

THE THEORY
OF FORWARD EXCHANGE



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THE THEORY
OF
FORWARD EXCHANGE

BY
PAUL EINZIG

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TO
J. M. KEYNES

PREFACE

WHEN I set out to write this book and discussed my undertaking with several bankers and economists interested in its subject, most of them were frankly sceptical about the possibility of writing a volume exclusively on Forward Exchange. I myself did not expect the book to run to more than 150 to 200 pages. It was only after I had started the preparatory work that I realised how vast the subject was and what an immense amount of material it was possible and necessary to collect. Indeed, the 500 odd pages of this book do not by any means exhaust the available material. Without much difficulty I could have written 1000 pages or more, and have abstained from doing so only for fear that a book of such formidable size, on a subject whose importance is far from being adequately realised, would not be read widely enough to justify the work involved.

My main object in producing a book which deals extensively with the broader aspects of Forward Exchange is to bridge the gap between theory and practice. On the one hand, there are thousands of practical bankers engaged in Forward Exchange operations every day of their life, possessing an enviable knowledge of everything that is worth knowing about the technical aspects of the system, but most of them lacking the qualifications to appreciate its broader implications. On the other hand, there are many theoretical economists who would be highly qualified to deal with the broader aspects of the subject but for their lack of knowledge of its technical details; in any case, they fail to appreciate the extent of the broader theoretical implications of Forward Exchange. As I myself stand somewhere halfway between practical specialists and theoretical economists—each of those groups considers, unflatteringly enough, that I belong to the other—I feel justified in attempting to construct a link between them. Accordingly, through my daily contact with bankers, I have collected much material which would be inaccessible to the purely academic economist, while at the same time, through research in libraries, conversation and correspondence with economists, and a little hard

thinking of my own, I have sought to provide material which is not as a rule within the reach of the practical specialist.

In the course of my search for technical material I have been in the fortunate position of being able to pick the brains of half the City—the better half, needless to say. While the existing literature by practical experts provided a useful guide, I endeavoured to collect a great deal more than they have presented in their isolated chapters on Forward Exchange. This part of my work bore much resemblance to that of a psycho-analyst. I had to ascertain the rules upon which, in a largely subconscious way, dealers operate in the Foreign Exchange market. In that admirable organisation, specialists practise their art with extreme skill as a matter of technical routine, for the most part without the guidance of any known set of theoretical rules. Day after day they come across interesting points which they take for granted, and consider them hardly worth mentioning to an outsider. It has taken me fourteen years of persistent questioning to elicit from them the details embodied in this book. Insignificant as many technical details may appear to academic economists viewing the subject from a theoretical standpoint, they have none the less a bearing on theory, and the knowledge of them is useful for any adequate appreciation of the broader aspects of Forward Exchange.

The second part of my task was to unearth the treasures of existing literature on the subject. When I set out to search for material, I was told by practically every British economist who had studied the subject of Forward Exchange that hardly anything had ever been published on it. Prolonged research in the libraries of the British Museum, the London School of Economics, the Institute of Bankers, the Royal Institute of International Affairs and the Royal Statistical Society, and correspondence with bankers, economists and financial journalists abroad, led, however, to the discovery of quite a considerable number of valuable sources, especially upon the historical aspects of the subject. I was less fortunate regarding its theoretical aspects. The theory of Forward Exchange has made but little progress since the publication of Mr. Keynes's *Tract on Monetary Reform* in 1923. While writings on the subject before and after that landmark may have thrown light on various points, they have all been confined to an examination of the factors that affect forward rates. I have so far failed to discover any writer, theoretical or practical, who has thrown any light on the broader effect of forward rates outside the

Foreign Exchange market. It is in this respect that I hope that I may have made some slight contribution towards the progress of the theory of the subject, by drawing attention to the effect of forward rates upon interest rates, price levels, trade balances, international gold movements, etc. While I indicated briefly some of my conclusions on this subject in an article in the September 1936 issue of the *Economic Journal*, I reserved my detailed discussion for this book. In particular, I believe that my conclusions on the effect of forward rates upon gold movements necessitate a revision of the whole theory of the normal working of the gold standard, especially as regards the immediate effect of Bank rate changes on gold movements. It is my contention that this effect depends, to a remarkable degree, upon the extent to which forward rates respond to the changes in their Interest Parities. The acceptance of my conclusions in this respect would materially strengthen the case for a revision of the attitude of Central Banks towards Forward Exchange, in the interests of the efficiency of their discount rate policy.

I should like to reassure those who, having read my previous books, regard me as a controversialist with strong prejudices. In this book I have tried to be as non-controversial as possible. Thus, while I cannot help holding strong views on various questions connected with Forward Exchanges, the object of this book is not to propagate those views but to draw attention to the subject and provoke discussion upon it. While I may not have been able to avoid dogmatism on various points, I have presented, as far as possible, both sides of each problem, leaving it to the reader to judge for himself.

The system of Forward Exchange is admittedly highly complicated, and I have not aimed at its over-simplification—another vice of which some of my previous books have been accused, doubtless rightly. Nevertheless, I maintain that there is nothing in Forward Exchange which cannot be grasped by an intelligent reader with a general knowledge of finance, provided that he has patience to concentrate upon it. Those who lack the patience had better skip the technical and theoretical chapters and concentrate on those dealing with the historical aspects of the subject.

During the past three years or so I have advocated, in a number of books and articles, the adoption of international Exchange Clearing, which would, of course, mean the abolition of Forward Exchange in its present form. I am now more than ever con-

vinced that Exchange Clearing is the rational system, and that it will be adopted sooner or later. As, however, its definite and complete adoption may take decades, in the meantime the system of Forward Exchange will remain in operation. Thus my plea for the adoption of Exchange Clearing is not incompatible with my desire that more should be known about the existing system and that, while it lasts, it should be improved as far as possible.

The practical object of this book is to indicate the possibilities of making better use of the Forward Exchange system, not only for meeting the requirements of trade but also for the broader purposes of monetary policy. In this latter respect I am whole-heartedly in agreement with Mr. Keynes's proposal in favour of systematic operations in Forward Exchanges by Central Banks. Indeed, I hope that my theory that interest rates and gold movements are apt to be affected by forward rates will strengthen the case in favour of the adoption of Mr. Keynes's proposal. And those bankers who are inclined to ignore or reject his proposal merely because it was put forward by a theoretical economist with no practical banking experience will find in Part V of my book historical evidence to prove that in some instances practical bankers did stumble upon the solution he advocates, although that same solution might appear strange to them if put forward in abstract terms.

The list of those to whom I am indebted for assistance in writing this book is long. For obvious reasons it would be inexpedient for me to disclose the full list of my sources of information within and outside the City. I have to acknowledge, however, my particular debt to Mr. W. H. Taylor, of Lloyds Bank, for reading the manuscript, and to Mr. F. C. Ellerton, of Barclays Bank, for reading a substantial part of the manuscript and of the proofs. They have both made innumerable valuable suggestions at every stage of my work, and I really doubt if this book could have been written at all without their assistance. But it is only fair to them to point out that, since I hold strong views of my own on many questions of fact and of interpretation, I have not always followed their advice, so that I bear the sole responsibility for the many errors that this book doubtless contains. Indeed, it is almost impossible to avoid errors when dealing with such a highly complicated and elusive subject as Forward Exchange. Each banker has a different experience in exchanges, and the material I gathered upon the facts of historical evolution, and even on the present organisation, was

therefore very often conflicting. Coming as it did from equally reliable sources, I was thrown upon my own judgment when deciding what to accept and what to reject. In such circumstances it would have been little short of a miracle if I had succeeded in avoiding mistakes. But, then, I do not mind being found guilty of errors. What matters is not that I should avoid mistakes, but that others, whether through my mistakes or in spite of them, should be able to discover the true facts and their correct interpretation.

I have mentioned only two names among the large number of bankers, British and foreign, who have helped me by providing material for this book. I owe a special debt of gratitude to members of the older generation who have supplied me with details on early forward dealing, which, owing to the inadequacy of early literature on Forward Exchange, would otherwise have been lost to the future student. It was indeed high time that someone undertook the task of collecting this historical material, for as time goes on it will become increasingly difficult to obtain first-hand information on early Forward Exchange developments.

For information on the technical details of the present organisation of the market I am largely indebted to a number of Foreign Exchange dealers of the younger generation, with whom my journalistic work has brought me in daily contact. Every one of them has forgotten more about the practical aspects of the subject than I shall ever know; I can only hope that in return for their valuable assistance this book will stimulate their interest in its theoretical aspects. My acknowledgment is due also to a number of overseas bankers for valuable information on the development and present position of Forward Exchange in their respective countries.

Among theoretical economists I owe, first and foremost, a great debt of gratitude to Mr. Keynes. I have dedicated this book to him partly because his name is outstanding among those who have ever written on Forward Exchange, and partly because it was following upon an inspiring conversation I had with him on the subject that I decided to undertake this work. Among the economists overseas who have assisted me with material I have to acknowledge my indebtedness especially to Professor H. Parker Willis, of Columbia University, New York; to Professor Giovanni Demaria, of Milan; and to Herr Walther Federn, founder-Editor of the *Österreichische Volkswirt*.

I should also like to thank the Editors of the *Economic Journal* and of *The Banker* for their permission to reprint some material from articles I have contributed to their publications. Finally, I owe acknowledgment to Mr. F. G. Woodhead, Manager of the Anglo-Portuguese Colonial and Overseas Bank, for having placed at my disposal the volumes of the weekly circular of his Bank—the only printed record of all the principal forward rates over a period of sixteen years ; to Mr. W. T. C. King for having revised the manuscript and the proofs, and for his constructive criticism upon both the form and the substance of the material ; and to Miss P. M. Rae for her assistance in the preparation of the charts and statistical tables.

P. E.

THE WHITE COTTAGE,
SOUTH BOLTON GARDENS,
LONDON, S.W.5, *March* 1937.

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CHAPTER I

FORWARD EXCHANGE—TERRA INCOGNITA

(1) EXPERTS' RELUCTANCE TO DEAL WITH THE SUBJECT

"THE nature of forward dealings in exchange is not generally understood. . . . There are few financial topics of equal importance which have received so little discussion or publicity." These remarks of Mr. Keynes¹ were made in 1922, but in substance they are still valid today. It is true that since the publication of *A Tract on Monetary Reform*, and largely in consequence of that publication, more attention has been paid to the subject than before. Forward Exchange rates are now quoted regularly in several newspapers; the financial Press comments systematically upon their fluctuations; and articles dealing with the broader aspects of the subject appear occasionally. But it is hardly less true today than it was fourteen years ago that the nature of Forward Exchange is not generally understood, either by the majority of theoretical economists or by bankers or writers on Foreign Exchange.

The reluctance of experts to deal with problems of Forward Exchange cannot be better illustrated than by the fact that the Macmillan Committee disposed of the subject in a few lines. Referring to the proposals made by Mr. Keynes for Forward Exchange operations by Central Banks, the report of the Committee² merely remarked that the matter was one of detailed technique which lay beyond its competence, and that the Committee preferred to make no recommendations on the subject. Although the Macmillan Committee included some of the leading experts on Foreign Exchange, the majority of its members knew far too little of the subject to commit themselves.

The same non-committal attitude towards Forward Exchange is adopted by the Bank for International Settlements, an institution which should be particularly qualified to study the subject.

¹ *A Tract on Monetary Reform* (London, 1923), p. 121.

² Report of the Committee on Finance and Industry (London, 1931), p. 154.

According to Miss Eleanor Lansing Dulles, who studied the working of the Bank on the spot and gathered a large volume of inside information on its policy, one of the reasons why the Board of the Bank decided by majority vote to avoid Forward Exchange dealings was that “. . . Forward Exchange business is comparatively little understood, and no comprehensive theoretical analysis of its significance has been made”.¹

(2) EXISTING LITERATURE INADEQUATE

The practical need for following the Forward Exchanges has increased considerably since 1931, and this accounts for the larger volume of publicity the subject has received during the last few years. For the most part, however, the comments on current movements of Forward Exchange rates are still essentially superficial and the occasional articles that deal with the more fundamental aspects of the subject do not cover a nearly wide enough ground. No book has so far been published in English on Forward Exchange. Though most books on Foreign Exchange devote a chapter or two to Forward Exchange, the space allotted is quite insufficient to do justice to what is indeed a vast subject. The same may be said of the small number of foreign books which have been devoted entirely to problems of Forward Exchange. As far as I have been able to ascertain, there are only four such books.² While they contain much highly valuable material, and have, within their limited scope, contributed much towards a better understanding of the problem, they are largely based on the one-sided experience of the countries of their authors; they confine themselves to certain aspects of the problem, and can hardly claim to have provided a comprehensive theoretical analysis of Forward Exchange.

Indeed, the material available for a thorough-going discussion of Forward Exchange is far from adequate. Statistical and historical material in an easily accessible form is practically non-existent, while the amount of technical and theoretical material is also very deficient.

¹ Eleanor Lansing Dulles, *The Bank for International Settlements at Work* (New York, 1932), p. 148.

² J. Vogel, *Das Devisentermingeschäft* (Berlin, 1924); C. A. Fischer, *Das Devisentermingeschäft* (Berlin, 1928); J. Casamajor, *Le Marché à terme des changes de Paris* (Paris, 1925); Giovanni Demaria, *I Saggi di Riporto e di Deporto della Lira Italiana a Londra dal 1921 al 1923* (Milano, 1928).

(3) NO STATISTICAL MATERIAL AVAILABLE

It is characteristic of the unsatisfactory state of international financial statistics that, while there appear dozens of overlapping tables giving monthly or annual figures of spot exchanges, not one has so far been published giving figures of Forward Exchanges. Anyone wishing to investigate Forward Exchanges over a past period has to compile the figures for himself from the files of newspapers. Should he want to obtain figures prior to 1931 the task would be still more difficult, for it is only since the crisis that most newspapers have quoted Forward Exchanges systematically in a tabular form. Even at present, the published quotations of Forward Exchanges are far from complete. Only about half a dozen leading Forward Exchanges are quoted. Admittedly the volume of dealings in the rest of them may be relatively small and the rates are often a matter of negotiation; but that is also true of the majority of minor spot exchanges which are, nevertheless, quoted regularly.

Thanks to Mr. Keynes, there are monthly figures available for the forward rates during the early post-war years.¹ Rates quoted before 1920 are, however, most difficult to trace. Before the war some German and Austrian newspapers published daily quotations of a few forward rates for the end of the current month, but these figures are not easily accessible to the student.

Statistical departments have certainly not exerted themselves to render accessible the "raw material" required for a study of Forward Exchange. It is hardly surprising, therefore, that they have failed to produce any of the "semi-products" of the subject, such as calculation of Interest Parities, *i.e.* the ratios between interest rates prevailing in any two financial centres. Although the importance of these Interest Parities in connection with Forward Exchanges had been vaguely realised several decades before the war, and although the significance of interest rates was made plain by Mr. Keynes in his *Tract on Monetary Reform*,² such desultory discussion of Forward Exchange problems as occurs from time to time is conducted without the support of any statistical material to indicate the relations between Interest Parities and forward rates.³

¹ *A Tract on Monetary Reform*, pp. 118-119. The tables contain rates for one month only.

² P. 124 *et seq.*

³ An attempt to provide such material was made by Mr. Lyman C. Duncan in

(4) HISTORICAL ASPECTS NEGLECTED

If we turn to the historical aspect of the study of Forward Exchange, we encounter a similar lack of material, especially where English financial literature is concerned. To begin with, there is not a single historical study even of Foreign Exchange, let alone a special history of Forward Exchange. Financial and other subjects of much less importance have received adequate historical treatment, but the student of the evolution of Foreign Exchange must piece the material together out of dozens of books dealing with particular currencies or particular periods. The task of following the historical evolution of Forward Exchange is even more difficult. In order to compile even a sketchy account of the historical evolution of Forward Exchange, of the movement of forward rates after the war, of the evolution of a theory of Forward Exchange, and of the attitude of the Central Banks towards the Forward Exchange market, I have had to go through some 1200 volumes written in the four principal European languages. Only about one out of ten of them contained any interesting material about Forward Exchange.

As far as early history is concerned, English literature is inadequate, which is only natural, for the development of the Forward Exchange market was rather belated in London. American literature is, however, hardly better, even though there were active dealings in Forward Exchanges in the United States long before London became acquainted with them.

French literature on the early history of Forward Exchange also leaves much to be desired, while even Italian authors, who have made some valuable contributions to the subject, have neglected its historical aspects. It is only natural that German and Austrian sources should be the most valuable. After all, both Berlin and Vienna had a highly developed Forward Exchange market for many decades before the war, and at the same time both Germany and Austria—especially the latter—could boast of a highly developed economic literature. In the circumstances, it is remarkable that even in these countries the descriptions of pre-war developments in Forward Exchange are, for the most part, rather hazy; nevertheless, I owe the bulk of my information on pre-war history, and a

an unpublished thesis entitled "A Study of the Course of Forward Exchange Rates during the last few Years", submitted to the London School of Economics in 1934. Its method of calculating Interest Parities is not, however, well chosen. Signor Giovanni Demaria also published in his book some figures and charts concerning the Interest Parities of the forward lira-sterling rate.

large proportion of my information on post-war history, to German and Austrian sources.

The available historical material is particularly inadequate as far as the war period is concerned. And yet, considering that there were wide exchange fluctuations in neutral centres, there must have been fairly active dealings in Forward Exchanges. The history of the early post-war period was described briefly by Mr. Keynes¹ and several German authors gave detailed accounts of the forward mark during the inflation. Generally speaking, even the historical description of the post-war period is, however, patchy, except for the more recent years, which are covered by the running commentary of the contemporary financial Press.

(5) GAPS IN INFORMATION ON THE TECHNICAL ASPECTS
OF FORWARD EXCHANGE

There is, unquestionably, a large volume of technical information available upon the working of the Forward Exchange market. Even in this respect, however, the material is far from adequate. There is, it is true, a large volume of useful material dealing with the arithmetic of Forward Exchanges, and with the details of the working of the market. The technique of the various types of operation is discussed in detail by general text-books on Foreign Exchange, but, while some points are repeated to boredom, others—such as operations in short against long forward, or the working on the cross forward rate, for instance—are neglected. As for the various handbooks for Cambists, whose task is supposed to be to provide practical details of Foreign Exchange markets all over the world, they seem to have forgotten Forward Exchange completely. Such handbooks may be invaluable to those who seek to convert Siamese ticals into Abyssinian talari through, let us say, the intermediary of Venezuelan bolivianos, but they provide no information upon the organisation and usage of the various Forward Exchange markets. Even the practical text-books which devote a chapter or two to Forward Exchange do not go sufficiently into technical details. As a rule, they fail to analyse many fine technical points, such as the multiplicity of Interest Parities, the reciprocal effects of acceptance credits and forward rates, and many other points on the borderline between theory and technique which could and should be dealt with by practical specialists. Thus, although literature on the technical

¹ *A Tract on Monetary Reform*, p. 117 et seq.

aspects of Forward Exchange is well developed, many blank spaces remain.

(6) STAGNATION OF THE THEORY OF FORWARD EXCHANGE

Upon the theoretical aspects of Forward Exchange, everybody who ever writes on the subject or reads about it will owe a great debt to Mr. Keynes. He has played the same part in the literature on the theory of Forward Exchange as Goschen played in the literature on the theory of Foreign Exchange in general. His article in the *Manchester Guardian Reconstruction Supplement*, and his classical Part IV of Chapter III in his *Tract on Monetary Reform* constitute a landmark both in the literature on Forward Exchange and in the evolution of the theory of the subject. Even though he was working at a disadvantage compared with the Central European economists, who had the experience of many decades at their disposal, he easily eclipsed all other writers on the subject. Since 1923, English and Continental literature on Forward Exchange has virtually subsisted upon the material provided by Mr. Keynes. A few exceptions apart—Mr. R. G. Hawtrey is one of them—nobody has sought to develop the theory of Forward Exchange any further. And yet, Mr. Keynes did not say the last word on the subject; indeed, with his main interest focussed on broader economic problems, he could hardly be expected to explore all the avenues of inquiry which his writings on Forward Exchange have opened up.

Theoretical economists in general have been remarkably reluctant to follow Mr. Keynes's lead in investigating Forward Exchange. Probably their reluctance has been largely due to the highly technical character of the subject, which presents innumerable pitfalls and traps to those who have not a thorough knowledge of a vast amount of practical detail. It is probable that many economists would have taken the trouble to master these details had they but realised the broader implications of the subject. But most of them have apparently considered Forward Exchange to be a mere matter of commercial arithmetic and, as such, outside the sphere of Economics.

The result is that the theory of Forward Exchange is still more or less at the same stage where Mr. Keynes left it in 1923. His Interest Parity theory is being stated and re-stated, interpreted and misinterpreted, without being developed much further.

While it has become a commonplace for books and articles on

Foreign Exchange to emphasise the dependence of forward rates upon their Interest Parities, very little has been said about the reciprocal nature of the relations between Interest Parities and Forward Exchanges, or about the reciprocal relations between commodity prices and forward rates, to mention only two of the innumerable points. The place Forward Exchange occupies in the general economic system has not been ascertained. Indeed, the study of the subject has been left largely to the practical specialist, who has no adequate academic background to enable him to tackle its broad aspects. Theoretical economists, even if they specialise in monetary questions, have usually been content to dismiss Forward Exchange in a few perfunctory paragraphs. They seem to be entirely unaware that forward rates, through their effect upon interest rates, international transfers of funds, gold movements, trade balances, price levels, etc., constitute an economic factor of first-rate importance which they can ill afford to ignore. Future generations of students, better equipped than our contemporary generation with a knowledge of Forward Exchange, will find it difficult to understand that during the post-war decades books were written by economists who were anything but superficial, on subjects such as international movements of funds or international aspects of interest rates or price levels, without so much as mentioning Forward Exchange.¹

(7) RESULT OF INADEQUATE INTEREST IN FORWARD EXCHANGE

Whatever may be the reason, Forward Exchange is one of the neglected branches of financial literature. The majority of economists avoid the subject if they can; the majority of bankers leave it to their Foreign Exchange dealers; as for the general public, they regard Forward Exchange as something deeply mysterious and infinitely complicated, like Relativity, and consider it futile even to try to understand the working of the system.

The practical results of this lack of interest in Forward Exchange are that proposals such as that of Mr. Keynes for the operation of Central Banks in the Forward Exchange market are ignored or

¹ In this respect the omission in the case of standard works such as Karin Kock's *Study of Interest Rates*, Iversen's *International Capital Movements*, Prof. James Angell's *Theory of International Prices*, is particularly glaring, for in other respects they cover their subjects with painstaking thoroughness. The first-mentioned book makes, at any rate, some casual references to Forward Exchange, but the author is evidently unaware of its influence on interest rates.

side-tracked without even being adequately discussed; that the Bank for International Settlements and many Central Banks abstain altogether from operating in Forward Exchanges; that the few Central Banks which are not afraid to deal in Forward Exchanges either make serious blunders, or—at best—they do the right thing by mere accident and for the wrong reason; and that such discussion as takes place upon the rôle of the authorities in relation to Forward Exchange is largely futile. The arguments usually run at cross-purposes, without due discrimination between intervention as a matter of commercial policy or monetary policy, between intervention in normal or abnormal times, as a matter of routine or as an exceptional measure.

(8) WHY FORWARD EXCHANGE SHOULD BE STUDIED

The object of this book is to fill at least some of the gaps in the material available for the study of the Forward Exchange, and to indicate the directions in which further exploration might fruitfully be pursued. There is indeed ample scope for original research for the student of statistics, for the economic historian, for the practical specialist conversant with technical details, and, last but not least, for the theoretical economist. They should not be deterred by the apparent narrowness of the field which the subject covers. The more thoroughly one inquires into it, the more its various aspects broaden. Nor is the subject beyond the reach of the general reader interested in financial problems. Unquestionably it is a complicated subject, but there is nothing in it that could not be grasped with a little concentration by anyone of an average knowledge of finance and of average intelligence. Nor is the subject nearly as dull as it is generally supposed to be. With a little imagination it is possible to discover even material for human interest in it. The epic of the fight for the franc in 1924-26; the tragedy of the mark in 1923; the comedy of the bear squeeze in Berlin in 1894; the "gold mystery" of 1891; and many other episodes in the history of Forward Exchange are likely to appeal to the dramatic sense of some readers. Others may derive intellectual pleasure from the innumerable fine technical points and the almost infinite variety of situations discovered through the investigation of the technico-theoretical aspects of Forward Exchange. Others, again, may find satisfaction in the exploration of the fundamental implications of Forward Exchange.

Although economists and Foreign Exchange dealers alike may find it difficult to believe this, there is such a thing as a Philosophy of Forward Exchange, capable of providing ample food for profound thinking. And there is also such a thing as a Metaphysics of Forward Exchange, providing ample material for the over-sophisticated. Indeed, few other subjects offer so much opportunity for indulging in futile discussion as to whether the first hen preceded the first egg.

The apparently narrow subject of Forward Exchange is in reality so vast that no single individual can possibly cover more than a small part of it, even if he were to devote his whole life to it. I am rather afraid, therefore, that much of the *Terra Incognita* will be left unexplored by this volume. Enterprising explorers will find ample opportunity to break new ground.

CHAPTER II

SCOPE OF THE BOOK

(1) SOURCES OF INFORMATION

IN attempting to remedy some of the deficiencies of the literature on Forward Exchange indicated in Chapter I, I have found ample confirmation of the old-established rule that it is easier to criticise than to construct. The task of providing the material that is required for an understanding and discussion of Forward Exchange is indeed immense. The ground is unexplored to a very large extent, and it will take the cumulative efforts of many theoretical and practical experts to complete its exploration. One of the objects in writing this book was to facilitate the task of others who may seek to explore the subject. To that end I have compiled an extensive bibliography of the literature of Forward Exchange. This bibliography includes, in addition to the well-known names, some names of continental authors which are hardly known even in their own countries. Other foreign names are household words abroad but are unknown to British and American students unacquainted with foreign languages. Others, again, may convey a great deal to students of the history of general economic theory but may mean nothing to specialists in Foreign Exchange.

The footnotes in various chapters, like the bibliography, are also designed to give ample indication of the sources available to those who want to carry the research further. In my efforts to discover these sources I was greatly assisted by the pedantic German habit of referring to the sources of information as frequently as possible. In the past this habit has caused me mild amusement, but having discovered its usefulness I decided to adopt it—within reason—in this book, especially in the historical sections.

(2) HISTORICAL MATERIAL

My next task was to fill the gaps in the history of Forward Exchange. As far as pre-war history was concerned I had to

proceed on almost entirely unexplored ground, but was lucky enough to discover ample material. If this book does nothing else it will certainly dispose of the belief, popular in English literature, that Forward Exchange was a post-war invention.

The historical sections of this book come under four headings :

1. The history of the evolution of the Forward Exchange market as an institution.
2. The history of the evolution of the theory of Forward Exchange.
3. The history of the movements of Forward Exchange rates.
4. The history of the attitude of Central Banks towards Forward Exchange.

Those who may feel that, for a book which claims to deal primarily with the theoretical aspects of Forward Exchange, the space allotted to history is disproportionate, should bear in mind that many theoretical conclusions could be reached only through a historical approach. In part, the lack of historical material has probably been responsible for the inadequate understanding of Forward Exchange. It was necessary, of course, to strike a mean between two extremes—the one a voluminous mass of historical “background” (itself a term which can be liberally interpreted) and the other a mere unrelated description and analysis of the present-day system of Forward Exchange, just as if the whole system had been created overnight.

(3) EVOLUTION OF FORWARD EXCHANGE

In the historical account of the evolution of the Forward Exchange Market as an institution I have attempted to show how, when and why Forward Exchange has developed. In this respect my conclusions are largely a matter of conjecture, as I was unable to discover any concrete material concerning Forward Exchange before the late seventies of the nineteenth century. That such material exists is highly probable, and the student with enough time and patience should be able to discover much original data. Nor can I claim that the material I have collected about the development of Forward Exchange during the last few pre-war decades is anything like complete. It leaves a wide scope for future research—research of a kind which can be undertaken really successfully only in the countries concerned. The material which I propose to give,

although far from complete, is sufficient to indicate the high degree of development attained by the system of Forward Exchange long before the war.

Material concerning the post-war developments of the Forward Exchange market is, of course, more easily accessible than pre-war material. Nevertheless there are a number of gaps in the scattered literature on the subject which I have had to fill by collecting material from bankers and Foreign Exchange dealers who were closely connected with the market during the period of post-war currency chaos. It was necessary to provide a bird's-eye view of post-war history of the Forward Exchange market. This is one of the innumerable subjects which those connected with it imagine they know thoroughly, and yet when it comes to going into its details the shortcomings of human memory soon become evident. This is true even of developments in recent years, so that no apology is needed for a chronicle of recent events, even though the contents of the last chapter in Part II may be familiar to those who have followed the Foreign Exchange market closely since 1931.

(4) PRESENT ORGANISATION OF THE MARKET

The historical account of the evolution of the Forward Exchange market in Part II is followed in Part III by a description of its present position and organisation. In this respect my main task was to co-ordinate into a comprehensive system the material provided by practical experts on the subject, and to fill the numerous gaps which, for considerations of space, their writings had to leave. The nature of the various causes that give rise to Forward Exchange operations has been examined closely. This involved the discussion of a large volume of details on the rôle of trade, foreign investment, foreign short-term funds, and of every kind of arbitrage and speculation, in the Forward Exchange market—details which do not, strictly speaking, belong to the sphere of theory. It would be impossible, however, for anyone to embark upon the examination of the theoretical aspects of Forward Exchange without having first an adequate knowledge of its practical aspects. It was, moreover, advisable to begin with the comparatively simple historical and practical material before proceeding to the highly complicated theoretical material.

Even though this part of the book deals with material already covered in part by practical writers on the subject, there still re-

mained a good deal to be said, for many points of importance have so far been discussed only cursorily. In dealing with various types of arbitrage operations, or with the relations between covered and uncovered balances, for instance, I had to break much unexplored ground, even though these subjects have been of great practical interest ever since Forward Exchange facilities developed. The rôle of foreign investments in the Forward Exchange market also required more attention than it had hitherto received. On the other hand, there was relatively little scope for providing original material upon commercial and speculative Forward Exchange operations without going into minute details unwarranted by the theoretical character of the book. Apart from co-ordinating the existing material on these subjects, I have confined myself to giving various points a new interpretation. There was no need for me to touch the arithmetic of Forward Exchange, for it is amply dealt with by existing text-books on Foreign Exchange.

(5) THE INTEREST PARITY THEORY

Strictly speaking, the next task should have been to give a historical account of important or characteristic Forward Exchange movements. After some hesitation, however, I decided to proceed at once from a history of the Forward Exchange market, and a description of its present organisation, to a discussion of the theory of Forward Exchange, thereby deferring the historical account of Forward Exchange movements. My object in choosing this method was to enable me to explain the Forward Exchange movements in the light of my conclusions on the theory of Forward Exchange. Possibly my choice of this method in preference to the inductive method may lead some to suggest that I have fitted my facts to my theories. In reality, the difference from this point of view between inductive and deductive methods is grossly exaggerated. It is equally possible to work on preconceived conclusions by both methods. It is not the method but the impartiality and intellectual integrity of the authors that counts.

The theoretical section proper is introduced by an account of the evolution of the theory of Forward Exchange from the 'eighties to the present day. This is followed by a detailed examination of the classical Interest Parity theory which up to the present has been practically the only theoretical explanation of the movements of forward rates. Although it has existed in a primitive form ever

since the early days of dealing in Forward Exchanges, nothing has so far been published about the method of ascertaining what Interest Parities really are. I have attempted to make good this important omission, with the aid of the statistical material published in the Appendices. Other important questions—such as the exact way in which Interest Parities affect forward rates, for instance—also required a close re-examination.

(6) NEW THEORETICAL MATERIAL

Above all, I have endeavoured to draw attention to the one-sided interpretation which has hitherto been generally given to the Interest Parity theory—an interpretation which has given rise to a popular misconception that has had far-reaching practical consequences.

One of the main aims of the book is to stress the reciprocal character of relations between Interest Parities and forward rates. The fact that not only are forward rates influenced by Interest Parities but that Interest Parities are also apt to be considerably influenced by forward rates has in the past been almost entirely overlooked. The effect of forward rates upon interest rates is by no means negligible even in relatively normal conditions, but the effect becomes all-important in abnormal conditions such as prevailed in France, for instance, during 1935–36. The realisation of the reciprocal character of relations between Interest Parities and forward rates is fundamental to an understanding of the broader implications of Forward Exchange, and to the formulation of a correct Forward Exchange policy by the authorities.

This principle of reciprocity is stressed also in other contexts. In particular, stress is laid upon the reciprocal relationship between price levels and forward rates. To a very considerable extent both the Forward Exchanges themselves and their Interest Parities are determined by the Purchasing Power Parities of Exchanges. This aspect of the theory of Forward Exchange has been completely ignored until quite recently, and such rudimentary attempts as have been made to draw attention to it required a thorough revision to make them acceptable as a useful contribution to the Theory of Forward Exchange. I have endeavoured to indicate the circumstances in which the Purchasing Power Parities affect the Interest Parities and forward rates, pointing out at the same time the numerous limitations of this theory. The theory of

reciprocity is applied also to the relations between trade balances and forward rates, and between international lending and forward rates. I have endeavoured, throughout the chapters dealing with these aspects of the subject, to make it plain that forward rates do not constitute a mere passive factor but are themselves capable of influencing various important factors of the economic system.

In the light of a close examination of the working of the Interest Parity theory, it has become necessary to revise the whole theory of international gold movements. To a hitherto unsuspected extent, the effect of Bank rate changes on gold movements depends upon the rapidity with which forward rates adjust themselves to their changed Interest Parities.

Although the main purpose of the theory of Forward Exchange is to explain the movements of forward rates, an adequate theoretical investigation must cover questions which have hitherto been considered to be mere matters of technical detail, such as the relation between gold points and forward rates, between spot and forward rates, and the relation between long and short forward rates.

(7) HISTORY OF FORWARD EXCHANGE MOVEMENTS

The history of the principal Forward Exchanges since the war is covered in Part V. My interpretation of the various characteristic movements of the rates is supported by statistical material the absence of which in the past must have made the rational discussion of Forward Exchange movements difficult if not impossible. The extent to which there have been parallel movements of forward rates and their various Interest Parities has been illustrated by three charts, and the frequent divergencies from parallel are interpreted in the light of the conclusions reached in the previous (theoretical) section of the book.

I am particularly anxious that this book should encourage further research into the nature of Forward Exchange. To that end, I have endeavoured to provide relevant statistical material in an easily accessible form. In the appendices the reader will find tables showing weekly quotations of the principal Forward Exchanges since 1921, and also their monthly Bank Rate Parities, Discount Rate Parities, and Call Money Rate Parities. In the case of the forward dollar I have worked out also an experimental parity between the London discount rate and the New York time

money rate. Even though this material is far from being sufficient to enable the future research worker to raise the study of Forward Exchange to the level of an exact science, its publication will, I hope, encourage the various statistical departments to establish more detailed records.

(8) CENTRAL BANKS' ATTITUDE

In the next section of the book detailed material is provided concerning the Forward Exchange operations undertaken by the various Central Banks. In this respect, too, a great deal of the material is entirely new, at least so far as the English economic literature is concerned. It will come as a surprise to most people to learn that many years before the war the Austro-Hungarian Bank pursued a Forward Exchange policy which bore a close resemblance to the proposals made by Mr. Keynes. Nor is it generally realised, even by those who knew the facts of recent French monetary history, that the Bank of France, of all Central Banks, put Mr. Keynes's proposals into operation in 1927-28. These and other instances in which Central Banks operated in Forward Exchanges should be studied by those who want to form an opinion upon whether Central Banks could or should operate in Forward Exchanges.

On the basis of the historical material about the various types of Forward Exchange operations undertaken in the past by Central Banks, I have proceeded to examine the arguments for and against undertaking those various types of operations. In particular the question whether Bank rate policy should be supplemented by forward rate policy is examined in detail. My conclusion is that, since the rôle of the Bank rate policy to regulate the international movements of funds frequently conflicts with its rôle of regulating internal trade, its application should be confined to internal purposes. International transfers could be regulated by a forward rate policy of the pattern advocated by Mr. Keynes and applied by the Austro-Hungarian Bank and the Bank of France. A case is made out also in favour of a forward rate policy to be pursued solely for increasing the efficiency of the orthodox Bank rate policy. Under the existing system, it is left entirely to chance to what extent the behaviour of forward rates neutralises or reinforces the effect of Bank rate changes upon arbitrage transfers and upon the amount of foreign credit availments.

(9) CONCLUSIONS

In the concluding section, the broader aspects of Forward Exchanges are once more examined, with the object of ascertaining the part they play in the general economic system. In particular, an attempt is made to reconcile the isolationist and internationalist conceptions of Forward Exchange, and to prove that intervention can serve the object of either an isolationist or an internationalist monetary policy. Finally, the future prospects of the Forward Exchange system are examined.

It is to be hoped that the material thus provided will prove useful to students engaged in research ; to the practical banker well acquainted with technical detail but without an adequate realisation of the broader implications of Forward Exchange ; to the academic economist interested in its fundamental aspects but afraid of technical details ; and above all to those with whom the management of monetary policy rests. It is to be hoped that the material provided by this book, and to be provided by those who follow up the avenues of research indicated by it, will deprive the monetary authorities of any excuse for ignoring Forward Exchange.

CHAPTER III

DEFINITIONS

(1) PRELIMINARY REMARKS

In any discussion of a difficult and complicated subject it is essential that the possibility of misunderstanding should be reduced to a minimum. To that end it is very desirable that all books of this kind should devote a chapter to definitions giving the precise meaning of the terms employed. This is an advantage from the point of view of authors and readers alike. It makes an author stick to his definition throughout the book and saves him from many an ambiguity. From the reader's point of view the provision of a kind of vocabulary of the terms the author uses is naturally welcome; for even though the author may give precise definitions as and when each term arises, it is not always easy or convenient to find these definitions when they are needed. The inclusion of a separate chapter makes this task much easier. From the point of view of critics, the advantage of such a chapter of definitions is that it minimises the possibility of arguing at cross purposes.

As a rule I have endeavoured to use the various terms in their generally accepted sense. In some instances, however, I considered it advisable, mostly for practical considerations, to depart from this rule. In other instances, where no adequate terms existed, I have had to coin them, but I have done so only where it was inevitable. I did not wish to add a formidable terminology to the existing difficulties of the subject, having no desire to emulate Professor Knapp, who has made life difficult for generations of German students.

But let us now proceed with the definitions.

(2) FOREIGN EXCHANGE

(FOREIGN EXCHANGES, in the concrete sense of the term, are means of payment and instruments of short-term credit expressed

in terms of the currency of another country. They include actual notes, cheques, bills of exchange and balances in foreign currencies.) In many foreign languages there is discrimination between *Devisen* and *Valuta* (the former includes foreign drafts and transfers while the latter refers to foreign notes) but in English they are all included under the heading of Foreign Exchanges. During the nineteenth century, foreign notes and bills were the principal kinds of Foreign Exchanges, but in more recent times they have been displaced almost completely by transfers of bank credit. Thus, except in the chapters dealing with the early history of Forward Exchange, the term Foreign Exchanges will refer to telegraphic or telephonic transfers.

(In the abstract sense of the term, Foreign Exchange means the process or system of conversion of one national currency into another.)

EXCHANGE RATES, unless otherwise indicated, are the middle figures between buying and selling rates quoted at a given moment for transfers.

(3) FORWARD AND SPOT EXCHANGES

(FORWARD EXCHANGES are Foreign Exchanges bought or sold for future delivery (hence the American name "futures") against payment on delivery.) The actual means of payment which are the subject of forward transactions are nowadays confined almost exclusively to transfers (not necessarily to telegraphic or telephonic transfers, for except in forward deals for very short periods there is always ample time to make the actual transfer by mail, even if the deal was concluded by trunk call or the exchange of cables), though there is still a certain amount of business transacted in bills for forward delivery, and occasionally even in notes for forward delivery. Although these latter transactions are at present quite unimportant both from a theoretical and from a practical point of view, they should nevertheless be included in the definition of Forward Exchanges, for during the earlier phase of the evolution of the Forward Exchange market dealing was confined at first to notes and subsequently to notes and bills. (In the abstract sense of the term, Forward Exchange means the process or system of buying or selling Foreign Exchange for future delivery.)

(SPOT EXCHANGES are Foreign Exchanges bought and sold for immediate delivery and paid for on delivery. "Immediate delivery" means delivery two days after the conclusion of the deal.

It is now a general rule that spot exchanges have to be delivered on the morning of the second day following the conclusion of the deal. Thus, strictly speaking, a spot deal is really a forward deal for two days.)

(FORWARD RATES are the difference between the prices of Foreign Exchanges for spot and for forward delivery at a given moment. In this respect my definition differs from the general use of the term. Several authors call this rate the "forward margin", "swap margin" or "swap rate", while their definition of forward rates is the figure representing spot rates plus or minus the "forward margin".) In reality, since Forward Exchanges are usually quoted not in terms of their actual price but in terms of their premium or discount on the spot rates, it is admissible to consider the figures of this premium or discount to be the forward rate. (Thus if the spot franc is quoted at 105 and forward francs are at a discount of 2 francs for three months, then the "discount of 2 francs" is, according to my definition, the forward rate, and 107 (105 + 2) may be called, to avoid misunderstanding, the forward price. This last term may be inadequate, but it serves its purpose.)

(4) PREMIUM AND DISCOUNT

(PREMIUM AND DISCOUNT. If a Forward Exchange is worth more than the corresponding spot exchange it is at a premium; if it is worth less than the spot exchange it is at a discount.) In English the term "premium" is used in the Exchange Market in two different senses. It may indicate either the premium upon Forward Exchange against the spot exchange or the premium of spot exchanges compared with their Mint parities; "discount" may mean either the discount on the Forward Exchange against spot exchange or the discount of spot exchange against its Mint parity. In continental languages there is a discrimination between *agio* and *report* on the one hand and *disagio* and *deport* on the other. *Agio* and *disagio* mean the discrepancy between Mint parities and spot exchanges; *report* and *deport* mean the discrepancy between spot and forward exchanges. In English, "premium" may be either *agio* or *report*, and "discount" may be either *disagio* or *deport*.

As in this book we are concerned with the relation between spot and Forward Exchanges, we shall use the terms Premium and Discount solely in that context. On the few occasions when the relation between spot exchanges and their gold parity is referred

to, it will be made plain that Premium and Discount are used in that sense.

(5) INTEREST PARITIES

(INTEREST PARITY is the difference between short-term interest rates prevailing in two centres. It is essential that this term, which at present is not in common use, should become part of the everyday vocabulary of those discussing exchanges.) In the absence of such a generally accepted term, the annual report of the Bank for International Settlements had to refer to "the normal spread corresponding to the difference in short-term interest rates between the markets concerned".¹ Sixteen words are used where two would be ample. Since the difference between Interest Rates constitutes the equilibrium rate of a Forward Exchange, there is every justification for calling it its Parity, even though it has no concrete existence similar to that of the Mint Parity.

(BANK RATE PARITY is the most primitive form of Interest Parity, representing the difference between the official rediscount rates in the centres concerned.)

(DEPOSIT RATE PARITY is the difference between the rates allowed on time deposits in two centres.) The rates taken are those allowed by bankers to bankers. Its exact definition is again highly complicated, and in practice it is most difficult to ascertain its figure.

(DISCOUNT RATE PARITY is the difference between the market rates of discount for bank bills or Treasury bills in two centres.) Since short-term funds can be invested also in other types of bills, the difference between other bill rates may at times be also of importance from the point of view of forward rates, but, unless otherwise indicated, Discount Rate Parity means the difference between rates for fine bank bills.

(CALL MONEY PARITY is the difference between short-loan rates in two centres.) There are various types of short loans in the market and it is often difficult to find the exact equivalent of a certain type in another market. It is possible to distinguish between call money parity, Stock Exchange loans parity, etc.

(THEORETICAL INTEREST PARITY is the difference between the average short-term interest rates in two centres.) This average should be calculated largely on the basis of interest rates which are apt to attract foreign funds, but purely domestic interest rates should not be left altogether out of this calculation.

¹ Report of the Bank for International Settlements, 1935-36, p. 17.

(6) DISCREPANCIES

(OVERVALUATION AND UNDERVALUATION of Forward Exchanges mean the existence of a discrepancy between Interest Parities and forward rates.) At present the terms Overvaluation and Undervaluation are employed only in connection with the discrepancy between spot rates and their Purchasing Power Parities. Since this subject will also be dealt with in this book, to avoid misunderstanding it will be made plain on every occasion when the terms are used whether overvaluation or undervaluation is in relation to Purchasing Power Parities or Interest Parities.

(Forward Exchanges are undervalued against their Interest Parities when (1) the discount is wider than would be justified on an interest basis ; (2) the premium is narrower than would be justified on an interest basis ; (3) there is a discount when on an interest basis there should be a premium ; and (4) there is a discount when there should be no disparity at all.

Forward Exchanges are overvalued against their Interest Parities when (1) the premium is wider than would be justified on an interest basis ; (2) the discount is narrower than would be justified on an interest basis ; (3) there is a premium when there should be a discount ; and (4) there is a premium when there should be no disparity at all.)

(7) INTEREST ARBITRAGE

(INTEREST ARBITRAGE consists of the transfer of balances from one centre to another for the purpose of profiting by the difference in the yield on short-term investment. It combines a Foreign Exchange transaction with short-term investment. If Interest Arbitrage is effected between the centre of the arbitrageurs and a foreign centre, it is bilateral arbitrage ; if it is effected between two foreign centres—for instance, if French holders of sterling transferred their funds from London to New York for the sake of the higher yield—then the operation is triangular arbitrage. A much more important distinction is between covered and uncovered Interest Arbitrage. In the former, the exchange risk attached to the investing of funds in the foreign centre is covered, while in the latter it is left uncovered. In covered Interest Arbitrage, the cost of or profit on the swap (*i.e.* the loss or gain on a combined

purchase of spot exchange and sale of forward) is deducted from or added to the yield of the funds in the foreign centre. Another important distinction is between Active and Passive Interest Arbitrage. If arbitrageurs take deliberate action to transfer funds from one centre to another for the sake of the difference in the yield, the transaction is Active Interest Arbitrage. If they merely allow funds to accumulate in some centre as a result of their transactions with their clients, then it is Passive Interest Arbitrage.)

(8) TRANSFER AND LOAN POINTS

(TRANSFER POINTS are the rates at which it becomes profitable to take action in order to transfer funds from one centre to another for the sake of higher yield with the exchange risk covered.) It is hardly worth while for a bank to undertake active Interest Arbitrage involving work, to lose the "turn", immobilise to some extent some of its funds, and take a slight risk, all for the sake of an additional yield of, say, one-eighth per cent per annum. The minimum discrepancy in yield which induces banks to undertake the deliberate transfer of their funds for the purpose of Interest Arbitrage varies widely, but as a general rule funds are not transferred by big banks on a large scale unless there is a profit of about one-half per cent per annum. The rates representing an overvaluation or undervaluation of the forward rates against their Interest Parities amounting to one-half per cent may be regarded therefore as their Transfer Points. Passive Interest Arbitrage does of course occur while the forward rate is within its Transfer Points, but if the discrepancy is very small it is hardly worth while to accumulate funds in a foreign centre.

(LOAN POINTS are the forward rates at which it becomes advantageous for arbitrageurs, exporters, or those desirous of hedging against the depreciation of a currency to borrow in the foreign centre concerned, as an alternative to selling Forward Exchange, because the cost of the forward operation exceeds that of the loan. Thus, if the forward franc is 8 per cent per annum, while it is possible to borrow in Paris at 6 per cent, British exporters having to receive francs at a future date find it more advantageous to borrow the francs, sell them, and repay the loan subsequently out of the proceeds of their exports. For arbitrageurs, loan points represent the rates at which it becomes profitable to borrow in a foreign centre for the purpose of using for swap transactions the

spot exchange thus obtained. The Loan Points vary according to the type of credit used.

(9) COVERING AND HEDGING

(COVERING THE EXCHANGE RISK means the acquisition or sale of foreign currencies to fix in terms of the national currency the amount receivable or payable at a future date. Thus a covering operation can arise only where there is a definite payment in foreign currency maturing at some future date. The covering operation provides a safeguard against the *direct* risk involved in exchange fluctuations.

HEDGING in general may be defined as consisting of deliberately taking a speculative risk in order to offset a bigger speculative risk. Hedging against exchange fluctuations is the Forward Exchange operation by which we safeguard against *indirect* loss arising from the depreciation of a foreign currency. The difference between covering and hedging is that in the former we safeguard ourselves against loss on some definite payment to be made or received, while in the latter we safeguard ourselves against the depreciation of assets brought about by the depreciation of the exchange. Thus an exporter of British goods to France who will receive francs in three months' time covers against the exchange risk by selling the francs forward. On the other hand a British buyer of French goods may hedge against the loss he would suffer in terms of sterling through the fall in the sterling price of the French goods, caused by the depreciation of the franc.)

(10) EXCHANGE POSITIONS

(EXCHANGE POSITIONS arise when there is a difference between the amount of foreign currencies owned or receivable by a bank, firm or individual under definite contracts, and the amount of the same currencies payable by them under definite contracts. If the amount held or receivable in foreign currencies is not covered by forward contracts, then the firm in question has a *long* position in the currencies concerned. If the amount payable in foreign currencies is not covered by forward contracts, then the firm in question has a *short* position in the foreign currencies concerned. So long as the totals receivable and payable are balanced, however, no position can arise, even though the payments to be received

and to be made are not synchronised. Discrepancy between maturity dates creates a commitment but not a position.

BEAR AND BULL POSITIONS are short and long positions deliberately created for speculative purposes, either by Forward Exchange operations or by borrowing abroad and selling spot exchange. If a merchant leaves the exchange on his imports or exports uncovered, he creates a short or long position, but not a bear or bull position.

(11) SUNDRY DEFINITIONS

(FORWARD DEALING IN DISCOUNTS constitutes fixing in advance the discount rate for bills to be delivered at a future date. It safeguards holders against the risk of a rise in the Bank rate.) Such transactions supplement forward operations in bills designed to reduce exchange risk on bills to be delivered at a future date.

(FOREIGN BALANCES, in the broader sense of the term, include not only current account balances but also sight deposits, deposits at notice, fixed deposits, holdings of bills, funds invested in the short-loan market, and even funds invested in easily realisable securities.

PURCHASING POWER PARITY is the ratio between the internal purchasing power of two currencies.) The exact meaning of the term is highly controversial, and its loose definition has caused much misunderstanding in the past. Here, however, we need not be more precise, since we are concerned only with broad tendencies in forward rates to move in the direction of their Purchasing Power Parities, tendencies brought about by divergencies of spot exchanges from their equilibrium levels, and from this point of view it is immaterial which interpretation of the term is correct.

(SWAP TRANSACTIONS are the purchase or sale of spot exchanges against the sale or purchase of Forward Exchanges.) In a broader sense the term can also be used to cover the purchase or sale of short Forward Exchanges against longer Forward Exchanges, but unless otherwise indicated the term will be used in this book exclusively to indicate spot-forward operations.

SWAP AND DEPOSIT transactions combine the buying of spot exchanges against Forward Exchanges and the loan of the foreign currency thus obtained to the foreign banks concerned.) Thus if an English bank buys spot reichsmarks and sells them for three months' forward delivery it will have the use of reichsmarks for three

months, while the German bank concerned will have the use of sterling for three months.) As a result of the Swap and Deposit transaction, the German bank will have the use of both sterling and reichsmarks for three months.

(TRANSFERS, unless otherwise indicated, mean the acquisition of a foreign balance by individual buyers. They need not necessarily involve the change in the volume of funds in the two centres concerned, only the change of the ownership of the funds involved.) It is only if the transfers are on a sufficiently large scale to give rise to gold movements or official exchange operations that they bring about a decline or increase in the total volume of funds in the centres concerned.

(CROSS RATE is the rate between two foreign currencies calculated on the basis of their quotation in a third centre.) Thus when we talk about the franc-dollar cross rate we mean the ratio between the London quotation of the two currencies. It need not necessarily be identical with the dollar rate in Paris or the franc rate in New York, and when there is a discrepancy it gives rise to exchange arbitrage.)

(CROSS FORWARD RATE or FORWARD CROSS RATE. While the cross rate is the ratio between two spot rates in a third centre, the cross forward rate is the ratio between two forward rates in a third centre.)

(FORWARD EXCHANGE POLICY is the set of principles followed by the monetary authorities in their operations in Forward Exchange, irrespective of the object of the operations.

FORWARD RATE POLICY is one particular type of Forward Exchange Policy, aiming at influencing the international movements of funds by means of regulating forward rates.)

PART II
EVOLUTION OF THE
FORWARD EXCHANGE SYSTEM

CHAPTER IV

THE ORIGIN OF FORWARD EXCHANGE

(1) LACK OF CONCRETE INFORMATION

THE majority of the systems and institutions that form part of the international financial apparatus as we know it today have developed by a gradual process. Their origin cannot be traced to some definite, or even approximate, date. They were not the invention of any particular individual, but came into existence through the coincidence of demand for certain facilities and of circumstances which made it possible to provide those facilities. This is how the system of Forward Exchange came into being. It is impossible either to point with even approximate accuracy to any date when it began or to name any individual or institution responsible for its initiation. All we know, or rather assume, is that it originated during the nineteenth century, but we are unable to express a definite opinion upon whether it was the first or the second half of that century.

We are equally in the dark about the exact process through which Forward Exchange became part of the financial system. By the time writers on financial subjects in Central Europe and elsewhere began to take notice of Forward Exchange, the system had been in operation for some time, and there is no evidence to show when and how it had come into existence. It is, nevertheless, possible to elaborate a theory about the origin of Forward Exchange, based on the experience of Foreign Exchange markets in which Forward Exchange developed only comparatively recently. Admittedly, we are not altogether on safe ground in inferring that the circumstances of the development of Forward Exchange in Vienna and Berlin during the nineteenth century were similar to those amid which Forward Exchange developed in other markets in more recent times. There are, however, several points in respect of which the similarity of circumstances can reasonably be assumed.

(2) DEMAND FOR FORWARD EXCHANGE FACILITIES

The demand for Forward Exchange facilities arose, not through one particular requirement, but through complex influences and conflicting requirements. (To state that it arose through the necessity for traders to cover their exchange risk caused by abnormal exchange movements would over-simplify the matter. The desire of importers and exporters to safeguard themselves against losses arising from the fluctuation of their own currency or that of another country is certainly one of the major factors responsible for the development of a Forward Exchange market.) But it is only one of a set of various complementary factors working in the same direction.

Unquestionably, the development of Forward Exchange is the outcome of fluctuating exchanges. I propose to show in the next chapter that wherever a currency was subject to fluctuations during the second half of the nineteenth century, there was evidence of the existence of an active Forward Exchange market. It would be incorrect, however, to attribute the development of that market solely to the prudence of merchants who were anxious to avoid having to gamble on the exchanges. To about the same extent, the creation of Forward Exchange facilities was due to the opposite influence: to the desire of speculators to gamble on the exchanges. It would be idle to attempt to answer the question whether commercial demand was first in the field, and the market created for its benefit was used and abused subsequently by speculation, or whether it was speculators who created the market which, once in existence, provided facilities also for non-speculative Forward Exchange requirements. In all probability these conflicting requirements developed more or less simultaneously. At the same time, the requirements of arbitrage of various kinds had also arisen and had contributed towards the factors making for the development of a Forward Exchange market.

(3) WHY LONG BILLS HAD BECOME INADEQUATE

In itself the existence of fluctuating currencies would not have given rise to a Forward Exchange market. Currencies have nearly always fluctuated in terms of one another, and yet there is no reason to suppose that Forward Exchanges existed before the nineteenth century. During earlier centuries general conditions

were much less settled, and such exchange risk as existed was merely one of the innumerable risks the venturesome souls engaged in foreign trade had to take. If any of them wanted to cover himself against that particular risk, he was in a position to do so by means of long bills on a foreign centre, which were the forerunners of Forward Exchanges. Anyone having to make a payment in a foreign currency at a future date was able to buy foreign bills in the currency concerned. Anyone expecting to receive payment in a foreign currency at a later date could draw a bill in that currency and sell it.

(The question we have to try to answer is why the necessity arose for developing Forward Exchange facilities in addition to the existing foreign bill facilities. It must have arisen gradually, with the expansion of foreign trade caused by industrialisation and by the progress of the international division of labour. During the second half of the nineteenth century the volume of foreign trade had advanced to a figure many times larger than its volume for the first half of that century. At the same time, international finance also developed on a perhaps even more extensive scale.) Banks of different countries acquired the habit of keeping funds in terms of each others' currency. This gave rise to interest arbitrage and to the desire to cover these balances against losses through exchange movements. Above all, the nineteenth century witnessed the development of active stock arbitrage, and this, too, was largely responsible for the increase of the demand for convenient facilities for covering the exchange risk. With the adoption of the gold standard by a number of countries during the last three decades of the nineteenth century, bullion arbitrage on an extensive scale added to the demand for such facilities.

(4) SUPERIORITY OF FORWARD EXCHANGE AS MEANS FOR COVERING

Why, it may well be asked, were the facilities provided by the foreign bills not sufficient to meet the increased requirements? (To answer that question it is sufficient to point to the advantages of Forward Exchanges compared with foreign bills as means of covering exchange risk. The purchase of long bills requires an immediate capital outlay or, alternatively, the contraction of a bank loan. Against this the purchase of Forward Exchanges requires no cash outlay (except in some instances a small deposit) and no credit transaction on the part of the buyer.) Foreign trade

transactions do not always give rise to bills, or, as Walther Lotz pointed out in 1889,¹ bills are not always of a sufficiently high quality to be marketable on advantageous terms. Another reason for the need for Forward Exchange facilities was that in many instances exporters were desirous of safeguarding themselves against exchange risk long before they were in a position to deliver the bills. Obviously, Forward Exchange facilities were much better suited to their requirements than were foreign bill facilities. In any case, bills are a clumsy and cumbersome instrument for a really large volume of turnover. Even though the development of finance bill facilities made their market more elastic and adaptable, such facilities were by no means unlimited.

Compared with the facilities of the foreign bill market, Forward Exchange definitely represented a higher stage of development. The creation of a Forward Exchange market was in keeping with the general tendency of evolution in international finance from the primitive to the more advanced system. Forward Exchange came into existence to meet the requirements of a progressing international financial and commercial organisation.

(5) PROGRESS OF BANKING SYSTEM

We have dealt so far with the conditions which created the demand for Forward Exchange facilities. Let us now see the conditions which made it possible to satisfy this demand. The fact that the demand for facilities for covering exchange risk prior to the nineteenth century was relatively small was not the sole reason why Forward Exchange did not exist at that time. (The system could develop only through progress in banking technique, the increase of confidence, and the establishment of closer international banking relations. Here again, it would be futile to try to ascertain whether the first hen preceded the first egg. Modern banking technique, confidence, and closer banking relations developed simultaneously with the evolution of the Forward Exchange market. It is evident, however, that the functioning of such a market presupposed a higher degree of banking organisation than existed in the earlier phases of evolution. It is even more obvious that the satisfactory working of Forward Exchange was conditional upon the existence of a high degree of confidence, both within the market

¹ Walther Lotz, "Die Währungsfrage in Österreich-Ungarn und ihre wirtschaftliche und politische Bedeutung", *Schmoller's Jahrbuch*, vol. 13, p. 34.

and between the various markets. The fact that the breakdown of confidence in 1931 nearly brought the Forward Exchange market to a standstill shows how essential a part the gradual establishment of confidence during the nineteenth century must have played in making the creation of such a market possible. Lastly, the establishment of innumerable links between banks across the frontiers during the last decades of the nineteenth century was also an indispensable condition for the creation of an active Forward Exchange market.

Another question that remains to be answered is whether forward dealings between bankers and their customers preceded the development of an open market in Forward Exchanges. Judging by the course of evolution in markets where dealing in Forward Exchanges is of relatively recent origin, this was probably the case. It is reasonably safe to assume that during the early stages of development, the banks, having sold to their customers exchanges for future delivery, covered themselves by buying spot. Conversely, if they bought Forward Exchanges they covered themselves by selling a corresponding amount of their holding of the exchanges concerned, or by selling spot obtained through finance bills or other means of credit. It was only at a later stage that an open market developed—mostly on the Bourses, where merchants and speculators were able to deal in some instances directly without the intermediary of banks, and where the banks were able to carry out forward operations on account of their customers or on their own account. It was only after the development of such open markets, in Vienna, Berlin, St. Petersburg and elsewhere, that the system began to attract attention, and that Forward Exchange operations began to be transacted on a large scale.

(6) EVOLUTION OF FOREIGN EXCHANGE

The evolution of dealings in Forward Exchanges from a primitive to a more advanced stage was part of the evolution of the Foreign Exchange market as a whole. (In the early stages, Foreign Exchange dealings, whether for spot or forward delivery, consisted in buying and selling foreign notes and foreign bills. It was only later, towards the end of the 19th century, that the system of dealing in mail transfers began to develop. Until then the Forward Exchange market consisted of buying and selling of foreign bank notes and of sight bills or long bills for future delivery. Even transactions in

bills constituted a relatively advanced stage of evolution ; they implied a certain amount of confidence in the bankers and merchants of the countries concerned. In the absence of an adequate degree of confidence, forward dealing was confined to bank notes. It was not until the late 'nineties that dealings in bills displaced dealings in notes in the Forward Exchange markets, though note dealings survived to a limited extent in certain continental centres until the outbreak of the war. The history of the development of mail transfers and of telegraphic transfers before the war is too well known to require repetition. Although forward dealing in bills declined in importance in consequence of the development of these new and more convenient facilities, it nevertheless survived the changes brought about by the war in the Forward Exchange market, and to some very slight extent it exists even to-day.

CHAPTER V

EARLY FORWARD EXCHANGE DEALINGS

(1) VIENNA'S RÔLE

HAVING outlined the general trend of the early evolution of the Forward Exchange market, we now may proceed to describe the actual development in the various centres. (It seems probable that Vienna was the first market where Forward Exchange dealings were transacted on a large scale.) A few relatively brief intervals apart, the Austrian currency was subject to more or less wide fluctuations during the greater part of the nineteenth century. Vienna possessed a highly developed banking organisation, and her bankers had a reputation for their skill in the art of arbitrage. At the same time the foreign trade of the Austro-Hungarian Monarchy was fairly substantial and increasing. Moreover, since the capital resources of the country were inadequate, it had to depend very largely on foreign capital, and this in itself necessitated covering operations. The leading Vienna banks had good international connections, which facilitated the development of a Forward Exchange market.

It is impossible to indicate even an approximate date as to when forward dealings in exchanges began in Vienna. My inquiries in this respect, addressed to some of the leading Austrian authorities on the subject, produced a negative result, and the perusal of old volumes of Austrian newspapers and periodicals also proved futile. The development was probably so gradual that it was imperceptible until dealings had assumed a relatively substantial scale. There is concrete evidence that mark notes were actively dealt in for forward delivery on the Vienna bourse throughout the 'eighties, but in all probability there were dealings some decades earlier when the wars of 1848-49 had led to exchange fluctuations. As a rule, the dealings were for the end-of-month settlement, in accordance with widespread custom on continental Stock Exchanges, but it was possible to transact business for much longer periods.

According to Walther Lotz,¹ in Vienna business was transacted in mark notes for delivery at the end of three, four and six months, in addition to delivery at the end of the current month. The rates for longer periods were, however, largely a matter of negotiation. Speculation largely assumed the form of buying foreign notes for delivery at the next end-of-month settlement, and renewing the positions month after month. According to Kramar,² at the end of the month the exchange rates moved often in favour of Austria, owing to speculative covering, but after the turn of the month the speculative positions were reconstructed once more.

(2) THE BERLIN FORWARD MARKET

If Vienna was the first active Forward Exchange market, Berlin was probably a good second. Indeed, there could be no really active market in Forward Exchanges in one centre until a market was created in another centre. We have concrete evidence that such a market existed in Berlin during the 'eighties. Its activities originally consisted in dealing in Austrian gulden and Russian rouble notes for forward delivery. In addition to references to this market by Walther Lotz³ we have detailed descriptions of the market in rouble notes by Arthur Raffalovich⁴ and especially by Dr. G. von Schulze-Gaevernitz.⁵ The writings of the latter and of Walther Lotz are probably the best existing accounts of early Forward Exchange dealings. They are, therefore, worth discussing in detail.

According to Lotz, Austrian and Hungarian merchants engaged in foreign trade felt keenly the necessity for Forward Exchange facilities, owing to the violent fluctuations of the gulden. They usually covered their exchange risk by buying or selling mark notes for forward delivery, even if their transactions were concluded in terms of sterling or other currencies.⁶ For, since the mark was stable, its fluctuations against other stable currencies were negligible. Lotz reports the existence of a keen interest arbitrage between Vienna and Berlin, with the exchange risk covered.

¹ Walther Lotz, "Die Währungsfrage in Österreich-Ungarn und ihre wirtschaftliche und politische Bedeutung", *Schmollers Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft*, vol. 13 (1889), p. 34.

² Dr. Karel Kramar, *Das Papiergeld in Oesterreich seit 1848* (Leipzig, 1886), p. 71.

³ *Op. cit.* p. 35.

⁴ Arthur Raffalovich, *Le Marché financier, 1894-95* (Paris, 1895), p. 235.

⁵ Gerhard v. Schulze-Gaevernitz, *Volkswirtschaftliche Studien aus Russland* (Leipzig, 1899), chap. vi. Part 2, "Rubelkurs und Rubelbörse", pp. 499 *et seq.*

⁶ *Op. cit.* p. 30.

⁷ *Op. cit.* p. 35.

Money rates were usually higher in Vienna than in Berlin, so that forward mark notes were as a rule at a premium. He expressed the view that the existence of a forward market was beneficial and that it tended to smooth out the fluctuations of the spot gulden.

The same view was put forward with much more emphasis by Schulze-Gaevernitz. He put up a spirited defence of the Berlin forward market in rouble notes against the attack of the Russian Press, which, throughout the 'eighties and at the beginning of the 'nineties, denounced speculation in roubles, in terms of abuse that could teach a lesson even to writers in the financial columns of the Press of the Gold Bloc countries in 1935, on the question of speculation against their currencies. The whole controversy of half a century ago shows yet again that there is very little new under the sun. The arguments for and against forward dealing were almost identical with those put forward in recent years.

(3) THE FORWARD MARKET IN ROUBLES

Schulze-Gaevernitz gave a detailed account of the development, activity and collapse of the Berlin forward market in rouble notes. It originated as a result of the large Russian purchases abroad during the Russo-Turkish war of 1877, purchases which were to some extent financed by means of exporting rouble notes to Germany. According to Raffalovich¹ the notes issued during the Turkish war amounted to some 400 to 500 million roubles, much of which amount found its way to Berlin. Schulze-Gaevernitz states that the reason why forward dealings in these notes developed was the active commercial and financial intercourse between Russia and Germany. Indeed, about one-third of Russia's foreign trade was done with Germany. And since the rouble was subject to wide fluctuations, German importers and exporters were anxious to cover their exchange risk. It is true that there was a Forward Exchange market also in St. Petersburg, but it was inferior to the Berlin market. German importers of Russian wheat were able to buy at low prices by quoting in terms of roubles, and German exporters to Russia were also willing to quote in terms of roubles. Their willingness to do so was very helpful for them in competition with British firms, as the latter never quoted in terms of a fluctuating currency.² Indeed, we have reason to suppose that the existence of a forward market in roubles, by enabling German importers

¹ *Op. cit.* pp. 234-235.

² *Op. cit.* p. 508.

and exporters to quote in roubles, went a long way towards establishing German supremacy in Russian trade, a supremacy which existed until 1914 and which was restored after the war. About this aspect of the question more will be said in the next chapter.

Needless to say, the Berlin Forward Exchange market in roubles provided facilities not only for commercial purposes but also for arbitrage and speculation. The Berlin banks kept balances in St. Petersburg and covered their exchange risk in the forward market. From time to time it was profitable for them to buy Russian internal Government securities with the exchange risk covered. German bank clerks were travelling regularly between Berlin and St. Petersburg, especially towards the end of the month, carrying suitcases full of rouble notes. Although the market was primitive, in that it was confined to actual notes, in some ways it was well developed. There were "put and call" dealings—something unknown in the modern Forward Exchange market—and it was possible to leave it to the option of the parties whether to carry out the contract or merely pay the exchange difference. These facts indicate the highly speculative character of the market. Unquestionably, by far the larger part of the dealings consisted of pure speculation. Even so, the frequent statements of the contemporary Russian Press that Berlin speculators "controlled" the rouble, and with it the destinies of Russia, were distinctly exaggerated.

(4) A BEAR SQUEEZE IN THE 'NINETIES

Throughout the 'eighties, the Russian Press conducted a violent campaign demanding stern measures for the suppression of the Berlin market in rouble notes. Among others, the institution of an embargo on the export of these notes was demanded. This solution was eventually adopted by the Finance Minister, Count Witte, in 1894. Having made good progress towards putting Russian finances on a sounder footing, in 1893 he began to discourage forward dealing in roubles. First he ordered the Russian banks to refrain from taking part in such operations. Then a small export tax was imposed on the notes. The final blow was delivered in 1894. A *de facto* stabilisation of the rouble had been achieved at the beginning of that year, but in September and October, when the illness of Tsar Alexander gave rise to speculative selling of rouble notes in Berlin, Count Witte took firm action to teach the bears a lesson. Anticipating M. Poincaré, he organised a bear squeeze, almost

exactly thirty years before the memorable franc squeeze of 1924. While M. Poincaré sought to reduce the supply of francs by forbidding the granting of loans to foreign borrowers, Count Witte achieved a similar result by suddenly forbidding the export of rouble notes. Prior to that measure, the banking house of Mendelssohn & Co., acting as agents for the Russian Government, bought up large amounts of rouble notes for delivery at the end of October 1894; on settlement day they insisted on actual delivery instead of accepting the payment of the exchange difference. The bears, being unable to secure the notes they had sold, were routed. The rouble notes went to a premium of 15 marks per 100 roubles, and even at that price they were unobtainable. Much of the commitments were offset by local clearing arranged for that purpose—just as in Vienna a large part of the franc commitments was locally compensated in 1924—and the actual deficiency was reduced to some 3,000,000 roubles. The speculators threw themselves upon the mercy of Count Witte, who, unlike M. Poincaré, was not vindictive and let them off relatively lightly by authorising the export of the required amount at a price which, while penalising the speculators, was not actually ruinous.

(5) FORWARD MARKETS UNDER STABLE CONDITIONS

After this memorable experience, speculators kept away from the forward market in rouble notes. The market continued to function, however, even after the stabilisation of the rouble, just as the Vienna forward market in mark notes and the Berlin forward market in Austro-Hungarian notes survived the stabilisation of the Austro-Hungarian currency in 1892. Business in these currencies consisted very largely of arbitrage operations, although there was a certain amount of commercial business. In spite of the fact that fluctuations of the rouble and of the new Austro-Hungarian krone became confined to narrow limits, many merchants considered it necessary to cover their exchange risk, especially if they dealt in primary produce which allowed a relatively narrow margin of profit for intermediary merchants. The Forward Exchange operations of this period were well described by Herr Walther Federn.¹ He pointed out that, although the volume of commercial Forward Exchange operations declined with the greater stability of rates,

¹ Walther Federn, "Das Problem gesetzlicher Aufnahme der Barzahlungen in Österreich-Ungarn", *Schmollers Jahrbuch*, vol. 34 (1910), p. 156.

there was nevertheless a large volume of business transacted in connection with stock arbitrage.

As we said in the last chapter, the importance of forward dealing in notes gradually declined towards the end of the nineteenth century. It was replaced to an increasing extent by forward dealing in bills. In particular, sterling bills had a good forward market in Vienna, Berlin, St Petersburg and other centres. During the last pre-war decade, forward dealing in other bills also developed in these markets, and at the same time forward dealing in mail transfers, especially on London and Paris, became increasingly evident. Interest arbitrage between Vienna and Berlin on the one hand and the Western European centres on the other, attained a high stage of development even in the 'nineties, but it was usually the Central European markets that took the initiative. Very little was known about Forward Exchange business in London or Paris in those days. To secure a high yield on swap transactions in those markets was still the privilege of the select few, who jealously safeguarded the secret of their knowledge. A financier who in the meantime has acquired world-wide reputation both as a practical expert and as a theoretical specialist in monetary problems told me that he secured his foothold in London during the 'nineties by buying Austrian Salinenscheine (Treasury bills secured on State-owned salt-mines) and covering the exchange on the Vienna Forward Exchange market. The Salinenscheine bore interest at $3\frac{1}{2}$ per cent, and in spite of the cost of the swap, the net yield was considered, in those lean days, attractive for a well-secured short-term investment.

During the years that preceded the war, interest arbitrage combined with swap operations between Vienna and other markets assumed such dimensions that the Austro-Hungarian Bank at times considered it necessary to adopt special tactics to counteract its effect. This important point will be discussed in detail in Chapter XXXVI.

(6) EARLY FORWARD EXCHANGE DEALINGS IN THE UNITED STATES

Hitherto we have confined ourselves to a description of the European Forward Exchange markets. The system was not, however, peculiar to Europe, even during its early stages. Indeed, there is ample evidence to show that there were active Forward Exchange markets, many decades before the war, in the United

States, in Latin America and in the East. In the United States they must have originated through the exchange fluctuations brought about by the Civil War. Even after the stabilisation of the dollar, American exporters were anxious to safeguard themselves against the exchange risk by selling their European bills for forward delivery. During the latter decades of the nineteenth century it had become the practice of American produce exporters to anticipate the seasonal appreciation of the dollar, and to begin from April onwards to sell forward their sterling bills for delivery in October or thereabouts. This practice made it necessary for the American banks to develop facilities to enable them to cover the exchange risk, and to secure themselves also against a possible rise in the London bank rate, by a forward discount operation.

Unfortunately there is very little evidence of these operations in American financial literature, although it is so highly developed in other directions. While the United States has produced some very good monographs on the pre-war monetary history of Great Britain and France, and even on the monetary history of mediæval Spain, some developments nearer home have received no adequate attention. This is a great pity, for a detailed description of Forward Exchange dealings—if any—during the Civil War, or at any rate of the Forward Exchange market during the last two or three pre-war decades, would be invaluable.

(7) THE "GOLD MYSTERY" OF 1891

The existence of an active forward market in franc bills in New York, New Orleans and Chicago in 1891 is referred to by Ottomar Haupt in his essay on *The Lazards' Gold Operations*.¹ He describes in detail the situation that arose in 1891, when, owing to the anticipation of a deficient harvest in France, American wheat exporters began to sell franc bills for forward delivery at a heavy discount during May and June. As Haupt pointed out, there was no forward market in bills in France, but there was one in New York, Chicago and New Orleans. In these markets, bills on France for future delivery were dealt in during May 1891 at the rate of 530 fr. for \$100, against the parity of 518.13. The spot franc was also unfavourable, though not nearly to the same extent. Much to the astonishment of the world, the Paris banking house of Lazard Frères began to import gold from the United States in May, in spite

¹ Ottomar Haupt, *The Monetary Question in 1892* (London, 1892), p. 96.

of the adverse exchange. Altogether some \$35,000,000 of gold was withdrawn—a huge amount for those days—most of which was paid into the Bank of France.

The financial Press of two continents was completely mystified by these transactions, and a variety of interpretations were current. In some quarters it was suggested that the Bank of France must have been paying a premium on the gold. The German Press suspected the accumulation of a war chest—how familiar that sounds!—and regarded the gold shipments as the forerunner of a war of revenge for 1871. Haupt himself sought to explain the transactions on the ground that, since the Bank of France was then unwilling to part with gold, Lazard Frères paid in the gold on the understanding that they would be entitled to withdraw it when necessary for meeting wheat import bills. Although he was then the leading foreign exchange expert in Western Europe, even he missed the point, which would be obvious today to every junior foreign exchange dealer, namely, that the transaction was made possible by the abnormal profit on the swap. Forward francs being at a big discount, Lazard Frères probably bought up the franc bills offered by American wheat exporters for forward delivery, and sold spot francs at the same time. Having thus acquired dollars for a few months, they were in a position to withdraw gold. Today the dollars would have been left on deposit in New York, but Lazard Frères had doubtless good reason for preferring to withdraw gold; in spite of transport costs, there was a margin of profit.

I have dwelt upon these mysterious transactions at some length because they probably constitute the earliest example of swap operations on a large scale. At the same time they indicate the existence of an active Forward Exchange market in the United States in the 'nineties. This was also confirmed by Margraff, who, writing in 1904, referred to the Forward Exchange market as a well-established institution. According to him, the foreign department of every American bank had to keep large sterling balances, and in order to secure themselves against fluctuations they had to sell demand drafts for future delivery.¹ Together with many other writers on Foreign Exchange, he defends the Forward Exchange system on the ground that “. . . the business devoted to legitimate purchases and sales of foreign exchange for future delivery . . . is conservative and not speculative”.

¹ A. W. Margraff, *International Exchange*, 2nd ed. (Chicago, 1904), pp. 54-55.

(8) EASTERN AND LATIN-AMERICAN MARKETS

The fluctuations of exchange rates between gold and silver currencies led to the development of Forward Exchange markets in the silver-using countries. Among the factors determining the forward rate of exchange for silver currencies, the London forward price of silver played a prominent part, though the influence was probably to some extent reciprocal, and in spite of the existence of active arbitrage there was a moderate scope for discrepancies to develop. The general rule was, and still is, that when spot silver in London is higher than forward silver then forward sterling in the Eastern market will be at a premium roughly corresponding to the discount on forward silver. When there is a premium on forward silver there is a discount on forward sterling in the East. Long before the war there was a forward market in sterling in Shanghai. Although it was largely controlled by the British banks, much more was known about it by exporters in Hamburg or Bremen than by their competitors in London or Manchester. In Japan there existed an active forward market in sterling, dollar and franc bills before the adoption of the gold standard, and this market survived the monetary reform.

Owing to the fluctuation of the Latin-American currencies, Forward Exchange markets developed in several Latin-American centres, especially in Brazil and in Chile. The forward market in sterling bills in Chile was particularly active and there is a fair amount of information available about its working many years before the war. In Valparaiso it was customary to deal in sterling bills for forward delivery on the fortnightly mail arrival dates up to twelve months ahead. This market developed in consequence of the wide fluctuations of the peso. In June 1908 the premium of the gold peso over the paper peso was 133 per cent, while in March 1909 it was down to 57 per cent. In such circumstances it was only natural that the local merchants should have tried to safeguard themselves by forward operations. Forward rates were quoted for £500 or multiples thereof, and the rate was, say, $\frac{1}{2}$ d. per mail date, premium or discount. Needless to say, speculation on a large scale developed in the market. In fact, the total transactions were many times larger than the total foreign trade of Chile, even though only part of that trade was covered in the market. There was also a certain amount of arbitrage, and several foreign banks operating

in Chile endeavoured to safeguard themselves against the exchange risk by covering their capital.¹

In addition to the countries mentioned, several others are known to have possessed active Forward Exchange markets long before the war. Henry Deutsch mentions specifically Argentine, Egypt, Spain and Portugal.² Indeed, it may be said that, with the exception of London and one or two other financial centres of Western Europe, there was an active Forward Exchange market in practically every civilised country, at least two decades before the war. Even in London, Forward Exchange operations gradually became known after the end of the nineteenth century. About this, however, more will be said in Chapter VII. Meanwhile in the next chapter we will examine the significance of early Forward Exchange markets abroad.

¹ R. Dunker, "Kursspekulation und Kurssicherung in südamerikanische Valuten", *Bank-Archiv.*, Nov. 1, 1909, pp. 40-43.

² Henry Deutsch, *Transactions in Foreign Exchanges* (London, 1914), p. 172.

CHAPTER VI

THE SIGNIFICANCE OF EARLY FORWARD EXCHANGE MARKETS

(1) WHY FORWARD EXCHANGE DEALING WAS SLOW TO DEVELOP IN LONDON

WHAT was the reason for the absence of a Forward Exchange market in London at a time when other financial centres—some of them in most respects much less developed than London—possessed one? (The reason usually given is that, since sterling had been stable for the best part of a century, the necessity for Forward Exchange facilities did not arise until 1919.) A less popular but none the less obvious reason is that, since British merchants always bought and sold in terms of sterling, there was no need for them to worry about the fluctuations of other currencies. For these same reasons, the development of the Foreign Exchange market as a whole was rather slow in London, and while in many respects the British banking technique was supreme, in the sphere of Foreign Exchanges it remained until recent years inferior to the technique in other centres.

It is a commonplace repeated to boredom that the reason why sterling before the war was generally regarded as the international means of payment was that it had remained absolutely stable almost from the close of the Napoleonic wars. Unquestionably, the fact that sterling was essentially stable must have been one of the major reasons for its adoption as the leading international currency. But to maintain that the commercial and financial supremacy of Great Britain was due to the fact that she possessed a currency which was universally trusted was clearly putting the cart before the horse. That particular misconception was largely responsible for the mistaken efforts of post-war monetary policy to restore sterling to its pre-war parity, in the hope that, in effect, the clock would thereby be put back to 1913. And the same misconception is, at the time of writing, largely responsible for the agitation in

favour of immediate stabilisation, irrespective of the risks and sacrifices involved.

(2) STERLING'S INTERNATIONAL POSITION

In reality, sterling's supremacy in foreign trade during the nineteenth century was mainly the result of the prominent place which Great Britain secured in world trade, thanks to her strong lead in the industrial field. It was in the first place the technical inventions and their commercial utilisation that made Great Britain the leading seller of manufactures and the principal buyer of food and raw materials among the nations. Her exporters and importers held such a monopolistic position for many decades that they could well afford to dictate their terms regarding the means of payment. This was the main reason why sterling became the principal currency in international trade. Stability alone would never have achieved that result. With a remarkable degree of insularity, some British writers on the subject actually imagine that, since the pound was stable while other currencies were not, foreigners with unstable currencies actually preferred to transact their business in sterling rather than in their national currency. (This attitude resembles that of the Englishman who refuses to believe that, when travelling abroad, it is he who is the foreigner, and not the thousands of local inhabitants he comes across.) These writers overlooked the elementary fact that, from the point of view of the Russian merchant it was the pound that was fluctuating and not the rouble, and that consequently he would have preferred to buy and sell in terms of his own national currency. Nevertheless, he was willing to buy and sell in terms of sterling, simply because the goods sold by British exporters were unobtainable elsewhere in the same quality, and because he was anxious to sell his products to the British importer.

Unquestionably, the unwillingness of British merchants to buy or sell in terms of foreign currencies before the war was largely responsible for the supremacy of sterling in the sphere of international finance. The readiness of German and other foreign merchants to quote in terms of foreign currencies was in fact one reason why their national currencies did not rival sterling as an international means of payment. It is a mistake, however, to regard sterling's supremacy as an international means of payment and London's supremacy as the world's banking centre as one and

the same thing. A willingness on the part of British merchants to deal in foreign currencies would have been detrimental to sterling's position, but would, if anything, have been advantageous to London's. After all, London's supremacy was mainly due to the fact that Great Britain had for many decades a large surplus available for lending abroad. Had British exporters been willing to quote in roubles and pesos before the war, they would have been able to hold their ground better in face of growing foreign competition, and in all probability the surplus available for lending abroad during the last few pre-war decades would have been larger, while that of other growing financial centres would have been smaller. This would have more or less offset the loss of business the London banking community might have suffered through the reduced use of sterling in international payments.

With the progress of industrialisation abroad, the monopolistic position of British commerce began to decline during the closing decades of the nineteenth century. German competition, in particular, began to make itself felt over the five continents. German firms were gaining ground partly because they were prepared to quote their prices in the currencies of the buyers, even though those currencies were subject to fluctuations. A fact that is almost entirely overlooked in the vast literature on the subject is that the reason why German merchants were willing to quote in fluctuating currencies was that they were both prepared and able to cover their exchange risk in the Forward Exchange market.

(3) FORWARD MARKETS IN STERLING ABROAD

We have seen in the last chapter that the existence of an active Forward Exchange market in Russian roubles in Berlin secured for Germany a lasting supremacy in Russian trade. Although the number of foreign currencies in which a forward market existed in Berlin before the war was small, and forward marks were not very actively dealt in in most foreign centres, the existence of a good forward market in sterling in most Foreign Exchange markets enabled the German merchants to cover the exchange risk in a round-about way. They—or rather their bankers—were very active in the Forward Exchange markets on the continent, in the East, and in Latin America. British banks established in these overseas centres were, of course, the main operators, but they dealt chiefly on account of their local clients, not on account of their

British clients. The latter continued to buy and sell in sterling, and it was the local importers or exporters who covered the exchange risk on their trade with Great Britain.

It was said at the time that trade in Chile was done on a sterling basis, and that the sterling bill was the real currency of the country. This statement, however, was but a half-truth—if that. It is true that nitrate exports were done entirely on a sterling basis, but this was because nitrate production was controlled by British enterprise. Even the British nitrate producing companies had to cover in the Forward Exchange market their requirements in national currency for wages and other expenses. British exports to Chile were certainly quoted in sterling, but the exchange risk was covered in the Forward Exchange market by the importers. The German rivals of British exporters, and to a less extent other foreign countries interested in the Chilean markets, usually quoted in paper pesos, and covered themselves in the Valparaiso market. What is true of Chile is also more or less true of other countries with fluctuating currencies.

(4) BENEFIT TO GERMAN TRADE

From the above facts it is possible to draw the following conclusions :

1. It was largely because of the existence of a forward market in sterling that German and other rivals of British exporters were able to capture some of the British markets.
2. It was largely because of the existence of a forward market in sterling that British exporters were able to retain some of their foreign markets in spite of their unwillingness to quote in fluctuating currencies.

The apparent contradiction between these two conclusions can easily be explained away. Importers in the leading foreign centres were able and willing to buy in terms of sterling because they were in a position to cover their exchange risk. For this reason, from their point of view the advantage of receiving quotations in terms of their national currencies was not so great. The big merchant firms of Shanghai or Valparaiso did not particularly mind reckoning in terms of sterling. For them the problem was one of simple arithmetic. If the peso equivalent of the sterling price, after allowing for the cost—if any—of covering the exchange risk, was lower than the peso price quoted by a German firm, then the Val-

paraiso firm accepted the British offer without hesitation. Not so the importer of the hinterland. Apart from a few very large firms, very few people in the interior were accustomed to dealing in Forward Exchange. They therefore preferred to accept the German offer, even if the goods were more expensive than the British, or of an inferior quality. It was precisely in the outlying districts of overseas countries that German exporters made the most striking headway before the war. They penetrated into the interior of Brazil and China, established agencies or sent travellers to pay frequent calls. Having sold in terms of national currency, they covered their exchange risk in the forward market in sterling.¹ They thus benefited by the existence of that market to no slight degree.

(5) BENEFIT TO BRITISH TRADE

At the same time it was also because of the existence of the Forward Exchange market that British exporters were able to hold their ground. It was because Britain was first in the field of international trade and finance that the Forward Exchange market in sterling developed in various centres where no other currencies were dealt in for forward delivery at that time.

These forward markets in sterling assisted in the maintenance of the supremacy of British trade in face of foreign competition, even though they also helped the competitors themselves. On balance it appears that from the point of view of British export trade before the war the existence of the forward market in sterling was decidedly beneficial, even though rival exporters made better use of it than British exporters. For, in the absence of facilities for forward dealing in sterling, foreign exporters would probably have developed at an early stage a forward market in the currencies concerned. It was only because of the existence of a forward market in sterling that there was no urgent need for the development of such markets. Thus, in the absence of a forward market in sterling, British exporters would have lost ground more rapidly than they actually did, even though some of the foreign importers might have been skilled enough to cover their sterling risk by operating in the forward market in German marks.

It may be argued, and not without reason, that sterling's

¹ It was not until a few years before the war that a forward market in marks began to develop in overseas centres; even then its facilities did not compare with those of the forward market in sterling.

supremacy was largely due to the unrivalled facilities of the London market for financing foreign trade. But even from this point of view, the existence abroad of forward markets in sterling was essential. The reason why foreign merchants were willing to buy and sell on the basis of London acceptance credits, sterling domiciles, etc., was that they were in a position to cover their exchange risk in the forward markets. For this reason, too, bankers and others in countries with fluctuating or undependable currencies were willing to borrow in London or to transfer deposits to London. But for the existence of the forward market, many of them would not have ventured to use the facilities of the London banking centre. Conversely, it was the desire to use those facilities that was largely responsible for the development of forward markets in sterling outside Great Britain. That does not, however, alter the fact that the existence of such forward markets was beneficial and even essential to the development and maintenance of London's position as the world's banking centre, as it was essential to the maintenance of Great Britain's commercial supremacy in face of increasing competition.

(6) FORWARD DEALING IN DISCOUNTS

The fact that sterling maintained its supremacy until 1914 was thus largely due to the existence of forward markets in sterling in foreign countries. Obviously, the development of those markets was highly desirable from a British point of view. Notwithstanding this, no official steps were taken to stimulate this development. On the contrary, the authorities actually discouraged the forward market in sterling by trying to discourage forward dealing in bills in the London discount market. Since very little has been written about this subject, and very little is known about it outside the discount market, it is perhaps not out of place to devote some space to it in this connection.

For many decades before the war, it had been the practice of foreign—especially American—exporters to sell their sterling bills several months ahead. This was done partly to safeguard themselves against the exchange risk, and partly to safeguard themselves against the risk of a rise in the British Bank rate. In many instances, it was done in connection with commercial or financial transactions with distant countries, with the object of covering the Bank rate risk pending the arrival of the bill in London. In other instances the bills were sold some months before they were

drawn. Crop bills, for instance, were sold from April onwards for delivery in the autumn. The London discount market developed very good facilities for such operations. The discount houses were not, of course, concerned with covering the exchange risk. They were prepared, however, to quote a buying or selling price in sterling for sterling bills to be delivered in several months' time, the extreme limit being usually six months. The whole business was entirely in foreign sterling bills; there is no evidence to show that inland bills were bought and sold forward to any extent, in spite of the existence of the facilities and in spite of the seasonal tendency of Bank rate changes. The United States, South American centres and the East were usually sellers of sterling bills for forward delivery. In the United States, indeed, the forward sales were not even confined to commercial bills, for the sterling bills of the City of New York were usually sold for future delivery. There was also regular forward buying of sterling bills by foreign importers of British goods, by foreign debtors in general and by continental Central Banks holding foreign exchange reserves. The discount houses, in addition to dealing with American banks, also dealt actively between one another in forward discounts. It was usually possible for them to undo a position before the forward contracts matured. Many banks were also interested in the business, but it was conducted independently of their Foreign Exchange business. Thus, an American bank desirous of covering both exchange risk and bank rate risk on sterling bills bought from its clients for future delivery, had to cover them independently even if it dealt with only one London bank; the exchange part of the transaction was fixed with the Foreign Exchange department while the Bank rate risk was covered with the discounts department.

Why is it that this practice—which was very important before the war and which survived, to some extent, until a few years ago, when discounts became so stable as to make it unnecessary to cover against the Bank rate risk—has been almost entirely ignored by writers on the discount market? ¹ The probable explanation is that, as the business is of a distinctly speculative character, the discount houses never talked about it to the Press if they could avoid doing so. The rates were never quoted in the Press—not even at times when dealing was active—and the whole practice seems to have escaped the attention of many otherwise shrewd outside

¹ One of the few exceptions is Mr. W. T. C. King, who, in his *History of the London Discount Market*, makes a brief reference to forward dealing in 1883 (p. 298).

observers. If the subject is mentioned in the discount market, most people do their best to minimise its importance. Yet the discount houses had no reason to be ashamed of having provided these facilities. Admittedly the business is speculative, but then so is insurance business, and yet nobody would think of blaming a Lloyd's underwriter for being willing to relieve other people of the risk which he is better qualified to bear.

(7) OFFICIAL DISAPPROVAL OF THE PRACTICE

One of the rare occasions on which the Press had to take notice of the existence of the practice of forward dealing in discounts was in April 1883, when the Bank of England sought to discourage discount market overtrading in general and forward dealing in particular by restricting advances to the discount houses. This action was endorsed by the *Economist*,¹ which considered that the effect of the restriction would be wholesome, "as it will tend to check the speculation in taking bills forward, which has recently been such a marked feature in the market". The whole practice was apparently viewed with disfavour by the Bank. Yet the popularity of sterling bills as an international means of payment was to a large degree due to the fact that foreign banks were able to cover the Bank rate risk. Since the stability of sterling exchange was secured largely at the cost of wide fluctuations of Bank rate, this risk was by no means negligible. In the absence of facilities for covering this risk, there would have been a greater reluctance to deal in sterling bills, and consequently foreign merchants would have made greater efforts to trade in terms of their own currencies.

One of the reasons why a forward market in sterling developed abroad at a time when the long bill was the principal means of exchange was the existence of facilities for covering the Bank rate risk. And since the development of forward markets in sterling helped, as we have seen above, to maintain the supremacy of British trade in face of strengthening competition, so the existence of facilities for dealing in forward discounts in the London discount market contributed to no slight extent towards prolonging the supremacy of sterling and of British trade long after Britain's monopolistic industrial position, which was the original cause of that supremacy, had ceased to exist. No other financial centre had comparable facilities. Yet none of the admirers of the technical superiority of

¹ 1883, pp. 485 and 513.

the London discount market ever emphasised them when comparing London with other centres. Even the Bank of England seems to have overlooked the significance of forward discounting, and of forward operations in general. To this very day, it regards the Forward Exchange market as a necessary evil that should be discouraged as far as possible, instead of as an institution whose efficiency is indispensable to a live financial centre and trading community. While in 1885 the German Government introduced legislation to exempt Forward Exchange contracts from stamp duty so as to encourage forward dealing,¹ two years earlier the Bank of England went out of its way to discourage it.

(8) FEDERAL RESERVE BANK'S FORWARD DISCOUNTING OPERATIONS

The desirability of facilities for forward discounting was duly realised by the United States authorities. When during the war they sought to develop the use of the dollar as an international means of payment, the Federal Reserve Bank of New York began to quote discount rates for dollar bills delivered at future dates.² The object of this arrangement was to encourage the use of dollar bills, and thus to make it easier for American exporters to induce their foreign customers to accept quotations in terms of dollars instead of in terms of their own currency or of sterling. This object was sought to be achieved by official intervention, because at the time the New York market had no forward discounting facilities comparable with those of London. Between 1915 and 1918 the facilities provided by the Federal Reserve Bank of New York were used to a

¹ Dr. J. Vogel, *Das Devisentermingeschäft* (Berlin, 1924), p. 3.

² H. Parker Willis and W. H. Steiner, *Federal Reserve Banking Practice* (New York, 1926), p. 576. See also Professor E. S. Furniss, *Foreign Exchange* (Cambridge, Mass., 1922), pp. 389 *et seq.* The attitude of the Federal Reserve Board towards the matter is defined in the legal ruling published in the June 1, 1915, issue of the Federal Reserve Bulletin: "FORWARD DISCOUNT RATES. Federal Reserve Banks may, under the established right to fix discount rates for acceptances or eligible paper, fix a forward rate; that is, a rate to apply at a future time. Such a rate is calculated to accommodate trade and commerce as required by the act, and will tend to obviate speculation due to fluctuating rates" (p. 97).

"... The purpose of fixing forward rates, that is, a rate to apply at some future date, is primarily to accommodate trade and commerce and to prevent those dealing in legitimate transactions from being subject to the speculative influence of fluctuating rates. For example, a commercial transaction may be safely engaged in if the purchaser, or one who is assisting the purchaser to finance such a transaction, can have the assurance that an acceptance or other eligible paper possessing the necessary qualification can be discounted or sold at a future date at a fixed rate, whereas if the rate is undetermined the element of speculation necessarily enters into the transaction" (p. 98).

considerable degree. Subsequently, however, they have fallen in disuse, because the New York discount market acquired meanwhile sufficient breadth and confidence to enable dealers and discount houses themselves to carry forward commitments. Nevertheless, the facilities have never been withdrawn. In theory they exist—even though almost everybody has forgotten about their existence—and I understand the Federal Reserve Bank would still be prepared to consider requests for forward quotations of discount rates.

The attitude implied in the adoption of the practice of official forward discounting in New York was significant. The American authorities knew by experience how much sterling and British trade gained from the facilities available for covering the Bank rate risk on sterling bills bought for forward delivery; and since it was impossible at short notice to develop in New York a discount market whose functions could compare with those of the London discount market, the Federal Reserve Bank took it upon itself to create such facilities. Admittedly, in the absence of experience such as that which influenced the New York authorities after the war, the British authorities in 1883 could not have been expected to realise the broader implications of the forward market in bills. The experience of the last two decades, however, should have taught them not to regard forward operations with pre-war eyes.

Facilities for dealing in forward discounts were not, of course, the only facilities of the London market which helped to stimulate the development of a forward market in sterling in foreign centres. One of the reasons why bankers in various parts of the world were willing to deal in forward sterling freely was that the short-loan market in London provided ample opportunity for them to cover themselves there whenever they were unable to cover in the Forward Exchange market itself. Thus, while the Forward Exchange markets in sterling abroad helped to maintain the supremacy of the London financial market, they themselves owed their existence largely to London's superiority—especially to the superiority of London's short-term loan facilities.

CHAPTER VII

DEVELOPMENT OF THE MODERN FORWARD EXCHANGE MARKET

(1) DEALING IN TRANSFERS

(It is a common belief, especially among the younger generation of post-war writers, that Forward Exchange dealings were practically non-existent before the war, and that they came into existence after the unpegging of the inter-Allied exchanges in 1919.) Many English writers who realise how backward the London Foreign Exchange market was compared with the continental and American markets, admit that forward facilities may have existed abroad before the war, but are convinced that they were an essentially post-war development in the London market. Even this view falls far short of the truth. (Actually the development of the modern Forward Exchange market began abroad long before the war, and even London conducted a moderate volume of Forward Exchange business during the last few pre-war years.) The difference between the Forward Exchange market of 1913 and that of 1920 was largely one of degree, both abroad and in London.

The development of the modern Forward Exchange market proceeded side by side with that of the modern Foreign Exchange market as a whole. When long before the war telegraphic transfers began to displace dealing in bills and mail transfers, the Foreign Exchange market, comprising both spot and forward dealings, made a big advance. In substance, it has remained unchanged ever since, although in the meantime long-distance trunk calls have to a large extent replaced dealing by cable. Even the adoption of mail transfers marked the beginning of the modern era, compared with dealing in notes or bills, for there then began that essential change whereby book-keeping transfers became substituted for the actual transfer of the ownership of negotiable instruments. Whether the book-keeping transfers be effected by mail, cable or telephone call is only a matter of technical detail.

(2) PRE-WAR MARKET

In this sense, a modern Foreign Exchange market existed for many years before the war, and within that market there was a modern Forward Exchange market. Admittedly, its turnover was a mere fraction of that of the post-war Forward Exchange market. But then there was a somewhat similar rise in the scale of operations in every sphere of finance between 1914 and 1919. It is true that before the war merchants in countries with stable currencies did not as a rule cover the exchange risk, except when dealing in terms of an unstable currency. There was, nevertheless, a fair amount of commercial Forward Exchange dealing abroad, especially on the part of intermediaries in produce trade, whose profits were not wide enough to make it advisable to risk even the exchange differences of one per cent or so that arose between stable currencies. Moreover, in some instances at any rate, there was not absolute confidence in the stability of the currencies, and the merchants considered it wiser to play for safety. Above all, the currencies of the majority of countries were not absolutely stable in terms of gold currencies. For one thing, the greater part of the world was on a silver basis. A number of countries in Latin America, and Southern and Eastern Europe, had in practice or in law an inconvertible paper currency. From the British angle the pre-war period seemed to be one of absolute monetary stability. But a closer examination of the financial history of the last few pre-war decades, or even of the last few pre-war years only, reveals that absolute stability was confined to a relatively small number of countries. Thus even in pre-war days there was a genuine need for Forward Exchange facilities for a large part of world trade.

(3) ARBITRAGE TRANSACTIONS

In addition to Forward Exchange transactions arising from trade, a large volume of such transactions arose from stock arbitrage. That branch of financial activity reached a very high stage of development during the last few years before 1914; indeed, it has never recovered its pre-war importance, not even during the period of post-war stability between 1925 and 1931. And as the margins in stock arbitrage operations were narrow, arbitrageurs made it a rule to cover, unless, in the case of stable currencies, the exchange rate was in the vicinity of gold point. This same rule

determined whether or not funds used in interest arbitrage should be covered. The decision whether or not to cover in interest arbitrage between the half-dozen centres which were *de jure* or *de facto* on a gold basis was a matter of simple arithmetic. If the possible depreciation within the gold points of the currency of the receiving centre was smaller than the discrepancy between the discount rate of the receiving centre and the sending centre, then there was no need to cover. If the possible depreciation was wider, then it was a matter of opinion whether it was worth while to take the limited risk involved.¹ Indeed, a leading pre-war authority on exchanges, E. N. Weill, elaborated a whole theory of international "solidarity" of money markets² based on the assumption that the exchange risk in interest arbitrage was left uncovered, and that the maximum of discrepancies between interest rates in two centres with stable currencies was determined by the maximum difference between the actual exchange rates and their respective gold points. In practice, however, funds employed in interest arbitrage were very often covered, not merely because the exchange risk exceeded the discrepancy between interest rates, but also because it was often profitable to cover the exchange risk. In currencies such as the Austro-Hungarian krone or the rouble, where there was always a shadow of doubt about their stability, the exchange risk was practically always covered in connection with interest arbitrage operations, even if the exchanges were at gold export point.

During the last few years before the war there was a highly developed modern Forward Exchange market in several continental centres, and also in the United States. Writing in 1911, F. Escher³ remarks that Forward Exchange was "a vital factor in modern methods of transacting Foreign Exchange business". Indeed, it appears that on the pre-war Forward Exchange markets abroad the transactions were almost as manifold in their types as they are on the post-war markets.

¹ The fact that the spread between gold points determines the maximum discrepancy between interest rates in two centres was already recognised by Goschen in *The Theory of the Foreign Exchanges* (London, 1861), pp. 138-143.

² E. N. Weill, *Die Solidarität der Geldmärkte* (Frankfurt, 1903). He only referred quite casually to the possibility of covering the exchange risk, emphasising that the existence of that possibility did not affect his theory.

³ F. Escher, *Elements of Foreign Exchange* (New York, 1911), p. 105.

(4) DEVELOPMENT OF THE LONDON MARKET

What part did London play in the pre-war Forward Exchange activity? We saw in the last chapter that sterling was by far the most important object of Forward Exchange transactions. Notwithstanding this, the development of the London Forward Exchange market was a slow process. For a long time buying and selling orders in forward sterling in the various markets were either "married" locally or between the various markets without touching London to any material extent. It was only towards the end of the nineteenth century and during the early years of this century that a Foreign Exchange market of any size developed in London. Its importance was small compared with the Foreign Exchange markets of New York and the leading continental centres. Gradually it began to deal in Forward Exchanges, at first largely in the form of international exchange arbitrage transactions, with the London market acting as intermediary between two foreign centres. It was only later that Forward Exchange business began actually to originate in Great Britain, not so much in connection with trade—which was largely conducted on a sterling basis—as with stock arbitrage and interest arbitrage. There was also a limited amount of speculation in London within gold points. Seasonal influences in dollars, Eastern exchanges and in certain continental exchanges such as Swiss francs, were anticipated by such speculative operations.

Forward Exchange business, like Foreign Exchange business in general, was at first handled entirely by foreign branches in London and by a small number of private banking firms. It was only later that some of the joint stock banks began to take an interest in forward dealings. Such dealings at first presented a rather difficult book-keeping problem to the banks; they did not know how to treat forward commitments, and at the beginning they merely placed them on record without entering them in their ledgers.

Gradually the range of the London Forward Exchange market was extended, both in regard to the volume of business and the types of transactions. On the eve of the war every type of forward business that was practised on the continent was also practised by London, even though the business was largely in the hands of the London branches of continental banks. At the outbreak of the war there was a fair volume of forward contracts outstanding between London and Germany; these contracts were duly executed after the conclusion of the war.

(5) FORWARD EXCHANGE DURING THE WAR

Information about the development of the Forward Exchange market during the war is highly inadequate. In London, certainly, very little business was done. Interest arbitrage and stock arbitrage were reduced to a minimum. After the wide fluctuations of the first months of the war, the principal exchanges were pegged until after the Armistice, so that there was little scope for forward operations. There was a certain amount of Forward Exchange business in commercial and financial dealings with neutral centres. In the United States, exporters sold their sterling bills to their banks for forward delivery at a relatively big discount. The banks found it difficult to cover their risk in the existing circumstances, and had to rely on the maintenance of the "peg", duly promised by authoritative British quarters. In the Latin-American market, especially in Chile, dealings in forward sterling bills continued, the rates going to a heavy discount. In the European neutral centres there was a Forward Exchange market both in Allied and in Central European currencies. The rates were influenced by the military and political situation and by the outlook for peace and victory, rather than by commercial and financial factors.

On the whole, it is correct to say that during the war the highly involved and delicate organisation of the Forward Exchange market, built up before 1914, broke down. In most belligerent countries the existing exchange restrictions prevented banks from operating in Forward Exchange. In Austria, for instance, the Vienna Bourse, where most of the Forward Exchange transactions were carried on before the war, was closed down, and the Austro-Hungarian bank suspended its highly skilled forward operations. The suspension of the system in Central Europe was so complete that even in Germany, where the banks were past-masters in Forward Exchange dealing, it became necessary to "re-discover" the system during the fluctuations that followed the conclusion of the war. Instead of resuming where they left off in August 1914, several Berlin banks began to experiment with a system whereby they granted their clients facilities for covering the exchange risk against the payment of a kind of insurance premium.¹ It was only later that Forward Exchange rates proper began to be quoted. Forward Exchange was re-discovered in a similar way in other countries also,

¹ J. Vogel, *Das Devisentermingeschäft* (Berlin, 1927), p. 7.

which probably largely accounts for the growth of the belief that such dealings were wholly a post-war development.

(6) STARTING AFRESH AFTER THE WAR

Indeed, in most parts of the world Forward Exchange after the war was treated as something new and experimental. This was partly because in every country many people, academic and practical, who did not know about the existence of a Forward Exchange market before the war, began to take an interest in the subject. Partly, too, it was attributable to the fact that the volume of business which had to be handled by the revived Forward Exchange market was incomparably larger than before the war, and to the fact that the speculative activity that began after the war was something new in the experience of the post-war generation. It was necessary in most centres to learn the technique of Forward Exchange afresh. Experiments were carried out in various markets to determine the best methods of dealing in Forward Exchanges. For instance, Amsterdam, Antwerp and Paris established special clearing-houses to deal with Forward Exchange transactions, on the assumption that they were something fundamentally different from spot exchange transactions. In New York some banks experimented with quotations for "put and call" contracts in Forward Exchange,¹ though the practice was abandoned very soon.

In London, too, Forward Exchange was at first regarded as something of a novelty. Banks advertised in newspapers: "Forward Exchange Transacted".² Various customs unknown before the war were adopted. For instance, imitating the continental centres, London after the war began to deal in Forward Exchange for end-of-month delivery, instead of dealing for delivery in a given number of calendar months. While in continental centres the whole economic and financial life is based on the "Ultimo" settlement, so that it was natural that forward rates should also be quoted accordingly, in the London and New York financial markets the last working day of the month has meant very little as a rule, and there was thus no need to adopt a practice similar to that adopted in continental centres. It was not until about the end of

¹ E. H. Lever, *Foreign Exchange from the Investor's Point of View* (London, 1925), p. 96.

² T. E. Gregory, *Foreign Exchange—before, during and after the War* (London, 1921), p. 51.

1921 that the London Forward Exchange market emancipated itself from this continental influence, and changed over to quotations in calendar months. Needless to say, whenever the continental centres insisted upon quotations for *Ultimo*—such as, for instance, in the case of the large transactions carried out by the Italian Finance Ministry under Count Volpi—it was possible to make a price in London ; but the general rule was to deal for calendar months.

(7) BANKS' RELUCTANCE TO DEAL FORWARD

In London and in other centres, the development of an active Forward Exchange market at first encountered much resistance on the ground that it was essentially speculative. Many banks of the more conservative type would not have taken it up but for the insistent demands of their commercial clients for facilities for covering their exchange risks. Confronted with the danger of losing their customers to more enterprising banks, they reluctantly consented to buy and sell Forward Exchange for commercial customers. Of course, they sought to cover the exchange risk thus assumed by operations in the spot market. To that end, banks all over the world opened foreign currency accounts with one another, and arranged mutual overdraft facilities. They were thereby enabled to cover a forward purchase of foreign currencies from their customers by means of selling a corresponding amount of their foreign balances or, if the balances should be exhausted, by overdrawing their accounts in the currencies concerned and selling the proceeds. Forward sales of foreign currency to their customers were largely covered by increasing the balance or reducing the overdraft in that currency. It was found, however, that there was no need for resorting to this method to any large extent, except temporarily, pending the adjustment of commitments. A large number of buying and selling orders were "married" within the same bank—apart from the difference between their respective maturity dates—while a considerable part of them were covered by means of Forward Exchange transactions between banks. This method was found more convenient than running up a big overdraft or accumulating a big balance in foreign centres. In banking circles, at any rate, prejudice against forward dealing soon vanished.

In official and political circles and in certain sections of the Press, opposition to Forward Exchange continued for a long time. Much emphasis was laid upon the essentially speculative character

of the market. Even after the resolutions of the Brussels and Genoa Conferences, in favour of a free, active and officially stimulated Forward Exchange market, this opposition continued.

Having gradually passed through its "second childhood", the Forward Exchange market settled down to a system which was broadly identical with that which prevailed during the last pre-war years. The difference was largely one of degree. The volume of commercial and speculative dealing was much greater, and the volume of dealing connected with stock arbitrage much smaller than it had been before the war. Forward dealing in bills, which had begun to diminish long before the war, continued to decline in importance, while forward dealing in notes, which in some centres remained fairly important until the outbreak of the war, disappeared almost completely. The Forward Exchange market in the modern sense of the term was confined almost entirely to transfers.

CHAPTER VIII

THE FORWARD EXCHANGE MARKET DURING CURRENCY CHAOS AND STABILITY

(1) NEED FOR FORWARD EXCHANGE FACILITIES AFTER THE WAR

HAVING traced the re-emergence of a Forward Exchange market after the war, we now come to a period upon which much more concrete information is available than was obtainable upon the early periods. From about 1921 onwards there are records of regular quotations of forward rates, which enable us to analyse the movements and to explain the tendencies which they reveal. Such an analysis, however, is best deferred, as we have already explained, until after we have discussed the theory of Forward Exchange movements. We propose, therefore, to confine ourselves in this chapter, as in the earlier chapters, to a description of the general evolution of the Forward Exchange market, without going into the technical details of the actual movements. A historical account of the post-war fluctuations of forward rates will be found in Chapters XXVIII to XXXIII, in which the actual trends of the various exchanges will be examined in the light of the theoretical conclusions arrived at in Chapters XVIII to XXVII. Meanwhile we shall refer to the actual rate trends only in so far as is necessary to indicate the development of the system as a whole.

It may be said that, by about 1921-22, a modern Forward Exchange market had been established in every financial centre. Every bank of standing willingly undertook Forward Exchange operations. There was, indeed, every need for a wide Forward Exchange market. (During the pre-war years such a market—at any rate in the countries of Western Europe—existed mainly for the convenience of financiers engaged in some form of arbitrage. By contrast, after the war the general currency chaos made a forward market a vital necessity for trade itself. Fluctuations in exchanges became so wide that it would have been sheer

gambling for merchants to buy or sell in terms of foreign currencies without covering the exchange risk.) Every merchant preferred, of course, to deal in his own currency, but since the party in the weaker bargaining position had to give way, it became essential that he should have the means of covering the exchange risk.

(2) COVERING OF EXCHANGE RISK ESSENTIAL

(Even British exporters could no longer afford to keep aloof from the Forward Exchange market, for the pound was no longer the universal means of payment in international trade. To a large extent it was replaced by the dollar. Moreover, many foreign importers successfully insisted upon dealing in their own national currencies.) And sterling itself was no longer sufficiently stable to obviate the necessity for covering the exchange risk. (It may be said that, between 1919 and 1925, practically every currency fluctuated widely in terms of every other currency. Consequently, it was necessary and advisable for one of the parties to cover in practically every transaction in foreign trade.) There was, indeed, a very large commercial turnover in the Forward Exchange markets.

The covering of the exchange risk was especially important in countries such as Germany, where the currency was subject to particularly wide fluctuations. To assist exporters, the Reichsbank soon after the war undertook to secure them against exchange risk by means of special arrangements; details of these will be discussed in the chapters dealing with the Forward Exchange operations of Central Banks. The German banks, too, were not slow to develop an efficient organisation for the benefit of merchants anxious to cover their exchange risk. In Germany, as in other countries, genuine commercial requirements provided a solid foundation and an unquestionable *raison d'être* for the Forward Exchange market.

(3) SPECULATION AND ARBITRAGE

Commercial operations did not, however, provide the bulk of the market activity. There was a great deal of business in Forward Exchange through interest arbitrage, and especially through speculation. As we pointed out in Chapter VI, before the war the funds engaged in interest arbitrage were to a large extent uncovered, for in many instances the risk of a depreciation of the exchange within

the gold points was smaller than the difference between interest rates in the two centres concerned. After the war, however, since the gold points had ceased to operate, there was no limit to the risk involved in uncovered interest arbitrage. Consequently, the practice of leaving arbitrage funds uncovered was discontinued entirely. This does not, of course, mean that every balance abroad was covered. On the contrary, huge amounts of refugee money and foreign exchange reserves were accumulated in the centres whose currencies were relatively stable, and the very nature of these balances demanded that they should be left uncovered. But no bank transferred any funds merely for the sake of the higher interest rate without covering the exchange risk. (After all, the depreciation of the exchange could in five minutes wipe out a three-months' difference in interest rates.)

(There was another reason why interest arbitrageurs after the war systematically covered the exchange risk. In many instances it was highly profitable to do so. The unusually wide premium on forward rates at times yielded abnormally large profits on interest arbitrage with the exchange rate covered. It was often profitable to invest funds in a market whose forward exchange was at a big premium, irrespective of the interest obtainable, for the forward sale of the currencies in question secured a handsome margin in favour of the operator.) As Mr. Keynes pointed out,¹ there was an occasion in 1920 when a seller of spot dollars could earn 6 per cent per annum, in addition to the interest received in London, by converting his dollars into sterling while selling the sterling forward for reconversion into dollars in a month's time; and in February 1921 a purchase of spot lire against a sale of forward lire for one month would have yielded over 25 per cent per annum, in addition to the interest rate obtained in Milan.

(4) MISGUIDED CRITICISM OF FORWARD OPERATIONS

(The main reason for these abnormal margins—which persisted in some currencies for quite a long time—was the widespread feeling of optimism that set in after the war regarding the future of the depreciated currencies.) It was generally taken for granted that not only sterling, but the franc and the lira, even the German mark, would eventually return to their Purchasing Power Parities, and even to their pre-war Mint parities. Speculative anticipation of

¹ *A Tract on Monetary Reform*, p. 130.

the rise of these currencies resulted in a persistent premium on forward sterling against dollars, and in a premium on the forward lira, mark, etc., against both sterling and the dollar. Ample opportunities were thus afforded for highly profitable interest arbitrage with the exchange risk covered. Such operations provided a much larger percentage of the non-commercial Forward Exchange turnover during the years of the post-war currency chaos than was realised at the time. Indeed, ignorant politicians, Government officials and journalists denounced these transactions as speculative, even though they represented pure arbitrage, and in spite of the obvious fact that they tended to correct the excesses of speculation.

M. Jean Casamajor¹ quotes as a characteristic instance the ignorance of the Belgian authorities about the real nature of such swap operations. In December 1922 five brokers were arrested in Antwerp and charged with bear speculation against the Belgian franc in association with the Amsterdam banking firm of H. Albert de Bary & Co. That bank, acting partly on account of others, had been engaged in swap operations in Belgian francs since 1920. Owing to the premium on forward francs, it was profitable to invest funds in Belgium with the exchange risk covered through the sale of forward Belgian francs. Evidently, these transactions tended to support the Belgian franc, for they caused a buying pressure on the spot exchange; it is true that at the same time they caused a selling pressure on the Forward Exchange, but since in any case the forward rate was at an abnormal premium, there was no harm in this. In spite of this, the Belgian authorities instituted legal proceedings against the Dutch firm, seized its balances in Belgium, and placed the brokers operating on their behalf under arrest. This action of the Government was universally condemned in the Press.²

(Admittedly the Forward Exchange markets witnessed a large volume of operations of an unquestionably speculative nature. But during the first three years of the post-war chaos, at any rate, these operations tended to support the depreciated currencies instead of attacking them. And since the speculators, with the exception of the bulls in sterling, proved to be wrong in the long

¹ Jean Casamajor, *Le Marché à terme des changes en France*, 2nd edn. (Paris, 1925), pp. 114-117.

² *The Times*, among others, commented upon it in strong terms in its December 16, 1922, issue. Among the Belgian newspapers, *Le Neptune* of Antwerp dealt extensively with the case in its December 17, 1922, issue, and in subsequent issues.

run, they paid the penalty for their "sins".) What is more important than any moralisation for or against speculators, the speculative support given to the depreciated European currencies by bulls operating in the Forward Exchange market largely contributed to the development of the custom of covering exchange risk in foreign trade. British importers, having a dollar risk to cover, could do so at an actual profit to themselves, and so could British exporters to Germany, Italy, Belgium, etc. There was, of course, the other side of the picture, since British exporters to the United States and importers from Germany, Italy or Belgium found covering very costly. In spite of this, the existence of substantial forward premiums during the first post-war years must have contributed to no slight extent to making merchants Forward Exchange-conscious.

(5) PROFESSIONAL *v.* AMATEUR SPECULATORS

In his classic chapter on Forward Exchange,¹ Mr. Keynes states that, during the first period of the post-war chaos which his book covered, speculative operations in the Forward Exchange market were largely done by professional speculators, while amateurs confined their activities to spot exchanges. This was substantially correct at the time when he wrote his book (in 1922), but a wave of non-professional speculation developed in Forward Exchanges during 1923, and reached its climax in 1924. The existence of such facilities was gradually realised by the general public, and the Forward Market attracted many thousands of gamblers in every country. While the leading banks in most centres confined their operations to the execution of orders, speculative or otherwise, for their own regular clients, in no centre was there any difficulty in finding a bank which was willing to operate in Forward Exchanges on behalf of anyone who was prepared to leave an adequate deposit to cover the margin of probable fluctuations. These operations were focussed for the most part on the French franc, and will be discussed in detail in Chapter XXX. They raised the turnover in Forward Exchanges to a level never attained before or since. They also showed that in given circumstances excessive speculation in Forward Exchanges can be highly damaging, just as the experience of the earlier post-war years showed that speculation in Forward Exchanges is not necessarily damaging.

¹ *A Tract on Monetary Reform*, p. 132.

(6) WHY FORWARD EXCHANGE SURVIVED STABILISATION

(Throughout the post-war currency chaos it was widely believed that the Forward Exchange market, like other emergency devices such as exchange restrictions or Government intervention in the Foreign Exchange market, was bound to disappear as soon as normal and stable conditions were restored. Those who held this view did not realise (a) that restoration of normal conditions would not necessarily mean restoration of pre-war conditions, and (b) that even before the war there had been a moderately active Forward Exchange market.) In fact, the market remained in existence during the period of post-war stability between 1925 and 1931, and its volume of turnover, though much smaller than during the currency chaos, was probably much larger than it had been before the war. This was due to several circumstances :

1. (All currencies were not stabilised in 1925.) It was not until 1928 that the franc was legally linked to gold, while the peseta continued to fluctuate until 1931. The volume of speculative forward dealing, which was small during the decade before the war, therefore remained relatively large.
2. Confidence in the stability of currencies was not so well-established as before the war, and gold points were not relied upon to the same extent as the extreme limits of possible exchange movements.) When on various occasions sterling or the mark declined to gold export point, this did not necessarily remove the desire for covering the risk of further depreciation.
3. Having formed the habit of covering their exchange risks, many merchants continued to do so whenever the forward operation involved was profitable for them, or at any rate whenever it was not costly.)
4. A practice of borrowing abroad by means of swap operations developed during the years that followed the stabilisation of the currencies of countries which were depleted of capital resources.) In particular the countries of Central Europe and Brazil developed this practice to a high degree.
5. The development of long-distance telephone communications stimulated international exchange arbitrage, a large part of which was done in Forward Exchanges. There was also a fair amount of interest arbitrage, stock arbitrage—though not

as much as before the war—and bullion arbitrage with the exchange risk covered.

6. During the period of great activity in Forward Exchanges, most banks established large Foreign Exchange departments which, being anxious to justify their existence after the stabilisation of currencies, did their utmost to create business for themselves.
7. Short-term borrowing abroad increased considerably compared with its pre-war volume, and the extent to which the credits were covered was probably also larger.
8. The banks adopted the habit of keeping many foreign currency accounts for their Foreign Exchange requirements, and the balances were as a rule covered.)

(7) FORWARD EXCHANGE DURING POST-WAR STABILITY PERIOD

The experience of the period of stability has conclusively proved that the system of Forward Exchange can fulfil a useful rôle even amidst stable monetary conditions. The fact that it survived the exchange fluctuations shows that it had become an integral part of the international monetary system. (Indeed, it was really during the period of stability that the Forward Exchange system came to be a permanent institution in international finance.) Its technique became finer, for, after the abnormally wide margins existing during the period of fluctuations, dealers had to get accustomed to operating with fractional margins.

(During the period of exchange fluctuations the main significance of the Forward Exchange system was that its facilities enabled legitimate trade to avoid exchange risk to a large degree. During the period of stability, its main significance was that it secured an international flow of funds to countries whose currencies did not enjoy confidence. During the years that followed the stabilisation of the Central European currencies, it was the existence of Forward Exchange facilities that made it possible for impoverished countries to attract a certain amount of short-term loans.) Otherwise foreign lenders would not have dared to lend in terms of the weak currencies, while borrowers would not have dared to borrow in terms of the strong currencies.

The opposition to Forward Exchange dealings as a means for speculation, which was very strong during the period of currency chaos, disappeared almost entirely after 1926, when speculation

on a large scale became confined to one or two minor currencies. From time to time there was a certain amount of bear speculation in reichsmarks and also in sterling, the rupee and other currencies, and between 1926 and 1928 there was a great deal of bull speculation in forward francs. But, even though these operations may have been inconvenient, they did not cause grave embarrassment, and in any case a certain amount of speculative operations was regarded as a matter of course. The strong defence of the system of Forward Exchange by Mr. Keynes also did much to influence expert opinion in its favour; and, by the end of the stabilisation period, the Forward Exchange system had come to be accepted as an integral and normal part of the Foreign Exchange mechanism.

CHAPTER IX

THE FORWARD EXCHANGE MARKET AFTER 1931

(1) EFFECT OF THE BANKING CRISIS

THE crisis of 1931 put the Forward Exchange system under a very severe test. The Austrian banking crisis undermined confidence in the stability of a number of currencies, and there was a sharp revival of demand for Forward Exchange facilities even before the actual collapse of sterling. The suspension of the gold standard by Great Britain and a number of other countries towards the end of 1931 caused a return to chaotic monetary conditions similar to those of the first few post-war years. This, however, would not in itself have impaired the efficiency of the Forward Exchange system. After all, the development of the market, as we have seen, had been largely assisted by the wild fluctuation of the exchanges after the war. (But there was a vital difference between the conditions prevailing before 1925 or 1926 and those that followed the suspension of the gold standard: during the period of post-war chaos the banking system remained more or less intact, but in 1931 a grave banking crisis coincided with the monetary crisis.)

(But confidence in the banking system, as we showed in Chapter IV, was one of the basic conditions of the development of a Forward Exchange market. A breakdown of that confidence inevitably leads to the breakdown of the Forward Exchange market.) From the time when the modern Forward Exchange system first developed, there was no major banking crisis until 1931. Never before had there been any experience of the effect of such a crisis upon a highly developed Forward Exchange market. There had, it is true, been a few minor breakdowns in the smooth working of the system. Indeed, considering its sensitiveness, it is surprising that breakdowns had not occurred more frequently. Between the ultimate buyer and the ultimate seller there is usually a long chain of intermediary deals and, as a practical writer rightly pointed out,¹ the chain of

¹ H. W. Philips, *Modern Foreign Exchange and Foreign Banking* (London, 1926), p. 139.

Forward Exchange transactions is as weak as the weakest of its links. (Notwithstanding this, the breakdown in Forward Exchange facilities usually occurred not through defaults on the part of dealers, but through Government restrictions.) For instance, in 1923 the German Government prohibited forward transactions except between two foreign currencies with the exclusion of the mark.¹ In 1924 the French Government's measures to restrict the granting of overdrafts to foreign borrowers, and the "bear squeeze" that followed, resulted in a number of defaults on Forward Exchange commitments. The same kind of Forward Exchange crisis was repeated in 1926 after the second Poincaré bear squeeze. Again in 1930 the Banco do Brasil had to consolidate its accumulated Forward Exchange commitments through an external credit transaction. All these were local breakdowns affecting one particular currency at a time. In 1931, however, the whole of the Forward Exchange market came very near the point of a general breakdown.

(2) THE CRISIS OF REICHSMARK AND STERLING

The events that led to this crisis within the general financial crisis are too well known to require repetition in detail. The Creditanstalt suspension led at once to a general run on Central European currencies, accompanied by speculative forward selling. Forward reichsmarks went to a big discount, even though the spot reichsmark was at gold export point. The quotations were of course purely nominal. Sellers were prepared to accept a rate far under gold export point, on the assumption that by the time the forward contracts matured the reichsmark would have depreciated. Outstanding forward commitments in reichsmarks were considerable, so that when in July the German Government introduced a general moratorium on external payments the Foreign Exchange market was faced with an embarrassing situation. A large part of the commitments was, however, liquidated, thanks to the privileged treatment given by the German authorities to balances on Foreign Exchange accounts.

The really grave crisis in the Forward Exchange market came after the suspension of the gold standard in Great Britain. The depreciation of sterling inflicted heavy losses upon merchants all over the world, and from September 1931 every merchant sought to cover the exchange risk. After the war the demand for such

¹ J. Vogel, *Das Devisentermingeschäft*, pp. 2 and 55.

facilities had developed gradually ; but in 1931 it arose almost overnight. Simultaneously, there was a huge demand for Forward Exchange facilities for speculation, and holders of uncovered time deposits and securities in every currency also endeavoured to secure cover. The demand for Forward Exchange facilities suddenly rose to a multiple of the figure which had been customary during the period of stability. In the previous period of instability—in 1924 or thereabouts—the banks had found no difficulty in coping with such a demand. In 1931, however, a sharp contraction in the volume of available facilities coincided with the sudden increase in the demand.

(3) WAVE OF DISTRUST

The crisis of the Creditanstalt, which until the fateful announcement of May 1931 had been generally regarded as the model of sound banking, dealt a severe blow at public confidence in banks in general. This was followed by a series of fresh shocks in the form of bank suspensions in Central Europe and elsewhere, the most severe of which was the suspension of the Darmstädter- und Nationalbank. A world-wide wave of distrust of banks developed. Indeed, there was hardly any name which was not subject to anxious inquiries at some time or other in 1931. Fears that banking difficulties in London would ensue from the Central European crisis were at least as much to blame for the flight from the pound as were fears of a depreciation of sterling. At the same time the sudden withdrawal of French official deposits from New York gave rise to anxiety about the position of some of even the strongest American institutions. Whether or not this anxiety was justified in the various instances, it was bound to produce a paralysing effect on Forward Exchange activities.

It is often pointed out that the risk involved in taking doubtful names for Forward Exchange transactions is limited to the possible range of the exchange rates during the currency of the forward contracts. In normal conditions that risk may be negligible ; but in 1931 it was impossible to foresee the degree of the depreciation of the various currencies. Moreover, at a time when almost any country might impose exchange restrictions or moratoria, the risk of non-delivery of a currency under a forward contract is vastly greater than the risk of a normal exchange difference. Conceivably, the default on the part of a bank in delivering the exchange it had sold forward might prove highly embarrassing to the buyer who, in

turn, might be unable to fulfil his own liabilities except at a very heavy loss.

(4) WHAT'S IN A NAME ?

It is no wonder, then, that during an uncertain period such as 1931 the dealers scrutinised with particular care the names they were asked to take for forward contracts. In many instances their distrust was grossly excessive. Admittedly it is easy to criticise by jobbing backward, but even at the time it seemed absurd that American banks should have established a standing rule to take no other London name than those of the clearing banks. As a result of such excessive distrust, many banks in London and abroad were practically excluded from the Forward Exchange market. This did not mean that the remaining banks were able to do more business, for the Foreign Exchange departments always have strict instructions not to take any name for forward dealing beyond a certain limit. Playing for safety, bank managements in 1931 were inclined to reduce the limits rather than to increase them, even for the best names. The possible limit of total forward transactions was thus very drastically reduced. While the leading banks were able to satisfy the requirements of their most valued commercial customers, many merchants were unable to secure the facilities they so urgently needed. The Forward Exchange system failed the commercial community precisely at the time when its assistance was most necessary.

Had the wave of distrust in the banking world continued for long, it would inevitably have accentuated considerably the contraction of the volume of international trade. As it was, many business deals had to be abandoned owing to the difficulty of covering the exchange risk. From the end of 1931 onward there was, however, a revival of confidence. The international banking crisis passed its climax. Even though there were banking crises in many countries during 1932 and 1933, the wave of distrust that paralysed the Forward Exchange market towards the end of 1931 never returned to the same degree. The nearest approach to the distrust of 1931 occurred during the American banking crisis early in 1933. Owing to the wholesale failure of banks in the United States, banks became reluctant to take almost any American name. And the dealers of those leading London financial houses whose names had been refused by the big American banks in 1931 derived no slight satisfaction from being able to return the compliment

eighteen months later. But even the leading American banks were reluctant to take one another's names for forward transactions, and the story goes that the London branch of one leading New York institution refused the name of its own head office. As, however, the crisis was confined to American banking, it did not materially affect the efficiency of the Forward Exchange market outside New York, or in currencies other than the dollar. In the Forward Exchange market there was no comparison between the repercussions of this crisis and those of the deadlock of 1931, though the fate of the huge volume of contracts during the enforced "Bank Holiday" in the United States in March 1933 was a matter of much concern for a few days.

(5) RESUMPTION OF NORMAL ACTIVITY

To some extent, the deadlock was overcome by adopting the practice of quoting different rates for different classes of names. This was not altogether an innovation, but after 1931 it became much more prevalent, especially during the spasms of feverish activity in Forward Exchange that accompanied wide movements in sterling or dollars or the attacks on the various gold currencies. In the course of time it had become evident, however, that the weak units in the banking system had all disappeared, and most of the banks which survived were worth trusting. Apart from this, it had become possible to form a vague idea of the extent of the possible depreciation of various currencies. Gradually, most banks re-entered the Forward Exchange market, though there still remains a higher degree of discrimination between names than there was at any time before 1931.

(From April 1933 onwards, it can be said that the Forward Exchange market has functioned smoothly. From time to time, embarrassing situations have arisen in consequence of the imposition of exchange restrictions by one country or another. For instance, the blocking of lira balances in 1935 necessitated compensation arrangements by which the outstanding forward contracts were gradually liquidated; and the forward market in lire ceased to exist. Again, the Spanish civil war in 1936 led to a deadlock in the peseta market. But apart from such episodes—which left the major currencies unaffected—the system has been able to provide all the facilities that were required for short-term commercial requirements. These requirements themselves tended to decline in

1935, as a result of the temporary stabilisation of the dollar and the relative stability of sterling.¹

(6) COVERING EXCHANGE RISKS

(During the years that followed the crisis of 1931 there was an increase in the practice of covering the exchange risk on foreign balances. In this respect the situation somewhat resembled that current before the stabilisation of currencies.) Interest arbitrage with uncovered exchange again became unpopular, even between countries with gold currencies. Speculative pressure on various Forward Exchanges again resulted in discrepancies that made swap operations abnormally profitable. Once more, these abnormal discrepancies were not exploited to their full extent by the banks, owing to the fact that the resources they were able or willing to use for that purpose were not by any means unlimited. In the case of the French franc, the profit on selling spot francs and buying them back for forward delivery attained fantastic proportions at times, because of the limited supply of francs available for interest arbitrage in possession of foreign holders or of French banks.

(Another important source of activity in Forward Exchange since 1931 has been the development of the practice of covering capital invested in foreign countries, whether in the form of security holdings, real property, working capital of subsidiary companies, or commodity stocks.) The hedging against the risk of the depreciation of these assets through a fall of the exchange has resulted in a constant non-speculative bear position in the vulnerable currencies, and this position is usually renewed every three months. In some instances the hedge is removed and restored from time to time, according to the prospects of the exchange concerned. Until the middle of 1935, a large part of the hedging was carried out by means of forward transactions in gold. This practice—which in a way provided rival facilities to those of the Forward Exchange market—was an innovation produced almost entirely by the crisis. In July, 1935, an embargo was placed on speculative forward dealing in gold in London, and although this unofficial restriction did not

¹ Mr. McKenna, addressing the shareholders of the Midland Bank on January 28, 1936, remarked that “. . . Forward Exchange contracts outstanding are very much lower on the year; this is due partly to the somewhat more stable exchange rates operating during 1935, and partly to greater confidence concerning the future of the dollar.”

apply to operations for legitimate hedging, the forward gold market contracted to such an extent as to become practically useless for hedging purposes.

(7) SPECULATION AFTER 1931

The volume of speculative Forward Exchange operations since 1931 has not been nearly as large as it was during the early post-war years before the stabilisation of the currencies. In the early stages the limitations of forward facilities made it difficult to deal freely for speculative purposes. Those banks whose names were accepted reserved their facilities for commercial customers. Even subsequently, when the market became wider, the leading banks did not encourage speculative forward operations. It was no longer possible for speculators to walk into any bank and open a speculative account on payment of a reasonable deposit. Nevertheless, at times of acute pressure on various currencies, speculators usually found a way to operate. Throughout this period the volume of bear positions was usually small in comparison with that of the flight of capital. But, precisely because of the relative narrowness of the Forward Exchange market compared with its dimension of 1924-26, even a comparatively moderate volume of speculative business was able to produce a marked effect on forward rates. In July 1935 an unofficial embargo was placed on speculative Forward Exchange operations in London and some other centres, as a result of which their volume declined further.

The only period during which there was a really large volume of speculative forward dealing noticeable was between March and May 1935. The movement began with the attack on the belga, and after the devaluation of the belga similar sweeping attacks were directed against the three remaining gold currencies in turn. Even then, the total volume of speculative operations was much smaller than is generally assumed on the basis of the movements of forward rates. The flight of foreign balances and national capital from the countries concerned was vastly more substantial than the speculative positions in the forward market. This is one of the reasons why the resources required for the defence of currencies have become so much larger. In 1894, when the attack on the rouble was purely speculative, Mendelssohn & Co. were able to rout the bears with the aid of £500,000. Thirty years later, when the attack on the franc was largely speculative, but there was a fair amount of genuine flight of capital, M. Poincaré needed resources amounting

to £24,000,000 to defeat the attack. In 1931, when the attack on the pound mainly assumed the form of a flight of foreign capital, the British authorities used up credits amounting to £130,000,000 without being able to save sterling. And the defence of the franc in face of a wholesale flight of French capital in 1935-36 cost several times that amount in loss of gold.

(8) DEVALUATION OF THE FRANC

(Even though speculation in forward francs contributed to the selling pressure which eventually led to the collapse of the resistance of the Gold Bloc, the main factor was the flight of capital.) From the summer of 1935 onward, the volume of speculative activity in forward francs and other vulnerable currencies was progressively reduced, as a result of the unofficial embargo on speculative Forward Exchange transactions. Admittedly, this embargo was far from watertight, as we shall see in Chapter XL ; but it resulted in a considerable contraction of the forward market in francs, especially between June and September 1936, when the French authorities made special efforts to enforce it. As a result of the contraction of the forward market, however, the rate became sensitive to even comparatively small pressures, and in September 1936 the discount on forward francs reached a high level, even though the volume of speculative operations was not nearly so large as in May 1935.

For a few days after the announcement of the devaluation of the franc, the absence of Foreign Exchange dealings in Paris—or of franc dealings in London—resulted in another brief deadlock in the Forward Exchange market. But once dealings were resumed, the forward rates of the devalued currencies settled down to reasonable figures and the Forward Exchange market recovered its normal appearance—presumably until the next crisis.

(9) THE RÔLE OF SPECULATION

Admittedly, as will be explained in later chapters, speculative forward selling of a currency is capable of leading to a loss of gold by stimulating swap operations. But even allowing for this factor, it is safe to say that the rôle of speculation in the Forward Exchange market was not nearly as destructive during the series of crises that began in 1931 as it was in 1924. During the second post-war period of exchange fluctuations, the rôle played by the Forward Exchange

market has been overwhelmingly constructive. Even to the extent to which it assisted in bringing about the fall of various currencies it merely acted as an instrument of fundamental tendencies which arose from the existence of a disequilibrium, and which made the position of the currencies in question untenable in the long run. Against this possibly adverse effect of the Forward Exchange system must be set the benefit which it conferred by enabling foreign trade to carry on in spite of vulnerable exchanges. The existence of facilities for covering the exchange risk during this period was even more important than during the period of post-war fluctuations. For margins of profit in practically every branch of trade were much lower than they had been ten years earlier, and, after years of depression, most merchants could ill afford to expose themselves to the risk of currency depreciation.

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PART III

**PRESENT ORGANISATION
OF FORWARD EXCHANGE**

CHAPTER X

THE ELEMENTS OF THE FORWARD EXCHANGE MARKET

(1) NO SEPARATE FORWARD MARKET

HAVING traced the evolution of the Forward Exchange market from its earliest days, our next task must be to describe the market as it exists today. In this respect, the ground is relatively well covered. There are a number of practical text-books on Foreign Exchange¹ which contain more or less detailed descriptions of how the Forward Exchange market works. They were written by Foreign Exchange dealers who know a great deal more about the practical aspects of the subject than I can ever hope to. None the less I have considered it necessary to devote seven chapters to the present organisation of Forward Exchange because I consider that these writers, in spite of their superior knowledge and experience, have not discussed their subject in sufficient detail, and because they have not always examined the broader implications of their facts. A comprehensive survey of the system of Forward Exchange as it operates in practice today is an indispensable prelude to the study of its deeper theoretical aspects.

The Forward Exchange market forms part of the Foreign Exchange market. Early attempts at organising separate Forward Exchange markets did not bring satisfactory results and were for the most part abandoned. There is, indeed, no reason for trying to segregate forward dealing, especially as most forward transactions assume the form of buying and selling spot against forward. The volume of "outright" buying or selling of Forward Exchange is much smaller than that of the dealings in "swaps", that is buying and selling spot against forward.

In many centres the Foreign Exchange market is, in theory at any rate, an open market, which means that there is no closed membership as on the Stock Exchange, and anyone can deal

¹ H. E. Evitt, *Manual of Foreign Exchange*; H. W. Philips, *Modern Foreign Exchange*; H. C. F. Holgate, *Foreign Exchange, etc.*

provided that his name is taken. In this latter respect, there is a material difference between dealing in spot and dealing in forward. Admittedly, even for spot transactions the market is particular about names. After all, much may happen even within the two days which elapse before exchanges bought and sold for spot are due to be delivered. But unless a bank is definitely under a cloud, its name will always be taken for spot transactions up to a reasonable amount. It is totally different in forward dealing. There the risk involved is considerably greater; dealers are therefore particular about the names they are prepared to take for forward business, and about the amount up to which they are prepared to take the various names. We have seen in the last chapter that difficulties about names brought the Forward Exchange market to the verge of breakdown towards the end of 1931.

(2) DISADVANTAGE OF "OFFICIAL" MARKET

(In some continental centres there is still an "official" Foreign Exchange market on the Bourse, and membership of this market is of course strictly limited.) Even in Paris, where anyone of male sex can walk into the Bourse, the section dealing with exchange is closed to non-members. As far as London, New York and many other centres are concerned, the dealing takes place over the telephone, and the members of the market need never meet. Banks in the same centre deal through the intermediary of Foreign Exchange brokers, while between the various centres they deal direct with one another. Even in centres where an "official" market exists it usually operates for only a limited number of hours each day, and outside those hours the system of dealing is the same as in London or New York. (As far as dealing in Forward Exchanges is concerned, the Anglo-Saxon system is generally regarded as preferable to the continental system, precisely because names play such an important part.) It happens much more frequently that names are refused in forward dealing than in spot dealing, and a refusal can be made much more conveniently for both parties concerned if the negotiations take place over the telephone through the intermediary of a broker. Even though brokers act as intermediaries also on the Bourses, the refusal of a name is much more likely to come to the knowledge of the firm whose name is refused, and—what is worse—to the knowledge of the market in general, than under the system of dealing over the

telephone. For this reason among others, the rôle played by Foreign Exchange brokers is much more important in forward dealing than in spot dealing.

(3) DEALING OF MEMBERS OF THE MARKET WITH OUTSIDE CUSTOMERS

(While in theory anybody is at liberty to deal in the market, in practice dealing is usually confined to a relatively small number of banks.) Those outside the banking community are not, as a rule, in a position to deal in the market, and have to deal with their bank, even though their standing may be quite as good as that of the banks with whom they have to operate. Even the largest industrial or commercial firms, insurance companies, etc.—though they may possess a Foreign Exchange department of their own to cope with their large volume of transactions—have to make use of the services of a bank for their Foreign Exchange dealing, whether spot or forward.

Accordingly, in examining the organisation of the Forward Exchange market, it is necessary to distinguish between two kinds of transactions, namely, dealings between bankers and their customers who are not members of the Foreign Exchange market, and dealing between banks. This distinction is essential, because in the majority of cases the banks are not mere intermediaries, but principals, in their relations with their customers. This fact is not generally realised outside banking circles. There is a widespread belief that the rôle of banks is confined to passing on the orders of their customers to the market, just as stockbrokers do. (In reality, the rôle of banks in the Foreign Exchange market is somewhat similar to that of the jobber, not of the broker, though with the difference that the banks deal direct with the ultimate buyers or sellers.) If banks acted as brokers to their customers, in practice it would mean that they would simply charge their customers the rates obtained in the market, plus or minus their own commission. (As it is, they usually quote rates even before they know the rates at which they are likely to cover—except in the case of large amounts, when it is safer for them to cover at the moment of fixing the rate to their customers. The banks thus assume a greater risk than brokers, and are therefore entitled to a turn in excess of the usual commission. Moreover, in forward dealings, a bank also lends its name on its customers' transactions, which in the case of smaller commercial or industrial firms, or of firms of secondary standing, is of

particular importance. In this respect, banks play the same rôle as they do when granting acceptance credits. For this reason alone, their customers are not entitled to claim—as they sometimes do—that the rates charged to them by their banks should be identical with those quoted in the market at the time of the transactions.

(4) HOW DEALINGS OUTSIDE THE MARKET AFFECT RATES

(While transactions between members of the market affect forward rates directly, transactions between banks and their customers affect the rates only indirectly, as and when they result in forward transactions between members.)They do not necessarily do so. In the following cases the banks do not immediately “undo” in the forward market the deals concluded with their customers :

1. Many banks, while insisting that their customers—who can ill afford to take risks—should always cover the Forward Exchange on certain transactions, themselves elect to cover only when their view of the exchange prospects suggests that cover is necessary. During the period of stability this practice was adopted to some extent by continental banks regarding acceptance credits arranged abroad for their customers.
2. Sometimes, too, a bank, instead of covering the forward operations of its customers in the Forward Exchange market, prefers to cover it by means of a spot transaction, through increasing or reducing its balance or its overdraft with its foreign correspondents.
3. Forward transactions between banks and their customers may to a large extent be “married” ; in which case it is only the balance between the buying or selling orders that comes to the Forward Exchange market ; or where there is a difference in dates, the transactions may lead to dealing in short forward against long forward in the market.
4. It is also possible for a forward deal between banker and customer to be covered by an operation in bills, in which case it does not come to the Forward Exchange market proper. Broadly speaking, however, the majority of forward deals between banks and their customers lead to corresponding deals in the market.

The most important point in distinguishing between deals within and outside the market is that very often, and to a very large

extent, short or long positions carried by banks in relation to other members of the market are covered by deals between banks and their customers. This point alone makes it imperative to distinguish those sources that feed the volume of forward transactions outside the market from those that feed transactions within the market.

There are five main sources from which forward transactions between the banker and his customer may originate :

1. Imports and exports, both visible and invisible.
2. Hedging operations against assets abroad and against holdings of commodities whose price is affected by exchange movements.
3. Various kinds of arbitrage operations.
4. Speculation.
5. Operations of every kind by banks which have no foreign exchange departments or whose names are not taken in the market for forward transactions.)

(5) COMMERCIAL OPERATIONS WITH CUSTOMERS

(Forward operations originating from imports and exports of commodities are usually regarded as the "bread and butter" of the market.) The import and export of services can also lead to forward transactions. The same considerations which determine whether or not a merchant covers the purchase or sale price of commodities also apply for the freight and other expenses attached to their transport, especially as in many instances these expenses constitute a very large proportion of the value of the goods. Insurance of every kind in terms of a foreign currency may also lead to covering transactions on the part of the insurer. Insurance companies themselves often prefer to cover their foreign currency risks by means of foreign currency accounts instead of forward transactions. The large tourist agencies, on the other hand, usually cover by means of a Forward Exchange transaction the exchange risk on tours definitely arranged in advance. Interest on capital invested abroad is not often covered; in fact, investors have only recently formed the habit of covering the exchange risk on their capital.

There are a variety of hedging operations that may give rise to Forward Exchange transactions between banks and their customers. We have seen in the last chapter that since 1931 holders of various

assets abroad have acquired the habit of covering their exchange risk whenever that risk appears particularly acute. Assets which are thus covered include real property, participation in enterprise abroad, foreign subsidiaries, the holding of foreign securities, the possession of commodity stocks abroad, etc. Owners of imported commodities whose price is largely affected by any changes in the exchange rate, if they are unable or unwilling to cover this risk by forward operations in the commodities themselves, also hedge by means of Forward Exchange operations.

(6) ARBITRAGE AND SPECULATIVE OPERATIONS

(Of the various types of arbitrage which may give rise to Forward Exchange transactions between banks and their customers, probably the most important is Stock arbitrage.) Although members of the Foreign Exchange market also undertake such operations—in fact, they are obviously at an advantage in competing with non-members—the bulk of it is done by Stock Exchange firms or others who have to cover their Forward Exchange through a bank. In the Bullion market, too, most bullion brokers in London have no Foreign Exchange departments of their own, and their operations—unless they are acting merely as agents on behalf of banking customers—also give rise to forward transactions between bankers and customers. Interest arbitrage is as a rule confined to banks, though very large commercial firms may take a hand also. When in abnormal conditions the margins of profit on swap transactions are particularly wide, then some sections of the public are tempted to undertake interest arbitrage. Exchange arbitrage proper—whether time arbitrage or space arbitrage—is, however, for obvious reasons confined to the professional dealers in the market.

Since the summer of 1935 banks have not been supposed to carry out speculative operations on behalf of their customers. But this unofficial embargo, like most unofficial embargoes, has been far from water-tight. It is not always possible to check the correctness of the statement of customers that the forward transaction they wish to undertake is of a genuine commercial nature. There are, moreover, many borderline cases. Even though the volume of speculative dealings on account of customers is much smaller than it used to be, it is by no means negligible, and at times of acute attacks on various currencies it increases to a substantial figure.

(7) OPERATIONS BETWEEN BANKS

There are banking houses which have no Foreign Exchange departments of their own, or whose names are not taken for forward transactions. Their forward business, whether it represents their transactions with their customers or transactions on their own account, is carried out by some bank whose name is taken in the market. The latter is in a position to know the banks concerned—which is not necessarily the case with other members of the market to whom the name may be offered. And the bank which operates in the market may possess security which duly safeguards it against any possible losses. It is necessary to bear in mind that while in transactions between banks and their customers a security to cover the possible exchange fluctuations is often demanded, this is never the case in transactions in the market—there a name is either taken or not taken. Thus, very often banks which cannot operate in the market are in a position to operate as customers of one of the banks which operate in the market.

(Let us now enumerate the sources from which Forward Exchange operations may originate between banks operating in the market. They are as follows :

1. Covering of positions arising from any of the above types of business with their customers.
2. Covering of their balances or overdrafts in foreign currencies.
3. Covering of bill transactions.
4. Hedging operations of various types.
5. Arbitrage operations of various types.
6. Borrowing through the Forward Exchange market.
7. Window-dressing and end-of-month operations.
8. Speculation on their own account.)

As we pointed out above, the operations between banks and their customers may or may not give rise to corresponding Forward Exchange operations in the market. While there are a variety of reasons why operations with customers need not be undone in the market, in a great many cases they are undone. In the case of large commercial banks with a large clientèle, these operations usually form the bulk of their Forward Exchange transactions, especially as such banks are usually not very active in arbitrage, and abstain from speculation to a large degree.

(8) COVERING BALANCES AND OTHER ASSETS OR LIABILITIES

(In stable monetary conditions, whether or not a bank covers its balances and overdrafts in foreign currencies may depend upon the view it takes of the likely fluctuation of the exchange rates within the gold points. Under conditions of widely fluctuating exchanges, however, most banks as a rule take good care to balance their assets and liabilities in terms of every currency.) While they may carry open positions on account of their customers, and their own positions cannot possibly be balanced every minute, their dealers have strict instructions not to carry open positions overnight. Fluctuations in the amount of balances or overdrafts in foreign currencies thus give rise to a great deal of forward transactions between banks.

If a bank arranges an acceptance credit in a foreign currency for its customer, and covers the exchange risk, the transaction represents the covering of a transaction between the bank and its customer. If, however, the acceptance credit is arranged by the bank for its own account for the purpose of drawing finance bills against it, then the covering of the exchange risk constitutes a direct operation on its own account.

Banks may possess assets in a foreign country, in which case they may find it advisable to hedge against the exchange risk. They may own real property abroad, especially if they have branches or subsidiaries in foreign countries. They may have participations in foreign banks, or other foreign security holdings. Their branches abroad have a working capital in foreign currencies. It is legitimate for banks to cover the exchange risk on all these assets, and the considerations which influence the decision of commercial firms whether or not to cover their assets abroad also apply concerning banks.

(9) ARBITRAGE OPERATIONS BY BANKS

(Arbitrage operations constitute a large proportion of the Forward Exchange business between banks. There is, in the first place, a great deal of exchange arbitrage proper, either to take advantage of the discrepancies between forward rates quoted at the same time in different centres or to buy or sell short against long Forward Exchange. Interest arbitrage is also an important source of forward business, especially amidst unstable conditions, when all the funds engaged in it are covered.) Many banks are very keen on Stock

arbitrage on their own account or on joint account with other banks, and this provides their Foreign Exchange departments with a certain amount of forward business. Operations in gold and silver bullion by banks on their own account or on joint account with other banks are a substantial source of short Forward Exchange transactions.

Borrowing through the Forward Exchange market is a practice which from time to time has assumed considerable dimensions since the war. It is well to realise that the Forward Exchange market provides an alternative to the internal money market for covering requirements in short-term loans. In some instances a shortage in a particular currency for particular dates is remedied by swap operations which do not constitute borrowing in the real sense of the term, for in exchange for the loan of, say, marks the bank in question lends sterling. If, however, the swap operation is combined with the lending of the marks obtained by the British bank, so that the German bank has the use of both sterling and marks for the period concerned, then it is a loan operation proper. Such operations, known under the name of "swap and deposit", were carried out on a very large scale after the stabilisation of the Central European currencies, when the German and Austrian banks and others covered a large part of their requirements by such means. From the point of view of the lenders, the operation falls into the category of interest arbitrage. It is none the less true that "swap and deposit" transactions constitute a peculiar type of credit operation giving rise to Forward Exchange business in the market between banks.

(10) WINDOW-DRESSING AND SPECULATION

(The practice of window-dressing and the increased requirements of certain money markets for funds at certain dates also give rise to much Forward Exchange business. Banks with balances abroad usually repatriate a large proportion of their balances for such dates.) As, however, they are anxious not to interfere with their Foreign Exchange positions, the currencies sold are usually repurchased for delivery after the dates in question. In the Anglo-Saxon centres such operations usually take place only for the banks' balance sheet dates, for the end of the year and, to a much less extent, for the end of the half-year and quarter; but in most continental centres the practice of repatriating funds for the end of each month is still prevalent, though perhaps not to the same extent as in the past.

Lastly, some banks speculate in exchanges on their own account. The names of some of the speculative banks are household words in international finance, but even among those banks which emphatically declare that they never carry open positions overnight there are some which at times indulge in speculation on their own account. Moreover, the rule that positions are to be balanced at the close of every day does not exclude the possibility of speculating in the course of the day. Many a position may be opened and closed between 10 A.M. and 5 P.M. If we include such operations, the proportion of speculative forward transactions to the total turnover of the Forward Exchange market is by no means negligible.

Even though part of the transactions between banks and their customers is covered outside the market, it is safe to assume that the volume of forward dealing within the market is as a rule several times larger than that of dealing between banks and their customers. The next chapter will be devoted to the examination of the methods by which these operations in the market are carried out. In the subsequent chapters the various sources which supply the volume of the business to the market will be examined in detail.

CHAPTER XI

THE TECHNIQUE OF THE FORWARD EXCHANGE MARKET

(1) SWAP *v.* OUTRIGHT OPERATIONS

THE Forward Exchange market, as we showed in the last chapter, is not a thing apart, but forms a section of the Foreign Exchange market. Apart from any other reasons, this is necessarily so because by far the larger part of forward dealings assume the form of swap transactions, that is the purchase or sale of spot exchange against Forward Exchange. This is one of the essential differences between Forward Exchange business within and outside the market. While to a great extent dealing between banks and their customers takes the form of buying or selling forward currencies outright, the bulk of forward dealing in the market proper assumes the form of swap transactions. (The only occasions on which customers require swap accommodation is when they undertake arbitrage operations, or when their existing forward commitments have to be renewed on maturity. Of the two occasions, the second is easily the more frequent.) It arises wherever necessity for hedging is prolonged, and also when payments arising from foreign trade are not received by the date on which they were expected. It also arises when a speculative position is renewed.

The volume of "outright" forward operations in the market is relatively small. Whenever a bank assumes a forward commitment in relation to a customer, the standing rule is that it shall be covered at once by a spot operation.¹ The development of this practice is largely due to the fact that it is as a rule much easier immediately to find a counterpart for a spot transaction than for a forward transaction. This is because all spot transactions are necessarily for the same date, while forward transactions are for a

¹ In practice a number of smaller transactions are allowed to accumulate before they are covered, because the minimum amount of operations in the market is usually much higher than the amount of most single commercial transactions between banks and their customers.

variety of dates. If anyone tried in a hurry to buy or sell outright for a certain date—even if it were for three months, for which there is usually a good market—the chances are that the rate would move considerably against him. If on the other hand the dealer takes his time and, instead of forcing the market, waits patiently until a counterpart to his deal comes his way, he runs the risk that meanwhile the basic spot rate may move against him. (The assumption is that the spot rate is liable to wider fluctuations than is the forward rate. For these reasons a forward commitment outside the market is covered in the first instance by a spot transaction in the market. If a bank has bought forward francs from its customer, it sells spot francs in the market. Subsequently it will undo the deal by means of a swap transaction, buying spot francs against forward francs.) On the other hand, if a bank has sold forward francs to its customer, it buys spot francs in the market. Again, it will later adjust the commitment by means of a swap deal.

(2) CHANGING CONDITIONS

Although there is obviously a great deal to be said in favour of the method practised by the market, there are also arguments against it. The covering of a Forward Exchange transaction concluded outside the market by two operations instead of one is obviously complicated and the chances are that it will involve the loss of two “turns” instead of one. Moreover, in recent years the fluctuations in forward rates have not been so negligible compared with the fluctuations of the basic spot rates themselves as text-books on Foreign Exchange are apt to assume. These text-books are largely based on the experience of the post-war currency chaos, when fluctuations in forward rates, marked as they were, were none the less overshadowed by the much more violent fluctuations in spot rates. Similar conditions also obtained for some years after 1931, but from 1935 onwards the temporary stability of the dollar and the relative stability of sterling and other currencies changed this state of affairs. During 1935 and 1936 until the devaluation of the franc the range of fluctuations of forward rates was in many instances much wider than that of spot rates. For instance, while during the first three quarters of 1936 the spot franc-sterling rate fluctuated between $74\frac{1}{2}$ and 77, the discount on forward francs fluctuated between $1\frac{3}{8}$ francs and 9 francs for three months.

In such circumstances it is obviously absurd to suggest that

dealers could well afford in every circumstance to disregard for a while the risk of fluctuations in the forward rate provided that they immediately covered themselves against the risk of fluctuations in the spot rate. Indeed, during 1935 and 1936 the volume of outright forward operations increased, but owing to the force of habit rather than to considerations of genuine convenience the market continued to prefer to cover in the first instance by a spot transaction, and then to undo the deal by a swap transaction. To defend the practice by contending that there is a wider market in swap than in outright transactions is to beg the question. On active days there would be no difficulty in creating a wider market in outright forward transactions for three months, were it not for the fact that—through habits formed in conditions different from those prevailing in recent years—dealers prefer the complicated method to the simple. Admittedly, when it comes to dates other than three months, and possibly even with one-month transactions, it might be difficult quickly to find a counterpart to outright forward buying or selling orders at advantageous terms, and when it comes to odd dates this is practically impossible except at very bad rates. But there is no reason why a good market for three-months' outright operations should not be developed.

(3) NEED FOR RECONSIDERATION OF PRACTICE

The origin of the existing system lies in the practice of covering forward transactions between banks and their customers in the spot market by means of acquiring balances or overdrawing the accounts in foreign currencies without undoing the commitments by means of swap operations. If a number of spot transactions concluded by the same bank in the same currency on the same date for the purpose of covering forward transactions offset each other, then the amount of that bank's balance or overdraft in that currency will not change. According to Vogel,¹ as a result of the operation of the law of averages—or, to translate literally the German term, "the law of big figures"—the chances are that in the course of time the buying and selling orders of the same bank in the same currencies will more or less offset each other. The question is how long it takes for the law of averages to operate. While in the long run the rule may hold good, during a short period there may be very marked discrepancies between buying and selling

¹ *Das Devisentermingeschäft*, pp. 15-16.

orders received by a bank in the same currency. When forward rates are steady, it may be worth while to delay the swap transaction, in the hope that a forward transaction in the opposite sense covered in the spot market may make it superfluous to cover by means of swap transactions. But at a time of widely fluctuating forward rates it is distinctly risky to leave the forward rate uncovered, even for a few minutes.

Evidently the existing practice works satisfactorily at the time when spot rates are liable to fluctuate within a much wider range than forward rates, and also during a period of stability when the operation of gold points and the existence of confidence in general restricts the fluctuations of both forward and spot rates. (When, however, spot rates are kept relatively steady, either by the operation of the gold points or by the intervention of Exchange Equalisation Accounts, while forward rates are allowed to take care of themselves and fluctuate rather widely, the advantages of changing the practice are evident.) Needless to say, this is entirely a matter for practical men engaged in Foreign Exchange dealing, and conceivably they may not welcome a critical suggestion from outside. The fact, however, that the relative volume of outright dealing has increased shows that some dealers at any rate have realised the advantage of departing from the established custom. In any case, with the devaluation of the franc and other currencies, the fluctuations of forward rates have once more become narrower. Thus the advantages of dealing in forward outright instead of in spot in the first instance and in swap in the second instance have diminished for the time being. As, however, a situation similar to that of 1935-36 may arise again in future, it is important that text-books on exchanges should not be dogmatic about the advantages of the existing practice.

(4) END-OF-MONTH DEALINGS

It was pointed out in the last chapter that in the early post-war period the bulk of forward dealing, not only on the Continent but also in London, was done for end-of-month delivery. This was in accordance with custom in continental centres, where financial activity is largely based on the practice of "ultimo" settlement, but was at variance with the requirements of trade, since payments in commerce are usually due in three calendar months, not necessarily at the end of the month. Moreover, several important markets—London and New York among others—were not accus-

tomed to operate for end-of-month. Gradually the Anglo-Saxon system, based on the requirements of trade, displaced the continental system, based on the requirements of speculation, Stock Exchange end-of-month settlements and window-dressing. There is still at times a relatively large volume of dealing at the end of the month, but this is not nearly as pronounced a feature of the market as it was in the past.

(5) LACK OF LONG FORWARD FACILITIES

At present by far the larger part of forward dealing—both swap and outright—is done for three months, although there is usually an active market also for one month and two months. Dealing for longer dates is a matter of negotiation, and it is not possible as a rule freely to obtain quotations beyond six months, though autumn requirements are occasionally covered in January. In this respect, the existing organisation is far from satisfactory, and has shown little or no sign of improvement since the early days of Forward Exchange dealing. Indeed, as we have seen in the historical section of this book, during the last decades of the nineteenth century there was a widespread practice of selling three-months bills forward for six months' delivery, which in reality involved an exchange risk for nine months. In certain centres such as Valparaiso, for instance, during the early part of this century sterling bills were dealt in freely for delivery up to twelve months, which, in the case of three-months bills, involved commitments running up to as much as fifteen months. Today it would be impossible to obtain quotations for such long periods, even as a matter of negotiation, and yet in existing circumstances the risk involved in such long forward transactions is certainly no larger than it was before the war in the case of such currencies as the Chilean peso, for instance.

From this point of view, banks are not nearly enterprising enough. They leave it to Lloyd's underwriters to cover the long risk on an insurance basis at clumsy and often prohibitive rates. In this respect the existing organisation and technique of the Forward Exchange market leave much to be desired. Unless the banks themselves see their way to develop a satisfactory forward market for periods up to twelve months or even longer, sooner or later the necessity for such facilities, and pressure on the part of the industrial and commercial interests concerned, may induce the

Government to enter the field. It may then be too late for bankers to complain—as they have done in the comparable case of the various activities of the Export Credits Guarantee department—at the “new encroachment of officialdom in the sphere of business.”

(6) DEALING IN SHORT DATES

There is an active market for dealing in very short dates, for a week or a few days, or even over a weekend. Beyond a week, dealings in odd dates—that is, dates other than one, two or three calendar months—is usually a matter of negotiation. Speculative dealing for very short periods became very popular at times during 1935-36 when the abnormally wide discount on French francs increased the cost of bear selling considerably. Rather than sell forward for three months, at a cost of 40 per cent per annum, or even for one month at a cost of 60 per cent per annum, speculators preferred to sell forward for a few days at a cost of something like 100 per cent per annum, since the real cost was obviously much lower in spite of its height as a percentage worked out on an annual basis.

Another quite common method which results at times from the prohibitive cost of selling forward is that of selling spot and covering before delivery is due—*i.e.* within two days. It is possible, however, to deal in exchanges for delivery on the next day or even on the same day instead of the customary two days. Usually a charge is made over the spot rate. This charge varies according to supply and demand, and at times it is by no means easy at short notice to find a counterpart for such operations. Nevertheless, the high cost of dealing in Forward Exchange drove much speculation into that market during 1935 and 1936. Nor is the practice altogether new. It was even adopted to some extent in 1924, in the course of the speculative campaign against the franc. The factors affecting the rates for these operations have never been subjected to close study by practical writers on exchanges. Indeed, the premium or discount in question has not even been given a name. It may be conveniently referred to as the “negative forward rate”, since it is charged on Foreign Exchange to be delivered before the normal spot delivery.

(7) SHORT AGAINST LONG FORWARD DEALING

There is much dealing in one forward date against another, especially in connection with time arbitrage. This type of dealing

will be discussed in detail in Chapters XV and XXVI. Banks often quote their customers rates for Forward Exchange to be delivered not at a fixed date but during a certain period at the customer's option.¹ In the market itself, however, all dealing is done for definite dates. On various occasions in the past attempts have been made to initiate "put and call" dealings in Forward Exchanges, but at present no Foreign Exchange market undertakes such operations, nor is it in any way desirable that the practice should be adopted.

We have seen above that the Foreign Exchange market deals in swap operations in preference to outright forward operations. Similarly, on active days the market prefers to deal in spot exchange rather than in swaps. On very animated days the market for a while "forgets" the forward rates which thus remain practically unchanged in relation to the spot rates, and it is the latter that are affected by the buying or selling pressure. It is only subsequently, when the commitments created by spot dealing are adjusted, that the effect of the movement is spread from the spot to the Forward Exchange. As we have already noted, it is a standing rule that dealers of well-established banks should not keep open position overnight, but they are allowed a free hand to create open positions in the course of the day, provided that they are covered before closing time. Thanks to this arrangement, dealers are enabled to concentrate upon dealing in spot exchanges during the most active hours of the day, taking, nevertheless, good care not to contract very large open positions, for these might be difficult to cover at reasonable rates towards closing time. Thus, contrary to a belief that is held widely among the public, at times of violent exchange movement the volume of spot transactions is usually much in excess of the volume of forward transactions. It is during periods of comparative inactivity and more especially during periods when violent exchange movements are anticipated, but before they actually materialise, that the volume of Forward Exchange transactions is large.

(8) NOSTRO ACCOUNTS

Overdraft facilities abroad are a great assistance to Foreign Exchange dealers. In their absence they would have to be ex-

¹ The somewhat involved rules according to which such operations, and also operations for broken dates, are covered by banks are described in detail by Mr. Evitt and other practical writers on exchanges.

ceptionally cautious not to be short in any exchange in order to avoid being at the mercy of the market. Thanks to overdraft facilities with correspondents abroad, dealers have an alternative way of covering short positions. The *nostro* accounts for employing foreign currencies acquired in the course of their dealing are often arranged on a basis of reciprocity between banks in different countries, with the rates allowed on balances and charged on overdrafts either fixed until further notice or variable in relation to the bank rate. By means of these accounts, it would be possible, in theory at any rate, to avoid Forward Exchange dealings altogether, for every forward transaction between a bank and its client could be covered by increasing or reducing the balance or overdraft on the *nostro* account. In practice, however, banks are not keen on accumulating large balances on such accounts, and still less keen to overdraw them. The yield on balances on *nostro* accounts is naturally very low and compares unfavourably with the yield on other short-term investments. Banks do not like to carry larger balances than are absolutely necessary. They have to carry certain minimum balances to keep the accounts alive, but they always endeavour to keep those balances as low as possible, especially during periods when they are exposed to exchange restrictions. They have even more reason to avoid overdrawing their *nostro* accounts. For one thing, the interest charged on such overdrafts is usually two or three per cent higher than that allowed on balances, and forward currencies must be quite considerably undervalued compared with their Interest Parities before it becomes a paying proposition to overdraw *nostro* accounts in preference to covering by means of selling Forward Exchange. At times it is necessary to make use of these facilities for short periods, but banks are always anxious to clear such overdrafts by the earliest possible moment. One of the reasons why they are very anxious to avoid overdrawing is that to do so may imply, to some extent, reciprocity; and to allow their correspondents, in their turn, to overdraw their *nostro* accounts is not always convenient, especially during a troubled period when some of the names may not be considered so good as they had previously been deemed. It should not be imagined, moreover, that overdrawing arrangements on *nostro* account are necessarily reciprocal, or that they can be used automatically. In practically every instance an overdraft has to be specially applied for, which is an additional reason why bankers are reluctant to make use of the facilities.

(9) DEALERS' FREEDOM OF ACTION

As a rule, Foreign Exchange departments are allowed a reasonably free hand in their operations provided that they do not keep open positions overnight. In many cases they are allotted a working capital, on which their head office charges interest at a rate usually slightly above the current rate for bills or deposits. The assumption is that, unless Foreign Exchange departments are able to earn more than the bank would be able to obtain by simply investing its funds in fine bills or placing them on deposit, they do not earn their keep. The Foreign Exchange departments are allowed a free hand, within reason, to accept deposits from, or to place deposits with, their foreign correspondents as a matter of daily routine. If they have more funds than they can use profitably in their department, they place them on deposit with their head office, which allows them interest on it, while if they are short of funds they can borrow from head office, which charges interest on these loans. There is, of course, a material difference between the interest on debit and credit balances. The interest charged and allowed by the head office influences the attitude of the Foreign Exchange department towards the opportunities of interest arbitrage, especially if their funds are fully employed.

The system provides channels through which international credits are contracted in addition to those arranged between banks for definite periods and for definite purposes. Through their freedom of action to undertake swap-and-deposit transactions, Foreign Exchange departments are in a position to grant loans or to obtain loans from abroad. At times the volume of such operations is considerable, and becomes an important factor in the international balance of payments and also in the volume of international short-term indebtedness.

(10) INTEREST ARBITRAGE

The difference between interest rates prevailing in two centres, and more especially the discrepancy between Interest Parities and actual forward rates, provides wide scope for profitable Forward Exchange operations. Details of Interest Parities will be discussed in Chapter XVIII, but a technical description of the Forward Exchange market would not be complete without a reference to the fact that between two centres there is in practice not one Interest

Parity but several. Foreign Exchange dealers can work on the difference between deposit rates in two centres, or on the difference between discount rates, short loan rates, brokers' loan rates, etc. Occasionally interest rates of a different kind are used as a basis of Interest Parities. For instance, bill rates in London may be compared with Wall Street brokers' loans with bank guarantee, or deposit rates in London may be compared with the rate on promissory notes of first-class American industrial combines. In such instances there is no corresponding rate in London which can be used for comparison with the New-York rates, for British banks do not undertake to guarantee loans to brokers and leading British industrial combines do not circulate promissory notes. If the difference between the two interest rates concerned more or less corresponds to the forward rate, then there is no profit in undertaking interest arbitrage operations. In order to induce banks to transfer their funds abroad, to transfer them from one foreign centre to another, or even to repatriate their funds from abroad, it is necessary that there should be a margin of profit caused by a discrepancy between forward rates and their various Interest Parities. On this subject more will be said in Chapter XV.

(11) CURRENCIES WITH GOOD FORWARD MARKETS

The existence of a good Forward Exchange market presupposes a high degree of confidence in the banks of the centres concerned. For this reason the number of Forward Exchanges in which a good market exists is limited. (There are only three currencies which have a really satisfactory forward market—sterling, the dollar and the French franc.) The markets in forward guilders, Swiss francs and belgas are not so wide but work reasonably smoothly. In the past there were good markets in German marks, Italian lire and Spanish pesetas, but exchange restrictions imposed in the three countries have reduced forward dealing in those currencies to negligible proportions. There is a good market for forward Canadian dollars in New York, and to less extent in London. The sale and purchase of Scandinavian currencies for forward delivery is a matter of negotiation, but business can be transacted with reasonable ease. The same is true of the major South American currencies. Forward transactions in the minor European currencies are always a matter of negotiation. They have no free forward market, not even in Paris or Zürich, where the spot currencies of

the countries of Central and Eastern Europe have a better market than in London. This does not mean that these countries are practically deprived of Forward Exchange facilities, for while Roumanian lei, for instance, never had a forward market in London, before the imposition of exchange restrictions sterling had a reasonably active forward market in Roumania. It may be said that the three principal currencies have a good forward market in every part of the world.

Apart from the Canadian dollar and to a less extent the Indian rupee, there is no forward market in Empire currencies. The South African, Australian and New Zealand pound are managed by rings of the banks of the Dominions concerned, and they quote for forward delivery, but there is no open market. When at times of adverse pressure such as occurred in the Australian pound in 1930-31, or in the South African pound towards the end of 1932, an outside market developed, there were also unofficial forward quotations, whose level reflected the pessimism concerning the future of the currencies. There is a limited forward market in Far Eastern currencies. The forward market in yen is largely in the hands of the official Yokohama Specie Bank.

(12) THE LEADING FORWARD MARKETS

(In all probability, London is at present the leading market for Forward Exchanges. Paris is a good market, too, though official interference with Foreign Exchange business during 1936 crippled her freedom for a while.) New York's geographical position and the difference between her business hours and those of the leading European markets prevent her from developing a Forward Exchange market comparable with that of either London or Paris. Within relatively modest dimensions, Amsterdam and the Swiss centres, especially Zürich, Basle and Geneva, have good Forward Exchange markets, though Switzerland came for a while under a cloud as a result of exchange restrictions. Apart from these markets, and Brussels, there are at the time of writing hardly any Forward Exchange markets of truly international significance. As we have already seen, there are local markets in the leading currencies for forward delivery in almost every country which has no exchange restrictions, but these markets are to a large degree self-contained and the counterpart for buying or selling orders has to be found locally. In any case, most of these markets have been

killed by exchange restrictions, which also killed the Berlin forward market, at one time one of the most active markets in Europe, and the Milan forward market, which was never altogether free from official supervision and was not, therefore, as active as those of the other Western European centres.

Having given an idea of how the Forward Exchange market works, we must now analyse in detail the sources of its supply and demand. This will be done in the following chapters, which will attempt to examine Forward Exchange transactions according to the purpose they serve.

CHAPTER XII

TRADE AND FORWARD EXCHANGE

(1) FORWARD FACILITIES AND THEIR USE

THE buying and selling of Forward Exchanges on commercial account, as we remarked in Chapter X, provides the "bread and butter" of the Forward Exchange market. At the same time commercial transactions provide the main justification for its existence. Even those who are hostile to the Forward Exchange system have to admit, however grudgingly, that it provides a useful and essential means for importers and exporters to cover themselves against the exchange risk. In dealing with the relations between trade and Forward Exchange, the following questions arise :

1. How far is the Forward Exchange market capable of providing the facilities for trade to safeguard itself against losses arising from exchange fluctuations ?
2. How far do merchants engaged in import and export trade avail themselves of these facilities ?

A third question—that of the reciprocal effect between trade balances and forward rates—lies in the realm of theory rather than of practice ; it is thus deferred to the theoretical section of this book.

(2) LIMITATIONS OF FACILITIES

The extent to which Forward Exchange operations can provide safeguards against exchange fluctuations has been subject to much discussion in the post-war literature on Forward Exchange. In particular, German financial literature during the years of inflation contained much material on the subject¹—for obvious reasons. The limitations of Forward Exchange as a means of securing legitimate

¹ See Dr. Joachim Vogel, *Das Devisentermingeschäft*, pp. 53-56 ; Dr. C. A. Fischer, *Das Devisentermingeschäft*, pp. 15-21 ; K. Schmalz, *Das Valutarisiko im deutschen Wirtschaftsleben und seine Bekämpfung* (Stuttgart, 1921) ; Paul Ostertag, *Die Deckung der Valutarisiken in Warenhandel* (Berlin, 1924).

interests against exchange risk had from the very outset been emphasised by those who were anxious to demonstrate the essentially speculative character of Forward Exchange transactions, but those limitations were recognised even by those who have taken a favourable view of Forward Exchange. Mr. Keynes pointed out¹ that it was important not to exaggerate the extent to which merchants, at the time at which he wrote, were able to protect themselves from risk by means of forward operations.

“It is not clear”, he states, “that even the banks themselves have yet learnt to look on the provision for their clients of such facilities, at fair and reasonable rates, as one of the most useful services they can offer.” This remark, which was only too true in 1922 and thereabouts, no longer holds good. In the meantime, Forward Exchange business, for periods up to three months at any rate, has been taken up by all banks dealing in exchanges, and competition has reduced the margin of profit on such dealings with merchants to very reasonable proportions. On the other hand, Mr. Keynes’s remark that “it is only in certain of the leading exchanges that these transactions can be carried out at a reasonable charge” still holds good, though to a less extent than in 1922. The existing Forward Exchange facilities do not enable British exporters to quote in Bulgarian levas or Siamese ticals. This shortcoming could—and in my opinion should—be remedied by official arrangement. There are, however, shortcomings inherent in the system which no official intervention can remedy.

(3) DUAL EFFECT OF EXCHANGE FLUCTUATIONS

(Exchange fluctuations can affect merchants in two different ways, namely, through bringing about a change in the amount payable or receivable in terms of their own currency, and through bringing about a change in the prices in terms of the national currency of the commodities imported or exported.) By means of Forward Exchange transactions, merchants are in a position to cover themselves against the direct exchange risk. That is, the British merchant, if he is to receive or to pay at a future date a definite amount of foreign currency, can fix the exact amount he will receive or pay in terms of sterling. He is, however, exposed to the risk that in the meantime changes in the exchange rate may materially alter the sterling value of the commodities in question. This especially

¹ *A Tract on Monetary Reform*, pp. 121-122.

concerns import trade, though even export trade is not altogether free from the indirect exchange risk, especially in countries whose currencies are susceptible to very wide exchange fluctuations, for these inevitably react upon the internal price level. Thus at the time of the wide fluctuations of the dollar during 1933 it was risky for American exporters to sell commodities for future delivery even if they covered themselves against the exchange risk by selling sterling forward, for the simple reason that a further depreciation of the dollar might have been accompanied by a sharp rise in commodity prices in terms of dollars by the time the commodity contract matured.

(There is another shortcoming inherent in the Forward Exchange system from the merchant's point of view. When the speculative anticipation of a fall of a foreign currency results in a very wide discount on the Forward Exchange the cost of covering the exchange risk on goods exported to that country becomes rather high.) (At times it becomes practically prohibitive, so that many exporters prefer to take the exchange risk rather than cover it.) And since covering is by no means compulsory, those who choose not to cover are in a position to undersell their more conservative competitors who prefer to pay the high cost rather than expose themselves to exchange risk.

These considerations operate to an even higher degree in import trade. In the case of exporters the optional character of covering may mean no more than the loss of business for conservative firms. In the case of import trade, it may inflict actual financial losses on conservative merchants, who, having imported goods with the exchange risk covered at a high cost, find themselves unable to sell without a loss owing to the lower prices quoted by less conservative importers who did not cover the exchange risk.

(4) IMPORTERS' DILEMMA

A much more important consideration from the point of view of importers is the possible effect of exchange fluctuations upon the price of their commodities expressed in terms of their national currencies. If a British merchant imports commodities from the United States, the fact that he secures the dollars required for the settlement of the purchase price does not safeguard him against heavy loss arising from an appreciation of sterling accompanied by a fall in the sterling price of the American products. Admittedly,

he also stands to benefit from a depreciation of sterling through its effect upon the sterling price of these products, but the possibility that exchange fluctuations may affect the price of his commodity in either direction attaches to his business an undesirable speculative character. Needless to say, in the case of some major commodities such as wheat, cotton, etc., which possess a forward market of their own, it is possible for holders of stock to safeguard themselves against the risk of a fall in the price. There are, however, innumerable commodities which have no forward market. In that case, the importers are confronted with the choice of risking a depreciation of the exchange or of risking a fall in the sterling value of their commodity caused by an appreciation of the exchange. In other words, they can either cover the exchange risk itself or they can hedge against the risk that exchange fluctuations may affect the price of their commodity. °

Let us take a concrete example. A British importer of Californian canned fruit has to make payment in dollars three months after his purchase is concluded. If he buys dollars for delivery in three months he will fix the sterling amount he will have to pay. Should sterling depreciate in the meantime he will nevertheless pay the same amount of sterling, and would make a profit on the rise in the sterling price of the canned fruit caused by the depreciation of sterling. Should sterling, on the other hand, appreciate, he will not enjoy the benefit of it, having fixed the sterling-dollar rate in advance, while he would stand to lose through the fall in the sterling price of canned fruit caused by the appreciation of sterling. If on the other hand he should choose to leave the sterling-dollar rate uncovered, then his loss or profit on a change in the sterling-dollar rate during the three months would be to a large extent offset by the effect of the changed exchange rate upon the sterling price of canned fruit. An importer who carries stocks is exposed to the indirect effect of exchange fluctuations upon the sterling value of his whole stock, although he is in a position to hedge against that risk by going short in dollars to the amount of his stock.

(5) INADEQUATE SAFEGUARD

In either case the importer is confronted with the problem of whether or not to cover. He is not in a position to eliminate both direct and indirect exchange risk altogether, for the simple reason that the effect of a change in the exchange rate upon the price of

his imported commodities is not necessarily proportionate to the change. If an appreciation or depreciation of dollars in terms of sterling by 10 per cent necessarily meant a rise or fall of the imported commodities to an exactly corresponding extent, the matter would be relatively simple. Even then the importer would have to consider whether the dollar is likely to appreciate or depreciate, for while he is in a position to safeguard himself against loss by hedging against the indirect effect of exchange movements, in doing so he also relinquishes the possible profit on the transaction arising through exchange fluctuations. He may thus place himself at a disadvantage compared with a less conservative rival should the latter's anticipation of exchange movements prove correct. But, to complicate matters, the changes in the prices of most imported commodities are not exactly proportionate to the fluctuations of exchange rates. Thus, even a conservative merchant is not in a position to cover himself fully against the direct effect of the exchange movements, for the simple reason that he is not in a position to foresee the exact extent of that effect. If he hedges against a depreciation of the dollar by selling dollars forward, and if a depreciation of 10 per cent is accompanied by a fall in the sterling price of his imported commodities by 5 per cent only, then he stands to make an unexpected profit. If, however, the dollar should appreciate by 10 per cent, and if this should provoke a rise in the sterling price of the commodity by 5 per cent only, then he stands to lose, for his loss on the exchange is offset only in part by his additional profit on the commodity.

It is thus evident that the existence of Forward Exchange facilities, however freely accessible and cheap they may be, does not altogether remove the exchange risk attached to foreign trade during periods of fluctuating currencies. In insisting upon this point, the memorandum compiled by Mr. A. A. van Sandick,¹ and published by the International Chamber of Commerce, with the object of making out a strong case in favour of early stabilisation, is really flogging a dead horse. Nobody, not even the most enthusiastic advocate of the Forward Exchange system, has ever claimed that it eliminated for importers and exporters every kind of risk and inconvenience. The memorandum in question would

¹ A. A. van Sandick, *Memorandum on the Technique of the Forward Exchange Market and the Elimination of Uncertainty*. Published by the Joint Committee of the Carnegie Endowment and the International Chamber of Commerce in a volume on "The Improvement of Commercial Relations between Nations—The Problem of Monetary Stabilisation" (Paris, 1936), p. 303.

have rendered a more useful service if it had examined in greater detail the possibilities of the improvement of Forward Exchange facilities. While the fundamental shortcomings of the system are unalterable, there is ample scope for improvement. This question will be discussed when we deal with the rôle of Central Banks in regard to Forward Exchange, especially in Chapters XXXIV and XLI.

(6) COVERING LONG COMMITMENTS

Another shortcoming of the existing system of Forward Exchange is the limitation of the period for which it is possible to cover. As, however, payments for normal commodity transactions in foreign trade are usually due within three months, the deficiency affects foreign trade to a relatively small degree only. Long-term engineering credits are the most important contracts affected by this deficiency of the system. Traders with longer commitments than three months are in a position to cover themselves for three months and arrange for an extension for a further three months at maturity. In doing so, they can safeguard themselves against any fluctuation of the spot rate. On the other hand, they are exposed to an increase in the cost of covering the Forward Exchange when their contract is to be renewed. It is for this reason that this arrangement cannot be applied successfully for long-term engineering contracts where it would be necessary to renew the forward contract a number of times. The expense involved might easily convert the prospective profit into a loss. When, however, the period to be covered is not unduly long, so that it would not be necessary to renew the contract more than once or twice, this risk is in most cases not prohibitive. There is, however, another risk—that it may be impossible to renew the forward contract on maturity, owing to the adoption of exchange restrictions in the meantime. Should such a situation arise, merchants would have no choice but to buy in or sell out and their position would thus become uncovered.

Merchants are also often faced with the unpleasant necessity of having to renew their forward contracts because the commodity transaction for which payment was to be made has not been completed for the time anticipated, or because payment has not been received on the date on which it was due. The possibility of such a situation, which indeed occurs fairly frequently, constitutes an important defect of the Forward Exchange system from the merchant's

point of view, though to some extent it can be remedied by making the date of the delivery optional. Thus the merchant, instead of buying or selling Foreign Exchange for delivery on a fixed date, can arrange to buy or sell for delivery in the course of a certain month. Needless to say, such facilities are more costly than ordinary Forward Exchange facilities for fixed dates.

We have seen that Forward Exchange operations arising from trade can be divided into two categories: those undertaken to cover the exchange risk proper and those undertaken for hedging against the indirect risk. As we pointed out above, the difference between covering the exchange risk and hedging is that in the case of the former the safeguarding measure is taken against direct loss from exchange movements, while in the case of the latter it is taken against indirect effects of exchange movements. A. C. Whitaker's definition¹ of hedging is worth quoting: "A hedge is a speculation of such character that when added to another, prior and more important speculation the element of risk in the latter is either eliminated or reduced".

(7) MERCHANTS' ATTITUDE DURING STABILITY

Having examined the Forward Exchange facilities available for the requirements of trade, let us now examine the extent to which merchants make use of these facilities. (This depends upon the following factors:

1. The degree of uncertainty about future exchange movements.
2. The possible loss or profit on uncovered exchanges.
3. The cost of covering.
4. The margin of profit in the various branches of trade.
5. The temperament, speculative or otherwise, of the merchant.)

During periods of stability the extent to which merchants cover exchange risk tends to decline. Indeed, even during a temporary period of relative stability such as that experienced in 1935, the Forward Exchange transactions on commercial account tend to contract. Nevertheless, even in conditions of stable exchanges there is a great deal of covering against exchange risk by merchants. Under the gold standard the range of exchange fluctuations is usually 1 per cent or less, but merchants trading on a large scale in staple commodities may find it advantageous to make use of Forward Exchange facilities even for the sake of safeguarding

¹ A. C. Whitaker, *Foreign Exchanges* (New York, 1920), p. 382.

themselves against such narrow movements. In particular, when seasonal movements can be foreseen with a reasonable degree of probability—as they can be, for example, in the sterling-dollar rate during crop movements—merchants make it a rule to cover their exchange in advance. This is especially true of merchants engaged in trade in staple produce, where margins of profit for intermediaries are so narrow as to make it advisable for a merchant to take steps to avoid a loss of even 1 per cent. Very often, moreover, currencies on a gold basis are of doubtful stability, in which case cautious merchants make it a rule to cover their exchange risk.

(8) PERIODS OF INSTABILITY

Under conditions of fluctuating exchanges it is a matter of elementary prudence for merchants to safeguard themselves. Apart altogether from covering the exchange risk, in many cases it is advisable for them to undertake hedging operations, which are practically unknown in conditions of stable exchanges. If no adequate Forward Exchange facilities are available, or if the cost of covering the risk is excessive, and absorbs the profit on the transaction, then all but the speculative type of merchants prefer to forgo the deal rather than run the risk. This is the reason why those in favour of immediate stabilisation argue that the instability of exchanges since 1931 has been largely responsible for the contraction of the volume of foreign trade.

Without going into the arguments for and against stabilisation, it is necessary to point out that this stabilisationist argument is grossly exaggerated. While some business must undoubtedly have been lost through lack of Forward Exchange facilities, this loss must be a mere fraction of the total decline in the volume of foreign trade due to the general contraction of purchasing power, trade and exchange restrictions, etc. It ought also to be borne in mind that while in some instances the wide discount on the Forward Exchange may make the cost of covering the risk prohibitive, that same wide discount is calculated to stimulate other foreign trade transactions. In this sphere one man's poison is very often another man's meat. For instance, the wide discount on forward francs during 1935-36 might on the one hand have increased the difficulty of selling goods to France in terms of francs, but on the other hand it stimulated the sale of French goods in terms of foreign currencies,

for French exporters obtained the benefit of the premium on forward currencies.

(9) PROSPECTS AND COST OF COVERING

It is only merchants of the most conservative type who make it a standing rule to cover the exchange risk during periods of unstable currency irrespective of the actual outlook of the moment. Many merchants are inclined to take a view as to whether there is any likelihood that the exchange may move against them within the next three months, or whether there is any chance that it may move in their favour. When the balance of probability is against an adverse change, then they may decide to leave the exchange risk uncovered.

Much depends also upon the cost of covering the exchange, which is of course compared with the normal degree of the risk involved and with the margin of profit available for covering the risk. Generally speaking, margins of profit have declined during the years of deflation that followed 1931, and this has tended to encourage the covering of exchange risk even in instances where the degree of the risk is not pronounced. Needless to say, the decision whether or not to cover largely depends on the individual temperament of the firms in question. Their degree of willingness to take a risk varies widely.

(10) MR. HENRY FORD'S OBJECTION TO FORWARD EXCHANGE

One thing is certain. While during the post-war period of exchange fluctuations there were in every country many merchants who were unaware of the existence of facilities for covering the exchange risk, today it may be said that everybody engaged in foreign trade in the civilised countries is aware of the existence of such facilities. The belief that it is speculative for merchants to carry out Forward Exchange operations has also lost ground in business circles, where it is now realised that, on the contrary, it is the omission to cover the exchange risk that is speculative. Admittedly there are still a few old-fashioned firms everywhere who prefer to run the risk or forgo the business rather than have anything to do with Forward Exchange. Mr. Henry Ford is the representative example of this type of business man. He has made it a standing rule that none of the firms belonging to his world-wide combine should ever sign a Forward Exchange contract. (His ex-

planation is that, having assets and liabilities in practically every currency, the chances are that in the long run the loss suffered through the depreciation of one currency is offset by the profit made in the appreciation of another. Besides, Mr. Ford is not prepared "to pay tribute to international banking". Such cases are, however, rare exceptions.) Most merchants concerned with foreign trade are not prevented either by ignorance or by considerations of principle from availing themselves of Forward Exchange facilities.

(11) INVISIBLE TRADE

Hitherto we have been dealing with Forward Exchange operations connected with visible trade, which unquestionably form the predominant majority of commercial Forward Exchange operations. A certain amount of Forward Exchange business originates, however, also through invisible trade. Shipping freight, and other transport costs, are usually covered whenever the purchase price of the commodities themselves is covered. The shipping companies themselves often cover their anticipated outlays in foreign ports, and their receipts in foreign currencies. Insurance premiums are covered by holders of policies in foreign currencies only when the amounts involved are very large. Although the acquisition of balances by insurance companies operating abroad involves spot transactions, it very often leads to forward transactions when the amounts thus acquired are employed in interest arbitrage by means of swap operations. Only a very small percentage of tourist spendings is covered against exchange risk. The yield on foreign investment is practically never covered by the creditors against exchange risk. On the other hand, Government and other debtors and companies having to pay interest or dividends in foreign currencies often make it a practice to buy exchange for forward delivery when they expect an adverse movement or when the Forward Exchange of the creditor country is at a discount.

Before closing this chapter it is necessary to point out that foreign trade gives rise to Forward Exchange transactions whether it is financed by book credits, acceptance credits or other methods. The reason why it is well to emphasise this obvious truth lies in the fact that theoretical economists do not as a rule realise that acceptance credits are also covered by means of Forward Exchange transactions. This oversight on the part of the theorists has led to a rather one-sided development of the Interest Parity theory

which will be dealt with in the theoretical section of this book. Here it is sufficient to note the fact that acceptance credits can and do give rise to a large volume of Forward Exchange business. Indeed, centres which practise the granting of acceptance credits on a large scale are at an advantage from the point of view of their Forward Exchange markets compared with centres where no such facilities exist in large degree, for the regular covering of a large amount of acceptance credits secures a steady flow of business to their Forward Exchange market.

CHAPTER XIII

FOREIGN INVESTMENT AND FORWARD EXCHANGE

(1) PRACTICE BEFORE AND AFTER 1931

(WHILE the bulk of non-speculative and non-arbitrage Forward Exchange business originates from trade, the amount originating from investment abroad is by no means negligible. Its proportion to the total turnover has increased considerably during recent years. The practice of hedging against the exchange risk on foreign investments has become popular only comparatively recently, but other Forward Exchange transactions arising from investment abroad have been known for many years.) We have seen in the previous chapter that some foreign debtors cover their interest and sinking fund requirements in foreign currencies by means of forward purchases. Also in some instances borrowers who leave part of the proceeds of their loans on deposit in the lending country will cover the Forward Exchange whenever it suits their purpose to do so. Even though they do not distrust the currency of their creditors, a forward discount on their own currency may make it worth their while to repatriate the balance by means of forward rather than spot operations.

(It is only since 1931 that the covering of exchange risks on investments abroad on the part of creditors or investors has become a widespread practice.) It comes under the heading of hedging, for one speculative risk is deliberately undertaken in order to counteract another speculative risk. Thus the British holder of French securities sells franc short, thereby assuming a speculative risk, in order to avoid running the risk of a depreciation of his securities in terms of sterling through a depreciation of the franc.

(2) YIELD *v.* CAPITAL APPRECIATION

Holders of securities in terms of a foreign currency could, of course, avoid the risk by simply liquidating their holdings and re-

patriating their capital. Very often, however, this is impossible. The securities in question may be unsaleable ; it may be impossible to liquidate them without taking a heavy capital loss ; for various reasons, legal or otherwise, it may be necessary to maintain a certain amount in the currency of the country concerned ; the yield obtained may be very attractive ; or, last but by no means least, there may be prospects of good capital appreciation in the local market.

Take, for instance, the case of French *rentes*. The French Government is a good debtor, and the yield of 5 or 6 per cent on its securities during 1935-36 was very attractive indeed. Few foreign holders, however, were prepared, simply for the sake of that yield, to run the risk of a capital depreciation of 25 per cent or more through the expected devaluation of the franc. Since the cost of hedging was usually at the rate of at least 15 per cent per annum, it would not have been a paying proposition on a yield basis alone for foreign holders to keep French *rentes* as an investment with the exchange risk covered. There seemed to be, however, prospects of capital appreciation in addition to the high yield. It was widely assumed that after an adequate degree of devaluation there would be a spectacular recovery in *rentes*. Though it was not considered likely that in itself this capital appreciation would compensate foreign holders for their loss on the exchange, by hedging against the depreciation of the franc they expected to gain the full capital appreciation through the rise of *rentes* without suffering a loss through the fall of the franc. Such operations were effected on a very large scale, especially at times when the devaluation of the franc appeared to be imminent.

(3) ATTITUDE TOWARDS DOLLAR SECURITIES

The practice of hedging against the exchange risk on dollar securities held abroad was not nearly so prevalent during 1935-36 as it was during 1933-34. During the period of uncertainty regarding the fate of the dollar, speculators and investors in foreign countries were anxious to take advantage of the prospective rise in Wall Street, but they were equally anxious to avoid loss through a further depreciation of the dollar. After the dollar had been kept stable for over a year, however, holders of dollar securities no longer considered it necessary to guard themselves against the possibility of a depreciation of the exchange. In the course of 1935 most

British holders removed the hedge, leaving the dollars uncovered. This practice was continued during 1936, notwithstanding the fact that dollars depreciated in terms of sterling by some 3 per cent and that the small premium on forward dollars would have made it slightly profitable to cover the exchange risk. Once the sterling-dollar rate had risen above 5.00, most British holders of dollar securities preferred to leave the exchange uncovered, for it was taken for granted that the definite rate of stabilisation of the sterling-dollar rate would be at 5.00 or under, but certainly not over. If investors intended to hold their dollar securities for a long period, hedging did not appear to be necessary. As for speculators, they did not consider it necessary to worry about the relatively narrow movements of the sterling-dollar rate, considering that the fluctuations in the price of stocks in Wall Street were many times wider.

(4) HEDGING BY OWNERS OF PROPERTY ABROAD

The practice of hedging is by no means confined to foreign securities. Holders of other kinds of property abroad have also formed the habit of safeguarding themselves against the risk of depreciation through a fall in the exchange. In particular, banks, and industrial and commercial undertakings with branches or subsidiary companies abroad, have been anxious to safeguard themselves by means of hedging. Admittedly, the value of their property in terms of the national currency in question stands to rise through a depreciation of those currencies, but in most cases the rise would not nearly correspond to the depreciation. If the capital invested is covered to its full value, then the firms in question stand to make a profit on the depreciation of the currency. On the other hand, if they do not cover the risk, then they may suffer considerable loss. To avoid this, throughout the greater part of 1935 and 1936, many holders of property abroad hedged through the forward market, thereby incurring heavy expense. In the case of the franc in particular, the cost of continuous hedging during 1935 and 1936 must in some instances have been almost equal to the probable net capital loss through devaluation.

Many firms, however, kept the cost of hedging comparatively low by hedging indirectly through operations in Dutch guilders or Swiss francs instead of in French francs, as the discount on those currencies was much narrower than that on the French franc. The assumption was that if the French franc depreciated, the other

currencies of the Gold Bloc would also fall. Such indirect hedging entailed two-fold risk. There was clearly a possibility—though not a probability—that an interval of several days, or even weeks, might have elapsed between devaluation in France on the one hand and in Switzerland and Holland on the other. During that interval the discount on forward Swiss francs and guilders would have become very wide indeed, and the market would have become “all sellers and no buyers”. It would have been fatal for those who had hedged against the depreciation of the French franc by selling forward Swiss francs and guilders if their forward contracts had matured during such an awkward interval. Moreover, it appeared possible, and even probable, that the percentage of devaluation in Switzerland and Holland would not be quite as large as in France. Although indirect hedging is thus not without its disadvantages, nevertheless, the possibility of such hedging in special circumstances should be borne in mind.

(5) HEDGING AND SPECULATION

A certain amount of hedging is done against commodities purchased in foreign markets. For instance, British buyers of rubber in Amsterdam during 1935–36 sold guilders forward to the amount of their commitment. Very often buyers of commodities for forward delivery adopted this practice. In the majority of these cases hedging was merely an excuse for speculative Forward Exchange operations. After all, it was reasonable to assume that the price of rubber in Amsterdam would to a very large degree adjust itself to the lower exchange value of the guilder, so that losses suffered by holders of such international commodities would be relatively small, if anything at all. Thus if they nevertheless hedged against the exchange risk, they stood to benefit by the depreciation of the guilder almost to its full extent.

There is an essential difference between hedging against international commodities or international Stock Exchange securities, and hedging against non-international assets, whether commodities, securities, real property or capital invested in subsidiary companies. Nobody can foresee even approximately the extent to which such assets would respond to a devaluation of the currency concerned. So far as real property is concerned, it might be a matter of years before their price rose at all, and conceivably it would never rise to an extent corresponding to the depreciation of the currency.

The elasticity of the prices of securities varies widely, but, except in international securities, the rise is likely to proceed slowly and to be much less than commensurate to the depreciation of the currency. In the case of international commodities, however, the chances are that the response to the depreciation of the currency will be instantaneous and almost complete.

(Admittedly it is very difficult to draw the line between hedging and speculation. It is all a question of degree. Those desirous of hedging against the exchange risk without attempting to make speculative profits sell Forward Exchange only up to a certain percentage of their foreign investments.) It is impossible to ascertain the precise percentage required to provide a perfect hedge, but it is possible to form a view in the case of each category of investments as to the degree to which their price is likely to respond to the depreciation of the currency. This estimate should be the basis for determining the proportion of the assets which should be covered by means of forward selling of the currency concerned. If this rule is followed, hedging loses its speculative character, provided of course that the estimate is made in good faith. By this method the cost of prolonged hedging can also be materially reduced. Many holders of foreign assets have actually adopted this course, though the majority either hedge against the full amount or not at all.

(6) DOES HEDGING ENCOURAGE INVESTMENT ABROAD ?

To what extent has the development of Forward Exchange facilities contributed to the increase of long-term investment abroad ? (It is necessary to distinguish between genuine investment and speculative or semi-speculative operations. The extent to which facilities for hedging have influenced the establishment of enterprises or the purchase of property abroad cannot be very large, though it is conceivable that in borderline cases the possibility of hedging against the exchange risk might prove the deciding factor.) The importance of this factor should not, however, be over-estimated. As the cost of hedging is at times prohibitive, and frequently exchange restrictions prevent hedging altogether, safeguards for foreign assets against exchange risk are far from perfect. While the existence of Forward Exchange facilities may lead many owners of property or enterprises abroad to abstain from liquidating their assets, it is probable that few people decide, simply because of the existence of those facilities, to increase their commitments of this

kind in foreign countries, except in cases where a quick capital appreciation is anticipated.

(The acquisition of foreign securities, as distinct from property, however, has been encouraged in no slight degree by the development of the practice of hedging. For the most part, however, the aim is capital appreciation and not high yield.) Even as far as speculative purchase of foreign securities is concerned, the extent to which investing abroad has been encouraged by hedging facilities should not be over-estimated. While it may have played an important part in 1935-36 in the countries of the Gold Bloc, in Wall Street it has played a subsidiary part. The possibilities of fluctuations in Wall Street appeared at times to be so wide that speculators regarded the exchange risk as a secondary consideration. They would cover it if they felt that there was likelihood of a depreciation of the dollar, but even if they were unable to cover in such a case, they would in all probability take a hand in a promising bull movement.

(Lending abroad, in the form of long-term investments through the issue of foreign loans in terms of the currency of the lending centre, is stimulated to a very slight degree by the system of Forward Exchange. Foreign borrowers are enabled to cover the next instalment of the interest and sinking fund service, but that is all they can do.)

(7) HEDGING AGAINST DOMESTIC ASSETS

(Hedging against depreciation of an exchange is undertaken not only by those possessing assets abroad but also by nationals of the country whose exchange appears to be in danger of depreciation. Residents in the countries of the Gold Bloc could safeguard themselves against risk of internal inflation by selling out their liquid assets and converting the proceeds into gold or foreign currency.) In many instances, however, they were unable or unwilling to sell out. In order to keep their cake and eat it, they sold the national currency forward on the assumption that in the event of its depreciation they would gain on this transaction what they would lose through depreciation of the value of the capital invested in their own country.

The borderline between hedging and speculation by the nationals of a country with a vulnerable currency is even more indistinct than it is between hedging and speculation by holders of assets abroad.

It is true that a depreciation of the currency is apt to inflict permanent loss upon the nationals of the country concerned, by depreciating their capital. This is especially true of capital invested in real property and in other assets whose prices are comparatively inelastic. In Germany the financial capital of the country was practically wiped out through the extreme depreciation of the mark in 1923. To hedge against such a possibility, or even against a moderate depreciation, is not necessarily speculation. On the other hand, the covering of assets by nationals against relatively moderate exchange depreciation has not the same justification as similar hedging operations undertaken by foreign residents. A foreign resident thinks in terms of his own national currency, and, what is more important as a rule, converts his foreign income into his own national currency. Thus he does not derive any direct benefit from the adjustment of the exchange of the foreign country to its equilibrium level. From the point of view of a British owner of real property in France, the devaluation of the franc by 30 per cent necessitates the writing-down of the assets by 30 per cent in terms of sterling for balance sheet purposes. From the point of view of a French owner of real property in France, the balance sheet value of the asset in terms of francs remains unaffected. Moreover, since the price of real property is not likely to respond to devaluation for a long time, its sale by a British owner would involve an actual sterling loss of nearly 30 per cent; nominally the French owner who sells his real property after the devaluation of the franc would suffer no loss at all and the extent of his real loss will be less than 30 per cent. For this reason what we have said above concerning the semi-speculative nature of hedging by holders of assets abroad holds good to an increased extent concerning hedging by the nationals of the country with a vulnerable currency.

CHAPTER XIV

COVERED AND UNCOVERED FOREIGN BALANCES

(1) AN OLD-ESTABLISHED PRACTICE

WHILE hedging against the exchange risk on investments and assets abroad is, generally speaking, of recent origin, the covering of short-term investments held abroad is probably as old as is the banks' practice of keeping short-term funds in foreign centres. We saw in Chapter V that even in the seventies and eighties of the last century Austrian and German banks were in the habit of holding funds abroad with the exchange risk covered by means of Forward Exchange transactions. But it is probable that even before the evolution of Forward Exchange facilities, such balances as were held abroad were covered by means of operations in bills.

From the point of view of the working of the Forward Exchange market, the covering of balances abroad is of much greater importance than the more recent practice of hedging against long-term assets abroad. These covering operations play a vital part in interest arbitrage, and are mainly responsible for the general tendency of Forward Exchange rates to adjust themselves to their Interest Parities, as will be seen in the theoretical section of this book.

(2) WHAT ARE FOREIGN BALANCES ?

As we explained in Chapter III, the term "foreign balances" is used in its broadest sense throughout this book. It includes not only current account credit balances proper but also banking deposits of every kind and funds invested in foreign commercial bills, treasury bills, etc. The criterion is simply whether these short-term investments, whatever their form may be, can be withdrawn at their face value within a few months—or, to be more definite, within not more than six months. The holders of these balances may be banks, Governments, Central Banks, private firms or individuals.

From our point of view, it is essential to (distinguish between covered and uncovered balances, that is, between balances with, and balances without, the exchange risk covered by means of forward sales of the currency concerned.) It is quite wrong to assume, as is sometimes done, that before the existence of the Forward Exchange market all foreign balances were uncovered, and it is equally wrong to assume that since its development all foreign balances are covered. We have seen already in the historical section of this book that the first part of this assumption is incorrect. The falsity of the second part becomes obvious if we try to analyse foreign balances according to their purpose. The following are the main categories of foreign balances :

1. Balances on *nostro* accounts of banks. These balances may represent the amount required by the normal day-to-day conduct of foreign business or they may represent amounts banks allow to accumulate abroad for the purpose of interest arbitrage.
2. Balances on the *loro* accounts of banks, that is foreign currency accounts held by banks on behalf of their customers.
3. Balances of foreign non-banking customers.
4. Foreign bill holdings.
5. Central Bank foreign exchange reserves.
6. Operating funds of Exchange Equalisation Accounts.

(3) CENTRAL BANK BALANCES UNCOVERED

For obvious reasons Central Bank foreign exchange reserves are not as a rule covered. (It has become an accepted rule that if the foreign currencies held by the Central Bank are sold forward they cannot be included in their metallic reserves.) We shall see in Chapter XXXVII that in 1924 the Austrian National Bank was persuaded by the League Finance Committee to exclude from its metallic reserve the Forward Exchanges acquired through swap operations. This interesting precedent may be said to have established a rule, rightly or wrongly, that it is only uncovered balances which can be regarded as Central Bank foreign exchange reserves. Apart from this, all other categories of balances may be either covered or uncovered according to their nature and according to circumstances. To answer the question as to the extent to which foreign balances are covered, it is necessary to distinguish between periods of stability and periods of fluctuating exchanges.

(4) BANKS' ATTITUDE DURING STABILITY AND INSTABILITY

During a period of stability, when the gold standard is established and is above suspicion, whether or not the banks cover their own balances depends upon whether the difference between interest rates prevailing in two centres outweighs the risk of the limited and moderate depreciation of the exchanges within their gold points. If the spot rate concerned is near gold export point, the balances are not covered unless the premium on the Forward Exchange makes a covering operation profitable. If the spot rate is at some distance from gold export point, then the balances are not covered if the difference between the spot rates and gold export point is smaller than the difference between interest rates, and if the cost of the covering would wipe out the benefit of investing the funds in the foreign centre.

Whether or not the difference between the spot rate and the gold point is wider than the difference between interest rates depends of course upon the period of the short-term investment in question. It may be worth while to risk an exchange depreciation of, say, half a point in order to earn the difference between the interest rates for a period of three months, but it may not be worth while to take such a risk for the sake of an investment for one month. If a three-months investment can stand the risk of an exchange depreciation by three-quarters of a point, a one-month investment can stand a depreciation by only one-quarter of a point. The calculation of the risk in conditions of stability is a matter of simple arithmetic. But it does not necessarily follow that dealers will cover every time it is arithmetically profitable to do so; nor is the converse necessarily true. They may take a view of the probable course of the exchange and may leave their balances uncovered on occasions when, on a strictly arithmetical basis, this would involve a speculative though limited risk, or they may cover the exchange when it suits them to do so even though the degree of the risk is well within the margin between interest rates.

(During periods of instability of currency, on the other hand, all conservative banks cover all their foreign balances, irrespective of considerations of cost and of profit prospects. At times, this is rather expensive and for this reason banks like to reduce to a minimum the balances they keep abroad on their own account for their current business requirements.) It is not generally realised

that the difference between the rate obtained by a bank in the market and the one it charges to its customers has to allow not only for the usual overhead charges but also for the cost of keeping such balances in foreign centres, irrespective of the cost of covering the exchange risk on them. Since big banks keep accounts with a number of correspondents in each centre, and since an account is not as a rule allowed to decline for long below a certain minimum, the amount of foreign balances held by the big banks, and the cost of covering the exchange risk on them, is by no means inconsiderable. In many instances exchange restrictions, or the absence of adequate Forward Exchange facilities, prevent them altogether from covering the exchange risk, in which case the net depreciation on such balances has to be added to the cost of keeping an adequate number of foreign accounts alive. (Apart from such instances, it is only banks of a speculative type that leave balances uncovered overnight during periods of monetary instability. This is also true concerning foreign bill holdings of banks.)

(5) BALANCES OF NON-BANKING HOLDERS

The balances kept by non-banking customers, whether direct balances or balances carried through the intermediary of the banks of their own country, are for the most part uncovered, both in periods of stability and in periods of fluctuating exchanges. In many instances these balances are maintained for some definite purpose, such as the premium reserve of insurance companies operating abroad, or as various legal reserves. Such balances are by their very nature uncovered.

There are also large amounts of refugee funds of every kind. Even during periods of stability there are many reasons for which the people of one country may prefer to keep balances abroad. Even before the war it was the general practice among the wealthy classes in Russia to keep balances in London or Paris for fear of a revolution. (Since the war, political motives, whether fear of revolution or fear of a war, have induced a very large number of people in many countries to keep balances in foreign centres. The desire to escape high taxation is another motive which, especially since the increase of direct taxation after the war, has been responsible for the transfer abroad of large balances from practically every country. Distrust in the solvency of the local banks or the Government is yet another cause of transfer of balances abroad. Above

all, since the war fear of a depreciation of the national currency has given rise to the transfer of huge amounts of "funk money" from one centre to another. When the motive for the transfer of balances abroad is flight from taxation or distrust in the solvency of banks and Government, then if the holders trust the national currency they may prefer to cover the exchange risk, but frequently distrust in the Government and banks implies distrust in the currency. On the other hand, if the flight of capital is due to fear of internal or external political troubles or of currency depreciation, then of course the balances are left uncovered.)

(6) BALANCES OF EXCHANGE EQUALISATION ACCOUNTS

We have seen already that the balances kept abroad by Central Banks as part of their metallic reserves cannot by their very nature be covered. The question is, do Central Banks or Exchange Equalisation Accounts cover balances held abroad for other purposes? In many countries the foreign exchange holdings of Central Banks cannot legally form part of the metallic reserve. In those instances there is no longer any special reason why the holdings should not be covered.) Moreover, even in countries which keep part of their metallic reserve in the form of Foreign Exchange, the Central Banks usually hold additional foreign balances. Nevertheless, in the majority of these cases the balances are left uncovered, apart from any other reason, because of the strong dislike of Central Banks for Forward Exchange operations. As for the "fighting funds" of Exchange Equalisation Accounts, they are also uncovered as a rule, unless the authorities in question are engaged in forward operations, which, as we shall see in later sections of the book, is not often the case.

(7) PROPORTION OF COVERED BALANCES UNCERTAIN AND FLUCTUATING

There are certain balances which are always necessarily covered, and others which are always necessarily uncovered, but in many instances the decision whether or not to cover depends on the terms obtainable in the Forward market. Thus, if a Forward Exchange which has hitherto been at a discount goes to a premium, or even if the discount contracts, some holders may be inclined to cover their hitherto uncovered balances. This assumes, of course, that

other factors have remained the same. Again, if the forward rate remains the same, but there is a change in one or more of the other factors affecting the position of holders, such as relative interest rates, the prospects of the currency, or the relation of the spot rate to gold point, then holders revise their attitude towards covering their balances. The balances of a financially weaker country in the currency of a financially stronger country are usually uncovered, though since 1931 this rule does not necessarily hold good, as in recent years the world has experienced the depreciation of the currency of more than one financially strong country while those of some financially weak countries have been maintained at par.

Nobody knows what proportion of the foreign balances held in any centre is covered. Yet without such knowledge it is impossible to appreciate fully the significance of the data concerning foreign short-term assets in the various centres. In so far as foreign sterling balances are covered by forward sales of sterling and the ultimate buyers of the forward sterling are British residents, the actual net amount of the potential selling pressure represented by those balances is in reality smaller by that amount. If the ultimate buyer of forward sterling is a foreign resident the fact of the covering makes no difference to the amount of the potential selling pressure on sterling.

Continental balances in London up to 1931 were largely uncovered, while American balances were for the most part covered. This difference was due to the fact that most of the continental balances, transferred to London during the flight from various continental currencies, were left uncovered after the cause for the flight had ceased to exist. The balances of countries belonging to certain groups of currencies are not as a rule covered. For instance, in London, nationals of the countries of the Sterling Bloc, and more especially citizens of the British Dominions, do not cover their sterling balances.

(8) HOW BALANCES GIVE RISE TO FORWARD EXCHANGE TRANSACTIONS

(Forward Exchange facilities tend to make foreign balances more liquid, as they can be repatriated in case of sudden necessity, or for window-dressing purposes, with the knowledge that the risk of loss on the transaction will not be more than a certain amount known in advance.) Whether or not such balances are liquid from the

point of view of meeting unforeseen contingencies depends on the way in which they are employed. In this respect there is, of course, no difference between covered and uncovered balances. Admittedly at window-dressing dates, when many banks try to repatriate their foreign balances at the same time for one date, the cost of swap for such a short period becomes relatively high.

Covered balances give rise to a large volume of Forward Exchange transactions both under stable conditions and in periods of fluctuating currencies. Paradoxical as it may sound, uncovered balances also give rise to Forward Exchange transactions in given circumstances. Such balances can be used for swap operations whenever these are profitable. This was recognised even during the early post-war years by owners of German refugee funds abroad who, while wishing to safeguard themselves from the risk of the depreciation of the mark, also wanted to benefit by the high money rates prevailing in Germany. To that end they sold their spot sterling, dollars, francs, etc., and repurchased them for forward delivery, employing the funds in the meantime in the German money market at high interest rates. These operations were made possible because the forward mark was for a long time overvalued compared with its Interest Parities. Similar operations are undertaken by those who for some reason are under the necessity of keeping uncovered balances in countries whose Forward Exchanges are undervalued compared with their Interest Parities. For instance, British insurance companies keep their premium reserve on their French business in the form of franc balances. While it is essential for them that they should have a holding of francs to the amount of the probable franc claims that might arise, there is no reason why in the meantime they should not take advantage of the profit on the swap, a profit which during 1935-36 assumed abnormal proportions. Banks holding uncovered balances on *loro* accounts on behalf of their customers are also in a position to use these balances for swap transactions if their clients do not thus use them. By selling spot and repurchasing forward, they do not alter the exchange positions which they have to keep open on behalf of their customers, and should the latter require the foreign currencies before the swap transactions expire the banks are always in a position to undo the swap. Their only risk is that they might be compelled to undo the swap at a moment when the rates are particularly unfavourable to them; as a result they might lose more than the profit on the original swap.

(9) EFFECT OF FORWARD EXCHANGE FACILITIES ON THE VOLUME OF BALANCES

A question well worth considering is whether the development of facilities for covering balances has tended in itself to increase the volume of balances, or whether it has merely resulted in the covering of part of the volume of balances which would be kept abroad in any case? The answer is difficult, because, in the course of the slow evolution of the Forward Exchange market, the various factors that influence the volume of foreign balances have undergone considerable change. In any case, no statistics are available upon which conclusions can be based. (It seems probable, however, that while to some extent the development of Forward Exchange facilities has resulted in the covering of balances which might otherwise have been uncovered, to a much larger extent it has led to the increase of foreign balances.) In addition to the existing uncovered balances, most of which have remained uncovered, new types of foreign balances have arisen which, but for the facilities for covering the exchange risk, might not exist.

We shall see in Chapter XXIV how the development of Forward Exchange facilities tends to increase foreign balances by enabling the lending centre automatically to re-borrow what it lends. There are other ways in which Forward Exchange facilities tend to increase foreign balances. It was the development of a very active forward market that induced bankers after the war to open *nostro* accounts on an unprecedented scale, so as to be in a position to cope with current business requirements. The profit arising from swap transactions and interest arbitrage in general has also been an important factor in the creation of foreign balances. Apart from this, Forward Exchange facilities created a feeling of security, encouraging financial activity and leading to increased foreign short-term investment.

But for the possibility of covering the exchange risk, currency uncertainties would from time to time have led to a considerable contraction of foreign balances. This tendency of Forward Exchange facilities to mitigate the contraction of certain types of foreign balances has been especially evident since 1931, during a period when practically every currency has been under suspicion. The reasons why, notwithstanding the existence of forward facilities, balances were in many instances to a large extent withdrawn instead of being merely covered against exchange risk, lie partly

in the distrust in the solvency of banks and in the limitation of the extent to which names are accepted for Forward Exchange transactions, and partly in the fear of exchange restrictions.

(10) INADEQUATE STATISTICAL INFORMATION

During the last few years attempts have been made in various countries to ascertain the amount of foreign balances. In view of the importance of such information in the formulation of monetary policy, it is remarkable that before 1931 practically no attempt had been made to secure it. Even now, however, the information collected is grossly inadequate, partly because no attempt has been made to ascertain the extent to which foreign balances are covered. And yet, as we said before, from the viewpoint of the management of the country's monetary policy, it is of little use to know the total amount of foreign balances unless we know also how much of it is covered by forward sales. Admittedly it would not be easy to ascertain this, but there is no reason to suppose that it would be an impossible task. At any rate, it would be well worth while to make an attempt, if only in order to ascertain how far it is possible to obtain the data which are necessary to scientific monetary management. There would probably be no insurmountable difficulty in ascertaining the total volume of outstanding forward commitments of a market in various currencies at a given date. Nor would it be impossible to ascertain how much of the total has its counterpart abroad, or whether the country as a whole has made a net sale or a net purchase of foreign currencies for forward delivery. The difficulty lies in ascertaining how much of this aggregate "short" or "long" position represents the covering of foreign balances—or of national balances abroad—and how much of it has for counterpart commercial hedging, speculation, etc.

In this chapter we have been concerned only with that aspect of foreign balances which has a bearing on Forward Exchange. The study of foreign balances in general is outside the scope of this book, but the points raised in this chapter may give an idea of the range of problems connected with this subject. They are certainly worth a much more thorough investigation from a practical point of view than has hitherto been made. I hope to be able to deal with this subject at some time in the future.

CHAPTER XV

ARBITRAGE AND FORWARD EXCHANGE

(1) VARIOUS TYPES OF ARBITRAGE

(FORWARD Exchange transactions may arise from every kind of international arbitrage.) We have seen in the historical section of this book that even before the war the various types of arbitrage were a source of Forward Exchange operations. Indeed, from this point of view the system had reached such an advanced stage during the last decade or so before 1914 that there has been but little scope for further progress since the war. Nor have the various post-war phases—currency chaos, stability, renewed currency fluctuations, and comparative *de facto* stability—materially altered the relative extent to which arbitrage operations are accompanied by forward exchange operations.

(The following are the types of arbitrage transactions which give rise to Forward Exchange transactions :

1. Exchange arbitrage—
 - (a) Arbitrage in space (bilateral or triangular).
 - (b) Arbitrage in time (spot against forward or short against long forward).
2. Interest arbitrage—
 - (a) Transfer of funds.
 - (b) Transfer of credit availments.
3. Bullion arbitrage—
 - (a) Gold or silver movements.
 - (b) Forward transactions in gold and silver.
4. Stock arbitrage.
5. Commodity arbitrage:)

In some instances, as in the case of covered interest arbitrage, or certain types of exchange arbitrage, the Forward Exchange transactions form an essential part of the operation ; without them these types of arbitrage could not exist. In other instances, in the case of certain types of interest arbitrage, stock arbitrage, bullion

arbitrage and commodity arbitrage, Forward Exchange operations play an accessory but none the less important part, in that they safeguard arbitrageurs from loss on their operations on account of the fluctuation of the exchanges. Margins of profit on arbitrage operations are usually narrow, and arbitrageurs can ill afford to take a speculative risk by leaving the exchange uncovered. For this reason, except in cases where under the gold standard the currencies concerned are in the vicinity of gold point and their stability is trusted implicitly, the covering of the exchange risk has always been a characteristic feature of every kind of international arbitrage.

(2) EXCHANGE ARBITRAGE IN SPACE

Exchange arbitrage proper—whether arbitrage in space or arbitrage in time—can lead to Forward Exchange transactions in many ways. (In arbitrage in space, dealers take advantage of the discrepancies between forward rates prevailing at the same time in two centres. This can be done if at the same time the spot rates are identical in the two centres, or if there is a discrepancy between the spot as well as the forward rates. Arbitrageurs take their profit by buying Forward Exchange in the cheaper centre and selling it in the dearer centre. They combine two swap transactions or two outright transactions. Bilateral arbitrage in Forward Exchanges can be carried out not only between the dealer's own centre and a foreign centre, but also between two foreign centres. In addition to bilateral transactions, arbitrage in Forward Exchanges can be done triangularly on the basis of the cross forward rate. This means that advantage is taken of any discrepancy between the London quotation of, say, the franc and the dollar on the one hand, and the Paris quotation of the dollar or the New York quotation of the franc on the other.

Triangular arbitrage is done on a very large scale in spot exchanges, but the number of banks which work on the cross forward rate is relatively small. "Why complicate a matter which is already complicated?" the chief dealer of a leading joint-stock bank said when asked whether he worked much on the cross forward rate. The large banks are indeed reasonably occupied in transacting the commercial business of their wide clientèle, and there is not the same need for them as for dealers of private banking houses or foreign agencies to go out of their way to create additional

Foreign Exchange business through complicated arbitrage transactions.

The volume of international exchange arbitrage operations in Forward Exchange is by no means negligible ; indeed, it represents a large part of the total volume of exchange arbitrage between the various centres. Immediately after the war, the margins of profit on such transactions were remarkably wide, because the number of firms engaged on them was small. • Since then, however, the increase of competition and the improvement of communications through the development of the long-distance telephone have reduced margins considerably, though on the whole they are still wider for forward rates than for spot rates.

(3) TIME ARBITRAGE

Hitherto we have been dealing with space arbitrage in exchanges. Let us now see how time arbitrage in exchanges affects the volume of Forward Exchange transactions. (Time arbitrage may assume the form of simple swap transactions—buying or selling spot against forward—or buying or selling short against long Forward Exchange.) We have seen in Chapter XI that the buying of spot against Forward Exchange constitutes the normal routine by which dealers adjust their commitments after having covered their positions by means of spot transactions. The undoing of commitments a few minutes or a few hours after they were created cannot be regarded as time arbitrage. At times, however, dealers find it expedient to go long in spot exchange and short in Forward Exchange, in order to benefit by the yield on the swap. If such operations are connected with the investment of the funds which they make available in the foreign market concerned, then they come under the heading of interest arbitrage. If, however, the interest factor does not arise—where, for instance, the foreign centre does not allow interest on balances—then the operation may be regarded as exchange arbitrage proper, though even then the yield on the exchange arbitrage is compared with the interest yield in the dealer's own market.

Time arbitrage proper assumes the form of buying or selling short Forward Exchange against long Forward Exchange. Such transactions amount to deferred swap operations which become effective when the short Forward Exchange is due to be delivered. As it is impossible to know what interest rates will rule in the two centres concerned on the future delivery dates, these rates cannot

form the basis of the transaction, even though dealers may have their own views about the future course of the exchange rates, and these views may to some extent influence their decision to operate in short against long Forward Exchange. Time arbitrage, it should be noted, can be bilateral or triangular. A type of triangular time arbitrage which is very involved and is not often done nowadays is buying or selling short against long forward on the cross forward rate.

The working of time arbitrage operations and their effect upon forward rates is probably one of the most complicated parts of our by no means simple subject. We shall deal with it in detail in a later chapter, where the factors affecting the ratio between short and long forward rates will be discussed. This chapter will simply indicate a few causes giving rise to such operations.

(4) DEALERS' OPPORTUNITIES

As we have already noted, there is a rule that the Foreign Exchange departments of all banks of standing shall not carry an open position in Foreign Exchange overnight, but for this purpose the commitments are considered to be balanced if the total purchases and sales in a currency are equal, irrespective of their dates of maturity. Dealers of the more go-ahead type, eager to earn their keep but handicapped by the rule against open positions, find an outlet for their ambition by taking a view of the probable course of the forward rates. They take care to miss no apparent opportunity for making a profit on time arbitrage, which enables them to undertake operations of a semi-speculative nature without transgressing the rule that positions have to be covered at the close of every day. The development of discrepancies between long and short rates—that is, between long and short rates expressed as percentages per annum—and the wide fluctuation of such discrepancies, provide them with ample scope for taking a hand.

The discrepancies between short and long forward rates are largely the result of speculative operations. Speculators often take the view that the depreciation of a currency is imminent, in which case the discount on the short Forward Exchange is apt to be proportionately wider than that for longer dates. Or they may take the view that devaluation is likely to occur within three months but not before, say, two months, in which case their selling transactions are concentrated on long Forward Exchange, the discount upon

which becomes wider than that for short dates. The commercial factor affecting the supply and demand for certain dates may also cause substantial discrepancies. It is the function of exchange arbitrage to level out these abnormal discrepancies by operations in long against short Forward Exchange.

If Foreign Exchange dealers take the same view as speculators in anticipating an early depreciation of an exchange, there is no room for time arbitrage. If, however, they should disagree with the general market view, then they have fair scope for taking advantage of the disproportionately wide discount on short forward by buying short Forward Exchange and selling long Forward Exchange. If, for example, the discount on forward francs is 4 francs for one month and 7 francs for three months, then the operation will enable the dealer to undo the swap profitably after a month, provided that the discount is still wider than 3 francs for the remaining two months. This is only one of the innumerable examples that could be given to illustrate the wide variety of transactions in spot against forward. It is remarkable that text-books on exchange arithmetic barely touch upon the subject, which is interesting enough to deserve a good-sized chapter, if not a whole book.

The reader will find further details of this complicated subject in Chapter XXV, though a full explanation would take more space than would be justified in proportion to the rest of the matter to be dealt with.

(5) INTEREST ARBITRAGE

Interest arbitrage plays an important part in the Forward Exchange market. We have already seen that foreign balances held by banks are usually covered through sales of Forward Exchange, except between gold standard currencies, in which the risk is limited by the operation of gold points, when the extent of this risk does not exceed the difference in interest rates prevailing in the two centres. In times of exchange fluctuations, uncovered interest arbitrage ceases altogether, and interest arbitrage transactions are combined with a Forward Exchange operation. This does not, of course, mean that all foreign balances held by banks on their *nostro* accounts are engaged in interest arbitrage. Part of them, at any rate, constitutes the minimum balances which the banks must maintain in foreign currencies in order to keep their correspondents' accounts alive and to enable the banks to operate more freely in Forward Exchange. When the banks undertake interest

arbitrage, then they prefer to employ their funds in deposits or bills rather than allow them to accumulate on their *nostro* accounts, for the simple reason that the *nostro* accounts offer an inferior yield. As a rule, interest arbitrage is undertaken only by banks which possess liquid funds available for that purpose. Such banks are in a better position to take advantage of the prevailing discrepancies than smaller banks which would have to pay interest on funds borrowed for use in interest arbitrage. When, however, there is a really persistent discrepancy between the forward rates and their Interest Parities, then it may become profitable to employ borrowed funds, once the discrepancy is wide enough to cover the cost of the borrowing.

Interest arbitrage can be carried out by a deliberate transfer of funds for that purpose, or by simply retaining spot-forward commitments created in the course of current business, instead of undoing them by swap operations.¹ Again, it is possible to undertake interest arbitrage in either sense, both by means of balances and by means of credits, by shifting availments from one centre to another for the sake of the difference between their respective interest-cum-commission-cum-forward-covering costs.

The whole subject of interest arbitrage is closely interwoven with the theory of Interest Parities, and it would be anticipating our explanation of this theory to go into further details at this stage. We propose to return to the question in Chapters XVIII to XXII.

(6) BULLION ARBITRAGE

Arbitrage in gold and silver has always been a very important source of Forward Exchange operations from time to time. (With the extension of the gold standard during the last decades of the nineteenth century, and with the increase in the volume of gold shipments early in the twentieth century, gold arbitrage became a recognised factor in the Foreign Exchange market.) And during periods of seasonal shipments, or on days when a large consignment of gold was disposed of in the London market, the gold arbitrage factor assumed considerable, if passing, importance. It is not generally realised that the premium or discount on the Forward Exchange is apt to influence the gold import point or gold export point by increasing or reducing the cost of the shipment. Bullion

¹ See Mr. W. W. Syrett, "Some Forward Exchange Comments" in *The Banker* of December 1936, pp. 219-220.

arbitrage between gold- and silver-using countries played an important part in the development of eastern Forward Exchange markets. With the decline of the monetary use of silver, its importance as a source of Forward Exchange operations has also declined.

The mere covering of the exchange on gold or silver bought or sold for forward delivery does not in itself constitute arbitrage, unless it is done for the sake of the profit from a discrepancy between the forward price of the bullion and the forward rate of the gold or silver currencies concerned. Such discrepancies may arise for various reasons, but especially because of the finer and more subtle rates quoted in the Foreign Exchange markets compared with the prices in the bullion market.

(7) STOCK ARBITRAGE AND COMMODITY ARBITRAGE

Stock arbitrage at times is also an important factor in the Forward Exchange market. It is a standing rule that the exchange risk must be covered on all stock arbitrage transactions. In the case of arbitrage with New York, where there is no dealing for the "account", the transactions do not as a rule give rise to forward operations. On the other hand, arbitrage with the continental Bourses, which have fortnightly or monthly settlements, gives rise to forward transactions for the settlement dates. It is only on rare occasions that the rule of covering all stock arbitrage transactions is disregarded, when arbitrageurs hold such definite views on the prospects of the exchanges that they are prepared to take a speculative risk. This was the case in August and September 1931, when the exchange on stocks sold by London to Paris was not covered, and again during 1936, when sales of stocks by Paris to London were not always accompanied by forward sales of sterling.

In commodity arbitrage such, for instance, as arbitrage in wheat between Chicago or Winnipeg and Liverpool, the exchange risk is usually covered, though arbitrageurs are at times inclined to take a view. The volume of Forward Exchange business arising from arbitrage in commodities is larger than is generally realised, for in practice it is hardly distinguishable from Forward Exchange business originating through foreign trade.

CHAPTER XVI

SPECULATION AND FORWARD EXCHANGE

(1) FORWARD FACILITIES NOT INDISPENSABLE FOR SPECULATION

(WHILE commercial requirements and arbitrage can secure a steady and at times substantial turnover in the Forward Exchange market, it is only at times of speculative activity that the turnover reaches really high figures.) On such occasions the speculative factor eclipses every other as a source of Forward Exchange operations, even though its counterpart is very often supplied by arbitrage operations. It would be idle to deny that the existence of Forward Exchange facilities provides good opportunities for speculative operations, just as the existence of dealings for forward delivery in securities or commodities encourages speculative activity. Notwithstanding this, it would be a mistake to exaggerate the importance of Forward Exchange facilities as a cause of speculation. Beyond doubt the New York Stock Exchange is by far the most speculative of all Stock Exchanges, despite the fact that there is no dealing on account. The fact that all purchases and sales take place for immediate delivery does not prevent speculators from gambling extensively by buying stocks and carrying them by means of loans, or by borrowing stocks and selling them.

(In the Foreign Exchange market, too, it is possible to speculate without utilising Forward Exchange facilities. Bull speculation can take the form of a purchase of spot exchange financed by borrowed money. This was done on a very large scale in 1926-28 during the pre-stabilisation period of the franc.) Bear speculation, similarly, can be pursued in the spot market by means of selling spot exchange and covering within two days, or by borrowing in terms of the currency concerned and selling the spot exchange thus obtained. There are various other ways of speculating in exchanges without transacting any Forward Exchange business. For instance, commercial debtors who owe money in terms of a currency whose depreciation is anticipated and who postpone payment as long as

possible, are really bear speculators. Conversely, exporters in countries with exchange restrictions whose exchange is expected to depreciate become bull speculators when, to avoid having to surrender the proceeds of their exports, they request foreign importers to delay payment due in terms of foreign currencies.) We have seen, too, how in the summer of 1931, London firms engaged in stock arbitrage departed from their custom of covering the Forward Exchange for stocks sold in Paris. It is thus possible to speculate, not only by operating in Forward Exchange, but also by abstaining from so operating.

(2) ATTACKS ON FORWARD EXCHANGE SYSTEM

These facts should go a long way towards disarming the devastating criticism which has been directed against the Forward Exchange system on the ground that it is mainly responsible for exchange fluctuations. The critics forget that one of the most notorious bear attacks in history, the attack on the franc in 1924, began in the form of wholesale sales of spot francs—that is, for delivery in two days—in the hope that in two days the exchange would move in favour of the sellers. Where there is a will to speculate there is usually a way, and while Forward Exchange facilities make it easier to speculate, they cannot by any means be regarded as the sole, or even the main, cause of unsound speculative activity. And yet the Forward Exchange system has always been made a scapegoat for many of the world's evils. We saw in Chapter V that during the eighties and nineties of the last century the Russian Press blamed the Berlin forward market in rouble notes for all the financial ills of the country. In Great Britain, too, there was before the war much prejudice against forward dealing in general and dealing in Forward Exchange in particular. To quote only one of the innumerable characteristic outbursts, in 1910 a business man named Charles William Smith, senior partner in an important firm of produce merchants and author of innumerable pamphlets, addressed an open letter to Joseph Chamberlain on the eve of the General Election,¹ in which he referred to “the sinful and gambling international operations”,

¹ Subsequently it was published by P. S. King & Son in pamphlet form under the title “*A Manifesto on International Financial and Commercial Gambling in Options and Futures (Marché à Terme) in conjunction with Free Trade and Protection*”; and bore the modest sub-title, “*A Challenge to the World*”.

and demanded international legislation "in order to suppress, *pro bono publico*, these international bull and bear gambling operations", adding as a happy afterthought—"especially the bear, who is the invisible enemy of mankind, as well as the direct cause of the economic ruin of the world". However, the system of Forward Exchange seems to have survived this and many other similar manifestations of bad temper.

(3) SPECULATORS AND SPECULATION

Admittedly there is very little to be said in defence of speculation in Forward Exchange from a moral point of view. It can hardly be said that professional speculators as a class are actuated by high moral principles. (Speculators in exchanges are usually the worst type of gamblers. The difference between gambling in stocks and shares or commodities and gambling in exchanges is that the former may affect only one section of economic life, whereas gambling in exchanges affects every section.) It is often described, and not without justification, as being equivalent to gambling in the life-blood of the nation.

Nevertheless, in the existing system the operations of exchange speculators are necessary in order to bridge the temporary gaps between supply and demand. (In the absence of speculation, official intervention would be necessary to supply a deficiency or to absorb a surplus, which would otherwise be thrown on the market, thereby causing sudden changes in the exchange rates until the equilibrium rate was reached. (As most Central Banks abstain from intervening in the Forward Exchange market, speculation in Forward Exchange performs a function of considerable social utility by absorbing short-term surpluses and supplying short-term deficiencies. For this reason, while we can find good reason to condemn speculators individually, we cannot in the existing order of society condemn speculation as such.)

(4) WHO ARE THE SPECULATORS?

A great deal has been said and written about the speculative campaigns carried out in the Forward Exchange markets, but seldom has any effort been made to ascertain the identity of speculators. In some instances in the course of law-suits (such as the famous *Ironmonger v. Dyne* case) the names of some gamblers

become public, but as a rule they are able to escape publicity, and the newspapers, while indulging in veiled references to certain sinister groups, seldom mention actual names, especially in countries where, as in Great Britain, the law of libel is rather strict. For this same reason I, too, must refrain from supplying any names of those engaged in Forward Exchange speculation, and shall confine myself to indicating in general terms the various categories of speculators.

Practically every bank emphatically disclaims indulging in speculation. Yet the speculative operations carried out by bank dealers during the course of a day, even though the positions are and must be balanced before closing, none the less affect the exchange rates. If dealers go short or long between 10 A.M. and noon the chances are that during the following hours outsiders will follow their example, and the selling or buying pressure thus caused enables the dealers to cover before closing time without thereby necessarily restoring the exchanges to their opening rates. Moreover, in every centre there are a few banks which are less strict about the covering of their positions every day. In London it is only some not altogether first-rate houses which depart from the rule, but in one or two continental centres there are some houses whose names are everyday words in international banking circles, which undertake speculative operations on a large scale on their own account. For years past, whenever there has been an attack on a currency it has always been the same names which have appeared in the market much more frequently than could be accounted for by the volume of their commercial business. In general, however, it remains true that banks of standing do not speculate in exchanges, but keep their books strictly balanced each day.

From time to time international syndicates are formed for the speculative forward purchase or sale of certain currencies. Apart from the continental banking houses in question, these syndicates usually include financiers of every description, representatives of high finance and low finance, wealthy individuals with plenty of money to risk and penniless adventurers with nothing to lose. It is not so easy nowadays to buy or sell currencies for forward delivery as it was during the early post-war years, when almost anybody could walk into almost any bank and open a speculative account. So long as he left an adequate margin on deposit no questions were asked; indeed, there was no need for attempting to conceal the nature of the business. Today most banks do not carry out For-

ward Exchange transactions except on behalf of their clients, and it is necessary to pretend, at any rate, that the transactions are concluded for genuine commercial purposes. Notwithstanding this, professional speculators usually manage to find a back door through which they can enter the market if they are refused admittance at the front door. Some bank in some part of the world is usually found to be willing to carry out their orders.

The general public, which usually takes a hand sooner or later in every substantial or lasting speculative movement, whether in commodities, securities or exchanges, has also acquired the habit of operating in Forward Exchange. But the habit is new: it did not exist at the time when Mr. Keynes, in his *Tract on Monetary Reform*, remarked that most amateur speculators throughout the world operated in the spot market, while the forward market was confined to the professional elements. This is much less so now than it was in 1922. In the meantime the general public, especially on the Continent, has formed the habit of speculating in Forward Exchange whenever such speculation appears profitable. At times of sweeping speculative movements it is the large number of operations undertaken by outsiders that exaggerates the tendency provoked originally by professionals, and, needless to say, it is the outside public that is eventually landed with the positions after the speculative professionals have taken their profits.

(5) SPECULATIVE OPERATIONS

(Speculative operations may take the form of buying or selling forward for short or long periods, according to the speculators' view of the proximity of the anticipated appreciation or depreciation, and according to the discrepancy between short and long forward rates. The speculation may take the form of operations either in the national currency against a foreign currency or in one foreign currency against another. This latter course is taken where there are restrictions upon operations in the national currency. In 1924 Berlin and Vienna were selling francs against sterling or dollars or guilders. This method may also be adopted with the object of limiting the risk. Those who sold forward francs in 1935-36 banked on the devaluation of the franc; they did not wish to concern themselves with the possible fluctuations of the sterling-franc rate that might occur in the absence of devaluation. For this reason, they preferred to sell forward francs against dollars, since the operation

of gold points between France and the United States limited the extent of the possible appreciation of the franc against the dollar.

If the speculative position is closed when the forward contract matures, its liquidation gives rise to spot transactions only. But it can give rise to new forward transactions, in addition to those entered into when the position was created, if the speculators should decide either to liquidate before maturity or to carry the position after maturity. In the first case, an outright operation is carried out, while in the second a swap is needed to cover the old contract and to open a new position.

Details of the origin and counterpart of speculative forward operations are given in Chapter XXV, discussing the relation between spot and forward rates. Other aspects of speculative operations in exchanges are discussed in various other chapters.

PART IV

THE THEORY OF FORWARD EXCHANGE

CHAPTER XVII

EVOLUTION OF THE THEORY OF FORWARD EXCHANGE

(1) LITERATURE BEFORE MR. KEYNES

SCIENTIFIC interest in Forward Exchange is of relatively recent origin. Until about fifteen years ago—to be exact, until Mr. Keynes took up the subject soon after the war—most economists ignored the very existence of Forward Exchange. Discussion of the subject was regarded as the task of practical writers on Foreign Exchange; theoretical economists, even if they specialised in monetary problems, would no more have been expected to write on Forward Exchange than on some intricate problems of bookkeeping or commercial arithmetic. Even now there are very few economists who have given the subject careful consideration and who have realised its broader implications. Mr. Keynes's books and articles have nevertheless succeeded in drawing the attention of academic economists to the theoretical aspects of Forward Exchange.

Before Mr. Keynes, writings on the theoretical aspects were few and far between, and for the most part they were of little scientific value. Practical writers on Foreign Exchange recognised long before the war that forward rates are to a large extent influenced by the difference between interest rates in the two centres concerned. Many writers took this for granted, and did not mention it specifically; they merely referred to it casually, in the course of a discussion of some interesting movement of exchange rates or of short-term funds. One of the few pre-war writers who dealt with the subject was Henry Deutsch,¹ whose remarks are worth quoting. "... The New York price of forward tt.² London will depend upon the discount rates in London and in New York. Therefore, when the discount rate in New York is the same as in London, the price of forward tt. will be identical with the price of prompt tt. If money in London is cheaper than in New York, then the forward rate for

¹ Henry Deutsch, *Transactions in Foreign Exchanges* (London, 1914), p. 174.

² Telegraphic Transfer. Its usual abbreviation is T.T.

tt. London must be dearer than the rate for prompt tt. London, and should the opposite take place then the forward rate for tt. London must be cheaper than the rate for prompt tt. London. Of course at times the actual rate for forward tt. London may not be in harmony with these rules, as the rate of exchange is subject to the law of supply and demand." Here we have the Interest Parity theory of Forward Exchange in its rudimentary form.

The relation between Interest Parities and Forward Exchanges was discussed, long before Deutsch, by Walther Lotz. His article, published in 1889,¹ is one of the earliest sources of information on Forward Exchange, and contains some interesting remarks on the influence of interest rates on forward rates. Dealing with the Vienna forward market in mark notes, he states that the premium on forward mark notes was due to the lower interest rates prevailing in Germany. In fact, he had even realised that the forward rate is determined, not by one interest rate but by several; he specifically mentioned the market rate of discount for prime bills and the interest rate on Bourse loans. He pointed out that the reaction of forward rates to changes in interest rates was very prompt, and quoted an interesting example to illustrate this. While as a rule interest rates in the 'eighties were higher in Vienna than in Berlin, on September 29, 1888, the rate on Bourse loans in Berlin rose suddenly to between 8 and 10 per cent, while in Vienna money was obtainable at 6 per cent. On this one day, the forward rate for mark notes in Vienna, which until then had stood at a premium, went to a discount amounting to $1\frac{1}{2}$ per cent per annum. On the following day, interest rates for Bourse loans in Berlin dropped, and forward marks in Vienna were once more quoted at a premium.

(2) MR. KEYNES'S CONTRIBUTION

The facts on which the Interest Parity theory is based have, of course, been evident to every exchange dealer ever since the beginnings of Forward Exchange operations, many decades before the war. The dealer's task, however, was to work upon these facts, not to write about them. In any case, few dealers would have been able to realise the theoretical significance of Interest Parities. Mr. Keynes was the first to put the practical rules of the relation between forward rates and interest rates into scientific form. The

¹ Walther Lotz, "Die Währungsfrage in Österreich-Ungarn", *Schmollers Jahrbuch*, vol. 13 (1889), p. 35.

✓ Interest Parity theory of Forward Exchange must be regarded, therefore, as one of his many contributions to the progress of Economic Science. Ever since the publication of his article on Forward Exchange in the *Manchester Guardian Reconstruction Supplement*, writers on the subject, whether British or foreign, have made extensive use of his conclusions, which have thus become the foundation of practically the whole existing post-war literature on the theory of Forward Exchange.

The most detailed explanation and analysis of the Interest Parity theory is to be found in Mr. Keynes's *Tract on Monetary Reform*.¹ His main points may be summarised as follows :

1. The most fundamental influence on forward rates is the difference between the interest rates obtainable on short money. The forward rate expressed in percentage per annum tends to be equal to the difference between interest rates in the two centres.
2. The Forward Exchanges of countries without adequate short-loan markets tend to behave as if interest rates in the countries concerned were very low, even though the prevailing interest rates are rather high.²
3. If political or grave financial uncertainty prevails in a country, no forward business is done in its exchange on any substantial scale at any reasonable rate.
4. Forward rates tend to fluctuate around their Interest Parities in accordance with supply and demand. If the Interest Parity is $1\frac{1}{2}$ per cent per annum, then the forward rate would tend to fluctuate normally between 1 and 2 per cent per annum.
5. Whenever forward rates depart from their Interest Parities to a sufficient extent to yield arbitrageurs sufficient profit (Mr. Keynes estimates the minimum at $\frac{1}{2}$ per cent) to make it worth their while to operate, they will shift funds to the more profitable centre.
6. If the bulk of business in a particular exchange is in the hands of a few houses, or if there is agreement between the leading dealers regarding the forward rates to be quoted, then the rates quoted may depart materially from their Interest Parities.

¹ Pp. 122-132.

² This was largely in accordance with experience during the early post-war period covered by Mr. Keynes's book, but subsequent experience has led to different results.

7. The floating capital available for transfer from centre to centre for interest arbitrage is by no means unlimited, and is not always large enough to bring about a readjustment of forward rates to their Interest Parities.
8. With an inconvertible paper currency, the only immediate effect of a change in the Bank rate is to cause a new adjustment of the forward rates.

(3) ENGLISH LITERATURE

Mr. Keynes's concrete proposals regarding Forward Exchange operations will be discussed in later chapters dealing with the Forward Exchange operations of Central Banks. Here we shall confine ourselves to tracing the evolution of the theory of Forward Exchange, an evolution in which the publication of *A Tract on Monetary Reform* was an important landmark. In his subsequent writings, in *A Treatise on Money* and in an article in *Lloyds Bank Monthly Review*, Mr. Keynes enlarges upon his practical proposals, but on the theoretical side adds little that is essential. This is to be regretted, for Mr. Keynes is better qualified than any other economist to follow up the lines of inquiry he first opened up. Since the publication of *A Tract on Monetary Reform* the evolution of the theory of Forward Exchange has made but little progress. Yet there was a great deal which was left unsaid by Mr. Keynes and by those theoretical writers who followed in his footsteps.

In the Anglo-American literature on Forward Exchange since the publication of Mr. Keynes's theory, some practical writers have contributed minor points on the borderline of theory and technique. Among the contributions of English theoretical economists to the evolution of a theory of Forward Exchange that of Mr. Hawtrey is second only to the contribution of Mr. Keynes. In an essay on "Mr. Keynes's *Treatise on Money*"¹ he raises several new points, and follows up other points raised by Mr. Keynes. The chief merit of his work is that it lays stress upon the possibility of lasting discrepancies between Interest Parities and forward rates even in normal conditions. He discusses the limitations of the volume of liquid funds which are available for international transfers through interest arbitrage. He also describes in detail how the law of Interest Parities actually works. It is a pity that he

¹ R. G. Hawtrey, *The Art of Central Banking* (London, 1932), pp. 406-411.

confined himself largely to crossing the *t*'s and dotting the *i*'s of Mr. Keynes's text, and did not embark upon an examination of the fundamental aspects of Forward Exchange, a task for which he would be particularly qualified.

My own modest contribution to the subject consisted of a detailed examination of the relations between forward rates and gold points.¹ In the September 1936 issue of the *Economic Journal* I wrote an article entitled "Some Theoretical Aspects of Forward Exchanges", in which I raised some fundamental points extracted from the present book, which was then in preparation. Another recent contribution to the subject is that made by Mr. W. W. Syrett,² a practical banker, who raised the question of the effect of Purchasing Power Parities on Forward Exchanges, even though he did not indicate exactly how and why his theory was supposed to work. A critical examination of his article is to be found in an article of mine, "The Theory of Forward Exchanges", in *The Banker*, July 1936, and the December 1936 issue of *The Banker* published Mr. Syrett's reply to my criticisms. Apart from these, and apart from a number of unsigned articles in various daily and weekly newspapers and magazines, commenting for the most part on current developments in the foreign exchange market, remarkably little has been published in English on the theoretical aspects of Forward Exchange. An unpublished thesis by Mr. L. C. Duncan³ contains some interesting, if inadequately digested, material on various theoretical points. Its chief merit is that it elaborates a number of interesting charts showing the degree to which the curves of forward rates and those of their various Interest Parities tend to run parallel with each other. Mr. Duncan realised that Interest Parities are not always the cause and forward rates not always the effect, but he did not realise the broader implications of this fact. In spite of its numerous deficiencies, the thesis would have been well worth publishing.⁴

¹ Paul Einzig, *International Gold Movements*, 2nd ed. (London, 1931), pp. 118-122. Reprinted from the March 1931 issue of the *Economic Journal*.

² W. W. Syrett, "The Theory of Forward Exchanges Re-stated", *The Banker*, June 1936.

³ Lyman C. Duncan, *A Study of the Course of Forward Exchange Rates during the Last Few Years*. Thesis (unpublished), London School of Economics, April 1934.

⁴ Mr. Duncan's work provides an outstanding example of the kind of thesis which students of economics should be induced to undertake. Instead of producing dozens of theses on the same general subjects, consisting largely of paraphrased versions of their Professors' lectures, students ought to be made to specialise in neglected subjects in which they can do original work and can carry out detailed research for which economists have no time.

(4) GERMAN LITERATURE

The German post-war literature of the theoretical aspects of Forward Exchange has not been so extensive as it might have been expected to be, in view of the interesting material made available by pre-war German and Austrian authors, and in view of the practical interest in the subject during the inflation period and also during the subsequent period of borrowing abroad through the intermediary of Forward Exchange. The two German booklets which deal with the subject—Dr. Joachim Vogel, *Das Devisentermingeschäft*, and Dr. Carl August Fischer, *Das Devisentermingeschäft in seinen Beziehungen zur Währung und Wirtschaft*—contain very useful material, especially upon the post-war experience of Germany, and upon points on the borderline between theory and technique. Dr. Vogel's book has a theoretical section of some 20 pages, but it deals largely with practical questions. Its theoretical interest lies in the application of Mr. Keynes's theory to German post-war conditions,¹ and in the description of the factors influencing forward rates in conditions of advanced inflation.² But Dr. Vogel does not touch upon the more fundamental aspects of his subject. Dr. Fischer is more inclined to dwell upon theoretical problems such as the relation between spot and forward rates,³ in which respect his book is second to none. But whenever he appears to be on the point of saying something fundamental, he changes the subject. Notwithstanding this, his book is easily the best of those devoted exclusively to Forward Exchange.

A number of articles in German periodicals such as *Bank-Archiv*, *Bank-Wissenschaft*, *Die Bank*, *Weltwirtschaftliches Archiv*, etc., and in the *Handwörterbuch des Bankwesens*,⁴ contain many stimulating suggestions, all very helpful to one engaged in the task of piecing together the comprehensive theory of Forward Exchange. The task itself, however, was not even attempted by any German writer on the subject, although several of them might have been well qualified to accomplish it.

(5) FRENCH LITERATURE

It is only natural that the contribution of French financial

¹ Pp. 46-48.

² Pp. 42-46.

³ Pp. 39-40 and 45-50.

⁴ The article by Rudolf Beerensson on "Devisen-Swap" is particularly worth noting. For other German articles on the subject, see the Bibliography.

literature to the evolution of the theory of Forward Exchange should be inferior to that of either English or German financial literature. Until the war, Paris knew no more about Forward Exchange than London did, and in any case in technical problems French authors could hardly compete with either German or English authors. Nevertheless, there is a French book devoted exclusively to Forward Exchange—which is more than the vast Anglo-Saxon financial literature has produced until now. Even though M. Casamajor¹ deals mostly with practical and historical material, from the limited and one-sided point of view of the Paris market, his book contains some interesting theoretical observations. He raises the point of the effect upon forward rates of the volume of funds available for foreign exchange purposes, in the case of a currency whose speculative market is mainly abroad. On the whole he, like most writers on Forward Exchange, draws extensively upon the material provided by Mr. Keynes without carrying the theoretical aspects of the subject much further.

Another writer in French on Forward Exchange is Mr. J. Lockhart,² whose book contains one or two interesting remarks on broader aspects of the subject. The *Encyclopédie de Banque et de Bourse* contains an interesting anonymous contribution on Forward Exchange which is, however, for the most part historical and practical.

(6) ITALIAN LITERATURE

Italian "post-Tract-on-Monetary-Reform" literature on Forward Exchange approaches in importance German writings on the subject. Signor Giovanni Demaria³ published in 1928 an interesting monograph analysing the movements of the forward lira-sterling rate. This valuable contribution—which published for the first time charts and tables comparing forward rates with their Interest Parities—has not received the recognition it deserves. In Italy itself its very existence is ignored, even by many specialists on the subject. Like the German authors, Signor Demaria deals extensively with the effect of speculation on forward rates. Writing on the basis of the one-sided experience of the market in the lira, he lays stress upon the inadequate organisation of arbitrage and upon

¹ Jean Casamajor, *Le Marché à terme des changes en France*, 2nd ed. (Paris, 1925).

² J. Lockhart, *Le Marché des changes de Paris* (Paris, 1924), Part II.

³ *I Saggi di Riparto e di deposito della Lira Italiana a Londra dal 1921 al 1928*.

the effect of official intervention. Another Italian author, Signor Ettore Lorusso, in his general work on Foreign Exchange,¹ deals extensively with Forward Exchange problems. His observations that the relative limit of forward rates is determined by the cost of overdrafts, though not altogether original—it had already been discovered by Dr. Vogel—are particularly interesting.

(7) LACK OF COMPREHENSIVE ANALYSIS

This description of the literature upon the theoretical aspects of Forward Exchange in the four principal European languages can hardly claim to be anything more than a bird's-eye view. It is sufficient to remark that there is a certain amount of material on this subject, but all these various works have remained more or less isolated and the same truths have had to be discovered independently in each of the four countries. The only connecting link between them is Mr. Keynes's work, which appears to have been studied extensively all over the world.

None of the works dealt with above has produced a really comprehensive theory which covers the whole immense range of questions involved. Above all, past writers have failed to penetrate into the fundamental aspects of Forward Exchange and to link up the theory of Forward Exchange with monetary and economic theory in general. In the following ten chapters an attempt will be made to fill the blank spaces in the literature on the theory of Forward Exchange; to co-ordinate the existing material and to complete it by the inclusion of points which have hitherto received no adequate attention; and to examine the broad implications of Forward Exchange in relation to the economic system as a whole. While it would be ungenerous not to pay a well-deserved tribute to those who have done pioneer work in this field, it is necessary to point out that the elaboration of a comprehensive theory of Forward Exchange required much more than mere compilation and co-ordination of the existing material which, even collected and co-ordinated, would leave many fundamental questions unanswered.

¹ Ettore Lorusso, *La Tecnica dei Cambi Esteri* (Milan, 1932), Part IV.

CHAPTER XVIII

WHAT ARE INTEREST PARITIES ?

(1) NEED FOR DEFINITION

(EVER since practical and theoretical experts began to write about Forward Exchange they have been referring to the "difference between short-term interest rates quoted in two centres" as the basis of Forward Exchange rates. This difference—which, for the sake of simplicity and convenience I call Interest Parities—has never been defined adequately.) Most writers on the subject consider it sufficient to refer to the difference between short-term interest rates and leave it at that. It is, therefore, high time an effort was made to ascertain precisely what Interest Parities mean. What exactly are the short-term interest rates which should be used as a basis for comparison? Evidently the rates which mainly matter are those which are used for the purpose of interest arbitrage. On the surface, therefore, the definition of Interest Parities appears to be essentially a matter for practical Foreign Exchange dealers. On closer examination, however, it is seen to involve problems for the theoretical expert also.

Before everything else I am anxious to avoid conveying the impression that Interest Parities—simply because I call them "parities"—are something concrete, definite, and fixed, like Mint Parities. The latter have a concrete existence, being the definite arithmetical ratio between the weights of gold that legally represent two currencies. (The Interest Parity, on the other hand, is essentially a vague conception. It has no concrete existence apart from the forward rates. Its exact figure is practically impossible to ascertain, and even its approximate figure is a matter of controversy. From a practical point of view there is not one but several Interest Parities, and it is their weighted average that should be regarded as the theoretical Interest Parity.)

(2) COMPARISON WITH PURCHASING POWER PARITY

While Interest Parities are much less concrete than Mint Parities, they are on the other hand much more definite than Purchasing Power Parities. In many ways, however, Interest Parities resemble Purchasing Power Parities. In particular :

1. Both Interest Parities and Purchasing Power Parities are essentially vague and difficult to define, and are matters of controversy ; though Purchasing Power Parities are more so than Interest Parities. •
2. Both are essentially elastic. While Mint Parities are rigidly fixed at a definite figure, Interest Parities and Purchasing Power Parities are subject to wide fluctuations.
3. Discrepancies of the actual rates from both Interest Parities and Purchasing Power Parities occur frequently, and at times are apt to be very wide and persistent. Here again, these qualities are present to a larger degree in Purchasing Power Parities than in Interest Parities.
4. Both Interest Parities and Purchasing Power Parities, while influencing the actual exchange rates for which they form the equilibrium level, are in turn themselves influenced by those rates. Admittedly, in one sense, even Mint Parities are at times influenced by the actual exchange rates, since a *de facto* depreciation is often confirmed by a *de jure* devaluation. These cases are, however, exceptional, whereas spot exchanges affect Purchasing Power Parities and Forward Exchanges affect Interest Parities as a matter of normal routine.
5. Both Interest Parities and Purchasing Power Parities are subject to the outside influences which affect the exchange rates also. Thus, speculative activity in exchanges may affect forward rates and also their Interest Parities by provoking a rise in the Bank rate ; the failure of the crop in a country may cause its commodity prices to rise at the same time as it causes its exchange to depreciate through its effect on the trade balance.

(3) BANK RATE PARITIES

(It would be easy to suggest that the difference between the Bank rates prevailing in two centres should be regarded from a theoretical

point of view as the Interest Parity of the Forward Exchange.) From a practical point of view, however, this Bank rate parity is entirely inadequate, for it is not on the Bank rate but on the actual interest rates prevailing in the markets that Foreign Exchange dealers base their arbitrage transactions. Yet from a theoretical point of view, forward rates in the long run are inclined to follow the difference between Bank rates, for the simple reason that most short-term interest rates are inclined to move in step with their respective Bank rates. Indeed, to a remarkable degree changes in the Bank rate are capable of affecting forward rates even when the latter are at a considerable distance from their Interest Parities. In 1936, forward rates of the French franc responded instantly to the reduction of the Bank of France's rediscount rate, notwithstanding the fact that the discrepancy between Interest Parities and forward rates was very wide ; but it should be noted that the various interest rates in the Paris market also responded instantaneously to the reduction of the Bank rate.

At times of monetary stringency, the Bank rate may play a direct part in interest arbitrage. When the percentage yield on interest arbitrage exceeds the Bank rate, banks with inadequate liquid resources may rediscount part of their bill portfolios at the Central Bank and use the proceeds for swap transactions.) On such occasions, provided that the Central Bank is willing to rediscount freely and the banks are willing and able to make use of its facilities to a large extent, the movement of forward rates is limited by the Bank rate, and the limit changes with a change of the Bank rate. Notwithstanding this, the importance of Bank Rate Parities is in practice, and even in theory, relatively small.

(4) DISCOUNT RATE PARITIES

Market rates of discount are much more suitable than Bank rates as a basis for calculating Interest Parities. Before 1931 the discount rate parity could very largely be regarded as the Interest Parity, for the bulk of funds engaged in interest arbitrage was invested in bills, especially in London and (though in less degree) in New York and Paris. Even then, however, this method was not altogether satisfactory. Bill rates were not of equal importance in the various centres, nor were they always strictly comparable. The volume of interest arbitrage done on a basis other than the ratio between bill rates in two centres was at times large. Nor

was there a single uniform bill rate in any one centre at any given moment, as there has since been as a result of the decline in rates to a low level after 1932. There was formerly a difference between parities based on fine bank bills, Treasury bills, etc. Moreover, while the bank rate parities were the same for any period up to three months, discount rate parities varied widely according to the period, which introduced another element of complication.

(5) DEPOSIT RATE PARITIES

Since 1932 the significance of bill rates from the point of view of calculating Interest Parities has declined, especially as deposit rates on foreign balances are no longer based upon them to the same extent as before. Prior to 1931 the rate allowed on foreign banking time deposits usually approximated to the bill rate. At present, these deposit rates are usually considerably higher than bill rates, especially in London. Thus the deposit rate parity has superseded the discount rate parity as the most important element in Interest Parities.

The trouble about Deposit Rate Parities is that they are very difficult to ascertain. The market rate of discount is usually published in the principal centres. For deposit rates, on the other hand, there are no authentic figures available in some centres. The rate to be taken into consideration is certainly not the standard rate which is allowed to any new customers. As is well known, bankers as a rule are prepared to allow a higher interest rate to their foreign banking correspondents. Thus, while at the time of writing the standard rate for a three months' foreign deposit in London is $\frac{1}{2}$ per cent, foreign banks can easily get $\frac{3}{4}$ per cent, and even 1 per cent. The actual rate is a matter of negotiation, and it varies from bank to bank and from day to day, according to whether Foreign Exchange dealers are anxious to increase their working resources. Five-thousand-a-year American bank representatives in London are usually supposed to earn their keep simply by reason of the extra $\frac{1}{8}$ per cent or $\frac{1}{4}$ per cent they are able to secure on the sterling deposits of their banks. The willingness of Foreign Exchange dealers to allow high deposit rates depends on their relations with their head offices. If they are in debit at head office and if the interest rate charged for book-keeping purposes on this debit is relatively high, then the dealers may be in-

clined to allow fairly high deposit rates to foreign banks. They cannot, however, go beyond certain limits. In any case, the amount that is taken is not unlimited, and the interest rates are always a matter of negotiation; they cannot be obtained automatically. Another difficulty is that in certain instances deposit rates vary according to the amount involved. While in former days large deposits received better rates than small deposits, since the banks began to suffer from an *embarras de richesse* many of them have reversed this policy. In order to defend themselves against an unwanted influx of "bad money", they began to refuse payment of interest upon more than a certain amount per account, or upon new accounts in general. Such measures were taken by the Swiss banks during 1931 to 1935. In such instances it is impossible to take deposit rates as the basis for calculating Interest Parities, since the rates depend on the position of individual accounts. Another method of discouraging the influx of foreign funds is that—adopted in the United States during 1935—of declining to pay interest on a deposit during the first month. This introduces another element of complication in calculating the deposit rates for purposes of Interest Parities.

(6) CALL MONEY RATE PARITIES

Day-to-day money rates may also form part of the basis of Interest Parities. After all, to some extent banks employ their liquid resources in day-to-day loans in foreign centres, and the yield on such loans may to some degree influence the amount used for interest arbitrage. It is true that, as a general rule, covered interest arbitrage is undertaken for definite periods, short or long, since it is necessary to cover the Forward Exchange for a definite period. The fact that call money is liable to be repaid at any time by the borrower does not, however, necessarily preclude the possibility of covering the Forward Exchange for a definite date. Even though individual borrowers may repay the funds before the forward contract matures, the call money market as a whole can generally re-absorb it. Admittedly, the possibility of premature repayment makes the calculation of the yield rather difficult, and arbitrageurs have to allow for the risk of having to re-lend at lower rates to avoid undoing the swap at a loss. For this reason, it is only when call money rates are relatively high, when they have a distinctly rising tendency, or when the forward rates are in themselves

particularly favourable to arbitrage, that covered arbitrage is undertaken in call money.

There are various types of short loans which may serve as a basis for interest arbitrage. And different types are involved in different centres. In New York, brokers' loans are of predominant importance. Time money is at times suitable as a basis for Interest Parities, but it has no equivalent either in London or in other centres. In London, Stock Exchange loans do not as a rule attract foreign arbitrage funds. Their rates are not quoted regularly, and vary according to the case.

An interesting question is whether it is the rates on loans overnight or renewal rates that should be used as a basis for Call Money Rate Parities. As a general rule, renewal rates are much more important. At times, however, on the occasion of heavy settlement dates or balance sheet dates, the rate for loans overnight temporarily assumes considerable importance in the Forward Exchange market and affects short forward rates.

(7) MULTIPLICITY OF INTEREST PARITIES

As Foreign Exchange dealers transact interest arbitrage on the basis of all these different kinds of interest rates, it may be asked whether there are not several Interest Parities? From a practical point of view this is indeed the case, and since there is only one forward rate for any given period at any given moment, it is not often possible for this forward rate to be at equilibrium with all its Interest Parities. It may be at equilibrium with the discount rate parity, but in that case it is not at equilibrium with the deposit rate parity or loan rate parity. From the point of view of the Foreign Exchange dealer this is an advantage, for even during periods of comparative equilibrium it is often possible to carry out interest arbitrage on one or other of the various bases. There is seldom a complete equilibrium between forward rates and all their Interest Parities, though discrepancies are often not wide enough to give rise to transfers of funds.

Writing from an essentially practical point of view, Herr Rudolf Beerensson¹ remarks that the average level of interest rates in a country is a purely theoretical notion. "It is precisely because there is in every country a discrepancy between interest rates on

¹ In his article on "Devisen-Swap" in the *Handwörterbuch des Bankwesens*, p. 155.

overdrafts, loans and securities, commercial bills, bank bills, etc., that there are interesting and often rather profitable possibilities for interest arbitrage."

(8) ELEMENTS OF COMPLICATION

Unquestionably, from a practical point of view there are quite a number of Interest Parities. Owners of liquid funds usually like to spread their investments between the various types of short-term loans, and this desire applies also to funds they employ abroad. In transferring balances from one centre to another they do not as a rule want to switch over from one type of investment to another unless it is particularly profitable to do so. Very often, however, such a switch-over is indispensable for interest arbitrage, owing to the fact that the same type of investment may not exist in both centres, or, if it exists, may have a totally different meaning. In consequence, when switching over from sterling to dollars or francs, dealers very often also switch over from one type of investment to another.

To complicate matters further, the amount of interest paid by the debtor is not necessarily the same as that received by the creditor. In the United States, for instance, there is a tax on the yield on short-term investments earned by foreign lenders. Thus, while from the point of view of American banks it is the actual amount paid which is taken into consideration, from the point of view of foreign banks it is the net amount after deduction of this income tax that forms the basis of calculation. At the time of writing, when deposit rates and bill rates in New York are about $\frac{1}{2}$ per cent, the tax of 10 per cent means nothing, but at a time when short-term investments yield 5 per cent or more the tax becomes a factor in calculating Interest Parities.

Interest Parities are not identical for various periods. The parity between one-month bills in London and New York may be totally different from the parity between three-months bills in the two centres. In particular, short-money rates are apt to rise suddenly in centres where there happens to be a particularly heavy end-of-month or end-of-year pressure, in which case Interest Parities for loans for the turn of the month may be entirely different from Interest Parities for one month or three months. This provides a partial explanation of the occasional rise in the premium of discount on Forward Exchange for short maturities to fantastic levels.

(9) RATES ON ACCEPTANCE CREDITS AND OVERDRAFTS

Hitherto we have been dealing with Interest Parities based on interest rates at which banks are prepared to invest their funds in a foreign centre. Forward rates are, however, also influenced by interest rates at which banks are prepared to lend to foreign borrowers. The most important of these rates are those on acceptance credits and on overdrafts. The cost of borrowing by means of acceptance credits includes, not only the bill rate, but also the commission, which even at any given moment will vary rather widely according to the standing of the lender, the borrower, the nature of the bills, etc. Although the use of acceptance credits does not in itself constitute interest arbitrage even if the exchange risk is covered by means of forward transactions, the relative amount of the cost tends to influence the extent to which acceptance credits are used in various centres. For this reason, the cost of acceptance credits tends to influence forward rates, and the relative costs therefore establish a type of Interest Parity.

The rates charged to foreign banking correspondents on overdrafts on *nostro* accounts constitute an important element in the Forward Exchange market. As we shall see in the next chapter, in certain circumstances they fix a limit to the deviation of forward rates from their Interest Parities.

(10) INTERNAL *v.* INTERNATIONAL INTEREST RATES

The difficulties of ascertaining the figure which, from the point of view of the theory of Forward Exchange, might be called the Interest Parity between two exchanges are considerable. And yet, it should be possible to elaborate such a theoretical parity. After all, somewhat similar difficulties arise when index numbers of prices, wages, cost of living, etc., are compiled. It is the task of statisticians to compile an average which, while of little or no significance in practical arbitrage, may be accepted none the less as the theoretical Interest Parity. What is needed is the elaboration of a scientific average weighted according to the relative importance of various rates for interest arbitrage. And since their relative importance is subject to changes, the weighting should be altered accordingly. In fact, an index-number for short-term interest rates has actually been compiled, for London by the London and Cambridge Economic Service and for New York by the Harvard

Economic Service. Unfortunately, neither of these is ideal for the purpose of calculating Interest Parities. Both have been compiled for the purpose of ascertaining the average interest rates for short-term borrowing in general, and not to ascertain the average of the rates that influence international transfers through covered interest arbitrage. The index of the Harvard Economic Service is particularly unsuitable from the arbitrage view-point, for it is the average of the market rate of discount, the call money rate, time money rate and commercial paper rate. The second and third of these do not regularly influence interest arbitrage, except under special conditions such as the boom of 1928-29. As for commercial paper rates, they hardly play any direct part in interest arbitrage. I do not mean to suggest that purely domestic interest rates such as the rate on commercial paper in New York, or the rate on advances in London, or the rate on "pensions" on *Bons de la Défense Nationale* in Paris, have no effect whatever upon interest arbitrage. While their direct influence may be negligible, they are capable of influencing the transfer of short-term funds indirectly. The relative level of domestic interest rates influences the banks' decision as to the amount to be employed in interest arbitrage. If domestic money rates are relatively high, a minor discrepancy between forward rates and their transfer points will not cause large transfers. If domestic money rates are relatively low, banks are only too glad to take advantage of any minor discrepancies between forward rates and their Interest Parities. This of course concerns only bilateral arbitrage, for those who have to choose between two foreign centres are not concerned with domestic rates.

(11) "INDIFFERENCE RATE"

Forward rates are at an equilibrium with their Interest Parities when there is no profit in transferring funds from one centre to another for the purpose of covered interest arbitrage. This does not mean that whenever Foreign Exchange dealers do not consider it worth while to transfer funds, forward rates are at their Interest Parities. As we shall see in the next chapter, the discrepancy between Interest Parities and forward rates must assume a certain magnitude before it induces dealers to act upon it. Interest Parities are the forward rates at which no profit at all can be made on interest arbitrage, whether active or passive, since the yield on funds would be exactly the same in the two centres,

assuming that the Forward Exchange is covered. Signor Ettore Lorusso very aptly calls this rate the *prezzo di indifferenza*¹ or the rate at which it is a matter of indifference in which centre the liquid funds at the bank's disposal are kept. That is, it is a matter of indifference from the point of view of the yield obtained. Holders may prefer to invest their funds in one centre or the other even if the yield is equal, for reasons of convenience, liquidity, security, etc. Interest Parities, however, are concerned only with the yield.

(12) METAPHYSICAL EXPLANATION OF INTEREST PARITIES

Hitherto we have endeavoured to explain the meaning of Interest Parities on an essentially concrete and practical basis. There is, however, another line of approach. It is worth while to attempt to explain Interest Parities also through abstract methods bordering on the realm of metaphysics. To a large degree, interest arbitrage with covered exchange risk is transacted not by means of buying spot or Forward Exchanges outright but by means of swap transactions. Now a swap transaction is an exchange of a loan in terms of one currency for a loan in terms of another currency. If the interest rates in the two markets are not equal, it is natural that there should be a difference in the relative cost of the two loans. If the interest in New York is higher than in London, then the American banker who swaps a dollar loan for a sterling loan should obtain compensation for employing his funds in the cheaper market. Thus the owner of sterling has to pay a larger amount for the dollar loan. This means that he loses on the swap while the owner of dollars gains on it. The owner of a currency with a forward discount always gains on the swap, and the owner of a currency with a forward premium always loses on it. Loans in the currency of a country with high interest rates are scarcer and more valuable than loans in the currency of a country with low interest rates. Normally, the profit obtained by the lender of the currency whose forward exchange is at a discount should represent the difference between interest rates in the two countries.

To illustrate this, let us take an example. Let us suppose that the spot sterling-dollar rate is \$5.00 to £1, while the premium on forward sterling is 1½ cents for three months, being equivalent to 1 per cent per annum. The interest rate in the New York market is 2 per cent per annum, while in London it is 1 per cent. Thus the

¹ Ettore Lorusso, *La Technica dei Cambi Esteri*, p. 296.

Interest Parity is 1 per cent per annum in favour of sterling, or a premium of $1\frac{1}{4}$ cents for three months. We can borrow in London at 1 per cent and in New York at 2 per cent. If we borrow in London and swap our sterling loan for a dollar loan it means that we have to give away 1 per cent on the buying of forward sterling at a premium. The cost of the loan is 1 per cent, plus a premium of 1 per cent, making a total of 2 per cent, the same as the cost of borrowing in dollars in New York. If we borrow dollars in New York at 2 per cent and swap the dollar loan for a sterling loan, we benefit by the discount on forward dollars. We can get 1 per cent interest in London and thus benefit by the forward discount of 1 per cent, making a total of 2 per cent, which is equal to the cost of the dollar loan in New York. This is as it should be when the forward rate is at its Interest Parity. If we own sterling we can lend it in London at 1 per cent, or we can swap it for a dollar loan and lend it in New York at 2 per cent, in which case we have to give away 1 per cent in the forward discount on the dollar, so that the net yield is only 1 per cent. If we own dollars we can lend them in New York at 2 per cent or we can swap them for a sterling loan and re-lend in London, in which case we gain 1 per cent on the premium on forward sterling, so that the true yield is 2 per cent.

(13) SUPPLY AND DEMAND

The relative cost of loans in two centres tends to determine the forward rate, just as the relative cost of two commodities tends to determine their relative value. If a certain commodity costs 100 units to produce and another commodity costs 110 units, then, other things being equal, their exchange value will be 100 against 110. If £100 produces £101 in a given period, while 500 dollars produce 510 dollars in the same period, then the use of £100 for the period will cost £1, while the use of 500 dollars will cost 10 dollars. Therefore the owner of dollars is prepared to exchange his holding against sterling only if he is compensated for the difference by receiving an additional 5 dollars.

In practice, the cost of production does not in itself entirely determine the relative prices of commodities. Supply and demand modify the effect of costs on prices. Similarly the cost of loans determines the forward rates only if supply and demand are evenly balanced at the rates representing the difference between the cost of loans in the two centres. Any discrepancy between supply and

demand modifies the rates, just as a discrepancy between supply and demand causes a deviation of the relative prices of commodities from their relative costs of production. If the number of those who want to get dollar loans in return for sterling loans is larger than those who want to get sterling loans in exchange for dollar loans, the profit obtained by holders of dollars becomes larger than the difference between the cost of sterling and dollar loans.

It is necessary to add that, for the sake of the above metaphysical argument, we assumed that borrowing and lending rates in a centre at a given moment are identical, which is by no means always the case. Moreover, in practice Forward Exchange transactions need not represent the swap of a loan in national currency against a loan in a foreign currency. The ultimate counterpart may be provided by a great variety of transactions. In fact, it is not often that the counterpart of a swap undertaken for interest arbitrage is another swap also undertaken for interest arbitrage in the opposite direction. For, as a rule, when it is profitable to transfer funds for interest arbitrage from London to New York, the reverse operation would result in a loss. There are, admittedly, exceptions to this rule. Discrepancies between various Interest Parities may make it possible to undertake arbitrage transfers simultaneously from London to New York and from New York to London. The employment of uncovered balances for swap operations also tends at times to produce a similar result. Finally, the shortage of loan accommodation in a centre may give rise to swap transfers from another centre even if the operation appears to result in a loss. Nevertheless, in the predominant majority of cases the counterpart of an arbitrage swap operation is not another arbitrage swap operation, but some other exchange operation.

CHAPTER XIX

THE ADJUSTMENT OF FORWARD RATES TO INTEREST PARITIES

(1) THE EQUILIBRIUM LEVEL OF FORWARD RATES

(THERE is a fairly widespread—though of course fallacious—belief that a Forward Exchange is at equilibrium only when it is at parity with the spot rate and that the existence of a forward premium or discount is a sign of disequilibrium. This view has been expressed, among others, by Mr. J. H. Huizinga,¹ who says that “when in a purely non-speculative forward market supply and demand are equal . . . the forward rates will be at par with spot rates”.) And the same opinion is held by various practical experts, despite the lessons of their own practical experience. (Actually, parity with spot rate is the equilibrium level for forward rates only when interest rates in the two centres concerned are equal. If interest rates are higher in one centre than in the other, then parity with spot rates ceases to be the equilibrium level.) Thus, if interest rates are 2 per cent in New York and 1 per cent in London, and forward dollars are at par, there would be a stream of transfers from London to New York to take advantage of the higher rate of interest, and this would continue until equilibrium was restored either by the adjustment of interest rates to each other, by the adjustment of the forward rate to its Interest Parity, or, what is more probable, by the reciprocal adjustment of the Interest Parity and the forward rate to each other.

(It is the Interest Parity that represents the equilibrium level for forward rates, and not the spot rate. A discrepancy between spot and forward rates in the form of a discount or premium will not of itself lead to an international transfer of funds so long as that discrepancy is more or less equal to the difference between interest rates in the two centres.) On the other hand, a discrepancy between

¹ In an article on “Central Banks and Forward Exchanges” in *The Banker*, May, 1936, p. 120.

forward rates and their Interest Parities tends to provoke a disequilibrium which will come to an end only when the forward rates are adjusted to their Interest Parities.

(2) IS ADJUSTMENT AUTOMATIC ?

The belief that the equilibrium level of forward rates is represented by the spot rate takes no adequate account of the significance of Interest Parities. At the other extreme is the belief, which unduly exaggerates the significance of Interest Parities, that in normal conditions the adjustment of the forward rates to their Interest Parities is instantaneous and automatic. This would mean that, whenever there is a change in Interest Parities, the mere fact of that change would lead to a corresponding adjustment of forward rates, just as an alteration in Mint Parities would lead to an instantaneous and automatic adjustment in spot rates. Doubtless, in normal conditions forward rates tend to adjust themselves quickly to changes in Interest Parities. Indeed, when such changes are expected, forward rates may even anticipate them, by moving towards their future Interest Parities. But even in normal conditions the complete adjustment is very seldom instantaneous.

The question is, do Interest Parities affect forward rates through psychological or mechanical channels ? Does the mere fact that the New York bill rate has been raised by 1 per cent, while the London bill rate has been left unchanged, induce Foreign Exchange dealers to mark down the forward dollar to a corresponding degree, or do forward dollars depreciate because of certain transactions undertaken by Foreign Exchange dealers in consequence of the discrepancy created by the change in the bill rate ? In this respect there is considerable difference between stable and unstable conditions. In normal conditions the material effect of changes in Interest Parities is so quick and so complete that dealers are inclined largely to anticipate this material effect. Their experience has shown that a change in the Bank rate or some other change leading to the alteration of Interest Parities is followed by interest arbitrage transactions which cause a corresponding movement in forward rates ; hence they are inclined to take it for granted that this must always be so, and the forward rates are marked up or down even before the discrepancy gives rise to a sufficient volume of actual arbitrage transactions to cause a change in the rates. (It is because of this psychological anticipation of the effect of a change in Interest

Parities that the belief has arisen that the adjustment of forward rates is necessarily automatic and instantaneous and can take place practically without any actual transfer of funds.)

In reality the adjustment is far from being so rapid and complete as to obviate the necessity or possibility of the transfer of funds from one centre to another. Even during a period when forward rates tend to remain in the close vicinity of their Interest Parities, it requires actual transfers of funds to complete the adjustment. This is true to an increasing degree in abnormal conditions, when forward rates tend to diverge widely from their Interest Parities. To a varying but by no means inconsiderable degree, the adjustment of forward rates to changing Interest Parities takes place as a result of arbitrage transactions undertaken on the basis of the temporary discrepancy.

If this were not the case, the effect produced by Bank rate changes upon spot exchange rates and gold movements would be much more moderate and less prompt. Were the adjustment of forward rates to their new Interest Parities instantaneous, Bank rate changes would produce but little immediate effects. As we shall see in later chapters, it is precisely because forward rates adjust themselves only slowly to changes in their Interest Parities that Bank rate changes may give rise to transfers of funds, and of acceptance availments to a sufficient extent to bring about gold movements.

(3) LIMITED AMOUNT OF FUNDS USED FOR ARBITRAGE

If the banks possessed unlimited amounts of funds for the purpose of interest arbitrage, and if they always considered foreign centres as safe as their own centre, then there could be no lasting discrepancy between Interest Parities and the forward rate. No matter how persistent the overvaluation or undervaluation of the forward rate as a result of commercial demands or speculative operations, it would be offset by arbitrage transactions as soon as it reached the limit at which banks considered it worth their while to operate. (In reality, there can be lasting discrepancies between forward rates and their Interest Parities, even in normal conditions, because the volume of funds available for interest arbitrage is limited. The volume of susceptible funds—to use the term employed by Mr. Hawtrey¹—may be large, but it has its limits.) Even if the banks

¹ *The Art of Central Banking*, p. 409.

have no reason whatsoever to distrust the foreign centre, they are not prepared to transfer there more than a small percentage of their liquid resources. This percentage is, of course, elastic, and with the widening of the margin of profit banks may be inclined to divert a larger proportion of their resources from use in the home market to employment in interest arbitrage. But if there is a considerable and persistent pressure on the forward rate, the limits may be reached long before the discrepancy has been adjusted, and the forward rates would thus remain overvalued or undervalued compared with their Interest Parities. The question of these lasting discrepancies will be dealt with in the next chapter. Here we are concerned with the relatively moderate and temporary discrepancies which exist in what are regarded as normal conditions.

(4) TRANSFER POINTS

Discrepancies between forward rates and their Interest Parities must reach a certain magnitude before they will induce banks to take advantage of them for the purpose of interest arbitrage. A profit of $\frac{1}{32}$ per cent or $\frac{1}{16}$ per cent is obviously not sufficient to make it worth while for arbitrageurs to operate. Needless to say, the attitude of banks varies widely in this respect. (The large British and American banks have made it a standing rule not to undertake interest arbitrage unless the difference in their favour is at least $\frac{1}{2}$ per cent per annum.) Smaller banks may be inclined to take a hand long before the discrepancy has reached that figure. The resources of these banks, however, are as a rule limited, and in order to be able to operate on a large scale they would have to borrow. From this point of view, therefore, they are less favourably placed than the big banks. While they are willing to operate on the basis of narrower margins, the margins to them for large operations are always narrower than they are for the big banks at the same time. Thus if the yield on interest arbitrage for big banks using their own funds appears to be $\frac{1}{2}$ per cent per annum, the yield for smaller banks which have to borrow for the purpose of interest arbitrage may amount to $\frac{1}{4}$ per cent per annum only. Thus even if small banks are willing to operate at a lower yield, it does not necessarily mean that they can operate at times when the margin is insufficient to induce operations by the big banks.

(It may be said, therefore, that discrepancies between Interest Parities and forward rates do not cause deliberate transfers through

interest arbitrage on a large scale unless and until the profit on the operation is at least $\frac{1}{2}$ per cent per annum. This has been recognised by Mr. Keynes¹ and by other writers, but is often overlooked by those who are not in contact with the market.) So long as forward rates are within $\frac{1}{2}$ per cent per annum on either side of their Interest Parities the situation may therefore be considered normal, just as the fluctuation of spot rates within their gold points is considered normal. It may therefore be said that the rates $\frac{1}{2}$ per cent above and $\frac{1}{2}$ per cent below the Interest Parities constitute the "transfer points" for interest arbitrage. Needless to say, these transfer points are not nearly so definite as gold points. Even gold points are not fixed figures, but their fluctuations are narrow compared with those of transfer points, and the latter are not nearly so universally effective as gold points. As we have already explained, the transfer point depends upon the willingness or unwillingness of Foreign Exchange dealers to accept foreign deposits at a high rate, and upon many other considerations.

(5) ACTIVE AND PASSIVE ARBITRAGE

(It is especially necessary to bear in mind that interest arbitrage can be undertaken in two ways—by taking deliberate action and by abstaining from action.) In many instances the margin of profit may not be sufficiently tempting to induce the big banks to go out of their way to transfer funds to a foreign centre with the Forward Exchange covered, but if, as a result of commercial and other transactions for customers, they find themselves in possession of an accumulated amount of balances with the Forward Exchange covered, then they may be induced by a margin of less than $\frac{1}{2}$ per cent to abstain from undoing this commitment. Thus, if a London bank, having sold forward dollars to British importers, covers the sale in the usual way by buying spot dollars, a difference of $\frac{1}{4}$ per cent on dollar deposits might be ample to induce the bank to abstain from undoing the deal in the usual way by selling spot against forward dollars. The dollars thus acquired are used in interest arbitrage even though they were not acquired primarily for that purpose. Operations of this kind tend to keep forward rates within their transfer points, so that there is less opportunity for active interest arbitrage operations than there would be otherwise.²

¹ *A Tract on Monetary Reform*, p. 128.

² See W. W. Syrett, "Some Forward Exchange Comments" in *The Banker*, December 1936, pp. 219-220.

Another factor that tends to keep forward rates between transfer points is triangular interest arbitrage. A British bank may not consider it worth while to go out of its way to transfer funds to New York for the sake of a difference of less than $\frac{1}{2}$ per cent. An American bank may not consider it worth while to engage in active arbitrage transactions for less than $\frac{1}{2}$ per cent. On the other hand, a French bank may consider it worth while to transfer funds from London to New York or *vice versa* for the sake of $\frac{1}{2}$ per cent or less. When it is not a case of transferring funds from the home country to a foreign country but of transferring from one foreign country to another, active arbitrage is apt to take place within transfer points.

(6) SHIFTING OF ACCEPTANCE AVAILMENTS

(Yet another method of interest arbitrage which tends to keep forward rates within their transfer points is the shifting of acceptance credit availments from one centre to another? Although for various reasons this cannot always be done—for example, payment in sterling or dollar acceptances may be definitely prescribed by contract—in many cases merchants have no reason to object if their bankers decide to use dollar acceptances instead of sterling or *vice versa*. This form of indirect interest arbitrage was undertaken on an extensive scale by German banks prior to 1931.¹ If, as a result of a discrepancy between forward rates and their Interest Parities, it became more profitable to use dollar acceptances than sterling, then German banks increased their availments in New York and reduced them in London; and, since acceptance credits are usually covered by Forward Exchange operations, this involved an increased buying pressure on forward dollars and a lessening of the buying pressure on forward sterling, with the result that the sterling-dollar forward rate tended to readjust itself to its Interest Parity.

The rôle played by such shifting of acceptance credits in influencing forward rates is not adequately appreciated by most writers on the subject.² They are usually inclined to assume that

¹ R. Beerenson, "Devisen-Swap", article in *Handwörterbuch des Bankwesens* (Berlin, 1933), p. 156. Even if payment is definitely fixed in sterling there is nothing to prevent the German bank from getting its customer to have bills drawn against dollar acceptance credits and converting the proceeds into sterling on maturity, provided that the sterling-dollar exchange is covered in advance.

² Mr. Hawtrey, dealing with this point in *The Art of Central Banking* (p. 421), seems to be under the impression that the covering of the exchange risk on acceptance credits during periods of exchange fluctuations tends to result in an excessive

the adjustment of forward rates to Interest Parities takes place exclusively by means of transfers of deposits, though in reality borrowing operations also play a certain part. The only kind of borrowing which is popularly recognised as a factor in the Forward Exchange market is the use of overdraft facilities on *nostro* accounts. Such borrowing, however, is resorted to only in comparatively abnormal conditions, when the discrepancy between the forward rates and their Interest Parities is sufficiently wide to make it worth while to pay the high cost of overdrafts, but when conditions are not sufficiently abnormal to induce the authorities concerned to place an embargo on the granting of overdrafts to foreign borrowers.

(7) LOAN POINTS

In a sense, the rate at which it becomes worth while to overdraw *nostro* accounts constitutes the extreme limit of normal or comparatively normal discrepancies between forward rates and their Interest Parities. These rates can be called the "loan points", to indicate the difference between them and "transfer points". When the forward rate reaches its transfer point it becomes profitable for banks to lend in the foreign market. If they do not lend by means of transferring balances on a sufficiently large scale to readjust the forward rate, or at least to prevent a widening of the discrepancy, the discrepancy may widen until it becomes profitable for foreign bankers to take the initiative and borrow in the foreign market. If they have acceptance credit facilities they make use of them in preference of overdrawing their accounts, because the cost of acceptance credits is usually appreciably lower than that of overdrafts. It is only if no acceptance credits are obtainable, or if the lines available are exhausted, that the banks resort to overdrawing their *nostro* accounts. Provided that they possess adequate overdraft facilities, they will be able to borrow a sufficient amount to prevent a further widening of the discrepancy. If, however, their borrowing facilities are limited, or if the pressure on the forward rate is too persistent, then the discrepancy might widen even beyond the loan point.

one-sided buying pressure on the Forward Exchange of the acceptance centre. He believes that "the Forward Exchange market would be quite incapable of absorbing one-sided transactions of such magnitude". In reality, forward sterling has experienced no such one-sided buying pressure since 1931, nor was there any such difficulty before 1925, although the volume of acceptance credits covered against the exchange risk was larger.

Between centres with adequate money markets, the loan points play but a subordinate part, for in normal conditions the volume of funds transferred by lenders on their own initiative is usually sufficient to check the widening of discrepancies. For the forward rates of countries with no adequate money markets, however, the loan points are much more likely than transfer points to become the normal limits of discrepancies. The transfer of funds for interest arbitrage to and from such countries is by no means free and easy. In the absence of adequate facilities for short-term investment, foreign banks may not be keen to employ their resources in the country, even though there may appear to be a margin of profit. Conversely, the banks of the countries concerned may not be able to employ a sufficiently large amount of funds in interest arbitrage with foreign centres. Thus a premium on the currency in question—which very seldom arises—fails to attract foreign balances until it is wide enough to make it worth while for the banks of the weak countries to raise credits from the strong countries for use in interest arbitrage. If they have acceptance credit facilities in the strong countries, they make use of these for the purpose, otherwise they seek to obtain overdrafts at a higher cost.

If the Forward Exchanges of the weak countries are at a discount, this in itself does not necessarily induce the local banks to transfer funds to the strong centres. The discount may thus be allowed to widen until it reaches the level at which it becomes profitable for the banks of the strong centres to borrow money in the weaker centres and use it for interest arbitrage. Since acceptance credit facilities are seldom available in the weaker centres, the borrowing assumes the form of overdrafts and is usually a costly operation. Thus the loan points of the forward rates are rather wide. The discount on the Canadian exchange before 1931, for example, remained for long periods in the vicinity of its borrowing point. It was quoted persistently at rates at which it was just profitable to sell Canadian dollars for forward delivery rather than to overdraw accounts with the Canadian banks and sell spot exchange. Since the interest obtained on overdrafts by Canadian Banks was much higher than the interest they would have obtained had they themselves transferred their balances to foreign centres, it was profitable for them to wait for the foreign banks to take the initiative.

(8) ADJUSTMENT THROUGH TRANSFERS

As we mentioned in the previous chapter, changes in the Interest Parities may produce an effect upon forward rates even during periods when there are lasting discrepancies between them and their Interest Parities. There is thus a definite tendency for forward rates to adjust themselves to their Interest Parities even in really abnormal conditions when powerful factors work against complete adjustment. Conversely, in normal conditions adjustment may be hampered by the normal working of the gold standard, since the forward rates do not go beyond gold points so long as the stability of the currency concerned is trusted. Apart from this, adjustment in normal conditions usually takes place quickly and is fairly complete. The discrepancy caused by a change in Interest Parities may disappear in a few hours, or even in a few minutes. For instance, in the pre-1931 days, when the result of Friday's Treasury bill tenders from London brought about a change in the discount rate, arbitrageurs set themselves to work and the forward rates usually adjusted themselves to the fractional change within an hour at the utmost. Even in such cases the adjustment is preceded by a certain amount of transfer of funds. It is largely for this reason that changes in the Bank rate, or in Interest Parities in general, usually affect spot rates as well as forward rates. If the effect of this change upon forward rates were instantaneous and psychological, there would be no reason for any change in the spot rates. It is because the adjustment does not as a rule take place without a certain amount of arbitrage that spot rates are affected at the same time as forward rates. And it is because the spot rate is also affected that interest arbitrage gives rise to gold movements. I propose to return to this important aspect of Forward Exchange in Chapters XXI and XXV.

We have thus seen that there is a strong tendency towards the adjustment of forward rates to their Interest Parities, both in normal and in abnormal conditions. It is true that very often this tendency is counteracted, and more than counteracted, by conflicting tendencies. This, however, does not mean that the tendency does not exist. The only conditions in which it ceases to exist are those in which Forward Exchange operations are made entirely impossible and Forward Exchange as such ceases to exist. So long as Forward Exchange business is transacted, the rate tends to be influenced by Interest Parities.

CHAPTER XX

LASTING DISCREPANCIES

(1) CAUSES OF UNDERVALUATION OR OVERVALUATION OF FORWARD RATES

(No doubt in an ideal world such as is usually in the minds of orthodox economists, forward rates would always adjust themselves promptly to their Interest Parities. Discrepancies occurring even in such a world would be essentially temporary and of little theoretical or practical significance.) In reality, however, things do not work nearly so smoothly. For a variety of reasons, there can be substantial and lasting discrepancies of great practical significance which cannot be ignored by theoretical economists. In describing the forward market as it works in normal conditions, Mr. Keynes indicated some of the causes of abnormal discrepancies.¹ (The main cause of discrepancies is, according to him, the absence of adequate funds available for interest arbitrage.) It is to the credit of Mr. Hawtrey that he has pointed out that this factor may operate also in so-called normal conditions.²

The discrepancy may take the form of undervaluation or overvaluation of forward rates compared with their Interest Parities. (The main causes of undervaluation or overvaluation may be summarised as follows :

1. Discrepancies between commercial supply and demand in the Forward Exchange market.
2. One-sided tendency of hedging operations.
3. One-sided speculative operations.
4. Absence of readjusting arbitrage operations, owing to :
(a) distrust in the banks in the countries concerned ; (b) distrust in the political stability of the countries concerned ;
(c) fears of coming exchange restrictions in the countries concerned ; (d) inadequate funds available for that purpose.)

¹ See Chapter XVII, p. 151.

² *The Art of Central Banking*, p. 407 *et seq.*

(2) ONE-SIDED BUYING OR SELLING

A discrepancy between commercial buying and selling in the Forward Exchange market may develop for a variety of reasons. The most obvious cause is an import or export surplus, but, apart from this, from time to time importers consider it more essential to cover against the exchange risk than do exporters, or *vice versa*. The discrepancy between the buying and selling of Forward Exchange in connection with hedging operations may also be due either to the one-sidedness of the commitments against which it is considered necessary to cover the exchange risk or to the view taken by owners of property abroad. From time to time speculative operations tend to assume an essentially one-sided character. While at times speculators very obligingly fill the gaps between supply and demand caused by the one-sidedness of commercial and hedging operations, on other occasions their operations tend to emphasise and magnify the discrepancy between supply and demand at the existing rates. Whenever there appears to be an obvious reason for expecting an exchange movement, then commercial, hedging, and speculative operations all tend to become one-sided. We shall see in a later chapter that such tendencies are often, though by no means always, due to the undervaluation or overvaluation of the spot exchanges concerned compared with their Purchasing Power Parities.

This one-sidedness of commercial hedging and speculative operations tends to be checked, and may even be reversed, when it has resulted in an excessive movement in the forward rates. When the discount on a Forward Exchange attains a certain magnitude, speculative and commercial hedging or selling becomes too costly, and the movement may come to a standstill. The reaction upon the volume of commercial hedging and speculative operations caused by the excessive movement, however, does not in itself provoke a readjustment. It only prevents the movement from continuing indefinitely. It is the task of arbitrageurs to bring about a readjustment by taking advantage of the profit to be made from the discrepancy. Given an unlimited volume of arbitrage operations, no one-sided pressure, however strong or persistent, could produce more than purely temporary discrepancies. The reason why discrepancies are apt to be both substantial and persistent is precisely because the volume of arbitrage operations is not unlimited.

(3) PROFESSIONAL *v.* NON-PROFESSIONAL ARBITRAGE

We have summarised under heading (4) in our list of the causes of discrepancies the reasons why arbitrage operations are not unlimited. It is either because, for financial or political reasons, the banks do not dare to commit themselves in such operations, or because the funds available for interest arbitrage are limited. If the banks or the Government¹ of the country whose Forward Exchange is overvalued compared with its Interest Parities do not enjoy the confidence of the banks of the country whose Forward Exchange is undervalued, or if exchange restrictions seem imminent, then even the most tempting profits on interest arbitrage fail to bring about the transactions necessary to readjust the discrepancies. But even if no such fears are entertained, the amount banks are willing to engage in such transactions with any particular country is necessarily limited. This does not, of course, mean that the limit is rigid. When the margin of profit widens, banks may be tempted to increase the resources which they employ in interest arbitrage with that particular country.

Nor are banks alone interested in such transactions. In Great Britain and the United States only the largest firms, such as insurance companies or industrial combines with world-wide ramifications, have realised the profit that can be made on such transactions without running any speculative exchange risk.¹ On the continent, however, the public is much more "swap-conscious" than it is in the Anglo-Saxon countries. Firms of every description, and even private individuals, do not hesitate to use their liquid funds for the purpose of interest arbitrage. As Mr. Hawtrey points out when describing the process in *The Art of Central Banking*,² even allowing for the possibility that the public may take a hand in swap transactions, the volume of susceptible balances is by no means unlimited. It is hardly worth while to operate with small balances, as the profits would be eaten up by commissions and the turns of foreign exchange dealing. Even among owners of big balances, only those who know for certain that they will not want their funds during the period concerned can afford to place them abroad.

¹ In the Anglo-American literature on Foreign Exchange, Mr. Ralph Curtis is probably alone in pointing out to the lay reader (Curtis and Winham, *Fresh Fields for Investment*, London, 1935, Chapter IV: "Foreign Exchange Swaps", by R. Curtis, pp. 98-99) the risk-free investment possibilities provided by swap operations.

² P. 408.

Bankers using their funds in interest arbitrage on a large scale may have to curtail their other advances, which might be detrimental to their relations with permanent clients. Needless to say, occasionally the profit on arbitrage transactions might be high enough to make it worth the banks' while to jeopardise their future business with some of their less valuable customers, but considerations of liquidity, and the necessity of avoiding wholesale cutting of credits, put a natural limit to the extent to which banks can operate. It is true that those of their customers who have ample liquid resources may operate on a large scale, but, as Mr. Hawtrey points out,¹ when depositors transfer funds abroad the bankers lose the deposits, have to effect a corresponding contraction of their assets, and can employ only a smaller part of their own funds in interest arbitrage.

(4) BORROWING FOR ARBITRAGE

(We have seen in the last chapter that interest arbitrage can be undertaken either on the initiative of the country whose Forward Exchange is undervalued or on the initiative of the country whose Forward Exchange is overvalued. The latter can take advantage of the discrepancy between forward rates and Interest Parities by borrowing in the countries whose Forward Exchange is at a discount.) The volume of funds available for arbitrage therefore consists of the "susceptible" balances of banks and their customers in the country whose Forward Exchange is at a discount, and of the amount which can be borrowed by foreign banks in that country. Needless to say, foreign borrowing is calculated to reduce the volume of funds available for arbitrage by nationals of the country.² When swap operations become exceptionally profitable, these borrowing facilities, whether in the form of acceptance credits or overdrafts, are usually curtailed, if not stopped altogether. Alternatively, the interest charged thereon will be raised until it is high enough to compensate the banks in question for relinquishing the use of resources which they themselves might otherwise employ in interest arbitrage. Thus, even allowing for foreign borrowing

¹ *Op. cit.* p. 408.

² It is necessary to bear in mind that throughout this book the meaning of an increase or reduction of funds or deposits is a net gain or loss for the whole centre through gold movements or Exchange Equalisation Account operations. Unless arbitrage leads to gold movements or Exchange Equalisation Account operations, the funds or deposits merely change ownership, and the total available for new arbitrage remains unchanged.

facilities, the extent to which it is possible to carry on interest arbitrage has its limits.

The authorities of the country whose exchange is subject to adverse pressure and whose Forward Exchange is at a discount often take steps to reduce the limit of the funds available for interest arbitrage. They do so in order to reduce the pressure on the spot exchange, with which they are primarily concerned. Thus banks are discouraged from granting credits to foreign borrowers, and the volume of internal credit is reduced. But even in the absence of such intervention, the volume of resources available for interest arbitrage is often not sufficient to bring about a complete readjustment of forward rates to their Interest Parities when there is a lasting one-sided pressure.

(5) NORMAL AND ABNORMAL DISCREPANCIES

Thus, whether through the unwillingness of arbitrageurs to take advantage of the discrepancies or through their inability to do so, it is possible for discrepancies to remain so long as the one-sided pressure on the Forward Exchange continues, unless, of course, the readjustment takes place through the changes of the Interest Parities themselves. Such lasting discrepancies can exist even in normal conditions within the limits of the transfer points, or in comparatively normal conditions within the limits of the borrowing points. Persistent discrepancies can exist in normal conditions under the gold standard, when the spot rate is subject to buying or selling pressure and appreciates or depreciates to the close vicinity of its gold points. If the spot rate is at gold export point and if the Interest Parities justify a discount on the Forward Exchange, then the forward rate tends to become overvalued, because the existence of the gold point prevents it from adjusting itself to its Interest Parities. Should the exchange be at gold import point, and should the Interest Parities justify a premium on the Forward Exchange, then the forward rate tends to be undervalued, for there can be no adjustment to its Interest Parities. Such overvaluation or undervaluation of the forward rate necessarily provokes arbitrage transactions which affect both spot and forward rates, tending to bring about a readjustment. If, however, the one-sided pressure on the spot exchange is persistent, or if the funds available for interest arbitrage have been exhausted, then the discrepancy continues.

Most writers on Forward Exchange have recognised the possibility of discrepancies, though many of them are inclined to regard them as purely passing phenomena ; but even those who realise that discrepancies can be both substantial and lasting do not adequately appreciate their immense significance from the point of view of the theory of Forward Exchange. It is one of the main tasks of this book to draw attention to the significance of discrepancies, especially from the point of view of their effect upon interest rates, and from the point of view of the working of Bank rate changes and of the gold standard in general. (It is largely because of the possibility of discrepancies that a high Bank rate is capable of attracting gold long before it has affected commodity prices and the trade balance.) We propose to show in the next chapter that the popular belief, that interest rate changes are always the cause and never the result of forward rate changes, is wholly mistaken, and that relations between interest rates and forward rates are to a very large extent reciprocal.

CHAPTER XXI

THE THEORY OF RECIPROCITY

(1) A CLASSICAL MISCONCEPTION

WE have now arrived at what I consider the most important part in the theory of Forward Exchange. (I shall endeavour to prove in this chapter that forward rates constitute a very prominent influence upon the level of interest rates in both normal and abnormal conditions.) The acceptance of this thesis is highly important from both a theoretical and a practical point of view. In the sphere of theory it should lead to the reconsideration not only of the theory of Forward Exchange and that of Foreign Exchange in general, but also of the existing theories of interest rates, of international transfers, and of gold movements. In the field of practical monetary policy it should induce monetary authorities to reconsider their "neutral" attitude towards Forward Exchange, and to adopt a policy of active intervention in order to increase the efficiency of their discount rate policy.

Consciously or unconsciously, the classical theory that forward rates are determined by their Interest Parities is based upon the philosophical conception that in the international money market, as in the economic field and in Nature itself, there is a tendency toward automatic compensation. The Forward Exchange system is regarded as the medium through which this tendency works to bridge the gaps between interest rates in various countries. (As, owing to the difference in the degree of risk and the changing relation between demand for capital and its supply in various markets, interest rates cannot ever be the same everywhere, the development of Forward Exchange is supposed to have provided the means by which the gaps between internal levels of interest rates are automatically filled. According to this theory, temporary deviations apart, short-term interest rates are supposed to be practically identical at any given moment in all leading centres, if we allow for the premium or discount on the Forward Exchange.) Thanks

to the tendency of forward rates to adjust themselves to their Interest Parities, there is thus believed to be a "solidarity" between money markets in spite of the difference between conditions prevailing in them.

This conception is so neat that it is almost a pity that it does not correspond to reality. (While it is true that in certain circumstances the Forward Exchange machinery plays the part of the supreme equaliser, in other circumstances it tends to disturb the "solidarity" of money markets, and to break up the international level of interest rates, by widening the gaps between them, instead of neatly compensating them in accordance with the classical principles.) The conception of perfect compensation is based on two erroneous assumptions: (a) that the adjustment between forward rates and their Interest Parities is always complete and practically instantaneous; and (b) that forward rates are always the passive factor in the process of adjustment to the Interest Parities. It is widely assumed that while forward rates are influenced by Interest Parities the converse can never be true.

We have already seen in Chapters XIX and XX that there can be lasting discrepancies between forward rates and their Interest Parities. We need not therefore go again into the examination of this cause of flaws in the solidarity of the international level of interest rates. Our present task is to disprove the second erroneous conception, which is much more prevalent than the first, namely, that the adjustment takes place solely through the effect of interest rates on forward rates.

(2) EFFECT OF FORWARD RATES ON INTEREST RATES IN NORMAL CONDITIONS

(As we have seen in Chapter XIX, the adjustment of forward rates to their Interest Parities takes place largely as a result of arbitrage operations undertaken whenever the existence of discrepancies makes such operations appear profitable.) Although to some extent a mere change in the Interest Parities, or even anticipation of such a change, tends to provoke automatic readjustment, as a general rule arbitrageurs have to operate between the two centres before the readjustment becomes complete. This means that in so far as these transfers lead to gold movements or Exchange Equalisation Account operations the centre whose Forward Exchange is undervalued compared with its Interest Parities loses

funds, while the centre whose Forward Exchange is overvalued compared with its Interest Parities gains funds.¹ This again means that the credit resources of the losing money market tend to contract and those of the gaining money market tend to expand. Should the movement assume a sufficient magnitude, and should it not be "neutralised" by the authorities through the manipulation of the volume of credit, it will lead to a rise in interest rates in the losing centre and to a fall in interest rates in the gaining centre. The result is an adjustment of Interest Parities to the forward rates.

Forward rates can produce such effects on interest rates to some extent even if the transfers brought about by their discrepancies from their Interest Parities do not lead to gold movements or Exchange Equalisation Account operations. While in that case the total monetary resources of the markets concerned remain unaffected by the transfers, the redistribution of these resources may produce some fall in interest rates in the gaining centre and

¹ A detailed discussion of the question of the effect of Exchange Equalisation Account operations on the volume of funds and on the interest rates in the centre concerned is outside the scope of this book. According to one conception, since the Exchange Equalisation Account reborrows from the market, through the issue of Treasury bills, the equivalent of the net increase of foreign deposits, the total resources of the market remain unchanged. There is another conception according to which the effect of an influx of funds through Exchange Equalisation Account operations is tighter money and a tendency towards higher interest rates, while the effect of an efflux is easier money and a tendency towards lower interest rates. In my opinion, however, Exchange Equalisation Account operations are apt to affect money market conditions in the same way as Central Bank operations, though to a less degree. Even in London, where the influx or efflux of foreign balances through Exchange Equalisation Account operations is promptly "neutralised" by the increase or reduction in the volume of Treasury bills, there is usually a time lag during which there is an expansion of credit resources. In other centres the process of "neutralisation" is usually not so complete as in London. In Paris, for example, where the absorbing capacity of the market for Treasury bills is limited, every additional gold purchase by the Fonds de Stabilisation would lead to a more or less corresponding credit expansion. In Holland the authorities "neutralised" only part of the plethora of credit caused by Exchange Equalisation Account operations. In the United States, until the end of 1936, the influx of gold through Exchange Equalisation Account operations was allowed to produce its full effect, but in December 1936 the British method of "neutralisation" was adopted.

Moreover, even if the effect of Exchange Equalisation Account operations on the volume of credit is fully "neutralised", this does not mean that they do not affect bill rates. If the increase of foreign balances precedes the increase of Treasury bills, then the buyers' initiative tends to lower bill rates, and the additional bills are easily absorbed by a receptive market, without necessarily restoring the rates to their old level. In addition, Exchange Equalisation Account operations affect bill rates also through their psychological influence. The evidence of heavy and persistent losses of gold through Exchange Equalisation Account operations is likely to cause bill rates to rise, while the evidence of a heavy and persistent influx tends to lower interest rates, even in the absence of any change in the supply of bills or in the volume of funds.

some rise in the losing centre. This factor operates through both psychological and technical channels, but its actual influence on interest rates is usually negligible. It is only when transfers brought about by the undervaluation and overvaluation of forward rates lead to an actual change in the total volume of credit resources of the markets concerned that they are apt to become an important factor. The question is therefore whether the international transfers brought about by this factor can be sufficiently large to lead to gold movements or Exchange Equalisation Account operations.¹

(3) A NEW INTERPRETATION OF GOLD MOVEMENTS

(It is a commonplace of text-books of Foreign Exchange that a rise in the Bank rate leads to the transfer of gold to the centre concerned.) (In reality more often than not it is not the rise in the Bank rate in itself but the discrepancy between forward rates and their changed Interest Parities that leads to the transfer of funds responsible for the gold movements.) In so far as the funds transferred are not covered against the exchange risk, the higher Bank rate is in itself responsible for the gold shipments. In so far, however, as the funds engaged in interest arbitrage are covered, the Bank rate change in itself would not be able to cause gold shipments, but for the fact that forward rates failed to respond automatically and instantaneously to the change in their Interest Parities. The extent to which forward rates can influence gold movements therefore depends largely on the extent to which funds engaged in interest arbitrage are covered.

From this point of view it is important to bear in mind that if the spot exchange of the country which raises its Bank rate appreciates to gold import point, foreign arbitrageurs do not consider it advisable to leave the exchange risk uncovered unless the discrepancy between interest rates is sufficient to compensate them for their possible loss on the exchange. The appreciation of the spot exchange to the vicinity of gold import point would therefore bring transfers through interest arbitrage to an end in most instances, were it not for the possibility of making a profit on *covered* interest arbitrage. It is largely because forward rates do not instantaneously adjust themselves to the change in their Interest

¹ The effect of swap transactions on the spot rate and, through its effect on the spot rate, on gold movements, will be discussed in Chapter XXV, dealing with the relation between spot and forward rates.

Parities, even in strictly normal conditions, that the transfer of funds through interest arbitrage continues even if the spot rate has reached gold import point. Thus on such occasions it is the behaviour of the forward rates that is directly responsible for the additional transfers which force the spot rate actually to gold import point, thereby leading to gold movements, and for the changes in interest rates brought about by such gold movements. The forward rate factor thus forms a very important part of the normal working of the gold standard. It is all the more remarkable that, even though the system of the gold standard has been subjected to the most minute scrutiny by innumerable theoretical and technical experts, the essential rôle forward rates play in gold movements has not so far been ascertained.¹

(4) FORWARD RATES AND ACCEPTANCE CREDIT REPAYMENTS

The behaviour of forward rates is capable of influencing gold movements, and therefore interest rates, not only through its effect on the transfer of funds through covered interest arbitrage but also through its effect upon the amount of acceptance availments, and upon the relative amount of bills placed in the acceptance centre or in other lending centres. If the forward rate of an acceptance centre fails to adjust itself to its new Interest Parities after an increase of the Bank rate, the higher discount rate may lead foreign borrowers to abstain from drawing on that centre, or to avoid discounting there bills actually drawn. In drawing bills upon, or giving them "in pension"² in, a centre where money rates are lower, borrowers benefit by the difference of interest rates, and this benefit will not be fully offset by the less favourable terms of covering the exchange risk. In such circumstances there will be a buying pressure on the spot exchange of the centre which raised its

¹ This criticism applies to me as much as to others who have gone into the technique of the gold standard. I must confess that in my examination of the causes of gold movements in my book, *International Gold Movements*, and in various articles on that subject, I completely overlooked the part played by forward rates except in so far as they are apt to affect gold points. This whole question of the way in which the behaviour of forward rates tends to influence the effect of Bank rate changes will be discussed in greater detail in Chapter XXVII.

² To give bills "in pension" is the practice, comparatively little known in London but popular in continental centres, of borrowing on the security of foreign bills as an alternative to selling them. Its advantage is that borrowers can benefit by the lower interest rates prevailing in the foreign centre, while if they sold the bills the discount rate would be reckoned on the basis of the high Bank rate of the centre upon which the bills are drawn.

Bank rate, leading conceivably to an influx of gold. Once, however, the forward rate has adjusted itself to its new Interest Parities, there is no longer any specific reason to refrain from drawing bills upon the centre concerned, or from discounting there the bills drawn. For the additional cost through the higher discount rate is then fully offset by the wider discount or narrower premium on the forward exchange of the centre which raised its Bank rate.

Admittedly this factor operates only when the acceptances are covered. In general they are covered whenever the forward exchange of the acceptance centre is at a discount, but they are often covered also when the forward exchange is at a premium, so long as the spot exchange does not appreciate to the vicinity of gold import point. Once it has approached gold import point there is no longer any inducement to debtors to cover the exchange risk at the cost of a premium on the forward exchange. The process of repayment of credits caused by the delay in the adjustment of forward rates to their new Interest Parities may thus come to an end even before the spot rate has reached gold import point. Nevertheless, even in such instances the behaviour of forward rates is indirectly responsible for subsequent gold movements, in that the repayment of credits thus caused tends to hasten the appreciation of the spot rates to gold import point.

When conditions under the gold standard become slightly abnormal, then the effect of forward rates on gold movements becomes even more evident. One-sided speculative pressure on the forward rate is apt to develop even under the gold standard, leading to large transfers of funds and large shipments of gold. In such instances the extent to which interest rates in the gaining and losing centres are affected is apt to be far from negligible. Admittedly, as I remarked above, this presupposes the absence of the official manipulation of the volume of credit with the object of neutralising the effect of gold movements. Such neutralising policy has, however, its limits, especially in the losing centre.

(5) EFFECT OF FORWARD RATES ON DEPOSIT RATES AND BILL RATES

The actual process through which forward rates may affect interest rates even in normal conditions is so obvious that it is amazing that it has escaped the attention of theoretical and practical writers on the subject. (Every banker knows that if, in consequence

of the overvaluation of forward sterling, foreign deposits are offered in London on a large scale, the London bankers will tend to quote lower special rates on such deposits.) If, on the other hand, as a result of the undervaluation of forward sterling, foreign deposits are withdrawn, the London banks are inclined to increase the special deposit rates which they are prepared to allow to foreign banks. Admittedly these special deposit rates have in normal conditions very little to do with the general level of internal interest rates in the countries concerned, but there are other at least equally obvious ways in which the overvaluation or undervaluation of forward rates reacts upon the internal level of interest rates. Its effect upon bill rates is particularly evident. (If forward sterling is overvalued, it tends to increase tendering for and purchase of bills in London on foreign account, and bill rates will tend to fall. If forward sterling is undervalued, it tends to check foreign demand for bills through tendering and buying, and existing foreign holdings are sold or are allowed to run out. The result is a rise in the London bill rate.) Even if these transactions do not lead to gold movements and the total of funds available for the purchase of bills in London remains unchanged, bill rates may be affected to some extent through the redistribution of holdings and through the effect of foreign buying or selling initiative, which is apt to be more pressing than the normal local factors.

What is more important, the supply of bills in London is apt to be influenced by the behaviour of forward rates even in the absence of gold movements. We have seen above that the overvaluation or undervaluation of forward rates influences the volume of acceptances drawn upon, or discounted in, an acceptance centre. Even if the pressure on sterling thus caused is not sufficiently strong to give rise to gold movements, the undervaluation of forward sterling is apt to cause an increased offering of bills in London, which again will tend to raise the discount rate in the London market and will tend to readjust the Interest Parities to forward rates. If forward sterling becomes overvalued, then many foreign borrowers switch over from sterling credits to dollar credits owing to the increased cost of covering. For the same reason, many sterling bills will not be discounted on the London market. As a result the fall in the supply of bills will tend to lower the bill rate and thus to adjust Interest Parities to forward rates. Of course, if the changes in the volume of foreign borrowing in London are substantial enough to give rise to gold movements, then it is not only the supply of bills

that is affected by the behaviour of forward rates, but also the demand for bills. In that case the extent to which forward rates are apt to influence interest rates is even more pronounced. But it is important to realise that forward rates tend to influence interest rates even in the absence of gold movements.

(6) EFFECT OF FORWARD RATES ON INTEREST RATES
IN ABNORMAL CONDITIONS

Possibly in normal conditions the extent to which internal interest rates are affected by forward rates is most of the time barely perceptible. (In abnormal conditions, however, forward rates are apt to become a very important factor in determining internal interest rates.) As we have seen already in Chapter XX, there can be lasting and substantial discrepancies between Interest Parities and forward rates, owing to the unwillingness or inability of holders of liquid funds to take advantage of the profit on such discrepancies to a sufficiently large extent to restore equilibrium. In certain circumstances these discrepancies can reach spectacular dimensions. If moderate and passing discrepancies tend to affect interest rates to a slight extent, wide and lasting discrepancies are apt to affect them markedly. The less readily forward rates adjust themselves to their Interest Parities, the more they are apt to influence interest rates. The following are the ways in which the possibility of earning a high yield on funds employed in swap transactions tends to affect interest rates in the country whose Forward Exchange is at a discount :

1. If the country is on the gold standard, the pressure on the spot rate caused by interest arbitrage will lead to an outflow of gold, tending to contract the volume of credit. If it is not on a gold basis but operates an Exchange Equalisation Account, a similar result is apt to be brought about, though not nearly to such a pronounced extent, by the latter's support of the spot rate.
2. If banks can earn, say, 10 per cent by employing their funds in interest arbitrage, they naturally become increasingly reluctant to accept a much lower yield on their domestic short-term investments.
3. In a country where the public is aware of the profit possibilities of swap operations, many depositors may be able to obtain special rates on their deposits so as to compensate

them for forgoing the exceptional profit on interest arbitrage. Thus deposit rates tend to rise simultaneously with loan rates. Even so, the possibility of earning large profits on interest arbitrage tends to reduce the volume of deposits, by giving rise to a gold outflow or Exchange Equalisation Account operations, and thus to raise interest rates.

4. As I pointed out in the last chapter, in order to counteract the pressure on the spot exchange caused by transfers for interest arbitrage, the authorities of the countries concerned are usually inclined to restrict credit so as to reduce the volume of resources available for interest arbitrage. To that end, the Bank rate is usually raised. Admittedly, one of the objects of the increase of the Bank rate is to discourage speculative selling and the flight of capital, but to a large degree it also serves the purpose of discouraging transfers through interest arbitrage.
5. When dealing with Bank rate parities in Chapter XVIII, I pointed out that, when the yield on covered interest arbitrage exceeds the Bank rate, banks in countries where liquid resources are scarce may be inclined to rediscount their portfolio with the Central Bank in order to employ in interest arbitrage the amounts thus raised. It is to the interest of the authorities to discourage this practice by raising the Bank rate.

(A higher Bank rate pursues the three-fold aim of increasing the cost of swap operations, bringing about a contraction in the volume of resources, and making it more attractive to invest the available funds in the home market instead of transferring them abroad. The increase of the Bank rate, whether or not it achieves the object of bringing forward rates back to their Interest Parities, certainly goes some way towards adjusting Interest Parities to forward rates.)

(7) THE FRENCH EXPERIENCE IN 1935-36

The experience of France during 1935-36 provides a characteristic example of the effect of forward rates upon internal interest rates. (As the devaluation of the franc had been widely expected, forward francs were at a persistently heavy discount from May 1935 until the devaluation in September 1936. They had become considerably undervalued compared with their Interest Parities.) The result was that it had become highly profitable for French

banks to use their liquid resources in interest arbitrage, which during that period seldom yielded less than 15 per cent per annum for any length of time, and at times yielded as much as 40 to 50 per cent for three months and even more for shorter periods. As a result, French banks employed much of their liquid resources in such operations, and the French public also became interested in them. Whenever the yield on such transactions increased, new classes of the public became tempted to take a hand, so that the total amount absorbed in such transactions must have risen to high figures. As these operations involved the sale of spot francs, they increased the outflow of gold from the Bank of France, and as they also involved a decline of deposits they resulted in a contraction in the volume of funds in the Paris money market. On three occasions between May 1935 and June 1936 the Bank of France raised its rediscount rate to the high level of 6 per cent., largely in order to check the outflow of gold due to interest arbitrage. Apart from this, the French banks were compelled to raise their deposit rates so as to induce depositors to refrain from withdrawing their balances for use in interest arbitrage. At the same time they raised their charges to borrowers, especially in instances when they were inclined to suspect that the funds borrowed would be used for interest arbitrage.

As a result of these influences, the level of interest rates in Paris tended to rise, and Interest Parities tended to adjust themselves to forward rates. Admittedly, they remained far below the fantastic level of the yield on arbitrage transactions. Even during periods when the temporary return of confidence resulted in a momentary recovery of the forward franc, the discrepancy between forward rates and their Interest Parities remained abnormally wide, notwithstanding the reciprocal tendency towards adjustment. Nevertheless, the fact remains that as a result of the undervaluation of forward francs compared with their Interest Parities, internal interest rates in France rose to no slight degree. The exact, or even approximate degree of rise attributable to this particular factor is impossible to ascertain. For one thing, nobody, not even the French authorities themselves, could say to what extent the increase of the Bank rate was due to the flight of capital and speculation, and to what extent it was brought about by the pressure due to arbitrage operations. Moreover, while nominally deposit rates and loan rates moved in exact proportion to the Bank rate, in reality many borrowers had to pay much higher rates and many

depositors were allowed much higher rates, largely in consequence of the temptation to employ funds in swaps. As these special rates were fixed by individual negotiations and were never published, it is impossible to ascertain their level, but instances were known during 1936 when French borrowers had to pay as much as 10 per cent for commercial accommodation.

(8) EFFECT ON GAINING CENTRE

Forward rates are apt to affect their Interest Parities not only by raising interest rates in the countries whose Forward Exchanges are at a discount, but also by lowering interest rates in the countries whose Forward Exchanges are at a premium. This effect is produced by interest arbitrage in the following ways :

1. The influx of funds through interest arbitrage is accompanied by an influx of gold, which tends to make money rates easier. This is particularly the case in countries on the gold standard, though countries with Exchange Equalisation Accounts are in a somewhat similar position, to a distinctly less degree.
2. The influx of funds through interest arbitrage tends to lower deposit rates.
3. The authorities of the receiving centre may try to defend themselves against this *embarras de richesse* by lowering the Bank rate.
4. Since the banks in the country whose Forward Exchange is overvalued are unable to employ part of their resources in interest arbitrage, they are forced to find employment for them in the local money market and this tends to lower money rates.
5. The banks in the country whose Forward Exchange is overvalued might even borrow in countries whose Forward Exchange is undervalued and transfer the proceeds to the home market.

The situation in the New York money market during 1935-36 provides an interesting example of the effect of the influx of arbitrage funds on money rates in the receiving centre. In this case it is, however, even more difficult than in the case of France to ascertain even approximately the extent to which this factor was responsible for easy money conditions. It is impossible to estimate to what extent the influx of gold to the United States was due to flight to the dollar, and to the attraction of Wall Street, and to what

extent it was due to interest arbitrage. The amount of covered foreign balances in New York is known, however, to have increased materially.

The situation becomes even more obscure and involved if a Forward Exchange is overvalued in relation to one or several exchanges and at the same time is undervalued in relation to other Forward Exchanges. This was actually the case of forward sterling during 1935-36. While it was grossly overvalued in relation to the forward franc, it was distinctly undervalued in relation to the forward dollar. It is impossible to do more than assume that the buying pressure on spot sterling due to the overvaluation of forward sterling in relation to the franc was larger than the selling pressure due to the undervaluation of forward sterling in relation to the dollar.

Even in the absence of the means to ascertain statistically the extent of the influence of forward rates on interest rates, and even if the extent of that influence may be a matter of opinion, its presence as a factor affecting interest rates is incontestable. The extent of the effect of forward rates on interest rates is greater for interest rates which are essentially international, and smaller for largely or purely internal interest rates. In this respect, too, the relations between interest rates and forward rates are reciprocal, since forward rates are affected to a much larger degree by international interest rates than by internal interest rates. But, as the example of France shows, even purely internal interest rates such as the rates on advances to customers are apt to be affected materially by forward rates.

(9) A RIVAL LOAN MARKET

It is of the utmost importance, both from the point of view of forming a correct conception of the theory of Forward Exchange and from the point of view of the efficient conduct of monetary policy, to realise that the Forward Exchange market provides a channel for the employment of liquid resources which not only rivals the internal money markets but which largely escapes the influence of the traditional discount rate policy of the Central Banks. The importance of this rival market depends partly upon the superior yield it can offer to short-term investors. It would be a mistake, however, to imagine that when normal conditions return and when the present spectacular discrepancies between forward rates and their Interest Parities disappear this rival market will once more

become an unimportant factor. For its importance does not depend only upon the size of the margins. It depends also upon the ability and willingness of holders of liquid resources to engage their funds in interest arbitrage.

From this point of view, the return of normal conditions will tend to increase the importance of the rival market provided by swap facilities. For, in the absence of credit restrictions, there will be more funds available for that purpose, and, owing to the more settled conditions, banks and other holders of liquid funds will be more willing to engage their resources in interest arbitrage. In this respect, conditions will become similar to those prevailing during the period of stability prior to 1931. The difference will be that the existence of abnormal conditions after 1931 has opened the eyes of many people and made them aware of the possibilities provided by this rival market. The chances are, therefore, that non-banking resources will in future be employed in interest arbitrage to a larger extent than they were in the past. This may tend to prevent the development of discrepancies much beyond transfer points, and at the same time it may also increase the volume of international transfers through interest arbitrage.

Above all, as I shall try to show in Chapter XLVII, which deals with the future of Forward Exchange, it is doubtful whether, after the experience of recent years, gold points will be relied upon by interest arbitrage in the future to the same extent as they were before 1914, or even between 1925 and 1931. After the stabilisation of currencies a much larger percentage of arbitrage funds will be covered than during previous periods of stability. This will be particularly so if, as is possible, the system of gold standard to be adopted allows for changes of gold parities. The widespread adoption of the practice of covering the exchange risk will increase the significance of forward rates as a factor affecting interest rates.

(10) CENTRAL BANKS' ATTITUDE

Consequently the monetary authorities will hardly be able to afford to ignore the existence of Forward Exchange, or to abstain from taking an active interest in it. The "neutrality" of most Central Banks towards Forward Exchange is probably largely due to their failure to realise either the reciprocal nature of the relations between Interest Parities and forward rates, or the extent and importance of the rival money market which interest arbitrage

facilities create. On the assumption that forward rates are a passive factor determined by Interest Parities, it may be possible to argue in favour of a *laissez-faire* policy in the sphere of Forward Exchange. Once, however, the reciprocity of the relations between Interest Parities and forward rates is realised, it is difficult to escape the conclusion that the monetary authorities cannot afford to ignore Forward Exchange. The discussion of the whole question of whether active intervention in the Forward Exchange market to supplement the discount rate policy, as proposed by Mr. Keynes, would be feasible or desirable, is outside the scope of this chapter, for it is discussed fully in Chapters XXXIV to XLIV. Even at this stage, however, it may be remarked that, in the light of the realisation that forward rates, if allowed to look after themselves, are apt to influence internal short-term interest rates, Mr. Keynes's proposal does not appear nearly so revolutionary as it does in the light of the misconception that, in the absence of official intervention in the Forward Exchange market, interest rates are always the cause and forward rates are always the effect.

The fact is that, whether or not the authorities interfere with forward rates, the latter tend to affect discount rates. The difference between the existing state of affairs and the system described by Mr. Keynes is that at present the effect of forward rates on discount rates frequently clashes with official policy, while Mr. Keynes's proposal would ensure that the effect of forward rates on discount rates would be in accordance with the lines of official policy. Thus, even from the point of view of orthodox discount rate policy, it is a mistake to adopt an attitude of neutrality towards the Forward Exchange market. Those who think that it would be going too far to bring about an artificial appreciation of forward rates in order to attract or retain foreign balances may well consider whether it would not be desirable in given circumstances for the authorities to counteract at least the discrepancies between forward rates and their Interest Parities, so as to prevent the development of a rival loan market which interferes with internal money rates.

There is another consideration of great importance from both a theoretical and a practical point of view. As a result of lasting discrepancies between Interest Parities and forward rates, situations may, and frequently do, arise in which funds move from the dearer market to the cheaper market. Even though the Bank rate may be at 6 per cent in Paris, 2 per cent in London and $1\frac{1}{2}$ per cent in New York, the discrepancy between forward rates and their

Interest Parities can result in wholesale movements of funds from Paris to both London and New York, and also in movements of funds from London to New York. Thus, as a result of the reciprocity of relations between Interest Parities and forward rates, money tends to become dearer in markets where it is dear already, and it tends to become cheaper in markets where it is cheap already. It will surely puzzle the *laissez-faire* economists to figure out how this unquestionable fact can be reconciled with their theory of economic optimism.

(11) OUTSIDE INFLUENCES

Finally, it must be pointed out that in itself the reciprocity theory does not always explain the tendency of money rates and Interest Parities to move together to a reasonably large extent. It is essential to recognise that the adjustment of discrepancies between the two is due not only to the influence of Interest Parities on forward rates but also to the influence of forward rates on Interest Parities. It is also necessary, however, to bear in mind that often the parallel movement of Interest Parities and forward rates is due not to their reciprocal influence on each other, but to outside influences which have a similar effect on both curves. We shall see in Chapter XXIII how an adverse change in the trade balance tends to affect forward rates. As such a change also tends to influence interest rates, the same factor is responsible for both a change of the forward rate and a corresponding change in its Interest Parities. Another influence affecting both forward rates and their Interest Parities is the overvaluation or undervaluation of spot rates compared with their Purchasing Power Parities. This factor will be examined in detail in the next chapter.

Outside influences may affect interest rates and forward rates simultaneously, but more frequently than not they affect one before the other. In such instances it may appear as though interest rates affect forward rates or *vice versa*, although actually both are affected by a third factor. It is indeed very difficult to draw a line between the cases when interest rates and forward rates affect each other and those when they are affected by outside influences.

CHAPTER XXII

THE PURCHASING POWER PARITY THEORY OF FORWARD EXCHANGE

(1) EFFECT OF PRICES ON FORWARD RATES AND INTEREST PARITIES

HAVING demonstrated the reciprocal nature of the influence of forward rates and Interest Parities on each other, we may go a step further in our investigation of the factors affecting forward rates. While Forward Exchanges and Interest Parities affect each other reciprocally, both in turn are yet to be affected by outside factors. (Forward rates are to a large degree influenced by the ratio between the internal purchasing power of the currencies concerned, in other words, by the Purchasing Power Parities of the spot exchanges.¹ The discovery of this interesting fact was made by a practical banker, Mr. W. W. Syrett.) In an article entitled "A Revision of the Theory of Forward Exchanges", in the June 1936 issue of *The Banker*, he maintained that under the changed conditions the Interest Parity theory no longer holds good, but must be replaced by a theory according to which the general tendency of forward rates depends upon their Purchasing Power Parities. He pointed out that while the operation of Exchange Equalisation Accounts prevents spot rates from adjusting themselves to their Purchasing Power Parities, forward rates, being allowed to take care of themselves, tend to move towards the level to which spot rates would move if they had the same freedom. In the form in which Mr. Syrett's theory is advanced, it is crude, one-sided and grossly exaggerated; but it

¹ Throughout this volume the term "Purchasing Power Parities" is used to indicate a vague and by no means easily definable ratio between the internal Purchasing Power of the currencies. It is not used in the sense of a definite figure representing the arithmetical ratio between two sets of index numbers. An alternative term would be the "equilibrium level of exchanges," which would have the same meaning without conveying the impression of a precise arithmetical ratio. Since, however, the term Purchasing Power Parities is better known, for the sake of convenience I propose to use it, with the mental reservation that Purchasing Power Parities are essentially vague, elastic and ill-defined.

opens up, nevertheless, interesting avenues for further research into the nature of Forward Exchange.

This new theory, far from being an alternative to the Interest Parity theory, as Mr. Syrett claims, is actually complementary to it, for to a large degree changes in Interest Parities are due to the overvaluation or undervaluation of spot exchanges compared with their Purchasing Power Parities. The lasting deviation of forward rates from their Interest Parities is also largely due to the undervaluation or overvaluation of spot exchanges in relation to their Purchasing Power Parities. Although the direct cause of such deviations may lie in the trade balance, speculation, etc., these are very often the effect of the more fundamental cause of overvaluation or undervaluation of a currency.

(2) EFFECT OF OVERVALUATION OF A CURRENCY

(If an exchange is overvalued compared with its Purchasing Power Parities, forward rates tend to move against the country concerned, for the following reasons :

1. Interest rates in the country with an overvalued currency tend to rise, especially if the currency is defended by the more or less orthodox methods of raising the Bank rate and imposing credit restrictions, or if the adverse pressure on the spot exchange caused by its overvaluation leads to an outflow of gold.) In countries which are not on a gold standard the effect of overvaluation upon interest rates is not so pronounced, but where there is prolonged adverse pressure due to gross overvaluation, the effect is likely to manifest itself sooner or later as a result of Exchange Equalisation Account operations, or through other channels.
2. The trade balance of a country with an overvalued currency tends to become adverse, and consequently, other things being equal, forward selling of the national currency on commercial account tends to exceed forward buying on commercial account. It is possible, however, to neutralise this tendency by import restrictions, export subsidies, etc.
3. Even if the overvaluation of the currency does not produce an import surplus, commercial forward selling will exceed commercial forward buying, owing to the pessimism with which merchants view the prospects of the currency concerned.) Those who expect payments in that currency are likely to

cover their exchange risks, while those who have to make payments at a future date may leave the exchange uncovered in the hope of benefiting by its subsequent depreciation. Should the discount become prohibitive, however, this factor may be reversed.

4. The same considerations as under (3) apply to hedging against risk on assets in a country with an overvalued currency.
5. Speculative anticipation of devaluation or depreciation of an overvalued currency is an important cause of the widening of the forward discount. Here, again, the tendency may be reversed, as many bears may decide to cover if the discount has, in the opinion of the market, become excessive.
6. The overvaluation of a currency tends to tighten credit resources as a result of the flight of capital, national or foreign. This is important because, owing to contraction of liquid resources, interest arbitrage is unable to take full advantage of the discrepancy between forward rates and their Interest Parities, and is thus unable to counteract the widening tendency of the forward discount.

(3) EFFECT OF UNDERVALUATION OF A CURRENCY

(If a currency is undervalued compared with its Purchasing Power Parities, forward rates tend to move in favour of the country concerned, for the following reasons :

1. Interest rates in the country with an undervalued currency tend to fall, especially if the influx of gold caused by the undervaluation of the currency is allowed to produce its effect upon money resources, and especially where such an influx is met by a prompt reduction of the Bank rate. Even in countries which are not on a gold standard, the undervaluation of the currency may lead to an influx of gold through the operation of Exchange Equalisation Accounts, the financing of whose gold purchases may necessitate an expansion of Central Bank credit.
2. The trade balance of a country with an undervalued currency tends to become favourable, notwithstanding measures taken by other countries to keep out its goods. A favourable trade balance involves more buying than selling of the Forward Exchange of the country concerned.
3. This excess of commercial forward buying of the undervalued

currency will be accentuated by the optimism with which merchants view the prospects of the currency concerned. Those who in 1935-36 expected to make payments in dollars, for instance, were inclined to cover their exchange risk, while those who expected payment at a future date preferred to leave the exchange risk uncovered. Should the premium become prohibitive, however, this factor may be reversed.

4. The same considerations, as under (3) apply to hedging against risk on assets held abroad by nationals of the country with an undervalued currency.
5. Speculative anticipation of an appreciation of an undervalued currency is another important cause of the widening of the forward premium, but if it is overdone the tendency may be reversed.
6. The plethora of short-term funds in a country with an undervalued currency usually leads to measures which seek to discourage a further influx of foreign balances through arbitrage by a refusal to accept deposits or a refusal to allow interest on them, or by charging a commission on new foreign deposits.)

(4) LIMITATIONS OF THE THEORY

(To summarise the conclusion, it is probable that if the spot exchange is overvalued or undervalued, the Interest Parities of the Forward Exchange will lie between the spot exchange and its Purchasing Power Parities, and actual forward rates will move between their Interest Parities and the Purchasing Power Parities.) When the spot rate is overvalued compared with its Purchasing Power Parities, the forward rate is undervalued compared with its Interest Parities; when the spot rate is undervalued compared with its Purchasing Power Parities, the forward rate is overvalued compared with its Interest Parities. It is important to emphasise that, in the event of wide discrepancies, the adjustment of either Interest Parities or actual forward rates to the Purchasing Power Parities of the spot exchange is never likely to be anything like complete. For instance, the French franc was between 75 and 76 during the greater part of 1935-36, while its Purchasing Power Parity in relation to sterling was probably somewhere between 95 and 105. All this time the Interest Parity for three months' forward francs was never higher than 77, while even the actual forward rate was never over 86 and was mostly between 77 and 79.

The validity of the Purchasing Power Parity theory of Forward Exchange is not confined to abnormal conditions. After all, under the gold standard spot rates are even more effectively prevented from adjusting themselves to their Purchasing Power Parities than under a régime of fluctuating currency with Exchange Equalisation Accounts in full operation. Whenever a currency is overvalued there is, for the reasons enumerated above, a persistent pressure on the Forward Exchange. If in spite of this it does not go to a corresponding discount, it is because there is also a persistent pressure on the spot exchange, which is frequently in the vicinity of gold export point. So long as there is confidence in the stability of the currency, its forward quotation does not go beyond export point, and therefore it cannot go to a discount in accordance with the rules of the Purchasing Power Parity theory, any more than in accordance with those of the Interest Parity theory. The fact, however, that in certain circumstances the existence of gold points prevents the working of these theories does not thereby render them invalid.

A much more important deficiency in the theory is that it operates to any large extent only when the adjustment of spot rates to their Purchasing Power Parities is generally anticipated, whether rightly or wrongly. This was the case of the forward rates of the Gold Bloc currencies in 1935-36, of the forward dollar in March 1933, and of forward sterling in 1931 and 1936. In each of these instances, the anticipation of an adjustment of spot rates to their Purchasing Power Parities, an anticipation expressed by an undervaluation of forward rates compared with their Interest Parities, was confirmed by events. In a number of instances, however, during the early post-war years, the overvaluation of the forward rates of the German mark, French and Belgian franc, lira, etc., in anticipation of the adjustment of the undervalued spot rates to their Purchasing Power Parities, proved to be entirely mistaken.

Many other examples could be quoted from post-war exchange movements to show how undervalued exchanges are sometimes viewed with pessimism while overvalued exchanges are sometimes expected to appreciate further. The tendency of the dollar at the end of 1933 provides the most characteristic instance. In such cases none of the material or psychological factors through which the Purchasing Power Parity theory works becomes operative. On the contrary, the overvaluation of a spot currency does not prevent its forward rate from going to a premium, while the undervaluation

of a spot currency does not prevent its forward rate from going to a discount.

Thus it is true to say that if, for whatever reason, a currency is expected to depreciate, its Forward Exchange is likely to go to a discount, while if the currency is expected to appreciate its Forward Exchange is likely to go to a premium. This is true whether the expectation of a rise or fall in the currency is due to its undervaluation or overvaluation or to some totally different set of causes.

(5) WARNING AGAINST DOGMATISM

Nevertheless, this primitive explanation cannot be recommended as a substitute for the much more sophisticated explanation provided by the Purchasing Power Parity theory of Forward Exchange, because in a majority of cases, and taking a long view, a currency is usually expected to depreciate if it is overvalued and it is usually expected to appreciate if it is undervalued.

Thus the Purchasing Power Parity theory is a more rational basic explanation of Forward Exchange tendencies than is the primitive psychological theory that exchanges which are expected to rise are at a premium while those which are expected to fall are at a discount. It is useful, however, to bear in mind the limitation of the Purchasing Power Parity theory, if only in order to avoid the development of a too dogmatic conception about it.

It is also important to bear in mind that, unless the speculative factor operates on a large scale, the extent to which forward rates tend to move towards Purchasing Power Parities is comparatively small. It is mainly in a "gamblers' market" that the Purchasing Power Parity Theory of Forward Exchange operates to a sufficiently large degree to assume a really considerable importance from a practical point of view.

Above all, I am anxious to avoid creating the impression that there may exist some mysterious urge which forces forward rates to move towards their Purchasing Power Parities. When dealing with such an essentially concrete subject as Forward Exchange we should at all costs avoid that cult of mysticism which is so largely to blame for the frequent clash of economics and reality. It is the acolytes of this cult who are responsible for the absurd theory that if a country over-lends or over-imports, this necessarily leads in the long run to a corresponding increase of its exports. By what exact process this miracle occurs is never explained, and the alleged ad-

justment is shrouded under a veil of mystery. Similarly Professor Cassel's Purchasing Power Parity theory of exchanges conveys the impression that there is some mysterious urge forcing spot exchanges to adjust themselves to their Purchasing Power Parities. This mystical conception had secured such a hold that for a long time after the elaboration of the theory nobody had attempted to penetrate behind the veil of mysticism and come down to concrete facts to show exactly how the theory actually works. Fortunately, in the case of the Purchasing Power Parity theory of Forward Exchange, we are able to ascertain all the factors, whether material or psychological, through which the theory operates in practice. To the extent to which Purchasing Power Parities tend to affect forward rates they exert their influence through a set of very definite and easily defined factors, as we have seen above.

(6) DIRECT EFFECT OF FORWARD RATES ON PRICE LEVELS

The next step is to examine whether the principle of reciprocity that characterises the relation between forward rates and their Interest Parities also applies to the relationship between forward rates and their Purchasing Power Parities. The direct effect of a discount on the Forward Exchange upon internal commodity prices in the countries concerned is to a large extent similar to that of a depreciation of the spot exchange. If spot francs are quoted at 76, while forward francs for three months are quoted at 80, the latter is the rate French importers have to pay, unless they prefer to take the speculative exchange risk, or unless they are in a position to pay cash or buy spot exchange in advance of maturity. If they insist upon payments in francs, it is foreign exporters who have to cover the exchange risk, and they quote their prices to allow for the cost of covering. Thus the direct effect of a discount on forward francs caused by overvaluation of the spot franc is to cause a rise in the French commodity prices in terms of francs. At the same time, however, French commodity prices become lower in terms of sterling or dollars, and since it is these and not the franc prices that really matter from the point of view of the equilibrium level of the franc, evidently the direct effect of a discount on forward francs is to reduce the international overvaluation of the French currency.

In a similar way the premium on forward sterling or dollars

tends to reduce the undervaluation of those currencies, since it increases the price of British or American goods in terms of francs from the point of view of French buyers covering the exchange risk, even though it may tend to cause a slight fall in British or American prices in terms of sterling or dollars as a result of the reduced cost of certain commodities imported from France.

The direct effect of a forward discount or premium on an overvalued or undervalued currency is somewhat similar to that of a corresponding change in the spot rate. In both cases prices in the countries concerned tend to rise or fall in terms of the national currencies, but not sufficiently to prevent a partial adjustment to equilibrium level as a result of the depreciation or appreciation of the exchange. The question is whether the effect of a discount or a premium on the Forward Exchange is as pronounced as is the effect of a corresponding change in the basic exchange rates, assuming, of course, that the premium or discount is of a sufficiently lasting nature to produce its full effect on prices. Would a persistent discount of, say, 5 per cent on forward francs for three months reduce the overvaluation of the franc to the same extent as a devaluation of the franc by 5 per cent? In all probability, the direct effect of the discount would remain less than that of the devaluation; that is, both the rise in French prices in terms of French francs and their fall in terms of sterling and dollars would be less pronounced. For, while a devaluation would affect everybody, a discount on forward francs affects only those French importers of foreign goods and foreign importers of French goods who choose to cover the exchange risk. As I have already pointed out, there are alternatives to covering by means of Forward Exchange operations. Moreover, if payment for goods imported to and exported from France should be due in less than three months, the percentage of the depreciation would be considerably less than 5 per cent.

(7) INDIRECT EFFECT OF FORWARD RATES ON PRICE LEVELS

The indirect effect of the discount on forward francs would, moreover, counteract its direct effect. We saw in the last chapter that a discount on the Forward Exchange tends to cause interest rates to rise. This, together with the curtailment of credit as a result of the use of large amounts abroad in interest arbitrage, should cause commodity prices to fall, or at any rate should moderate

their rising tendency. On the other hand, a devaluation of a currency tends to relax the pressure on interest rates and on the volume of credit, and tends to accentuate the rise in prices in terms of the national currency that follows devaluation. Similarly, the indirect effect of a premium on forward dollars upon the American price level would be a rising tendency, while the indirect effect of an appreciation of the dollar, through its influence upon interest rates, and the volume of credit, would be a falling tendency.

To summarise the conclusion : the *direct* effect of a premium or discount on the Forward Exchange in the direction of restoring equilibrium is less than that of a corresponding appreciation or depreciation of the spot rate. On the other hand, while the *indirect* effect of an appreciation or depreciation of the spot rate tends to reinforce its direct effect, the indirect effect of a premium or a discount on the forward rate tends to offset its direct effect. Actually, whether a forward premium or discount, while it lasts, tends to eliminate the undervaluation or overvaluation of the currency to a greater or less extent than a corresponding change in the basic rate varies from case to case. The question is well worth examination whenever it arises. Even in normal conditions, when the premium or discount on forward rates is narrow, its significance from the point of view of its effect on prices is similar to that of the fluctuations of spot rates within their gold points. In abnormal conditions, when the discount or premium is apt to be very wide, it becomes a factor of importance, and one which ought not to be ignored either from a theoretical or from a practical point of view. Factors of less importance have been subjected to close examination, and it is high time that students of price movements took notice of Forward Exchange.

CHAPTER XXIII

TRADE BALANCE AND FORWARD EXCHANGE

(1) EFFECT OF ADVERSE TRADE BALANCE ON FORWARD RATE

(It is generally known that the trade balance affects forward rates through its effect upon the supply and demand for currencies for forward delivery. \ Various writers have pointed out that an excess of commercial demand over supply, or an excess of commercial supply over demand, may cause forward rates to diverge from their Interest Parities. But there are other, less generally recognised, ways in which the trade balance can affect forward rates. Nor is it generally realised that forward rates, in their turn, may affect the trade balance. Literature on the question of the relationship between the trade balance and Forward Exchanges, as on so many other Forward Exchange questions, has been largely superficial, although it deserves close examination.

If there is an adverse change in the trade balance—whether seasonal or fundamental—on commercial account there will be less buying and more selling of the Forward Exchange of the country concerned. This is because a large proportion of its foreign trade is usually covered by means of Forward Exchange, so that any change in the amount which can be covered produces an immediate and direct effect upon forward rates. (The development of an adverse trade balance affects the forward rate before it affects the spot rate. \ In so far as this effect is noticed, it is generally attributed to the discounting of the adverse change in the trade balance. In reality, the direct effect manifests itself even if merchants or speculators are not in a position to anticipate the change. Unless the change is seasonal, or unless it is due to obvious factors—such as the Japanese earthquake of 1923—it can be ascertained only after a slight delay, when the figures are published, which is usually some little time after the end of the month in question. The amount of invisible trade can be ascertained only approximately and after the end of the year, when, with some months' delay, the

balance of payments estimates are published. Nevertheless, the forward rates are affected long before the change in visible or invisible trade is shown by published figures.

(The result of a decline in exports or an increase of imports of a country is a depreciation of the forward rate in consequence of an excess of commercial supply over commercial demand. On such occasions the forward rate tends to depreciate below its Interest Parities. This leads to—

1. A withdrawal of funds employed by foreign banks in interest arbitrage, owing to the increased cost of covering the Forward Exchange.
2. An outflow of national funds, owing to the profit on covered interest arbitrage.
3. An increase of acceptance availments by foreign borrowers owing to the lower cost of covering the exchange.
4. An increase of the amount of bills discounted by foreign holders in the market concerned.
5. A pressure on the spot exchange because of the depreciation of the forward rate.)

(2) EFFECT ON SPOT RATE

The pressure of the forward rate caused by the commercial factor will spread to the spot rate. At the same time withdrawals of arbitrage funds and the increase of acceptance availments tends to mitigate the depreciation of the forward rate. Whether the equilibrium is restored before the beginning of the actual direct seasonal pressure on the spot exchange depends on the one hand upon the relative importance of the commercial factor and on the other hand upon the withdrawal of arbitrage funds, the increase of acceptance availments and the increase in the volume of foreign-owned bills discounted in the market concerned.

It is possible that the repercussions of a depreciation of the forward rate will cause the spot rate to fall to its gold export point even before it begins to come under the direct influence of the adverse change in the trade balance. As a result, the forward rate will become overvalued through the operation of the gold points. It may rise above its Interest Parities. This will tend to reverse the factors enumerated above, even before the Bank rate is raised.

The speculative anticipation of a change in the trade balance

through seasonal factors or through forthcoming adverse developments, such as a big strike, is thus apt adversely to affect both the spot and the forward rates. The pressure on the forward rate comes in addition to the pressure on the spot rate. Thus, forward facilities tend to accentuate the total volume of adverse pressure. In these instances the usual text-book theory that Forward Exchange facilities tend to spread the effect of an adverse trade balance over a longer period can hardly be said to hold good. Arbitrage does not fulfil in such circumstances the rôle assigned to it by the teachings of classical economics. Instead of counteracting discrepancies due to the commercial factor, it actually accentuates them. If all that happened was that British importers covered their dollar requirements in May instead of September, the total volume of selling pressure on sterling would remain unchanged. Even then if an import surplus is covered by purchases of foreign currencies forward, it does not mean that to that extent the spot exchange becomes relieved of the pressure. All that happens is that the pressure on the spot exchange is postponed until the forward contracts mature. When the exchanges bought for forward delivery have to be delivered, then the ultimate seller may have to acquire them, and in doing so he naturally increases the spot buying pressure on the exchanges concerned. Over a given period the total pressure on the spot exchange on commercial account is the same whether or not part of the requirements are covered by forward transactions. What happens in consequence of forward covering is that there will be an immediate pressure on the spot exchange in consequence of the withdrawal of arbitrage funds. This immediate pressure may take place in addition to the eventual pressure on the spot exchange through the execution of forward contracts on commercial account, in which case the total selling pressure on the spot exchange is larger than it would be in the absence of arbitrage. Whether this anomaly tends to correct itself depends upon many circumstances.

(3) READJUSTMENT

(It is through the depreciation of the spot exchange—whether in consequence of the withdrawal of arbitrage funds or in consequence of spot purchases for commercial requirements—that automatic readjustment operates.) Since this depreciation, by bringing the spot rate to gold export point, cancels out the undervalua-

tion of the Forward Exchange, it checks the outflow of arbitrage funds. If the depreciation of the spot rate leads to an overvaluation of the Forward Exchange, the result will be a return of arbitrage funds to the centre concerned. This again would relieve the commercial pressure on the spot exchange. Once the spot rate has depreciated, the existence of Forward Exchange facilities thus tends to readjust the disequilibrium. It makes good the harm which it causes during the earlier stages when the effect of commercial pressure, being confined to the forward rates, causes their undervaluation. More often than not, however, the flow of arbitrage funds is reversed on a sufficiently large scale only when the trade balance itself has changed for the better.

The fact that at the later stages of the process Forward Exchange facilities may make good the "damage" caused during the earlier stages does not alter the fact that in the initial stages Forward Exchange, if allowed to take care of itself, produces a decidedly unwanted tendency. Interest arbitrage, instead of filling the gap between supply and demand for Forward Exchange on commercial account, in accordance with the principles laid down by *laissez-faire* economists, in certain circumstances tends actually to widen the gap. The remedy for this deficiency of the system is control of the forward rates to prevent an adverse trade balance from causing their undervaluation.

(4) INDIRECT EFFECT

It ought to be borne in mind that when an adverse change in the trade balance causes a depreciation of the forward rate, the selling pressure on the spot exchange that follows is not the direct result of the withdrawal of arbitrage funds. Since the Forward Exchange for such funds was covered in advance, all that happens is that the holders deliver the exchange when their forward sale matures instead of renewing their commitments by buying spot and selling forward once more. This does not, however, make any difference to the effect upon the spot rate. The spot exchange delivered by the arbitrageurs constitutes an additional supply in the market, over and above the current supplies; thus its sale must result in an adverse tendency in the spot rate. This is the way in which the withdrawal of arbitrage funds—whether caused by an adverse trade balance or by a change in Interest Parities—affects the spot exchange and may lead to a loss of gold. On the other

hand, the absence of any forward renewal sales on the part of arbitrageurs brings indirect relief to the forward rate, which may recover some of its depreciation caused by the trade deficit.

A change in the trade balance affects forward rates indirectly also through its influence upon interest rates, which tend to rise in the country with an adverse trade balance and fall in the country with the favourable trade balance. This leads to a change in Interest Parities, which tends to accentuate the unfavourable tendency in forward rates, caused through the direct effect of a trade deficit.

(5) EFFECT OF FORWARD EXCHANGE ON TRADE BALANCE

Let us now examine the effect of Forward Exchange upon the trade balance. (The existence of Forward Exchange facilities tends to stimulate exports from financially strong countries to financially weak countries. In their absence, importers in the weak countries would often insist upon buying in terms of their national currency, and since many foreign exporters would not be prepared to take the exchange risk, in many instances negotiations for the import of goods would fall through. The exporters of the financially weak countries would also prefer to quote in terms of the national currency, but they would not be nearly so insistent upon this point as importers, since they would stand to gain and not lose through a depreciation of the national currency. In consequence, the existence of Forward Exchange facilities tends to create an adverse balance for weak countries—precisely those which can least afford an adverse balance.) The importance of this argument should not, however, be over-estimated, especially as recent years have witnessed the depreciation or devaluation of the three strongest currencies.

We have already touched upon the effect of forward rates upon the trade balance when dealing with the Purchasing Power Parity theory of Forward Exchange. It is necessary to distinguish between the effect of a premium or discount and that of an over-valuation or undervaluation of the forward rates compared with their Interest Parities. For obvious reasons the effect of a premium on a Forward Exchange is similar to that of an appreciation of the spot exchange, while the effect of a forward discount is similar to that of a depreciation of the spot exchange. There is, however, a marked difference in degree. As we pointed out in Chapter XXII, the covering of the exchange risk on foreign trade transactions is by no means universal, and in any case it can be effected by

means other than Forward Exchange operations. If, for the sake of argument, we assume that 50 per cent of foreign trade is covered by means of Forward Exchange transactions, then the effect of a premium or a discount of, say, 5 points for three months is, other things being equal, the same as an appreciation or depreciation of the spot exchange by $2\frac{1}{2}$ points, provided that the covering is wholly done on a three months' basis. This, of course, assumes that imports and exports of the country concerned are covered to an equal degree. This is not, however, necessarily the case. In fact, whenever there is a substantial premium or discount, it usually indicates the anticipation of an appreciation or depreciation of the spot exchange, and consequently commercial covering of the exchange risk tends to become rather one-sided. If, for example, the forward franc is at a discount of 5 per cent, the discount will tend to affect French importers to a higher degree than French exporters, for most French importers cover the exchange while many exporters would prefer to stand a chance of gaining by a depreciation of the franc. Similarly, most foreign exporters selling in terms of francs will cover the exchange, while most foreign importers buying in terms of francs will prefer to leave the exchange open in the hope of a depreciation. Evidently, the approximate estimate of the effect of premium or discount on the trade balance of a country is not a matter of simple arithmetic.

(6) EFFECT THROUGH INTEREST RATES

If the premium or discount on the Forward Exchange is more or less in accordance with Interest Parities, it is not likely to affect the trade balance otherwise than in the way indicated above. If, however, the forward rate is undervalued or overvalued, then it is likely to affect the trade balance by means of its influence upon interest rates. The undervaluation of Forward Exchanges leads to an outflow of funds employed in interest arbitrage. If the pressure is strong or persistent the result is a loss of gold; and this, together with the competition of the higher yield on the swap, leads to higher interest rates in the losing country and lower interest rates in the gaining country. This argument was discussed in some detail in Chapter XXI, when we dealt with the effect of forward rates on interest rates. Here it is sufficient to add that in so far as the undervaluation of a Forward Exchange leads to higher interest rates and tighter money conditions, and in so far

as these in turn lead to lower prices, it will have a favourable effect upon the trade balance. Conversely, in so far as the overvaluation of the Forward Exchange leads to cheaper and easier money and in so far as this in turn leads to higher commodity prices, it will affect the trade balance unfavourably. From this point of view the working of the Forward Exchange system tends to provoke automatic adjustment to some degree.

Even if the effect of the undervaluation of forward rates compared with their Interest Parities is not sufficient to bring about a fall in prices, or even to check the rising trend in prices, it doubtless contributes to the slowing down of the upward movement. In France, for instance, the rise in prices during the second half of 1935 and the first three-quarters of 1936 would probably have been even more pronounced than it actually was had money conditions not been made tight by the depreciation of the forward franc.

Thus the depreciation or appreciation of a Forward Exchange gives rise to a tendency towards a readjustment of the trade balance of a country with an overvalued or undervalued currency, both through its direct effect upon imports and exports, and through its indirect effect upon commodity prices through the intermediary of interest rates and the supply of credit. Except, however, in entirely abnormal conditions, such as existed in France during 1935 and 1936, the importance of these influences upon the trade balance is probably not very great.

CHAPTER XXIV

INTERNATIONAL LENDING AND FORWARD EXCHANGE

(1) EFFECT OF SHORT-TERM LOANS

THE rôle played by investment abroad in providing one of the sources of the activity of the Forward Exchange market has been discussed in Chapter XIII. We have seen that many of those who invest their capital in a foreign country have acquired the habit of hedging against the risk of the depreciation of its currency. In Chapter XIV we have seen that to a large extent short-term balances held in a foreign currency are also covered by Forward Exchange operations. In both of these chapters we confined ourselves to examining the ways in which international long-term or short-term lending leads to an increase of the volume of Forward Exchange business. In the present chapter we shall attempt to examine how international lending affects forward rates and, conversely, how forward rates and the existence of the Forward Exchange system in general affect international lending.

The effect of short-term lending on forward rates is, as a rule, a buying pressure on the Forward Exchange of the lending country and a selling pressure on the Forward Exchange of the borrowing country. The pressure naturally depends upon the extent to which short-term credits are covered—by the borrower if they are granted in the currency of the lender, or by the lender if they are granted in the currency of the borrower. The general rule does not necessarily apply to acceptance credits, for these may be used to finance trade between two foreign countries. If the credit is granted by a London acceptance house to a German exporter to the Argentine, the German sells the spot sterling as soon as the bill is accepted and discounted, so that there is no need for him to cover any exchange risk. On the other hand, the Argentine importer of German goods will cover the exchange on the sterling payment he has to make in three months' time. In this instance it is not the Forward Exchange of the country to which the credit is granted

but the Forward Exchange of the third country that is affected adversely by the operations. From the point of view of the effect on forward sterling, however, it is immaterial whether the payment in three months' time is covered by Germany or by the Argentine. So long as the sterling acceptances are discounted in London, the granting of acceptance credits involves a selling pressure on spot sterling and a buying pressure on forward sterling.

(2) ACCEPTANCE AVAILMENTS AND FORWARD RATES

An increase in the volume of availments of acceptance credits tends to result in a weaker spot sterling and a firmer forward sterling; conversely a decline in availments results in a firmer spot sterling and a weaker forward sterling. This assumes, of course, that the relative extent to which the sterling bills are discounted in London or abroad remains the same. Availments may be increased owing to a reduction of the discount rate or owing to a depreciation of the forward rate. They may decline as a result of a higher discount rate or an appreciation of the forward rate. Because of these tendencies, the existence of acceptance credit facilities in a centre does much to level out discrepancies between Interest Parities and forward rates. In a centre which does not grant acceptance facilities the discrepancies are apt to widen until it becomes profitable for foreign arbitrageurs to overdraw their accounts in that centre; but as between acceptance centres the shifting of availments from one to another tends to check the widening of the discrepancies long before the forward rates have reached their loan points. In other words, in acceptance centres the tendency of discrepancies to provoke their own corrective is stronger than it is in centres without acceptance facilities.

The extent to which availments are shifted from one acceptance centre to another is very difficult to ascertain. They cannot always be shifted whenever a shifting would be profitable. Even though banks may have unavailed acceptance credits in several centres, it is not always possible for them to switch over at a moment's notice from one centre to another, for the sake of a difference of, say, $\frac{1}{8}$ per cent per annum. To a large extent the financing of certain branches of trade is governed by tradition and custom. All the efforts to shift the financing of autumn cotton movements to dollar acceptances instead of sterling have produced only a partial and temporary result. In many instances agreements fix the method

of payments, and it would require lengthy negotiation to obtain an alteration in order to switch the availment from one centre to another. On the other hand, where overseas acceptance credits are arranged by banks for their clients, the banks are in a position to use dollar acceptances even if their clients require sterling, since they can always cover the sterling-dollar exchange risk. It may be profitable for them to do so to take advantage of a discrepancy between the sterling-dollar forward rate and its Interest Parity.

(3) ACCEPTANCE CREDITS AND INTEREST PARITIES

During busy seasons borrowers usually come very near the limits of their credit lines in all centres ; in that event they are not in a position to choose between the cheaper and the more expensive credits. Most of the time, however, they have unavailed credits lines in more than one centre. When competition is keen and commission rates are low, the cost of covering the Forward Exchange may well be the deciding factor in determining upon which of the various centres a borrower shall draw. It is no exaggeration to say that, even if there were no international movements of funds through interest arbitrage, in normal conditions the shifting over of availments would in itself be sufficient to make the Interest Parity theory work to a reasonably high degree so far as the acceptance centres are concerned.

Discrepancies between Interest Parities and forward rates are apt to become relatively wide when in normal conditions the existence of gold points prevents forward rates from adjusting themselves to changes in Interest Parities. It is on such occasions that there is good scope for switching over from one acceptance centre to another. Otherwise, in normal conditions the discrepancies may be too short-lived to provide adequate opportunity for it, for the shifting of deposits is a more elastic process and holders of funds are in a better position than borrowers to take advantage of passing discrepancies.

One reason why acceptance credits are different from other forms of credits from the point of view of their effect upon forward rates is that bills drawn under them can be discounted in the borrowing country or in some other country, and not necessarily in the lending country. This means that, while an overdraft granted by a London bank to a foreign borrower is covered as a rule in the Forward Exchange market and gives rise to buying

of forward sterling, a bill drawn under a London acceptance credit will not give rise to a net demand for forward sterling unless it is discounted in London. If it is discounted abroad, the borrower may buy forward sterling, but the holder of the bill may sell forward sterling, and the two operations cancel each other out. Similarly if the bills are discounted in London but are subsequently acquired on foreign account—as very frequently happens—then, here too, the buying pressure on forward sterling caused by the use of acceptance availments will subsequently be cancelled out by a corresponding selling pressure on the part of foreign holders of the bills. If the short-term loans assume the form of cash advances or deposits, then the effect is usually the same as in the case of the majority of acceptance credits. There will be a heavy selling pressure on the spot exchange and a buying pressure on the Forward Exchange of the lending country. And—which comes to the same thing—there will be a buying pressure on the spot exchange and a selling pressure on the Forward Exchange of the borrowing country. This rule holds good more generally than in the case of acceptance credits, for the exceptions noted above do not arise.

(4) LONG-TERM LOANS AND FORWARD RATES

The effect of long-term lending upon forward rates depends upon the nature of the operation and on the use made of the loan proceeds. If a long-term loan is granted in terms of the lender's currency, it will give rise to Forward Exchange transactions only if the borrowers choose to leave part of the proceeds in the lending centre or to repatriate the proceeds by means of forward rather than spot transactions. In either case the result is a selling pressure on the Forward Exchange of the lending country and a buying pressure on the Forward Exchange of the borrowing country. Thus the direct effect on forward rates is the reverse of that of short-term lending.¹

If a long-term loan is granted in the currency of the borrowing country, then it is not likely to affect forward rates, unless the

¹ Herr H. H. Hohlfeld, in his book *Die englisch-amerikanischen Geldmarkt-Beziehungen unter dem Goldstandard* (Stuttgart, 1936, C. E. Poeschel Verlag), pp. 68-69, points out that the proceeds of German long-term loans during the period of post-war stability were to a large extent provisionally invested in the London market, and the exchange risk covered through the forward purchase of reichsmarks. Sometimes even the proceeds of dollar loans were transferred to London, thereby causing a buying pressure on spot sterling and a selling pressure on forward sterling through the covering operation.

lender from time to time considers it advisable to hedge against a depreciation of his assets. As a general rule it may be said that the majority of long-term loans produce no direct effect upon forward rates, as they do not involve Forward Exchange transactions. To some extent, however, international long-term lending may affect forward rates indirectly through its effect upon spot rates.

(5) EFFECT OF OVER-LENDING

Should lending abroad assume sufficient dimensions to cause a material depreciation of the spot rate, the forward rates may become overvalued compared with their Interest Parities. This is particularly likely if over-lending leads to the depreciation of the spot exchange to the vicinity of gold export point. When such a situation arises it becomes profitable to transfer short-term funds for interest arbitrage to the lending centres; and the stimulus to such transfers is increased by the fact that over-lending tends to increase interest rates in the lending centre and to reduce interest rates abroad. The influx of short-term funds through interest arbitrage tends to counteract to some degree the adverse effect of over-lending on the spot exchange. Thus the working of the Interest Parities tends to disguise the effect of over-lending. London lends to foreign borrowers in the form of long-term loans and automatically reborrows the funds, as a result of interest arbitrage, in the form of short-term deposits.

These assumptions are correct only if and when the proceeds of long-term loans are not left in the lending country. When part of the proceeds is so left, the pressure on the spot exchange is lessened, while the pressure on the Forward Exchange may be strengthened by the covering of the unused balances. If the proceeds are spent in the lending country, then neither the spot nor the forward rate is affected. Short-term lending abroad tends to adjust itself automatically through its effect on the forward rate and upon money rates at home and abroad. Very often London lends to foreign borrowers and automatically reborrows in the form of arbitrage funds. This is one of the ways in which the existence of Forward Exchange facilities encourages the increase of floating international balances. In the absence of Forward Exchange facilities, the effect of over-lending, whether on short-term or on long-term, would be more evident, since the lending centre would not be in

a position to re-borrow so easily as it does through the automatic working of covered interest arbitrage.

The system of Forward Exchange has created a vicious circle through which funds can flow to and from London almost indefinitely. While the immediate effect of the working of this vicious circle is the adjustment of temporary disequilibrium created by over-lending, its long-range effect is the creation of large potential disequilibrium. If over-lending assumes the form of long-term loans, then the effect of the working of this vicious circle is much more harmful than in the case of short-term loans. With short-term loans, the counterpart of the influx of arbitrage funds is a corresponding amount of liquid credit, and no danger can arise so long as these credits are really as liquid as they are supposed to be. In the case of long-term loans, however, the influx of arbitrage funds simply involves a net increase of the "negative gold reserve", for the counterpart is in the form of long-term lock-up investment. The lending centre is enabled to lend the same funds over and over again, owing to the effect of arbitrage in disguising the real position.

(6) INCREASE OF FLOATING BALANCES THROUGH THE FORWARD EXCHANGE SYSTEM

During the years 1927 to 1931 we heard a great deal about the extent to which the operation of the gold exchange standard led to the duplication of credit. It is not generally realised that the working of the Forward Exchange system tends to lead to the same result, by enabling the lending centre automatically to re-borrow any excess lendings. There are also other ways in which the working of the Forward Exchange system tends to increase the volume of international floating indebtedness. In order to be able to satisfy the demand for Forward Exchange facilities after the war, all banks with international connections adopted the habit of keeping balances abroad and obtaining overdraft facilities from foreign banks. These arrangements added to the volume of actual and potential floating funds. Moreover, the profit possibilities of covered interest arbitrage encouraged the custom of keeping large balances in foreign centres. In certain countries, especially on the continent, the swap habit was not confined to banks, for even the general public took a hand at times, thereby increasing the volume of funds engaged in interest arbitrage.

The Forward Exchange development, by providing facilities

for covering the exchange risk, also contributed to the post-war increase of international floating indebtedness by helping to create a feeling of security. This again encouraged foreign lending, borrowing and investment, in spite of the relative uncertainty of general conditions during the period of post-war stability. Once they had covered their exchange risk, the banks considered their foreign deposits to be as safe as they were before 1914, when the gold standard was altogether above suspicion.

(7) DOES FORWARD EXCHANGE LEAD TO DUPLICATION
OF CREDIT ?

The question whether interest arbitrage through swap transactions leads to a duplication of credit is well worth examining. In transactions between financially strong countries the answer is in the negative. A British bank with arbitrage funds in New York or Paris would not include those funds among its cash assets. Nor would leading American or French banks do so. The amounts kept in foreign balances do not serve as a basis for credit at home. Moreover, what they lend abroad through swap transactions they cannot lend at home. At the same time, the high degree of liquidity of such funds probably encourages a degree of internal expansion which would not take place if the same amount had been employed in home trade or even in uncovered foreign balances.

The position is very different with banks of financially weaker countries, which, during the period of stability, regarded sterling, the dollar and the franc as absolutely safe. Such banks regarded their covered deposits in these currencies as first-rate cash assets, and considered them to be even safer than balances with their own Central Banks. The deposits thus served as a basis of internal credit expansion in those countries, although at the same time the identical funds were being employed, either at home or abroad, by the British, French or American banks. Such a situation would probably arise, however, even in the absence of Forward Exchange facilities, since the financially weaker countries would regard their balances in strong countries as cash assets even if the Forward Exchange were not covered. But it seems reasonable to assume that the existence of Forward Exchange facilities leads to an increase of the total of such balances, covered and uncovered—to assume, in other words, that, in addition to the balances which the

financially weak countries would be able to keep in the financially strong countries without covering the Forward Exchange, they would be able and willing to transfer funds to the financially strong countries with the Forward Exchange covered. This means that Forward Exchange facilities have stimulated that curiously absurd process by which poor countries in great need of capital have been lending to rich countries, without at the same time depriving themselves of the use of the funds lent abroad.

This anomaly is one of the characteristics of the Forward Exchange system. On the one hand it secures a flow of loans from rich countries to poor countries by providing the means by which the lenders or the borrowers can cover their exchange risk. On the other hand it very often provides the channels through which poor countries lend to rich countries. Whenever the Forward Exchange of a country is undervalued it is profitable to transfer funds to countries whose Forward Exchange is overvalued. We have seen that the heavy discount on forward francs during 1935-36 led to a wholesale outflow of French funds, even though interest rates in Paris were much higher than in London or New York. As a result of the working of the Forward Exchange system, money can go from where it is dear to where it is cheap. Thus in addition to leading to an increase in the volume of international floating indebtedness, the system also diverts the flow of funds from normal to abnormal channels.

There is yet another way in which the Forward Exchange system is apt to create anomalies in the sphere of international lending. Long-term borrowers may find it convenient to repatriate the proceeds of their loans by forward rather than spot transactions. If this is done on a sufficiently large scale the Forward Exchange of the borrowing country becomes overvalued. As a result, long-term lending by a centre, instead of leading to short-term borrowing, leads to short-term lending to the borrowing country.

CHAPTER XXV

THE RELATION BETWEEN SPOT AND FORWARD RATES

(1) EFFECT OF SPOT RATES ON FORWARD RATES

To answer the question of how spot and forward rates react upon each other, it is necessary to examine :—

1. The effect of spot operations, or movements in spot rates, upon forward rates ;
2. The effect of forward outright operations, or movements in forward rates, upon spot rates ; and
3. The effect of swap operations upon both spot and forward rates.

There is a widespread impression that spot operations, or movements in spot rates, do not affect forward rates. This impression originates from the fact that at times of excited dealing, when most of the business is done in the spot market, forward rates remain unchanged for a while because dealers have no time to pay attention to them. When, however, the commitments are adjusted, then dealers usually revise their forward quotations in the light of the changed situation. A change in the spot rate usually alters the market's view of the prospects for the exchange concerned, and this alteration expresses itself in a change in the forward rates.

Under the gold standard, movements in the spot rate in certain circumstances tend to cause the forward rate to move in an opposite direction. This is the case whenever the spot rate is approaching gold point. The nearer it comes to gold point, the narrower the premium or discount on the forward rate tends to become, for, so long as there is confidence in the stability of the currency, it cannot go beyond gold point. But even in the absence of any gold points, the market usually takes a view as to whether the movement in the spot rate has gone far enough, and, before the spot rate reacts, the forward rate anticipates the movement. If, on the other hand, it is assumed that the prevailing tendency in spot rates will continue, then there will be a speculative anticipation in the forward

market. Thus forward rates tend to move towards the level at which the spot rates are expected to be by the time the forward contract falls due.

(2) EFFECT OF FORWARD RATES ON SPOT RATES

To analyse the way in which spot operations or movements in spot rates affect forward rates is a comparatively simple matter. The task of examining how outright forward operations or movements in forward rates affect spot rates is, however, much more difficult. According to one theory, any selling or buying pressure on the forward rate produces a direct effect on the spot rate in that it increases the total supply of, or demand for, the currency concerned. It is argued that if a bank sells forward francs outright in the market it adds to the total supply of francs and therefore its operation tends to depreciate the spot rate as well as the forward rate. This theory, however, seems to me unacceptable. While the acquisition of spot francs enables the buyer to sell either spot or forward francs, the acquisition of forward francs does not in itself enable him to sell spot francs.

It is true that, in many instances, a holder of spot francs, by acquiring forward francs, is in a position to sell his spot francs without thereby creating a short position, but then he is in a position to do so in any case by means of a swap transaction, instead of by buying outright and subsequently selling the spot. Moreover, by such a deal the seller of forward francs may also be placed in a position to buy spot francs. Admittedly, it is true that certain transactions can be done either in the forward market or in the spot market, and that therefore the possibility of selling the forward exchange acquired might divert selling pressure from the spot exchange. But in choosing these alternative transactions the operator is in effect engaging in interest arbitrage operations. And, in that case, it is these interest arbitrage operations and not the forward outright operations that affect spot rates.

(3) EFFECT OF COVERING FORWARD POSITIONS BY MEANS OF SPOT TRANSACTIONS

Apart from their influence on interest arbitrage, outright forward operations are apt to affect spot rates also because of the practice of the banks of covering their outright forward operations

in the first instance by means of spot operations. When a banker buys forward francs, he usually covers himself in the market by means of selling spot francs. The immediate result is that the spot franc tends to depreciate. Admittedly the banker's next move is to undo his commitment in the market by a swap transaction, buying spot francs against forward francs ; this second operation, while causing a depreciation of the forward franc, should go a long way towards reversing the effect of the first operation upon the spot franc. In this respect I am once more on highly controversial ground, however, for a very substantial section of expert opinion considers that swap transactions affect the forward rate exclusively and leave the spot rate unaffected. If this were true, it would mean that an outright forward transaction, having in the first place caused a depreciation of the spot rate, causes in the second instance a depreciation of the forward rate also, at the same time leaving the spot rate at its depreciated level. This would mean that, as a result of the current practice of covering outright forward operations in the first instance in the spot market, such operations must produce twice as pronounced an effect on exchange rates as they would if they were to be covered by outright forward operations. First they produce their full effect on the spot rate and then they produce their full effect on the forward rate. Obviously this sounds too absurd to be right. There is no reason to suppose that on balance the net effect of the combination of the swap and spot operations differs fundamentally from the effect which would be produced by a simple outright operation.

We mentioned above that outright operations could affect spot rates by giving rise to interest arbitrage operations. They can do so by bringing about either an overvaluation or an undervaluation of the forward rates compared with their Interest Parities. If these arbitrage operations assume the form of passive interest arbitrage, then their effect on the spot rates is evident. Let us take an example. Speculative forward selling of francs results in an undervaluation of the forward franc, and this means that it becomes profitable for French banks to keep balances in London. When selling forward sterling to their clients, the French banks cover themselves by buying spot sterling, and then, instead of undoing the commitment by selling spot sterling against forward, they simply keep the sterling until the forward contract matures. Evidently, by doing so they accentuate the buying pressure on spot sterling and the selling pressure on the spot franc.

(4) EFFECT OF SWAP OPERATIONS

If, however, the arbitrage operations stimulated by the speculative depreciation of the forward franc assume the form of active interest arbitrage through swap transactions—that is, the buying of spot sterling and the selling of forward sterling—then the fact that these operations affect spot rates is less obvious. Indeed, it is of first-rate theoretical as well as practical importance to ascertain how swap operations affect spot and forward rates. It is very commonly believed that they exert their whole effect on forward rates and leave spot rates entirely unaffected. This view is held on the ground that, since dealers engaged in swap operations are concerned only with the margin between the spot price and the forward price of the currency, any discrepancy between the supply and demand can be adjusted by a corresponding modification of that margin alone.

It is also argued that, since a swap transaction does not alter the total combined supply of spot and Forward Exchange available for sale, there is no reason why it should affect the "basic" spot rate.

Although these arguments are put forward by some of the leading practical experts, they sound to me utterly unconvincing. They are based on an erroneous belief that the spot exchange is something fundamentally different from the Forward Exchange. According to this theory, if the relation between the supply and demand requires an adjustment of the margin between the spot price and the forward price of an exchange, the spot price remains as rigid as a rock and the whole effect is produced on the elastic forward price. In reality, the difference between the spot exchange and the Forward Exchange is merely one of degree. After all, it ought to be recalled that a spot transaction is in substance a two days' forward transaction. The difference between a spot sale and a forward sale for three months is that in the first instance the exchange has to be delivered in two days, while in the second instance it has to be delivered in, say, 92 days.¹ Thus a swap transaction really amounts to the purchase or sale of short Forward Exchange against longer Forward Exchange.

¹ This conception that spot transactions are in reality short forward transactions is gaining ground in practical banking circles. Mr. H. C. F. Holgate, in the introductory note to his book, *Foreign Exchange Accounts for Bankers* (London, 1934), lays special stress upon the logic of the view that all market contracts (with the exception of "value today" transactions) should be treated as forward deals.

Nobody would think of arguing that a purchase or sale of Forward Exchange for one month against three months affects exclusively the rate for three months and leaves the rate for one month unaffected. Nobody would claim that the effect of a purchase or sale of Forward Exchange for one week or three days against three months would be confined to the rate for three months. And yet quite a number of intelligent people most emphatically argue that when it comes to the purchase of exchange for two days against three months the circumstances become totally different, and that the rate for two days is sacrosanct and immune from the influence of the swap operation, which spends all its force upon the rate for three months.

In reality, experience shows that the impact of swap operations works in both directions, and affects both forward and spot rates. For instance, at the end of 1936, the repatriation for window-dressing purposes of British bank balances from New York in the form of selling spot dollars and buying short forward dollars distinctly affected also the spot rate, even though dealers engaged in the operations were solely concerned with the margin representing the cost of the operation. The relative extent to which spot and forward rates are affected by swap transactions depends to a large degree upon the nature of the counterpart. I readily admit that, since the spot market is much wider than the forward market for any one date, a swap transaction tends to affect the forward rate to a larger degree than the spot rate. But I am satisfied that active interest arbitrage through swap operations tends to shift funds from one centre to another, and it must, therefore, affect the spot rate. If done on a large scale under the gold standard, it may lead to a corresponding temporary shifting of gold from the losing to the gaining centre.

CHAPTER XXVI

LONG *v.* SHORT FORWARD RATES

(1) DISCREPANCIES BETWEEN LONG AND SHORT QUOTATIONS

THROUGHOUT the previous chapters we have been examining the factors affecting forward rates in general, without particular regard to the difference between various maturities. We must now examine the relation between long and short forward rates. If the rates quoted were proportionate to the length of the forward contract—*i.e.* if the rates on a percentage per annum basis were always the same for long as for short Forward Exchange—there would be no need for any special explanation. In reality, the forward rates quoted nowadays are very seldom exactly proportionate to the length of the contract, except for brief periods. It was only during the earlier stages of the development of the forward market, when the rates quoted were largely artificial, that short rates and long rates were proportionate. In exchanges which have a bad forward market the same situation still exists. The rates quoted, being largely arbitrary, are either exactly the same figure for one month, two months or three months, or they are exactly proportionate to the length of the contract. In a good, sensitive market, the ratio between long and short rates is subject to fluctuation.

When forward rates expressed as a percentage per annum are the same for long and short maturities, then they are at equilibrium in relation to each other. When short forward rates on a percentage per annum basis are higher or lower than long forward rates on a similar basis, then there is a discrepancy between them. If we say that the premium or discount on long Forward Exchange is wider than on short Forward Exchange, this will mean not only that the actual figure is higher—which is natural—but that the equivalent of the rate in percentage per annum is higher. Again, if we say that the premium or discount on short Forward Exchange is wider than on long Forward Exchange, we do not mean that the actual quotation is higher—which again is unlikely—but that, allowing for

the difference in their maturities, it represents a higher percentage per annum.

(2) OVER-SIMPLIFIED EXPLANATION

The popular explanation of the discrepancies that arise from time to time between short and long forward rates is that they are due to disparities between supply and demand for particular maturities. This explanation does not, however, carry us much further. Nor is it even strictly correct in every instance. If the difference between interest rates in two centres is not the same for one month as for three months, then the Interest Parity theory itself justifies a discrepancy between long and short forward rates. Indeed, the equilibrium rate would be different for one month and for three months and a discrepancy could arise without there being any disparity between supply and demand for any particular maturity. In this instance, as in so many instances, it is evident that over-simplification of a highly involved subject cannot produce an adequate explanation.

Another explanation, which also over-simplifies the position, is that the relation between long and short forward rates is determined by the view taken by the market about the imminence of movements in the spot rate. It is said that, if devaluation or depreciation of a currency is expected to take place within one month, then it stands to reason that the discount should be relatively wider for one month than for three months. If on the other hand devaluation or depreciation is not considered so imminent, then pressure will be stronger on longer maturities, and the discount will be wider for three months than for one month. This is undoubtedly true, but contains only part of the truth. The full explanation of the discrepancy between long and short forward rates is much more involved, and does not lend itself to reduction to a simple formula.

(3) DISCREPANCIES BETWEEN INTEREST PARITIES FOR VARIOUS PERIODS

There are a number of factors that influence the relations between long and short forward rates. We have already seen that the difference between interest rates for long and short loans provides a justification for discrepancies. As a general rule, money is cheaper for one month than for three months, and the discrepancy

between rates for one month's bills or deposits in two centres is likely to be narrower than the difference between rates for three months' bills or deposits. It may therefore be said that in normal conditions there is a tendency towards slightly wider forward rates for long periods than for short periods. In the case of the forward dollar there is, at the time of writing, a specific reason why the premium for one month should be wide. American banks have adopted the practice of declining to allow interest on foreign banking deposits for the first month. Since this practice has not been adopted in most other centres, it stands to reason that less funds will be transferred for interest arbitrage to New York for investment in one month's deposits than for three months. This means that, during a period when most arbitrage funds are invested in time deposits, there is less selling of one month's dollars than of three months' dollars on account of interest arbitrage. As a result, the premium for one month is apt to widen to a larger degree before interest arbitrage checks its upward movement. On the other hand, when most arbitrage funds that find their way to New York are invested in call money, the pressure caused tends to be stronger on forward dollars for one month than for longer maturities, for the simple reason that the Forward Exchange on funds invested in call money is seldom covered for periods longer than one month.

(4) THE COMMERCIAL FACTOR

In abnormal conditions the discrepancy between long and short interest rates is of small importance compared with the other factors which operate. Even in normal conditions there are various factors at work which cause discrepancies between long and short rates, apart altogether from those justified on a strictly interest basis. There is, among others, the relation between supply and demand for commercial purposes. Foreign trade is very largely based on three months' credits, and merchants cover their exchange risk mostly for three months. This means that the commercial factor tends to influence long rates to a larger degree than short rates. This factor is often counteracted by conflicting influences, but its existence can nevertheless be ascertained.

When there appears to be reason for anticipating a depreciation of the currency, and there are likely to be more commercial sellers than commercial buyers of the Forward Exchange, then selling pressure affects the three months' rate to a higher degree than the

one month's rate. It is true that when the discount for three months is too wide it might appear more profitable for merchants to sell for a shorter period, especially if the depreciation is anticipated to take place within a short time. The majority of merchants cannot, however, be bothered with involved arrangements which necessitate the renewal of their forward commitments. They like to know where they stand, and like to cover their exchange risk to maturity, unless the cost of the cover becomes prohibitive. It is therefore safe to assume that while the interest factor generally tends to keep short forward rates narrower than long forward rates the commercial factor tends to produce the opposite effect.

The commercial factor is to some extent responsible for sudden changes in the relation between short and long forward rates when an acute wave of distrust of the currency develops. An acute attack on the currency leads to the sudden widening of the discount, and this may tend to reduce the discrepancy between commercial buying and selling. Thus the British importer who owes francs, or the French exporter who expects sterling, both of whom have hitherto preferred to leave the exchange uncovered in anticipation of a devaluation of the franc, may be induced by the widening of the forward discount to take a profit by covering the exchange. Since these operations affect three months' francs to a much larger degree than one month's francs, they tend to moderate the discount on three months' francs compared with the discount on one month's francs.

(5) EFFECT OF TIME ARBITRAGE

Let us now examine how the relation between short and long forward rates is affected by time arbitrage. It is the function of arbitrage to smooth out glaring discrepancies between short and long Forward Exchanges. Thus it may well be asked how it was that such very wide discrepancies persisted during the years 1935 and 1936. While it is understandable that during the excitement of an acute crisis very pronounced discrepancies should develop, how was it that time arbitrage failed to smooth out the discrepancy between short and long rates during the relatively calm months between two acute attacks on the franc? The truth of the matter is that when margins are wide, as they generally were during 1935-36, time arbitrage involves a fairly considerable speculative risk. Not every arbitrageur is prepared to take that risk, and none will take it to an unlimited extent.

There are two ways to which time arbitrage can operate. Those who expect that forward rates will widen within the next three months sell three months forward and cover themselves by buying forward for one month or possibly for even shorter periods. Those, on the other hand, who expect that forward rates will become narrower within the next three months buy three months forward and cover themselves by selling forward for one month or for shorter periods. The changes in the spot rate during the periods concerned do not affect either type of arbitrageur, but both can make substantial profits or suffer substantial losses according to whether changes in forward rates are in the direction anticipated.

When the discount on forward francs was relatively narrow, most arbitrageurs took the view that it was likely to widen. For this reason, they were sellers of three months francs and buyers of one month francs. This was partly responsible for the relative narrowness of the discount on one month forward francs in the period before the crisis. On the other hand, the moment the speculative attack on the franc resulted in a widening of the forward rates, many arbitrageurs changed their views and anticipated a narrowing of forward rates, whether in consequence of the passing of the crisis or through a devaluation of the franc. This assumption was reasonable, since no acute crisis can last longer than a few days, or a few weeks at the utmost. Thus arbitrageurs became sellers of short forward and buyers of long forward. Consequently, their operations offset the widening tendency of three months francs, while at the same time they accentuated the depreciation of one month forward francs.

(6) "FORWARD QUOTATION OF FORWARD RATES"

It may be said that the discrepancy between short and long forward rates is to a large extent a forward quotation of forward rates. The discrepancy is influenced not only by the views taken by speculators and commercial operators about the prospects for spot rates, but also by the views taken by arbitrageurs about the prospects of forward rates themselves. To add another element of complication, it is also influenced by the views taken by the arbitrageurs about the prospects of changes in the relation between long and short forward rates. When, in consequence of speculative and arbitrage operations, the discount for one month becomes dis-

proportionately wider than for three months, this may not necessarily discourage speculators from selling for one month in preference to three months, but it may discourage arbitrageurs from selling for one month against three months.

Time arbitrage does not necessarily operate so as to cause a smoothing out of discrepancies between long and short rates. On the contrary, very often it tends to accentuate these discrepancies. This is because a speculative element is introduced into arbitrage and interferes with the traditional smoothing rôle of arbitrage. In any case, as we have pointed out, the resources at the disposal of arbitrageurs are by no means unlimited, so that their influence for better or for worse is often not the predominant factor in the market.

(7) THE SPECULATIVE FACTOR

During abnormal conditions the main influence is of course the speculative factor. It stands to reason that speculators do not want to pay more for their speculation than they can help, so that if they think there is a chance that the expected event will materialise within a month they will not operate for longer periods. The other side of the picture is that they might have to renew their positions at the wrong time at considerable expense. For this reason, if they think that immediate depreciation is improbable, speculators are likely to think it worth while to stand the cost of selling forward for long periods. During periods of acute crisis it is the custom of speculators to sell for very short periods, for even though the percentage per annum equivalent of the discount for a few days may be exorbitant, the actual cost is usually negligible.

Window-dressing or end-of-year pressure may be responsible for abnormally wide forward rates for very short periods at certain dates. Since the temporary nature of these abnormal rates is evident, it provides excellent opportunities for time arbitrage to step in.

Detailed examination of all factors that influence the discrepancy between short and long forward rates would occupy a whole volume. The technical details must be fascinating to those interested in the subject, but they would be practically unintelligible to the uninitiated. It is useful and necessary to bear in mind the following rules :

1. In normal conditions, when neither of the two currencies

involved is under suspicion, short forward rates are inclined to be, if anything, narrower than long forward rates.

2. During periods of vague uneasiness about the fate of a currency but in the absence of an acute attack, speculative, commercial, and time arbitrage operations tend to keep long forward rates materially wider than short forward rates.
3. During periods of acute distrust, commercial, speculative, and arbitrage operations tend to lead to wider short forward rates.
4. Short forward rates are usually more sensitive towards disturbing influences than long forward rates. Their range of fluctuations, expressed in percentage per annum, is wider than that of long forward rates.

CHAPTER XXVII

FORWARD EXCHANGE UNDER THE GOLD STANDARD AND UNDER PAPER CURRENCY

(1) DIFFERENCE EXAGGERATED

HITHERTO we have been dealing with the Forward Exchange system in general, without special regard to the difference between its operation under stable monetary conditions and under conditions of fluctuating currencies. It is true that occasionally we have pointed out the difference between the working of the various theories according to whether the currencies concerned are on an actual gold basis or whether they are inconvertible. But this difference is sufficiently important to justify a closer and more systematic examination.

Several prominent experts—among them Mr. Keynes and Professor T. E. Gregory—have been inclined to over-simplify the difference between the rôle played by Forward Exchange under the gold standard and under a paper standard. Mr. Keynes wrote in 1922¹ that while under the gold standard the effect of dear money used to be to draw gold from the cheaper centre for temporary employment in the dearer centre, nowadays “the only immediate effect is to cause a new adjustment of the difference between the spot and forward rates of exchange between the two centres”. This idea is endorsed by Professor Gregory,² according to whom “under paper currency standards a rise in the bank rate produces a shift between spot and forward rates of exchange. Under the gold standard it causes a reversal of the flow of gold.”

Admittedly, under an inconvertible paper currency, adverse pressure on an exchange caused by the interest factor, or by any other factor, cannot lead to an outflow of gold, unless, of course, the monetary authorities are prepared voluntarily to support the exchange by exporting gold. Bearing this in mind, what actually

¹ *A Tract on Monetary Reform*, p. 137.

² T. E. Gregory, *The Return to Gold* (London, 1925), p. 18.

matters is not whether a country is technically on the gold standard but whether its authorities are prepared to part with gold whenever there is an adverse pressure on the exchange, and whether they are prepared to absorb gold whenever there is a buying pressure on the exchange. From this particular point of view, the regular working of an Exchange Equalisation Account almost amounts to the existence of a gold standard with wider and rather elastic gold points.

(2) PRESSURE ON SPOT RATE NOT RELIEVED UNDER
PAPER CURRENCY

Both Mr. Keynes and Professor Gregory seem to suggest by implication that under the gold standard a difference between interest rates in two centres causes an adverse pressure on the spot exchange leading to an outflow of gold, while under an inconvertible paper currency the spot exchange is saved from such pressure by a corresponding depreciation of the Forward Exchange. There are several reasons why this assumption cannot be accepted.

Under the gold standard buying or selling pressure on the exchange may produce its effect within the gold points, in which case the position is exactly the same as under inconvertible paper currency. So long as rates are within the range of gold points, there is no reason whatsoever to suppose that the rôle played by Forward Exchange is in any way different from what it is under inconvertible paper currency.

Moreover, the fact that under inconvertible currency gold is not allowed to leave the country does not in the least modify the initial effect of the Bank rate factor upon the spot exchange. In both cases the increase of the Bank rate tends to depreciate the Forward Exchange, but the margin between the spot and forward price of the currency tends to widen also through the appreciation of the spot rate. Under the gold standard, gold leaves the country simply because an increase of the Bank rate in a foreign centre causes a selling pressure on the spot exchange. Under a paper standard the selling pressure exists just the same as under the gold standard, only it is not allowed to lead automatically to an outflow of gold. It simply produces its full effect on the spot exchange.

(3) RÔLE OF UNCOVERED BALANCES

There is yet another reason for questioning the assumption that

under an inconvertible currency every pressure caused by the difference in interest rates affects the forward rate only. Under the gold standard as well as under an inconvertible paper currency it is only the transfer of covered balances that is affected by forward rates. Even if forward rates were to adjust themselves automatically and instantaneously to a change in their Interest Parities—which, as we have shown in earlier chapters, is not the case—this would not prevent the transfer of uncovered funds from the cheaper to the dearer centre. While under a paper currency uncovered interest arbitrage does not exist, uncovered refugee funds may be shifted for the sake of the higher yield. As we shall see later in this chapter, under the gold standard high interest rates virtually cease to attract uncovered funds when the spot rate has appreciated to gold import point. Under paper currency there are no gold import points, and the appreciation of the spot rate may go much further before it discourages uncovered investment. The pressure on the spot rate due to covered interest arbitrage is also apt to be stronger under an inconvertible paper currency than under a gold standard, because discrepancies between forward rates and their Interest Parities are apt to be wider and more persistent.

Under an inconvertible paper currency Central Banks are less inclined to use the Bank rate for defending their exchanges against pressure due to higher interest rates abroad, but this is not because the Forward Exchange system assumes the rôle of shock-absorber. The real reason is that under a paper currency there is no need for them to defend the gold stock from depletion or the exchange from depreciation. It is because the volume of credit is independent of the volume of gold, and because the authorities are in consequence comparatively indifferent to a depreciation of the exchange, that under paper currency there is a high degree of isolation of money markets from one another. The result is not achieved by any rôle played automatically by Forward Exchange in isolating money rates.

(4) INTERNATIONALISM *v.* ISOLATIONISM

Here again, the over-estimation of the extent to which forward rates adjust themselves to Interest Parities, and the under-estimation of the extent to which discrepancies can persist, and to which they can affect internal interest rates, have led to a misconception. It is curious that the conception of perfect adjustment of forward

rates to their Interest Parities should mislead both the internationalists and their opponents, the isolationists. Thus it is that the internationalists contend that forward rates constitute the means by which a solidarity can be established between money markets in spite of the difference in their local conditions, while the isolationists argue that, under inconvertible paper currency, monetary conditions in various markets can become effectively isolated because of the perfect adjustment of forward rates. The reply to both arguments is the same: the adjustment of forward rates to Interest Parities is very far from being perfect, and forward rates, if allowed by the authorities to take care of themselves, are therefore incapable either of equilibrating individual interest levels to one international level, or of effectively isolating them from one another. Indeed, it is safe to assume that under a paper currency Forward Exchange does not isolate money markets and monetary policies from one another even to the extent to which it does in given circumstances under the gold standard, since under the gold standard forward rates can adjust themselves to their Interest Parities to a high degree, at least while spot rates are at a reasonable distance from gold points.

We have seen in an earlier chapter that under an inconvertible paper currency the forces working to cause divergences of forward rates from their interest Parities can be so strong and persistent that funds available for interest arbitrage may become exhausted before they have succeeded in entirely counteracting the effect of those forces. For this reason there is less chance of perfect adjustment under a paper currency than under the gold standard, notwithstanding the fact that under the gold standard the working of the gold points often interferes with the adjustment of forward rates to Interest Parities.

(5) THE RECIPROCITY THEORY

We have already seen above that the discrepancies between forward rates and their Interest Parities are apt to be wider under inconvertible paper currency than under the gold standard. A change in the Bank rate is apt to provoke a marked reaction on the forward rate also under inconvertible paper currency, although in such circumstances the influence of the interest factor is *relatively* smaller, because of the increase of the importance of other factors. Even though the forward rate may be out of touch

with its Interest Parities, from a distance it is none the less affected by changes in them.

Forward rates are apt to affect internal interest rates to a higher degree under the gold standard, during periods of distrust in the stability of the currency, than under inconvertible paper currency. We shall see later in this chapter the extent to which under the gold standard the behaviour of forward rates is apt to influence international gold movements. And since under the gold standard gold movements constitute a very important factor affecting internal interest rates, the effect of forward rates upon the latter is at times considerable. When a gold parity is defended against abnormal pressure, then the undervaluation of the Forward Exchange usually plays a very important part in affecting internal interest rates. When, however, the gold standard is suspended, the influence of forward rates on interest rates declines, unless the monetary authorities seek to defend the inconvertible paper currency at a certain level in face of strong adverse pressure. In that case they might raise their Bank rate and restrict credit owing to the pressure on the spot rate caused by swap transactions, just as under the gold standard. Apart from such instances, the credit apparatus becomes less sensitive to international influences and money conditions in general become easy under paper currency. For this reason the effect of forward rates upon interest rates tends to diminish. It exists nevertheless as a potential factor which may come to the fore during periods of strong adverse pressure on the inconvertible currency.

(6) THE PURCHASING POWER PARITY THEORY

Let us now examine the differences between Forward Exchange under the gold standard and under an inconvertible paper currency from the point of view of the Purchasing Power Parity theory of Forward Exchange. If the spot exchange is overvalued compared with its Purchasing Power Parities, the forward rate tends to be at a discount whether under the gold standard or under an inconvertible paper currency. If the spot exchange is undervalued compared with its Purchasing Power Parities, the forward rate tends to be at a premium under the gold standard as well as under an inconvertible paper currency.

Under both systems Interest Parities will tend to move towards the Purchasing Power Parities. The difference is that under the

gold standard Interest Parities frequently lie between forward rates and Purchasing Power Parities, while under inconvertible paper currency forward rates usually lie between their Interest Parities and their Purchasing Power Parities. Under the gold standard, Interest Parities tend to adjust themselves to some extent to Purchasing Power Parities, through the effect of the undervaluation or overvaluation of the currency upon gold movements, interest rates and the volume of credit. Under inconvertible paper currency these factors operate to a relatively less degree, even if gold movements are brought about by Exchange Equalisation Account operations. On the other hand, Interest Parities are affected to a large degree by much wider discrepancies between them and forward rates than can exist under the gold standard—at any rate so long as there is confidence in its maintenance. When there is no such confidence, then Interest Parities tend to adjust themselves to Purchasing Power Parities to a much higher degree under the gold standard than under an inconvertible paper currency, since they are affected both by the factors that are normally at work under the gold standard and those that are at work under inconvertible paper currencies. This was the case of the French franc during 1935 and 1936. The fact that the spot dollar rate in Paris was at gold export point did not prevent forward dollars from being quoted at a huge premium. The defensive measures taken by the Bank of France at times of acute panic, and the contraction of currency and credit brought about by the outflow of gold, affected Interest Parities to a considerable degree. At the same time the gross undervaluation of forward francs compared with their Interest Parities affected the latter also.

Under the gold standard, so long as there is confidence in the stability of the currency, forward rates can affect the internal price level to a negligible degree only. After all, so long as forward rates remain between gold points the maximum premium or discount is usually under 1 per cent.¹ Under a paper currency, or when confidence in the stability of a gold currency is undermined, the premium or discount on Forward Exchanges can at times attain very high percentages, and consequently the effect on internal prices is apt to be many times larger than under the gold standard.

¹ This may of course represent a very high percentage per annum, especially in the case of short forward rate. But from the viewpoint of the relations between prices and forward rates, it is the absolute figure of the forward rate and not its equivalent percentage per annum that matters.

For the same reasons, Forward Exchanges are apt to affect the balance of trade to a much larger extent under a paper currency or a gold currency whose stability is not trusted than under a gold currency whose stability is trusted.

(7) FORWARD EXCHANGE AND GOLD MOVEMENTS

Before concluding the theoretical section of this book, it is necessary to examine closely the relations between forward rates and international gold movements. I have already paid some attention to this subject in Chapter XXI, where I pointed out that the reason why interest arbitrage, brought about by a rise in the Bank rate abroad, leads to pressure on the spot exchange and an outflow of gold is that the forward rate does not adjust itself immediately and completely to a change in its Interest Parities. I discussed this point in order to prove that through their effect on gold movements forward rates are capable of affecting interest rates in both the losing centre and the gaining centre. My conclusions in this respect, however, need closer examination, since they call for a revision of the existing theory of international transfers and international gold movements.

According to the classical theory adopted by most text-books, an increase in the Bank rate in a foreign centre tends to lead to immediate pressure on the national currency through the transfer of short-term funds to take advantage of the higher interest rates abroad and through the repayment of foreign credits to that centre. It also leads, in the long run, to a prolonged pressure through the fall in the price level in the country with the higher Bank rate, and the changes in the trade balance caused by the change in the Purchasing Power Parities. We are not concerned with the long-range effect of the increase of the Bank rate, as it has no direct bearing on Forward Exchange. On the other hand, it is necessary to examine closely the rôle played by Forward Exchange in the immediate effect of Bank rate changes.

Beyond doubt an increase in the Bank rate in a centre, accompanied by an increase of its interest rates, tends to cause immediate transfers of funds from centres with lower interest rates. If these transfers assume sufficiently large dimensions they lead to gold movements. This rule is regarded as being of fundamental importance in the normal working of the gold standard. Nevertheless, nobody has so far examined the exact way in which transfers and

gold movements take place under the gold standard in consequence of differences in interest rates between various centres. Economists have vaguely assumed that high interest rates attract funds and gold, and leave it at that. They do not realise that the behaviour of forward rates plays a vital part in bringing about these international transfers and international gold movements.

(8) TRANSFERS THROUGH COVERED AND UNCOVERED INTEREST
ARBITRAGE

Transfers of funds to a foreign centre to take advantage of higher interest rates may take place either through covered interest arbitrage or through uncovered interest arbitrage. It is sometimes argued that unless the exchange risk is covered the transaction should be regarded as speculation rather than arbitrage. In normal conditions, however, the risk attached to holding balances abroad without covering the exchange risk is limited by the gold points and arbitrageurs are in a position to calculate on the basis of the difference between the spot rate and gold point the exact extent of that risk. If the surplus interest obtained during the period is larger than the maximum of possible capital depreciation through an adverse movement of the spot exchange, then the operation can hardly be called speculative, since arbitrageurs risk only part or the whole of their profit. Before the war, arbitrageurs were inclined to go further and take theoretical risks for the sake of earning higher interest rates abroad simply because the fluctuations of the spot rate were narrow and very regular. The monthly average change in the sterling-dollar rate varied remarkably little from year to year during the last few pre-war years, and arbitrageurs were therefore reasonably safe in assuming that variations during the year in question would not differ materially from those experienced in the past. Thus even though theoretically there was a risk of losing about 1 per cent through a depreciation of the dollar from gold export point to gold import point, in practice the seasonal movements were much narrower. The risk in assuming that the depreciation would not be during the ensuing months more than, say, $\frac{1}{4}$ per cent was not unreasonable, so that when the dollar rate was at gold import point arbitrageurs considered it expedient to transfer funds to New York for the sake of a difference in the interest rate amounting to, say, $\frac{1}{2}$ per cent for three months, or 2 per cent per annum.

This state of affairs underwent a thorough change after the war. During the period of stability between 1925 and 1931, seasonal movements were much less regular than before the war and fluctuations within the gold points were apt to be much wider. Many disturbing factors which did not exist before the war assumed considerable importance from time to time. It was therefore no longer safe for arbitrageurs to take it for granted that the exchange would not depreciate to gold point. All but the most speculative amongst them allowed for the possibility of maximum depreciation, and did not undertake uncovered interest arbitrage unless the difference between interest rates was in excess of the possible extent of depreciation to gold point. Admittedly some operators were inclined to "take a view", but this was the exception and not the rule. The majority of arbitrageurs during 1925 to 1931 either altogether avoided carrying open positions, or, at any rate, followed the rule not to leave the exchange risk on foreign short-term investments uncovered unless their possible profit was at least equal to their possible loss.

(9) IMPORTANCE OF FORWARD RATES

This meant that whenever the spot exchange of the centre with higher money rates appreciated to the vicinity of gold import point, practically all Foreign Exchange dealers covered the exchange risk on the funds invested for the sake of high interest rates. This again meant that they could undertake interest arbitrage operations only if the cost of covering the exchange risk was less than the profit on the higher interest rate. In other words, funds were transferred to the centre with higher interest rates only if the latter's Forward Exchange was overvalued compared with its Interest Parities.

Thus as a general rule uncovered interest arbitrage ceased before the spot exchange of the centre with higher interest rates appreciated to gold import point and covered interest arbitrage continued so long as the forward rate of that centre had not depreciated to its Interest Parities in consequence of the covering operations connected with interest arbitrage. It is essential to grasp the fact that in itself the higher Bank rate would not have led to a flow of gold but for the fact that the forward rate did not immediately and completely adjust itself to its changed Interest Parities. This was the rule between 1925 and 1931, and there is no reason to suppose that it would be otherwise after the return to the gold standard.

To illustrate the important part played by forward rates in influencing interest rates through their effect on gold movements, let us assume that at a given moment the Bank rate is, say, 3 per cent in both London and New York, and that the forward sterling-dollar rate is at par with the spot rate. For internal considerations New York raises its Bank rate to 4 per cent, and there is a corresponding all-round rise in American interest rates. Thereupon the forward dollar goes to a discount, but its discount will not be quite 1 per cent per annum to begin with. Even so, a certain amount of funds will be transferred to New York without covering the exchange. This will tend to depreciate spot sterling to gold export point. Once the spot rate has approached gold export point it becomes risky to transfer funds from London to New York without covering the exchange risk.

It is well to bear in mind that for a three months' investment a capital depreciation of $\frac{1}{2}$ per cent through the depreciation of the dollar would wipe out the whole difference of 1 per cent between interest rates in London and New York. For investments for shorter periods even smaller capital depreciations would produce the same effect. London banks would continue to transfer funds to New York only if they could do so profitably without running any exchange risk disproportionate to the profit. The same would be true of foreign short-term funds invested in London, with the exception of American funds. The latter might be repatriated following upon the rise in the New York Bank rate and more stringent monetary conditions in the United States, irrespective of considerations of exchange and interest rates, for the simple reason that the banks wanted their money at home. Thus it is conceivable that the repatriation of funds would continue even after the spot dollar had appreciated to gold import point and even after the forward dollar had depreciated to the vicinity of its new Interest Parity.

(11) OVERVALUATION OF FORWARD RATE THE CAUSE OF
GOLD INFLUX

With these qualifications, and allowing for a moderate amount of uncovered speculative interest arbitrage, it can be stated that the transfer of funds from London to New York practically ceases the moment the spot dollar is at gold import point and the moment the discount on the forward dollar is equal to the discrepancy between interest rates in London and New York. Broadly

speaking, therefore, the gold movement will continue only while the forward dollar remains overvalued compared with its Interest Parities. Therefore, we may conclude, the main reason why London loses gold when New York raises its Bank rate is not the resultant disparity between interest rates in the two centres but the undervaluation of forward sterling compared with its Interest Parities. But for this undervaluation, London's losses of gold in this hypothetical instance would be much more moderate.

This conclusion applies also to the effect of the higher Bank rate in causing gold movements through the repayment of foreign credits. According to the classical theory, an acceptance centre can always attract gold by raising its rediscount rate, thereby compelling foreign debtors to refrain from replacing maturing drafts under acceptance credits, and forcing them to draw upon some other acceptance centre. It was partly on this assumption that the Bank of England raised its rediscount rate to a fantastic level in 1914. In reality, debtors will tend to allow their sterling acceptances to run off only so long as the forward sterling rate has not adjusted itself to its new Interest Parities. As soon as the adjustment is complete, the disadvantage of the high London discount rate from the debtors' point of view is offset by the benefit of the discount on forward sterling, which reduces the cost of covering. If forward sterling goes to a discount in relation to the debtors' currency, this makes the covering operation actually profitable. Had there existed an efficient forward market in sterling after the outbreak of the war, and had the increase of the Bank rate to 10 per cent in August 1914 been accompanied by a correspondingly wide discount on forward sterling, the high Bank rate would not have provided any inducement for foreign debtors to reduce their acceptance availments.

It may be argued that the above theory applies only in so far as the foreign borrowers are in the habit of covering the credits against exchange risk. But when forward sterling is at a discount it is actually profitable to buy for forward delivery the sterling needed to meet the bills. When it is at a premium, acceptance credits may or may not be covered; in this respect foreign debtors are guided by the same considerations as in the covering of balances.

Another way in which a high Bank rate is supposed to attract gold is by inducing foreign holders of sterling bills to "give them in pension" in a foreign centre where money rates are lower, in preference to selling the bills in London. In this instance, too, there is no inducement for them to do so once forward sterling has adjusted

itself to its new Interest Parities. Thus, the classical theory that a high Bank rate attracts gold by attracting arbitrage balances, by causing the repayment of credits and by diverting the supply of sterling bills from London to foreign centres, holds good only so long as the forward sterling rate has failed to adjust itself to its new Interest Parities. The effect of the Bank rate upon gold movements largely depends, therefore, upon the extent to which forward rates respond to it.

Thus, if the sterling-franc forward rate responds immediately and completely to a rise in the London Bank rate, there is no advantage whatever for arbitrageurs to transfer funds from Paris to London; nor for borrowers to switch over their acceptance availments from London to Paris; nor for holders of sterling bills to give these bills "in pension" in Paris instead of selling them in London—unless, of course, they are prepared to run a risk by leaving the exchange uncovered.

In consequence, the time lag between changes in Interest Parities and the adjustment of forward rates to their new level is to be regarded a major factor in normal conditions. In most instances it would be possible to prevent gold movements from taking place at all, or at any rate on a large scale, by accelerating the adjustment through official intervention; on the other hand, it would be possible to increase the volume of gold movements by deliberately preventing or delaying the adjustment. This subject will be dealt with in detail in Part VI of this book.

PART V
INTERPRETATION OF FORWARD EXCHANGE
MOVEMENTS

CHAPTER XXVIII

FORWARD STERLING

(1) PRELIMINARY REMARKS

IN Part IV of this book the causes and effects of the movements of forward rates have been examined. The next task is to give a historical account of the movements of the principal Forward Exchanges since the war, and to examine them in the light of the theoretical rules arrived at in Part IV. Considerations of space have compelled me to confine myself to the most important exchanges and to discussion of movements which were either of practical importance or were interesting from a theoretical point of view. Appendix I gives weekly rates for these exchanges for one month and three months from the beginning of 1921 to the end of 1936. The present chapter is devoted to the examination of the movement of forward sterling; separate chapters are devoted to the forward dollar, franc, mark and lira, while the remaining important Forward Exchanges are dealt with in an additional chapter.

There are also three charts, indicating the curve of the three most important forward rates—the sterling-dollar rate, the sterling-franc rate and the sterling-reichsmark rate—together with the curve of their Bank rate parities, discount rate parities and call money rate parities. The sterling-dollar chart indicates also the parity between the London discount rate and the New York time money rate. The sterling-dollar chart and the sterling-franc chart cover the period between 1920 and 1936, while the sterling-reichsmark chart covers the period from the resumption of forward dealings in Germany in 1924 up to their suspension in 1931.¹

¹ In the case of the sterling-dollar and sterling-franc charts I have adopted the monthly average forward rate compiled by Mr. L. C. Duncan in his chart contained in his Thesis "A Study of the Course of Forward Exchange Rates during the Last Few Years" (London School of Economics, 1934), and have brought his curve up to date from 1933 onwards. The reichsmark curve is based on the average of the forward rates published in Appendix I. Both forward rates and their interest parities are represented in the charts from the point of view of sterling; that is, if sterling is at a premium, or if interest parities indicate a premium for sterling, the lines are above

From the standpoint of the London observer the difficulty is to distinguish tendencies of forward sterling from those of the forward rates quoted in London. If forward sterling goes to a premium, it means of course that the forward dollar or some other Forward Exchange goes to a discount. Should this movement be discussed in the present chapter, or in the chapter dealing with that particular Forward Exchange? In many instances the decision is easy, for it can be seen that the movement is the result either of causes inherent in sterling or of those inherent in some other currency. In other instances, however, the movements in exchanges, whether spot or forward, may equally well be regarded as the result of inherent strength in sterling or as the result of inherent weakness in the dollar, and *vice versa*. In such instance references will be made to the movement in both chapters, though its interpretation will be confined to one.

(2) LONDON'S INTERMEDIARY RÔLE

In dealing with forward sterling, it is necessary to bear in mind London's special position as an intermediary market between the continental centres and overseas centres, especially New York. As a result of this intermediary rôle of London, both spot and forward sterling are often largely influenced by buying and selling orders carried out here on account of foreign centres. This, of course, is true of every centre of importance, but usually not nearly to the same extent as for London. If there is French buying of dollars, for instance, many of the buying orders find their way to London, which is as a rule a better market in dollars than Paris. The result is a depreciation of the franc in relation to sterling and an appreciation of the dollar in relation to sterling. It was because of this sensitiveness of sterling to influences arising from London's intermediary rôle that the late Mr. F. C. Goodenough once remarked that the sterling-dollar exchange was not a London-New York exchange but a Europe-New York exchange.

While the effect on the spot exchange of such foreign operations the parity which is the spot rate, and if sterling is at a discount or if its interest parities indicate a discount, the lines are below parity. The Bank rate parities in all three charts are based on the figures in Appendix II. The discount rate parities are based on the figures in Appendix III, and the call money rate parities, in so far as they are available, are based on the figures in Appendix IV. The figures of the parity between the London discount rate and the New York time money rate, as indicated in the sterling-dollar chart, are published in Appendix V. My method of calculation of Interest Parities is indicated in the preamble to Appendix II.

is generally known, little attention has so far been paid to their effect upon forward sterling. Yet that effect is more pronounced than is the effect of foreign operations in London upon spot sterling. What is more, these operations largely affect spot sterling simply through their effect upon forward sterling. If a Frenchman buys spot dollars in London, in order to do so he has simultaneously to buy spot sterling, thereby mitigating the adverse effects of his operations upon spot sterling. When, however, he buys forward dollars in London there is no need for him to buy sterling until the forward contract matures. He may, of course, cover his sterling-franc risk simultaneously, in which case the effect of his operation on forward sterling is the same as that of French purchases of spot dollars in London upon spot sterling. In many instances, however, he will not cover at once, and therefore forward sterling bears the full burden of the selling pressure caused by foreign operations in London. Consequently, whenever the Continent buys forward dollars in London, forward sterling tends to become undervalued in relation to dollars compared with its Interest Parities, and this will tend to provoke arbitrage transfers calculated to increase selling pressure on spot sterling. This means that, whenever there is a major international movement in Forward Exchanges afoot, forward sterling is apt to be affected as a result of London's intermediary rôle. When the Continent buys forward dollars, or New York sells forward continental currencies, forward sterling is apt to be weak in relation to the dollar and firm in relation to the continental currencies. When the Continent is a seller of forward dollars, or New York is a buyer of forward continental currencies, then forward sterling is apt to be firm in relation to the dollar and weak in relation to the continental currencies.

(3) THREE PERIODS

The history of the movements of forward sterling since the war may be divided into three main periods. From the time when active forward dealing was resumed after the unpegging of the Allied exchanges until March 1925 sterling was nearly always at a premium compared with the dollar, even though it was for prolonged periods at a discount compared with the continental currencies. It may be said that during the whole period forward sterling was characterised by a firm tendency; it was at a discount for a while against various continental currencies simply because those

Forward Exchanges were even firmer than sterling. In the second period, from March 1925 until the end of 1931, forward sterling was almost incessantly at a discount. It is true that it was for some time at a premium against the forward franc and other continental currencies, but this was due to the inherent weakness of the latter and not to any inherent strength of sterling. It is also true that during the greater part of the Wall Street boom in 1928 and 1929, forward sterling was at a premium in relation to the dollar, but this again was due to the special position of the dollar, to be dealt with in the next chapter, and not to any inherent strength in sterling, which was in fact at a discount in relation to the franc during all that period. The third period begins with the recovery of sterling after its slump at the end of 1931. Ever since the beginning of 1932, forward sterling has been distinctly strong. It is true that, since the beginning of 1935, forward sterling has been at a discount in relation to dollars, but this only shows that forward dollars were even firmer than forward sterling, which has been very firm all the time in relation to continental currencies.

(4) FIRMNESS OF FORWARD STERLING DURING 1919-20

It would be idle to try to explain the exceptional firmness of forward sterling during 1919-20 on the basis of either the Interest Parity theory or the Purchasing Power Parity theory. Even though call money rates and time money rates in New York rose during part of that period to abnormal levels, this in itself would not have justified such a degree of firmness of forward sterling. As for the sterling-dollar Purchasing Power Parity, it would have justified a discount and not a premium on forward sterling, since spot sterling was overvalued most of the time. The commercial factor also tended to produce a discount on forward sterling, owing to the huge trade deficit of Great Britain in relation to the United States. In 1919, for instance, British exports to the United States amounted to \$309 millions, while American exports to Great Britain amounted to \$2278 millions. In 1920 the figures were \$513 millions and \$1825 millions respectively. Obviously, commercial selling of forward sterling must have been several times larger in both years than commercial buying.

That forward sterling was nevertheless at a premium was due partly to the covering of the exchange on funds invested in call money and time money in New York, but predominantly to specu-

lative influences. The depreciation of spot sterling was considered essentially temporary, especially towards the end of 1920, and speculators anticipated a recovery. As Mr. Keynes pointed out, "the abnormal discount on forward dollars which persisted more or less from November 1920 to February 1921, thus indicating that the market was a bull of sterling, coincided with the sensational rise of sterling from 3.45 to 3.90. This discount was at its maximum when sterling touched its lowest point, and at its minimum (in May 1921) when sterling reached its highest point of that swing."¹ This speculative factor overshadowed every other influence, and was responsible for those abnormal movements of forward sterling. During most of this period, continental forward currencies were at a premium in relation to sterling, for the same reason for which forward sterling was at a premium in relation to the dollar, namely that the depreciation of the spot rates was looked upon as a temporary phenomenon and a recovery was anticipated.

(5) RÔLE OF INTEREST PARITIES FROM 1921 ONWARD

The sudden drop of the premium on forward sterling during the first five months of 1921 is explained by Mr. Keynes as the liquidation of the bull position in sterling as and when the spot rate was recovering. In fact, it can also be accounted for, in small part at least, by the commercial factor. Even though the British trade balance in relation to the United States remained adverse during 1921, the volume of imports from the United States declined, reducing the adverse balance to \$504 millions, against \$1312 millions in 1920. Towards the end of 1920 and the beginning of 1921 there was, as a result of the slump, a wholesale cancellation of British purchases in the United States. Since the forward dollar on these purchases was for the most part covered, every cancellation resulted in commercial selling of forward dollars.²

The reduction of the Bank rate from its crisis level of 7 per cent, which took place in London two months earlier than in New York, was probably partly responsible for the rise in the premium on forward sterling towards the middle of 1921. When New York followed suit, and brought the Bank rate to the figure of the British

¹ *Manchester Guardian Reconstruction Supplement*, Section I, April 1922, p. 13.

² The best description and analysis of the movements of the sterling-dollar rate during this period can be found in Mr. William Adams Brown's *England and the New Gold Standard, 1919-1926* (London, 1929).

Bank rate, the premium on forward sterling responded by contracting. From this time onward until the hectic days after the suspension of the gold standard in Great Britain, the curve of the forward sterling-dollar rate paralleled fairly closely the curve of its Interest Parities, as is shown by the Forward Dollar Chart opposite page 276. Evidently the Forward Exchange market was well established by the middle of 1921, and interest arbitrage activity was in full swing. For this reason, during the next ten years or so, any deviations of the forward sterling-dollar rate from its Interest Parities, for speculative or other reasons, brought forth corrective influences which tended to provoke adjustment. This does not, of course, mean that it was always the forward rate that returned to its Interest Parities. As the chart shows, frequently a movement in the forward rate anticipated the corresponding movement in the Interest Parities. While it would be dangerous to assume that in all those instances it was the forward rate which caused a change in its Interest Parities, in some instances at all events this must evidently have been the case. In other instances, the parallel movement of forward sterling and its Interest Parities, whichever moved first, was due to the operation of outside factors which affected both curves.

(6) SPECULATIVE OVERVALUATION OF FORWARD STERLING,
1922-24

During June and July 1921 the depreciation of spot sterling from about 4.00 to 3.56 was accompanied by a rise in the premium on forward sterling. For the rest of the year, spot sterling was appreciating almost uninterruptedly, while the premium on forward sterling tended generally to decline. This appears to confirm Mr. Keynes's theory about the influence of the level of the spot rate upon speculation in forward sterling.

In 1922 the tendency of forward sterling was largely in accordance with the rules of the Interest Parity theory. Until April the London and New York Bank rates were at the same level, and most of this time the forward rate was in the vicinity of its parity with spot rate. Admittedly, the discount rate parity would have justified a slight premium on forward sterling, since bill rates in London were below those of New York. It is more than coincidence, however, that when, from April onwards, the London Bank rate was reduced below the level of the New York Bank rate, and

when in consequence the discrepancy between London and New York bill rates widened in favour of London, there was a simultaneous appreciation of forward sterling which continued until the end of 1922. The appreciation may have been due in part to the anticipation of a continued rise in spot sterling, which in fact advanced steadily until March 1923. This probably accounts for the overvaluation of forward sterling compared with its Interest Parities towards the end of 1922 and the beginning of 1923.

From the middle of 1923, the increase of the London Bank rate from 3 to 4 per cent resulted in a decline in the premium on forward sterling, which was probably accentuated to some extent by speculative operations due to the declining tendency of spot sterling. For a short while, forward sterling was, if anything, slightly undervalued, though still at a premium. The weakness of spot sterling during the last four months of the year was accompanied by a widening of the premium on forward sterling, which towards the end of 1923 and the beginning of 1924 rose once more above its Interest Parities. The premium began to fall, however, from February 1924. This movement was connected with the wholesale speculative attack on the franc, which largely assumed the form of sales of forward francs against dollars. Much of these speculative transactions found its way to London, and her intermediary part must have been among the causes of the weakness of forward sterling against the dollar. From May onwards, the decline of bill rates in New York, which was subsequently confirmed by a reduction of the Bank rate, provided justification for the weakness of forward sterling, which towards the middle of the year went for the first time to a substantial discount.

(7) RETURN TO PRE-WAR PARITY

To prepare the way for the restoration of spot sterling to its old parity, the British authorities from June 1924 onwards maintained their Bank rate persistently above the New York Bank rate. Indeed, it was not until May 1932 that the Bank rate parity between the two centres once more justified a premium on forward sterling. The discount rate parity, too, justified a discount on forward sterling most of the time during 1924-32, except for brief periods in 1928, 1929 and 1930, when, owing to the Wall Street situation, bill rates in New York were for a while higher than those prevailing in London. On the other hand, the call

money rate parity remained almost continuously at a premium from 1919 until 1935. But the influence of the call money rate parity upon interest arbitrage and the movements of forward rates is generally moderate, apart from periods of boom, when call money rates soar to tempting high levels.¹

During the second half of 1924 and at the beginning of 1925 forward sterling was for a while at a premium, even though its Interest Parities would have justified a discount. This was due to the speculative anticipation of the return of sterling to its old parity. Once this event materialised, forward sterling went to a discount, as a result of the liquidation of bull positions. It is true that between July and October 1925 forward sterling underwent a marked recovery. From a discount of $1\frac{1}{8}$ c. for three months it rose to a premium of nearly $\frac{3}{4}$ c. This was partly justified by a decline in bill rates in London, confirmed by a reduction of the Bank rate from 5 to 4 per cent. Towards the end of the year, however, seasonal gold losses resulted in a rise in the Bank rate, with a corresponding decline in both the Interest Parities and the forward rate.

During 1926 the outstanding influence upon forward sterling was the General Strike, which resulted in a depreciation below discount rate parity, though not below Bank rate parity. The second half of the year witnessed a recovery of forward sterling, which reached par with spot sterling towards the end of the year. This may have been to some slight extent due to the increase of the New York Bank rate from $3\frac{1}{2}$ to 4 per cent, though even at that figure it was 1 per cent lower than the London Bank rate. Possibly the recovery was due to some extent to the liquidation of bear positions in sterling created in anticipation of the General Strike.

(8) THE FRENCH FACTOR

Throughout the first half of 1927, forward sterling remained in the close vicinity of spot sterling. It was not until May, however, after the lowering of the London Bank rate to $4\frac{1}{2}$ per cent, that London bill rates declined to the proximity of New York bill rates,

¹ In any case, the New York rate on brokers' loans and the London day-to-day money rate are not strictly comparable, and were only chosen for the calculation of call money rate parities because they are the representative call money rates in their respective centres. Since the London day-to-day loans are secured on bills, while the New York brokers' loans are secured on stocks and shares, it is natural that the latter rate should be higher than the former.

thereby providing an adequate, if temporary, justification for the level of forward sterling. In this instance, there is reason to believe that the relatively high discount rate in London attracted a certain amount of funds from New York during the first few months of 1927, and this factor, by causing an influx of gold, was partly responsible for the decline in bill rates and the reduction of the Bank rate in London. This illustrates how the deviations of forward rates from their Interest Parities can affect internal interest rates. The tendency in favour of the London market did not, however, continue for very long. As a result of French gold withdrawals in May and June 1927, London bill rates rose once more, and the discount rate parity declined to a level at which it would have justified a discount on forward sterling to the extent of about 1 per cent per annum. In fact, forward sterling did go to a discount during the second half of the year, though not quite to such an extent. The change of the Interest Parity against sterling was subsequently confirmed by the reduction of the New York Bank rate to $3\frac{1}{2}$ per cent in August 1927.

From the beginning of 1928 until the end of 1929 forward sterling came strongly under the influence of the Wall Street situation. The rise in money rates in New York resulted in a premium on forward sterling from the middle of 1928 until the end of 1929. As, however, this was due to the inherent weakness of forward dollars brought about by the Wall Street boom, it will be examined in detail in the next chapter dealing with the forward dollar.

Hitherto we have treated forward sterling almost exclusively in relation to forward dollars. The movements of the major continental Forward Exchanges until 1928 were largely influenced by causes individual to the countries concerned, and were not therefore a reflection of the weakness or strength of forward sterling. As for the forward rate of stable continental exchanges such as the forward guilder or the forward Swiss franc, they played but a subordinate part, and either moved in sympathy with forward sterling or dollar, or were affected by special conditions in Holland or Switzerland. There was no need to take these movements into consideration in examining the tendencies of forward sterling. From the end of 1928 onwards, however, the forward sterling-dollar rate ceased to be the expression solely of tendencies inherent in forward sterling. After the stabilisation of the franc, and more especially after the liquidation of the position created by official

French forward operations,¹ the forward franc assumed considerable importance as an expression of tendencies in forward sterling.

(9) STERLING OUT OF EQUILIBRIUM

Even though the forward dollar was at a discount throughout the second half of 1928 and until September 1929, this was not by any means a sign of inherent strength in forward sterling, for throughout that period the forward franc in London was almost incessantly at a premium, showing that the premium on forward sterling in relation to dollars was solely due to the peculiar Wall Street situation. The discount on forward sterling in relation to the franc was fully justified on an interest basis, for throughout 1928, and more especially during 1929, interest rates in Paris were considerably lower than those prevailing in London. The discount was also justified by the Purchasing Power Parity theory of Forward Exchange, as the spot franc was grossly undervalued in relation to sterling.

The disequilibrium of the British price level in relation to the world level began to assume an increasing importance after the stabilisation of the franc at an undervalued level. It resulted in a persistent adverse pressure on sterling, which led to a discount on forward sterling during most of 1929, 1930 and 1931. Indeed, from the time of the Wall Street slump of October 1929, when forward sterling went to a discount also in relation to the dollar, until the suspension of the gold standard in September 1931, forward dollars, French francs, Swiss francs, guilders and belgas were almost incessantly at a premium in relation to sterling. Among the important Forward Exchanges, only the lira and the reichsmark were at a discount, for reasons peculiar to Italy and Germany respectively. Evidently there was a pressure on sterling, due to overvaluation, and since the working of the gold standard prevented spot sterling from adjusting itself to its Purchasing Power Parities, forward sterling tended to move slightly in that direction.

(10) FORWARD STERLING UNDER GOLD EXPORT POINT

During the last three quarters of 1930 bill rates in London declined to the close vicinity of bill rates in Paris, though the Paris

¹ For details see Chapter XXXVIII.

Bank rate remained below the London Bank rate, and the discount on forward sterling in relation to the franc, which was at times in the vicinity of 1 per cent per annum, was in part, at any rate, justified by Interest Parities. The premium on forward francs gave way to a discount in May 1930, when the withdrawals of French balances brought the spot rate to gold export point. As at that time the stability of sterling was still trusted, it was natural that forward sterling should rise to a premium when the spot rate reached the point which was expected to mark the limit of depreciation. Towards the end of May the recovery of spot sterling above gold export point appeared to have justified the tendency of forward sterling, but the moment the spot rate rose above 123.90 the discount on forward sterling reappeared.

Towards the middle of June, spot sterling again relapsed in relation to the franc, this time quite considerably below gold export point, and it remained under gold export point until the end of January 1931. This was in consequence of the decision taken by the Bank of England to pay out gold of standard fineness only, instead of continuing to pay out fine gold. As the Bank of France refused to accept gold of a fineness inferior to .995, it became necessary to refine the bars withdrawn from the Bank of England before they could be delivered to the Bank of France. As a result of the additional expense thus caused, the gold point declined, though nobody quite knew its new figure which was influenced by the fluctuations in the refining charge and by the period of the delay. When the refining charge was 1½d. per ounce, the gold point declined to the low level of about 123.65.

The situation that arose in consequence is described in detail in my book *International Gold Movements*, Chapter XII. Here I shall confine myself to those of its aspects which concerned forward sterling. Even though the spot sterling-franc rate was well under its normal gold export point, this did not prevent forward sterling from being at a discount in relation to the franc, for the simple reason that nobody quite knew the new gold point. Towards the end of the year, however, when spot sterling declined below 123.60, the market considered it obvious that the new abnormal and provisional gold point had been reached, and forward sterling went to a premium in relation to the franc. During November and December the premium varied between ½ and ¾ per cent per annum. At the beginning of 1931 the prospects of an understanding with the Bank of France, which subsequently materialised, resulted in a rise

of spot sterling to the vicinity of its normal gold point, and forward sterling promptly moved to a discount in relation to the franc. The depreciation of both spot and forward sterling below the normal gold point over a period of seven months, however, undermined confidence in the stability of sterling to no slight degree. As a result, after the recovery of spot sterling, forward sterling remained slightly but persistently under the normal gold export point. When at the end of January spot sterling advanced to 123.92, the discount on forward sterling in relation to the franc widened to $4\frac{1}{2}$ c. for three months; the gold export point was reckoned at the time to be 123.89. When, a week later, the spot rate rose to 123.98, the forward discount widened to 9 c.

(11) THE CRISIS OF 1931

The discount on sterling was inclined to widen further when, following upon the Franco-German tension over the Austro-German Customs Union scheme, spot sterling appreciated in the period from March to May. It was not until spot sterling rose above its parity with the franc that the discount on forward sterling, wide as it was, rose appreciably above gold point. On April 4, for instance, when spot sterling was just a shade under par at 124.21, three-months forward sterling was at a discount of 34 c., which was a few centimes under gold point. A week later, when spot sterling was at 124.26, three-months forward sterling was at a discount of 35 c., which was a shade over gold point. On May 2, when spot sterling rose to 124.43, the discount on forward sterling widened to 37 c., but in spite of this it rose well over gold point. Towards the end of that month, however, when as a result of the Creditanstalt crisis clouds began to gather on the international financial horizon, the decline of spot sterling, though accompanied by a contraction of the discount on forward sterling, brought the latter once more below gold export point.

In July, when the crisis spread over Germany, spot sterling declined to the vicinity of gold export point in relation to both the dollar and the franc. At the end of July the Interest Parities of sterling declined materially, as a result of the increase in the London Bank rate from $2\frac{1}{2}$ to $4\frac{1}{2}$ per cent. This would have justified a considerable discount on forward sterling, since the Bank rate in New York and Paris remained unchanged. In fact, while the discount on forward sterling in relation to the dollar widened to

the vicinity of $1\frac{1}{2}$ to 2 per cent per annum during August, it nevertheless remained overvalued compared with its discount rate parity, which would have justified a discount on forward sterling of somewhere between 3 and $3\frac{1}{2}$ per cent. This overvaluation of forward sterling appeared on the surface all the more remarkable as there was throughout August a heavy and increasing speculative selling pressure, a pressure which largely took the form of sales of forward sterling. As a result, had the rates been allowed to find their own level, forward sterling would probably have declined below its Interest Parities. This, however, was prevented by official intervention. As we shall see in Chapter XL, the British authorities decided to support forward sterling as well as spot sterling, in order to prevent its depreciation considerably below gold export point. Throughout August and the first three weeks of September the spot dollar rate was artificially maintained at between $4.85\frac{3}{4}$ and 4.86. Three-months forward sterling was allowed to go to a discount of up to $2\frac{3}{8}$ c. Although the forward rate was thus under gold export point, the difference was not spectacular. At the same time the franc rate was kept between 123.90 and 123.96. In this case the discount, which widened towards the end of August to between 50 and 70 centimes, was materially under gold export point. Apparently the authorities paid much more attention to the dollar rate than to the franc rate.

(12) AFTER THE SUSPENSION OF THE GOLD STANDARD

The depreciation of spot sterling upon the suspension of the gold standard was, of course, accompanied by a further weakening of forward sterling, especially as the "Control" no longer intervened. The extent of the discount on forward sterling was, however, relatively moderate during this period. In relation to the franc it never for any length of time exceeded 4 per cent per annum; in relation to the dollar its maximum was 3 per cent per annum even during the darkest days of currency chaos. The explanation of the difference lies in the fact that while most American balances held in London were already covered against the exchange risk, most of the French balances were uncovered, and many owners hastened to cover. Taking this into consideration, and also the speculative selling pressure on forward sterling, the extent of the discount, even in relation to the franc, was remarkably moderate during the last quarter of 1931. This was probably explained by the widespread

feeling that once the sterling-franc rate declined below 100 it was not likely to depreciate further.

During October 1931, while forward sterling was still at a heavy discount in relation to the franc, it actually rose to a substantial premium in relation to the forward dollar. This is explained by the "dollar scare" that took place at the time, as a result of the wholesale repatriation of French and other foreign balances. There was a widespread fear that the United States might follow Great Britain's example; hence the weakness of the forward dollar.

From December 1931 a recovery in spot sterling set in, the dollar rate rising from 3.31 to 3.40 by the beginning of January, to 3.45 by the beginning of February, and to 3.50 by the beginning of March 1932. In the meantime, the rise in interest rates in New York, and to a less extent in Paris, brought the Interest Parities of forward sterling to a less abnormal level. This alone would not, however, have affected forward sterling to a material degree, for the chaotic currency conditions, and the wave of distrust in banks all over the world, brought interest arbitrage almost to a standstill.

(13) TURN OF THE TIDE IN 1932

When, however, early in 1932, speculators realised that the tide had turned, bear positions in sterling were covered in haste, and bull positions developed. As a result, forward sterling went to a premium in relation to the dollar at the end of January, and in relation to the franc at the end of February. In March, when the recovery of sterling tended to assume spectacular dimensions, the premium on forward sterling in relation to both major currencies widened, especially as the changed sentiment was accompanied by a rapid reduction of the London Bank rate to $3\frac{1}{2}$ per cent, against 6 per cent in January. The gap between forward sterling and its Interest Parities became rather wide in relation to the dollar. From time to time fears of a suspension of the gold standard in the United States resulted in the widening of the premium on forward sterling in relation to the dollar. In June 1932, when one of these "dollar scares" reached its climax, the discount on forward dollars in relation to sterling widened to over 4 c. for three months. Although the subsequent return of confidence in the dollar resulted in a recovery, a discount nevertheless persisted from the beginning of 1932 until the beginning of 1935. This, however, was due not so much to any inherent strength in

forward sterling as to the inherent weakness in forward dollars, which will be discussed in the next chapter.

In relation to the franc, forward sterling was much less steady during 1932. When the recovery of spot sterling reached its climax at the beginning of April, the franc rate rising to 96, forward sterling once more went to a discount, which tended to contract as and when spot sterling declined. In June, when the spot sterling-franc rate appeared to have reached its lowest point for the time being at 93, forward sterling rose to a premium. From the end of June this was justified on an interest basis, for by then the London Bank rate had reached 2 per cent, against $2\frac{1}{2}$ per cent in Paris, while discount rates in London were distinctly 'easier. When, however, it became evident in July that the downward trend of spot sterling was to continue, forward sterling returned to a discount and, apart from a brief interval in September, remained at a discount until December when banking and budgetary troubles in France resulted for the first time in a wave of pessimism in relation to the stability of the franc.

(14) TENDENCIES AFTER 1933

During the first half of 1933, forward sterling remained at a premium. The discount rate in London declined to about $\frac{1}{2}$ per cent, while in Paris it kept to the close vicinity of the Bank rate, $2\frac{1}{2}$ per cent. On these grounds a premium on forward sterling at the rate of about 2 per cent per annum would have been justified. Temporary deviations apart, the premium was in fact not very far removed from that level until June 1933, when forward sterling became distinctly weaker, during and after the London Economic Conference. This largely resulted from the fact that Mr. Ramsay MacDonald was seen at lunch with Mr. Keynes at the Athenæum, from which many people were inclined to infer that the Prime Minister had come under Mr. Keynes's influence in regard to his monetary policy. As a result, the premium on forward sterling in relation to the franc contracted materially during June, while during July and August it gave way to a discount. During the autumn months, however, forward sterling was once more at a premium, for notwithstanding the weak undertone of the spot rate, which continued until November, fears for the fate of the franc were becoming increasingly acute by that time. From August 1933 onwards, forward sterling remained at a premium in relation to the franc, apart from a brief interval from August to October 1934, when

hopes attached to the results of the deflationary policy of M. Doumergue's Government of National Union temporarily restored confidence in the franc. The fluctuations of the forward sterling-franc rate after this short-lived depreciation in the summer of 1933 were closely bound up with the fluctuating hopes and fears regarding the franc. Discussion of them will therefore be deferred to the chapter on the forward franc.

After the provisional stabilisation of the dollar in January 1934, the abnormal discount on forward dollars disappeared, and the forward sterling-dollar rate re-established contact with its Interest Parities. Throughout 1934, forward sterling remained at a premium in relation to the dollar, but in January 1935 it went to a discount and has remained at a discount ever since, up to the time of writing. This can be justified both on the basis of the Interest Parity theory and on that of the Purchasing Power Parity theory, for interest rates in New York since 1934 have been even lower than in London, and the spot dollar has been undervalued in relation to sterling. As, however, this position is not the result of any causes inherent in sterling, but to causes inherent in the dollar, I propose to examine it in detail in the next chapter:

Forward sterling has been at a premium in relation to forward guilders and Swiss francs almost incessantly since the beginning of 1933, but this again is to a large degree the result of the inherent weakness of those currencies, and will be discussed in Chapter XXXIII. Similarly the premium on forward sterling in relation to the belga up to the latter's devaluation, and the discount after April 1935, can more appropriately be discussed when dealing with the forward belga.

CHAPTER XXIX

THE FORWARD DOLLAR

(1) NEW YORK COMPARED WITH LONDON

IN discussing the movements of the forward dollar, it is necessary to bear in mind the fundamental difference between the London and New York money markets. The rates quoted in the two centres are not strictly comparable. The New York market rate of discount is much less elastic and sensitive than its London equivalent, and investment in dollar bills has never acquired quite the same degree of popularity among arbitrageurs as investment in sterling bills. In the New York market there are, in addition to the special rates on time deposits, three rates quoted which are more important than fine bank bill rates: (1) the rate for commercial paper (which is a one-name bill and in many ways is the American equivalent of bank advances in Great Britain); (2) the call money rate (known also as the rate for brokers' loans); and (3) the time money rate (loans on securities for definite periods). There is, strictly speaking, no London equivalent of these rates, which from time to time play a certain direct part in influencing interest arbitrage.

The call money and time money markets in New York are often regarded by arbitrageurs as providing alternative facilities for investment to those provided by the London bill market. The New York call money market attracts funds from the London call money market and also those invested in short sterling bills. The alternative for investment in long sterling bills is provided by the time money market. Owing to the popularity of time money from the point of view of arbitrageurs, the parity between the London discount rate and the New York time money rate occasionally plays a leading part in influencing the forward dollar rate. Indeed, during the normal years the forward rate was often nearer its parity between the London discount rate and the New York time money rate than to its discount rate parity proper. Between

1925 and 1931 the forward dollar rate was most of the time somewhere between these two parities.

It is also necessary to recall at the present juncture what was said in Chapter XVIII about the indirect effect of purely domestic interest rates upon forward rates. In the positive sense the only interest rates which can affect forward rates are those for the type of loans that attract arbitrage funds; but interest rates on loans which never or very seldom attract arbitrage funds can influence forward quotations in a negative sense. Although it may be profitable to transfer funds from New York to London because the forward dollar is undervalued compared with its discount rate parity, American banks may nevertheless abstain from transfers on any substantial scale owing to the high rates they are able to obtain at home on commercial paper. This factor does not affect transfers on foreign account, but at times the volume of these is not sufficient, in the absence of an adequate volume of transfers on American account to provide a corrective. On such occasions the undervaluation of the forward dollar will not be corrected automatically unless and until the profit on the swap increases, or the interest on domestic loans declines, sufficiently to induce American banks to switch over some of their resources from the home market to interest arbitrage. It is partly for this reason that the working of Interest Parities is by no means absolutely smooth even in relatively normal conditions and even between two such free and elastic markets as New York and London.

(2) WEAKNESS OF FORWARD DOLLAR UNTIL 1925

Let us now trace the actual movements of the forward dollar since the war. The early period can be briefly dismissed, for it has been discussed, in relation to sterling, in the previous chapter. During the post-war boom the exceptionally high New York call money rates, which at times rose to between 20 and 25 per cent, were an important factor and were partly responsible for the big discount on the forward dollar. For some time a curiously anomalous situation arose, owing to the wide discrepancy between New York bill rates and call money rates. While it was highly profitable for London banks to transfer funds to the New York call money market with the exchange risk covered, at the same time it was profitable for New York banks to transfer funds to the London bill market, also with the risk covered, if they sought to employ part of their

resources in bills instead of call money. This situation recurred during the second half of 1928 and in 1929—and since the details are much easier to ascertain for the latter period, we propose to discuss this question when dealing with the movements of the forward dollar in 1928.

Until the middle of 1924 forward dollars were almost incessantly at a discount in relation to sterling, even though, from 1922 onwards, they were at times at a premium in relation to the franc. From the middle of 1924 the movement in Interest Parities justified a premium on forward dollars against sterling, owing to the higher Bank rate and discount rate prevailing in London in consequence of the efforts to restore and maintain the gold standard. Nevertheless, bull speculation in sterling resulted in a relapse in the forward dollar after its temporary rise to a premium in the summer of 1924. It was not until these bull positions were liquidated after the restoration of sterling to par that the forward rate once more moved towards its Interest Parities.

(3) SEASONAL INFLUENCES

In the autumn of 1925, the forward dollar again went to a discount, partly because of a rise in bill rates in New York and a simultaneous decline in bill rates in London, and partly because of seasonal influences which brought spot dollars to gold import point in relation to sterling. In the circumstances, the market naturally anticipated a depreciation of the spot rate. When this depreciation occurred, early in 1926, the forward dollar recovered to a premium, especially as the Bank of England rate had meanwhile been raised from 4 to 5 per cent, causing the discount rate parity to move in favour of the dollar. The same seasonal phenomenon repeated itself during 1926, this time unaccompanied by a corresponding fluctuation of the Interest Parity. The mere fact that towards the end of the year spot dollars appreciated to gold import point was in itself sufficient to bring the forward rate to a discount.

It is worth noting that in 1927 New York bill rates fell by about $\frac{1}{2}$ per cent before the actual reduction of the New York Bank rate in August, but notwithstanding this the forward rate responded only when the change in the discount rate parity was confirmed by the reduction of the Bank rate.

(4) THE WALL STREET BOOM

The period of 1928 and 1929 is very interesting and instructive from the point of view of the forward dollar. The Wall Street boom resulted in an all-round rise in interest rates in New York. By the middle of 1928 the Bank rate parity had moved against the dollar, and simultaneously the forward dollar went to a discount. During the autumn months the forward dollar became considerably undervalued compared with its discount rate parity, and also with its Bank rate parity. This was not an unusual state of affairs. In fact, throughout the post-war period, the forward dollar, except for brief periods, had always been undervalued in relation to these parities. On the other hand, it had usually been overvalued compared with parities based on interest rates on call money, time money and commercial paper in New York. Consequently, the theoretical Interest Parity, which would naturally take account of these rates, must generally be more adverse to the forward dollar than would appear from the trend of either the discount rate parity or the Bank rate parity. During the second half of 1928 the abnormally high call money rates in New York made this situation particularly clear.

While, from the middle of 1928 until the end of 1929, the forward dollar was constantly undervalued compared with its discount rate parity, it was very heavily overvalued compared with its call money parities or with the parity between the New York time money rate and the London discount rate. It was highly profitable for London banks to transfer funds to New York call money loans or time money loans. In order to cover the exchange risk, they had to relinquish part of the profit on the transaction, and since during that period the spot dollar was in the vicinity of gold import point, this measure of precaution was essential.

(5) ANOMALOUS POSITION

Throughout the second half of 1928 and the whole of 1929 there was a material profit on covered interest arbitrage with New York for funds invested in call money and time money. At the same time, just as during the early post-war period, it would have been profitable for New York banks to buy sterling bills and cover the exchange. From time to time the profit on such opera-

tions was over 1 per cent per annum, but very few American banks availed themselves of it, owing to the much more attractive investment facilities in the home market, where interest rates rose to a very high level. Nor did London banks take advantage of the profit on call money and time money sufficiently to reduce materially the discrepancy between the forward dollar rate and the margin between the London bill rate and the New York call money rate and time money rate. Although during that period the influence of the call money market was predominant, the forward dollar tended to be influenced to a larger degree by bill rates than by call money rates or time money rates.

Another instructive example from the experience of the forward dollar at this period is that from June 1928 until October 1929 the discount on forward dollars was relatively wider for one month than for three months. As the spot dollar was all the time over parity in relation to sterling, the working of gold points—which under the gold standard is often responsible for divergencies between long and short forward rates—could not have been the cause of this discrepancy. The explanation lies in the fact that, as much of the funds that were transferred to New York for interest arbitrage were employed in call money, the operations led to a selling pressure on short forward dollars. The exchange risk on funds invested in call money is seldom covered for more than one month.

(6) FORWARD DOLLARS DURING 1929-31

During 1930 the range of forward dollar fluctuations in relation to sterling was relatively limited, and the rate was almost all the time within its transfer points. The anomalous situation of forward sterling, referred to in the last chapter, which was created through the refusal of the Bank of France to accept gold of standard fineness, failed to affect the sterling-dollar forward rate, since it was due to local circumstances between the franc and sterling. We dealt in the last chapter with the critical period of 1931, and as the movement of the sterling-dollar forward rate then was due to a cause inherent in sterling, there is no need to return to the subject here. The only point worth mentioning is that the sudden depreciation of the forward dollar in October 1931 was in part, at least, due to fears that the spot dollar might follow the depreciation of spot sterling. With the return of confidence in November, the forward dollar once more went to a premium.

While until the suspension of the gold standard in Great Britain the forward dollar had remained in the close vicinity of its Interest Parities, during the last quarter of 1931 a discrepancy arose which was at times as wide as 2 per cent per annum. Throughout the first half of 1932 the discrepancy was even wider: it was seldom less than 2 per cent, and at times was much above that figure. All the time, the forward dollar remained abnormally undervalued compared with its Interest Parities. When the latter moved against the dollar, the forward rate went to a very wide discount, owing at first to a flight to the £ but later to a speculative attack on the dollar. After the collapse of this attack in June 1932, a reaction set in, and a weak tendency of spot sterling, coupled with a marked decline of bill rates in New York, brought the rate down practically to parity with spot dollars. This movement was, however, short-lived.

(7) THE CRISIS OF 1933

The banking crisis in the United States at the beginning of 1933 was accompanied by a wave of distrust in the dollar, culminating in March, when the monthly average discount on forward dollars rose to a peak of $6\frac{1}{2}$ per cent per annum. Since the spot dollar was overvalued, this was in accordance with the Purchasing Power Parity theory which worked mainly through the intermediary of the speculative factor.

The depreciation of the spot dollar after the suspension of the gold standard caused the forward discount to narrow considerably towards the middle of the year as the spot dollar ceased to be overvalued. But when President Roosevelt's intention to depreciate the spot dollar further became evident, the discount widened once more, reaching the vicinity of its previous high record by December. At the same time the reflationary policy adopted by President Roosevelt resulted in a decline of interest rates in New York, so that, while the discount on forward dollars widened, the Interest Parities moved in favour of the dollar. This anomaly was all the more striking as at the same time spot dollars became considerably undervalued compared with their Purchasing Power Parities, so that theoretically the forward dollar ought to have been at a premium. In reality, however, the working of both the Interest Parity theory and the Purchasing Power Parity theory can be vitiated by the speculative factor. Even if the forward rate is undervalued compared with its Interest Parities, and even if

the spot rate is undervalued compared with its Purchasing Power Parities, the forward rate may depreciate further if the market anticipates a further fall in the spot exchange.

It is also worth while to inquire why interest rates in the United States declined and why money was exceptionally easy, throughout 1933 and 1934, in spite of the gross undervaluation of the forward dollar. According to the theory of reciprocity, the large profits obtainable on swap transactions tend to cause a rise in internal money rates in the country whose Forward Exchange is undervalued. There are two reasons why this law did not operate in the United States during 1933-34. The one is that the Government pursued a deliberate policy of inflation and cheap money, so that the undervaluation of the forward dollar, unlike that of the forward franc two years later, failed to produce monetary stringency in the home market. The other reason was that the United States authorities imposed restrictions on swap transactions. American banks were not allowed to undertake a swap operation unless it was connected with some genuine commercial transaction. For this reason they were not in a position to take advantage of the discount on the forward dollar by swap transactions either on their own account or on account of their clients. Admittedly, restriction was not water-tight. Since American banks were fully entitled to cover the exchange risk on short-term credits granted abroad, in many instances they were prepared to grant such credits at a very low interest rate or even free of interest in order to take advantage of the profit on the swap in a legitimate way. In fact, cases have been brought to my notice in which credits were granted, on goods in warehouses in England, with a negative interest rate. That is, the borrowers received a small premium for their consent to accept the loan offered by the American bank. The volume of such transactions was not, however, nearly sufficient to make a material difference to money conditions in the United States, which remained consistently easy. The American experience of 1933 and 1934 does not invalidate the reciprocity theory, but merely provides an example of the circumstances in which the effect of forward rates on interest rates becomes neutralised.

(8) AFTER THE STABILISATION OF THE DOLLAR

After the provisional stabilisation of the dollar, a sharp reaction set in. By the end of April 1934, forward dollars were within $\frac{1}{2}$ per

cent of their parity in relation to spot dollars, and within $\frac{3}{4}$ per cent to 1 per cent of their discount rate parity. Nevertheless, they remained at a discount throughout 1934, even though the exceptionally low discount rates in New York would have justified a premium. In this instance again, the discrepancy between the discount rate parity and the forward rate was due to the fact that both time money rates and call money rates remained relatively high. While the rate for fine bank bills in New York was down to $\frac{1}{8}$ per cent by May 1934, and to $\frac{1}{4}$ per cent towards the end of that year, the call money rate remained at 1 per cent and the time money rate at $\frac{7}{8}$ per cent until April 1935. Thus, while the margin between discount rates in London and New York would have justified a premium on forward dollars right from the beginning of 1934, it was not until 1935 that New York time money and call money declined below the level of London discount rates. This explains in part why the forward dollar remained at a discount until early in 1935.

In any case, it was not until November 1934 that exchange restrictions were removed, and even after that date many American banks were reluctant to undertake arbitrage operations that involved an export of capital. It was several months before the volume of arbitrage assumed sufficient dimensions to wipe out the discount on the forward dollar.

(9) INTEREST PARITY FAVOURS PREMIUM ON FORWARD DOLLAR

The tendency of the forward dollar during 1935 and 1936 deserves special attention. The fact that, from February 1935 onwards, the forward dollar was at a premium, and that at times its premium was as wide as 2 c. for three months, was regarded by many people as highly anomalous, and even some experts were at a loss to explain it. In reality it is easily explicable on the basis of the theory of Forward Exchange. Interest Parities, no matter on what rates we base them, were throughout that period distinctly in favour of the dollar. Bill rates in London throughout the period have remained at a shade over $\frac{1}{2}$ per cent, and from time to time they have risen perceptibly over $\frac{1}{2}$ per cent. In New York, on the other hand, bill rates throughout 1935 were $\frac{1}{8}$ to $\frac{3}{8}$ per cent. This made a difference of at least $\frac{3}{8}$ per cent, and frequently of over $\frac{1}{2}$ per cent, in favour of New York. Although call money rates and time money rates in New York during 1935

were a shade over bill rates, they were nevertheless very low, and in any case banks abroad were no longer attracted by call money investment. If we compare New York call money rates with London day-to-day loan rates, there remains a discrepancy in favour of New York of about $\frac{1}{2}$ per cent per annum.

The discrepancy is distinctly wider if we compare the deposit rates granted to foreign banks in both centres. For some inscrutable reason, London banks in 1935-36 were prepared to pay something like $\frac{3}{4}$ to 1 per cent on three-months' time deposits, even though the re-investment of these funds in bills would have resulted in a loss. In New York, on the other hand, hardly any interest was allowed on deposits. American banks were not at all keen on receiving them, owing to the lack of facilities for profitable re-investment in a liquid form. No interest was allowed for the first month, and very little, if anything, for subsequent months. Consequently the discrepancy between London and New York deposit rates definitely favoured the forward dollar, to the extent of over $\frac{1}{2}$ per cent. Given these facts, a premium on forward dollars amounting to between $\frac{1}{2}$ and $\frac{3}{4}$ per cent per annum was fully justified on the basis of Interest Parities.

(10) OVERVALUATION OF FORWARD DOLLARS IN 1935-36

From June to September 1935, and again towards the middle of 1936, the premium was, however, wider than the discrepancy between interest rates. The persistence of this overvaluation perplexed Foreign Exchange dealers and also those few economists who take an interest in Foreign Exchange. Its consequences were not, however, realised adequately. The persistent and abnormally wide premium on forward dollars was largely responsible for the repatriation of American bank balances from London, and for the transfer of British and foreign bank funds from London to New York. And it was partly the movement of these short-term funds, American, British and foreign, that brought about the spectacular influx of gold to the United States in 1935-36.

Admittedly, the influx of gold was largely the result of the repatriation of American refugee money and of a heavy influx of European refugee money. But the westward flow of bank funds also contributed to the buying pressure on dollars which led to a flow of gold to New York from Paris and other continental centres, and also from the London gold market. Had the premium on forward

dollars not exceeded its Interest Parities, the American banks would have left their balances in London, for they had no use for the funds in New York. But with the increase of the premium it became too costly for them to cover their exchange risk by selling sterling forward whenever they renewed their expiring sterling deposits or sterling bill holdings. The cost of covering the forward exchange was higher than the difference between the interest rates in London and New York, so that it was no longer profitable for the American banks to keep their funds in London.

At the same time, British and foreign (non-American) holders of liquid sterling assets found it profitable to transfer their balances from London to New York. It is true that the interest they obtained on dollar deposits or bills was even lower than the interest obtainable on sterling deposits or bills. But in covering the exchange risk they had to sell forward dollars, thereby benefiting by the big premium, which more than compensated them for the loss in interest yield involved in transferring funds to New York.

(11) BUYING PRESSURE ON FORWARD DOLLARS

But then, it may be asked, how was it that, in spite of the selling of forward dollars by those who transferred funds to New York, the premium continued and, apart from a few relapses, remained at an abnormally high level? How was it that the banks in London and elsewhere did not transfer funds on a larger scale to take advantage of the profit on the operation? The explanation is that there was a strong buying pressure on forward dollars which fully counteracted the selling caused by interest arbitrage. Moreover, many banks did not take an active hand unless the profit obtainable on transferring funds to New York was at least $\frac{1}{2}$ per cent per annum. Whenever the premium on forward dollars rose to a sufficiently high level to afford such a profit—as it did in June, July and October, 1935, and June and July 1936—the selling of forward dollars through interest arbitrage soon resulted in a relapse in the premium.

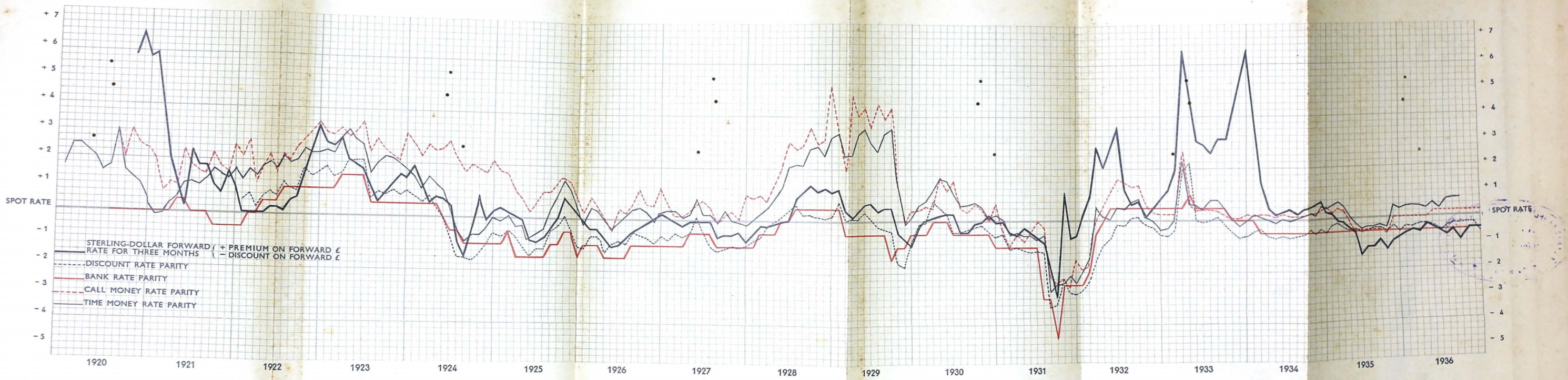
What was the cause of the persistent buying pressure on forward dollars which, despite selling by arbitrageurs, sufficed to maintain an abnormal premium for some length of time? Two main factors were responsible. In the first place, the spot dollar, ever since its depreciation in 1933-34, had been substantially undervalued against sterling. Most people took it for granted that in the long

run the sterling-dollar rate would decline below the figure of 5.00-5.05, around which it stood for a long time during 1936. Indeed, a decline in the spot rate had been expected even when the rate was around 4.90, so that, after the rise above 5.00, a decline was generally considered practically certain. It was assumed that the rate of stabilisation would be not higher than the old parity of 4.86, and might be much lower. As a result, merchants and holders of securities were more inclined to hedge against an appreciation of the dollar than against its further depreciation, which was considered unlikely. They did not mind being "long" in dollars, but took good care never to be "short". In consequence, there was much more forward buying than forward selling of dollars by merchants and investors. While there was no actual bull speculation in dollars against sterling, in practice this one-sided covering against exchange risk produced the same result. The second important cause of the firm undertone of forward dollars was the practice of selling forward francs against forward dollars in the London market. Many speculators who expected a devaluation of the franc were anxious to limit their risk. If they sold forward francs against forward sterling, they were exposed to the risk of a recovery of spot francs against spot sterling. If, on the other hand, they sold forward francs against forward dollars, their risk was restricted to the amount of the discount on forward dollars, plus the difference between the gold points of the franc-dollar exchange. It was realised that the depreciation of the spot dollar against sterling was largely an indirect consequence of the weakness of the franc, and that the moment the franc was devalued the dollar was bound to recover against sterling. For this reason, the profit prospects were larger if francs were sold against dollars than they were for sales against sterling.

It was for these reasons that the premium on forward dollars was so persistent. If the big banks—who, after all, control most of the liquid funds—had been prepared to engage in active interest arbitrage for a profit smaller than $\frac{1}{2}$ per cent per annum, their operations would have kept the premium nearer to the Interest Parities. After the devaluation of the franc, the expectations of the market materialised. The spot dollar appreciated in relation to sterling to the extent of over 3 per cent, while at the same time the premium on the forward dollar contracted. At about $\frac{3}{4}$ c. for three months it was more or less around its Interest Parities. From time to time the anticipation of a further appreciation of the dollar

against sterling led to the slight widening of the premium, but it remained well within its transfer points.

I have dealt at some length with the recent tendencies of the forward dollar, for it provides a valuable illustration of the application of the theory of Forward Exchange in comparatively normal conditions both between two free markets and between inconvertible currencies.



CHAPTER XXX

THE FORWARD FRANC

(1) LIMITATIONS OF ARBITRAGE WITH PARIS

THE difficulty of finding what interest rates should serve as the basis for reckoning Interest Parities is even greater in the case of the franc than in the case of the dollar. The market rate of discount is in Paris even less representative of the tendencies of interest rates than it is in New York ; and while in the latter centre there is the alternative choice of basing the Interest Parity on the call money rate, in Paris there is no particular quoted rate which can be regarded as especially important from the point of view of interest arbitrage. The rate charged on pensions of *Bons de la Défense Nationale* is unquestionably the most representative in the Paris market, but it has relatively little meaning for arbitrageurs abroad. The latter have to depend upon deposit rates to a much larger extent than they do in arbitrage with London or even New York, and since the deposit rates are largely a matter of negotiation and are not quoted regularly, they cannot be used for calculating Interest Parities. For this reason the discount rate parities must be depended upon, however unrepresentative they may be.

During a large part of the post-war period the Paris money market was not free, so that arbitrage with Paris was not always as smooth as it was between London and New York. Moreover, the custom of covering balances abroad was not so general in France as it is either in Great Britain or in the United States. In the circumstances, Interest Parities naturally did not play such an important part in connection with the forward sterling-franc rate as they did in connection with the forward sterling-dollar rate. Nevertheless, as the franc chart opposite page 286 shows, there has been a remarkable degree of sympathy between the movements of the forward franc and those of its Interest Parity, except during periods of acute crisis.

(2) MISLEADING THEORIES

The speculative factor has played a more important part in the history of the forward franc than in that of either forward sterling or the forward dollar. To begin with, the same factor which caused the gross overvaluation of sterling in relation to the dollar during the early post-war dealings in Forward Exchange also caused a gross overvaluation of the forward franc—in relation to sterling until about the middle of 1921, and, more especially, in relation to the dollar until about the beginning of 1922. The general public, the markets, and even experts, refused to regard the depreciation of the franc as being anything but temporary, and the forward franc expressed this anticipation of eventual recovery. The Purchasing Power Parity theory as expounded by Professor Cassel was largely responsible for the misconception which caused the Forward Exchanges of all the former European belligerent countries to become heavily overvalued during the first few post-war years. The theory which Professor Cassel popularised was that an undervalued currency is bound to return eventually to its Purchasing Power Parities. He did not make it sufficiently plain for the man-in-the-street that equilibrium can be restored also through an adjustment of Purchasing Power Parities to exchange rates. His teachings conveyed the impression that an undervalued currency is likely to appreciate. This is certainly not what he meant, but, having omitted to lay stress on the reciprocal character of the relations between price levels and exchanges, he and his followers were largely responsible for the popular misinterpretation of his theory.

In addition, there were large numbers of people in every country who went even further. They were firmly convinced that sooner or later all exchanges would come back to their old pre-war Mint parities. It is thus no wonder that in most depreciated currencies there was bull speculation on a large scale. The result was a heavy premium on the Forward Exchange, although the real position and prospects would have warranted a discount. It was only when the markets began to realise the futility of expecting a recovery that the bull positions were liquidated and bear positions were created.

(3) FLUCTUATIONS DURING 1921-23

In the case of France, the unwarranted optimism about the prospects of the currency disappeared earlier than in the case of some other continental countries, owing to the huge expenditure on the reconstruction of devastated regions, the realisation of the difficulties of collecting reparations from Germany, and also to fears that sanctions against non-payment of reparations might be applied by the French Government. While in 1920 and early in 1921 the premium on the forward franc in relation to sterling was at times as wide as 6 per cent per annum, during the second and third quarters of 1921 the premium gradually disappeared and gave way to a discount. In the case of the franc during this period it is impossible to observe any connection between the fluctuations of the spot rate and those of the forward rate.

Towards the end of 1922 wholesale inflation in France and the reduction of the Bank rate in London without a corresponding change in Paris, together with the anticipation of the Ruhr occupation, resulted in a rising trend in the discount on forward francs, which in relation to sterling widened momentarily above 4 per cent per annum in November. The forward franc approached its discount rate parity during the second half of 1922 and the first quarter of 1923, and became undervalued during the second quarter, but during the second half of the year the discount rate parity more or less adjusted itself to the forward rate. Throughout this period the spot rate continued to depreciate, but the forward rate, though at a moderate discount, was, if anything, slightly overvalued. Although the Ruhr occupation caused forward francs to be at a discount throughout 1923, it was not until the beginning of 1924, when a wholesale speculative attack was launched in the forward market, that the overvaluation of the forward franc gave way to gross undervaluation. This speculative attack, and the method employed by M. Poincaré to defeat it, constitute a very interesting chapter in the history of Forward Exchange, and deserve to be discussed in detail.

(4) THE GREAT SPECULATIVE ATTACK

The attack began in November 1923, when it was noticed that forward francs were being sold heavily in Amsterdam on German

account. The wave of selling soon spread to London, and before very long selling was in progress in every market from Vienna to Buenos Aires. The speculative activity was not by any means confined to sales of forward francs. To a large extent it took the form of borrowing francs and selling them for immediate delivery. In fact, to quite a considerable degree speculators were selling spot francs—which were, of course, due to be delivered in two days, according to the usage—in the hope that on the day of the delivery they could cover their sales at a profit. It was not until the French authorities took steps to discourage the granting of credits to foreign borrowers that the activity of bear speculators became focussed upon the forward market.

In January 1924 the forward franc was still at a quite normal discount and was at par in relation to the dollar. It was only in February that the widening of the discount in relation to both sterling and, to a less extent, dollars, indicated a rapid development of the huge bear position. On March 1 the discount on the forward franc in relation to sterling was 4.20 francs for three months. A week later the figure was 10 francs. Meanwhile the spot franc, which was at 85 to the £ at the beginning of the year, depreciated from 103.40 francs on March 1 to 117 francs on March 8. While on previous occasions such a movement had caused a contraction of the discount in consequence of bear profit-taking in anticipation of a recovery, this time the discount continued to widen. It became practically prohibitive to all but the most reckless gamblers to sell forward for three months, though it was still comparatively cheap to sell forward for short periods. Foreign banks made desperate efforts to overcome the difficulty of borrowing francs. A Swiss bank, for instance, published an advertisement offering 6 per cent interest for three-months' deposits in French francs.¹ Possibly in this and many other instances the francs were required not for the purpose of speculation by selling short, but for the purpose of interest arbitrage, which was becoming increasingly profitable.

(5) M. POINCARÉ'S BEAR SQUEEZE

The speculative campaign attained its climax on March 11, when the franc touched 120. Then followed one of the most memorable recoveries in the history of Foreign Exchange. It began with rumours of the conclusion of credits abroad. These rumours

¹ Jean Casamajor, *Le Marché à terme des changes en France*, p. 122.

were subsequently confirmed by the announcement that a British banking group, headed by Lazard Brothers & Co., had granted the French Government a credit of £4,000,000 and a few hours later an American banking group headed by J. P. Morgan & Co. had granted a credit of \$100,000,000. The banks acting as agents for the French Government began to buy francs heavily in an over-sold market. Before very long francs became practically unobtainable. When speculators realised that the game was up, many of them tried frantically to cover their short positions at all costs.

During the first few days that followed the turn of the tide, many bears whose franc commitments were falling due made desperate efforts to renew their positions, for it was believed that the foreign credits would be exhausted soon and the franc would then resume its fall. Consequently, the discount remained wide for some days, and it was not until the last week of March that it began to contract rapidly. By that time many speculators had given up hope of avoiding having to cover at a loss, and, to judge by the recovery of the spot rate as well as the contraction of the discount on the forward rate, the extent of bear covering must have been substantial. The process of bear covering continued throughout April, and by the end of the month the spot rate was under 68 and the forward discount had declined to about 60 c. for three months. Even at that rate, however, it was undervalued compared with its discount rate parity, which shows that many bears still refused to cut their losses and were carrying their positions.

Their views of the temporary nature of the recovery were justified by subsequent developments. Following upon the defeat of M. Poincaré at the General Election, the franc became distinctly weaker, and by the end of May it was once more over 84 to the £. At the same time the discount on forward francs had again widened to abnormal figures.

(6) SHORT-LIVED VICTORY

This experience showed that, even though a bear squeeze can be temporarily successful, especially through the restriction of credits to foreign borrowers, if it is undertaken with relatively moderate resources in face of an adverse fundamental position it cannot hope to produce lasting results. In 1924 the French budget was hopelessly unbalanced and inflation was bound to continue. In the circumstances, it was impossible, in the absence of any genuine effort to restore equilibrium, to expect that the recovery of the

franc would prove permanent. Moreover, the whole operation was undertaken, not as part of a well-conceived scheme of financial reconstruction, but in a vindictive spirit as a punitive action against the wicked speculators. It was for this reason that M. Poincaré forced the bear squeeze to the point at which the spot franc actually became overvalued, and at which, therefore, French trade became handicapped. His whole attitude towards bear speculators was similar to his attitude towards Germany, which culminated in the occupation of the Ruhr. In both instances M. Poincaré succeeded in inflicting a severe blow on his opponents, and in both instances his short-lived satisfaction with the result had to be paid for dearly by France. The part played in M. Poincaré's bear squeeze by the official measures of credit contraction is discussed in detail in Chapter XL. Undoubtedly, the bear squeeze through intervention by means of foreign credits would not have resulted in even a temporary victory had it not been preceded by an embargo on credits to foreign borrowers, an embargo which forced speculators from the loan market to the Foreign Exchange market, exposing them to the mercy of the authorities.

In the two years from the advent of M. Herriot in June 1924 to the second great climax of the franc in July 1926, adverse pressure on the forward franc was persistent but varied in intensity. The discount on forward francs fluctuated widely, and was generally hopelessly out of touch with its discount rate parity. From August to October 1924 the discount on forward francs contracted sharply, declining slightly below discount rate parity, but before the end of that year it widened once more, and again lost touch with its Interest Parities. Throughout 1925 the speculative undervaluation of the forward franc continued, though towards the middle of that year the depreciation of forward sterling, following upon its return to its old gold parity, was reflected in a sharp contraction of the discount on the forward franc, stimulated also by a downward movement of the Interest Parity.

(7) THE CLIMAX OF 1926

During 1926 the sweeping attack of 1924 was repeated, with even more spectacular results. The spot franc depreciated on July 20, 1926, to 240, exactly twice the figure of its worst rate in 1924. At the same time the discount on the forward franc was 11 francs for one month, 18 francs for two months and 25 francs for three

months. At this stage, M. Poincaré took charge once more. He repeated his tactics of 1924, this time without the aid of foreign credits. Having learnt his lesson, he took great care not to repeat the mistakes of two years ago. Instead of relying upon external assistance, he set about improving the fundamental financial position of France. Moreover, this time he abstained from overdoing the bear squeeze.

Although there was an instantaneous recovery of both the spot and the forward franc from their July 20 levels, it took some time for the market to realise that this time the improvement would be of a lasting nature. While the spot rate recovered to 174 francs by the end of September, the three-months' discount was still in the vicinity of 10 francs. It was not until the end of October that the forward franc showed a tendency to return to its normal level, and it was not until the middle of March 1927 that the discount for three months could be quoted once more in centimes instead of francs. In April, however, the discount disappeared altogether and gave way to a premium. Long before that the spot rate had appreciated to the vicinity of 124, at which level it remained throughout the period of pre-stabilisation, and at which it was eventually stabilised.

During March 1927 the forward rate re-established contact with its discount rate parity. It remained, however, out of touch with its Bank rate parity, for the simple reason that the French authorities were reluctant to bring the Bank rate into line with the decline of bill rates. Until December 1927 the French Bank rate remained at 5 per cent, even though the market rate of discount in Paris declined to around 2 per cent by the middle of that year. Needless to say, in such circumstances the forward rate follows the market rate of discount rather than the Bank rate. Indeed, by May 1927 the forward rate, for the first time since 1924, became slightly overvalued compared with its discount rate parity.

(8) OFFICIAL FORWARD OPERATIONS

From August 1927 the forward franc came under the influence of official Forward Exchange transactions undertaken by the Bank of France. A detailed discussion of these operations is to be found in Chapter XXXVIII. Their object was deliberately to bring about an undervaluation of the forward franc, so as to make it profitable for French banks to invest their liquid resources abroad,

and thereby relieve the Paris market of the plethora of liquid funds. This was not the first time that the French monetary authorities had operated in Forward Exchanges. At various times during 1924-26 they intervened in the Forward Exchange market as part of the tactics of their defence of the franc against speculative attacks. Not until 1927, however, did they pursue a systematic forward rate policy.

Between the summer of 1927, when the official swap operations began to assume considerable dimensions, and the end of 1928, when these operations ceased, the forward franc was persistently undervalued to the extent of about $\frac{1}{2}$ to 1 per cent per annum compared with its discount rate parity with sterling. Considering the degree of bull speculation which was undertaken throughout 1927 and up to the date of the *de jure* stabilisation of the franc in June 1928, the forward franc would have become heavily overvalued if it had been allowed to take care of itself. After the stabilisation, the liquidation of the huge bull position would have led to a substantial undervaluation of the forward franc. As it was, throughout the period when the Bank of France was engaged in swap operations, the forward rate was constantly at a moderate premium and fluctuated within a narrow margin only. By the beginning of 1928 the Bank rate parity followed the decline of the discount rate parity, so that throughout that year the forward franc was slightly undervalued also in relation to its Bank rate parity.

After the legal stabilisation of the franc, when it was no longer considered necessary to divert funds from Paris by causing an undervaluation of the forward franc, the discrepancy between the franc and its Interest Parities in relation to sterling declined to $\frac{1}{2}$ per cent, while the undervaluation of the franc-dollar forward rate disappeared altogether. As a result, the banks gradually liquidated their swap transactions, enabling the Bank of France to reduce its commitments. Towards the end of the year, the forward franc became overvalued once more, but by that time the Bank of France had ceased to take an active interest in forward rates.

(9) UNDERVALUATION OF THE FORWARD FRANC IN 1929

At the beginning of 1929, when no speculative influences were at work in either direction, the forward rate tended to move towards its Interest Parities. Subsequently, however, there developed a rather substantial undervaluation of the forward franc. Although

the discount rate parity and also the call money parity—which under stable monetary conditions began to play some part in arbitrage—would have justified a premium in relation to both sterling and dollar, the forward franc remained in the vicinity of par in relation to sterling, and at only a very narrow premium in relation to the dollar. During the greater part of the last three quarters of 1929 the forward franc was undervalued to the extent of $1\frac{1}{2}$ to 2 per cent per annum in relation to sterling. It was not until the end of the year that it began to approach its Interest Parities.

The fact that the marked undervaluation of the forward franc in relation to sterling did not lead to a sufficient amount of arbitrage to correct the position was due to several circumstances. For French arbitrageurs the profit of $1\frac{1}{2}$ or 2 per cent per annum must have appeared small compared with the much larger profit obtainable on interest arbitrage with New York. Apart from this, French holders of sterling balances were not in the habit of covering the exchange risk, so that they enjoyed the benefit of higher interest rates in London without having to bear even the relatively moderate cost of covering the forward franc. In any case, from the middle of the year sterling remained almost incessantly in the vicinity of gold export point in relation to the franc, and as it was then above suspicion, arbitrageurs felt it unnecessary to cover the exchange risk. The existence of a small premium in relation to the forward dollar is explained by covering operations on funds transferred to New York during the call money boom.

During the first nine months of 1930, the forward franc remained in the close vicinity of its Interest Parities, and was in fact inclined to be overvalued. This was natural in view of the high degree of the undervaluation of the spot franc in relation to sterling, an undervaluation which by that time was making itself felt to an increasing degree. During the last two months of 1930 and the beginning of 1931 the forward franc went to a discount and once more became undervalued compared with its Interest Parities in London. This, however, was due to the abnormal conditions—described in Chapter XXVIII—created through the refusal of the Bank of France to accept gold of standard fineness. Since spot sterling declined considerably below its normal gold export point, and since this state of affairs was obviously temporary, it was natural that forward sterling should tend to go to a premium. When this abnormal situation was terminated in January, the

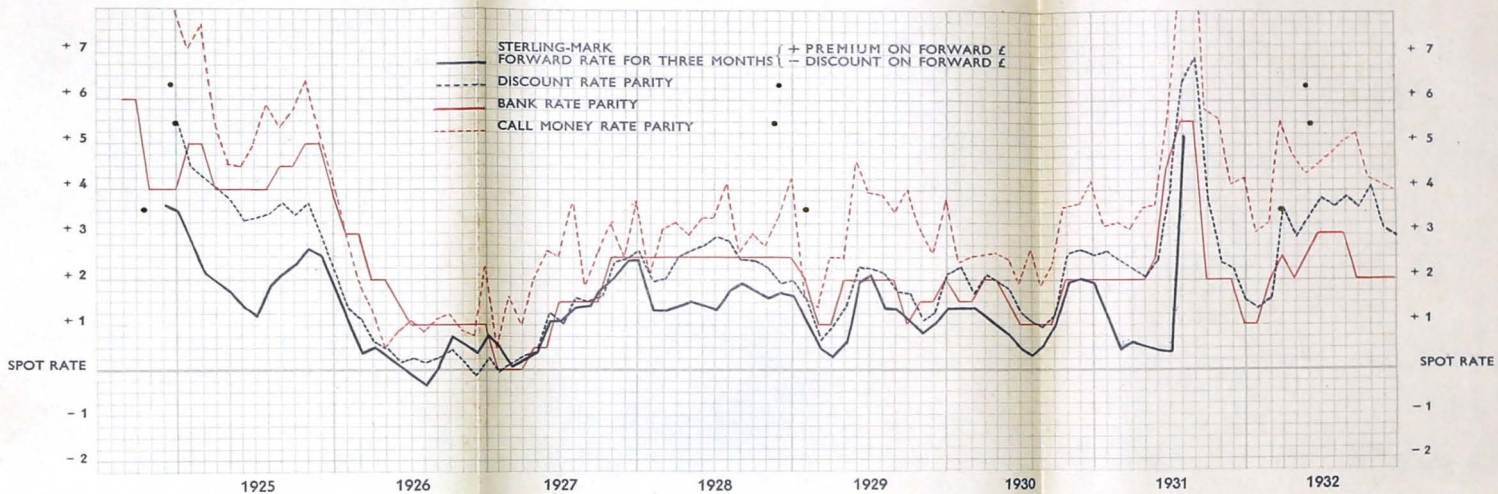
forward franc returned to a premium, and by March it was again overvalued compared with its Interest Parity with sterling.

(10) THE FORWARD FRANC IN 1931 AND AFTER

The behaviour of the forward sterling-franc rate during the crisis of 1931 has already been described in Chapter XXVIII. The forward franc moved more or less in sympathy with the forward dollar until the suspension of the gold standard in Great Britain—except in so far as British official intervention in August aimed at the appreciation of forward sterling in relation to the dollar. But during the dollar scare of October 1931 the forward franc went to a substantial premium against the dollar. During 1932 the sterling-franc forward rate remained in the vicinity of both its parity with the spot rate and its Interest Parities, but the forward franc-dollar rate was most of the time at a big premium, owing to the dollar's inherent weakness. This premium widened considerably, of course, during the American crisis of 1933 and during the depreciation of the dollar at the end of that year. Throughout this period the movement of the forward franc mainly reflected the tendencies of the forward dollar.

It was not until 1934 that causes peculiar to the franc itself once more predominated. The February riots were accompanied by a sharp increase of the discount on the forward franc, which for several months lost touch with its Interest Parities. The apparent success of M. Doumergue's Government in its efforts to improve conditions resulted, however, in a sharp recovery of the forward franc, which during the second half of 1934 went to a premium in relation to both sterling and the dollar.

From the beginning of 1935 the forward franc went to a discount and it has remained at a discount until the time of writing. From time to time the discount has assumed spectacular dimensions, and apart from one occasion in the autumn of 1935 the rate has remained entirely out of touch with its Interest Parities. Its gross undervaluation was in accordance with the rules of the Purchasing Power Parity theory of Forward Exchange. These rules were discussed in Chapter XXII and were there illustrated mainly by the recent experience of the forward franc. This experience also provides an excellent example of the reciprocal character of relations between Interest Parities and forward rates, discussed in detail in Chapter XXI. The gross undervaluation of the forward franc compared



with its Interest Parities was partly responsible for the increase in French money rates which took place in May and November 1935 and again in May and September 1936. This period also provides excellent examples of the relations between long and short forward rates, discussed in Chapter XXVI. To avoid duplication, I must refer the reader to these chapters. Beyond doubt, the glaring anomalies that arose during 1935 and 1936 in connection with the movements of the forward franc have contributed largely to the increased interest taken in the broader aspects of Forward Exchange.

CHAPTER XXXI

THE FORWARD MARK

(1) THE EARLY POST-WAR PERIOD

THE collapse of the mark in 1923 divides the history of the German Forward Exchange into two quite distinct periods, separated by a gap of over a year in which there were no legitimate forward dealings whatever in German currency, and for which no quotations of forward rates are available. Both periods are exceedingly interesting, though for totally different reasons. During the period before September 1923, the movements of the forward mark provided an interesting example of the effect of advanced inflation upon the Forward Exchanges. The course of the forward reichsmark during the second period, from 1924 onwards, provides illustrations of the movements of forward rates in a borrowing country in conditions of monetary stability. In following the course of the forward mark and the forward reichsmark, it ought to be borne in mind that arbitrage has always been highly developed in Germany; possibly even more so than in London, New York or Paris.

As we saw in Chapter VIII, it was not until the first half of 1920 that the practice of the Reichsbank, and of other banks, of quoting insurance premiums against exchange risk was followed by the development of a properly organised forward market in Berlin. Throughout 1920 and 1921, and until the middle of 1922, the forward mark was at a premium in relation to sterling, the dollar and the French franc. To begin with, the premium was to some slight extent theoretically justified by the fact that, while the German Bank rate was maintained at 5 per cent until July 1922, during 1920 and part of 1921 the Bank rates in London and New York were considerably above that figure. This, however, does not mean that a premium on the forward mark was justified also on the basis of discount rate parities. For obvious reasons, the German Bank rate, at 5 per cent, was purely nominal, and market rates of discount were well above that figure. In any case, while the maximum

discrepancy between Bank rates was 2 per cent in favour of Germany, towards the middle of 1920 the premium on forward marks was at times as high as 8 per cent per annum, and during 1921 it occasionally rose to the vicinity of 15 per cent per annum. It remained abnormally high even when the spot rate began rapidly to depreciate—the sterling-mark rate rose from around 240 during the first quarter of 1921 to about 1200 in November, though it recovered to 770 in December. When this depreciation movement reached its climax, the premium on the forward mark was around 4 per cent per annum. Early in 1922 it was slightly higher, but subsequently it began to decline. When in May and June it became evident that the mark was undergoing a non-stop depreciation, the premium ran out, and by the time the spot rate reached 1500 the forward mark went to a discount.

(2) UNWARRANTED OPTIMISM

In the light of subsequent events, it may appear incomprehensible that there could be a premium on the forward rate of a currency which was so obviously doomed. It should have been evident to everybody that, owing to the excessive burden of reparations which were far beyond Germany's capacity to transfer, to the weakness of the German Government, and to the prospects of military sanctions on the part of France, the mark had absolutely no chance of avoiding collapse. For this reason the forward mark ought to have been at a discount—and a very substantial discount at that—from the very outset. The reason why it nevertheless remained for a long time at a premium, was the same as that which caused the forward franc, the forward lira and the forward Belgian franc to remain for a long time at a premium in relation to both sterling and the dollar. The world simply refused to believe that all currencies would not sooner or later return to their pre-war parities. Even when the mark was tumbling down fast and the sterling-mark rate was quoted in six and seven figures, there were naïve people who bought mark notes in the hope that through their appreciation to pre-war parity they would become millionaires in pounds one day.

The Foreign Exchange market saw the danger signal earlier than the general public, but even otherwise shrewd dealers took a long time to realise that the mark was doomed. The mark was grossly undervalued compared with its Purchasing Power Parities,

and the belief that undervalued exchange rates are bound to return to their Purchasing Power Parities played an even more important part in the case of the mark than it did in the case of the franc, in causing the Forward Exchange to be grossly overvalued compared with its Interest Parities. The fact that from time to time the spot mark underwent a temporary but substantial recovery encouraged the belief that sooner or later it would definitely improve.

The reason why the overvaluation of the forward mark during that period was not even more pronounced was that the premium was substantially reduced by interest arbitrage operations. So soon after the war, very few foreign arbitrageurs would have dared to risk their money by transferring it to Berlin, but owners of German refugee funds in Amsterdam and elsewhere, anxious both to eat their cake and keep it by safeguarding themselves against the depreciation of the mark and at the same time benefiting by the high interest rates prevailing in Germany, lent their funds to the German market by buying spot marks and covering the Forward Exchange. But for these operations, which were on a fairly large scale, the results of the unwarranted optimism about the prospects of the mark would have been even more fantastic.

(3) THE COLLAPSE OF THE MARK

Once the market realised how utterly hopeless the outlook for the mark was, the depreciation of the spot rate was accompanied by a rapid though not uninterrupted increase of the discount on the forward rate. At one time, in November 1922, the discount widened to over 250 per cent per annum; by the end of the year it was down, however, to the relatively moderate figure of 50 per cent. But in 1923 the discount began to assume spectacular dimensions. While during the earlier stages of inflation, the market had been guilty of excessive optimism about the prospects of the currency, at this stage it began increasingly to anticipate the further progress of the destructive process. It became difficult to obtain any quotations for three months, while the rate for one month reached 1,000,000 marks towards the middle of July. On August 4, when the spot mark was 5,200,000 to the £, the discount on the forward mark was no less than 5,000,000 for one month, which is equivalent to about 1150 per cent per annum. On September 1, when the spot mark was 45 millions to the £1, the quotation of the forward mark was 20 millions for one month.

After that date, the rates became subject to negotiation, while from the end of September the forward market in marks ceased to exist.

According to Mr. Keynes,¹ these fantastic forward rates were a reflection of the sensational rate of interest for short loans current inside Germany. It would be difficult, however, to try to establish any link between internal rates and forward rates once the collapse had assumed a panic-like character. Both rates were but the manifestation of the desperate flight from the mark, and amidst the confusion and demoralisation prevailing, discrepancies that undoubtedly existed between them lost all theoretical meaning.

(4) FORWARD DEALINGS AFTER STABILISATION

In 1923 all Forward Exchange dealings in Germany were prohibited except buying and selling forward in foreign currencies against each other. It was not until late in 1924, after the stabilisation of the currency and the establishment of the reichsmark, that Forward Exchange business was resumed. Meanwhile, a certain amount of highly speculative dealing took place in occupied territory, especially in Cologne, where the success of Dr. Schacht's stabilisation was not trusted and forward marks remained at a wide discount. It was by repeating Count Witte's tactics of 1894 that Dr. Schacht, by creating a scarcity in marks, compelled bears to cover at a heavy loss. After this lesson the speculative fever subsided.

When forward dealings in reichsmarks were resumed, under the new currency régime, early quotations reflected the wide discrepancy between interest rates in Germany and abroad. Towards the end of 1924, the forward reichsmark was at a discount of some 4 per cent per annum, but early in 1925 the discount contracted. The forward reichsmark was all this time more or less overvalued compared with its Bank rate parity, its discount rate parity and, more especially, its call money rate parity.

(5) THE FORWARD REICHSMARK OVERVALUED, 1926-28

During 1926 a high degree of contact was established between the forward reichsmark curve and that of its discount rate parity. Early in the year the discount was about $1\frac{1}{2}$ per cent, which corresponded to the discrepancy between bill rates in London and

¹ *A Tract on Monetary Reform*, p. 120.

Berlin. By the middle of the year this discrepancy declined to a purely nominal figure, while the Bank rate in London was raised to the level of the German Bank rate. For some months during that period the forward reichsmark moved round its parity with the spot reichsmark. During 1927 the curve of the forward reichsmark and those of its discount rate parity and Bank rate parity again moved in parallel to a remarkable degree. As and when the discrepancy between interest rates in London and Berlin widened, the discount on the forward reichsmark widened too. During the last two months both were in the neighbourhood of $2\frac{1}{2}$ per cent per annum, which was exactly the figure of the discrepancy between the British and German Bank rates. It ought to be borne in mind, however, that in Germany, in consequence of the prevailing scarcity of funds, interest rates were inclined to remain over rather than under the Bank rate. Rates allowed on foreign deposits—especially on reichsmark deposits—were above bill rates in Berlin. Thus, if the forward reichsmark rate was more or less at its discount rate parity in relation to sterling, it was most of the time overvalued compared with its deposit rate parity, which, from the point of view of arbitrage, was more important than the discount rate parity. It should be noted, too, that the forward reichsmark-dollar rate was overvalued even in relation to its discount rate parity.

During 1928 the forward reichsmark also became considerably overvalued compared with its discount rate parity in relation to sterling. This overvaluation continued during the early part of 1929, though towards the middle of that year the forward reichsmark adjusted itself to some extent to its Bank rate parity.

(6) OVERVALUATION OF REICHSMARK EXPLAINED

This persistent overvaluation of the reichsmark during a prolonged period requires some explanation. All the known factors appear to have been working in the opposite direction. Germany was borrowing abroad heavily in the form of short-term credits. Whether these operations assumed the form of borrowing by German banks in foreign currencies or of lending by foreign banks in the form of reichsmark deposits, they involved a selling pressure on the forward reichsmark.

Nor can the overvaluation be attributed to any official manipulation by the Reichsbank, for Dr. Schacht was opposed to any foreign borrowing and would not have stimulated it by overvalua-

tion. Indeed, in 1926-27 it was the Reichsbank's declared policy to discourage short-term borrowing abroad.¹ The practical result of the overvaluation of the reichsmark was, of course, an influx of foreign short-term funds, rendered profitable by the discrepancy between the forward mark and its Interest Parities. It was during that period that the swap and deposit business assumed particularly large proportions.

The explanation of the overvaluation of the reichsmark lies in the fact that there was a persistent buying of forward reichsmarks in connection with long-term borrowing abroad. Whether some of the proceeds of foreign loans were left abroad, or whether they were repatriated as and when the calls became due, it became a widespread practice to buy forward the reichsmarks required. This was only natural, for although forward reichsmarks were overvalued, they were almost incessantly at a discount in relation to sterling, and especially in relation to the dollar, so that, unless the reichsmark was at gold import point, or unless the German borrowers took a strong view about the likelihood of its depreciation, they considered it advantageous to buy forward reichsmarks instead of spot. Thus, long-term borrowing abroad stimulated short-term borrowing abroad, through its effect on the forward rates.

(7) EFFECT OF BOOM AND SLUMP

Apart from a few brief intervals, the conditions described above also prevailed in 1929, though not to the same extent as in the previous year. As a result of the increase of the Bank rate in London in February, the sterling-reichsmark Interest Parity moved in favour of Germany and the forward discount declined to an unusually low figure. When, during the spring, the spot reichsmark touched gold export point, and the German Bank rate was raised to 7½ per cent, the discount widened to the vicinity of its Bank rate parity, with the result that the forward reichsmark was actually beyond gold export point. In June, however, when the depreciation of sterling brought the spot rate back to gold import point, the discount was inclined to widen for a while. After the increase of the London Bank rate in September, the forward reichsmark touched for a short while its Bank rate parity with sterling. It

¹ Report of the Sub-committee on Currency, Credit and Finance of the Committee appointed for the Investigation of German Trade Conditions (Berlin, 1929, E. S. Mittler & Sohn), p. 76.

remained, however, more or less overvalued in relation to its discount rate parity. During the last quarter of 1930 Interest Parities moved against Germany and the forward rate adjusted itself to a large degree to those Parities. This was due to the wave of pessimism which followed the successes of the National Socialists at the General Election.

During the first five months of 1931 the forward reichsmark substantially became overvalued in relation to sterling, though not in relation to the dollar. In June, the Central European crisis resulted in heavy withdrawals of American funds from Germany, and the spot reichsmark quickly fell to its gold export point. Consequently the forward rate went to a nominal premium for a very short while, but fears that the Reichsbank would not be able to maintain the gold parity led shortly to a discount, which had widened to the neighbourhood of 10 per cent per annum by the middle of July, when the crisis reached its climax.

The moratorium of July 13, and the subsequent exchange restrictions, brought the German Forward Exchange market virtually to an end. Even though the reichsmark continued to be dealt in for forward delivery in foreign centres, the rates were a matter of negotiation. Dealing was not easy, since foreign banks were anxious to avoid increasing their reichsmark balances and they were not, of course, allowed to overdraw their accounts with German banks. In the circumstances, the rates from time to time quoted for forward deals in reichsmarks were of little significance. During the autumn of 1931 the anticipation of an early devaluation of the reichsmark resulted in a widening of the forward discount to the neighbourhood of about 75 per cent per annum. Subsequently, however, when it became evident that the Reichsbank meant to hold out, business was done on the basis of rates much more favourable to Germany.

CHAPTER XXXII

THE FORWARD LIRA

(1) AN INADEQUATE MARKET

HITHERTO we have been dealing with centres which possessed a more or less developed money market, where the art of arbitrage had reached a high stage of development. The position is different in Italy. The open market for bills in Milan is practically non-existent, and the rates quoted are nominal. Call money rates are not quoted at all. Notwithstanding the highly developed Italian banking system, throughout the post-war period there has always been a certain reluctance on the part of Italian banks to make full use of their technique for the purpose of arbitrage and Forward Exchange business. Ever since the war there has been almost constantly a restriction—official or unofficial—on Forward Exchange dealings in Italy. During the period between the stabilisation of the lira in 1927 and the crisis of 1931 the Forward Exchange market was nominally free, yet the leading banks did not feel at liberty to undertake transactions which they thought might be viewed with disfavour in official quarters. For this reason, the market in the forward lira developed mainly abroad, while in Milan dealings in Forward Exchange were never quite as active as the relative importance of the lira among the world's currencies would have warranted.

The fluctuations of the forward lira, therefore, can hardly provide really representative examples of the working of the principles of Forward Exchange theory. It is nevertheless worth while to follow the vicissitudes of the forward lira, from the origin of dealings after the war until dealings were suspended in 1935 in connection with the blocking of foreign lira balances. Such a study affords some interesting examples of the behaviour of Forward Exchanges in an inadequate market, as well as examples of official intervention.

(2) ABNORMAL PREMIUM

During the early post-war years the tendency of the forward lira bore much similarity to that of the forward franc or the forward mark. Throughout 1920 and 1921 the forward lira was at an abnormally wide premium. At times this premium rose above 10 per cent per annum. Until the second quarter of 1921 this appears to have had theoretical justification to some slight extent, owing to the fact that the Bank of Italy did not follow the Bank of England and the Federal Reserve Bank of New York in raising its rediscount rate. In practice, however, as in the case of Germany, the discount rate parity was less in favour of Italy than the Bank rate parity. In any case, the lower Bank rate in Italy justified only a fraction of the wide premium on the forward lira. For the rest, it was due to the same factor as was responsible for the big premium on the forward reichsmark, and for the smaller but none the less substantial premium on the forward franc during the same period. The spot lira was depreciating, and most people considered its depreciation temporary.

When the first spell of depreciation was approaching its climax in January 1921, the spot sterling-lira rate rising to over 108, the forward lira went to par for a brief period, but recovered promptly to a wide premium. On this occasion the speculators proved to be right, for by the middle of the year the spot rate was down to 72. All the time the forward premium remained abnormally wide. In July, however, when the spot lira began to depreciate once more, the premium on forward lira contracted considerably, and remained relatively narrow for the rest of the year. The spot rate depreciated to over 100 by October, and remained between 90 and 100 until the end of January 1922, when anticipation of another recovery caused the premium on the forward lira to widen.

Once more the instinct of speculators proved to be right. Simultaneously with the recovery of the spot lira, the premium on the forward lira contracted, and this tendency continued for a while after that of the spot lira had reacted. In June and July 1922, the forward lira for the first time went to a moderate discount. From September onwards, however, it was once more at a premium, where it remained, irrespective of the fluctuations of the spot rate, for the rest of the year and 1923. From time to time the premium widened to something like 4 per cent per annum, but

the spectacular figures of earlier years were never reached again. All this time the discount rate parity would have justified a discount on forward lire amounting to $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent per annum in relation to sterling, and to $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent per annum in relation to the dollar. In 1924 the premium on the forward lira contracted further, and in May and June it went to a discount for a few weeks, but for the rest of the year it was quoted at a premium which continued and even widened at times during the first half of 1925.

(3) A PARADOXICAL SITUATION

Throughout this period, with the exception of 1920 and the first half of 1921, Interest Parities were strongly adverse to Italy and would have justified a fairly substantial discount. Needless to say, the gross overvaluation of the forward lira resulted in a certain influx of foreign funds for interest arbitrage. At times such operations were abnormally profitable, but in spite of this they were not done on a sufficiently large scale to reduce the premium on the forward lira to more normal proportions. Mr. Keynes was under the impression that this was due to a lack of understanding of Forward Exchange by bankers and other holders of liquid funds.¹ In fact, it would be more correct to attribute it to the unwillingness of banks abroad to invest funds in Italy. It will be remembered that until the end of 1922 internal political and economic conditions in Italy were anything but stable. Even the substantial profits due to the premium on the forward lira and the high interest rates in Italy were not sufficient to induce foreign banks to invest in Milan more than a small fraction of their resources. To some extent distrust in internal conditions in Italy was overcome by the arrangements made by certain Swiss affiliates of Italian banks to accept lira deposits in Switzerland, but even so the volume of interest arbitrage operations remained moderate, for it was feared that any major disaster in Italy might affect the position of the foreign associates of the Italian banks.

The situation was indeed paradoxical. While there was excessive optimism about the prospects of the Italian exchange, there was excessive pessimism about internal political and economic conditions and their possible repercussions upon Italian banks. As if the lira could possibly have appreciated amidst an internal political upheaval or a general banking crisis! The contradiction

¹ *A Tract on Monetary Reform*, p. 130.

is, however, more apparent than real. It was the speculators who, through their optimistic views about all depreciated and undervalued currencies, caused the appreciation and overvaluation of the forward lira. And it was the banks who, owing to their distrust in the internal conditions in Italy, were unwilling to take advantage of the big profit on the swap. Thus the paradoxical situation can be explained by the difference between the views held by speculators and by bankers.

After the advent of Signor Mussolini, order and stability were restored, but it was some time before this was realised abroad. Gradually, as the foreign banks realised that there was no longer any need to fear major political upheavals in Italy, they began to transfer funds to Milan, and the profits obtainable on interest arbitrage declined to less abnormal proportions.

(4) OFFICIAL INTERVENTION

Towards the middle of 1925, the forward lira went to a discount, and the discount in relation to sterling and the dollar remained almost without interruption until forward dealings in lire were suspended at the end of 1935. Broadly speaking, this was in accordance with the tendency of Interest Parities, for interest rates in Italy were all the time considerably higher than in London or New York.

The recovery of the spot lira from 136 at the end of June to about 120 at the beginning of September 1925 was accompanied by a widening of the discount, thus showing by that time the market was inclined to view the prospects with pessimism. In September the discount was about 8 per cent per annum, and remained fairly high until November. During the period from September 1925 to May 1926, the spot rate was maintained comparatively stable between 118 and 122 as a result of official intervention. According to Signor Demaria, this stability was achieved partly through official manipulation of the Forward Exchanges. Judging by the figure of the discount on the forward lira, this may conceivably have been the case during part of the period of relative stability, between November 1925 and March 1926, for the discount was then relatively narrow. During this period the forward lira became slightly overvalued compared with its discount rate parity. This may conceivably have attracted some foreign balances, or Italian balances which had sought refuge abroad against the de-

preciation of the lira. At that time the Italian Treasury was, in fact, engaged in swap transactions, but the information available about them is too hazy to enable us to use it as a basis of any too definite conclusions. The extent of the overvaluation was probably too slight to tempt foreign banks to invest any large proportion of their resources in Milan.

From May 1926 onwards, speculation launched a violent attack on the French franc, and, as throughout the post-war period of fluctuation the three Latin currencies usually moved in sympathy, the lira underwent a marked depreciation. By the end of July the spot rate had risen above 150. This speculative activity was accompanied by a widening of the forward discount to abnormal figures. Even while the spot rate was maintained around 120, the forward discount had widened to over 12 per cent per annum, and at the end of July it was about 35 per cent per annum. Throughout this period and during subsequent months, intervention in defence of the lira against speculative attack largely took the form of support for the Forward Exchange. In addition, the authorities endeavoured to force the bears to cover, by restricting credit in general and lira credits to foreigners in particular. So long as the speculative pressure due to distrust in the lira continued, these methods failed, however, to produce the desired result.

(5) PESARO AND AFTER

It was not until after Signor Mussolini's Pesaro statement, in which he promised to defend the lira, that the tendency turned. The devices which had been applied successfully elsewhere, namely, the contraction of credit and reduction of the budgetary deficit so as to reduce the volume of spot exchange available, were successfully applied also in Italy. The last four months of the year witnessed a sharp recovery of the spot lira, and simultaneously the discount on the forward lira contracted. In April 1927, by the time the sterling-lira rate had declined below 100, the discount on the forward lira was once more down to about 3 per cent per annum. When the recovery movement attained its climax in June, the discount was only 1 per cent per annum. For the rest of the year it fluctuated between 1 and 3 per cent, which was within the range of about 1 per cent of the Interest Parities of the lira. Considering the limitations of the Italian market, this may be regarded as normal, especially as, although the spot lira was kept stable during that

period, it was not until December that legal stabilisation was carried out.

A few days before stabilisation, the discount on the forward lira widened to about 4 per cent per annum, indicating that the decision to stabilise the lira at about 2 per cent below the level at which it had been kept for the past five months did not come altogether as a surprise. Following upon stabilisation, the discount immediately dropped to about $\frac{3}{8}$ per cent.

(6) THE PERIOD OF STABILITY

Throughout 1928 the forward lira remained at a discount in relation to sterling, but the discount never materially exceeded 1 per cent per annum. In relation to the dollar, the forward lira at times went to a premium, but this was due to the weakness of the forward dollar. In relation to the franc the discount on forward lira was at times between $1\frac{1}{2}$ and 2 per cent, but this again was due to the inherent strength of the forward franc. On the whole the forward lira was inclined to be overvalued compared with its Interest Parities, which were still in the vicinity of 2 to $2\frac{1}{2}$ per cent per annum in relation to sterling. This should have attracted foreign funds, but owing to the lack of short-term investment facilities in the Milan market, and to the vague distrust in the stability of the régime, which continued abroad, the extent to which interest arbitrage took advantage of the discrepancy was not sufficient to bring about readjustment. Nor were Italian banks encouraged to take advantage of the discrepancy by borrowing abroad extensively and converting the proceeds into lire with the exchange risk covered.

During 1929, Interest Parities moved in favour of Italy, owing to the fact that, although money rates in London and New York were rising as a result of the Wall Street situation, this factor affected money rates in Italy to a relatively moderate extent only. At the beginning of the year the discount on the forward lira against sterling contracted, following the rise in the London Bank rate. During the second quarter the discount widened to over 1 per cent per annum, but during the third quarter it declined once more.

(7) BEAR SQUEEZING INTERVENTIONS

In October 1929 the forward lira actually touched par for a

short while, owing to the fact that the spot lira was allowed to depreciate somewhat beneath gold export point. When it was found that the depreciation was rather more than a passing phenomenon, the forward lira went once more to a discount. Early in 1930 the recovery of the spot lira to the vicinity of gold export point was accompanied by a widening of the discount on the forward lira to over $1\frac{1}{2}$ per cent per annum, while towards the end of the year, when the spot lira actually recovered to within its gold points, the forward discount widened to something like 3 per cent per annum, showing that the market did not expect the recovery to be lasting.

During this period, the Italian authorities carried out bear squeezing operations from time to time in the Forward Exchange market, and it was with this object in view that the spot lira was allowed to depreciate from time to time beneath gold export point. These tactics began to bear their fruit in the spring of 1931, when the discount on the forward lira declined once more to about 1 per cent per annum. At this rate the forward lira again became overvalued, for until the middle of 1931 its Bank rate parity in relation to sterling was $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent, while its discount rate parity was even wider. From July the increase of the London Bank rate changed the Interest Parities in favour of Italy, but it made no difference to the forward lira. In fact, in the course of July and August the discount actually widened, and the rate became undervalued. It was only towards the end of August and during the first three weeks of September that the expectation of a fall of sterling was accompanied by a contraction of the discount on the forward lira.

(8) WEAKNESS OF FORWARD LIRA AFTER 1931

Following upon the suspension of the gold standard in Great Britain, there was an acute wave of distrust in the lira, as it was generally taken for granted that Italy would soon follow the British example. While the spot lira appreciated in relation to sterling in sympathy with the other gold exchanges, the discount on the forward lira widened to over 10 per cent per annum by the end of the year. During 1932 the forward rate was at times inclined to be even wider. The wide discount was justified on the basis of the Purchasing Power Parity theory of Forward Exchange as far as the forward sterling-lira rate was concerned. But the forward lira was also grossly undervalued in relation to the currencies of countries

whose price levels were above the Italian price level—a fact which is worth bearing in mind, as it indicates one of the limitations of the Purchasing Power Parity theory.

After 1931 the spot lira was persistently at a heavy discount in relation to the gold currencies, well beyond gold export point. The forward rate frequently lost touch with its Interest Parities, not only in relation to sterling but also in relation to other currencies. When, during 1932, the sterling-lira Interest Parities moved against Italy as a result of cheaper money in London, the discount on forward lire actually contracted materially, and during the second half of the year the rate became overvalued compared with its Interest Parities in relation to sterling and—for most of the time—also in relation to the franc and the dollar.

(9) TENDENCIES DURING 1933-35

During 1933 the Interest Parities moved in favour of Italy, as a result of the reduction of the Italian Bank rate and the fall in the discount rate. Apart from a sudden widening of the discount on the forward lira for a short while during April and May in consequence of a wave of distrust, the forward rate remained most of the time reasonably near its Interest Parities in relation to sterling, though it tended to be undervalued rather than overvalued. In 1934 the forward lira was inclined to be weak on many occasions, the discount widening from time to time to 5 to 10 per cent per annum, even though the difference between the Bank rates in Rome and London was only 1 per cent, and the discount rate parity was only 2 per cent against Italy. During this period there was a growing wave of distrust in the stability of the lira, as a result of the persistent loss of gold by the Bank of Italy.

Following upon the adoption of stringent exchange restrictions at the end of 1934, the forward lira recovered for a while at the beginning of 1935, notwithstanding the widening of the Interest Parities through the increase of the Italian Bank rate. When, however, it became evident that the lira was being allowed to depreciate gradually in relation to the gold currencies, the discount widened to abnormal proportions. Later in the year, the Abyssinian developments increased the pessimism about the prospects of the lira, and between July and October the discount was constantly between 30 and 40 per cent per annum. From this level there was a recovery during the second half of October and in November, and the last

quotations before the suspension of dealings were in the vicinity of 16 per cent per annum. These rates, however, were purely nominal. When the Italian authorities decided to block the lira balances of foreign banks, dealings in forward lire were discontinued.

CHAPTER XXXIII

OTHER FORWARD EXCHANGES

(1) THE BELGIAN FRANC

THE tendencies of the forward Belgian franc during the early post-war years closely resembled those of the French franc and the lira. During the early years the forward Belgian franc was at a premium, but this continued for a long time after the forward French franc had gone to a discount. This was due to the fact that the finances of Belgium were incomparably stronger than those of France. In spite of this, the two spot rates usually moved in sympathy, owing to psychological factors which appear to have affected the spot market much more than the forward market. Throughout 1922 the forward Belgian franc remained at a premium, and it was not until August 1923 that it went to a discount. By that time the depreciation of the spot Belgian franc led to pessimism about the prospects of the Belgian currency. Early in 1924 the forward discount gave way to a premium for a few weeks, but simultaneously with the speculative attack on the French franc there was also an attack on the Belgian franc, and the discount widened to nearly 10 per cent per annum. After the collapse of the speculative attack, the discount contracted once more, and at times was even inclined to run off altogether, even though interest rates in Belgium were relatively high.

Early in 1925 the forward Belgian franc went to a premium for several months in relation to sterling, following upon the latter's return to gold. During the autumn of that year, however, there was another speculative attack, causing the development of a wide discount on the forward Belgian franc. The failure of the first attempt at stabilisation early in 1926 was accompanied by a widening of the discount to abnormal proportions. Indeed, during the critical days of July the discount on the forward Belgian franc was even wider than the discount on the forward French franc. This time the psychological effect of the sentimental link with the French

franc produced its full effect upon the Forward Exchange. During subsequent months, however, confidence in the Belgian currency was regained more speedily than in either the French franc or the lira.

(2) THE FORWARD BELGA

When in October 1926 the Belgian currency was stabilised, the forward quotation of the new unit, the belga, soon went to a small premium. This was in accordance with the Purchasing Power Parity theory, for at its devalued level of 175 to the pound the Belgian franc was easily the most undervalued currency. It was also in accordance with the Interest Parity theory, for even though the Belgian Bank rate remained relatively high until January 1927, the discount rate and call money rate responded to the devaluation by December 1926, and their levels justified a premium.

Although the gradual reduction of the Belgian Bank rate moved the Interest Parity in relation to London in favour of Belgium during 1927-28, the forward belga was frequently at a slight discount. In 1929, however, following upon the rise of the London Bank rate, the forward belga went to a small premium, though during the second half of the year it was once more at a discount. In a narrow market, relatively small discrepancies between commercial buying and selling exert a disproportionate influence.

During 1930 the forward belga moved within a few centimes either side of par, more or less within reasonable distance of its Interest Parities. The sterling crisis of 1931 led to a widening of the premium on forward belgas, especially after the suspension of the gold standard in Great Britain. Early in 1932, however, when the decline of money rates in London changed Interest Parities in favour of sterling, the forward belga went to a discount, where it remained until after the devaluation of the belga in 1935. During 1933 its discount was relatively moderate, and the forward belga was for some time actually overvalued against its discount rate parity with sterling. This state of affairs continued in the early part of 1934, but later the discount was inclined to widen, especially towards the end of the year, when the belga became subject to speculative attacks.

(3) THE BELGIAN CRISIS OF 1935

These attacks increased in intensity early in 1935, reaching their climax in March. On the eve of the devaluation the forward belga

was quoted at a discount of 2 belgas for three months, equivalent to over 30 per cent per annum, after having been $3\frac{1}{2}$ belgas two days before, while the discount on one month's belgas was nearly 50 per cent per annum.

On the day following devaluation the forward belga went to a premium. This was due in part to bear profit-taking, in part to confidence in the belga at its new level. Subsequently the sharp decline in money rates in Brussels—to a level below even that of money rates in London as far as call money rates and deposit rates were concerned—provided theoretical justification for the premium, on the basis of the Interest Parity theory. The premium can also be explained on the basis of the Purchasing Power Parity theory, for although the spot belga was grossly overvalued before its devaluation, after devaluation it became slightly undervalued in relation to sterling. Apart from a few brief intervals, the forward belga has remained at a moderate premium up to the time of writing.

(4) THE FORWARD GUILDER

The history of the forward guilder is distinctly less eventful than that of the Forward Exchanges we have discussed so far. During the early post-war years the forward guilder was usually at a discount in relation to sterling, notwithstanding the fact that the Dutch Bank rate remained at $4\frac{1}{2}$ per cent during the post-war slump while the British Bank rate was raised to 7 per cent, and despite the fact that the discount rate parity was also strongly in favour of the forward guilder. From 1923 onwards the existence of a discount was from time to time justified on the basis of Interest Parities, though frequently it was rather wider than these would have warranted. The fact that Amsterdam acted as an intermediary for speculation in Forward Exchanges may have been to some extent responsible for the persistence and wideness of the discount on the forward guilder, especially during 1924. The main reason for the undervaluation of the forward guilder was, however, the same as that which caused the undervaluation of the forward dollar during this period, namely, the anticipation of a recovery of spot sterling to its old parity.

In 1925 the return of sterling to the gold standard was preceded and succeeded by an appreciation of the forward guilder to a premium, as a result of the increase of the London Bank rate, and also of the depreciation of spot sterling. Later in the year, how-

ever, the guilder went to a moderate discount, and it was not until a further rise in the London Bank rate that it recovered to a premium. This, however, persisted throughout 1926 and remained until October 1927, when, following upon the increase of the Dutch Bank rate to $4\frac{1}{2}$ per cent, the forward rate went to a discount. During the greater part of 1928 it remained at a moderate discount around its Interest Parities with sterling. In 1929, however, the forward guilder followed a rather erratic course, and was more often than not at a premium, especially towards the end of the year, when a premium was justified by a higher Bank rate in London. It remained at a premium during the greater part of 1930, especially during the early months, when the spot guilder was in the vicinity of gold export point. When in September it approached gold import point, the forward guilder went to a discount, although on an interest basis it should have remained at a premium. Once the spot rate had weakened below gold import point, the forward rate recovered accordingly. During February and March 1931 the spot guilder was inclined to be weak, and simultaneously the premium on forward guilders widened. With the recovery of the spot guilder from 12.12 to 12.08 to the £, however, the premium contracted from $3\frac{1}{2}$ cents to $1\frac{1}{2}$ cents.

(5) THE GUILDER DURING THE CRISES OF 1931-36

When in July 1931, as a result of the international financial crisis, the guilder moved to gold import point, for a short while this produced its natural effect upon forward rates, and the forward guilder went to a slight discount. The British authorities did not, however, operate in guilders, so that before long the growth of the bear attack on sterling caused the forward guilder to go to a wide premium, while the spot sterling-guilder rate remained around gold import point. After the collapse of sterling in September the premium contracted, and towards the end of the year, when sterling began to recover, it gave way to a discount, and this continued until May 1932. For the rest of 1932 the forward guilder was quoted at a slight premium, in accordance with its discount rate parity with sterling. Although the Dutch Bank rate remained $\frac{1}{4}$ per cent above the British Bank rate, the discount rate in Amsterdam declined faster than in London, and the forward rate naturally tended to move with the discount rate rather than with the ineffective Bank rate.

The year 1933 was somewhat more eventful for the forward guilder. The attack on the guilder which followed the suspension of the gold standard in the United States resulted in a widening of the forward discount, which reached 4 per cent per annum in April, although the discount rate parity would have justified a slight premium. Interest arbitrage did not fail to take advantage of this situation, and the pressure of the transfer of funds, together with the withdrawal of foreign balances from Amsterdam, induced the Dutch authorities to raise the Bank rate to $4\frac{1}{2}$ per cent. The Interest Parities thus moved strongly against Holland, and the discount on forward guilders widened. It is worth noting, however, that the widening of the discount largely preceded the increase of the Bank rate, and was one of the major causes of the rise in money rates in Holland.

When the attack on the guilder passed, the Bank rate was reduced and the discount rate parity again moved in favour of the guilder. With few exceptions, however, the forward guilder remained persistently at a discount, and thus was materially undervalued. It was only during the autumn months of 1934, when Dutch bill rates again fell below London bill rates, that the forward guilder rose for a while to a premium. From the end of 1934 it remained constantly at a discount. During 1935, after the devaluation of the belga, attacks on the guilder were resumed, and were on a much larger scale than in 1933. Once more the Dutch authorities sought to defend the currency by raising the Bank rate, and on two occasions they were forced to increase it to 6 per cent. The forward rate completely lost touch with its Interest Parities, momentarily widening on one occasion to 30 per cent per annum. When the attacks subsided, the Netherlands Bank reduced its rediscount rate and the discount on the forward guilder contracted; but the recovery of the forward guilder was once again the cause rather than the consequence of the reduction of the Bank rate. During 1936 the storm centre definitely settled over France, and the deterioration of conditions in that country compared with those of the other members of the Gold Bloc diverted selling pressure from the guilder. As there was no major political crisis after September 1935, the guilder experienced a reasonably quiet time until the devaluation of the franc, despite the fact that from time to time the prohibitive discount on forward francs diverted some selling pressure, due to indirect hedging, to the forward guilder.

The depreciation of the guilder which followed the devaluation

of the French franc did not produce the same effect as arose in the case of the belga, owing to the fact that, while France and Switzerland devalued to the extent of 30 per cent, Holland tried to limit the depreciation to about 20 per cent. Thus the selling pressure on the guilder continued, and the forward guilder remained for a while at a relatively wide discount. Towards the end of 1936, however, the discount disappeared, as the market gradually realised that the Dutch authorities found no difficulty in keeping the guilder at its new level.

(6) THE FORWARD SWISS FRANC

While the forward dollar and the guilder were at a discount in relation to sterling during the early post-war years, the forward Swiss franc remained at a premium until the middle of 1923. From October 1922 onwards this was partly due to the fact that the spot Swiss franc was at only a very narrow premium over sterling, so that anticipation of the latter's recovery did not influence the forward rate to the same extent as it did the forward dollar or guilder rate. Moreover, a premium on the forward Swiss franc in relation to both sterling and dollar was more or less justified on an interest basis, for Switzerland avoided raising her Bank rate to a crisis level during the post-war slump. Even after the middle of 1922, when the London Bank rate was reduced to the level of the Swiss Bank rate, bill rates in Switzerland remained below London bill rates. Not until the second half of 1923 did they rise above London bill rates; then, accordingly, the forward Swiss franc moved to a discount. During the first half of the year, it was distinctly overvalued compared with its Interest Parities; but in the second half of the year it was even more decidedly undervalued. The forward discount persisted throughout 1924, although during the second half of the year the discount rate parity would have justified a slight premium. The undervaluation was due, not to any inherent weakness, but to inherent firmness of forward sterling caused by anticipation of the recovery of spot sterling to its old parity.

When in 1925 this recovery materialised, and when, in addition, the London Bank rate was raised, the forward Swiss franc went to a premium. It remained at a premium for the rest of the year and during most of 1926. During the first half of 1926 the premium was inclined to be rather wide, but later in the year it declined in consequence of a change in the Interest Parities—a change brought about more by the rising trend of bill rates in Switzerland than by

the fall of bill rates in London. During 1927 and the first half of 1928, the forward Swiss franc was generally at a premium, but during the second half it went to a moderate discount, despite the fact that Interest Parities remained in favour of Switzerland. In 1929 there was a recovery to a premium, though this was not proportionate to the widening of the gap between interest rates in Switzerland and London. During 1930 interest rates in London declined virtually to the level of Swiss rates, and consequently the forward Swiss franc moved within a narrow range around the spot rate.

(7) THE SWISS FRANC DURING THE CRISES OF 1931-36

During the greater part of the crisis year of 1931 the Swiss franc was at a premium, which widened considerably immediately before and after the suspension of the gold standard in London. The forward Swiss franc maintained its premium against sterling throughout 1932, even though from June onwards London bill rates were below the level of Swiss bill rates. This state of affairs continued during the first quarter of 1933, but for the rest of the year the forward Swiss franc was mostly at a discount. The reason for this was that the attacks on the guilder were accompanied by attacks on the Swiss franc. In June 1933 the discount on forward Swiss francs widened to about 6 per cent per annum. The Swiss National Bank, however, did not follow the example of the Bank of France and the Netherlands Bank by trying to defend the currency by means of a high Bank rate. From the beginning of 1931 until May 1935 the Swiss Bank rate was unchanged at 2 per cent, and even during the major crisis of May 1935 it was raised only to 2½ per cent, returning to 2 per cent in September 1936. The moderate level of the Bank rate, however, did not prevent the discount on the Swiss franc from widening to the level of the discount on the forward guilder. In fact, during the attack of 1935 the Swiss discount was, if anything, slightly wider. The forward Swiss franc, like the forward rates of other overvalued currencies, remained at an abnormally wide discount, even while there was no speculative attack, though the discount was usually moderate in comparison with that of the French franc. In consequence, throughout 1936 there was a certain amount of selling of forward Swiss francs as a hedge against a depreciation of the French franc.

After the devaluation, the forward Swiss franc promptly went

to a moderate premium, not only because heavy repatriations and an influx of foreign funds resulted in a fall in interest rates, followed by a reduction of the Bank rate to $1\frac{1}{2}$ per cent, but also because the Swiss franc, having been devalued by 30 per cent, became the most distinctly undervalued European currency of importance. A premium was therefore justified on the basis of the Purchasing Power Parity theory.

Considerations of space prevent me from giving a historical account of the movements of other Forward Exchanges, though some of them, notably the Latin-American exchanges and the Eastern currencies, would make interesting studies. In particular, the forward rupee, yen, Shanghai dollar, Argentine and Chilean peso and milreis would provide interesting additional material to illustrate the working of the theory of Forward Exchange in both normal and abnormal conditions. It is to be hoped that this task will be undertaken by those acquainted with the local financial history and conditions in the countries concerned.

PART VI

CENTRAL BANKS AND FORWARD EXCHANGE

CHAPTER XXXIV

SCOPE AND METHODS OF OFFICIAL FORWARD EXCHANGE OPERATIONS

(1) SCOPE FOR IMPROVEMENT OF THE SYSTEM

THE following chapters will discuss the question whether Central Banks should intervene in the Forward Exchange market or whether they should allow forward rates to take care of themselves. From a practical point of view this question is, in my opinion, of first-rate importance. Indeed, it was largely with the object of facilitating a balanced judgment on this subject that I accumulated and prepared the historical, technical and theoretical material which has been presented in the preceding thirty-three chapters. Undoubtedly, even if we have no practical object in mind, it is of interest to know more about the history of Forward Exchange, to explore its fine points of technical detail and to search for its fundamental theoretical principles. But the study of Forward Exchange serves the essentially practical purpose of assisting those whose task it is to consider the possibilities of increasing the efficiency of the existing monetary system.

The scope for constructive suggestions for the improvement of the existing Forward Exchange system through private initiative appears to be limited. Although in earlier chapters I have put forward a few minor suggestions—such as the provision of forward facilities for longer periods than those obtainable at present—on the whole I feel that anyone not directly engaged in practical Forward Exchange operations stands but little chance of having his proposals seriously considered, let alone followed, by practical bankers. The Forward Exchange market developed entirely under the influence of practical necessity, and not as a result of any proposals made by experts. Skilled dealers, well aware of the intricate technicality of their business, would receive any proposals by outsiders with that half-amused, half-patronising air which speaks of a conviction that none beyond the

charmed circle could possibly understand its mysteries as well as they. Hence any suggestion for innovation made by a mere outsider is fated to be brushed aside by the practical specialists on the ground that if it were feasible or if it were of any use it would have been adopted long ago.

Yet it is beyond doubt that the existing Forward Exchange system leaves much to be desired. The facilities provided on private initiative are not always adequate for the requirements of trade and finance. Moreover, the tendencies prevailing in an uncontrolled Forward Exchange market are often detrimental to public interest. While some of the deficiencies of the system from the commercial viewpoint could be remedied by the banks themselves, many of them could be corrected only by official intervention. As for the deficiencies of the system from a broader monetary viewpoint, nobody but the authorities can provide the remedy. Thus any practical proposals for the improvement of the Forward Exchange system must necessarily consist of proposals for intervention in the Forward Exchange market by the monetary authorities themselves.

(2) OBJECT OF INTERVENTION

From time to time the question whether or not it is desirable for a Central Bank to operate in Forward Exchanges has been subject to a certain amount of discussion in various countries. The question has not, however, received nearly sufficient consideration. Indeed, in the absence of adequate historical, technical, statistical and theoretical material, it would have been difficult to make a thorough investigation of the subject. Moreover, those who examine the problem must first get a clear idea of the exact object of Central Bank operations they advocate. Admittedly, to break down the stubborn refusal of most monetary authorities to concern themselves with Forward Exchange in general, as a matter of principle, would in itself be a positive step, but this can hardly be achieved by simply agitating in favour of official Forward Exchange operations without specifying the exact purpose, the exact nature, the exact advantages and the exact disadvantages of such operations.

In the first place, then, it is necessary to decide what the object of intervention should be. (Central Bank operations in the Forward Exchange market could seek any one of the following objects :

1. A cheap or convenient form of replenishing the official Foreign

- Exchange or gold reserve, or a profitable form of unloading some of the Foreign Exchange or gold reserve.
2. Replacement of facilities that have disappeared as a result of exchange restrictions.
 3. Creation or improvement of Forward Exchange facilities for the benefit of trade.
 4. Manœuvring to defend a currency against speculative attack.
 5. Attraction of foreign short-term capital.
 6. Systematic regulation of the influx and efflux of foreign funds by a method alternative to, or complementary to, Bank rate policy.)

(3) INTERVENTION FOR COMMERCIAL PURPOSES

(The most primitive and least important object for which Central Banks or Governments can intervene in Forward Exchange is in order to save money when increasing their stocks of gold and Foreign Exchange. In given conditions, such an increase can be carried out at a lower cost and with less disturbance of the market if the foreign currencies are bought for forward delivery when the forward rates are at a discount. Similarly, if the monetary authorities foresee that they will have to unload some of their gold or Foreign Exchange reserve, they can do so more profitably for themselves by selling foreign currencies for forward delivery, provided that the forward rates are at a premium.) Unless the need for the increase or reduction is urgent, there appears to be no reason why the authorities should not operate in Forward Exchanges whenever it is financially advantageous for them to do so. The argument seems unanswerable; yet it is often overlooked by the monetary authorities who, for considerations of principle, prefer to pay more or receive less for spot exchanges rather than operate in Forward Exchanges.

Another obvious instance in which the case for intervention is unanswerable is when official action, in the form of exchange restrictions, has deprived the commercial world of Forward Exchange facilities which would otherwise have been provided through private initiative. Whatever the objects of exchange restrictions may be, a deliberate increase of risk for importers and exporters is certainly not amongst them. The currencies that are subject to restrictions are usually weak currencies, and nationals of foreign countries are usually reluctant to buy or sell in terms of those currencies. Conse-

quently, the chances are that the nationals of the country concerned will have to buy or sell in terms of foreign currencies and bear the burden of the exchange risk. The necessity for intervention in such instances appears obvious, yet the principle that the monetary authorities of countries with exchange restrictions should provide their nationals with the Forward Exchange facilities which they need is very far from being universally applied. In many instances, exporters are assisted by official Forward Exchange facilities, while importers are left to fend for themselves.

Even in countries where the Foreign Exchange market is not subject to any restrictions, private initiative is often unable or unwilling to provide all the Forward Exchange facilities required by trade. Only about half-a-dozen exchanges have a really adequate forward market. For the remaining Forward Exchanges it is often difficult to obtain satisfactory quotations. Apart from this, it is not easy to obtain quotations for many Forward Exchanges for periods exceeding three months, and it is almost impossible to deal for periods exceeding six months. It may be asked whether or not it should be the duty of the monetary authorities to provide the lacking facilities. To the *laissez-faire* school the idea may appear repulsive, but considering that since the war various forms of Government intervention, such as the provision of export credit guarantees, have become a normal routine, it may be asked why assistance by means of Forward Exchange facilities should be regarded in a different light from these other forms of official assistance to trade.

(4) INTERVENTION FOR MONETARY PURPOSES

Another question is whether the defence of an exchange against an unwanted depreciation or appreciation should be confined to operations in the spot market, or whether manœuvring in Forward Exchanges should be added to the armoury of Exchange Equalisation Accounts. Evidently the authorities with self-imposed restrictions upon the sphere of their operations deliberately place themselves at a disadvantage. In given circumstances it would be to their interest to retain a free hand to intervene in the Forward Exchange market, whether to squeeze speculators, to divert pressure from the spot exchange, or to avoid a depletion of their fighting fund. There is also much to be said in favour of intervention in Forward Exchanges on the ground that, by offering a greater variety of operations, it would make it more difficult for speculators

to detect the object which the authorities have in mind and to act accordingly.

We have seen in earlier chapters that the Forward Exchange market provides additional channels for foreign borrowing, channels through which short-term loans can be raised and granted. Thus it may be asked whether the authorities of a country in urgent need of foreign capital should not encourage the influx of foreign funds through these channels. Such encouragement can be given by means of official regulation of forward rates or by direct borrowing by Central Banks through swap operations. Is this method preferable to the orthodox method of offering higher interest rates to attract foreign capital?

In any case, whether or not official encouragement of systematic short-term borrowing through the forward market can be approved, it is worth while to consider whether the international flow of funds ought not to be regulated by means of intervention in the Forward Exchange market. Indeed, this type of intervention is probably the most important of all from a theoretical, as well as from a practical, point of view. Could and should a manipulation of forward rates supplant, or at any rate be complementary to, the manipulation of the Bank rate for the purpose of regulating the flow of international short-term funds? An affirmative answer to this question, if officially acted upon, would revolutionise monetary policy.

(5) METHODS OF INTERVENTION

We have seen that intervention can be advocated on a variety of grounds. Thus proposals for intervention cannot—or at any rate should not—be rejected without duly distinguishing between the various purposes they are designed to serve. Both advocates and opponents of intervention should in every case make it plain what particular purpose they have in mind. Otherwise the debate on the question is bound to lead to argument at cross-purposes.

(Moreover, it is necessary to distinguish between the various methods of intervention. Those who advocate intervention should make it plain whether they favour swap or outright operations, or both; whether the proposed intervention is to be regular or merely occasional; whether it is advocated for stable or for unstable monetary conditions; and whether it is proposed that it should be confined to one or several leading Forward Exchanges.)

Doubtless many opponents of intervention reject it simply

because it conflicts with their general economic or moral philosophy.) They may object to Government intervention of every kind, in which case they are not likely to make an exception in favour of Forward Exchange. Or they may object to official operations in Forward Exchanges on "moral" grounds, because of the alleged speculative character of the market. Confronted with such fanatical dogmatism, it would be a waste of effort to get down to detail. In such instances the idea of intervention is rejected *en bloc*, and there is nothing more to be said about it. It is only when intervention of a particular type is objected to, not on general grounds but for considerations of expediency, that there is scope for instructive and constructive controversy. This is the kind of discussion for which the material given in the following chapters is provided.

CHAPTER XXXV

MR. KEYNES'S PROPOSALS

(1) THEORETICAL *v.* PRACTICAL EXPERTS

THE question whether Central Banks should or should not operate in Forward Exchanges is too technical to arouse popular interest. While some monetary controversies, such as the fight between the advocates of the gold standard and those of a managed currency, or between the supporters and opponents of cheap money, have been followed closely by a large section of the general public, the controversy which surrounds the question of official Forward Exchange operations has remained confined to a small number of technical specialists. (The majority of economists and bankers have taken no part in it, while the attitude of most Central Banks has been determined by the time-honoured naval slogan, "When in doubt, do nothing".) As any useful contribution to the discussion necessitates considerable knowledge of complicated technicalities and elusive details, most of those who would have been qualified to appreciate the broader aspects of the question have preferred to leave the matter severely alone.

Many practical bankers, on the other hand, have the technical aspects of Forward Exchange at their finger-tips, but very few of them realise the broader implications of the subject. Certain practical facts are so obvious to Foreign Exchange dealers that even those of them who write on the subject do not consider it worth while to mention them; yet the knowledge such dealers could impart is essential to the advancement of the theory of Forward Exchange, and to the discussion of the case for and against official intervention.¹ In the absence of adequate links between the theoretical and the practical experts, many important points have not so far received

¹ The attitude of bankers towards the theory of Forward Exchange is discussed in greater detail in an article of mine, "Bankers and Forward Exchanges", in the November 1936 issue of *The Banker*, being extracts from an address I delivered to the Lombard Association on October 14, 1936.

the attention they deserve. Had such points been fully appreciated, they might conceivably have influenced the attitude of Central Banks towards the problem.

(2) EMPIRICISM *v.* SCIENTIFIC TREATMENT

(It would be a mistake to imagine, however, that all Central Banks have always abstained from Forward Exchange operations.) As we shall see in the following five chapters, many Central Banks have intervened at one time or another in the Forward Exchange market. In general, however, their intervention has been characterised by utter empiricism and, apparently, has been without theoretical background. Their operations have been carried out with the least possible publicity, and have hardly ever been discussed from a broader point of view. Thus on the one hand we have a limited but valuable literature on the theory of official Forward Exchange transactions, and on the other hand we have a number of practical experiments in such operations, without any link between theory and practice. Those Central Banks which have undertaken Forward Exchange operations were probably unaware of their broader theoretical implications, while the writers who have advocated or opposed such operations were unaware of the practical experience which has been accumulated on the subject. One of the objects of this book is to bridge this gap between the theory and practice of official intervention in the Forward Exchange market.

The development of scientific literature on the subject since the war is entirely the work of Mr. Keynes. The movement in favour of official Forward Exchange operations was to a very large degree the result of his initiative. And it is his occasional references to the subject¹ that have kept the idea from falling into oblivion. It was because of his world-wide prestige that the proposal received attention—even though limited attention—in theoretical as well as practical quarters. Had it been put forward by a lesser authority it would probably have been ignored altogether.

(3) THE BRUSSELS AND GENOA RESOLUTIONS

(It is necessary to pay tribute also to Sir Henry Strakosch, who

¹ In his *Treatise on Money*, vol. ii., and in an article in the December 1935 issue of *Lloyds Bank Monthly Review*.

played an important part behind the scenes in the initiation of the movement. He was one of the British delegates at both the Brussels and the Genoa conference, and the resolutions there passed in favour of Forward Exchange operations were partly his work, although at Genoa he was of course inspired and powerfully supported from the outside by Mr. Keynes, who was present in an unofficial capacity.) (At the Brussels conference in 1921, Sir Henry's efforts to secure a resolution in favour of official Forward Exchange dealings did not succeed, but at least he was able to induce his fellow delegates to pass a resolution against interference with free dealings in Forward Exchanges.¹ In Genoa the joint efforts of Sir Henry Strakosch and Mr. Keynes, and possibly of Mr. Hawtrey—the technical expert of the British Government, whose influence upon the results of the conference was probably much larger than is generally realised—resulted in the passing of a resolution advocating the intervention by Central Banks for the purpose of improving the Forward Exchange facilities available for trade.²) Almost simultaneously Mr. Keynes published his article, "The Forward Market in Foreign Exchanges", in the *Manchester Guardian Reconstruction Supplement*. His most important contribution was, however, his chapter on Forward Exchange in *A Tract on Monetary Reform*, published in 1923. He advocates intervention on two grounds—first, in order to improve the facilities available for merchants,

¹ Resolution No. XV of the Brussels International Conference: "Attempts to limit fluctuations in exchange by imposing artificial control on exchange operations are futile and mischievous. In so far as they are effective they falsify the market, tend to remove natural correctives to such fluctuations and interfere with free dealings in Forward Exchange, which are so necessary to enable traders to eliminate from their calculations a margin to cover risk of exchange which would otherwise contribute to the rise in prices. Moreover, all Government interference with trade, including exchange, tends to impede that improvement of the economic conditions of a country by which alone a healthy and stable exchange can be secured."

² Resolution of the Financial Commission of the Genoa Conference:

"All artificial control of operations in exchange, whether by requiring a licence for transactions in exchange or by limiting the rates at which transactions may be effected or by discriminating between the different purposes for which the exchange may be required or by preventing free dealings in Forward Exchange, is futile and mischievous, and should be abolished at the earliest possible date.

"It is desirable that where no adequately organised market in Forward Exchange exists such a market should be established. It has been suggested that in any country where private enterprise is found to be unable to organise such a market, the Central Bank, without itself incurring any uncovered exchange risk, should provide facilities. It might, for example, give facilities to approved banks and financial houses to convert spot transactions in Foreign Exchange into transactions for forward delivery by a system of "contango" or "reports" of Foreign Exchange, their quotation being for the double transactions of a spot deal one way and a simultaneous forward deal the other."

and, secondly, in order to obviate the necessity of changing the Bank rate for the purpose of counteracting unwanted tendencies in the international movement of funds. For the purpose of creating a good forward exchange market he suggested that Central Banks should "enter the forward market and offer to buy or sell Forward Exchange at a reasonable discount or premium on the spot quotation".¹ Mr. Keynes suggested that Central Banks should not deal direct with the public, but only with approved banks and financial houses; that they should quote daily rates at which they are willing to buy and sell exchange either one or three months' forward; and that they should not deal outright but should always buy and sell spot against forward. This is more or less on the lines of the financial resolution of the Genoa conference.

(4) INTERVENTION AS A MATTER OF MONETARY POLICY

(Mr. Keynes, however, went further than the Genoa resolution, for he advocated intervention not only as a matter of commercial policy but also as a matter of monetary policy. He pointed out that by varying the forward rates, Central Banks would be able "to vary the interest offered for foreign balances as a policy distinct from whatever might be their Bank rate policy, for the purpose of governing the interest obtainable on home balances".²)

Another of his proposals was for the creation of a forward market in gold. To that end, he suggested that the Bank of England should quote a daily price, not only for the purchase and sale of gold for immediate delivery but also for delivery three months forward.³ Mr. Keynes believed that "the existence of the forward quotation of the Bank of England would offer a firm foundation for a free market in Forward Exchange, and would facilitate the movement of funds between London and New York for short periods . . . while at the same time keeping down to a minimum the actual movement of gold bullion backwards and forwards". In his subsequent writings, however, Mr. Keynes dropped the proposal for a forward gold market, realising, doubtless, that the quotation of a forward gold price would in itself not be sufficient to control the Forward Exchange market. In his *Treatise on Money* he emphasised the monetary rather than the commercial aspects of his proposal. While continuing to advocate Central Bank operations for the purpose of providing adequate facilities for trade, he did not then

¹ P. 133.

² P. 135.

³ P. 192.

attach so much importance to this as he did in *A Tract on Monetary Reform*. The reason for this is that during the seven years that elapsed between the publication of the two books an adequate Forward Exchange market had actually developed, at any rate in the principal currencies. In consequence, the need for official intervention for the purpose of providing adequate facilities for trade was not nearly so strong in 1930 as it was in 1923, especially as, in the stable exchange conditions prevailing in 1930, the demand for such facilities for commercial purposes had declined. On the other hand, the necessity for, and the advantages of, official Forward Exchange operations as a matter of monetary policy were made much more evident by the experience in conditions of monetary stability.

In particular, the experience of 1929 went a long way towards proving the necessity for some device by which home trade could be protected from an increase of Bank rate at a time when there is no speculative boom at home to require higher rates. It will be remembered that sterling during that period was subjected to strong adverse pressure through the transfer of funds, both British and foreign, from London to New York, in consequence of the Wall Street boom. There was strong speculative buying of American stocks from London, and at the same time the fantastically high rates obtainable on brokers' loans also attracted large funds to New York. In face of this dual pressure, the Bank of England rediscount rate had to be raised, even though British trade was already suffering from depression. It was in the hope of preventing a recurrence of such a situation that Mr. Keynes entered a powerful plea in *A Treatise on Money* in favour of his technical devices, which, he claimed, would provide an alternative to raising the Bank rate.

In addition to restating his suggestions for the regulation of the international movement of funds by means of official regulation of forward rates, he advocated also a policy of widening the margin between gold points. Mr. Keynes suggests that the potential margin between gold import point and export point should be widened by giving the Central Banks power to lower their gold prices. By such means it would be possible to accentuate the effect of Forward Exchange manipulations. Otherwise a comparatively narrow difference between interest rates is likely to give rise to uncovered interest arbitrage when the spot exchanges are at gold point. But if the exchange risk is increased by the possibility of

the widening of the margin between gold points, then this flaw in the forward rate policy would largely disappear. This is essential, since a forward rate policy can be effective only if a large proportion of the short-term funds transferred from one centre to another is systematically covered against the exchange risk.

(5) INADEQUATE DISCUSSION OF MR. KEYNES'S PROPOSALS

Mr. Keynes's challenge to the orthodox Bank rate policy has remained almost entirely unanswered. It has received a certain amount of attention from Continental writers on the subject, but it has hardly ever been discussed in detail. The proposals did, it is true, receive mild and qualified support from Dr. Fischer,¹ but the majority of German writers who have considered the matter have taken the opposite view. Among English writers, Mr. Hawtrey is the only one who has dealt with Mr. Keynes's proposals in detail.² While he favoured the proposal for official manipulation of forward rates, he opposed the proposal for widening the margin between gold points.³

The latest development in the controversy arose from the publication of an article by Mr. Keynes in *Lloyds Bank Review*, which provoked a reply from Mr. R. H. Brand.⁴ The latter expressed no very definite views about Mr. Keynes's proposals—or, to use Mr. Brand's term, "gadgets"—and did not give them the full examination which they deserved, which is a pity, for it would have been interesting to see the detailed argument of one of the few practical bankers who possess a profound theoretical background.

Mr. Keynes also submitted his proposals to the Macmillan Committee, of which he was a member. As we have already seen, however, the Committee declined to express an opinion on the proposals, on the ground that they were of a technical nature and lay somewhat outside its competence. The report expressed the pious wish that the Bank of England would give the matter due attention, and left it at that. Considering that the Committee included, in addition to Mr. Keynes, such prominent monetary experts as Mr. Brand, Professor Gregory, Lord Bradbury, etc., and was in a position to obtain evidence from any number of practical specialists, the way in which it shirked dealing with Mr. Keynes's

¹ *Das Devisentermingeschäft*, p. 76.

² *The Art of Central Banking*, chaps. vi. and vii.

³ *Op. cit.* p. 423.

⁴ Both articles appeared in the December 1936 issue.

proposals can only be described as deplorable. The Committee would have rendered valuable service had it made a thorough investigation of the question instead of disposing of it in a brief paragraph.

(6) ATTITUDE OF THE B. I. S.

(The Bank for International Settlements considered the question of Forward Exchange operations in 1931. During its first business year the Bank avoided Forward Exchange operations entirely, but at a meeting of representatives of the participating Central Banks in May 1931, Mr. Quesney is understood to have declared himself in favour of certain types of Forward Exchange operations. The views of the directors were not unanimous, but on the whole were unfavourable, and the proposals were rejected.) In the course of the discussion, Dr. Vissering, then President of the Netherlands Bank, admitted that in the absence of an adequate Forward Exchange market there might be occasion for the Central Bank to organise facilities for forward dealing. Other participants were emphatically opposed to the suggestion. Dr. Pospisil, then President of the Czechoslovakian National Bank, objected to outright forward transactions, and even to swap transactions by Central Banks, on the ground that they would imply that the Central Bank did not trust its own currency. By this he presumably meant that if the Central Bank considered it advisable to cover a forward purchase of its currency by a spot sale, such action might be interpreted as indicating a lack of confidence in the stability of the currency. He referred to the recommendation of the Genoa conference as being "only more or less of historical value". M. Louis Franck, Governor of the National Bank of Belgium, agreed that there should be no question of forward operations either by Central Banks or by the Bank for International Settlements.

The most forceful and dogmatic view was, however, expressed by Herr Fuchs, representative of the Reichsbank. "I should much regret it", he said, "if the Bank for International Settlements . . . tried to cover itself on the forward market. In my view, every forward market has strongly speculative tendencies. *By participating in forward transactions, the Bank for International Settlements would be recognising that such speculative factors have a justification to which they are not properly entitled.* If risks are to be incurred, they should be incurred as against serious

debtors. The elements operating on the forward market are very frequently extremely weak."

This view may be regarded as more or less representative of the frame of mind in which the idea of official Forward Exchange operations has been viewed and is still viewed in Central Banking circles. It is apparently believed that if Central Banks or the Bank for International Settlements were to undertake Forward Exchange operations, they would lend Forward Exchange an appearance of respectability and would recognise the justification for speculation in the economic system. It is comforting to know, however, that not many decades ago Foreign Exchange operations in general were tabooed by certain conservative Central Banks on the ground that they were not respectable. And yet today there is hardly a Central Bank which does not operate in Foreign Exchanges. Nor has this moral objection to Forward Exchange operations prevented the monetary authorities in many countries from resorting to the despised transactions when considerations of expediency convinced them of the need for them. Before examining in detail the arguments for and against official intervention in the Forward Exchange market, we propose in the following five chapters to examine the circumstances of these various descents from Olympus.

CHAPTER XXXVI

FORWARD RATE POLICY OF THE AUSTRO-HUNGARIAN BANK

(1) AN IMPORTANT PRECEDENT

SOME time ago a student of Economic History informed the world that monetary management was practised even in Ancient Greece and Egypt, where the priests, in accumulating and releasing metal to and from their temples, deliberately influenced the tendency of prices. Far-fetched as this theory may be, it is certainly true that many monetary reform proposals which are considered revolutionary innovations today were actually applied in some primitive form in the past. It is not often, however, that there is such a clear historical precedent as that which can be cited in support of Mr. Keynes's proposal of Central Bank operations in Forward Exchanges for the purpose of monetary policy. More than fifteen years before the question of official Forward Exchange operations was raised at the Genoa Conference, the Austro-Hungarian Bank had actually practised a very advanced form of forward rate policy, with the object of preventing an excessive external drain on its gold reserve, and thus of obviating the necessity for raising or lowering the Bank rate to a level at which it would unduly interfere with the stability of internal trade.

In the past, no less than today, most Central Banks liked to surround their technique as well as their policy with a screen of secrecy. Unless the contemporary financial Press succeeds in penetrating behind that screen, much valuable experience falls into oblivion, and posterity fails to derive any benefit from it. This would have happened in the case of the Forward Exchange operations of the Austro-Hungarian Bank, but for the alertness of Herr Walther Federn, former Editor of the leading Vienna financial newspaper *Österreichische Volkswirt*, and a prominent authority on practical monetary questions in Austria.

(2) HERR FEDERN'S INTERPRETATION

Thanks to Herr Federn, the details of the Forward Exchange operations carried out by the Austro-Hungarian Bank in 1906-7 and to a less extent in subsequent years have been preserved, and can now be brought to bear upon the present-day controversy over the attitude of the authorities towards the Forward Exchange market. Admittedly, Herr Federn was not the only writer who mentioned them. But it was he who discovered and disclosed the operation of an official forward¹ rate policy, and who described it in full detail. In face of all attacks he stuck to his interpretation of the events of 1906-7, and his interpretation later received official confirmation.

Herr Federn's account of the events of 1906-7—first published in contemporary Vienna newspapers¹ and subsequently re-stated in an article entitled "Das Problem gesetzlicher Aufnahme der Barzahlungen in Österreich-Ungarn" in *Schmollers Jahrbuch* of 1910—gave rise to one of the most interesting polemics in financial literature, between Herr Federn and Professor von Mises. As the subject in question is highly controversial it is important to get the basic facts right. And since the whole controversy is practically unknown to the English-speaking public, detailed discussion of it after so many years requires no apology, especially as the circumstances whose interpretation by Herr Federn gave rise to the controversy resemble to a remarkable degree those in which Mr. Keynes claims that the application of his technical proposals would be advisable.

Even before the critical events of November 1907—especially during the period of rising interest rates that accompanied the boom of 1906—Herr Federn noticed the peculiar tactics adopted by the Austro-Hungarian Bank in face of a pressure on the krone due to the transfer of short-term funds abroad. But it was the experience of the 1907 crisis that provided a really clear example of the new methods. To understand Herr Federn's account it is necessary to appreciate the general monetary and exchange conditions prevailing in Austria-Hungary during the first decade of this century.

¹ In an article entitled "Die Devisenpolitik der Bank", appearing in *Die Zeit*, August 23, 1907; and in articles in various issues of *Der Österreichische Volkswirt*.

(3) AUSTRO-HUNGARIAN EXCHANGE CONDITIONS

In the 'nineties, after some decades of strong exchange fluctuations, the Austro-Hungarian currency was stabilised, but was not legally linked to gold. By 1907 the *de facto* stability of the krone had been maintained for about fifteen years. Although the gold standard was not officially operative, the gold shipments and Foreign Exchange operations undertaken by the Central Bank had secured an adequate degree of stability for the krone. The public both in Austria-Hungary and abroad trusted this *de facto* stability to some degree. Nevertheless, many foreign trade transactions and especially many foreign financial transactions—credit, investment, or arbitrage operations—were usually covered against the exchange risk. Vienna was an important financial centre and her banks had very good connections with London, Berlin and other centres, while her highly developed banking organisation was remarkably experienced in every kind of arbitrage.

From about the early 'nineties the Austro-Hungarian Bank had gradually achieved a quasi-monopolistic position in the Vienna Foreign Exchange market. It acquired the surplus of foreign currencies offered during the export season, and was in a position to meet the requirements of importers during the lean months. Although the banks were able to meet a large part of these requirements from their own Foreign Exchange resources, at times of strong adverse pressure, seasonal or otherwise, the market was usually at the mercy of the Austro-Hungarian Bank. The latter, in addition to controlling the market with firm hands, had adopted a highly ingenious policy, applied with skilful technical devices which, during the years preceding the war, enabled it to avoid violent fluctuations in the Bank rate. Indeed, the range of fluctuations of the Austro-Hungarian Bank rate was materially narrower than that of either the British or the German Bank rates.

(4) DEVISEN-POLICY

Much has been written in a general way about the supreme skill with which the inconvertible currency of the Austro-Hungarian Monarchy was managed before 1914. But few of those who have praised this policy ever took the trouble to describe its technical aspects in detail. Even Professor Knapp, who became almost

lyrical about the Devisen-Policy of the Austro-Hungarian Bank, confines himself to generalities.¹ Most people assume that the adoption of the gold exchange standard instead of the full gold standard was in itself sufficient to spare Austria-Hungary the shocks of violent Bank rate changes, shocks to which the countries on a gold basis were exposed. In reality, the policy of maintaining the stability of the exchanges while excluding private gold arbitrage, and of minimising gold movements by means of a secondary reserve, was supplemented by the systematic use of certain devices for the mitigation of pressure on the krone due to interest arbitrage.

The practice of interest arbitrage had been highly developed in Vienna for decades before the war. To some extent foreign centres regularly utilised the facilities of the Vienna market for short-term investments.² The Vienna banks themselves were pastmasters in such transactions. They employed their liquid resources abroad whenever this was profitable, and they were usually able to borrow abroad and employ the funds in Vienna whenever such operations showed a margin of profit. Every time the Bank rate was raised in London or Berlin—the two markets with which Vienna was chiefly concerned—there was always an exodus of foreign short-term funds, accompanied by an outflow of Austro-Hungarian liquid banking resources, to take advantage of the profit on interest arbitrage. It was the pressure arising from such transactions that, according to the theory put forward by Herr Federn, the Austro-Hungarian Bank sought to neutralise by the use of technical devices. These devices were directed against both covered and uncovered interest arbitrage operations.

(5) COUNTERACTING INTEREST ARBITRAGE INFLUENCES

To discourage the outflow of funds through uncovered interest arbitrage operations, the Austro-Hungarian Bank at times allowed the krone to depreciate to a shade beyond gold export point. Since there was no free gold arbitrage, the exact figure of the gold export point was not known, but when in November 1907, for instance, sterling was quoted in Vienna at a premium of 0.968 per cent, it

¹ The abridged English translation of *Die staatliche Theorie des Geldes* omits the chapter dealing with this subject. The second German edition (Leipzig, 1918) contains, on page 422, a passing reference to the fact that the Austro-Hungarian Bank was meeting requirements of Foreign Exchange for future delivery as part of its ordinary tactics.

² For detailed description of the Vienna Forward Exchange market before the war see Chapter V, pp. 37 *et seq.*

was obvious to everybody that the krone was beyond its theoretical gold export point. And since the stability of the krone was above suspicion—especially as its weakness in 1907 was obviously not due to any internal troubles but to pressure caused by the international financial situation in which Vienna was not directly concerned—few people cared to run the risk of losses through its probable recovery, simply for the sake of an arbitrage profit which, for a period of three months, was never much over $\frac{1}{2}$ per cent. The device of allowing the spot exchange to depreciate slightly beyond gold export point closely resembles Mr. Keynes's proposal for the widening of the margin between gold points. And the circumstances of its application in 1907 and on other occasions are very similar to those in which Mr. Keynes claims that his proposed measures would be beneficial, *i.e.* when the weakness of the currency is due, not to fundamental disequilibrium or a sweeping wave of distrust, but solely to the situation in foreign financial markets.

In itself, the depreciation of the krone to a shade beyond gold export point would not have discouraged covered interest arbitrage, so long as the cost of covering operations, represented by the premium on the forward krone, was smaller than the discrepancy between interest rates in Vienna and foreign centres. The Austro-Hungarian Bank, anticipating Mr. Keynes's second technical proposal, took deliberate steps to raise the premium on forward kronen. The fact that interest rates in Vienna were lower than in London or Berlin, and that the krone was around gold export point, would in itself have justified a premium, but the Austro-Hungarian Bank evidently went out of its way to cause this premium to widen, so as to make the cost of covering the exchange risk on interest arbitrage prohibitive. At the same time the overvaluation of the forward krone compared with its Interest Parities made it worth while for foreign banks to retain, if not actually to increase, their Vienna balances in spite of the higher interest rates elsewhere; and it was worth while for Austrian banks, in their turn, to borrow abroad and employ the proceeds in the Vienna market. In reality, in consequence of the stringency prevailing in the creditor centres, neither foreign nor Austrian banks had actually much chance of transferring funds to Vienna. The official tactics worked largely in a negative sense, through discouraging withdrawals rather than encouraging an influx. Indeed, Herr Federn's description of the Austro-Hungarian Bank's tactics was entirely confined to their negative aspects.

(6) THE CRISIS OF 1907

Similar tactics had been employed even before 1907,¹ but it was during that memorable crisis that their application was particularly evident. As is well known, on that occasion the Bank of England rate was raised to 7 per cent, and the Reichsbank rate to $7\frac{1}{2}$ per cent. The Austro-Hungarian Bank rate, however, remained for a while at $4\frac{1}{2}$, and even during the peak of the crisis it was only raised to 6 per cent. The fact that the Austrian authorities were able to avoid penalising trade by a higher Bank rate was due to the use of the technical devices described above, for these devices prevented higher interest rates abroad from provoking a wholesale outflow of short-term funds from Vienna. A depreciation of the spot krone to a discount of nearly 1 per cent was ample to discourage uncovered interest arbitrage, while the artificial appreciation of the forward krone to a premium of about $3\frac{1}{2}$ per cent per annum² was more than sufficient to preclude the possibility of covered interest arbitrage, since the discrepancy between the market rate of discount in London and Vienna was only between 1 and 2 per cent. The forward mark for the end of the month, which on November 5 was at a premium of $1\frac{1}{4}$ per cent per annum against the krone, went to a discount a few days later, and its discount continued widening until it exceeded 15 per cent per annum.

Had Austria-Hungary been on the automatic gold standard, interest rates in Vienna would have been affected by the pressure from London and New York to at least the same extent as were interest rates in Berlin. As it was, the market rate of discount, whose average in October 1907 had been somewhat higher in Vienna than in London or Berlin, in November averaged 5.280 per cent in Vienna against 6.535 per cent in London and 6.620 per cent in Berlin; while in December the average for Vienna was 5.728 per cent against 5.853 per cent for London and 7.068 per cent for Berlin. These figures speak for themselves.

¹ Herr Federn's first article describing them in *Die Zeit* appeared on August 23, 1907. It refers to the pressure on the krone during 1906 in consequence of the boom in New York and other foreign markets, a pressure against which the Austro-Hungarian Bank defended its gold and foreign exchange reserve by means of the devices described above.

² On November 13, 1907, spot sterling in Vienna was 241.825, while forward sterling for the end of November was 241.400.

(7) THE MISES-FEDERN CONTROVERSY

There can be no doubt that the reason why money rates in Austria remained low was the depreciation of the spot krone to a shade below gold export point, and the development of a wide premium on the forward krone, which rose above its Interest Parities. In consequence the transfer of short-term funds to London or Berlin, whether through covered or uncovered arbitrage, was checked. It may be asked, however, whether the overvaluation of the forward krone and the depreciation of the spot krone were really the result of deliberate policy, or whether they resulted merely from the higher Bank rates in London and Berlin, and from speculative forward buying of kronen, stimulated by the fact that the spot krone was at gold export point. Herr Federn staked his whole reputation upon his assertion in his various articles¹ that official policy was the cause. On the other hand, his opponent, Professor von Mises, was equally emphatic in denying that any special devices had been applied by the Austro-Hungarian Bank, in 1907 or at any other time, for the purpose of discouraging the outflow of funds.² Herr Federn goes into minute detail in describing how the policy was carried out, showing how the Austro-Hungarian Bank discriminated between demand for foreign currencies for commercial purposes and for the purpose of interest arbitrage, how it refused to sell spot currencies while selling freely for forward delivery, on the assumption that in the then existing circumstances those who bought Forward Ex-

¹ "Die Devisenpolitik der Bank", *Die Zeit*, August 23, 1907 (unsigned); a number of unsigned articles in *Der Oesterreichische Volkswirt*, June 5, 1909, July 17 1909, July 31, 1909, December 10, 1910, December 24, 1910, September 23, 1911, September 30, 1911, and October 7, 1911; "Das Problem gesetzlicher Aufnahme der Barzahlungen in Oesterreich-Ungarn", *Schmollers Jahrbuch* (vol. 34) 1910; "Moderne Geldtheorie in oesterreich-ungarisches Bankprivilegium", *Schmollers Jahrbuch* (vol. 35), 1911; "Moderne Geldtheorie", *Jahrbuch der Gesetzgebung, Verwaltung und Volkswirtschaft* (vol. 35); "Die Frage der Barzahlungen", *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* (vol. 19), 1910; and "Entgegnung auf den Artikel von Dr von Mises 'Das Vierte Privilegium der oesterreichisch-ungarischen Bank'", *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* (vol. 19), 1910.

² "Das Problem gesetzlicher Aufnahme der Barzahlungen in Oesterreich-Ungarn", *Schmollers Jahrbuch* (vol. 33), 1909; "Das Problem gesetzlicher Aufnahme der Barzahlungen in Oesterreich-Ungarn: Ein Schlusswort gegenüber Walther Federn", *Schmollers Jahrbuch* (vol. 34), 1910; "Das vierte Privilegium der oesterreichisch-ungarischen Bank" and "Entgegnung", both in *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* (vol. 22), 1912.

change could not possibly use the funds for interest arbitrage. Being in close contact with the market, he was in an excellent position to ascertain the facts, which were never questioned by anyone apart from Herr von Mises.

The latter, although he already had an international reputation as a theoretical economist, had no practical contact with the market, nor even, it appears, an adequate knowledge of the essential practical details. Indeed, he disclosed an ignorance of the difference between long bills and Forward Exchange,¹ an ignorance which, for an Austrian economist dealing with monetary questions, is indeed surprising even for pre-war days. His only evidence in support of his argument was a statement by Dr. von Bilinski, then Governor of the Austro-Hungarian Bank,² according to whom the official policy at times of pressure due to international causes was to send gold freely to foreign markets in order to "prevent there a further increase of interest rates which would otherwise lead to an artificial efflux of gold from the Monarchy, and consequently to the increase of interest rates." On the basis of this statement, Professor von Mises triumphantly pointed out that Austria-Hungary was pursuing, in fact if not in law, a policy identical with that of gold standard countries, and that she did not seek to avoid parting with gold when higher interest rates abroad provoked a pressure on the krone.

(8) HERR FEDERN'S THEORY CONFIRMED

This assertion was subsequently contradicted by no other person than Dr. von Bilinski himself, who had meanwhile become Austrian Finance Minister, and, having ceased to be a Central Banker, presumably felt no longer the same need for paying lip-service to monetary orthodoxy. In a speech before the Austrian Parliament on December 1, 1910, and in a subsequent speech, he opposed the adoption of the full gold standard on the ground that under the existing system the Austro-Hungarian Bank had a very effective weapon at its disposal in defending the exchange, in that it could differentiate between those demanding Foreign Exchanges for commercial purposes and those who wanted them for arbitrage or speculation. This official statement confirmed (a) that it was the

¹ L. v. Mises, in *Schmollers Jahrbuch*, vol. 34, p. 416. See also Federn's answer in *Schmollers Jahrbuch*, vol. 35, p. 361.

² Made on October 2, 1906, in the course of an address to the Convention of Polish lawyers and economists in Cracow.

object of the authorities to use means other than the Bank rate to discourage the outflow of funds, and (b) that, with this object, the Austro-Hungarian Bank had adopted the tactics of differentiating, in allotting Foreign Exchanges, between the requirements of trade and those of interest arbitrage, withholding allotment for the latter purpose. These admissions went a long way to confirm Herr Federn's explanation. There was only one missing link: the exact method of discrimination had not been officially disclosed. Herr Federn's theory that it assumed the form of freely allotting Forward Exchanges while declining to allot spot exchanges had not been openly endorsed by official quarters. Indeed, it would have been too much to expect that the Austrian authorities would publicly reveal the technical details of their tactics. But leading officials of the Austro-Hungarian Bank are known privately to have confirmed Herr Federn's assertions.¹ In any case the practice of discrimination had been a matter of common knowledge among Vienna bankers in direct contact with the Foreign Exchange market, even though most of them had failed to grasp the broader implications of the tactics pursued by the authorities. Even in our days, two decades after the events in question, it is possible to discover Austrian bankers who still remember what they then strongly resented as "arbitrary" discrimination on the part of the Central Bank in its allotment of Foreign Exchanges. We are therefore safe in accepting Herr Federn's facts as having been definitely proved.

¹ Herr Federn, in his article in *Schmollers Jahrbuch*, 1911, quotes as a tacit official endorsement of his assertions the fact that, when in 1910 he addressed a public meeting, Herr Friedrich Schmid, deputy Secretary-General of the Austro-Hungarian Bank, and himself an author of repute on technical monetary subjects, took part in the debate, and while he criticised several of Herr Federn's observations, did not contradict anything Herr Federn said about the forward rate policy adopted by his Bank.

The number of those who had confirmed in public the existence of the policy described by Herr Federn was not confined to opponents of the adoption of the gold standard—they might be suspected of wanting to strengthen the case in favour of maintaining the monetary *status quo*. But several prominent experts favouring the adoption of the gold standard readily endorsed Herr Federn's findings. Director Gustav Rosenbaum, of the Wechselstuben A. G. "Mercur", in an article appearing in the *Österreichische Volkswirt* of July 3, 1909, admitted that, with the aid of the tactics described by Herr Federn, it was possible, in certain circumstances, to avoid raising the Bank rate, but maintained that in such circumstances a higher Bank rate would be an advantage. Dr. August Bari, one of the leading Hungarian financial writers, in an article appearing in the *Pénzügyi Szemle* of Budapest on January 5, 1910, admitted the advantages of the tactics concerned, but maintained that they were outweighed by the advantages of being on an effective gold basis.

(9) FORWARD EXCHANGE POLICY AFTER 1907

After 1907 the Austro-Hungarian Bank resorted to the same tactics on two more occasions, viz. during the adverse pressures on the krone caused by the international political tension, first in connection with the annexation of Bosnia in 1908-9, and later in connection with the Balkan war of 1912. On these occasions, however, the result of the official intervention in the Forward Exchange market was not so clearly discernible as on the occasion of the crisis of 1907. Nor were the circumstances so favourable for a successful application of the tactics which had produced such satisfactory results in 1907. For, as Mr. Keynes makes it plain, the technical devices that he advocates can be applied only against pressure due to causes other than an inherent weakness of the currency in question. They are not meant to combat either a fundamental disequilibrium or a genuine flight of capital. While in 1906-7 there was no trace of any inherent weakness of the krone, in 1908-9 and in 1912 there was a relatively moderate flight of capital, owing to political uncertainty; by 1912, too, the trade balance had become adverse, producing a pressure on the krone which the technical weapons of Devisen-policy were unable to counteract.

It is important to note that the technical devices described by Herr Federn were not used solely for the purpose of avoiding an unwanted outflow of funds for interest arbitrage. There was at least one instance in which they were known to have been used for the opposite purpose. During the first half of 1909, when conditions in the money markets of Western Europe were becoming increasingly easy, there was a heavy inflow of funds to Vienna to take advantage of the higher interest rates prevailing there. In spite of the cost of covering the exchange risk, the profit on transferring funds for interest arbitrage to Austria was by no means inconsiderable. The management of the Austro-Hungarian Bank viewed the influx of funds with misgiving, owing to the possibility that it might cause overlending and a speculative boom, and also because of the danger of an inopportune and sudden withdrawal of the amounts lent to the Vienna market. To counteract the movement the Central Bank resorted to the same tactics as it had successfully employed against an outflow of funds. It stimulated the appreciation of the spot krone so as to discourage uncovered

interest arbitrage, and at the same time it caused the forward krone to depreciate so as to reduce the yield on funds invested in Vienna in covered interest arbitrage.¹

(10) LESSONS OF THE AUSTRO-HUNGARIAN EXPERIENCE

In view of the practical value of the experience gained by the Austro-Hungarian Bank, it is a matter for regret that the principles and the technique of its Devisen policy have not been the subject of more detailed investigation. The material we have assembled here is a mere fraction of that which could and should have been made available.

Yet there is a great deal to be learnt from the available information upon the policy and tactics of the Austro-Hungarian Bank thirty years ago, in spite of the difference between conditions then prevailing in Vienna and present-day conditions in other centres. From this point of view, the conclusions of Herr Federn are disappointing. He maintains that, while the technical devices in question were applied successfully in relatively primitive conditions of a market of secondary importance, they could not be successful in the totally different conditions, involving a much larger turnover, in a first-class international financial centre such as London.² There is, however, no reason to suppose that the devices which were applied successfully on a small scale in Vienna could not be applied with equally favourable results in London or other centres on a much larger scale, provided that their application were limited, in accordance with Mr. Keynes's suggestion, to instances when selling or buying pressure on the currency is due to higher or lower interest rates in a foreign centre and not to inherent weakness of the currency concerned.

The proof of the pudding is in the eating. We shall see in Chapter XXXVIII that during the period 1927-28 a Forward Exchange policy similar to that applied in Vienna before the war, and to that advocated by Mr. Keynes, was successfully applied by the Bank of France. It is true that the object was the diversion of unwanted funds from Paris and not their attraction. But this does not alter the fact that the official manipulation of forward rates is capable of influencing the movements of funds even in modern post-war conditions, and even in a centre of first-rate

¹ See *Österreichische Volkswirt*, July 17, 1909, p. 2.

² *Österreichische Volkswirt*, March 28, 1936, p. 505.

importance. The figures involved are many times larger than they were in Vienna before the war, but the principles involved are the same.

The Mises-Federn controversy leads to an interesting question of principle, namely, whether the aim of monetary policy should be to prevent a gold outflow when that outflow would mitigate the rising tendency of interest rates abroad. This point raises the whole fundamental conflict between internationalism and isolation. Professor von Mises is a supporter of an internationalist theory, which explains his attitude towards Herr Federn's explanation of the events of 1907. After all, as often as not the wish is father to the thought. Herr von Mises wanted to believe that Austria-Hungary had pursued an internationalist monetary policy, and found no difficulty in convincing himself that this was the case, despite the evident facts and despite official admissions to the contrary.¹

The fundamental question of internationalism *v.* isolationism in relation to a Forward Exchange policy will be discussed in greater length in Chapter XLVI. Here let it be sufficient to point out that, whether the isolationist policy of the Austro-Hungarian monetary authorities was right or wrong, the manipulation of Forward Exchanges provided an effective mechanism for its successful execution.

¹ Incidentally, Professor von Mises proved to be a very bad loser indeed. Herr Federn had caught him out and exposed his errors of fact as well as his errors of interpretation. In 1910 Professor von Mises's "chief witness", Dr. von Bilinski, upon whose earlier statement his argument mainly rested, turned evidence against him. Most people in a similar position, if they were not great enough to admit having been wrong, would at least have retreated in silence. But not so Herr von Mises. In his article on the subject in the *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* in 1912, two years after the official confirmation of Herr Federn's thesis, he reiterated his old argument as if nothing had happened. He chose to ignore Dr. von Bilinski's statement, and simply repeated his earlier assertion that for the Austro-Hungarian Bank there were no other means to prevent a rise in the exchange rate above a certain rate than the unrestricted sale of Foreign Exchanges at that level (p. 756). He even went so far as to assert that this thesis had never been disputed by anyone but "a small group of Austrian writers". This "small group" included such recognised authorities as Professor Robert Zuckerkandl and Herr Friedrich Hertz, apart from Dr. von Bilinski himself.

CHAPTER XXXVII

“KOSTDEISEN” OPERATIONS OF THE AUSTRIAN NATIONAL BANK

(1) LEGACY FROM AUSTRÖ-HUNGARIAN BANK

WE have seen in Chapter XXXVI that the Austro-Hungarian Bank pursued a regular forward rate policy for years before the war, and that it had developed a highly-skilled technique of official Forward Exchange operations. It is only natural, then, that the Austrian National Bank and, to a less degree, the other Central Banks which succeeded the Austro-Hungarian Bank, should have been first in the field in adopting a Forward Exchange policy after the war. The Austrian National Bank was particularly qualified to carry on the traditions of the Austro-Hungarian Bank, for it inherited the latter's Vienna head office with its experienced staff and its accumulated practical experience. Admittedly, the continuity of this valuable experience was broken during the war and early post-war years. Moreover, the initiator of the Forward Exchange policy of the Austro-Hungarian Bank, Secretary Kuhn, had died even before the war, and his successors either did not possess the same initiative and imagination or they did not have the same experience. Nevertheless, the Austrian National Bank had a better chance of benefiting from pre-war experience in official Forward Exchange operations than any other Central Bank.

During the inflationary period, of course, the Austrian monetary authorities were not in a position to apply the experience which they had gained during the period of stability. In any case, the Austrian National Bank was not established until in January 1923, whereas the Austro-Hungarian Bank went into liquidation immediately after the war. The provisional authority which was in charge of monetary affairs during the currency chaos of 1919-22 was not in a position to elaborate a Forward Exchange policy to suit abnormal requirements. It was not until after the establishment of the Austrian National Bank and the stabilisation of the krone that a Forward Exchange policy was adopted. But during the

period 1923-25, when Austrian finance was still suffering from the aftermath of the collapse of the krone, the Forward Exchange operations of the Austrian National Bank rendered invaluable service in improving conditions.

(2) DEADLOCK AFTER STABILISATION OF THE AUSTRIAN
CURRENCY

Although the krone was stabilised in 1923, confidence in its stability was none too firm. Consequently, it was very difficult to obtain foreign credits to replenish the country's capital resources, depleted by inflation. Some of the leading banks, with an international reputation which had survived the collapse both of the Austro-Hungarian monarchy and of the krone, would have been able to obtain credits in terms of foreign currencies. They were reluctant to do so on any large scale, however, owing to the risk of big losses in the event of a new depreciation of the krone. Moreover, the exchange restrictions introduced during the inflationary period prevented the revival of the highly-developed Vienna Forward Exchange market which had existed before the war, for the restrictions remained to some extent even after stabilisation. Austrians were allowed to sell foreign currencies against each other for spot or forward delivery but they were not allowed to operate in Forward Exchange against Austrian currency. Thus, during the great gambling fever in francs in Vienna in 1924, francs were sold forward against dollars, not against kronen. And even if there had been an open market for forward kronen, there would have been too many sellers and very few buyers of the currency, and the cost of covering the exchange risk on foreign credits would have been prohibitive.

Thus the position was that the Austrian banks were not prepared to borrow in sterling, dollars, etc., while foreign banks were even less prepared to lend in terms of kronen. The deadlock was complete. Notwithstanding the stabilisation, the Vienna money market was completely isolated from the international market. As a result, interest rates in Austria remained very high even after stabilisation. In the ordinary course, it would have taken many years for the accumulation of savings to produce a gradual decline of interest rates. Meanwhile, trade would have been severely handicapped by the prohibitive interest rates and lack of adequate working capital.

(3) NATIONAL BANK'S INITIATIVE

In face of this situation the Austrian National Bank had two alternatives. The orthodox remedy would have been to keep the Bank rate at a very high level and to restore confidence in the krone by means of prolonged and ruthless deflation. Such a policy might possibly have gradually induced the Austrian banks to borrow in terms of foreign currencies notwithstanding the absence of facilities for covering the exchange risk. The result of such a policy, however, might have proved to be disastrous for the trade of a country which had suffered as much as Austria did between 1918 and 1923. The Austrian authorities were wise enough to choose the other alternative which, while unorthodox, was substantially in accordance with the pre-war traditions of the country. They sought to attract foreign funds to Vienna by means of a Forward Exchange policy which overcame the deadlock.

From 1923 onwards, the Austrian National Bank was prepared to buy from the Austrian banks foreign currencies for immediate delivery and to resell them to the same banks for forward delivery. In other words, it was prepared to provide a substitute for the lacking open market in forward kronen. As a result, foreign banks were enabled to lend in terms of Austrian currency with the exchange risk covered, and Austrian banks were enabled to borrow in terms of foreign currencies without running any exchange risk. These operations were known as "Kostdevisen" transactions and became a feature of the international market during 1923-24. Although the forward krone (and subsequently the forward schilling) was quoted by the National Bank at a fairly substantial discount, the big margin between interest rates in Vienna and in the Western European financial centres made it profitable to pay the cost of covering the exchange risk.

(4) SWAP AND DEPOSIT OPERATIONS

British, American and other foreign banks, through the intermediary of Vienna banking houses, bought from the Austrian National Bank spot kronen (or schillings) and resold them to the National Bank for delivery in three months at a discount of, say, 4 per cent per annum. As they were able to lend the Austrian currency to first-class Vienna banks at something like 12 per cent

per annum, there was a net yield of 8 per cent per annum, which was quite satisfactory considering that there was no exchange risk. The discount charged by the National Bank varied between $1\frac{1}{2}$ and $4\frac{1}{2}$ per cent per annum and was on the average between about 2 and $2\frac{1}{2}$ per cent per annum. Needless to say, foreign banks were not prepared to commit themselves very heavily in this type of business and preferred in many instances to lend to Austrian banks in terms of foreign currencies, in which case it was the Austrian banks which, as principals, sold these currencies to the National Bank and rebought them for forward delivery. The yield to the foreign lenders on such operations was always appreciably lower than the yield on their operations in terms of Austrian currencies.

As a result of these swap and deposit transactions it was possible to attract to Vienna substantial amounts of foreign funds which otherwise would not have come. Thanks to this influx, interest rates gradually declined from their prohibitive level to more normal figures. The technical arrangement made by the National Bank obviated the necessity for pursuing a deliberate policy of high Bank rate and deflation. Thus, in substance, the policy pursued was similar to the pre-war Forward Exchange policy of the Austro-Hungarian Bank. This is not admitted, however, by most admirers of the latter's policy, who maintain that the Austrian National Bank's policy was inherently unsound and had nothing in common with the pre-war policy. Indeed, very few people have had a good word to say for the Austrian National Bank's Forward Exchange operations. The National Bank itself probably now regards them as an error of its early days, though in reality it certainly has no reason to be ashamed of the solution it adopted.

(5) THE INFLATION BOGEY

The main reason for the unpopularity of the National Bank's "Kostdevisen" operations was the fear that they might lead to an inflationary expansion of the currency. In order to acquire foreign currencies through these swap operations, the Central Bank had to create currency or credit. Moreover, since the foreign currencies acquired formed part of the Bank's metallic reserve, it was in a position to expand credit in accordance with its statutes to the extent of five times the amount thus acquired. It was argued that, since swap operations were essentially temporary, the withdrawal of foreign currencies by the lending banks might create an embar-

rassing position, in that it might compel the National Bank to contract credit at an inopportune moment. To my mind this argument sounds most unconvincing. In so far as the Central Bank did not create currency or credit in excess of the actual amount of the Foreign Exchanges acquired—even though under the continental system of reserve ratios it was entitled to expand credit to several times the additional metallic reserve—there would be no special difficulty in liquidating the situation, since the lenders, in withdrawing the foreign currencies, would pay for them in Austrian currency. Admittedly, this might be inconvenient for the country's trade, if not also for the Central Bank, for trade would thus be deprived of some of its borrowed working capital; but this is true of every form of short-term borrowing from abroad. Even if foreign funds are attracted by strictly orthodox methods of high Bank rate, they are always liable to withdrawal when the lenders find more profitable use for their money. From this point of view, there is no difference whatever between funds attracted by high Bank rate and those attracted by means of Forward Exchange operations. This also answers the argument about the inflationary effect of using the foreign currencies as the basis of a deliberate credit expansion, and about the deflationary effect of the contraction of credit necessitated by the withdrawal of foreign currencies. Under the continental system of reserve ratios, this risk always exists, whether the Central Bank increases the basis of its currency and credit structure by means of high Bank rate or by means of Forward Exchange policy.

(6) CRITICISM OF KOSTDEISEN OPERATIONS

As a matter of fact the Austrian National Bank never intended to use "Kostdeisen" for the purpose of a credit expansion beyond that inevitably involved in the purchases.¹ Notwithstanding this, many critics of the Bank, and also the League Finance Committee, viewed with suspicion the increase of the Bank's Foreign Exchange reserve through "Kostdeisen" operations. Until the end of 1924 the Bank included the amounts thus acquired in its ordinary Foreign Exchange reserve, although indicating their special nature. This practice was subjected to much exaggerated criticism. It was pointed out that, since the National Bank had actually resold for future delivery the foreign currencies thus acquired, it had no

¹ This was expressly stated in the annual report for 1924.

right to add them to its Foreign Exchange reserve. There may be much to be said in favour of a footnote reference to the amount of swap-devisen, but the attacks upon the National Bank for including them at all in its metallic cover were unjustified and hypocritical. After all, if an Austrian bank borrowed sterling for three months and sold it to the National Bank without covering, it would have had to repurchase it from the National Bank in three months' time. All parties would be aware of the essentially temporary nature of Central Bank exchange acquisitions through such transactions, yet it would not occur to anybody to suggest that it was the duty of the Central Bank to indicate specially that these Foreign Exchanges were liable to withdrawal in three months' time.

However this may be, acting upon pressure from the League Finance Committee, the Austrian National Bank decided at the end of 1924 to exclude "Kostdevisen" from its Foreign Exchange reserve. As a result, the reserve ratio dropped from 54.6 per cent on December 31, 1924, to 40 per cent on January 7.¹ The statutes of the Bank were altered so as to provide that the swap-devisen should be added to various other kinds of foreign currency holdings which were not qualified to form part of the metallic reserve. This omnibus item was to remain, however, part of the fiduciary cover.

(7) LEAGUE FINANCE COMMITTEE'S ATTITUDE

For this reason, in spite of the change, the League Committee was not altogether reassured, and sought to impress upon the National Bank the necessity for caution regarding the volume of its "Kostdevisen" operations. In this respect it is interesting to quote the remarks of the report of the Finance Committee dated February 14, 1925 :

"The Finance Committee view with satisfaction the exclusion from the gold and Foreign Exchange reserve of the Austrian National Bank of foreign currencies which flow into the Bank by way of the combined spot and forward transactions in Foreign Exchange (Kostgeschäft). The Finance Committee entirely agree with the action of the National Bank in undertaking exchange business, whether spot or forward. They have, however, been impressed by the rapid expansion of the Kostdevisen transactions,

¹ League of Nations Commissioner General's Monthly Report on Austria, January 31, 1925.

which had counterbalanced the decrease effected in the volume of bills discounted by the Bank. They were glad to note that their view and that of the Austrian National Bank coincide as to the monetary influence of the *Kostdevisen*, the credit created by this means being as much a part of the general credit structure as are discounts acquired by the National Bank. While expansion and contraction in the latter are controlled by a proper Bank rate policy, the former should be controlled by raising and lowering the rate charged for the *Kostgeschäft*. The Finance Committee heard with satisfaction that the Austrian National Bank scrutinises carefully the nature and quality of the credits it grants, not only by way of its purchase of discounts but also by way of the *Kostdevisen*, with a view to confining these credits to strictly economic purposes."

Largely as a result of the attitude of the League Finance Committee, the volume of the *Kostdevisen* operations of the Austrian National Bank gradually declined. Its highest figure was reached at the end of 1924, when it amounted to 179,856,000 schillings. By 1927 it had declined to a negligible figure. Even up to this day the Bank return includes an item of "Foreign Exchanges not included in the Foreign Exchange reserve", and a footnote indicates the exact amount of *Kostdevisen* represented in this amount. The rest consists of Foreign Exchanges ineligible as part of the metallic reserve. During the years of stability an open market had developed in Vienna for Forward Exchanges against schillings, and this reduced the necessity for official Forward Exchange operations. Notwithstanding this, it is a pity that the experiment was practically discontinued after the return of more normal conditions. While the system was in operation, it was of great assistance to Austria, and was largely responsible for the cheapening of money rates that prepared the ground for the gradual reduction of the Bank rate from 15 per cent in 1924 to 7 per cent by the end of 1926.

(8) SWAP OPERATIONS BY OTHER CENTRAL BANKS

The Austrian National Bank was not the only Central Bank in the Succession States which took an active interest in Forward Exchange. To some extent the other Central Banks carried out operations somewhat similar to those of the Austrian National Bank. Article 127 of the statutes of the Czechoslovakian National Bank authorises the execution of Forward Exchange transactions,

but it is not known to what extent the Bank has availed itself of this right. Its exchange operations are included among "Other Assets and Liabilities" in the Bank return.¹ Generally speaking, its activities consisted of regulating seasonal fluctuations in the supply and demand for Forward Exchanges for commercial purposes. Information about the Forward Exchange operations of the Central Banks of other Succession States is practically unobtainable, though some of them are known to have been engaged in *Kostdevisen* transactions.

Among the National Banks outside Europe, the Banco do Brasil took up the system of official swap operations and used it as a means of acquiring foreign deposits. While the Austrian National Bank and other Central European institutions operated exclusively through the local banks, the Banco do Brasil established direct contact with London, New York and other Foreign Exchange markets, concluding swap and deposit deals with foreign banks. In this instance the system produced an unfavourable result. It was used to a large degree for bolstering up an untenable position by means of the foreign short-term credits obtained through these swap operations. Eventually it became necessary in 1931 to consolidate these and other external liabilities by means of a large banking credit. This example shows that official Forward Exchange operations can lead to unfavourable results if the system is abused.

(9) PRE-WAR AND POST-WAR METHODS COMPARED

There is a subtle but none the less essential difference between the forward rate policy pursued by the Austro-Hungarian Bank before the war and that adopted by the Austrian National Bank and other Central Banks after the war. In both instances the international movement of short-term funds was influenced by means of the manipulation of the forward rate as an alternative to the orthodox Bank rate policy. In the case of the Austro-Hungarian Bank, however, the forward rates were influenced by intervention in the normal Foreign Exchange market, while in the case of the Austrian National Bank and other Central Banks a new type of market was specially created by the Central Bank for swap and deposit transactions. This latter method is much more artificial than the one pursued by the Austro-Hungarian Bank, which

¹ Dr. Robert B. Kaepfelli, *Der Notenbankausweis in Theorie und Wirklichkeit* (Fischer, Jena, 1930), p. 202.

was so natural as to be almost imperceptible to all but the shrewdest observers with practical contacts with the market. The Austro-Hungarian Bank sought to influence the forward rate by influencing supply and demand. The Austrian National Bank fixed an artificial rate of its own in the absence of a market.

A much more important difference is that while the Austro-Hungarian Bank merely aimed at maintaining the *status quo* in the Vienna market by counteracting, by means of a forward rate policy, any tendency detrimental to its equilibrium, the Austrian National Bank sought actually to increase the supply of funds in the market. In the case of the Austro-Hungarian Bank the object was the regulation of the international flow of funds ; in the case of the Austrian National Bank the object was short-term borrowing from abroad. Thus in spite of the high degree of similarity of the methods applied, it cannot be said that the policy pursued was identical.

CHAPTER XXXVIII

FORWARD EXCHANGE OPERATIONS OF THE BANK OF FRANCE IN 1927-28

(1) A RADICAL INNOVATION FOR AN ORTHODOX PURPOSE

THE examples quoted in Chapters XXXVI and XXXVII have shown that it is possible for Central Banks to influence the international movement of funds through the manipulation of forward rates. We have seen that before the war the Austro-Hungarian Bank succeeded, by means of a skilful Forward Exchange policy, in retaining in Vienna short-term funds which would otherwise have been transferred abroad, and in restraining an influx of unwanted funds. We have also seen that in more recent years the Austrian National Bank and possibly other Central European institutions, and also the Banco do Brasil, have succeeded in attracting funds from abroad by fixing the forward rates at a convenient level. The object of the present chapter is to demonstrate more fully that Forward Exchange policy is by no means necessarily a "one-way street"; that it can be applied to serve purposes other than the prevention of an outflow of funds or the encouragement of an inflow. An example of this was given in Chapter XXXVI, when we described the Austro-Hungarian Bank's tactics aiming at the discouragement of an influx of funds in 1909. But the case of the Bank of France during 1927-28 is much more enlightening.

It is remarkable that one of the most conservative Central Banks—which the Bank of France undoubtedly was until the revision of its statutes and the change of its control in 1936—should have provided one of the most interesting examples of the application of technical but none the less radical monetary reform measures. The Bank of France, in initiating its Forward Exchange policy in 1927, was probably not aware that it was applying a radical reform measure. To reassure those who may be shocked by the revelation that in 1927 such a stronghold of monetary orthodoxy as the Bank of France could take the lead in

the adoption of radical reform, I hasten to add that this radical measure served an essentially orthodox purpose: to counteract monetary expansion and avoid a reduction of the Bank rate. Notwithstanding this mitigating circumstance, the fact remains that the rigidity of its statutes, the fundamental orthodoxy of its principles and the conservatism of its management, did not prevent the Bank of France from applying a very unconventional method of intervention when this suited its purpose.

(2) CIRCUMSTANCES LEADING TO ADOPTION OF
FRENCH FORWARD RATE POLICY

While it is hardly surprising that the pre-war Forward Exchange operations of the Austro-Hungarian Bank and the post-war Forward Exchange operations of various minor Central Banks have escaped attention, it is remarkable that the example of the Bank of France should have received so little publicity. After all, the events took place in recent years; their details as well as principles were, moreover, public knowledge. The actual details of the Forward Exchange policy of the Austro-Hungarian Bank were never officially described; but the operations undertaken by the Bank of France were repeatedly admitted in the annual reports of that Bank, in speeches by M. Poincaré, and in various official documents. It is characteristic of the highly unsatisfactory state of the literature on Forward Exchange that the broader implications of the technical measures taken by the Bank of France were overlooked.¹

The circumstances in which the French monetary authorities decided upon the adoption of their Forward Exchange policy are a matter of general knowledge. During the period of *de facto* stabilisation between 1926 and 1928, there was a strong speculative buying of francs in anticipation of a further appreciation. The French authorities had to take up a large part of the Foreign Exchanges sold by speculators, and as a result there was a plethora of funds in the Paris market. The Bank of France had to increase its note issue and the volume of credit to pay for the sterling and dollars bought. Since the amounts thus acquired were not repatriated in the form of gold but remained abroad in the form of official

¹ Professor Demaria was the only author who connected the French official Forward Exchange operations with Mr. Keynes's proposals. Mr. Hawtrey refers to these operations casually in *The Art of Central Banking* (p. 18), but does not enlarge upon the subject, nor does he connect the measures with Mr. Keynes's scheme.

French balances, they contributed towards the monetary ease in foreign markets, an ease which in turn facilitated the foreign buying of francs. The French authorities, determined to prevent inflation at all costs, sought first to check the buying pressure by creating dearer monetary conditions abroad. It was with this object in view that M. Poincaré decided to withdraw gold from the Bank of England in May and June 1927.¹ These withdrawals, however, provoked an outcry of indignation against such direct interference with the conditions of a foreign market, and M. Poincaré decided to resort to more subtle and less aggressive devices.

(3) OFFICIAL INTERVENTION IN 1927

In July 1927 the restriction on the export of capital was relaxed, and in August the French banks were authorised to carry on arbitrage operations with foreign centres. At the same time the Government authorised the Bank of France to lend Foreign Exchanges to the French banks. The transactions assumed the form of swapping spot against forward sterling and dollars. The Bank of France sold spot sterling and dollars to the French banks, repurchasing from them the same amounts for delivery in three months. The French banks were at liberty to employ these funds abroad, thus taking advantage of the higher interest rates prevailing there. Since the Bank of France repurchased the foreign currencies at a fixed rate, the banks did not run any risk of capital depreciation in the event of an appreciation of the franc.

The removal of exchange restrictions would in itself have been sufficient to enable the banks to undertake interest arbitrage. The question is whether, in the absence of intervention on the part of the Bank of France, it would have been worth their while to invest short-term funds abroad. It is true that the market rate of discount was higher in London than in Paris, where the plethora of funds reduced interest rates considerably. During the spring of 1928, bill rates in London were about $4\frac{1}{4}$ per cent, while in Paris they were about $2\frac{3}{4}$ per cent. In the absence of intervention, however, speculative forward buying of francs would have widened the premium on forward francs to a figure at which it would have more than offset the discrepancy between bill rates. Thus, in

¹ These withdrawals are discussed in detail in my books *International Gold Movements*, *The Fight for Financial Supremacy*, and *Behind the Scenes of International Finance*.

order to make the transfer of funds to London and New York profitable, the Bank of France quoted swap rates to the French banks which left a reasonable margin of profit on the covered interest arbitrage. In other words, the Bank of France was prepared to buy forward dollars and sterling at an overvalued level compared with their Interest Parities. This was done in order to induce the French banks temporarily to relieve the Bank of France of its excessive supply of foreign currencies. By such means the French monetary authorities hoped to be able to mop up the excessive supply of notes issued, and credit created, in connection with their purchase of Foreign Exchanges.

(4) INCREASE OF VOLUME OF SWAP OPERATIONS IN 1928

The official swap operations gradually assumed considerable dimensions. Although initiated only in August 1927, their outstanding total reached 3 milliard francs by the end of September. It remained practically stationary until the end of the year. At the beginning of 1928, however, the complete removal of exchange restrictions increased the buying pressure on the franc, and the authorities had to take up further large amounts of Foreign Exchange. To offset the increase of the note issue, the swap operations were further stimulated. The result was that by the beginning of June 1928 the total outstanding was over 15 milliards.

The annual report of the Bank of France for 1927 makes a brief reference to these operations. "A substantial part [of the francs issued as a counterpart to the foreign currencies acquired] found its way back to us directly, through forward transactions in Foreign Exchanges which we were authorised by the Government to carry out in the Paris market, and which enabled us to lend temporarily, against immediate payment of francs, part of the Foreign Exchanges acquired." The bank's annual report for 1928 gives more details of the development of these operations and of their subsequent liquidation after the stabilisation of the franc. "The acquisition of foreign currencies assumed extraordinary proportions, and it became increasingly difficult to absorb the francs created in consequence. We indicated in our last report the way in which a large part of the notes issued and credit created as a counterpart to our gold and Foreign Exchange purchases had been withdrawn during 1927, by the bank of issue, through Forward Exchange transactions. . . . During the early months of 1928 this regulating

movement was unable to assume sufficient dimensions to offset the increase of our note issue. To facilitate as much as we could the reflux of francs we increased our Forward Exchange operations to a considerable figure. The amount of foreign currencies thus lent to the French market against immediate payment of francs increased gradually, from about 2½ milliard francs at the end of 1927 to about 15 milliards at the beginning of June. But these operations were only able to improve the situation temporarily, since the Bank bought for forward delivery the exchanges it sold for cash, and the liquidation of the operations had to result, sooner or later, in an issue of francs.”

(5) FAVOURABLE RESULTS OF THE SYSTEM

Even though the official swap operations could not wholly prevent an unwanted expansion, they went a long way towards keeping down its amount. It was largely as a result of these operations that the Bank of France was able to maintain its discount rate at a relatively high level. Notwithstanding the buying pressure on the franc and the tendency towards easier money, the Bank rate remained at 5 per cent until December 1927 and at 4 per cent until January 1928. It was still as high as 3½ per cent at the time of the stabilisation of the franc in June 1928, notwithstanding the accentuation of the reflux of funds during the months preceding it. It may of course be asked whether it would not have been a better policy to allow the buying pressure to produce its natural effect on interest rates, on the volume of credit, and on commodity prices, and thus to produce its automatic corrective. After all, it was because the spot franc was so evidently undervalued that speculative buying was so persistent. It may well be asked whether a rise in French prices would not have mitigated the adverse pressure on sterling during the three years following the stabilisation of the franc, an adverse pressure which culminated in the suspension of the gold standard in Great Britain.

It is, however, outside the scope of this book to criticise the basic principles of the French monetary policy of 1927-28. Whether that policy was right or wrong is a matter of opinion; the fact is that its execution was facilitated to no slight degree by the application of the technical device of official Forward Exchange operations.

The Bank of France report remarks that the relief brought by

the swap operations was necessarily temporary, since the Bank repurchased for future delivery the exchange it sold for cash. But it was always in a position to renew the existing arrangements by offering the French banks sufficiently attractive terms in the form of overvalued forward sterling and dollar rates.

(6) CRITICISM OF THE SYSTEM

The system was subjected to criticism outside the Bank on the ground that, since the French banks were always free to decline the renewal of the swap transactions, the existence of a large outstanding amount was like a Damocles' sword which threatened to frustrate any attempt on the part of the Bank to contract credit, and which might have led to a sudden expansion at any moment.¹ In reality the worst that could possibly have happened was the creation of the state of affairs that would have existed had the swap transactions never been undertaken. In mopping up part of the excessive note issue the Bank converted actual inflation into potential inflation. To object to the system on this ground is equivalent to objecting to President Roosevelt's policy of financing the deficit by Treasury bills rather than by crude currency inflation, simply because the non-renewal of Treasury bills might conceivably lead to currency inflation.

M. Pierre Fraysinet took a broader view of the situation when he regarded these swap operations as a hidden reserve for the Bank of France.² Until the stabilisation of the franc, the swap operations were not shown in the Bank return. Any adverse pressure on the franc might have been met by the non-renewal of swap transactions, in which case the fall in the foreign currency holdings would have been offset by the recovery of the amounts lent to the French banks. Indeed, even after stabilisation, when the Bank of France began to

¹ According to Dr. Robert B. Kaeppli, *Der Notenbankausweis in Theorie und Wirklichkeit* (Fischer, Jena, 1930), the existence of a large official holding of swap exchanges was apt to render a high Bank rate ineffective since the banks were in a position to secure francs by liquidating the swap contracts (p. 150).

Dr. S. Wolff, former financial correspondent of the *Frankfurter Zeitung* in Paris, writing in *Wirtschaftsdienst* of October 19, 1928, states: "The existence of swap commitments limits considerably the Central Bank's freedom of action in the sphere of money market and discount policy". The answer to this criticism is that, so long as the forward rate was maintained at a level which left an adequate margin of profit on the transfer of funds from Paris, there was no need to fear an inopportune reflux of funds.

² P. Fraysinet, *La Politique monétaire de la France 1924-1928* (Receuil Sirey, Paris, 1928).

publish the amount of its swap operations,¹ the existence of a large outstanding amount provided a useful "first line of defence", even though it was no longer invisible. The liquidation of the swap operations went a long way towards meeting the temporary adverse pressure on the franc which followed its legal stabilisation, a pressure due in part to the closing of speculative accounts in francs and in part to the Wall Street boom.

(7) A TEMPORARY EXPEDIENT

How far does the device applied by the Bank of France accord with Mr. Keynes's proposal? Even though Mr. Keynes had mainly in mind the use of official Forward Exchange operations to prevent a rise in interest rates, he also envisaged their use to prevent an unwanted fall in interest rates. The principle involved is the same. Whether the object is to prevent a rise or a fall, the system consists of counteracting, by means of Forward Exchange operations, the effect of the international factor upon the internal monetary situation, so as to safeguard trade against an unwanted influence. The essential difference between the system advocated by Mr. Keynes and the one adopted by the Bank of France was that, while Mr. Keynes would like to see Forward Exchange operations become part of the normal monetary policy, the Bank of France applied this device only exceptionally in order to cope with a temporary abnormal situation. As soon as that special situation ceased to exist, the Bank of France discontinued its Forward Exchange operations and liquidated its existing commitments. In this respect the remarks in its report for 1928 are worth quoting :

"The swap operations which proved to be highly salutary during the period of the *de facto* stabilisation of the franc, through reabsorbing temporarily the excess of liquid resources, ceased to be indispensable and could not be perpetuated under a normal régime. We endeavoured to proceed with their gradual liquidation, at first by changing the terms on which we were prepared to lend exchanges, and subsequently by ceasing to renew the swap transactions. This progressive liquidation is now complete. The amount of exchanges lent was 9777 million francs on June 25. By December 22, which was the last day of the business year, it had become reduced to

¹ There was an item "Engagements provenant de reports sur devises" on the Liabilities side of the Bank return, and an item "Devises en report" on the Assets side.

about 25 millions, and even this amount disappeared from our account a few days later. Within six months we have thus taken delivery of Foreign Exchanges amounting to nearly 10 milliards, as and when the forward contracts matured."

(8) A LOST OPPORTUNITY

It is a pity that, in spite of its favourable results, the experiment was discontinued. For there would have been ample opportunity for the application of the device in the same sense in subsequent years, to the benefit of France and other countries. In 1930, in particular, it would have provided an ideal solution of the Franco-British differences over discount rate policy. As is well known, the British authorities at that time aimed at lowering interest rates in order to mitigate the depression that developed after the Wall Street slump. Since the French authorities were unwilling to adopt a similar policy, the result was an accentuation of the selling pressure on sterling. The application of the device of Forward Exchange operations would have enabled the French authorities to maintain interest rates at a relatively high level, in pursuance of the domestic discount rate policy which, rightly or wrongly, they were determined to pursue, without thereby aggravating the international position of sterling. A resumption of the Forward Exchange policy adopted during 1927-28 would have enabled the Bank of France to prevent a flow of funds from London to Paris. The French authorities were at that time anxious to emphasise that, much as they would have liked to avoid aggravating the pressure on sterling, they were not in a position to counteract the natural tendencies in the Paris market. Their spokesmen repeated to boredom the inability of the Bank of France, owing to the rigidity of its statutes, to intervene effectively. As, however, these same statutes did not prevent the French authorities from undertaking Forward Exchange operations to counteract an unwanted tendency in 1927-28, there is no valid reason why they should not have fallen back upon the same device for the same end three years later.

(9) PROFIT OR LOSS ?

It is perhaps worth mentioning that, far from being costly, the Forward Exchange policy pursued by the Bank of France during 1927-28 was highly profitable. The item of "Commissions et

intérêt sur opérations de change" showed a profit of 14,864,642 francs during the first half of 1928. During the second half of that year, when most swap operations were allowed to expire, the profit declined to 6,426,189 francs, and since 1929 the item has ceased to be published. Even though profit on other Foreign Exchange operations must have contributed to the total, there can be no doubt that the result of swap transactions constituted the bulk of it.

- Considering that Mr. Keynes's scheme is opposed partly for fear of the heavy cost involved, it is of particular importance to note that in given circumstances the operations can actually yield a direct profit, apart altogether from the benefit derived from its general effects, for the sake of which it would be well worth while even to bear a direct financial loss on the operation. If the monetary authorities, in the course of their intervention, are sellers of their own national currency for forward delivery at a premium, or if they are buyers of their own national currency for forward delivery at a discount, they make a profit. If intervention involves forward buying of the national currency at a premium, or forward selling of the national currency at a discount, the result is a financial loss.

(10) ITALIAN FORWARD RATE POLICY, 1925-26

Even before the Bank of France began its Forward Exchange operations, a forward rate policy, which in outward appearance was of a somewhat similar kind, had been pursued for a short while by the Italian Treasury. Between September 1925 and April 1926 the Italian Treasury sold spot exchanges and repurchased Forward Exchanges. On other occasions it bought spot exchanges and resold Forward Exchanges. Thus, while the French authorities operated only one way, with the aim of encouraging an outflow of short-term funds, the Italian authorities operated both ways, encouraging both the inflow and the outflow of short-term funds. According to a theory elaborated by Professor Demaria,¹ the object of this policy was to facilitate the international movement of short-term funds to and from Milan and presumably to prevent these movements from affecting the spot rate. This arrangement was supposed to have been meant to act as a shock-absorber, in the absence of international gold movements. Whenever there

¹ Giovanni Demaria, "I Saggi di Riporto e di Deporto della Lira Italiana a Londra dal 1921 al 1928", published in *Rivista Internazionale di Scienze Sociali*, November-December, 1928, pp. 139-142.

was an outflow of short-term funds, the Italian Treasury was a buyer of spot lire and a seller of forward lire, thereby preventing the outflow from causing a depreciation of the spot lira. Whenever there was an inflow of short-term funds, the Treasury was a seller of spot lire and a buyer of forward lire, thereby preventing the movement from causing an appreciation of the spot lira, an appreciation which subsequently would have proved difficult to maintain and which would thus have led to unnecessary fluctuations. The application of these tactics—whose existence has never been officially confirmed—was discontinued in April 1926, owing to the development of a sweeping speculative movement, in the face of which such a policy could not have produced any useful results.

Unlike the French Forward Exchange operations, the Italian operations were not linked to discount rate policy. Indeed, the Milan money market was far less developed than the Paris money market, and, in any case, in the unstable exchange conditions then prevailing, it was necessarily less sensitive to technical influences than the Paris money market was during the period of *de facto* stability. Nor is it possible to accept definitely, in the absence of further evidence, the theory that the Italian authorities pursued a forward rate policy similar to that of the Austro-Hungarian Bank, by which they sought to regulate the international movement of funds through fixing the forward lira rate at a level at which it was calculated to provoke an influx or an efflux of balances. Such a policy presupposes reasonably stable monetary conditions, and a highly developed international arbitrage operating freely in both directions. Neither of these conditions existed in Italy during 1925-26.

The Italian experience shows, however, that official Forward Exchange policy can be pursued for the purpose of supporting the spot rate without thereby causing any lasting decline in the gold and Foreign Exchange reserve, through offsetting any spot sale of Foreign Exchanges by a corresponding forward purchase. I am inclined to believe that this was the sole object of the Italian official swap operations during 1925-26. These operations did not pursue objects of broader monetary or economic policy, but merely aimed at increasing the efficiency of the defence of a currency against an acute attack. They belong to the realm of defensive intervention and will be discussed under that heading in Chapter XL.

CHAPTER XXXIX

THE REICHSBANK AND FORWARD EXCHANGE

(1) CHANGE OF POLICY AFTER THE WAR

ALTHOUGH I am definitely in favour of official intervention in the Forward Exchange market, it is not the object of this book to make out a case for such intervention regardless of the facts that could be quoted against it. Thus I have sought to present all the material facts, irrespective of whether they are favourable or unfavourable to intervention. The reader will be in a position to judge for himself whether or not official operations in Forward Exchanges are desirable. In the last chapter we gave details of a case in which official manipulation of forward rates was essentially successful. In the present chapter we shall examine a totally different case, in which intervention was essentially a failure: for experience of the Reichsbank's Forward Exchange operations after the war does not exactly encourage belief in the utility and effectiveness of such operations in given circumstances.

Before the war the attitude of the Reichsbank towards Forward Exchange dealings, in contrast to that of the Austro-Hungarian Bank, was one of strict neutrality. In fact the German Bank Act of 1875 made it unlawful for the Reichsbank and the minor issuing banks then operating to buy or sell for forward delivery. Although this law referred only to commodities and securities, it was considered to apply also to Foreign Exchanges. For this reason, in December 1919 Article 7 of the Bank Act was in part suspended. Article 6 of the new Act authorised the Reichsbank to deal in Forward Exchanges. Its text is as follows: "Up to December 31, 1930, the Reichsbank is empowered for the purpose of meeting its own liabilities in foreign currencies, to buy Devisen for future delivery and to resell for future delivery the Devisen bought for that purpose". The central committee of the Reichsbank was authorised to suspend this article before it expired.¹

¹ Dr. Joachim Vogel, *Das Devisentermingeschäft*, p. 4.

(2) SAFEGUARDING EXPORTERS AGAINST EXCHANGE RISK

On the basis of this law the Reichsbank embarked upon Forward Exchange operations of a distinctly limited scope and of a distinctly one-sided character. It had undertaken to buy from German exporters the proceeds of their exports to be delivered at a future date. This was done partly through a curious system of issuing fictitious bills, the so-called "Kurssicherungstratten". These were bills issued by German exporters, not for acceptance or payment by the foreign importers, but solely for the purpose of being discounted at the Reichsbank. The latter paid cash at a fixed exchange rate, so that the transaction was not really a Forward Exchange operation but a discounting operation, even though the Reichsbank received no bills in the real sense of the term. Such operations were conducted even before the alteration of the Bank Act, and they have been carried out ever since. Indeed, under the régime of stringent exchange restrictions, which completely killed the Forward Exchange market in Berlin after 1931, these Kurssicherungstratten have remained the only means by which German exporters can cover their exchange risk.

After the passing of the new law in 1919 the Reichsbank began to buy Forward Exchange from exporters for dates up to three months. According to Dr. Vogel, the experience of the Reichsbank with this kind of forward transaction was highly unfavourable. The bank adopted an essentially passive attitude towards exporters, who were at liberty to unload their Forward Exchanges whenever this suited them. In practice this meant that the Reichsbank was certain to be flooded with Foreign Exchanges whenever the mark showed a tendency to recover. On the other hand, whenever the mark tended to weaken, exporters preferred, for obvious reasons, to abstain from surrendering their foreign currencies in advance. Admittedly, exporters might make mistakes in anticipating exchange movements and might sell their Foreign Exchange to the Reichsbank at the wrong moment. On the whole, however, the chances were rather against the Reichsbank, and the result of its operations is understood to have been a heavy loss. In 1920 its total losses on Foreign Exchange amounted to four milliard marks. Although a large part of this may have been due to losses on credits contracted in terms of foreign currencies, there can be

no doubt that the Forward Exchange operations were in no slight degree responsible for it.

(3) AN INADEQUATE ARRANGEMENT

The Reichsbank charged an insurance premium of 1 per cent per month for the Forward Exchange it bought from German exporters. During the early phase of inflation this was a very substantial percentage, which must have tended to discourage exporters from availing themselves of the facilities whenever they had no definite reason to suppose that the exchange would move against them. Subsequently, the charge was raised to 1 per cent per half-month, while by November 1920 it had reached 3 per cent per half-month.¹ Later on, however, with the development of an open Forward Exchange market, the Reichsbank reduced its charges, and from the middle of 1921 the premium was about $\frac{1}{2}$ per cent per month for periods not exceeding six months. Provision was made for renewal of the forward contracts if exporters were unable to deliver the foreign currencies by maturity.

With the development of an open market for Forward Exchange in Berlin the Reichsbank's arrangement lost much of its early significance, as exporters were often able to cover on more advantageous terms through the banks. Subsequently, when inflation attained a more advanced stage and when the depreciation of the mark became almost continuous, the whole object of the arrangement was lost, since exporters, far from being anxious to sell the proceeds of their exports in advance, endeavoured to retain them up to the last possible moment.

Evidently, these operations by the Reichsbank after the war did not form part of the bank's monetary policy. They did not aim at influencing the trend of the market or the international movement of funds. According to Vogel, the main object was to cover in advance the Government's Foreign Exchange requirements.² The secondary object of the arrangement was to assist export trade, though the cost of the facilities, as we have shown,

¹ For the details of the working of this arrangement see Vogel, *Das Devisentermingeschäft*, p. 6.

² *Op. cit.* p. 6. Vogel remarks that even this end was not necessarily served, since exporters were very frequently unable to deliver the Foreign Exchanges by the maturity dates and often found justification for backing out of the contract altogether, so that the Reichsbank never knew for certain whether the exchanges bought would in fact be forthcoming in due course.

was far too high. As for importers, they were left to fend for themselves. No official arrangements were made to enable them to cover their Foreign Exchange requirements in advance.

(4) NO FORWARD RATE POLICY

During the early stages of inflation the Reichsbank's arrangements may to some extent have helped to encourage foreign trade, but apart from this there appears to be very little which can be said in favour of the system. It did not materially assist in the development of an open Forward Exchange market, for this took place independently of the Reichsbank's operations, on the initiative of leading private banks. The whole system lacked the subtlety and adaptability which were essential for its satisfactory working. There was not the least effort made to pursue a forward rate policy, in the sense of regulating the rates with a definite purpose in view. It must be borne in mind, however, that the German authorities after the war did not possess adequate experience and technical knowledge to enable them to make the best of the experiment. Nor were general conditions favourable to the operations. Even if the Reichsbank had possessed all the technical skill required for successful forward operations, it stood but little chance of succeeding amidst the disturbed conditions between 1920 and 1923.

The Reichsbank itself became thoroughly discouraged by the unfavourable results of its intervention. After the abandonment of the arrangement during the more advanced stages of inflation, it has since kept strictly aloof from Forward Exchange operations—apart from the discounting of "Kurssicherungstratten"—in spite of the strong demand for active intervention that arose, for more than one reason, during the period of stability.

(5) DR. SCHACHT'S DILEMMA

An interesting instance of the circumstances in which the Reichsbank might usefully have resorted to Forward Exchange operations on the lines of those pursued by the Austro-Hungarian Bank two decades earlier, and by the Bank of France some months later, was provided by the experience of the German Black Friday of May 13, 1927. On that day credit restrictions were resorted to, giving rise to a heavy fall in the Bourse, and leading—on June 10—to an increase in the Bank rate from 5 to 6 per cent. The circum-

stances in which this policy of credit restriction was adopted were revealed on June 21 in Dr. Schacht's evidence before the Committee appointed by the Reichstag to investigate monetary and credit problems. In the course of his evidence, Dr. Schacht complained about the heavy influx of foreign short-term loans—they amounted to some 800,000,000 reichsmarks within a few weeks during March 1927—the proceeds of which were used to bolster up speculative positions on the Bourse. Although Dr. Schacht claimed that in any case the technical position of the Reichsbank necessitated the special measures, their main object was evidently to bring about a liquidation of bull positions on the Bourse in order to reverse the influx of short-term funds, which Dr. Schacht considered to be dangerous. He held the view that, apart from encouraging speculation on the Bourse, such an influx exposed the reichsmark to risk of sudden selling pressure through the withdrawal of the foreign short-term deposits. On the other hand, in earlier evidence before the same Committee, he expressed fears that such an influx might force the Reichsbank to lower the rediscount rate against its will.

This was evidently a case in which a forward rate policy might usefully have been adopted. The sterling and dollar deposits obtained abroad by German banks were for the most part covered against exchange risk, and, since the forward reichsmark was at a discount, the cost of covering increased the cost of the loan transactions. Similarly, when the loans were granted in terms of reichsmarks, the foreign lenders invariably covered their exchange risk, and were prepared to lend only if, after deducting the cost of the swap, the net yield on the transaction was sufficiently tempting. Throughout that period the discount on forward reichsmarks was not nearly wide enough to offset the difference between money rates in Germany and abroad. In other words, the forward reichsmark, even though at a discount, was perceptibly overvalued; although it was in the vicinity of its discount rate parities, the interest rates paid by German banks for dollar and sterling deposits, and especially for reichsmark deposits, were well above the market rate of discount in Berlin. The cost of covering the exchange risk was thus unduly low. Had the Reichsbank resorted to intervention for the purpose of deliberately widening the discount on forward reichsmarks, it would have increased the cost of borrowing abroad and would have discouraged the influx of funds. There would have been no need to resort to swap transactions, for these would have involved a

reduction of the Foreign Exchange reserve or the raising of credits abroad. It would have been sufficient to sell forward reichsmarks outright. This would have involved no risk for the Reichsbank, since an appreciation of the Reichsmark above gold import point was out of the question.

(6) FORWARD REICHSMARKS UNDER GOLD POINT

Another instance in which the adoption of a forward rate policy might have been worth considering arose towards the end of 1930, when the discount on the forward reichsmark became rather wide, partly because of the high interest rates prevailing in Germany, but largely in consequence of the pessimism caused by the National Socialists' progress at the General Election of September 1930. Even when the spot reichsmark depreciated to gold export point, the forward reichsmark remained at a substantial discount and was therefore considerably beneath gold export point.¹ The reason for this was that, although the gold standard appeared to have been safely established in Germany, there was some doubt in the minds of many people whether the Reichsbank would always be in a position to allow a free outflow of gold and thus to maintain the reichsmark at par. For this reason there was a limit to the extent to which foreign dealers were prepared to carry open position in reichsmarks, even when the forward rate was actually under gold export point. Whenever an adverse change in the trade balance or an outflow of capital brought the spot reichsmark to gold export point, the forward reichsmark depreciated materially below gold export point. Consequently, German importers who covered their exchange requirements in advance were penalised by unfavourable forward rates. It was therefore suggested that the Reichsbank, in addition to holding the spot rate at gold export point, should intervene in the forward market and prevent the depreciation of the forward reichsmark below gold export point by selling forward currencies whenever necessary. Apart from their value to German importers, such measures were advocated also as a means of retaining foreign short-term capital in Germany. Foreign lenders in 1930-31 found it at times too costly to cover their exchange risk owing to the depreciation of the forward reichsmark below its

¹ I discussed in detail this anomalous position in an article in the March 1931 issue of the *Economic Journal*, entitled "Recent Changes in the London Gold Market" (p. 64); and in my book *International Gold Movements*, 2nd ed., pp. 119-120.

Interest Parities. It was pointed out that an official intervention to support the forward reichsmark would have had the dual advantage of reducing the interest rates at which foreign banks were prepared to lend to German banks in terms of reichsmarks and of cheapening the cost of imported raw material.¹

The Reichsbank, however, was not prepared to fall in with these suggestions. Under the existing banking legislation it was impossible for the Reichsbank to undertake Forward Exchange transactions, as the authorisation given by Parliament in 1919 was subsequently withdrawn. In some quarters it was also feared that an artificial appreciation of the forward reichsmark might lead to an excessive influx of short-term funds and might encourage over-lending and speculation. According to Herr Waldenburg,² if the forward reichsmark depreciated below gold export point there was no need for German importers to cover their Foreign Exchange requirements. If they did so nevertheless, the unfavourable rate was "a punishment for their publicly manifested distrust in the currency". In fact a number of importers left their exchange commitments uncovered when the forward reichsmark was below gold export point, and the cost of forward covering thus saved constituted a kind of premium reserve against the risk involved. Herr Waldenburg goes so far as to say that the Reichsbank, had it decided to intervene, should have operated in the opposite direction to that suggested; instead of reducing the discount on forward reichsmarks, the authorities, according to him, should have widened it; instead of rewarding and encouraging distrust in the stability of the currency they should have penalised it. Neither of these opposing suggestions was, however, adopted, and the Reichsbank retained an attitude of strict neutrality towards the Forward Exchange market.

(7) OTHER CENTRAL BANKS' COMMERCIAL FORWARD OPERATIONS

The Reichsbank was by no means the only institution which after the war undertook Forward Exchange transactions for the purpose of relieving exporters of the exchange risk. Similar arrangements were made at one time or other by several continental central Banks, especially by Central European authorities,

¹ Georg Waldenburg, "Die Kurssicherung im Devisen-Termingeschäft", *Die Bank*, Dec. 6, 1930, p. 1881.

² *Op. cit.* p. 1883.

which showed more inclination to adopt an active attitude towards Forward Exchange than did the authorities in other parts of the world. In Czechoslovakia, for instance, before the establishment of the National Bank, the Government Banking Office was prepared to buy Foreign Exchange for forward delivery. In other instances, Forward Exchange operations undertaken by the monetary authorities in the interests of foreign trade were not confined to the buying of exchanges originating from export trade. The importers were also looked after, the authorities enabling them to cover their requirements in advance. In countries with exchange restrictions, such arrangements were particularly beneficial to import trade.

As I have already pointed out, such activities do not constitute measures of monetary policy. Their scope is not very ambitious, but in so far as they provided Forward Exchange facilities for foreign trade when such facilities were not otherwise available, they were none the less helpful.

CHAPTER XL

EXPERIENCE IN DEFENSIVE INTERVENTION

(1) THREE SCHOOLS OF THOUGHT

(THE experience of the Austro-Hungarian Bank, the Austrian National Bank, and the Bank of France in the sphere of Forward Exchange provides examples of official intervention in the Forward Exchange market for the purpose of deliberate monetary policy.) The experience of the Reichsbank and other monetary authorities provides examples of intervention with the object of meeting the requirements of foreign trade. (The present chapter will discuss some examples of official intervention of a third type—intervention in the interests of the defence of the currency against an acute attack.) Although, strictly speaking, such measures form part of the monetary policy of the countries concerned, they differ from the Forward Exchange operations undertaken by the Austrian, French, and other monetary authorities in that they do not aim at influencing internal money rates or the movements of funds. They are merely tactical devices for the purpose of fighting bear speculation against the national currency.

(Upon the question of the attitude of Central Banks towards Forward Exchange in face of an attack on the national currency, there are four main schools of thought among theoretical and practical experts. According to the first, the attitude of the monetary authorities should be one of complete neutrality towards Forward Exchange. They should confine their activities to spot exchange. Opponents of the "neutral" school fall into two categories. According to the one, intervention by the monetary authorities in the Forward Exchange market should aim at supporting forward rates at or above their Interest Parities. According to the other school, the object of official intervention in the Forward Exchange market should be to discourage bear selling by making its cost prohibitive. This can be achieved by artificially depreciating the rates well beneath their Interest Parities. The most extreme

school favours a complete prohibition of speculative operations in Forward Exchanges.¹)

(2) FRENCH EXPERIENCE IN SUPPORTING FORWARD RATES

The experience of the post-war currency fluctuations, as well as recent experience, provides examples of every kind of defensive intervention. Between 1924 and 1926 the French Treasury undertook Forward Exchange operations on a large scale. In its efforts to mop up the francs in the international market and to squeeze the bears, it bought forward as well as spot francs on various occasions. On the occasion of the famous bear squeeze of March 1924, M. Poincaré confined his operations to spot francs, but on various subsequent occasions the French authorities were understood to have operated extensively in forward francs also. In the absence of adequate information upon the details of these operations, it is difficult to ascertain the extent to which they influenced the tendency of the exchanges concerned. The interventions did not lead to decisive results, but beyond doubt they did contribute towards bringing about the bear covering which was their object to secure.

Admittedly, the same object could have been attained also by buying spot francs on a more extensive scale. But there were two advantages in buying forward francs—first, the Forward Exchange, being at a substantial discount, was cheaper; and secondly, the decline of the stock of Foreign Exchange through the supporting operations was deferred to a future date. The operations compelled sellers of forward francs to cover, and thus led to buying pressure on both spot and forward rates.

It is an open question whether the bear squeeze carried out by means of operations in Forward Exchange was on balance more effective than a corresponding increase of operations in spot exchange would have been. After all, if the spot exchange began to appreciate, those who had short positions would hasten to cover in any case, so that the effect would tend to be as pronounced as if the authorities had bought Forward Exchanges which had to be delivered on maturity. Moreover, intervention in the spot market produces an immediate and dramatic effect instead of a gradual and deferred one.

¹ The attitude of these various schools is discussed in detail in chap. xxiv. of my book *Monetary Reform in Theory and Practice* (Kegan Paul, London, 1936), p. 186 *et seq.*

(3) THE ITALIAN EXPERIENCE OF 1925-26

It is believed that during 1925 and 1926 the French authorities intervened in the Forward Exchange market by means of both outright and swap transactions. Very little has been written about the technical details of those operations or the policy behind them. On the other hand, we are fortunate in possessing some information regarding the swap operations undertaken by the Italian Treasury in 1925-26. In Chapter XXXVIII I briefly examined these operations in order to decide whether they could be regarded as constituting a forward rate policy. I then pointed out that it seems probable that the sole object of these swap transactions was to enable the Italian Treasury to support the spot lira without thereby diminishing its stock of Foreign Exchange. Professor Demaria describes this manoeuvring in some detail in his book *I Saggi di Riporto e di Deporto della Lira Italiana a Londra dal 1921 al 1928*.¹ Instead of endeavouring to squeeze the bears by buying forward lire, the Italian Treasury in September 1925 adopted the tactics of buying spot lire and selling forward lire. The idea of buying spot lire was of course to mop up the lira supply in the international market and thereby to support the spot rate. The simultaneous sale of forward lire pursued a dual object. In the first place it enabled the Treasury to make good the depletion of its Foreign Exchange supply caused by the spot operations; even though it had to part with Foreign Exchange, when the forward contracts matured it recovered the amounts thus temporarily relinquished. The second object, according to Demaria, was to compete with the bears in selling forward lire so as to increase the cost of speculation. Later in this chapter we shall encounter a somewhat similar policy adopted some ten years later by the Dutch authorities in their defence of the guilder.

Since the forward lira was at a fairly substantial discount throughout the period concerned, the swap transactions resulted in a considerable net loss to the Italian Treasury. And since the turnover was by no means negligible, the total spent on these operations must have been substantial. Banking circles in London, where a very large proportion of these official swap operations were carried out, were puzzled to no slight degree by the freedom with which the Italian Treasury gave away large amounts in the form of

¹ See also Professor Demaria's article in the *Rivista Internazionale di Scienze Sociali* of November-December, 1928, pp. 143-146.

swap margins. In Italy, however, the view was held that the amount thus lost was well spent. There can be no doubt that the monetary authorities feel more at liberty to allow their stock of Foreign Exchange to decline in support of the spot exchange if they hold the counterpart thus spent in the form of forward contracts by which they will recover their loss within three months.

The question is whether selling pressure on the forward lira did not annul the buying pressure on the spot lira, by giving rise to an outflow of funds through profitable interest arbitrage transactions. But, whether or not this was so in this particular instance, it is clear that if the arbitrage outflow is minimised by exchange restrictions, then the whole policy will be beneficial to the spot rate. Otherwise, as we shall see in the case of Holland, the policy is largely futile.

(4) THE BRITISH EXPERIENCE OF 1931

When, during 1925 or thereabouts, the Italian and French authorities intervened in the Forward Exchange market to fight speculation, the spot lira and franc were exposed to very wide fluctuations. We must now inquire, therefore, how the argument for or against intervention is modified when the movement of the spot exchange is confined to narrower limits, either through the operation of the gold standard or through the maintenance of its *de facto* stability by official intervention in the spot market. From this point of view an examination of the British experience of 1931 is especially interesting. During August and September 1931 the British authorities sought to maintain sterling, in face of a sweeping flight of capital, by means of dollar-franc credits obtained to an amount of £130,000,000. The authorities carried out operations in the spot market. At the same time they were also understood to have operated, at times fairly extensively, in Forward Exchange. The persistent selling pressure on sterling tended to keep the spot rate around gold export point, and since interest rates in London were higher than in Paris or New York, forward sterling tended to go to a fairly substantial discount on an interest basis.

Admittedly, in normal conditions, when there was adequate confidence in the stability of sterling, the higher interest rates prevailing in London would not in themselves have caused forward sterling to go to a discount. Many merchants as well as arbitrageurs would have preferred to leave the exchange uncovered rather than cover under gold point, for they would have assumed

that when their liabilities matured they would always be in a position to sell spot sterling at gold point or better. But when there was distrust in the stability of sterling this rule no longer held good. Even before the panic of August-September 1931 there were instances in which distrust in sterling led to a depreciation of forward sterling below gold export point.¹ Had the authorities allowed forward sterling to find its own level during the summer of 1931 it is certain that it would have gone to a very substantial discount. Instead, the authorities prevented forward sterling from declining materially below gold point, by raising spot sterling above gold point and artificially reducing the discount on forward sterling, especially in relation to the dollar.²

(5) LESSONS OF BRITISH EXPERIENCE

It is reasonable to suppose that one of the objects of the manipulation of forward sterling in 1931 was to divert pressure from the spot to the forward market. Had forward sterling been allowed to depreciate below its Interest Parities through speculative selling, considerable covered dollar balances would have been withdrawn because it would have ceased to be profitable for their owners to keep them in London. The alternative would have been to raise the Bank rate further in order to compensate foreign holders of sterling balances for the higher cost of covering the exchange risk, but in doing so the authorities would only have aggravated the panic. Since the Forward Exchange operations constituted the alternative to raising the Bank rate, from this point of view they came within the category of Forward Exchange operations for the purpose of monetary policy, a fact which shows that Forward Exchange policy can fulfil more than one object at the same time. Nevertheless it cannot be suggested that the operations undertaken in 1931 were pursued with the broader object in mind, or that they

¹ I discussed this technical position in an article in the March 1931 issue of the *Economic Journal*.

² As I pointed out in my *Tragedy of the Pound* (Kegan Paul, London, 1932), pp. 94-95, possibly the object of these tactics was to convey the impression that there was confidence in the prospects of sterling. It is also conceivable that the authorities aimed at frightening bears into covering and producing a bear squeeze on a modest scale by inflicting loss upon those who had sold sterling forward when the forward rate was under gold export point. The actual effect was in fact the opposite of what it was intended to be. The fact that forward dollars were obtainable at an unduly low premium encouraged the demand for them and thus increased the pressure on sterling rather than reduced it.

were inspired by Mr. Keynes's proposals. Mr. Keynes emphasised that the proposed technical measures could be effective only if pressure on the currency concerned was not due to any fundamental disequilibrium or sweeping flight of capital. In 1931 there was a fundamental disequilibrium working against sterling, which was considerably overvalued, and at the same time there was a panic flight of capital on a scale that was entirely without precedent. In face of such sweeping pressure, the application of technical devices was a mere pill against an earthquake.

In any case, fear of a depreciation of sterling was by no means the sole reason for the wholesale withdrawal of bank balances. The Central European banking crisis, and the exaggerated views about the extent to which London was involved, led to a wave of distrust on the part of foreign holders of sterling in the security of their deposits with London banks. Such holders would have withdrawn their balances even if they had had adequate safeguards against loss through a depreciation of sterling. The degree of distrust was such that many foreign holders of sterling would not have considered forward contracts an adequate safeguard against loss. It was feared that in the event of a major banking crisis those contracts would not be carried out. As is well known, dealers are prepared to take forward commitments only up to certain limits for every name. These limits would have been reached long before all the hitherto uncovered London balances had been covered. Thus, notwithstanding the attractive forward rates at which—thanks to official intervention in the Forward Exchange market—short-term sterling investments could be renewed, a sufficient amount of foreign balances was withdrawn to exhaust within a few weeks the resources available for the defence of sterling.

(6) OPPORTUNITIES FOR SUCCESSFUL DEFENSIVE INTERVENTION

The British experience of 1931 is not exactly an encouraging example of the working of official Forward Exchange operations in defence of a stable currency against speculative attack. This does not necessarily mean, however, that support for the Forward Exchange is always undesirable or useless as a defence against such an attack upon a stable currency. Indeed, during the years that followed the depreciation of sterling, there would have been ample opportunity for the countries of the Gold Bloc to make beneficial use of this technical device. When the forward franc went to a

spectacular discount during 1935-36, it would have been beneficial for the French authorities to intervene in the Forward Exchange market. Not only would they have secured a substantial profit at the expense of speculators who were prepared to sell forward francs at a discount of anything up to 60 per cent per annum, but would also have effectively penalised and discouraged them.

When the spot rate is more or less stable it is only by causing a contraction of the forward discount that bears can be penalised. In 1924-26 the French authorities had the means to intimidate bears by moving the spot rate against them; ten years later they were not in a position to do so except to a very limited degree. For this reason they ought to have resorted to the weapon of squeezing bears by means of Forward Exchange operations. Admittedly, from time to time the discount on forward francs contracted suddenly and substantially, even in the absence of official intervention in the Forward Exchange market, through the temporary return of confidence after some reassuring statement or reassuring action calculated to allay fears of early devaluation. The contraction of the discount, however, could have been brought about much more effectively and at more opportune moments by means of official intervention. Among the Central Banks of the former Gold Bloc countries, only the Swiss National Bank is known to have operated in Forward Exchange during 1935-36 prior to the devaluation of the Gold Bloc currencies. Admittedly, its occasional forward operations did not save the Swiss franc from eventual devaluation. Nor is there any reason to suppose that, had the Bank of France resorted to similar tactics—or, indeed, to any kind of tactics—it would have been possible to avoid devaluation. Although the defence would have been more efficient, it would have collapsed under the inexorable pressure caused by the substantial overvaluation of the spot franc.

After the devaluation, the French authorities changed their tactics. They no longer kept aloof from the forward market; during November and December 1936 they frequently intervened, supporting the forward franc. On one or two occasions minor bear-squeezing operations were carried out, but for the most part official intervention aimed at preventing the discount from widening to an extent at which it would have inspired distrust in the franc. On the whole this intervention in the forward market was not very effective, as it was conducted rather half-heartedly.

(7) ARTIFICIAL DEPRECIATION OF FORWARD RATES

Examples of deliberate intervention to depreciate a Forward Exchange below its natural level are not numerous. Such a depreciation, of course, is often caused unintentionally by measures designed to increase the cost of borrowing in the country whose currency is attacked. The alternative to selling Forward Exchange is to borrow in terms of the currency concerned and to sell the spot currency thus obtained. At times of speculative attacks on a currency it is usually much cheaper to go short by such method. If, however, this alternative is made more difficult or prevented altogether as far as foreign speculators are concerned the result is inevitably an increase of the pressure on the Forward Exchange, and the discount tends to widen. This policy has been pursued by a large number of Central Banks since the crisis, in particular by the Bank of France, and by the Italian authorities.

In some instances a formal embargo on lending to foreign borrowers is imposed, while in other instances the monetary authorities seek to achieve the same end by restricting credit internally, or by merely requesting the banks to abstain from granting credits to speculative borrowers. In all these cases the depreciation of the Forward Exchange is merely incidental, and in some instances it is not even viewed with favour by the authorities whose measures are partly responsible for it. They do not always realise that they cannot eat their cake and keep it. It is impossible to restrict lending to foreign borrowers, and to speculation in general, without causing a widening of the discount on the Forward Exchange.

(8) NETHERLANDS BANK'S TACTICS

Some Central Banks have gone much further with this policy of causing artificial depreciation of the Forward Exchange. The Netherlands Bank, for instance, whenever there was a speculative attack on the guilder, usually brought pressure to bear upon the Dutch banks to induce them not to buy forward guilders from foreign sellers except in connection with genuine commercial transactions. The idea is that in the absence of an adequate Dutch demand for forward guilders the discount is bound to widen, so that the cost of bear operations eventually becomes prohibitive.

The policy of deliberately depreciating the Forward Exchange is based on a mistaken view of the rôle of speculative forward

operations among the causes of a selling pressure on the spot rate. Those who believe in this policy assume that if the cost of speculative selling of the national currency can be made prohibitive, then the selling pressure will come to an end. They overlook the fact that, by widening the discount on Forward Exchange, they encourage the pressure on the spot exchange caused by the transfer of funds through interest arbitrage. Obviously, if forward rates are made to depreciate well beneath their Interest Parities, it becomes highly profitable to transfer short-term funds abroad with the exchange covered. The higher the degree of undervaluation of forward rates compared with their Interest Parities, the bigger the profit on such interest arbitrage, which could then be stopped only by means of exchange restrictions. In the circumstances, the deliberate widening of the Forward Exchange discount, to a point at which it becomes prohibitive for speculators, simply results in a transfer of the pressure from the forward to the spot exchange—a very unfavourable result indeed. As I have stated earlier in this chapter, exchange restrictions might mitigate the pressure on the spot exchange caused by interest arbitrage transactions thus stimulated. But there were no such restrictions in Holland in 1935.

It is true that in Holland the speculative attack, nevertheless, came to an end every time the authorities resorted to this device of widening the discount on forward guilders. Those who conclude, however, that this proves the effectiveness of the device are guilty of the fallacy of *post hoc ergo propter hoc*. The attacks on the guilder came to an end because their cause—usually a political crisis, or a heavy flight of Dutch capital—came to an end, and because the Netherlands Bank proved to be strong enough to withstand the drain while it lasted. In all probability such attacks would have come to an end even if the Forward Exchange had not been made to depreciate, just as they did in Switzerland, where no such devices were employed, and where the authorities aimed at keeping the forward discount artificially narrow instead of causing it to widen.

(9) EMBARGO ON SPECULATIVE FORWARD EXCHANGE TRANSACTIONS

Post-war financial history provides many examples of official intervention in the form of complete prohibition of speculative operations in the Forward Exchange market. Indeed, during the early post-war years the authorities in various countries were inclined to regard Forward Exchange as essentially and inevitably

speculative, and imposed a ban on Forward Exchange operations even in cases where they would have served the requirements of genuine commerce. It was because of this attitude that the Brussels and Genoa Conferences passed resolutions condemning restrictions upon Forward Exchange activity. Nevertheless, almost every Government whose currency was endangered resorted to a restriction of Forward Exchange operations. In Germany in 1922 they were prohibited except in the form of forward sales of one foreign currency against another. In France, Italy, Belgium, etc., similar measures were adopted. In more recent years, abnormally stringent exchange restrictions have in many cases killed the local Forward Exchange market altogether. Needless to say, none of these various prohibitions prevented the development of speculative forward markets abroad in the currencies concerned.

The most outstanding example of this form of official intervention in the Forward Exchange market is the unofficial embargo on speculative Forward Exchange operations which was imposed during the summer of 1935, by agreement between a number of countries—including Great Britain—in which no exchange restrictions existed. The object of this embargo was to assist France and other countries of the Gold Bloc in their fight against bear speculation in their currencies. The extent to which the embargo was made effective varied from country to country, but it is safe to assume that in London, where banks as a rule are more inclined to obey official hints than in other markets, it was more effective than elsewhere.

(10) LOOPHOLES IN THE EMBARGO

This does not mean, however, that the embargo was effective even in London. Very far from it. Indeed, the unofficial embargo left innumerable loopholes, and its applications and interpretations varied widely from bank to bank. For one thing, if the client of a bank stated that the Forward Exchange operations he wished to carry out were of a genuine commercial nature, the banker would not as a rule doubt his client's word. As for orders received from other banks, national or foreign, the question whether they were "genuine commercial" was not even asked. Thus there was ample scope for circumventing the embargo. Nevertheless, it was by no means entirely ineffective, for it made the opening of bear accounts more difficult. Forward operations were no longer carried out for strangers or for individuals known to be professional specu-

lators, at any rate not by first-class banks. Moreover, the existence of unofficial restrictions discouraged bears, owing to the uncertainty of whether they would be able to renew their positions in three months' time. It is therefore safe to assume that the unofficial embargo on Forward Exchange transactions, although it did not stop speculative operations, materially reduced the volume of activity in the Forward Exchange market. Needless to say, when the prospects of an early devaluation of the franc or of other gold currencies suggested the chance of making a good profit, the unofficial embargo did not prevent a sudden burst of speculative activity.

Until the spring of 1936, London was practically the only market in which the unofficial embargo on speculative Forward Exchange transactions was taken more or less seriously. In May 1936, however, French banks were emphatically requested by their authorities to refrain from dealing in Forward Exchanges, and generally speaking they complied with the request to a considerable degree. Although French banks are not as rule very disciplined, in this instance the steady withdrawals of their deposits made them dependent upon official support to such an extent that they considered it expedient to make an effort to comply with the official wish, even though it had not the force of law. In Switzerland the unofficial embargo on speculative Forward Exchange transactions was reinforced by law in June 1936. Severe penalties were enacted against those who disregarded the restriction.

On the whole, it may be said that defensive intervention on the part of Central Banks during recent years has mainly taken the form of discouraging speculative forward selling, either by making it more expensive for speculators or by dissuading or preventing banks from undertaking such operations on behalf of their clients. For the most part, intervention has been entirely passive and negative, in accordance with the attitude adopted by the predominant majority of Central Banks, which are inspired by a feeling of strong hostility towards Forward Exchange operations and fail to realise the useful purpose that such operations can serve.

CHAPTER XLI

INTERVENTION FOR COMMERCIAL PURPOSES

(1) NEED FOR OFFICIAL FACILITIES

IN any examination of the case for and against intervention it is essential to distinguish between operations undertaken for commercial and for monetary purposes. If this distinction is not drawn, intervention for the benefit of trade might be rejected simply because conservative Central Banks are generally opposed to the use of Forward Exchange for the purposes of their monetary policy. Whether or not they are right in refusing to consider intervention in the Forward Exchange market for monetary purposes, the case for intervention for commercial purposes deserves a hearing.

It is sometimes argued that the necessity for intervention in order to improve existing Forward Exchange facilities is not so strong today as it was during the early years of post-war currency chaos. This may be true in countries where dealing in Foreign Exchanges is free, but it certainly does not hold good in countries where Foreign Exchange operations in general, and Forward Exchange operations in particular, are subject to restrictions. Let us consider, first of all, the case of countries which have no exchange restrictions. Admittedly, Forward Exchange facilities in the leading currencies have improved considerably since the days when Mr. Keynes and the Genoa Conference pleaded for official intervention for commercial purposes. From the commercial point of view, there is now no need whatsoever for any intervention in sterling, dollars, French francs, Swiss francs, Dutch guilders and belgas for periods up to three months. Individual initiative provides all that is required in this respect. It is also possible for merchants to obtain quotations in these currencies for longer periods than three months, up to six months, as a matter of negotiation. Nor is there any difficulty in buying or selling for forward delivery Scandinavian currencies, Portuguese escudos, Canadian dollars, and the major Latin-American and Eastern exchanges.

In all these cases there is no free market proper, but the possibility of obtaining reasonably good quotations as a matter of negotiation removes the necessity for official intervention.

(2) SCOPE OF INTERVENTION IN FREE MARKETS

This does not mean, however, that in countries with a free Foreign Exchange market there is no case for commercial intervention. Indeed, official action may justly be sought on the following grounds :

1. To provide Forward Exchange facilities in currencies which have no adequate forward market in the major Foreign Exchange markets. Such currencies are most Central and Eastern European currencies and the minor Latin-American exchanges, which never had a good forward market in any of the Western European centres or in New York. In addition, a number of exchanges which in the past had good forward markets can no longer be dealt in for forward delivery, owing to exchange restrictions or internal troubles. Such exchanges are the reichsmark, the lira and the peseta.
2. To provide forward facilities for periods exceeding three months. In this respect, facilities even in the major currencies leave much to be desired. Possibly the absence of adequate markets in forward dollars, sterling and francs for periods between three months and six months, and the almost complete absence of any market between six months and twelve months is due to the absence of regular demand for such facilities. But the absence of demand is largely due to the assumption that such facilities are unobtainable. In some instances which have come to my notice, even large firms with an extensive international business have refrained from trying to obtain quotations beyond three months simply because they took it for granted that this was impossible.

(3) SHOULD MONETARY AUTHORITIES ASSUME EXCHANGE RISK ?

The question must be asked, however, whether it is to the advantage of the community as a whole that the Governments or the Central Banks should take the risk involved in undertaking operations either in currencies for which no adequate forward facilities exist or in currencies for which no long-term facilities exist.

The opponents of intervention may reject the idea on the ground of their general dislike of official meddling with private business, or on the ground that the authorities have no right to risk the taxpayers' money. This is not the place to discuss the first objection, which raises the whole broad question of interventionism *v. laissez-faire*. It is, however, necessary to point out that, rightly or wrongly, the present tendency is towards an increasing degree of intervention in the sphere of Foreign Exchange, as in most other economic and financial spheres. This may distress the orthodox school, especially as the Foreign Exchange market has always been considered as being, above all others, the sphere in which individualism should be allowed free play. This is no longer so. The world trend towards intervention has not avoided this happy hunting-ground for individualism, and the authorities nowadays interfere with exchanges in various ways.

The objection to commercial intervention on the ground that it might result in a loss to the taxpayer must be considered from the point of view of whether the risk taken is outweighed by the advantages secured for trade. Admittedly, if the authorities became possessors of substantial amounts of levas, drachmas, pesetas, etc., they might from time to time have to write down losses on those assets, especially as it is only at times when the currencies are expected to depreciate that merchants would sell them to the authorities for forward delivery, so that the dice are distinctly loaded against the authorities. In fact, we saw in Chapter XXXIX that the experience of the Reichsbank in the sphere of commercial intervention after the war was anything but favourable. Notwithstanding this, in given circumstances the provision of such facilities may appear a desirable way of stimulating export trade. To that end the Governments of most countries are prepared to impose sacrifices upon the taxpayers by granting direct or indirect export subsidies or by assuming part of the risk by means of export credit insurance. In Great Britain the idea of export subsidies has not so far been adopted, but since the war the Government has undertaken to guarantee loans and credits to finance exports; to insure the risk of default on the part of foreign debtors; and, more recently, to guarantee the transfer into sterling of the amount paid by foreign debtors. All these various forms of assistance have at times resulted in losses, but it was worth while to bear them for the sake of the stimulus to export trade.

(4) OPERATIONS IN "EXOTIC" CURRENCIES FOR THE BENEFIT OF EXPORTERS AND IMPORTERS

The principle that the Government should make sacrifices and take risks for the sake of stimulating exports is well established. The only question is whether the taking of risks by buying "exotic" currencies for forward delivery is calculated to afford as great a benefit to trade as that derived from these other methods of Government assistance. The answer varies from country to country, according to the degree of the risk and the extent of the commercial interests involved. It should be examined carefully in each individual instance, and the rules adopted should be changed as frequently as changes in the situation dictate.

Let us now consider the case for and against selling exotic currencies forward to meet the requirements of importers. In most countries, importers are treated as step-children in the community of those engaged in foreign trade; yet, in order to be able to export, it is necessary to import. Occasions may arise in which considerable savings may be effected in the acquisition of raw material if the importers are in a position to meet the foreign exporters' insistence on the price being fixed in his currency. In any case, the sale of exotic currencies for forward delivery enables the authorities to unload the currencies bought from exporters, and it is desirable to create a market which operates in both ways. In some instances, official selling for forward delivery in excess of the amount bought forward involves a risk, owing to the possibility of an appreciation of the currency concerned. Here again, as in the case of operations for the benefit of exporters, the attitude of the authorities should be determined according to circumstances.

(5) FORWARD FACILITIES FOR LONG PERIODS

In the purchase and sale of major currencies for forward delivery for long periods, the element of risk is not nearly so great as in official operations in exotic currencies. In normal conditions, the authorities would be in a position to cover their commitments in the spot market. In any case, once the business community realised that facilities for covering the exchange risk for longer periods were obtainable, a large number of firms would avail themselves of them, and in the two or three principal currencies, at any

rate, a wide market would undoubtedly develop in the long Forward Exchanges. Once the basis for such a market had been created by official intervention, speculation and arbitrage would also take a hand, and before very long the necessity for official intervention for this purpose would cease. At present, forward facilities are not available for long periods simply because none of the leading banks is prepared to depart from its existing practice. Bank *A* is unwilling to do it because Bank *B* is not doing it; Bank *B* refuses to consider it because Bank *C* will not; and Bank *C* will have nothing to do with it because Bank *A* will not. The moment official operations were undertaken, the ice would be broken and Banks *A*, *B* and *C* would compete with one another for the business.

In normal conditions, the authorities' task of providing long Forward Exchange facilities would thus be very easy, so far as the major currencies are concerned. In abnormal conditions, however, complications might arise. The authorities would no longer be in a position to cover their forward commitments in the spot market, because they would consider it inexpedient to keep large balances in the currencies concerned, or because certain countries might refuse to grant them borrowing facilities to enable them to cover their forward sales for long periods. In given circumstances, the authorities would even be reluctant to ask for such borrowing facilities, knowing well that the granting of them would be contrary to the monetary policy of the countries concerned. The same situation would also arise with exotic currencies in more or less normal conditions. Thus, exactly when the existence of official long-term facilities would be most advantageous, their provision would entail an exceptionally high degree of risk. For this reason, the rule should be the same as that for forward dealing in exotic currencies in general, viz. that dealings should not be undertaken as a matter of routine, but individual instances should be considered on their merits.

(6) INTERVENTION BY COUNTRIES WITH EXCHANGE RESTRICTIONS

The case in favour of intervention for commercial purposes is much stronger in countries with exchange restrictions than in countries with a free market. Since the Governments in the restricting countries have deliberately destroyed the existing facilities for commercial forward operations, it is plainly their duty to safeguard the interests of merchants against the risk of losses on

exchange fluctuations. Needless to say, they are concerned only with the interests of their own nationals. Foreign merchants dealing with countries with exchange restrictions have to choose between three alternatives—insisting on quoting prices in a free currency, covering the exchange risk as best they can in such forward markets as may survive abroad in the restricted currencies, or taking the exchange risk. Nationals of the countries with exchange restrictions, in the absence of official facilities, must choose between insisting on quoting prices in their own currency or taking the exchange risk. In many instances, their Governments have provided forward facilities for exporters, but importers are often left to carry their risks themselves. Even when foreign currencies are allotted to them for delivery at some future date, usually they are made to pay the official rate prevailing on the date of delivery.

By circumventing the exchange restrictions, importers might get over their difficulty either through buying the spot currency concerned or through hedging in some way. Black Bourses that usually exist in countries with exchange restrictions are of no assistance for Forward Exchange operations, for all transactions in such markets are for immediate delivery. In case of exchange clearing arrangements, the exchange rate is often fixed for a definite period, and this obviates the necessity for covering the exchange risk. Very often, however, the clearing agreements stipulate the possibility of changing the exchange rate, in which case it is essential for merchants to cover the exchange risk. In the majority of instances the nationals of countries with exchange restrictions must bear the exchange risk unless their Governments come to their rescue.

(7) MORAL AND PRACTICAL CONSIDERATIONS

While the authorities of countries with free Foreign Exchange markets are entitled to decline to assist trade by providing forward facilities, in countries with exchange restrictions the Governments are under a strong moral obligation to provide such facilities for genuine commercial requirements, irrespective of the risk involved. As a rule their moral obligation is by no means in conflict with their practical interests, for the encouragement of export trade and the provision of necessary imports at a relatively low cost is of vital importance to countries with a weak currency and with a controlled trade and exchange.

As a general rule, it may be said that if it is inevitable that

someone should take the exchange risk, the authorities are in a better position to take it than individual merchants. In a large number of countries the Governments are prepared to guarantee exporters against loss through default of their foreign debtors. Surely a guarantee against exchange risk is more evidently the function of Governments than is the assumption of credit risk. After all, it is the duty of merchants to keep themselves informed as far as possible about the standing of their customers abroad, and if they make a mistake they should take the consequences. They are better equipped to follow the position of a relatively small number of firms than the authorities are to keep an eye on a large number of firms. On the other hand, the authorities are in a better position to judge the exchange outlook, while to the merchant the risk entailed in exchange fluctuations is a case of *force majeure*, which calls for official safeguards against it.

CHAPTER XLII

OFFICIAL SUPPORT OF FORWARD RATES

(1) THREE OBJECTS OF FORWARD EXCHANGE OPERATIONS FOR MONETARY POLICY

(OFFICIAL Forward Exchange operations for considerations of monetary policy may be undertaken for three different purposes:— (1) to defend the currency against an acute attack, (2) to attract foreign capital to the country, and (3) to provide an alternative to regulating the international movement of funds by means of the Bank rate and credit restrictions.) It is at times difficult to draw a line between these objects, for after all, whenever a Central Bank resorts to the manipulation of the forward rate in order to avoid raising the Bank rate, its object is to defend the currency by means of attracting or retaining funds.

The difference between the first and second kinds of intervention is that, in the event of acute attack, the object of supporting the forward rate is not to attempt to attract foreign funds by manipulating the forward rate; the object of the authorities in such a case is merely to discourage speculative selling, national or foreign. The difference between the first and third kinds of intervention is that defensive support through Forward Exchange operations is applied at times of sweeping pressure, while the subtle devices of systematic manipulation of the forward rate on the pattern of the Austro-Hungarian Bank's Devisen-policy are only applicable during reasonably stable conditions. The difference between the second and third kinds of intervention is that in the one instance the attraction of foreign capital is the sole object, while in the other instance the authorities aim at the systematic regulation of the money and Foreign Exchange markets by influencing the influx and efflux of foreign funds through the manipulation of the forward rates, as an alternative to Bank rate policy. In the present chapter we are concerned only with intervention for the sake of defending an exchange against an acute attack. We have

already examined, in Chapter XL, the various instances of such intervention in post-war experience. We shall now attempt to summarise the arguments for and against this type of intervention.

(2) ARGUMENTS FOR AND AGAINST SUPPORTING THE FORWARD EXCHANGE UNDER THE GOLD STANDARD

When seeking to counter an acute attack or persistent pressure, should the authorities confine their support to the spot exchange, or should they extend it to the Forward Exchange? This question had already risen during the period of stability. Whenever the forward quotation of a gold currency depreciated beyond gold export point, it was urged that the monetary authorities should step in in order to bring the Forward Exchange back to gold point. The following were the main arguments in support of this demand :

1. The depreciation of the Forward Exchange below gold export point is apt to create a bad impression, and to undermine confidence in the stability of the currency concerned.
2. If the Forward Exchange depreciates, not only beneath gold point, but also beneath its Interest Parities, it leads to an outflow of funds through covered arbitrage, and results in a pressure on the spot exchange, leading to an outflow of gold.
3. The support of the Forward Exchange does not entail any immediate loss of gold or foreign exchange stock. By the time the Forward Exchanges sold by the authorities are due for delivery, conceivably the tide may have turned, in which case it may be possible to cover in the market instead of parting with gold and foreign exchange.
4. The gesture implied in the support of the Forward Exchange is calculated to create a good impression, as it indicates the confidence of the monetary authorities in the future prospects of their currency.
5. Without necessarily supporting the forward rates at gold point, the authorities can intervene in order to squeeze speculators when there is evidence of a large bear position.

The arguments against supporting the Forward Exchange under a gold standard may be summarised as follows :

1. The depreciation of the Forward Exchange below gold point is a sign of disequilibrium : the authorities, instead of fighting symptoms, should get at the root of the trouble.
2. While it is the duty of the Central Bank to maintain the

present value of the currency at or over gold export point, it is under no obligation whatever to support its future value.

3. By selling Forward Exchanges, Central Banks would mortgage their gold and Foreign Exchange reserves ; should they not indicate the extent to which this is done, they would be guilty of publishing misleading returns ; yet if they do indicate the extent to which the gold and Foreign Exchange reserves are mortgaged, the psychological effect is the same as if an equal amount had actually been spent on supporting the spot exchange.
4. If the Central Bank is not prepared to support the exchange, whether through spot or forward transactions, beyond the actual amount of its gold and Foreign Exchange reserves, it is advisable to conserve the resources for the purpose of supporting the spot exchange alone.
5. A depreciation of the forward rate below gold export point inflicts a penalty upon those who distrust the stability of the national currency, and acts as a deterrent to forward sales. Support of forward rates at above their " natural " level would reduce the cost of speculating against the national currency, and would stimulate the bear campaign.

(3) ANSWER TO CRITICISMS

There can be no doubt that the depreciation of the Forward Exchange of a gold currency beneath gold export point indicates distrust in the stability of the currency, and that is apt to create an unfavourable impression. If the distrust is justified by fundamental disequilibrium, or by an inherent weakness of the technical position, it would be idle to try to eliminate it by fighting the symptom alone. On the other hand, if the depreciation of the Forward Exchange is due to what is evidently a passing speculative attack, then it might be helpful to support the Forward Exchange. Even though that might reduce the cost of speculation, this disadvantage might be more than offset by the elimination of the adverse symptom, for it encourages the flight of capital.

It is unquestionably true, though far from being generally realised, that a pressure on the Forward Exchange translates itself into a pressure on the spot exchange by making it profitable to transfer funds abroad for interest arbitrage. To prevent this from happening is really equivalent to direct support for the spot ex-

change itself. If, instead of selling £1,000,000 of gold, a Central Bank relieves potential pressure by selling £1,000,000 of Forward Exchanges, it is distinctly better off, as for three months it will have the use of the reserve, and during those three months it stands a chance of covering. Even if the opportunity for covering does not arise by the time the forward contracts mature at the end of three months, the Central Bank will be no worse off than it would have been if it had sold spot exchange (or gold) instead of Forward Exchange.

(4) MORAL CONSIDERATIONS

In my opinion, there is no need whatever for a Central Bank to reveal the extent to which its gold and foreign exchange reserve is likely to diminish in three months' time through the execution of forward contracts. There is barely a single Central Bank which, at one time or another in its recent history, has not used gold earmarked as specific security as part of its general gold reserve, without giving any indication to this effect. Compared with this, the technical irregularity of not disclosing the existence of forward commitments is negligible. We have dealt with this point in some detail in Chapter XXXVII in connection with the swap operations of the Austrian National Bank, and there is nothing to add to the conclusions we reached in that connection. In any case, the dilemma of "should a Central Banker tell?" can be avoided if it is not the Central Bank but the Exchange Equalisation Account that supports the forward rate.

The idea of penalising those who dare to distrust the currency may appeal to those who, like M. Poincaré, are primarily influenced in their attitude towards monetary policy by their vindictive nature. It should not, however, carry any weight in the balance of arguments for and against intervention. There is, of course, no hard and fast rule that if the principle of support is admitted the forward rate should be kept pegged at gold export point. Indeed, if it is allowed temporarily to depreciate below gold export point, this increases the scope for bear squeezing, which under the gold standard is normally rather narrow. Admittedly, however, bear squeezing can also be carried out to some degree through operations in the spot market.¹

The argument that it is the duty of the Central Bank to defend

¹ For the respective merits of bear squeezing in the spot and in the forward market, the reader is referred back to Chapter XL, p. 369.

the present value of the currency but not its future value—an argument that prevailed against the suggestion that the forward rupee should be supported in 1930—carries no conviction. The question is not what is the duty of the authorities, but what is the most advantageous action from the point of view of the efficiency of the defence of their currency. It might as well be argued that, since it is not the duty of the Central Bank to maintain forward rates within the gold points, a depreciation of the forward quotation of the currency beneath gold point is not detrimental to their prestige. In practice, such a depreciation would be regarded as a sign of weakness and distrust and as a forerunner of the depreciation of the spot exchange.

(5) THE CASE FOR SUPPORT IN ABNORMAL CONDITIONS

While in 1931 the British authorities made an attempt to keep forward sterling in the vicinity of gold point, this is practically an isolated instance. Ever since, countries with gold currencies have frequently allowed forward rates to depreciate far beyond gold point in relation to other gold currencies. Thus, forward francs were allowed to depreciate in relation to dollars to a discount of anything up to 10 per cent below gold export point. The arguments for and against such a policy are materially different from those put forward during normal conditions. The question assumes much greater immediate importance precisely because discrepancies are so much wider and entail so much more far-reaching consequences. While in normal conditions the debate centred upon the question of depreciation of forward rates to a fraction of 1 per cent below gold export point, during 1935-36 depreciations of 5 to 10 per cent below gold point were an everyday occurrence.

If it was true that before 1931 the depreciation of forward sterling or reichsmarks below gold export point created an unfavourable impression, how much more was this true during 1935-36 regarding the vastly greater depreciation of forward francs, guilders and Swiss francs! What is more, during the period of stability, forward rates seldom depreciated beneath their Interest Parities simultaneously with their depreciation beneath gold points, while during 1935-36 they also depreciated beneath their Interest Parities. Consequently interest arbitrage transfers of funds from the centres concerned assumed unprecedented dimensions. This again resulted in a pressure on the spot exchange, and was to a very large degree responsible for the loss of gold by the countries of the Gold Bloc.

Gold losses as a result of flight of capital received much publicity, yet losses caused by interest arbitrage were usually overlooked by the commentators on current events.

The importance of obviating the demoralising effect of a heavy depreciation of the Forward Exchange beneath gold point, as well as the effect of such depreciation on the spot rate and on gold movements, is greatly increased in abnormal conditions. By selling Foreign Exchanges for forward delivery on a large scale, the authorities are in a position to prevent such depreciation. The question is, should intervention assume the form of selling Forward Exchanges outright, or selling Forward Exchanges against spot? The second solution would, of course, result in the conversion of part of the gold stock into Foreign Exchanges held under swap contracts. In so far as this fact was disclosed in Bank returns it might give rise to distrust. From this point of view, therefore, it is preferable to sell Forward Exchanges outright, though in any case, if it is not Central Banks but Exchange Equalisation Accounts that operate, the question of publicity does not arise. In so far as there is evidence that the authorities are selling Forward Exchanges outright, their operations might be interpreted as an indication that they trust the stability of their currency, but no undue importance should be attached to this argument.

(6) THE CASE AGAINST SUPPORT IN ABNORMAL CONDITIONS

The main argument against supporting the Forward Exchange in abnormal conditions is that it encourages speculative selling pressure. In the absence of official intervention, the widening of the forward discount on the national currency tends to check speculative selling by making it too expensive. By reducing the discount—and, still more, by putting the forward rate at a premium, which has been suggested—the authorities would encourage speculative selling to a high degree. Thus, on the one hand they would gain by reducing the pressure on the spot exchange due to transfer of funds through covered arbitrage, while on the other hand they would lose by increasing the pressure on the Forward Exchange through stimulating outright speculative forward sales.

If the result of their intervention was simply a transfer of selling pressure from the spot to the Forward Exchange, there would be everything to be said in its favour. There is reason to assume, however, that in the abnormal conditions the increase of pressure

on the Forward Exchange would be many times larger than the decline of pressure on the spot exchange. After all, the resources available for interest arbitrage are not unlimited, while the sky is the limit to the volume of speculative forward selling. No matter how high the yield on the swap may be, the outflow of funds through interest arbitrage is bound to come to a halt, owing to the absence of unlimited resources for the purpose. On the other hand, if the risk and expense of speculation are reduced to a negligible figure, the volume of speculative selling may be multiplied.

Admittedly, from this point of view the difference between normal and abnormal conditions is one of degree, but the difference is so great that it almost amounts to a difference of kind. Before 1931 the artificial appreciation of an exchange by $\frac{1}{2}$ per cent approximate extent—which is about the degree of interference which would have been contemplated then—would not have made much difference to the volume of forward selling. In 1935 and 1936, however, it would have made all the difference if speculators, instead of having to pay at the rate of 60 per cent per annum, had been able to go short at a cost of 3 per cent per annum. Nobody but the boldest gamblers would have opened positions at 60 per cent per annum, unless the devaluation of gold currencies appeared to be imminent. On the other hand, had the cost of forward selling been kept down, everybody would have been keen to take a hand in speculating against the Gold Bloc currencies.

(7) EFFECT ON GOLD RESERVE

It is true that official selling of Forward Exchanges would not entail an immediate reduction of the gold reserve. Indeed, since the majority of buyers would never be in a position to insist on delivery, the chances are that the Central Bank would never suffer the loss of more than a small part of the exchanges sold forward. Notwithstanding this, no Central Bank would ever be so bold as to sell for forward delivery a larger amount of exchanges than the stock it possessed, or the amount it could acquire through selling its gold reserve. Thus the chances are that a point would be reached at which the authorities would have to decide to abandon further support of the exchange, having exhausted all their reserve by spot and forward sales. If they possess a substantial gold reserve, the authorities may face with comparative equanimity a pressure due to interest arbitrage, made profitable by the wide discount on the

Forward Exchange. On the other hand, the depletion of their resources through their forward operations, encouraged by a reduction of the discount on the forward quotation of the national currency, might unnerve the authorities. Admittedly, the absence of a big discount on the Forward Exchange might to some degree reduce the volume of the flight of capital, but after all, the forward discount is merely a barometer showing the degree of distrust in the currency. The distrust would exist, even if the barometer were put out of action by official intervention.

In theory, it would be reasonably safe for a Central Bank to sell Forward Exchanges in amounts exceeding its gold stock. Let us take the example of France during 1935 and 1936. Had the Bank of France sold Forward Exchange to the amount of, say, 60 milliard francs at the time when its gold stock was down at 55 milliard francs, there would have been no real danger of its being caught short and having to cover at all costs in the market in order to deliver the deficiency of 5 milliards, for in order to demand the delivery of 60 milliard francs' worth of Foreign Exchange, the buyers would have to possess francs to that amount, and the Bank of France would have been in a position to restrict the volume of francs available for that purpose. There would have been a real, if remote, risk, however, that the francs might be supplied to speculators through the flight of capital from France. It is doubtful if any Central Bank would ever expose itself to such a risk, even though technically there is no reason why it should not sell Forward Exchange in excess of the amount of its gold reserve.

The increase of speculative selling of the national currency through a reduction of the forward discount could be kept down by the adoption of an unofficial embargo on speculative Forward Exchange transactions. In such circumstances an unofficial embargo might serve a distinctly useful purpose. Even with such an embargo, however, it might be impossible to prevent a large increase in the pressure on the Forward Exchange in consequence of the artificial reduction of the discount. For, as Mr. van Sandick rightly points out in his memorandum to the International Chamber of Commerce, an embargo on speculative Forward Exchange operations does not prevent the development of highly one-sided tendencies in commercial Forward Exchange operations. The reduction of the discount to a very low figure would tend to stimulate this tendency towards one-sidedness. If in 1936 it had been possible to cover forward francs at a cost of 3 per cent per annum, every French merchant

having to make payment in foreign currencies at a future date, and every foreign merchant having to receive francs at a future date, would unhesitatingly have covered the exchange risk. As it was, the high cost of covering deterred many of them from doing so. On the other hand, while under the conditions which existed in 1935-36 many French exporters sold their proceeds forward and many foreign importers from France bought francs forward in order to benefit by the large discount, if the discount had been reduced to a negligible figure this buying pressure would have ceased almost completely. What is more, the reduction of the discount on forward francs would have led to the universal adoption of the practice of hedging against the risk of a depreciation of the franc. Consequently, the French authorities would have had to take up formidable amounts of forward francs in spite of any restrictions imposed upon speculative forward operations. All the more so since these restrictions can never be watertight. But even if the monetary authorities are not prepared to commit themselves to a systematic and persistent support of the forward rate at pegged rates, they could and should intervene from time to time whenever this is considered expedient for tactical purposes. It is to the interest of Central Banks and Exchange Equalisation Accounts to act unexpectedly whenever possible. By making a hard and fast rule never to operate in Forward Exchanges, they deprive themselves of one of the means to that end.

(8) SUPPORT INEFFECTIVE IN CASE OF FUNDAMENTAL DISEQUILIBRIUM

It may be concluded that at times of sweeping pressure due to fundamental disequilibrium, systematic support of the forward rate would prove to be as ineffective a weapon as the increase of the Bank rate. If a currency is grossly overvalued, the application of technical devices, orthodox or unorthodox, makes but little difference to its ultimate fate. In such circumstances, to concentrate upon the symptom instead of tackling the main problem is simply to mistake the shadow for the substance.

Above all, it cannot be emphasised sufficiently that during periods of recurrent distrust the fixing of the forward rate at a figure at which it is overvalued compared with its Interest Parities would not lead to an influx of foreign funds, any more than the increase of the Bank rate would. It is true that, in theory, short-

term funds invested by covered arbitrage in the country concerned are safe against any contingencies. In practice, however, there is always the risk of exchange restrictions, a risk which is very prevalent in countries whose overvalued currencies are subject to heavy and persistent attacks. Thus, while it is true that a high Bank rate fails to attract foreign funds if there is a risk of exchange depreciation and if the cost of covering this risk is too high, it is equally true that a favourable forward rate would fail to attract foreign funds if there appears to be great risk of exchange restrictions, or major financial or political difficulties which might result from the overvaluation of the currency.

(9) SUPPORT OF FORWARD EXCHANGE IN CASE OF
PAPER CURRENCIES

Hitherto we have been dealing with the question of official support for Forward Exchanges in normal and abnormal conditions under the gold standard. The next question is how the arguments for and against official support are affected under a system of inconvertible currencies. Doubtless the case for systematic support is weaker when the authorities are not under any obligation to support even the spot exchange at a definite level, let alone the Forward Exchange. If the inconvertible paper currencies are maintained more or less stable by means of Exchange Equalisation Account operations, then the arguments put forward for and against intervention in the case of gold currencies hold good without any material difference. If, however, the paper currencies are allowed more or less to find their own level, then the question of gold losses brought about by arbitrage operations does not arise. A wide discount on the Forward Exchange would encourage such operations, and would thus lead to the depreciation of the spot exchange. It would not, however, entail a decline of the gold resources. The strength of the argument in favour of intervention in such circumstances will be determined by the official attitude towards depreciation of the spot exchange—whether it is considered a blessing in disguise or a major disaster.

CHAPTER XLIII

FORWARD RATE POLICY *v.* BANK RATE POLICY

(1) THE TWILIGHT OF BANK RATE WORSHIP

IN the abnormal conditions prevailing at the time of writing this book, the question whether the monetary authorities should or should not support the Forward Exchange against speculative attack is of great immediate importance. On a longer view, however, the broader question whether in normal conditions the manipulation of forward rates should form part of the authorities' regular practice is of far greater significance. Such manipulations may aim simply at attracting foreign funds, or they may have the much broader object of providing an alternative to Bank rate changes as a means for regulating the international movements of funds. We have discussed the question of short-term borrowing through official Forward Exchange operations in Chapter XXXVII, dealing with the Forward Exchange policy pursued by the Austrian National Bank. I have very little to add to the remarks I made on the subject in commenting upon that policy. On the other hand, even though the forward rate policy aiming at the systematic regulation of the international flow of funds has been discussed in some detail, in chapters especially XXXVI and XXXVIII, dealing with the Forward Exchange operations of the Austro-Hungarian Bank and the Bank of France, there remain many points which deserve detailed examination.

The study of forward rate policy as a possible alternative to Bank rate policy is one of the most important connecting links between the special theoretico-technical study of Forward Exchange and the general study of monetary policy. A suggestion that there can be an alternative to Bank rate policy is no longer considered a sacrilege. For, the cult of Bank rate worship, which originated during the nineteenth century and attained the zenith of its popularity after the war, is definitely on the decline. The conception that the course of the world can and should be governed by means

of Bank rate changes has been discredited to a large degree, partly owing to experience which has cast doubt upon the omnipotence of the Bank rate, and partly as a result of the spirited attacks delivered against it by Mr. Keynes and others.

Whether or not it is possible to perform by means of the Bank rate all the miracles which the acolytes of Bank rate worship claim to be able to perform, grave doubts have arisen upon whether it is desirable to make such extensive use of the Bank rate. According to the orthodox school, the Bank rate should perform the dual function of regulating internal trade as well as the international movement of funds. During recent years, however, it has been realised to an increasing degree that these two functions are often incompatible. Situations often arise in which a high Bank rate is necessary from the point of view of the international movement of funds while it is unnecessary and harmful from the point of view of internal trade. Similarly, situations often arise in which a low Bank rate may be desirable from the point of view of the international movement of funds while it is undesirable from the point of view of internal trade.

(2) INCOMPATIBILITY OF DUAL FUNCTIONS OF BANK RATE

Whenever the dual functions of the Bank rate come into conflict with each other, the monetary authorities are confronted with the dilemma of deciding whether to use the Bank rate in accordance with internal or with international requirements. If, for the sake of encouraging home trade, they maintain the Bank rate at a level which is too low from the point of view of the international movement of funds, the result is a steady pressure on the currency. If, in order to cope with this pressure, the Bank rate is raised, then home trade is bound to suffer. This is what actually happened in Great Britain in 1929. Conversely, a situation may arise in which internal considerations require a high Bank rate, while international considerations require a low Bank rate. If on such occasions the Bank rate is maintained at a low level in order to prevent an unwanted influx of funds, it may lead to unwanted boom-like conditions in internal trade and finance. If, in consequence of this internal boom, the Bank rate is raised in accordance with the requirements of internal conditions, this will lead to an unwanted influx of funds calculated to stimulate those very boom-like conditions for the sake of which the Bank rate

was raised. This is what actually happened in the United States in 1927-29.

After the war various Central Banks endeavoured to reconcile the international and the internal requirements of their Bank rate policy by the use of open-market operations. By such means they tried to offset the effect upon internal trade of an unwanted influx or efflux of gold. Open-market operations may offset the effect on the volume of credit of an influx or efflux of gold. They are bound, however, to affect the technical position especially if a centre with an inadequate gold stock loses gold. Moreover, they do not eliminate the psychological effect of an influx or efflux of gold. They are therefore capable of reconciling conflicting internal and international requirements of Bank rate policy to a limited extent only.

(3) MR. KEYNES'S PROPOSAL

Evidently, on many occasions it is impossible to find a compromise between the conflicting international and internal requirements. It is therefore impossible to escape the conclusion that the Bank rate is not suitable for fulfilling the dual function for which it has been used. The disadvantages of forcing it to fulfil both of these often conflicting functions are so obvious that it is really amazing how little attention has so far been paid to the question of whether it would not be possible to relieve the Bank rate of one of its functions. Yet as long ago as 1922 Mr. Keynes put forward a scheme which claims to provide the solution required. According to his scheme, the internal and international functions of the Bank rate should be divorced from each other; the Bank rate should be used solely for the purpose of regulating internal trade. Its international functions should be replaced by a policy of manipulating Forward Exchange rates for the purpose of regulating the international movement of funds. These proposals, however, met with very little response, either among the public, who simply could not understand their technicality, or among bankers, statesmen and economists, whose understanding of the technique or theory of Forward Exchange left also much to be desired. We have seen in Chapter XXXV that on the few occasions when Mr. Keynes's proposal has come up for consideration by authoritative bodies, the authorities concerned have thought it safer to take the line of least resistance by leaving it alone.

On the other hand, we showed in Chapters XXXVI, XXXVII

and XXXVIII that in practice the monetary authorities of several countries have at times adopted devices which sought to supplement the international functions of their Bank rate policy by a policy of manipulating forward rates. It is not known whether in any of these instances the Central Banks concerned consciously followed Mr. Keynes's proposal. The chances are that, in the course of dealing with the practical problems they had to face, they simply stumbled upon the very same solution which they and their colleagues had previously or subsequently rejected for lack of understanding of its theoretical implications.

(4) THE IDEAL SOLUTION

In the majority of cases in which Central Banks have sought to influence the international movement of funds by means of the forward rate instead of by the Bank rate, their object has been essentially limited and one-sided. Either they wanted simply to encourage the influx of foreign capital—this was done by the Austrian National Bank and other Central Banks of the Succession States, the Banco do Brasil, etc.—or they wanted to provoke an outflow of funds—this was done by the Bank of France. So far as it is possible to ascertain, there is only one instance—that of the Austro-Hungarian Bank before the war—of the systematic pursuance of a forward rate policy, as an alternative to Bank rate changes, for the regulation of the inflow as well as the outflow of international balances over a long period.

So far as is known, the majority of Central Banks have never attempted to substitute a forward rate policy for an "external" Bank rate policy. And yet this was the obvious solution, for by means of it they could have had the best of both worlds. Whenever the internal trade situation necessitated a low Bank rate, while the trend of the international movement of funds necessitated a high Bank rate, the difficulty could have been overcome by causing the forward rates of the national currency to appreciate above their Interest Parities. Such an overvaluation of forward rates is just as effective in attracting or retaining foreign balances as is a higher Bank rate. After all, it makes no difference to those engaged in interest arbitrage whether they obtain their higher yield through higher interest rates or through the higher profit on the swap. Instead of needlessly penalising home trade, or of allowing, for the sake of home trade, a deterioration of the technical monetary

position, the monetary authorities, by applying this device, could solve the difficult problem of eating their cake and keeping it. Again, if the internal trade situation or Stock Exchange activity threatened to develop into a speculative boom or unwanted inflationary expansion, the authorities could raise the Bank rate at home without thereby provoking an unwanted influx of foreign funds and gold. All they have to do in such a case is to cause the forward rates of the national currency to depreciate until they are undervalued compared with their Interest Parities. The result is a check to the influx or a stimulus to the efflux of funds.

(5) AN AID TO BANK RATE POLICY

By adopting the forward rate policy indicated above, Central Banks would be able to make their Bank rate policy dependent solely upon internal considerations. The Bank rate would be relieved of the often impossible task of satisfying both internal and international requirements. And that is not all. The forward rate policy would be able to support the Bank rate policy even in the internal sphere. If the trade of a country is depressed, the authorities are anxious to maintain interest rates at a low level in order to stimulate trade by means of cheap and plentiful credit. In the ordinary course this would tend to lead to an outflow of foreign capital and to an outflow of gold. Should this movement assume considerable dimensions, it would materially reduce the volume of credit available, and might even make it difficult to keep money cheap. Indeed, even though the authorities were determined not to raise the Bank rate, and were prepared to witness an outflow of gold, developments in the internal money market, brought about by the loss of gold, might eventually force their hands, for there are technical limits to the extent of open market operations. If, on the other hand, they should cause the forward rates of the national currency to appreciate above their Interest Parities, the result would be an influx of funds, or at any rate a cessation of the efflux, notwithstanding the low Bank rate. Consequently, the low Bank rate would be able to produce its full effect upon trade. And in cases where the overvaluation of the Forward Exchange provokes an actual influx, it definitely reinforces the efforts of the authorities to make money cheap and plentiful.

Conversely, in the absence of a forward rate policy, official efforts to keep money dear and scarce in order to check an in-

flationary expansion or a speculative boom are apt to be frustrated by the influx of funds provoked by the high Bank rate. If, however, the Central Bank causes the forward rate to depreciate beneath its Interest Parities, it is able to stave off the unwanted influx, so that the dear money policy is not disturbed by the international effect of the high Bank rate. Indeed, if the deliberate depreciation of the Forward Exchange is carried far enough, it leads to an outflow of balances and gold, which would actually support the Bank rate policy in its task of making money dear and scarce.

(6) DISEQUILIBRIUM OF PRICES AND FORWARD RATE POLICY

The orthodox school would doubtless object to the proposed forward rate policy on the grounds that it would tend to perpetuate the disequilibrium between price levels in various countries. It is often argued that if trade is more depressed in one country than in another, it is because its price level is out of equilibrium. On this assumption it is urged that the remedy is not a low Bank rate which might cause a rise or prevent a fall in prices, but a high Bank rate, which would cause a fall in prices and, by improving the trade balance, would thus tend to provoke a buying pressure on the exchange. This school of thought claims that it would be unsound policy to try to bolster up the exchange by means of attracting or retaining foreign balances through offering them an artificial profit on the swap. According to this orthodox conception, it is the sacred duty of the monetary authorities of every country to restore equilibrium by means of a high Bank rate and credit restrictions, even though these measures may destroy trade and "temporarily" aggravate an existing depression.

It is necessary to bear in mind, however, that trade depression in a country may be due to a variety of causes other than disequilibrium between its commodity prices and the world level. It may be due to changes in the trend of national or international consumption or production, which may cause unemployment to increase even when the price level is not out of equilibrium with the world level. If, for instance, the world consumption of coal should decline as a result of the substitution of oil for coal, then a country whose trade largely depends upon the full employment of its coal industry is likely to suffer trade depression even though its prices are not higher than those of other countries. Or if most countries create textile industries of their own, and protect them

with prohibitive tariffs, then a country whose trade largely depends on textile exports is likely to undergo a depression even if its general price level is not unduly high. The orthodox idea in such cases is that the losses of the coal or textile trades should be made good by the gains of other trades, and that to make this possible the price level of the country concerned should be forced down by means of a high Bank rate. This theory is becoming, however, discredited to an increasing degree. It stands to reason that, in the situations described above, it is desirable to assist the adjustment of trade to the changed requirements by keeping money reasonably cheap and plentiful. This cannot be achieved without causing a depletion of the gold reserve unless the Central Bank is prepared to use the device of forward rate policy.

(7) HIGH BANK RATE NOT INEVITABLE

In any case, even if the depression is due to the relatively high level of prices compared with the world level, that does not necessarily justify a policy of high Bank rate. If the disequilibrium is substantial, then its readjustment by a high Bank rate would require such a degree of deflation that, even in the opinion of such extreme deflationists as Professor Lionel Robbins, the game is not worth the candle. If, on the other hand, the disequilibrium is moderate, then it may well be asked whether it is not wiser to let it remain, and to neutralise its effect by means of a judicious forward rate policy rather than to fight it by means of a relentless Bank rate policy. There is no absolute necessity for the price level in every country to be at equilibrium with the world level. Indeed, such a thing is impossible. Even before the war, when the world was supposed to be enjoying a high degree of equilibrium, there were very marked discrepancies between price levels in various countries. It is advisable to discard dogmatism on this matter.

All this, however, is a matter of opinion, and detailed discussion of the broader issue would be outside the scope of this book. It is necessary, however, to emphasise the fact that the monetary authorities of a country, should they be inclined to adopt the unorthodox view, would find the device of forward rate policy very useful. If they are unaware of the existence of such a device, they might be reluctantly compelled by the pressure on their gold stock to adopt a high Bank rate policy even though they were of opinion that this was not in the best interests of the country. Against their

better judgment, they would have to restore equilibrium by destroying trade.

It is high time that all monetary authorities realised that there is an alternative method at their disposal. Whether they used the alternative would naturally depend upon whether they are progressive or orthodox. But it is essential that those who are inclined to discard orthodox dogmatism should realise that the remedy lies in their hands.

(8) TRADE DEFICIT AND FORWARD RATE POLICY

In many instances the Bank rate is raised, temporarily or otherwise, not in order to restore the equilibrium of national prices with the world price level, but in order to neutralise the effect of an adverse trade balance upon the gold stock. Even if the adverse balance is obviously seasonal only, its effect on the gold reserve is offset with the aid of a higher Bank rate. This end can, however, be achieved also by means of the forward rate policy, without inflicting upon trade the disadvantages of a fluctuating Bank rate. To fill the gap created by an import surplus, foreign funds can be attracted either by means of high interest rates or by means of a profit on the swap. According to the orthodox school, it would be highly unsound to bolster up the exchange by attracting foreign short-term funds through such artificial methods. Yet from this point of view, there is in reality absolutely nothing to choose between a Bank rate policy and forward rate policy. Both aim at bolstering up the exchange by attracting foreign balances. In both cases those balances are liable to withdrawal at short notice, and their presence may render the currency vulnerable.

Why it should be considered sound to bring about this situation by a high Bank rate, and unsound to bring it about by means of a high premium on the Forward Exchange, is difficult to understand. If the trade deficit is temporary, then there can be no harm if its effect upon the exchange is offset by attracting foreign balances, whether through a high Bank rate or a favourable swap rate. If the trade deficit is of a lasting nature, then it is desirable that it should be covered by means of long-term borrowing abroad. To cover it by means of short-term borrowing, and thus to increase the international floating indebtedness to an undesirable degree, is "unsound", no matter what the method by which the foreign balances are attracted.

It may be argued that a raising of the Bank rate would stimulate the issue of long-term loans abroad, and would thus accelerate the consolidation of the floating indebtedness. This argument may carry weight if borrowing abroad is left to individual initiative. If, however, the authorities exercise their function of regulating the issue of long-term loans abroad, then there is no need for them to raise the Bank rate in order to drive some of the borrowers to foreign markets. The Government itself, or various official and semi-official corporations, may issue long-term loans abroad if this is necessary for the consolidation of the international floating indebtedness of the country. Or it may discourage the flotation of certain types of securities in the home market, thus compelling potential borrowers to find the capital abroad.

Another argument which is used in favour of the high Bank rate method, as opposed to the forward rate method, of counteracting the effect of adverse trade balance is that a high Bank rate would tend to lower prices, and would therefore tend to wipe out the trade deficit. Unquestionably, it is true that the manipulation of the forward rate would produce no such result. The question is, is it worth while to restore the equilibrium of the trade balance by means of destroying home trade through a high Bank rate and credit restriction? This again is a broad question, detailed discussion of which is outside the scope of this book. What matters, from our point of view, is that the monetary authorities should realise that they can choose between restoring the trade balance by means of destroying trade through a high Bank rate and credit restriction and neutralising the effect of a trade deficit on the gold reserve by means of Forward Exchange manipulations.

(9) COUNTERACTING FINANCIAL PRESSURE

Many even of those who favour a high Bank rate in the event of disequilibrium between the national and international price levels, or in the event of a trade deficit, are prepared to admit that, when pressure on the exchange is due to neither of these causes but merely to an outflow of funds brought about by international financial developments, there is everything to be said in favour of the alternative method of counteracting the pressure. Orthodox economists may think it worth while to destroy home trade for the sake of making imports and exports balance each other. Unless, however, they are fanatical doctrinaires, it is inconceivable that they should

consider it desirable to destroy trade in Great Britain by means of a high Bank rate and credit restriction merely because a speculative boom on Wall Street attracts funds from London and results in a pressure on sterling. To try to offset the effect of such pressure by forcing down commodity prices below the world level and to meet capital transfers by enforcing an increase of current exports, is obviously the height of absurdity. And yet all but a few Central Banks have always considered it the natural thing to do. "There is pressure on the exchange; gold is leaving the country; the market rate of discount is rising; therefore we must raise the Bank rate", is the beginning and the end of the much-vaunted wisdom of many a reputed Central Banker. The necessity for this course of action was taken for granted—mainly because Central Banks have not realised that they have at their disposal an alternative method of counteracting the pressure. •

(10) A COSTLY LESSON

The world has had to pay dearly for the ignorance of its monetary authorities. It was because European Central Banks in 1929 were not aware that there was an alternative weapon to the high Bank rate that the Wall Street boom, although confined to one country, was followed by a world-wide slump in commodities. In 1929 there was nothing so inherently unsound in the commodity situation itself as to make the subsequent slump inevitable. What happened was simply this: In order to fight the speculative boom the American authorities adopted a policy of dear money. This attracted further funds from Europe in general, and from London in particular, and resulted in a selling pressure upon the European currencies, especially upon sterling. To retain the funds that were leaving for New York, the Bank of England and other European Central Banks resorted to the orthodox device of raising their Bank rates. The result was a world-wide curtailment of credit. Outside the United States, there was no such speculative expansion of trade as would have justified this drastic action. Trade in Great Britain was distinctly depressed even before the increase of the Bank rate during 1929, while in most other European countries it was far from booming. Consequently, the all-round increase of the Bank rates and curtailment of credit resulted in a wholesale contraction of trade and purchasing power. The outcome was the slump, culminating in the financial crisis of 1931, and leading to a

series of crises and a prolonged depression from which, even at the time of writing, seven years after the Wall Street boom, many parts of the world are only just beginning to emerge.

If instead of raising the Bank rate, the Bank of England and the other European Central Banks had resorted to the device of forward rate policy, the disaster might have been, if not altogether avoided, at any rate considerably mitigated. Admittedly, the situation in Wall Street was unsound and required correction. But for the fact, however, that the Wall Street situation led to high Bank rates and credit contraction in Europe, there would have been no reason whatsoever why the inevitable Wall Street slump should have provoked a world-wide slump in commodities. At any rate, there was no need whatsoever for a slump in commodities on anything like the scale experienced after the credit contractions of 1929.

(11) HOW FLOW OF EUROPEAN FUNDS TO WALL STREET COULD
HAVE BEEN CHECKED

It may be argued that it would not have been easy to check the westward flow of funds by means of Forward Exchange manipulations. In reality, a forward rate policy would have gone a much longer way towards checking the flow than did the Bank rate policy. Capital transferred to New York for investment in Wall Street would of course have been unaffected by a forward rate policy, as it was unaffected by the higher Bank rates in Europe. But the transfer of funds for investment in brokers' loans would have been affected by a forward rate policy to a much higher degree than they were by the Bank rate policy pursued in London and other European centres. It was obviously impossible to raise Bank rates sufficiently to compete with the attraction provided by the fantastic interest rates paid on brokers' loans in Wall Street. There would have been no difficulty, however, in raising the premium on forward sterling to a sufficiently high figure to induce holders of London balances to abstain from transferring them to New York. It is true that to do so would have necessitated an artificial depreciation of the forward dollar to a substantial degree. Technically, this would have been feasible, provided that the British authorities had been prepared to pay a sufficiently high premium on forward sterling, and provided that the margin between gold points had been widened sufficiently to discourage uncovered interest arbitrage.

Admittedly, the operation would have been costly especially

as it would have had to have been undertaken on a considerable scale. It would have been well worth while, however, to spend a few million pounds to obviate the necessity of raising the Bank rate and contracting credit. Apart altogether from the general benefit of such policy to trade, it would have involved no loss to the taxpayer, since the increase in the cost of the huge floating debt as a result of the high Bank rate would have been avoided. It ought to be borne in mind that, with a huge floating debt, 1 per cent in the Bank rate means a difference of millions of pounds in interest, in addition to the difference it makes in the cost of conversion operations. Allowing for this, it is reasonable to assume that the operations that would have been undertaken to maintain forward sterling at an overvalued level might have been profitable for the Treasury even from a narrow financial point of view, apart from their broader indirect effect upon trade.

(12) NEED FOR CO-OPERATION BETWEEN CENTRAL BANKS

Needless to say, efficient execution of the forward rate policy required would have necessitated close collaboration between the monetary authorities of the leading countries. There is no reason to suppose, however, that this would have been very difficult to secure. After all, it was as much to the interest of the United States authorities to prevent an unwanted influx of foreign funds as it was to the interest of the Bank of England and other European Central Banks to prevent an unwanted efflux. In any case, the movement towards co-operation between Central Banks was at its zenith at that time, and there is little doubt that it would have been possible to reach a satisfactory agreement. The co-operation would have been necessary if the special conditions which called for official intervention had lasted more than three months. In the early stages, it would have been sufficient if the British authorities had sold forward dollars outright, or if the American authorities had bought forward sterling outright, in order to bring about the necessary depreciation of forward dollars. At the end of three months, however, it might have become necessary for them to carry their positions, which would have compelled the British authorities to borrow dollars from the Federal Reserve Bank, and compelled the American authorities to accumulate a sterling balance with the Bank of England. It is conceivable, however, that by reducing the influx of funds from Europe the high Bank rate in New York

could easily have been made effective within a short time, so that the necessity for carrying the exchange positions would not have arisen.

It is true that time money rates in New York were at times so high that the exchange risk, which was limited by the margin between gold import point and gold export point, was not sufficient to discourage uncovered interest arbitrage on time money for three months. In the circumstances, a widening of the margin between gold points might have been necessary as a complementary measure to the forward rate policy, for it is precisely under such conditions that this measure is most effective. Moreover, the mere fact that both Central Banks concerned had the right to raise or lower their mint parity would have been sufficient to discourage uncovered interest arbitrage even if the authorities did not actually avail themselves of their right.

Admittedly, it is easy to be wise after the event. In 1929 I did not advocate the adoption of a forward rate policy, so I have no right to criticise others for having failed to adopt it. Mr. Keynes, however, and Mr. Keynes alone, is fully entitled to blame the authorities for having ignored his proposals. In pointing out what might have happened had the authorities pursued the course advocated above, my object is not to cry over spilt milk but to draw the attention of the authorities to possibilities in the future. The fact that the failure to use such a technical device can lead to such far-reaching consequences is indeed a lesson well worth remembering.

(13) FORWARD RATE POLICY AS AN ORTHODOX DEVICE

Hitherto we have examined forward rate policy as an essentially unorthodox device. Its adoption can be advocated, however, also on strictly orthodox grounds, as a means of making orthodox Bank rate policy more effective. We have seen in Chapter XXI that the departure of forward rates from their Interest Parities is apt to react upon internal interest rates, and thus to interfere with the official discount rate policy. To avoid this interference, the Central Banks may find it expedient to bring about a readjustment of forward rates to their Interest Parities.

We have also seen in Chapter XXVII that the effect of Bank rate changes on gold movements depends upon the extent and promptness of the adjustment of forward rates to their changed Interest Parities. The slower the adjustment the larger the inter-

national flow of gold through interest arbitrage and through changes in credit availments. If, however, the authorities intervene in order to bring about instantaneous adjustment, the gold movements provoked by the Bank rate changes can be reduced to a minimum, for the inducement to interest arbitrage, and to repayment of credits in the dear money centre and additional borrowing in the cheap money centre, will be reduced. If, on the other hand, the adjustment is delayed artificially, the effect of Bank rate changes on gold movements will be accentuated, by stimulating such inducement to interest arbitrage, etc., as already exists through the natural delay in the adjustment. Whether the Bank rate changes are made for the purpose of bringing about gold movements, or whether they are made for other purposes, and the resultant gold movements being regarded simply as an incidental disadvantage, the official policy can be made more effective if it is supplemented by a forward rate policy.

(14) CENTRAL BANKS' EMPIRICISM

It is characteristic for the utter empiricism with which Central Banking has been conducted in the past that, a few exceptions apart, the effect of Bank rate changes on gold movements has always been left to chance. Although Central Banks were never in any doubt about whether they wanted their rate changes, or those of other Central Banks, to cause an influx or efflux of gold, they never attempted to regulate the effect of such changes on gold movements. Indeed, in all probability they were even unaware that the degree of promptness with which forward rates responded to Bank rate changes largely influenced the extent to which those changes led to gold movements; that a change of the Bank rate by, say, one per cent may, from the point of view of its immediate effect on gold movements, be equivalent to $\frac{3}{4}$ per cent, $\frac{1}{2}$ per cent, $\frac{1}{4}$ per cent or nil, according to the degree to which forward rates adjusted themselves to their new Interest Parities. Whether or not they wanted the Bank rate change to bring about gold movements, they just made the change and hoped for the best.

It has been a classical rule in the art of Central Banking that, by raising the Bank rate to a crisis level, an acceptance centre can in times of emergency compel its foreign debtors to repay their credits. Those who practised this rule were unaware that, since the development of the Forward Exchange market, the response to such a crisis measure has come to depend largely upon the degree to which for-

ward rates adjust themselves to their Interest Parities, and complete adjustment necessarily nullifies the effect of the measure. No efforts have ever been made to ensure the effectiveness of the Bank rate action by appropriate manipulation of forward rates.

Even if Central Banks reject the principle that Bank rate should be confined to internal regulation, and have every intention of adhering to the orthodox principle of using it for both internal and international purposes, they might at any rate endeavour to make their chosen policy more effective by means of Forward Exchange operations. From their own point of view, there is everything to be said in favour of a scientific handling of the Bank rate weapon, even if it is used without scientific discrimination regarding its object.

CHAPTER XLIV

THE TECHNIQUE OF FORWARD RATE POLICY

(1) NEED FOR EXPERIENCE AND TECHNICAL KNOWLEDGE

POSSIBLY one of the main reasons why Central Banks in general have been reluctant to adopt the technical devices suggested by Mr. Keynes is their fear of embarking upon a bold innovation in Central Banking practice. Indeed, for many Central Banks Foreign Exchange operations in general have been an innovation. As, however, there is but little difference between Foreign Exchange operations by Central Banks and by other banks, there was ample experience upon which Central Banks could draw. In using the subtle device of forward rate policy, however, Central Banks would have to elaborate an almost entirely new policy and technique. The material available through past experience, while sufficient to show that the policy advocated is feasible, is not sufficient to provide detailed guidance in its application. Central Banks would have to learn through trial and error. Possibly some of them are reluctant to run the risk of making mistakes during the initial period of the application of the new scheme.

Another conceivable reason for the reluctance of Central Banks to adopt a forward rate policy lies in its highly technical character. In foreign exchange operations in general, those who determine the broad outlines of policy can leave the technical execution of that policy to practical specialists. They are nevertheless able to supervise the technical execution of their policy, since there is nothing in spot exchange operations which cannot easily be grasped by any banker or Treasury official, even if he has had no direct experience in Foreign Exchange dealing. The same cannot be said of forward rate policy. It is impossible to draw a line between the principles of that policy and its technique, for the principles themselves are highly technical. To be able to determine the outlines of such a policy, those responsible for it must be well acquainted with a mass

of technical details. There can be no division of labour between the planning of the policy and its execution.

(2) QUESTION OF PERSONNEL

Unless the senior officials cared to leave the planning of the policy to those in charge of its execution, they themselves would have to acquire the practical knowledge which exchange dealers possess. Unfortunately, it is not often that Foreign Exchange dealers who possess a thorough knowledge of technical detail are also endowed with the qualities required to enable them to formulate the policy to be pursued. Even if they did happen to have such dual qualifications, it is doubtful whether their seniors would be in a position to recognise this and would be prepared to entrust them with the planning as well as the execution of the forward rate policy. The Austro-Hungarian Bank before the war was fortunate in possessing such an exceptional man as the late Secretary Kuhn, who, while occupying a comparatively subordinate position, was allowed a free hand in devising and executing the forward rate policy pursued by that Bank. Every Central Bank is not, however, equally fortunate, and it may well be that the anticipation of difficulties of personnel were partly responsible for the general reluctance to adopt Mr. Keynes's proposal.

Yet there is nothing in the theory and the technique of Forward Exchange which could not be grasped by any intelligent man with a good general knowledge of finance and Foreign Exchange. I am convinced that practically every Treasury and Central Bank possesses officials who are capable of grasping the broader implications of Forward Exchange policy, and who at the same time are capable of mastering technical details. Or, failing that, it would be possible to find the right man in the banking community. It is, of course, easier to reject the proposal than to discover the right man and assume responsibility for his actions.

(3) RULES OF FORWARD RATE POLICY

Another difficult problem is to establish a set of rules governing the circumstances in which the application of forward rate policy is justified. Mr. Keynes made it quite plain that he has only normal conditions in mind. This means that he expects his scheme to work satisfactorily only in conditions of monetary stability

when there is no sweeping pressure on the currency, either owing to fundamental disequilibrium or owing to a wholesale flight of capital and speculative attack. It is, needless to say, difficult to ascertain the nature and the causes of pressure. From this point of view, however, those who have to make decisions about Bank rate changes are confronted with exactly the same difficulty, unless they choose to follow the primitive rule of raising the Bank rate whenever there is a selling pressure on a currency and reducing it whenever there is a buying pressure, irrespective of the cause.

Doubtless, even after a general stabilisation, conditions will never be "normal" in the pre-war sense of the term, but this is an advantage from the point of view of the chances of the successful application of the forward rate policy. In pre-war days there was a considerable amount of uncovered interest arbitrage between currencies on a gold basis. The movements of spot exchanges within gold points were to a large degree seasonal and arbitrageurs did not as a rule go very far wrong in taking a view about the probable extent of the depreciation of the exchanges with which they were concerned. Between 1925 and 1931 the movements were less regular, and cautious arbitrageurs had to allow for the possibility of unexpected fluctuations up to the gold points. There is no reason to suppose that it will be otherwise after the stabilisation of the currencies. The increased risk of unexpected movements within the gold points—a risk which can be further increased artificially by adopting Mr. Keynes's proposal for widening the margin between the gold points—will induce arbitrageurs to cover in most cases. As a result, the predominant part of international transfers of funds through interest arbitrage would come under the influence of the official forward rate policy.

(4) TECHNICAL DETAILS

A forward rate policy is a much more elastic weapon than a Bank rate policy. The Bank rate cannot be changed every day, and the minimum change is traditionally $\frac{1}{2}$ per cent. Forward rates, however, can be changed several times a day, indeed several times in an hour, and can be changed fractionally until the desired effect upon the movement of funds is produced.

A forward rate policy should operate both ways. It should be applied just as readily against an unwanted buying pressure as

against an unwanted selling pressure. Without necessarily being continuous, it should become part of the normal routine of Central Banking instead of being reserved for major emergencies.

Admittedly, the multiplicity of Interest Parities often makes it impossible to adjust forward rates even approximately to the margin between all the various kinds of interest rates. In such instances forward rates must be adjusted to the margin between those interest rates which form the major basis of interest arbitrage.

The authorities should be prepared to deal either in swaps or outright. Since the system would be applied only during periods of stability, the risk involved in outright operations would not be excessive. On many occasions it is not convenient to combine forward operations with spot operations, and on such occasions the authorities should not be debarred by dogmatism from taking relatively moderate risks if necessary.

(5) ACCELERATION OR PREVENTION OF ADJUSTMENT

There is usually a natural tendency of forward rates to move in the right direction, and all the authorities would usually be called upon to do would be to accentuate, regulate and accelerate this tendency whenever necessary, or to moderate it on the occasions when it goes in an unwanted direction.

In order to make the forward rate policy reasonably effective, frequently it would not be necessary to cause the forward rate to appreciate or depreciate beyond its Interest Parities. Admittedly, a deliberate overvaluation or undervaluation of the forward rate would materially increase the effect of the device on the movement of funds. In many instances, however, it would be sufficient if the Central Bank were to take steps to keep forward rates at their Interest Parities, adjusting them instantaneously to any changes in the Interest Parities. By such means, Central Banks would be in a position to neutralise almost completely the effect of a high or low Bank rate upon the international movement of funds. If the forward rates are adjusted instantaneously to any changes in the relative level of interest rates, then there is no reason why changes in the margin between interest rates in two centres should lead to unwanted movements of funds through covered interest arbitrage.

In other instances the forward rate policy would consist of preventing or delaying the natural adjustment of forward rates to their Interest Parities. We have seen in the last chapter that, if the

Bank rate is raised in order to attract gold, this end can only be attained if forward rates do not adjust themselves too quickly to their changed Interest Parities. Intervention in the Forward Exchange market would have to aim occasionally at preventing Interest Parities from working too smoothly.

If a Central Bank reduces its rediscount rate in order to stimulate home trade, and if it adjusts its forward rate to the new Interest Parities, this would stop the outflow of funds through interest arbitrage with covered exchange, but it would not stop the withdrawal of funds on the part of those who do not consider it necessary to cover the exchange risk. We saw in Chapters XXI and XXVII, however, that uncovered interest arbitrage does not as a rule lead to gold movements, for the simple reason that few arbitrageurs care to run the risk of taking uncovered commitments in an exchange which is at gold import point unless the difference between interest rates in the two centres appears to make it worth while to take the exchange risk. In order to make the forward rate policy more effective, it is advisable to adopt Mr. Keynes's second proposal by widening the actual or potential margin between gold points. By this means the risk attached to uncovered interest arbitrage is increased, so that there is less likelihood of gold movements through arbitrage transactions which are not directly affected by the forward rate policy.

Even in such circumstances, gold movements caused by the repatriation of funds by the nationals of countries which had raised their Bank rate would largely escape the influence of the forward rate policy. Although such repatriations might not appear profitable on a strictly interest basis, they could nevertheless be brought about by a high Bank rate at home, owing to monetary stringency in the home market. Such repatriations, if they occur on a sufficiently large scale, would lead to an outflow of gold in spite of the efforts of the Central Bank with the lower discount rate to adjust the forward rate to its Interest Parities. In order to prevent such an outflow of funds it might be desirable to do more than merely neutralise the effect of the lower Bank rate by adjusting the forward rates to their Interest Parities. A deliberate overvaluation of the Forward Exchange would then lead to an influx of funds through covered interest arbitrage, and this would neutralise the effect of the efflux of funds brought about by repatriation.

(6) CO-ORDINATION OF FORWARD RATE POLICIES

If only one Central Bank were to practise a forward rate policy, its hands would be entirely free. Whatever rate it fixed would hold good in the world market, so long as it were prepared to operate to an unlimited extent at the official rate quoted. If, however, more than one Central Bank were to adopt the policy of influencing forward rates, then complications would be apt to arise unless they were to co-ordinate the various policies through collaboration. It may well be asked what would happen if two Central Banks wanted to attract funds at the same time by over-valuing their respective Forward Exchanges. Let us suppose that both the Bank of England and the Bank of France want to provoke an influx of funds at a given moment, without raising the Bank rate. In that case, in the absence of co-ordination, the former would quote forward francs at a discount, while the latter would quote forward sterling at a discount. Thus at a given moment there would be two totally different rates quoted for the forward sterling-franc exchange. On the basis of a spot rate of, say, 105, and assuming identical interest rates in the two centres, the Bank of England would be a seller of forward francs at, say, 106, while the Bank of France would be a seller of forward sterling at, say, 104. Both banks would be buyers of the spot exchange at 105, thus losing 1 point on the transaction. As a result, any Englishman with any liquid resources at his disposal would transfer funds to Paris to benefit by the favourable forward rate paid by the Bank of France. At the same time, every Frenchman with liquid resources at his disposal would transfer his funds to London to benefit by the favourable forward rate paid by the Bank of England. Indeed, there is no reason why the same funds should not be transferred and re-transferred over and over again. Arbitrageurs could become millionaires in twenty-four hours by buying forward francs from the Bank of England at 106 and reselling them to the Bank of France at 104. This process would continue until the resources of one of the Central Banks—or, what is more likely, its patience—had become exhausted.

Evidently such an absurd state of affairs would rule out the possibility of the pursuit of a forward rate policy by more than one Central Bank at a time unless co-operation could be established between them. The difficulty of establishing such co-operation

should not, however, be exaggerated. After all, similar working arrangements between the various Exchange Equalisation Accounts already exist in the spot market. If the Bank of France were to peg the sterling-franc rate at 105, while the Bank of England's rate at the same time was 105·05, it would give rise to a good deal of profitable exchange arbitrage between London and Paris. In practice such situations never arise, because, whenever both Exchange Equalisation accounts operate simultaneously, arrangements are made to peg the spot rate at the same figure in both London and Paris. There should be no difficulty in coming to a similar understanding about fixing forward rates. The only difficulty might conceivably be that of reaching agreement upon frequent changes of forward rates. Even this would not be unduly difficult if only two Central Banks pursued a forward rate policy, but complications might arise if there were more than two banks operating, and this might lead to a reduction in the number of changes.

(7) CLASH OF POLICIES NOT INEVITABLE

A situation in which two Central Banks each wanted to attract funds from abroad at the same time is not new and is not special to the forward rate policy. Such situations have arisen in the past, and have led to competitive increases in Bank rates, the increase in one centre cancelling out the effect of the increase in the other. During the period of post-war stability there was, however, a certain amount of collaboration between Central Banks regarding their Bank rates. Admittedly, this collaboration did not amount to very much, but it was sufficient to indicate its feasibility. There is reason to suppose that it would be easier to reach agreement upon forward rate policy than upon Bank rate policy. After all, the Bank rate policy affects the internal as well as the international and monetary situation of the countries concerned, while the direct effect of the forward rate policy is confined to the international monetary situation. The interests at stake are less vital and less conflicting. While it is too much to expect a country to pursue a Bank rate policy which would accentuate depression or speculative boom, merely to please another country, it is easier to come to terms on the basis of give-and-take when all that is at stake is the direction of the international flow of funds.

A situation in which two of the major countries—it would be sufficient if the forward rate policy of leading countries were

co-ordinated—wanted to attract funds by causing their forward rates to appreciate at the same time would be exceptional. Much more frequently their interests would be more or less identical. It usually happens that when one country wants to attract funds another country wants to defend itself against an unwanted influx. In such circumstances it is easy to establish collaboration between the two countries. In 1927, for instance, when the United States authorities were prepared to lower their Bank rate in order to divert pressure from sterling, it would have been easy to arrange for the Bank of England to be a buyer of forward sterling at an artificially high level, and for the Federal Reserve Bank of New York to be a seller of forward dollars at an artificially low level. The result would have been much more satisfactory than the reduction of the Bank rate was, since it would not have encouraged speculation in Wall Street, while it would have assisted sterling to at least the same extent as did the reduction of the Bank rate. Again, in 1929, it would have been easy to establish co-operation between London and New York, and to pursue a forward rate policy designed to discourage the flow of funds from London to New York. Similarly in 1930-31 there possibly would have been no insurmountable difficulty in establishing collaboration between London and Paris upon a forward rate policy to discourage the flow of funds to the latter centre. While the British and French authorities were unable to agree whether the flow should be stopped by an increase of the British Bank rate or by a reduction of the French Bank rate, the considerations which made agreement on this point difficult would not have operated regarding the forward rate policy.

(8) CONTROLLED *v.* UNCONTROLLED FORWARD RATES

For the purpose of forward rate policy, it is sufficient if the Central Banks operate in two or three major exchanges. There is no need, from a monetary point of view, to deal in all currencies, even though this may appear desirable from a commercial point of view. Admittedly, if the forward franc and the forward dollar are controlled, while forward guilders, Swiss francs, etc., are allowed to fluctuate freely, these latter rates would express the normal and natural tendencies at work. This might lead to some interest arbitrage between the minor centres and London, but there is no reason to suppose that such movements would be sufficient to interfere with the results of the forward rate policy. Should the disturb-

ing movements nevertheless prove to be strong, then it might in given circumstances become expedient to extend the official operations to the Forward Exchanges of other countries.

If the choice lies between increasing the artificial character of the major Forward Exchanges, in order to counteract arbitrage with minor centres, and increasing the number of currencies in which the authorities operate, the second alternative appears to be preferable. In this respect the position is somewhat different from what it is with control of spot rates. If one of the spot exchanges on a gold basis is controlled, then all the other gold currencies are indirectly controlled, as their fluctuation is confined to the margin between gold points. As, however, the working of the gold points is not necessarily effective for forward rates, it is not sufficient to peg the forward rate of one gold currency in order to peg the forward rates of them all. The question whether the authorities should operate in the major currencies only, or also in a number of minor currencies, is an involved one, and a definite answer can be given only on the basis of experience. What matters is that in this respect, as in many others, the attitude of the authorities should not be guided by any too rigid preconceived rules, but solely by considerations of practical expediency.

(9) LONG AND SHORT FORWARD RATES

The same may be said of the question whether the authorities should deal for three months only, or also for shorter periods. If the rate for three months is controlled, while the rates for shorter periods are allowed to take care of themselves, abnormal discrepancies are bound to arise, and may lead to unwanted movements of funds through arbitrage. If three months' forward sterling is artificially overvalued compared with its Interest Parities, while one month's forward sterling is undervalued, then conceivably funds may be transferred to London for investment for three months, but those who want to invest their resources for only one month will prefer to shift them from London to New York. To avoid this, it might be worth while to operate for all dates up to three months, or at any rate in a number of key dates. Here, again, it would be a mistake to put forward any definite rules: the only object in raising the point is to indicate in a broad way the problems with which the authorities in charge of a forward rate policy would have to cope.

It would be idle to minimise the complications that would inevitably accompany the execution of a forward rate policy. Day after day many a thorny problem would have to be solved by those in charge. This is the reason why it is essential that they should be acquainted with the technique of Forward Exchange operations and that at the same time they should be in a position to appreciate the broader implications of their policy. Unquestionably, it is much easier to abstain from a forward rate policy altogether than face the complications which such a policy would involve. Unfortunately for Central Banks, the golden days when the gold standard looked after itself are over. Central Banks would be shirking their responsibilities if, merely for fear of complications, they were to abstain from using a device by which the efficiency of their policy could be increased.

PART VII^o
CONCLUSION

CHAPTER XLV

THE PHILOSOPHY OF FORWARD EXCHANGE

(1) SOME FUNDAMENTAL QUESTIONS

To reassure the reader, I hasten to point out that I do not intend to follow the example of Mr. Dennis Bradley who fastened his philosophical system, such as it is, on a sartorial peg. Although Forward Exchange would provide quite as suitable a peg to hang one's philosophical principles upon, I intend to do nothing of that kind. The philosophy which we shall here discuss will be strictly relevant to Forward Exchange. The reader must have noticed in various chapters that a number of points raised go far beyond the boundaries of technical discussion, or even those of the theoretical discussion of detail, and raise questions of fundamental economic principles. It is these points which I propose to recapitulate, and to some extent expand and complete, in the present chapter.

Is Forward Exchange the great international equaliser, or is it the disturber of international monetary equilibrium? Does the system make for stability or instability? Does it serve as a shock-absorber, or does it provoke the shocks? Is it the highest manifestation of automatic currency, or does it reduce the automatic system to absurdity? Is it a mere technical device, or has it become one of the fundamental factors of the whole monetary system? Should its development be encouraged or discouraged? Is it to be allowed to take its course, or is it to be controlled? Is it an alternative to monetary stability, or is it a mere palliative? Does it tend to divert the flow of funds to the right channels or to the wrong channels?

These questions, raised or implied in various chapters of this book, give an idea of the scope of the philosophy of Forward Exchange. They involve the discussion of such fundamental questions as Isolationism *v.* Internationalism, *Laissez-faire v.* Intervention, economic optimism *v.* economic pessimism, etc. In the

sphere of the theory of Forward Exchange, as in most other spheres, there is the clash between the orthodox and unorthodox viewpoints, though this is not realised by most writers on the subject. This accounts for the fact that in some instances unorthodox conclusions have been inferred from orthodox premises, and *vice versa*.

(2) THE THEORY OF PERFECT COMPENSATION

According to the orthodox school, the Forward Exchange system is one of the many channels through which everything in economic life tends to work out to the best advantage of mankind, so long as there is no interference with the working of the natural tendencies. Forward Exchange is regarded as a means by which a "solidarity" between international money markets may be established, both in the sense of securing a uniformity of the international level of interest rates and in the sense of securing the movement of funds from centres where capital is abundant to centres where capital is scarce. As we pointed out in Chapter XXI, the classical theory that forward rates are determined by their Interest Parities is based upon the philosophical belief that there is in the international money market, as in the economic field in general and in nature itself, a tendency towards automatic compensation. According to the internationalist viewpoint, the ideal state of affairs would be that in which interest rates were the same all over the world. Since this is at present impossible—and it is doubtful whether it will ever be possible—owing to differences in the degree of security, in the relation between supply and demand, etc., the next best thing is to have an automatic equaliser which, added to or deducted from the local interest rates prevailing in the various centres, would produce in every case the same result.

In other words, the conception of perfect compensation means that forward rates are supposed to tend to adjust themselves to the figure at which they are equal to the discrepancies between interest rates in the centres concerned. The development of the Forward Exchange system is thus supposed to have provided the means by which the gaps between internal levels of interest rates are automatically filled. Accordingly, short-term interest rates are supposed to be practically identical at any given moment in all leading centres, if we allow for the terms at which the exchange risk can be covered through Forward Exchange operations. Although the believers in this theory recognise the existence of discrepancies

between forward rates and their Interest Parities, they are inclined to minimise their importance, and to regard them as "temporary" deviations. Above all, they regard Forward Exchange as an essentially passive factor whose object is to level out discrepancies between interest rates, and do not realise that very often it is an active factor. From this point of view, the prevalent theory of Forward Exchange is as inadequate as the theory of supply and demand was in the early stages of economic science, when it was thought that prices were determined by the relation between supply and demand, in a purely static sense, without themselves reacting upon those two factors.

(3) FORWARD EXCHANGE, CREATOR OF ANOMALIES

The moment it is realised (*a*) that there can be substantial and lasting discrepancies between forward rates and their Interest Parities, and (*b*) that forward rates themselves are apt to affect their Interest Parities, the theory that Forward Exchange is a passive means of automatic international compensation collapses. As we have seen in Chapter XXI, and in various other parts of this book, even in normal conditions there are at times lasting discrepancies, while in abnormal conditions these discrepancies tend to assume spectacular dimensions. The Forward Exchange system thus fails in its "duty" of compensating the difference between national levels of interest rates. Indeed, it often goes so far as actually to exaggerate these differences. In given circumstances it tends to accentuate the rise of interest rates in centres where their level is already high, and it tends to lower interest rates in centres where they are already low. From this point of view, the free working of the normal tendencies inherent in the Forward Exchange system, so far from establishing equilibrium in the international money market, at times tends either to produce disequilibrium or considerably to accentuate existing disequilibrium.

The same conclusion is reached when we examine closely the theory that Forward Exchange tends to lead to a movement of capital from centres where funds are plentiful to centres where they are scarce. This doubtless happens in certain circumstances, when the existence of an exchange risk would otherwise deter owners of liquid funds from shifting their balances abroad for the sake of higher interest rates. On the other hand, circumstances frequently arise in which the operation of the Forward Exchange system leads to a flow of funds from the centre where money is scarce

and dear to the centre where money is plentiful and cheap. Forward rates are apt to disturb the "solidarity" of the international level of interest rates no matter what the nature of the discrepancy between forward rates and their Interest Parities. They lead to movements of funds in an unnatural direction only if the forward rate of the currency of a country suffering from scarcity of funds becomes undervalued, or if the forward rate of the currency of a country with a cheap and plentiful money supply becomes overvalued. Should the reverse be the case, the Forward Exchange system will stimulate the movement of funds in the right direction.

(4) ORTHODOX OPTIMISM UNJUSTIFIED

The next question to answer is whether the Forward Exchange system makes for stability or instability of the international and internal value of currencies. Here again, the orthodox conception is inclined to err on the side of optimism. It assumes that the existence of Forward Exchange facilities, by spreading the pressure on the currency over a long period, tends to level out fluctuations. At the same time the *laissez-faire* school is inclined to minimise the effect of speculation in Forward Exchanges upon the spot rates. We have seen in Chapters XXIII and XXIV, however, that very often the Forward Exchange system works in an opposite sense. An adverse trade balance is apt to be accompanied by an outflow of covered arbitrage funds, which tends to accentuate the effect of the adverse balance upon spot rates. As for the theory that speculation can affect forward rates only, we have seen in Chapter XXV that, through various ways, but especially through the working of interest arbitrage, a speculative depreciation or appreciation of Forward Exchanges is apt to react upon spot exchanges. It is therefore difficult to escape the conclusion that, if Forward Exchanges are allowed to take care of themselves, they very frequently impair the stability of the spot exchange, instead of helping to maintain it.

On the question of the effect of forward rates upon prices, we have seen in Chapter XXII that at times when the premium or discount is abnormally wide it tends to influence the price level. Although in the majority of cases this influence is in the right direction, tending usually to reduce the disequilibrium between Purchasing Power Parities and exchanges, in given circumstances it is none the less unwelcome to the countries concerned. It may be

said that while, in normal conditions, the Forward Exchange system generally provides a useful shock-absorber, in abnormal conditions, when a shock-absorber is particularly needed, Forward Exchange creates or exaggerates shocks rather than absorbs them. It is thus not justified to cite the working of the Forward Exchange system as an argument to support the orthodox theory of economic optimism.

(5) COMPLICATIONS AND ANOMALIES THROUGH
IMPERFECT ADJUSTMENT

With the development of the Forward Exchange system the automatic currency system has doubtless attained the most advanced phase of its development. It has become a highly involved and extremely sensitive organisation. The question is whether the complicated nature and extreme sensitiveness of the system does not reduce it to absurdity. The fact that forward rates are exposed to a variety of conflicting influences, and that these influences, through the intermediary of forward rates, are apt to lead to a variety of unwanted reactions upon spot rates, prices, interest rates, etc., appears to strengthen the case for intervention. Far from being a mere technical device, the Forward Exchange system has become one of the fundamental parts of the whole monetary system, and should be recognised as such. Scientific monetary management cannot be adequate if such an essential part of the monetary system is left to its own devices.

The science of Forward Exchange is a science of anomalies created by imperfect adjustment. The development of the system is one of the factors which is calculated to reduce *laissez-faire* to absurdity, instead of providing another argument to justify it, as the orthodox school believes. If allowed to take care of itself, the Forward Exchange system is apt to exert a destructive influence. This being so, the question arises whether the development of the system should be encouraged or discouraged. Under the existing system of international trade and transfers its existence has, however, become indispensable. In any case, the existence of the system is an accomplished fact. Although it is possible to suppress Forward Exchange by means of drastic exchange restrictions, this would constitute a far higher degree of intervention than the mere official regulation of forward rates. Thus, even from the standpoint of orthodox principles, the regulation of Forward Exchange should be regarded as a smaller evil than its total suppression.

(6) AN ALTERNATIVE TO STABILITY

Another question of fundamental importance is whether the Forward Exchange system provides, or should provide, an alternative to international exchange stability. The answer is in the negative. As we have seen in Chapter XII, Forward Exchange facilities cannot possibly eliminate all risk due to fluctuating exchanges. At the same time they can considerably reduce the evil effect of exchange fluctuations on trade, and can render inevitable fluctuations tolerable. Even though the existence of Forward Exchange facilities does not compensate trade for the absence of monetary stability, it certainly provides a mitigating factor. In the balance-sheet of arguments for and against stabilisation it might in given circumstances turn the balance against the decision to make sacrifices and put up with the inconveniences of a premature stabilisation. The improvement of commercial Forward Exchange facilities through intervention would go a long way towards strengthening the argument against stabilisation in difficult circumstances.

What is even more important in the long run, the existence of adequate Forward Exchange facilities for trade considerably strengthens the argument in favour of a more elastic system of stabilisation than that which existed before the war or between 1925 and 1931. While trade is apt to suffer considerable inconvenience, in spite of the existence of improved Forward Exchange facilities, if fluctuations are within a range of, say, 25 per cent, the existence of Forward Exchange facilities minimises the inconvenience of fluctuations within a range of, say, 5 per cent.

Left to take care of itself, the Forward Exchange system contains all the virtues and vices of economic liberalism. The question is whether its virtues could be accentuated, and its vices minimised, by judicious intervention. We propose to show, in the next chapter, that an affirmative answer can be arrived at both from the point of view of the isolationist theory and from that of the internationalist theory.

CHAPTER XLVI

ISOLATIONISM *v.* INTERNATIONALISM IN RELATION TO FORWARD EXCHANGE

(1) PRE-WAR "SOLIDARITY" OF MONEY MARKETS

ACCORDING to the teaching of the nineteenth century school of liberal economists, the ultimate end of economic evolution is to demolish barriers that exist between countries, and, from an economic and financial point of view, to convert the whole world into one large country. In the monetary sphere this internationalist conception has not progressed so far as it did in the economic sphere. While liberal economists advocated the abolition of customs barriers, they regarded the idea of an international currency as Utopian. In the monetary sphere, their goal was such a free flow of funds as would level out the demand for capital and its supply in various countries, leading to a high degree of uniformity of interest rates. The idea of the "solidarity" of money markets, so ably expounded by N. E. Weill,¹ gained considerable popularity before the war, and there can be no doubt that, had the twentieth century been as stable a period as the nineteenth century, progress would have been made towards a levelling-up of interest rates. But for the war of 1914, the number of currencies stabilised on an effective gold basis would have increased, and the reduction of the cost of gold shipment would have narrowed down the range of exchange fluctuations, and also the range of difference between interest rates in various centres.

The "solidarity" of money markets implied before the war an absence of interference with the movement of funds and of gold. If money was tighter in one centre than in another, the higher interest rates prevailing there should necessarily have been allowed to produce their effect in the form of gold movements.

¹ N. E. Weill, *Die Solidarität der Geldmärkte*.

(2) CONFLICTING CONCEPTIONS

This view was not accepted universally as the basis of monetary policy. We have seen in Chapter XXXVI that the Austro-Hungarian Bank, instead of playing the "gold standard game", adopted the device of forward rate policy in order to isolate its money market from the world trends. On a much larger scale, the Bank of France pursued the same policy before the war, but with totally different devices. While the Bank of England did not hesitate to allow gold to leave the country to relieve the tension in another centre, the monetary policy of the Bank of France aimed at preventing external influences from affecting internal monetary and trade conditions. Thus the conflict between internationalist and isolationist conceptions already existed before the war. The Austro-Hungarian Bank had resorted to intervention in the Forward Exchange market in the course of its isolationist policy. That, however, does not necessarily mean that intervention is synonymous with isolationism, or that *laissez-faire* is identical with internationalism. We have seen that after the war internationalism assumed the form of co-operation between Central Banks, which constitutes a relatively high degree of interference with normal tendencies.

After the war, and especially after the crisis of 1931, the isolationist conception has made considerable headway in most countries. Every attempt at the management of the gold standard, whether through sterilisation of an influx of gold or efforts to avoid a contraction of credit in consequence of an efflux, constitutes an act of isolationism. While before 1914 the internationalist conception was predominant, since 1931 isolationism has reigned supreme. Even among theoretical economists there are few left who still advocate, as the supreme goal, a return to the automatic gold standard in the interests of monetary internationalism. Such internationalism as has survived the crisis mainly takes the form of suggestions for monetary collaboration between the countries, instead of suggestions for the demolition of the monetary barriers between them.

Two questions arise in relation to this isolationism *v.* internationalism controversy. One is whether the system of Forward Exchange, as it exists, makes for isolationism or internationalism. The other is whether any official interference with the system of

Forward Exchange could or should further the object of isolationism or internationalism.

(3) ISOLATIONISM AND PERFECT COMPENSATION THEORY

Those who believe that the adjustment of forward rates to their Interest Parities is automatic and instantaneous are, consciously or otherwise, supporters of the theory that Forward Exchange tends to isolate money markets from one another. While in the metaphysical sense it fills the gaps between interest rates, and therefore, according to this theory, creates a uniform international level of interest rates, in the physical sense it tends to perpetuate the gaps between interest rates. If the only result of a change in the Bank rate in one centre is a corresponding adjustment of the forward rates without any movement of funds, then the existence of Forward Exchange facilities prevents a flow of funds which would otherwise take place, and which would otherwise tend to reduce the discrepancy between interest rates in the two centres.

This theory, however, does not correspond to reality. As we saw in Chapter XIX, the adjustment of forward rates to changes in their Interest Parities is neither automatic nor instantaneous. While, admittedly, it is to some extent psychological, to a considerable extent it is also mechanical. Thus the mere change in Interest Parities does not, as a rule, lead to a corresponding change in forward rates unless and until a certain amount of funds is transferred through interest arbitrage. Thus, even in normal conditions, the operation of the Forward Exchange system does not prevent that international flow of funds which tends to reduce the difference between interest rates in various centres. Even if we were to admit that the adjustment is automatic to the extent of, say, 50 per cent or 75 per cent, there would still remain 50 per cent or 25 per cent to be adjusted by the transfer of funds. It is therefore entirely wrong to assume that the normal operation of the Forward Exchange system prevents international transfers which would otherwise tend to equalise interest rates in various centres.

(4) FORWARD RATES AND GOLD MOVEMENTS

The fact is that the functioning of the Forward Exchange system in normal conditions tends to lead to the levelling-up of interest rates exactly because imperfect compensation leads to

international gold movements. This question was discussed in detail in Chapters XXI and XXVII, where I endeavoured to prove that the development differences between interest rates in two countries can lead to gold movements mainly because forward rates do not adjust themselves automatically and instantaneously to changes in their Interest Parities. If adjustment were perfect, the volume of gold movements from centres with low interest rates to centres with higher interest rates would be much smaller. And since it is largely through the gold movements that interest rates in cheap money centres tend to rise and those in dear money centres tend to fall, the imperfect adjustment of forward rates to their Interest Parities is in reality a factor which in normal conditions works towards monetary internationalism.

We must be careful to distinguish the substance from the shadow. The fact that discrepancies exist even in normal conditions spoils the picture of a perfect international level of interest rates, with the gaps between different local rates neatly filled by forward rates. The really important substance of the matter, however, is that in normal conditions the existence of these very gaps tends to bring about an actual levelling-up of interest rates in various centres.

(5) FORWARD RATE POLICY, ISOLATIONISM AND INTERNATIONALISM

If the isolationist theory of the Forward Exchange system were correct, the case in favour of intervention in order to isolate the national money market from international influences would be very weak indeed. Why, after all, if we want to avoid capital movements should we intervene if, in the normal course of things, forward rates tend to settle exactly at the figure at which they succeed in preventing a low Bank rate from causing an outflow of funds and a high Bank rate from causing an inflow of funds? Unless, of course, it happens to be our object to attract gold with the aid of a high Bank rate, or to reduce the gold stock with the aid of a low Bank rate. We have seen that the theory that the working of the Forward Exchange system in normal conditions tends automatically to isolate the money markets from each other is entirely wrong; and it is largely because it is wrong that a strong case can be made in favour of intervention, whether if we want to avoid gold movements or to stimulate them. Thus the theoretical basis of the proposed forward rate policy is the mechanical conception of Forward Exchange,

by which the adjustment of forward rates to their Interest Parities takes place largely in consequence of actual transfers of funds.

Evidently a forward rate policy can serve the purpose of monetary isolationism, if it artificially fixes forward rates at the level at which they effectively prevent the international movement of funds caused by discrepancies between interest rates. This, however, does not necessarily mean that intervention can only serve the purpose of isolationism. All depends upon the circumstances in which the intervention is undertaken. If the discrepancy between forward rates and their Interest Parities is of such a nature as to cause the funds to move in the right direction—that is, from the centre with lower interest rates to the centre with higher interest rates—then intervention aiming at the elimination of that discrepancy serves the purpose of isolationism. If, however, the discrepancy is of such a nature as to cause funds to move in a wrong direction, then intervention aiming at the elimination of that discrepancy is by no means incompatible with an internationalist monetary policy.

Let us take the example of France during 1935 and 1936, when the undervaluation of the forward franc compared with its Interest Parities resulted in a heavy outflow of funds in spite of the fact that interest rates in Paris were considerably higher than in London or New York. Had the French authorities chosen to intervene in order to check this movement by causing the forward franc artificially to appreciate to its Interest Parities, this could not have been regarded as an act of monetary isolationism. After all, it is not in accordance with monetary internationalism that funds should be allowed to flow freely from the market with higher interest rates to the market with lower interest rates. Such a movement, if allowed to take place undisturbed, tends to accentuate the difference between interest rates, which is exactly the opposite goal to that sought by monetary internationalism.

(6) FORWARD EXCHANGE A SOURCE OF ANOMALY UNDER
LAISSEZ-FAIRE

The theory that Forward Exchange, if allowed to take care of itself, tends to make funds flow in the right direction, is as untenable as the one which declares that they tend to check the flow of funds altogether. The truth is that, under *laissez-faire*, Forward Exchange very often tends to influence the flow of funds

in the wrong direction. It is therefore possible to justify intervention both from the isolationist and from the internationalist point of view, according to the circumstances. This is true not only in abnormal conditions such as existed in France during 1935 and 1936, but also in reasonably normal conditions.

It is a mistake to imagine that a forward rate policy can be applied only for the purpose of keeping money cheap without thereby causing an unwanted outflow of funds, or for the purpose of keeping money dear without thereby attracting unwanted funds. Its use for these purposes would be in accordance with the principles of isolationism. The forward rate policy, however, can be applied in normal conditions in accordance with the principles of monetary internationalism, to stimulate the movement of funds from centres with low interest rates to centres with high interest rates. It is conceivable that a centre with a low Bank rate, far from being afraid of losing funds, may wish to encourage an efflux, either because the funds are not wanted in the country or because the authorities want to assist countries which are in need of an influx. Let us take the example of the United States. The interest obtained upon short-term investments in New York is, at the time of writing, practically nil. Notwithstanding this, during 1935 and 1936, there has been a flow of short-term funds for interest arbitrage from London to New York, owing to the yield on the swap. This influx is supposed to be unwelcome to American banks and to the United States authorities. They cannot defend themselves against it by a further reduction of interest rates, for Bank rate is already down at the low record figure of $1\frac{1}{2}$ per cent, and the banks cannot allow on their foreign balances less than nothing—unless they resort to the bold innovation of allowing a negative interest rate.

(7) INTERVENTION NOT INCOMPATIBLE WITH INTERNATIONALISM

A much less revolutionary alternative, and one which would probably be more effective, would be the application of a forward rate policy. It would not require much effort by the United States authorities to cause an artificial depreciation of forward dollars, thereby checking the influx of arbitrage funds and even causing an efflux. By so doing they would not be guilty of isolationism. On the contrary, they would serve the cause of internationalism, by diverting funds from the cheaper to the dearer centre.

Similarly, the authorities of a country where money is dear could hardly be accused of isolationism if they sought to attract funds by means of a forward rate policy. This, as we have seen, was actually done by the Austrian National Bank and other Central Banks after the war, and led to a gradual decline of abnormally high interest rates, in accordance with the wishes of monetary internationalists.

It is therefore evident that intervention in the form of a forward rate policy can equally serve the purposes of isolationism and internationalism. This fact is so obvious that the advocates of monetary internationalism have no excuse for overlooking it. Admittedly, a recognition of this fact would confront them with a situation of divided allegiance. On the one hand, as good orthodox economists or bankers, they are opposed to every kind of official intervention. On the other hand, they are in favour of a more even distribution of the world's financial resources, and of a levelling-out of discrepancies between interest rates. In many cases these two desires come into conflict with each other, since, as we have shown above, it is only through intervention that the aim of redistributing financial resources and levelling-out interest rates can be secured. The question is whether this school of thought attaches more importance to its doctrinaire opposition to intervention than it does to the practical advantages of a more even distribution of the world's financial resources.

CHAPTER XLVII

THE FUTURE OF FORWARD EXCHANGE

(1) WILL THE FOREIGN EXCHANGE SYSTEM DISAPPEAR ?

HAVING dealt with the development, practice, principles and policy of Forward Exchange, it only remains for us to examine the future prospects of the system. Since it is part and parcel of the Foreign Exchange system as a whole, its fate is largely, though not exclusively, determined by the future of the Foreign Exchange market. In this respect, I have on various occasions expressed my firm conviction that, in the long run, the international transfer of funds through the Foreign Exchange market will be replaced by the more rational system of international Exchange Clearing.¹ If and when this change takes place, the Forward Exchange system, in the form in which we know it today, will also have to disappear.

The fact that I hold this view does not mean, however, that I expect an early abolition of the Foreign Exchange market, and with it the Forward Exchange system. On the contrary, the chances are that the system of Foreign Exchange will survive for many years to come, more or less in its present form. As I have emphasised in all my writings on the subject, the world today is not yet ripe for the universal and permanent adoption of the Exchange Clearing system. It is highly probable that, when conditions become less disturbed, the existing Exchange Clearing arrangements will be abolished. The system will not be restored until the next major international financial crisis, and even then it will not necessarily come to stay. Possibly it will require a series of crises, extending over many decades, to convince the world of the wisdom of adopting a rational system of international transfers, and to improve the Exchange Clearing system, through trial and error,

¹ For details the reader is referred to my book *The Exchange Clearing System* (Macmillan, 1935) and also *Exchange Control* (Macmillan, 1934), chaps. xiii. and xiv. and *Monetary Reform in Theory and Practice* (Kegan Paul, 1936), chaps. xxxvi. and xxxvii.

sufficiently to make it acceptable as a permanent institution. Meanwhile, Foreign Exchange in general and Forward Exchange in particular will continue to exist for a long time. Were I not convinced that this will be the case, I should not have taken the trouble to write a book on Forward Exchange, even though it might be of some historical interest to future students after the universal and permanent adoption of Exchange Clearing.

(2) NO EARLY STABILISATION

From the point of view of the future of Forward Exchange, a question of greater immediate interest than the ultimate prospects of the Foreign Exchange system is whether or not the exchanges are likely to be stabilised in the near future. With the restoration of stability, the importance of Forward Exchange would inevitably decline, especially if there were confidence in the stability of currencies. Should the gold standard be restored in the leading countries in the course of the next year or two, and should it be operated successfully, the volume of Forward Exchange business would inevitably decline, and with it the widespread interest in the subject that has manifested itself since 1931.

The gold standard is, however, not likely to be restored in the near future. Meanwhile, requirements for Forward Exchange facilities will remain as they are at the time of writing. It was believed until recently that the devaluation of the Gold Bloc currencies would reduce public interest in Forward Exchange. The fact, however, that five weeks after devaluation the discount on forward francs was once more at 12 per cent per annum for three months and at the panic level of 25 per cent per annum for one month speaks for itself. In spite of the devaluation of September 1936, the Forward Exchange market has remained lively and from time to time rates have still tended to become spectacular. The increased demand for forward facilities is likely to remain for a long time to come.

(3) EFFECT OF STABILISATION

In any case, it would be a mistake to exaggerate the extent to which stabilisation, when it does come, will reduce the demand for Forward Exchange facilities. Prior to 1925 most people thought that, once the major currencies were linked to gold, the Forward Exchange market would disappear. Experience between 1925 and

1931 proved this prophecy to be wrong, but that may not prevent the prophets from falling once more into the same error. Even after the gold standard is restored, stability will be looked upon with suspicion for some years, so that in any case the Forward Exchange market is not likely to suffer eclipse on this account. Moreover, it is conceivable that the stabilisation system that emerges from the melting pot may not be the automatic gold standard of pre-war days, nor the managed gold standard of 1925 to 1931, but a totally different system in which parities will not be fixed rigidly. Possibly, in accordance with Mr. Keynes's suggestion, there will be a wider margin fixed between gold points, in which case the range of possible fluctuations will be wider than it was with the gold standards of the past, and the exchange risk, even in normal conditions, will be greater. Such an arrangement would, of course, make Forward Exchange facilities even more necessary than they were in the period from 1925 to 1931. It is also conceivable that when the leading countries decide upon stabilisation it will be on the understanding that the Governments reserve the right to adjust their parities in face of persistent and sweeping pressure. This is the system that exists at present in the United States, where the President has the right to vary the gold value of the dollar between 50 and 60 per cent of its former gold value; in France where the gold content of the monetary unit can be changed by decree within 43 and 49 milligrammes of gold; and in several other countries. Even if the Governments were not to avail themselves of such rights for years, under such a system there would be more inducement to cover the exchange risk than under a system in which it is the declared policy of the Government to defend the existing gold parity to the last drop of its blood.

It remains, of course, to be seen whether under the existing system the authorities would allow the demand for forward facilities to be satisfied. It is conceivable that we may witness an extension of exchange restrictions which would paralyse Forward Exchange operations. While such restrictions are usually ineffective as far as spot exchanges are concerned, it is difficult to develop a good black market in Forward Exchanges, especially within the countries where the restrictions operate. It is also possible that various countries will increase the number of their Exchange Clearing systems, which means that the free market in these currencies, whether for spot or forward dealing, would contract to a large degree. Even so; however, the active forward market in dollars and sterling and

some other currencies would survive, and its importance would probably increase.

The question is what attitude the authorities are likely to adopt towards Forward Exchange in the centres where dealing remained free. We have seen that since 1935 efforts have been made to discourage speculative Forward Exchange transactions in a number of centres, including London. With the reorganisation of the Foreign Exchange Committee of the London market, the extent to which this unofficial embargo on speculative Forward Exchange transactions can be made effective has doubtless increased. It remains to be seen how far the authorities will go in this direction. While from the point of view of the defence of overvalued currencies it might be helpful to discourage speculative dealings in Forward Exchanges, this would inevitably impair the facilities available for legitimate purposes. If the authorities were to succeed in stopping speculative dealing completely, commercial buyers or sellers would at times have to search hard to find a counterpart. In reality, there is no reason to hope or fear that the unofficial embargoes on speculative forward dealings will ever become wholly effective. We have seen in earlier chapters how difficult it is to draw the line between legitimate commercial and hedging operations on the one hand and semi-speculative or entirely speculative operations on the other. The chances are that the endeavours to eliminate speculation would seriously handicap the forward market but would not paralyse it.

(4) LIKELIHOOD OF OFFICIAL INTERVENTION

Is it likely that the authorities will in future take an active interest in Forward Exchange? I believe the answer to be in the affirmative. The technique of various Central Banks and Exchange Equalisation Accounts in operating in exchanges has improved beyond recognition during the last few years. So far as the British Exchange Equalisation Account is concerned, it has acquired a complete mastery of the technique in the spot market, and has extended its operations to the open market for gold, which it practically dominates.

The chances are that sooner or later the advantages of defensive intervention in the Forward Exchange market will be realised in official quarters. While, in the existing abnormal conditions, they may hesitate to undertake a systematic pegging of the forward

rates as well as the spot, they may replace their present doctrinaire opposition to forward operations by a certain degree of judicious opportunism, intervening whenever they expect to derive tactical advantages therefrom. This, in fact, has actually been the practice of the French authorities to some extent since the devaluation of the franc.

A much more important question is whether, after the restoration of monetary stability, there is any prospect of the adoption of Mr. Keynes's proposal for a systematic forward rate policy. It would be risky to express any definite opinion in this respect. In my view, the case in favour of such a policy is unanswerable, but this does not necessarily mean that I expect it to be adopted. It may be said, however, that owing to the increasing attention which has been paid to Forward Exchange during the last few years, and owing to the possibility that the authorities might undertake occasional operations, Mr. Keynes's scheme will have a better chance of adoption after stabilisation than it had before the crisis of 1931.

(5) FORWARD EXCHANGE UNDER EXCHANGE CLEARING

Finally—to return to the starting-point of this chapter—what would be the fate of the Forward Exchange mechanism if and when Exchange Clearing were universally and permanently adopted? In its present form the system obviously could not survive the abolition of the Foreign Exchange market. It would be necessary, however, to provide some form of safeguard against losses through changes in the rates at which debts in foreign currency were converted into the national currency or *vice versa*. Under many existing clearing arrangements no such safeguards are provided, apart from fixing the rate of conversion for a definite period. The Exchange Clearing system, however, has not yet developed to its final form. It has many shortcomings, which can be remedied in the course of experience. Among others, the necessity for covering the exchange risk will have to receive attention. In the absence of a Foreign Exchange market this would have to be done on an insurance basis.

Experience has shown that private insurance facilities for covering the exchange risk are grossly inadequate. Even at Lloyd's, where the development of the science and art of insurance has reached its highest form, the rates quoted for insuring against exchange risk are rigid, clumsy, and usually excessive. Not being

able to work on any accepted basis to ascertain the degree of the risk involved, the underwriters are inclined to round up the rates they quote to a rather high figure. They quote, say, 5 guineas per cent, when at the same time the same risk is covered in the Forward Exchange market at a cost of, say, 3½ per cent. It is doubtful whether, in the absence of official intervention, these facilities could be improved sufficiently to meet requirements. It may become necessary for the Government itself to insure merchants against exchange risk. As we pointed out in Chapter XLI, the case for providing official facilities is, unanswerable when, through the Government's action, merchants are deprived of the possibility of covering themselves in the open market. In consequence, the Government should always guarantee the exchange risks involved in transfers through Exchange Clearing, in so far as such risks could not be removed by the terms of the clearing agreements.

Whether or not this is done, Forward Exchange facilities are likely to survive in some form or other even after the abolition of the free Foreign Exchange market. Unless and until the economic and social system is changed completely, and foreign trade ceases to involve private profit and risk, there will always be a tendency on the part of some people to safeguard themselves against risk, and there will always be people willing to assume that risk in the hope of a profit. The early history of the evolution of Forward Exchange has taught us that the facilities were created as a result of the joint desire of those who wanted to avoid risks and those who wanted to assume them. Unless and until the individualist system is replaced by collectivism, this demand for Forward Exchange facilities will remain, and in the long run a method will be found for meeting it, even after the abolition of the Foreign Exchange market.

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APPENDICES

APPENDIX I

FORWARD RATES—1921 to 1936

THE following tables contain weekly quotations of the spot rates and forward rates for one month and three months of the dollar, French franc, German mark (later reichsmark), Italian lira, Dutch guilder, Swiss franc and Belgian franc (later belga). They are extracted from the weekly circular published by the Anglo-Portuguese Colonial and Overseas Bank, Ltd. (originally the London branch of the Banco Nacional Ultramarino of Lisbon). This circular constitutes, to my knowledge, the only continuous published record of all the principal forward rates for one, two and three months from the beginning of 1921. The rates quoted are those of the Saturday of each week, but in cases where the market was closed on the Saturday, or when there was no quotation, the latest quotation available prior to that Saturday was used.

Up to November 19, 1921, the forward rates quoted are not for one and three calendar months but for the end of the current month and for the end of the third month, in accordance with the practice that was popular in the early period of Forward Exchange dealing. From that date onward the quotations are for one and three calendar months.

The sign (-) means that the forward rate concerned is at a discount in relation to sterling. The sign (+) indicates premium on the forward rate concerned in relation to sterling.

FORWARD RATES—1921

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1921	\$	o.	c.	fr.	e.	o.	M.	M.	M.	L.	e.	e.	fl.	c.	c.	fr.	e.	o.	fr.	c.	c.	
January	8	3-64	-1½	-5	60-87	+40	+120	263	+2	+6	104-50	..	..	11-39	-1	-3	23-60	..	..	57-88	+45	+135
	15	3-73	-½	-3½	61-30	+40	+115	254	+2½	+7½	108-25	..	..	11-37	-½	-2½	23-96	..	..	58-30	+50	+145
	22	3-78	-¾	-3¾	55-62	+45	+125	228	+2½	+8½	104-75	..	..	11-38	-1	-3	24-06	..	..	52-25	+55	+165
	29	3-86	-1¾	-5½	54-37	+30	+90	221	+1¾	+5½	104-25	..	..	11-40	-½	-½	24-20	..	..	51-83	+35	+105
February	5	3-84½	-1½	-5½	54-78	+30	+90	241	+1½	+3½	106-00	..	..	11-32	-½	-1½	23-36	..	..	52-13	+35	+115
	12	3-88½	-1½	-3½	53-60	+15	+70	227	+1	+4½	106-25	+35	+165	11-34	+½	+1½	23-82	..	..	51-32	+20	+85
	19	3-81½	-½	-3	54-18	+10	+65	236	+1	+5	106-50	+35	+210	11-34	+½	+1½	23-49	..	..	51-80	+12	+80
	26	3-87	-1½	-3½	54-98	+30	+90	241	+2	+6	106-12	+90	+270	11-35	+½	+2½	23-29	..	..	51-80	+37	+112
March	5	3-90	-½	-2½	54-25	+25	+85	241	+2	+6	106-25	+85	+270	11-36	+½	+2½	23-35	..	..	51-90	+30	+100
	12	3-90½	-½	-2½	55-05	+20	+80	244	+1½	+6½	106-25	+75	+250	11-36	+½	+2½	23-12	..	..	52-67	+25	+95
	19	3-91½	-½	-1	56-38	+7	+60	245	+½	+5	95-75	+25	+175	11-37	Par	+2½	22-55	..	..	53-88	+10	+10
	26	3-92	-½	-1½	56-58	+27	+65	247	+2½	+7	98-75	+100	+280	11-37	+½	+2½	22-75	..	..	53-20	+35	+100
April	2	3-91½	-½	-1½	56-10	+20	+60	246	+1½	+5½	95-68	+90	+270	11-37	+½	+2½	22-60	..	..	53-78	+30	+90
	9	3-89½	-½	-1½	55-32	+15	+50	242	+1½	+5½	89-38	+75	+245	11-27	+½	+2½	22-54	..	..	53-22	+20	+70
	16	3-92½	-½	-½	55-10	+8	+42	246	+½	+3½	83-75	+35	+165	11-29	+½	+2	22-67	..	..	53-28	+10	+60
	23	3-93	-½	-¾	53-91	+3	+30	260	+½	+3½	83-50	+16	+145	11-30	+½	+2½	22-70	..	..	53-00	+6	+50
	30	3-96	-½	-¾	51-19	+15	+45	262	+1½	+5½	82-75	+65	+195	11-27	+1	+5	22-57	..	..	51-22	+23	+65
May	7	3-98	-½	-½	47-80	+12	+40	261	+1½	+5	77-75	+60	+200	11-22	+½	+2½	22-36	..	..	47-80	+20	+65
	14	4-00½	-½	-½	47-02	+3	+16	227	+1	+4½	71-75	+25	+115	11-07	+½	+1½	22-27	..	..	47-05	+7	+37
	21	4-00½	-½	-½	45-65	+2	+18	237	+½	+3	71-92	+15	+115	11-12	Par	Par	22-20	..	..	45-60	+4	+35
	28	3-89½	-½	-2½	46-70	+8	+25	242	+1½	+4½	74-00	+47	+142	11-24	Par	Par	22-12	..	..	46-70	+17	+51

June	4	3.90	- 1/2	- 2 1/2	46.86	+ 7	+ 23	247	+ 1 1/2	+ 4 1/2	74.38	+ 45	+ 139	11.31	Par	Par	22.21	..	..	46.92	+ 15	+ 47
	11	3.74 1/2	- 1/2	- 2	47.18	+ 5	+ 19	257	+ 1	+ 3 1/2	75.38	+ 35	+ 110	11.40	+ 1/2	+ 1	22.29	..	..	47.23	+ 10	+ 34
	18	3.79 1/2	- 1/2	- 1 1/2	46.35	+ 3	+ 17	258	+ 1/2	+ 3 1/2	75.25	+ 20	+ 110	11.40	Par	Par	22.27	..	..	47.20	+ 5	+ 31
	25	3.73	- 1/2	- 1 1/2	46.74	+ 8	+ 22	271	+ 1 1/2	+ 4 1/2	77.38	+ 55	+ 165	11.33	Par	Par	22.22	..	..	46.86	+ 13	+ 37
July	2	3.73 1/2	- 1/2	- 1 1/2	46.60	+ 2	+ 7	278	+ 1 1/2	+ 4 1/2	72.25	+ 45	+ 135	11.35	Par	Par	22.18	..	..	46.85	+ 11	+ 33
	9	3.70	- 1/2	- 1 1/2	46.70	+ 2	+ 6	280	+ 1	+ 3 1/2	78.25	+ 35	+ 125	11.37	Par	Par	22.11	..	..	47.42	+ 8	+ 27
	16	3.62 1/2	- 1/2	- 1 1/2	46.52	+ 1	+ 5	271	+ 1/2	+ 2 1/2	80.00	+ 20	+ 100	11.40	Par	Par	21.95	..	..	47.60	+ 5	+ 23
	23	3.59	- 1/2	- 1	46.20	+ 1	+ 5	276	+ 1/2	+ 2	80.50	+ 15	+ 91	11.41	Par	Par	21.82	..	..	47.40	+ 3	+ 19
	30	3.56 1/2	- 1/2	- 1 1/2	46.92	- 4	- 12	290	+ 2	+ 2 1/2	85.50	+ 22	+ 67	11.58	Par	Par	21.72	..	..	48.55	+ 5	+ 16
August	6	3.80	- 1/2	- 1 1/2	46.50	- 2	- 6	292	+ 1 1/2	+ 4	84.00	+ 20	+ 60	11.75	Par	Par	21.68	..	..	48.45	+ 5	+ 15
	13	3.66 1/2	- 1/2	- 1 1/2	46.88	- 4	- 12	308	+ 1 1/2	+ 4	83.50	+ 12	+ 37	11.77	Par	Par	21.68	..	..	48.20	+ 5	+ 35
	20	3.66	- 1/2	- 1 1/2	47.35	- 2	- 9	310	+ 1	+ 4 1/2	85.25	+ 8	+ 32	11.80	Par	Par	21.65	..	..	48.30	+ 2	+ 12
	27	3.68 1/2	- 1/2	- 1 1/2	47.65	- 3	- 8	322	+ 1 1/2	+ 5 1/2	86.25	+ 12	+ 37	11.82	Par	Par	21.75	..	..	49.20	+ 5	+ 15
September	3	3.72 1/2	- 1/2	- 1 1/2	47.75	- 2	- 8	329	+ 1 1/2	+ 4 1/2	83.25	+ 12	+ 37	11.75	Par	Par	21.80	..	..	49.10	+ 5	+ 15
	10	3.73 1/2	- 1/2	- 1 1/2	50.02	- 2	- 8	371	+ 2	+ 3 1/2	86.50	+ 12	+ 37	11.75	Par	Par	21.75	..	..	51.00	+ 5	+ 15
	17	3.71	- 1/2	- 1 1/2	52.60	- 2	- 8	383	+ 1 1/2	+ 3	87.25	+ 8	+ 32	11.78	Par	Par	21.55	..	..	53.00	+ 5	+ 15
	24	3.73 1/2	- 1/2	- 1 1/2	52.35	- 1	- 5	405	+ 1 1/2	+ 3	90.00	+ 8	+ 32	11.76	Par	Par	21.60	..	..	52.80	+ 5	+ 21
October	1	3.73	- 1/2	- 1 1/2	52.35	- 4	- 12	450	+ 1 1/2	+ 5	94.00	+ 12	+ 37	11.70	Par	Par	21.47	..	..	53.08	+ 8	+ 24
	8	3.70 1/2	- 1/2	- 1 1/2	52.40	- 4	- 12	467	+ 1 1/2	+ 5	94.38	+ 15	+ 45	11.66	Par	Par	21.25	..	..	53.30	+ 10	+ 33
	15	3.88 1/2	- 1/2	- 1 1/2	53.20	- 3	- 9	560	+ 1 1/2	+ 5 1/2	96.50	+ 12	+ 40	11.55	Par	Par	21.10	..	..	53.85	+ 4	+ 12
	22	3.93	- 1/2	- 1	54.12	- 1	- 5	652	+ 2	+ 8	100.50	+ 10	+ 44	11.55	- 1/2	- 1 1/2	21.10	..	..	55.10	+ 5	+ 25
	29	3.92 1/2	- 1/2	- 1 1/2	54.00	- 3	- 10	690	+ 2	+ 6	99.50	+ 9	+ 27	11.52	- 1/2	- 1 1/2	21.85	..	..	55.25	+ 10	+ 30
November	5	3.94	- 1/2	- 2	53.38	- 3	- 10	962	+ 2 1/2	+ 7 1/2	96.00	+ 10	+ 30	11.40	- 1/2	- 1 1/2	21.15	..	..	55.15	+ 10	+ 30
	12	3.94	- 1/2	- 1 1/2	54.50	- 4	- 12	1120	+ 1 1/2	+ 5	96.50	+ 8	+ 26	11.35	- 1/2	- 1 1/2	20.85	..	..	56.90	+ 10	+ 30
	19	4.00	- 1/2	- 1 1/2	55.40	- 3	- 9	1105	+ 3	+ 9	95.50	+ 12	+ 38	11.35	- 1	- 3	21.20	..	..	57.25	+ 8	+ 24
	26	3.98 1/2	- 1/2	- 1 1/2	57.80	- 2	- 6	1175	+ 2	+ 6	98.00	+ 20	+ 60	11.18	- 1/2	- 1 1/2	20.90	..	..	61.25	+ 6	+ 18
	December	3	4.04 1/2	- 1/2	- 1 1/2	55.45	- 4	- 12	888	+ 1 1/2	+ 4 1/2	95.00	+ 20	+ 60	11.32	- 1/2	- 1 1/2	21.25	57.30	+ 5	+ 15
10	4.11	- 1/2	- 1 1/2	53.05	- 1	- 3	772	+ 2	+ 6	93.75	+ 20	+ 60	11.45	- 1 1/2	- 4 1/2	21.20	..	..	55.12	+ 6	+ 18	
17	4.18	- 1/2	- 1 1/2	53.00	- 1	- 3	820	+ 2 1/2	+ 8 1/2	91.50	+ 20	+ 60	11.45	- 1 1/2	- 4 1/2	21.50	..	..	55.12	+ 11	+ 33	
24	4.18 1/2	- 1/2	- 1 1/2	52.65	- 1	- 3	795	+ 2 1/2	+ 7 1/2	94.50	+ 22	+ 66	11.45	- 1 1/2	- 4 1/2	21.45	+ 1 1/2	+ 4 1/2	54.70	+ 10	+ 30	
31	4.21 1/2	- 1/2	- 1 1/2	51.88	- 1	- 3	770	+ 2 1/2	+ 7 1/2	96.50	+ 22	+ 66	11.40	- 1 1/2	- 4 1/2	21.55	+ 1 1/2	+ 4 1/2	54.50	+ 10	+ 30	

FORWARD RATES—1922

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1922	\$	c.	c.	fr.	c.	c.	M.	M.	M.	L.	c.	c.	fl.	c.	c.	fr.	c.	c.	fr.	c.	c.	
January	7	4-20	- $\frac{3}{16}$	- $\frac{3}{16}$	52-30	+ 1	+ 3	780	+ 3	+ 9	97-25	+22	+66	11-45	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	21-70	-1	-3	54-60	+12	+36
	14	4-23	- $\frac{1}{16}$	- $\frac{1}{16}$	51-47	+ 1	+ 3	770	+ 3	+ 9	97-25	+25	+75	11-47	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	21-77	-1	-3	53-90	+10	+30
	21	4-21	Par	- $\frac{1}{16}$	52-00	+ 1	+ 3	840	+ 3	+ 9	96-75	+42	+1-26L	11-58	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	21-67	+1	+3	54-10	+10	+30
	28	4-25	- $\frac{1}{16}$	- $\frac{1}{16}$	51-80	+ 1	+ 3	847	+ 2 $\frac{1}{2}$	+ 7 $\frac{1}{2}$	95-75	+47	+1-41L	11-56	- $\frac{1}{2}$	-1 $\frac{1}{2}$	21-74	+1	+3	54-10	+ 8	+24
February	4	4-32 $\frac{1}{2}$	- $\frac{3}{16}$	- $\frac{3}{16}$	51-50	- $\frac{1}{2}$	-1 $\frac{1}{2}$	872	+ 2	+ 6	92-50	+41	+1-23L	11-60	- $\frac{1}{2}$	-1 $\frac{1}{2}$	22-50	+ $\frac{1}{2}$	+ $\frac{3}{4}$	53-90	+ 9	+27
	11	4-32 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	50-92	- $\frac{1}{2}$	-1 $\frac{1}{2}$	877	+ 2 $\frac{1}{2}$	+ 7 $\frac{1}{2}$	89-69	+41	+1-23L	11-68	- $\frac{1}{2}$	-1 $\frac{1}{2}$	22-24	+ $\frac{1}{2}$	+ $\frac{3}{4}$	53-90	+ 7	+21
	18	4-36 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	49-25	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	912	+ 2 $\frac{1}{2}$	+ 6 $\frac{1}{2}$	89-37	+31	+93	11-57	- $\frac{1}{2}$	- $\frac{3}{4}$	22-34	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	51-95	+ 5	+15
	25	4-39 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	49-30	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	975	+ 2 $\frac{1}{2}$	+ 6 $\frac{1}{2}$	86 $\frac{1}{2}$	+31	+93	11-50	- $\frac{1}{2}$	- $\frac{1}{2}$	22-46	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	51-62	+ 5	+15
March	4	4-38 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	48-65	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1086	+ 1	+ 3	84 $\frac{1}{2}$	+32	+96	11-53	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	22-54	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	51-33	+ 5	+15
	11	4-36	- $\frac{1}{16}$	- $\frac{1}{16}$	48-83	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1124	+ 1	+ 3	85 $\frac{1}{2}$	+17	+51	11-52	-1	-3	22-50	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	52-07	+ 7	+21
	18	4-40	Par	Par	48-54	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1223	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	85 $\frac{1}{2}$	+18	+54	11-56	-1	-3	22-51	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	51-42	+ 7 $\frac{1}{2}$	+22 $\frac{1}{2}$
	25	4-38 $\frac{1}{2}$	Par	- $\frac{1}{16}$	48-60	Par	Par	1400	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	85 $\frac{1}{2}$	+25	+75	11-59	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	22-56	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	52-12	+ 7	+21
April	1	4-37 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	48-50	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1282	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	85-00	+17	+51	11-58	-2	-6	22-55	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$	52-12	+ 7	+21
	8	4-40	- $\frac{1}{16}$	- $\frac{1}{16}$	48-10	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1330	Par	Par	82-75	+15	+45	11-62	-2	-6	22-62	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$	51-97	+ 8	+24
	15	4-41 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	47-56	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	1277	Par	Par	81-00	+13 $\frac{1}{2}$	+40 $\frac{1}{2}$	11-63	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	22-69	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$	51-61	+ 7 $\frac{1}{2}$	+22 $\frac{1}{2}$
	22	4-42	Par	- $\frac{1}{16}$	47-40	-1	-3	1185	Par	Par	81 $\frac{1}{2}$	+14 $\frac{1}{2}$	+43 $\frac{1}{2}$	11-64	-2	-6	22-71	+2	+6	51-50	+ 6 $\frac{1}{2}$	+19 $\frac{1}{2}$
	29	4-42 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	48-27	- $\frac{1}{2}$	-2 $\frac{1}{2}$	1206	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	84-00	+ 8	+24	11-60	-2	-6	22-77	+2	+6	52-12	+ 7	+21
May	6	4-45	- $\frac{1}{16}$	- $\frac{1}{16}$	48-49	-1	-3	1231	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	82 $\frac{1}{2}$	+ 8	+24	11-57	-2	-6	23-01	+2	+6	53-04	+ 7	+21
	13	4-44 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	48-78	-1	-3	1280	+ 1	+ 3	84 $\frac{1}{2}$	+ 5 $\frac{1}{2}$	+16 $\frac{1}{2}$	11-50	-2	-6	23-06	+2	+6	53-55	+ 6	+24
	20	4-44 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	49-07	-1	-3	1342	+ 1	+ 3	87 $\frac{1}{2}$	+ 5 $\frac{1}{2}$	+16 $\frac{1}{2}$	11-46	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	23-32	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	53-55	+ 6	+24
	27	4-45	- $\frac{1}{16}$	- $\frac{1}{16}$	48-87	-1	-3	1305	Par	Par	85 $\frac{1}{2}$	+ 1	+ 3	11-43	-2 $\frac{1}{2}$	-6 $\frac{1}{2}$	23-29	+1	+3	52-87	+ 3	+ 9

June	3	4.47 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	49.09	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	1220	Par	Par	86.00	+2	+6	11.48	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	23.38	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	53.16	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$
	10	4.49 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	49.59	-1 $\frac{1}{2}$	-1 $\frac{1}{2}$	1333	+1	+3	87 $\frac{1}{2}$	+1	+3	11.50	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	23.52	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	53.61	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$
	17	4.45	- $\frac{1}{2}$	- $\frac{1}{2}$	51.03	- $\frac{1}{2}$	-1 $\frac{1}{2}$	1432	+ $\frac{1}{2}$	+2	89 $\frac{1}{2}$	+1	+3	11.49	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	23.42	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	53.87	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$
	24	4.40 $\frac{1}{2}$	- $\frac{3}{8}$	- $\frac{3}{8}$	52.18	-2	-6	1500	- $\frac{1}{2}$	-1 $\frac{1}{2}$	94	-1	-3	11.48	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	23.25	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	54.82	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$
July	1	4.42	- $\frac{1}{8}$	- $\frac{1}{8}$	52.64	-5	-15	1733	-2	-6	94	Par	Par	11.47	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	23.27	+1	+4 $\frac{1}{2}$	55.52	+3	+9
	8	4.45 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	56.00	-5	-15	2305	-3	-9	99 $\frac{1}{2}$	-2	-6	11.47	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	23.27	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	58.80	+3	+9
	15	4.44 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	53.82	-5	-15	1965	-7 $\frac{1}{2}$	-22 $\frac{1}{2}$	97 $\frac{1}{2}$	-1	-4 $\frac{1}{2}$	11.46	-1	-3	23.16	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	56.82	+3 $\frac{1}{2}$	+10 $\frac{1}{2}$
	22	4.46	- $\frac{1}{8}$	- $\frac{1}{8}$	53.10	-5 $\frac{1}{2}$	-16 $\frac{1}{2}$	2235	-8	-24	96	-2	-6	11.45	-2	-6	23.32	+2	+6	56.09	+2	+6
	29	4.44 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	54.17	-8	-24	2677	-10	-30	97 $\frac{1}{2}$	Par	Par	11.48	-2	-6	23.26	-1 $\frac{1}{2}$	+4 $\frac{1}{2}$	57.25	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$
August	5	4.45 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	54.38	-10	-27	3362	-15	-45	96 $\frac{1}{2}$	Par	Par	11.51	-2	-6	23.43	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	57.54	-1	-3
	12	4.46 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	54.46	-7	-21	3440	-30	-90	97	Par	Par	11.49	-2	-6	23.48	-2	-6	57.57	+1	+3
	19	4.48	- $\frac{1}{2}$	- $\frac{1}{2}$	56.10	-8	-24	5540	-60	-180	98 $\frac{1}{2}$	Par	Par	11.49	-2	-6	23.45	+2	+6	59.12	+1	+3
	26	4.47 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	59.40	-11	-24	8500	-150	-450	103	Par	Par	11.44	-2	-6	23.46	+2	+6	62.32	+1	+3
September	2	4.46 $\frac{1}{2}$	- $\frac{1}{8}$	-1 $\frac{1}{2}$	57.00	-11	-24	5750	-150	-450	101 $\frac{1}{2}$	+10	+30	11.45	-2	-6	23.48	+2	+6	60.12	+6	+10
	9	4.45 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	57.56	-4	-9	6200	-200	-600	102 $\frac{1}{2}$	+8	+24	11.46	-1	-3	23.50	+2	+6	60.90	+5	+15
	16	4.43	- $\frac{1}{2}$	- $\frac{1}{2}$	58.26	-4	-9	6525	-200	-600	105 $\frac{1}{2}$	+10	+30	11.43	-1	-3	23.65	+2 $\frac{1}{2}$	+7 $\frac{1}{2}$	61.72	+7	+21
	23	4.41 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	58.09	-4	-9	6087	-300	-900	105	+12	+36	11.41	-1	-3	23.66	+2	+6	61.55	+7	+21
	30	4.37	- $\frac{1}{2}$	-1 $\frac{1}{2}$	57.77	-3	-9	7100	-300	-900	103 $\frac{1}{2}$	+8	+24	11.29	-1	-3	23.44	+2	+6	61.56	+7	+21
October	7	4.41 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	58.10	-3	-9	9870	-500	-1.5*	103	+8	+24	11.37	-2	-6	23.60	+2	+6	62.27	+6	+18
	14	4.43 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	58.52	-6	-18	12.07*	-800	-2.4*	104 $\frac{1}{2}$	+6	+18	11.39	-2	-6	23.66	+1	+3	62.76	+6	+18
	21	4.40 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	60.33	-6	-18	19.20*	-1.5*	-4.5*	108 $\frac{1}{2}$	+10	+30	11.40	-1	-3	24.44	+1	+3	65.22	+4	+12
	28	4.40 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	62.15	-10	-30	17.95*	-2*	-6*	112 $\frac{1}{2}$	+12	+36	11.43	-1	-3	24.69	+1	+3	68.05	+2	+6
November	4	4.46 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	64.97	-12	-36	26.00*	-4*	-12*	106 $\frac{1}{2}$	+12	+36	11.38	-1	-3	24.36	+1	+3	69.97	+2	+6
	11	4.46	- $\frac{1}{2}$	-2 $\frac{1}{2}$	69.52	-30	-70	35.50*	-7*	-21*	101	+8	+24	11.39	-1	-3	24.36	+1 $\frac{1}{2}$	+4 $\frac{1}{2}$	74.60	Par	+4
	18	4.48	-1	-3	63.75	-17	-40	29.75*	-2*	-6*	97	+18	+54	11.40	-1	-3	24.23	+1	+3	68.12	+1	+3
	25	4.50	-1	-3	62.97	-10	-30	31.50*	-4*	-12*	94 $\frac{1}{2}$	+20	+60	11.41	-1	-3	24.15	+1	+3	67.90	+1	+3
December	2	4.52 $\frac{1}{2}$	-1	-3	64.25	-10	-30	36.00*	-4*	-12*	93 $\frac{1}{2}$	+20	+60	11.41	-1	-3	24.12	+1	+3	69.30	+1	+3
	9	4.57	-1	-3	64.70	-12	-30	37.00*	-5*	-15*	91	+15	+45	11.47	-1	-3	24.25	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	70.52	+3	+9
	16	4.64 $\frac{1}{2}$	-1	-3	61.62	-8	-22	28.70*	-1.5*	-4.5*	91 $\frac{1}{2}$	+25	+75	11.61	-1	-3	24.47	Par	+2	67.80	+10	+30
	23	4.65	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	62.65	-8	-15	31.00*	-1.5*	-4.5*	90 $\frac{1}{2}$	+32	+90	11.67	-1	-3	24.60	+1	+3	68.42	+4	+12
	30	4.63 $\frac{1}{2}$	-1 $\frac{1}{2}$	-3	63.57	-3	-8	33.20*	-2*	-4*	91 $\frac{1}{2}$	+22	+66	11.71	-1	-3	24.45	Par-	Par-	69.25	+5	+15

* Thousands of marks.

FORWARD RATES—1923

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1923	\$	o.	o.	fr.	o.	o.	M.	M.	M.	L.	o.	o.	fl.	o.	o.	fr.	o.	o.	fr.	o.	o.	
January	6	4-65	-1	-2½	66-20	-9	-20	39-63*	-3*	..	92	+11	+33	11-74	-1	-3	24-55	-½	-1½	71-95	+3½	+13
	13	4-67½	-1	-3	66-82	-5	-15	48-50*	-2*	-6*	94	+20	+60	11-80	-1	-3	24-73	Par	Par	73-22	+4	+12
	20	4-68½	-1	-3	70-70	-6	-16	85-00*	-8*	-20*	97	+25	+40	11-78	-1	-3	24-94	+1	+3	78-00	+4	+16
	27	4-64	-1	-2½	72-25	-7	-16	125-00*	-17*	..	97	+25	+75	11-76	-½	-2½	24-86	+½	+1	81-35	+3	+14
February	3	4-67½	-1	-3	73-02	-15	-30	165-00*	-30*	..	96½	+30	+90	11-87	-1	-3	24-85	+3	+9	83-10	+1	+3
	10	4-68½	-1	-3	73-35	-12	-30	142-00*	-25*	-75*	96½	+25	+75	11-85	-1	-3	24-93	+1	+3	85-47	Par	+7
	17	4-69	-1	-3	78-45	-12	-25	80-00*	-20*	..	98	+30	+80	11-80	-1	-3	24-97	+3	+9	89-23	+3	+10
	24	4-71½	-1	-3	77-60	-10	-25	106-00*	-36*	..	97½	+25	+60	11-89	-½	-2½	25-04	+3	+8	88-27	+3	+9
March	3	4-70½	-1½	-3½	77-45	-11	-23	106-00*	-17*	..	97½	+21	+57	11-89	-1	Par	25-09	+3½	+10	88-40	+3	+1
	10	4-71	-1	-3½	78-00	-9	-21	97-00*	-5*	-16*	98½	+20	+53	11-89	Par	Par	25-20	+2	+6	90-67	+4	+12
	17	4-69½	-1	-3	75-02	-8	-20	97-00*	-3*	..	97½	+23	+68	11-89	Par	Par	25-23	+3	+8	87-40	+3	+11
	24	4-69	-1	-3	72-17	-8	-18	97-00*	-3*	..	96	+17	+45	11-89	Par	Par	25-37	+3½	+11	83-65	+3	+12
	31	4-67½	-1	-3	70-40	-9	-19	101-00*	-5*	..	93½	+19	+45	11-88	Par	Par	25-33	+4	+11	81-75	+3	+10
April	7	4-66½	-½	-2½	71-00	-5	-12	97-50*	-6*	..	94	+19	+45	11-88	Par	Par	25-43	+4	+11	82-15	+2	+10
	14	4-65½	-½	-2½	70-05	-4	-10	98-00*	-5*	-16*	93½	+20	+45	11-89	Par	Par	25-57	+3	+10	81-02	+3	+9
	21	4-65½	-½	-2½	70-07	-4	-11	120-00*	-9*	..	94	+2	+55	11-88	Par	Par	25-64	+5	+12	81-07	+3	+10
	28	4-63½	-½	-2½	68-22	-3	-9	136*	-15*	..	94	+21	+55	11-86	-½	-2	25-52	+4½	+14	79-17	+2	+8
May	5	4-62½	-½	-2½	69-30	-4	-10	160*	-17*	..	94½	+16	+40	11-83	-½	-1½	25-62	+4	+11	80-25	+2½	+9
	12	4-61½	-½	-2½	69-95	-4½	-10	194*	-22*	..	95	+13	+32	11-81	-1	-3	25-71	+4	+10	80-97	+2½	+9
	19	4-62½	-½	-2½	69-42	-3½	-8	225*	-26*	..	95	+16	+40	11-81	-1	-3	25-65	+2½	+7	80-61	+1½	+7
	26	4-62½	-½	-2½	69-87	-3½	-8½	251*	-36*	..	96½	+15	+41	11-82	-1	-3	25-66	+2½	+6	81-45	+1½	+5

June	2	4 63½	- ½	- 2 7/16	71 25	- 4½	- 11	353*	- 45*	..	98½	+ 17	+ 46	11 81	- 1½	- 3	25 62	+ 1½	+ 3	82 75	+ 3	+ 6
	9	4 61½	- ½	- 2½	71 85	- 5½	- 14	390*	- 25*	..	99	+ 10½	+ 45	11 76	- 1	- 3	25 66	+ 1½	+ 4	83 40	Par	+ 2
	16	4 61½	- ½	- 2	73 15	- 5½	- 15	522*	- 33*	..	100	+ 18	+ 46	11 76	- 1	- 2½	26 67	+ 1	+ 3	84 97	Par	+ 2
	23	4 61½	- ½	- 1½	74 42	- 5	- 12	485*	- 65*	..	102½	+ 21	+ 55	11 77	- 1½	- 3½	26 73	+ 2	+ 4½	87 25	+ 1½	+ 3½
	30	4 57½	- ½	- 1½	75 62	- 6	- 13	850*	- 170*	..	104	+ 21	+ 68	11 68	- 1½	- 4	26 89	+ 2½	+ 6	88 87	+ 2	+ 4
July	7	4 56½	- ½	- 1½	79 12	- 5	- 12	960*	- 375*	..	108½	+ 25	+ 65	11 65	- 1½	- 4½	26 68	+ 2	+ 3	96 52	+ 3	+ 6
	14	4 60½	- ½	- 1½	78 32	- 2½	- 7	1075*	- 350*	..	107½	+ 29	+ 70	11 73	- 1	- 3	26 54	- 2	- 5½	94 27	+ 4	+ 12½
	21	4 69½	- ½	- 1½	77 85	- 3	- 5	1600*	- 700*	..	108	+ 32	+ 83	11 71	- ½	- 2½	26 95	- ½	- 1	93 07	+ 6	+ 13
	28	4 58½	- ½	- 1½	77 90	- 4	- 8	4500*	- 1600*	..	105	+ 30	+ 77	11 63	- 1	- 2½	26 66	Par	- 2	94 95	+ 8	+ 16
August	4	4 57	- ½	- 1½	78 90	- 6	- 10	5200*	- 5000*	..	105½	+ 29	+ 75	11 62	- ½	- 1½	25 54	- 3	- 6	98 95	+ 4	+ 12
	11	4 57	- ½	- ½	80 75	- 4½	- 11	15*	- 6000*	..	107½	+ 24	+ 63	11 60	- ½	- 1	25 15	- 6	- 13	102 87	- 5	- 9
	18	4 55½	- ½	- ½	82 05	- 5	- 10	18†	- 9†	..	108½	+ 24	+ 65	11 58	- ½	- ½	25 20	- 6	- 17	103 62	- 8	- 14
	25	4 55½	- ½	- ½	80 35	- 4½	- 10	21†	- 7†	..	105½	+ 26	+ 72	11 58	- ½	- ½	25 20	- 6	- 12	100 07	- 6	- 14
September	1	4 54½	- ½	- ½	80 82	- 5	- 11	45†	- 20†	..	107½	+ 22	+ 60	11 55	- ½	- ½	25 19	- 5	- 15	98 35	- 10	- 18
	8	4 53½	- ½	- 1 7/16	81 40	- 3½	- 7½	182†	..	..	105	+ 22	+ 55	11 53	Par	- ½	25 19	- 5½	- 15	99 35	- 9	- 16
	15	4 54½	- ½	- 1½	77 37	- 5	- 10	525†	..	..	102	+ 18	+ 55	11 55	- ½	- ½	25 53	- 1½	- 10½	93 25	- 10	- 19
	22	4 54½	- ½	- 1½	76 02	- 2½	- 7	700†	..	..	100½	+ 19	+ 45	11 56	- ½	- ½	25 55	- 1½	- 7	89 40	- 4	- 9
	29	4 55½	- ½	- 1½	74 17	- 3	- 6½	875†	..	..	99½	+ 19	+ 50	11 57	- ½	- ½	25 45	- 5	- 8	87 25	- 4	- 8
October	6	4 55½	- ½	- 1½	77 02	- 6	- 13	2‡	..	..	101½	+ 16	+ 48	11 58	- ½	- ½	25 48	- 3	- 8	90 95	- 7	- 13
	13	4 53½	- ½	- 1 7/16	74 60	- 3½	- 8	20‡	..	..	99½	+ 14½	+ 43	11 55	- ½	- ½	25 25	- 4	- 11	87 50	- 5	- 12
	20	4 51½	- ½	- 1 7/16	75 85	- 3½	- 7	62½‡	..	..	100½	+ 15½	+ 50	11 55	Par	- ½	25 27	- 3½	- 10	87 70	- 5	- 12
	27	4 50	- ½	- 1½	75 92	- 4½	- 9	275‡	..	..	99½	+ 18	+ 45	11 56	+ 1 7/16	+ 1 7/16	25 24	- 3½	- 10	88 05	- 5	- 10
November	3	4 45½	- ½	- 1½	77 67	- 7	- 17	7500‡	..	..	100½	+ 10	+ 30	11 52	Par	+ ½	25 09	- 3	- 9	90 60	- 6	- 12
	10	4 39	- ½	- 2½	78 30	- 9	- 20	9¶	..	..	100½	+ 10	+ 38	11 55	Par	+ 7/16	24 95	- 3	- 9	90 55	- 6	- 12
	17	4 30	- ½	- 2½	81 85	- 11	- 22	20¶	..	..	102½	+ 9	+ 34	11 62	- ½	- 2½	24 88	- 3½	- 10	96 00	- 6	- 14
	24	4 36½	- ½	- 2½	80 87	- 10	- 30	40¶	..	..	101	+ 9	+ 32	11 46	- 1	- 3	24 97	- 4	- 11	93 92	- 7	- 16
December	1	4 34	- ½	- 1 7/16	80 42	- 6	- 17	22¶¶	..	..	100½	+ 1½	+ 9	11 45	- 2½	- 5	24 87	- 3	- 9	93 50	- 8	- 22
	8	4 36	- ½	- 1½	81 77	- 6½	- 16	17¶¶	..	..	100½	+ 6	+ 25	11 47	- 2½	- 4½	25 00	- 2½	- 7	94 80	- 6	- 18
	15	4 3 7/16	- ½	- 1½	82 15	- 5	- 13	18¶¶	..	..	100½	+ 6	+ 28	11 45	- 3½	- 7	25 08	- 2½	- 7	94 97	- 4½	- 10
	22	4 34½	- ½	- 1½	86 00	- 4	- 11	19¶¶	..	..	100½	+ 9	+ 22	11 47	- 4½	- 8½	24 90	- 3	- 5	96 92	- 2	- 8
	29	4 33½	- ½	- 1½	84 82	- 4½	- 8	19¶¶	..	..	100	+ 14	+ 28	11 39	- 5	- 10	24 77	- 4½	- 9	96 77	- 2	- 8

* Thousands of marks.

† Millions of marks.

‡ Billiards of marks.

¶ Billions of marks.

FORWARD RATES—1924

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1924		\$	c.	c.	fr.	c.	c.	M.	pf.	pf.	L.	c.	c.	fl.	c.	c.	fr.	c.	c.	fr.	c.	c.
January	5	4-29	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	88-30	- 8	- 19	19*	..	..	99 $\frac{1}{2}$	+ 7	+20	11-37	-2 $\frac{1}{2}$	-5	24-65	- 4 $\frac{1}{2}$	- 9	99-87	- 4	- 8 $\frac{1}{2}$
	12	4-26 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	90-47	- 22	- 43	19-5	..	..	97	+ 5 $\frac{1}{2}$	+17	11-37	-3	-6	24-69	- 2 $\frac{1}{2}$	- 7	100-67	- 3 $\frac{1}{2}$	- 8
	19	4-23 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	92-87	- 43	- 120	18-5	..	..	97 $\frac{3}{16}$	+ 8	+26	11-39	-3 $\frac{1}{2}$	-8	24-50	- 1 $\frac{1}{8}$	- 4	101-95	Par	Par
	26	4-22 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	94-25	- 27	- 77	17-75*	..	..	97 $\frac{1}{2}$	+11	+32	11-40	-2 $\frac{1}{2}$	-7	24-50	- 1	- 4	104-25	+ 2	+ 5
February	2	4-34 $\frac{1}{2}$	-2 $\frac{1}{8}$	-1 $\frac{1}{8}$	92-17	- 22	- 60	18-0*	..	..	98 $\frac{1}{2}$	+11	+28	11-53	-2 $\frac{1}{2}$	-6	24-88	- 1	- 4	104-25	+ 4	+ 14
	9	4-30	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	94-80	- 25	- 65	21-0*	..	..	98 $\frac{1}{2}$	+ 9	+23	11-50	-1 $\frac{1}{2}$	-5	24-71	- 1	- 4	107-20	+ 2	+ 7
	16	4-28 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	97-65	- 43	- 1-25	19-25*	..	..	98 $\frac{13}{16}$	+11	+33	11-48	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	24-68	- 1	- 4	113-97	+ 5	+ 15
	23	4-31 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	99-75	- 58	- 1-80	19-00*	..	..	99 $\frac{1}{2}$	+ 9	+25	11-53	-1 $\frac{1}{2}$	-4	24-90	- 2 $\frac{1}{2}$	- 6	113-75	-20	- 50
March	1	4-29 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	103-40	-1-10	- 4-20	19-50*	..	..	99 $\frac{1}{2}$	+ 7	+20	11-53	-1	-3	24-81	- 4	-10	118-75	-25	- 75
	8	4-27 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	117-00	-3-55	-10-00	19-50*	..	..	101	+ 8	+20	11-54	-1 $\frac{1}{2}$	-1 $\frac{1}{2}$	24-80	- 4	-12	131-37	-90	-3-20 fr.
	15	4-28 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	89-81	-3-75	- 9-25	19-00*	..	..	99 $\frac{13}{16}$	Par	Par	11-55	-1	-2 $\frac{1}{2}$	24-77	- 4	-10	109-75	-65	-1-60 fr.
	22	4-29 $\frac{1}{2}$	Par	-1 $\frac{1}{8}$	81-25	-1-25	- 3-25	19-00*	..	..	99 $\frac{1}{16}$	+ 6	+12	11-63	-1 $\frac{1}{2}$	-1 $\frac{1}{2}$	24-86	- 4	-10	102-50	-60	- 90
	29	4-30	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	78-45	-1-12	- 3-00	19-00*	..	..	99	+ 7	+17	11-64	-1 $\frac{1}{2}$	-1 $\frac{1}{2}$	24-77	- 3	- 9	100-00	-15	- 35
April	5	4-31 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	74-97	- 45	- 1-80	20-50*	..	..	98 $\frac{5}{16}$	+ 6	+17	11-61	-1 $\frac{1}{2}$	-3	24-78	- 4	-10	89-62	- 5	- 20
	12	4-33 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	72-40	- 50	- 1-60	19-00*	..	..	97 $\frac{1}{2}$	+ 4	+17	11-63	-1	-2	24-70	- 4	-10	85-12	- 5	- 20
	19	4-36	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	69-57	- 20	- 55	19-00*	..	..	98 $\frac{1}{2}$	- 1 $\frac{1}{2}$	- 1 $\frac{1}{2}$	11-70	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	24-75	- 3 $\frac{1}{2}$	-10	81-25	- 2	- 4
	26	4-38 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	68-75	- 20	- 60	19-25*	..	..	97 $\frac{1}{16}$	+ 3	+ 9	11-77	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	24-67	- 3	- 8	80-62	- 2	- 2
May	3	4-38 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	67-87	- 25	- 62	18-25*	..	..	97 $\frac{13}{16}$	Par	+ 5	11-71	-2 $\frac{1}{2}$	-4 $\frac{1}{2}$	24-62	- 2 $\frac{1}{2}$	- 7	81-69	Par	- 5
	10	4-37	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	73-00	-1-40	- 3-35	19-00*	..	..	97 $\frac{1}{2}$	Par	Par	11-68	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	24-59	- 2	- 6	89-00	-35	- 80
	17	4-36 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	75-82	- 60	- 1-25	18-50*	..	..	97 $\frac{1}{2}$	- 3	-12	11-67	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	24-62	- 2	- 5	89-75	-10	- 27
	24	4-34 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	80-42	- 55	- 1-50	18-50*	..	..	98 $\frac{3}{8}$	Par	Par	11-62	-1 $\frac{1}{2}$	-2	24-59	- 1 $\frac{1}{2}$	- 4	93-63	-10	- 30
	31	4-30 $\frac{1}{2}$	-1 $\frac{1}{8}$	-1 $\frac{1}{8}$	84-40	- 70	- 2-00	18-00*	..	..	99	Par	- 4	11-52	-1	-2	24-46	- 1	- 5	97-25	-15	- 35

				c.		c.																
June	7	4.31½	- ½	- ½	84.85	- 52	- 105	18.00*	..	..	99½	- 1½	- 8	11.52	- 1½	- 2½	24.48	- 2	- 5	95.50	- 12	- 32
	14	4.31½	Par	- ½	80.82	- 25	- 85	18.00*	..	..	99½	Par	- 8	11.55	- 1½	- 2½	24.45	- 2	- 5	94.13	- 7	- 25
	21	4.33½	Par	- ½	79.84	- 30	- 70	18.00*	..	..	100½	Par	- 8	11.58	- 1½	- 2½	24.32	- 2	- 5	92.62	- 7	- 25
	28	4.32	+ ½	+ ½	81.80	- 30	- 87	18.00*	..	..	100½	+ 4	+ 42	11.50	- 1	- 2½	24.33	- 3	- 7	93.56	- 7	- 20
July	5	4.32½	+ ½	+ ½	86.02	- 30	- 75	18.25*	..	..	101½	Par	+ 2	11.47	- 1½	- 3	24.27	- 3	- 7	97.44	- 7	- 20
	12	4.36½	+ ½	+ ½	85.07	- 20	- 58	18.00*	..	..	102	+ 7	+ 15	11.56	Par	- ½	23.98	- 3	- 7	96.12	- 10	- 22
	19	4.37½	+ ½	+ ½	85.57	- 15	- 48	18.37*	..	..	101½	+ 8	+ 17	11.53	Par	- ½	23.99	- 5	- 15	95.87	- 1	- 4
	26	4.40	+ ½	+ 1½	86.12	- 7	- 30	18.37*	..	..	101½	+ 10	+ 20	11.51	+ ½	+ ½	23.89	- 5	- 12	95.75	- 2	- 6
August	2	4.42	+ ½	+ ½	85.25	- 5	- 20	18.50*	..	..	101½	+ 8	+ 18	11.53	+ ½	+ ½	23.74	- 11	- 22	94.62	- 3	- 8
	9	4.51½	+ ½	+ ½	82.15	- 8	- 22	19.00*	..	..	100½	+ 12	+ 25	11.61	+ 2½	+ 2½	23.85	- 12	- 22	90.25	Par	Par
	16	4.55	+ ½	+ ½	79.40	- 3	- 21	19.25*	..	..	100½	+ 17	+ 35	11.62	+ 1½	+ 2½	24.08	- 10	- 20	86.50	- 2	- 6
	23	4.49	+ ½	+ ½	83.45	- 6	- 26	18.75*	..	..	101½	+ 20	+ 40	11.59	+ ½	+ 1½	23.97	- 12	- 22	90.75	- 3	- 8
	30	4.50½	+ ½	+ ½	82.12	- 7	- 25	19.00*	..	..	101½	+ 13	+ 35	11.62	+ ½	+ 1	23.88	- 11	- 20	89.06	- 4	- 13
September	6	4.43½	+ ½	+ ½	84.75	- 4	- 15	18.75*	..	..	102	+ 9	+ 30	11.60	Par	Par	23.61	- 5	- 20	89.75	- 3	- 11
	13	4.46	+ ½	+ ½	83.17	- 5	- 15	18.75*	..	..	101½	+ 11	+ 32	11.63	- ½	- 1	23.60	- 7	- 17	89.40	- 1	- 5
	20	4.46½	+ ½	+ ½	84.05	- 5	- 15	18.75*	..	..	101.77	+ 12	+ 32	11.60	- 1½	- 2½	23.63	- 5	- 11	90.05	Par	Par
	27	4.47½	+ ½	+ 1½	84.80	- 9	- 20	18.75*	..	..	101.80	+ 11	+ 32	11.57	- 1½	- 2½	23.67	- 7	- 17	91.85	- 3	- 8
October	4	4.40½	+ ½	+ 1	84.75	- 8	- 19	18.72	..	..	101.82	+ 9	+ 30	11.52	- 3	- 6½	23.33	- 7	- 18	92.50	- 7	- 16
	11	4.49	+ ½	+ ½	86.57	- 14	- 38	18.87	..	..	102.90	+ 9	+ 27	11.47	- 2	- 6	23.39	- 5	- 13	93.97	- 5	- 13
	18	4.49	+ ½	+ ½	85.82	- 15	- 39	18.87	..	..	102.85	+ 9	+ 28	11.49	- 2½	- 6½	23.38	- 5	- 12	93.37	- 6	- 13
	25	4.49	+ ½	+ ½	86.20	- 13	- 39	18.85	..	..	103.80	+ 6	+ 28	11.44	- 2½	- 6½	23.36	- 4	- 11	93.70	- 4	- 8
November	1	4.53½	+ ½	+ ½	86.00	- 18	- 48	19.05	..	..	103.95	Par	Par	11.48	- 2½	- 7	23.54	- 2	- 8	93.87	- 7	- 12
	8	4.58½	+ ½	+ ½	87.55	- 30	- 77	19.20	..	..	108.57	Par	+ 2	11.49	- 3	- 7	23.79	- 3	- 8	95.47	- 10	- 25
	15	4.63½	Par	Par	87.05	- 28	- 77	19.42	..	..	106.95	Par	+ 2	11.54	- 4½	- 8½	24.02	- 1	- 5	95.80	- 12	- 32
	22	4.63½	Par	Par	87.35	- 20	- 57	19.47	- 6	- 18	108.72	Par	+ 6	11.52	- 6½	- 9	24.01	- 2	- 5	95.35	- 12	- 20
	29	4.02½	+ ½	+ ½	85.82	- 25	- 83	19.43	- 6	- 18	106.47	Par	+ 4	11.46	- 4½	- 9½	23.96	- 2	- 4	94.42	- 8	- 20
December	6	4.68	- ½	+ ½	86.70	- 50	- 1.45	19.63	- 7	- 18	107.85	Par	+ 4	11.56	- 2	- 6½	24.17	- 2	- 6	94.72	- 8	- 17
	13	4.69½	- ½	+ ½	87.57	- 38	- 1.00	19.69	- 7	- 18	108.80	+ 7	+ 17	11.63	- ½	- 2½	24.22	- 2	- 6	95.00	- 7	- 17
	20	4.70½	- ½	+ ½	87.30	- 42	- 1.17	19.76	- 4	- 17	110.07	+ 5	+ 15	11.65	- 1½	- 3½	24.29	- 2	- 5	94.82	- 3	- 10
	27	4.71½	- ½	- ½	87.27	- 47	- 1.20	19.80	- 4	- 17	109.87	+ 5	+ 15	11.65	- 1½	- 3	24.24	- 2	- 6	94.62	- 4	- 12

* Billions of marks.

FORWARD RATES—1925

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium		
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months
1925	\$	c.	c.	fr.	c.	fr.	Rm.	pf.	pf.	L.	c.	c.	fl.	c.	c.	fr.	c.	c.	fr.	c.	c.
January 3	4-74½	-⅞	-⅞	87-47	-50	-1-17	19-93	-4	-16	112-15	+ 5	+ 12	11-71	-1½	-3½	24-34	-3	-8	94-87	- 4	- 12
10	4-78½	-⅞	-⅞	89-12	-43	-1-29	20-10	-4	-14	114-00	+ 5	+ 12	11-79	Par	Par	24-72	Par	Par	95-92	Par	Par
17	4-77½	-⅞	-⅞	88-40	-24	- 72	20-7	-4	-14	117-12	+ 5	+ 12	11-83	Par	Par	24-78	Par	Par	95-25	Par	Par
24	4-80	-⅞	-⅞	88-85	-20	- 55	20-15	-4	-14	116-31	+ 5	+ 12	11-89	Par	Par	24-85	Par	Par	93-97	Par	Par
31	4-79½	-⅞	-⅞	88-40	-28	- 63	20-11	-5	-12	114-82	+ 5	+ 12	11-90	Par	Par	24-84	Par	Par	92-32	- 2	- 8
February 7	4-77½	-⅞	-⅞	88-67	-35	- 80	20-05	-5	-11	115-19	+ 5	+ 16	11-87	Par	Par	24-75	+1	+3	93-00	- 8	- 20
14	4-77½	-⅞	-⅞	91-85	-45	-1-25	20-05	-5	-11	116-12	+ 6	+ 16	11-87	Par	Par	24-77	+ ½	+2	95-32	- 9	- 18
21	4-76½	-⅞	-⅞	90-87	-43	-1-20	20-02	-5	-11	116-25	+ 7	+ 17	11-88	+1½	+2½	24-77	Par	+2	94-85	- 7	- 17
28	4-76	-⅞	-⅞	92-57	-48	-1-20	20-00	-5	-10	117-50	+ 10	+ 25	11-90	+1½	+3½	24-77	+1	+3	94-95	- 8	- 18
March 7	4-76½	Par	Par	91-65	-32	- 92	20-01	-4	-10	116-75	+ 8	+ 23	11-93	+1½	+3½	24-76	+1	+3	94-15	- 1	- 7
14	4-78½	Par	Par	92-75	-25	- 75	20-09	-4	-10	117-62	+ 8	+ 23	11-97	+2	+4	24-80	+1	+3	94-62	+ 1	+ 1½
21	4-78	Par	Par	92-10	-22	- 77	20-07	-4	-10	117-56	+ 8	+ 23	11-98	+1½	+3½	24-79	Par	Par	94-35	Par	Par
28	4-77½	+⅞	+⅞	90-60	-30	- 80	20-07	-4	- 9	116-75	+ 8	+ 23	11-98	+1½	+3½	24-78	+1	+2	93-15	+ 3	+ 7
April 4	4-78½	+⅞	Par	92-32	-57	-1-30	20-09	-4	- 9	116-37	+ 17	+ 40	11-99	+ ½	+1½	24-78	+1	+2	94-20	+ 3	+ 5
11	4-77½	+⅞	+⅞	92-60	-65	-1-65	20-07	-3	- 8	116-50	+ 13	+ 35	11-99	+ ½	+1½	24-72	+1	+2	94-65	Par	+ 2
18	4-78½	+⅞	+⅞	91-30	-44	-1-15	20-11	-3	-10	116-62	+ 15	+ 37	11-99	+ ½	+1½	24-75	+1	+2	94-75	+ 2½	+ 6
25	4-81½	+⅞	+⅞	92-60	-53	-1-42	20-22	-3	- 8	117-15	+ 20	+ 42	12-02	+ ½	+1½	24-83	+ ½	+2	95-60	+ 4	+ 7½
May 2	4-84½	+½	+½	92-42	-45	-1-15	20-35	-2	- 7	117-62	+ 17	+ 40	12-07	+ ½	+ ½	25-03	+ ½	+1½	95-52	+ 4	+ 10
9	4-85	+⅞	+⅞	93-12	-45	-1-15	20-36	-2	- 7	118-12	+ 15	+ 40	12-07	+ ½	+ ½	25-07	+ ½	+1½	96-10	+ 4	+ 12
16	4-85½	+⅞	+⅞	93-32	-45	-1-15	20-39	-2	- 7	118-87	+ 15	+ 37	12-07	+ ½	+1½	25-07	+ ½	+3	96-32	+ 5	+ 12
23	4-86	+½	+½	95-17	-47	-1-40	20-41	-2	- 6	120-62	+ 17	+ 37	12-09	+ ½	+1½	25-13	+1½	+3	97-62	+ 5	+ 12
30	4-86	+½	+½	96-92	-55	-1-55	20-42	-2	- 6	122-00	+ 10	+ 27	12-10	+ ½	+2	25-11	+1½	+4	99-30	+ 3	+ 5

June	6	4 86	+ $\frac{7}{16}$	+ $\frac{1}{16}$	102.57	-58	-1.72	20.42	-2	-6	122.75	+ 10	+ 20	12.10	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	25.08	+1 $\frac{1}{2}$	+5	104.25	- 2	- 5
	13	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	100.05	-55	-1.50	20.40	-2	-6	123.00	+ 10	+ 20	12.09	+ $\frac{1}{2}$	+2	25.02	+1 $\frac{1}{2}$	+5	101.92	+ 1	+ 6
	20	4 86	+ $\frac{1}{16}$	+ $\frac{1}{16}$	102.80	-75	-1.75	20.41	-2	-6	128.37	+ 4	+ 19	12.12	+1	+3	25.02	+ $\frac{1}{2}$	+4	103.90	+ 2	+ 12
	27	4 86 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	105.95	-75	-2.00	20.41	-2	-6	136.00	Par	+ 5	12.13	+1	+3	25.03	+ $\frac{1}{2}$	+4	106.85	+ 5	+ 20
July	4	4 86	+ $\frac{1}{16}$	+1 $\frac{1}{16}$	103.85	-30	-1.20	20.42	-4	-10	134.43	- 10	- 22	12.13	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	25.05	+1	+3	104.65	+ 2	+ 7
	11	4 86	+ $\frac{1}{16}$	+1	103.55	-34	- .90	20.42	-2	-9	128.93	- 17	- 32	12.13	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	25.03	+1 $\frac{1}{2}$	+3	104.67	+ 4	+ 10
	18	4 86	+ $\frac{1}{16}$	+ $\frac{1}{16}$	103.25	-23	- .75	20.42	-2	-9	131.06	- 12	- 25	12.11	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	25.02	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	105.25	+ 4	+ 12
	25	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	102.97	-31	- .82	20.39	-2	-9	132.56	- 17	- 32	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.00	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	105.10	+ 4	+ 15
August	1	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	102.17	-50	-1.40	20.41	-3	-9	132.03	- 35	- 70	12.10	-1	-1 $\frac{1}{2}$	25.01	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	105.22	+ 2	+ 4
	8	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	103.92	-52	-1.40	20.40	-4	-12	135.62	- 17	- 50	12.08	Par	- $\frac{1}{2}$	25.01	+1 $\frac{1}{2}$	+3	107.75	Par	+ 5
	15	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	104.02	-50	-1.37	20.41	-3	-10	134.40	- 27	- 70	12.07	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.02	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	107.90	+ 3	+ 5
	22	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	103.42	-50	-1.45	20.41	-3	-8	132.87	- 50	- 80	12.05	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	25.05	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	107.02	+ 1	+ 1
29	4 85 $\frac{1}{2}$	+ $\frac{1}{16}$	+ $\frac{1}{16}$	103.42	-55	-1.70	20.40	-5	-13	129.31	- 70	-140	12.05	-1	-2 $\frac{1}{2}$	25.06	+1 $\frac{1}{2}$	+3	107.57	- 3	- 8	
September	5	4 85	Par	Par	103.40	-70	-1.80	20.37	-4	-11 $\frac{1}{2}$	120.59	-145	-275	12.04	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	25.11	+1 $\frac{1}{2}$	+3	108.87	- 3	- 8
	12	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	103.29	-50	-1.50	20.36	-4	-11 $\frac{1}{2}$	118.87	- 95	-195	12.06	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	25.10	+1	+3	110.12	Par	- 3
	19	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	102.40	-27	-1.05	20.35	-4	-11 $\frac{1}{2}$	118.00	-115	-215	12.06	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.11	+1	+3	109.67	Par	Par
	26	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	102.27	-40	-1.40	20.35	-5	-12 $\frac{1}{2}$	120.66	- 80	-180	12.05	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.10	+1	+3	110.97	- 2 $\frac{1}{2}$	- 7
October	3	4 84	- $\frac{1}{16}$	- $\frac{1}{16}$	104.47	-46	-1.50	20.34	-5	-14	120.37	- 67	-155	12.04	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.09	+ $\frac{1}{2}$	+2	108.35	-12	- 25
	10	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	104.95	-49	-1.50	20.33	-4 $\frac{1}{2}$	-15	120.87	- 58	-180	12.05	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	106.90	-15	- 32
	17	4 84	- $\frac{1}{16}$	- $\frac{1}{16}$	107.95	-36	-1.30	20.32	-3	-12	120.00	-100	-210	12.04	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	106.05	- 7	- 17
	24	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	116.32	-55	-1.35	20.35	-5	-14	122.00	-105	-215	12.04	- $\frac{1}{2}$	-2 $\frac{1}{2}$	25.15	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.30	-25	- 52
	31	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	115.47	-62	-1.87	20.35	-4	-12	122.37	- 95	-230	12.04	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	25.14	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.75	-50	-100
November	7	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	119.95	-80	-2.25	20.36	-4 $\frac{1}{2}$	-14	122.40	- 80	-210	12.04	- $\frac{1}{2}$	-2 $\frac{1}{2}$	25.14	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.87	-75	-165
	14	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	120.20	-50	-1.80	20.36	-4 $\frac{1}{2}$	-13	119.81	- 42	-130	12.04	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25.14	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.87	-35	-105
	21	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	122.32	-50	-1.80	20.34	-4 $\frac{1}{2}$	-13	120.93	- 30	-110	12.04	- $\frac{1}{2}$	-1	25.13	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.92	-35	-110
	28	4 84 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{16}$	125.00	-40	-1.80	20.34	-4 $\frac{1}{2}$	-11	120.09	- 20	- 70	12.05	- $\frac{1}{2}$	- $\frac{1}{2}$	25.14	+1	+2 $\frac{1}{2}$	106.95	-45	-125
December	5	4 85	- $\frac{1}{16}$	- $\frac{1}{16}$	126.37	-30	-1.20	20.37	-4 $\frac{1}{2}$	-11	120.31	- 20	- 70	12.07	- $\frac{1}{2}$	- $\frac{1}{2}$	25.15	+1	+2 $\frac{1}{2}$	107.02	+60	-120
	12	4 85	- $\frac{1}{16}$	- $\frac{1}{16}$	131.06	-15	- .80	20.37	-4 $\frac{1}{2}$	-11	120.43	- 20	- 70	12.07	- $\frac{1}{2}$	- $\frac{1}{2}$	25.14	+1	+2 $\frac{1}{2}$	107.00	-40	-120
	19	4 85	+ $\frac{1}{16}$	+ $\frac{1}{16}$	126.16	-10	- .82	20.36	-4	-9	120.12	- 25	- 60	12.07	+ $\frac{1}{16}$	+1	25.11	+2 $\frac{1}{2}$	+5 $\frac{1}{2}$	106.97	-35	- 80
	24	4 85	+ $\frac{1}{16}$	+ $\frac{1}{16}$	131.19	-18	- .80	20.37	-3	-8	120.19	- 25	- 65	12.07	+ $\frac{1}{16}$	+ $\frac{1}{2}$	25.11	+1 $\frac{1}{2}$	+3 $\frac{1}{2}$	106.95	-45	- 95

FORWARD RATES—1926

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1926	\$	o.	o.	fr.	o.	c.	Rm.	pf.	pf.	L.	c.	c.	fl.	c.	c.	fr.	o.	c.	fr.	o.	c.	
January	2	4-85	- $\frac{1}{16}$	- $\frac{1}{16}$	129-00	- 13 $\frac{1}{2}$	- 60	20-38	- 2	- 7 $\frac{1}{2}$	120-60	- 40	- 80	12-06	- $\frac{1}{4}$	- $\frac{1}{8}$	25-10	+ $\frac{1}{2}$	+ 3	106-97	- 12 $\frac{1}{2}$	- 35
	9	4-85	- $\frac{1}{16}$	- $\frac{1}{16}$	127-25	- 9 $\frac{1}{2}$	- 35	20-37	- 2	- 7 $\frac{1}{2}$	120-12	- 30	- 75	12-06	+ $\frac{1}{2}$	+ $\frac{1}{8}$	25-10	+ $\frac{1}{2}$	+ 3	106-95	- 12 $\frac{1}{2}$	- 32 $\frac{1}{2}$
	16	4-86	+ $\frac{1}{16}$	+ $\frac{1}{16}$	128-31	- 6	- 26 $\frac{1}{2}$	20-41	- 1	- 6	120-22	- 32 $\frac{1}{2}$	- 65	12-08	+ $\frac{3}{8}$	+ 1 $\frac{1}{8}$	25-15	+ 2	+ 4	107-00	- 3 $\frac{1}{2}$	- 17 $\frac{1}{2}$
	23	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	129-85	- 6	- 27 $\frac{1}{2}$	20-42	- 1	- 6	120-40	- 34	- 77	12-10	+ 1 $\frac{1}{4}$	+ 2 $\frac{1}{4}$	25-17	+ 2 $\frac{1}{2}$	+ 7	107-00	- 10	- 30
	30	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	128-85	- 7	- 30	20-42	- 1	- 2	120-70	- 35	- 83	12-13	+ 2 $\frac{1}{4}$	+ 4 $\frac{1}{4}$	25-22	+ 3	+ 9	106-97	- 7 $\frac{1}{2}$	- 35
February	6	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	129-82	- 11	- 27	20-43	- 1	- 3	120-75	- 35	- 85	12-13	+ 2 $\frac{1}{4}$	+ 4 $\frac{1}{2}$	25-23	+ 3 $\frac{1}{2}$	+ 8	106-98	- 7 $\frac{1}{2}$	- 27 $\frac{1}{2}$
	13	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	131-62	- 20	- 65	20-42	- 1 $\frac{1}{4}$	- 3	120-65	- 35	- 87	12-14	+ 2 $\frac{1}{2}$	+ 4 $\frac{1}{2}$	25-25	+ 3	+ 8	106-97	- 12	- 42
	20	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	136-62	- 19	- 82	20-42	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	120-95	- 25	- 75	12-14	+ 2 $\frac{1}{2}$	+ 5	25-26	+ 2 $\frac{1}{2}$	+ 9	106-99	- 17	- 47
	27	4-86	+ $\frac{1}{16}$	+ $\frac{1}{16}$	132-20	- 11 $\frac{1}{2}$	- 49	20-41	- 1	- 2	120-95	- 22	- 72	12-14	+ 2 $\frac{1}{4}$	+ 4 $\frac{1}{4}$	25-26	+ 2 $\frac{1}{2}$	+ 8	106-97	- 14	- 42
March	6	4-85 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	134-00	- 32	- 92	20-40	- 1	- 3	121-05	- 35	- 82	12-12	+ 1	+ 2 $\frac{1}{4}$	25-24	+ 1 $\frac{1}{2}$	+ 7	106-97	- 35	- 82
	13	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	133-87	- 25	- 86	20-41	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	121-05	- 40	- 102	12-13	+ 2	+ 4	25-25	+ 3 $\frac{1}{2}$	+ 9	107-10	- 108	- 237
	20	4-86	+ $\frac{1}{8}$	+ $\frac{1}{8}$	138-00	- 28	- 105	20-42	- $\frac{1}{2}$	- 3	121-02	- 80	- 200	12-13	+ 1 $\frac{1}{4}$	+ 3 $\frac{1}{2}$	25-25	+ 2	+ 7	120-70	- 80	- 180
	27	4-86 $\frac{1}{2}$	+ $\frac{1}{4}$	+ $\frac{1}{4}$	141-10	- 27	- 120	20-42	- 1	- 2 $\frac{1}{2}$	120-85	- 40	- 145	12-13	+ 2 $\frac{1}{2}$	+ 3 $\frac{1}{2}$	25-25	+ 2 $\frac{1}{2}$	+ 8	122-27	- 90	- 200
April	3	4-86 $\frac{1}{2}$	+ $\frac{7}{32}$	+ $\frac{1}{8}$	141-10	- 24	- 112	20-42	- $\frac{1}{2}$	- 2 $\frac{1}{2}$	120-90	- 95	- 205	12-12	+ 1 $\frac{1}{2}$	+ 3 $\frac{1}{2}$	25-23	+ 1 $\frac{1}{2}$	+ 7 $\frac{1}{2}$	133-37	- 75	- 200
	10	4-86 $\frac{1}{2}$	+ $\frac{1}{4}$	+ $\frac{1}{8}$	141-72	- 27	- 107	20-42	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	120-95	- 47	- 140	12-12	+ 1	+ 2 $\frac{1}{2}$	25-20	+ 1	+ 4	127-43	- 72	- 140
	17	4-86 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	144-93	- 57	- 160	20-42	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	120-85	- 42	- 125	12-12	+ 1 $\frac{1}{2}$	+ 3 $\frac{1}{2}$	25-19	+ 1	+ 4	131-75	- 75	- 180
	24	4-86 $\frac{1}{2}$	+ $\frac{1}{32}$	+ $\frac{1}{8}$	144-69	- 42	- 142	20-42	- $\frac{1}{2}$	- 1	120-90	- 45	- 130	12-11	+ 1 $\frac{1}{2}$	+ 2 $\frac{1}{2}$	25-18	+ 1 $\frac{1}{2}$	+ 4	136-75	- 35	- 125
May	1	4-86 $\frac{1}{2}$	+ $\frac{11}{32}$	+ $\frac{1}{8}$	147-25	- 110	- 290	20-43	- $\frac{1}{2}$	- 1	120-94	- 57	- 157	12-09	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	25-13	+ 1	+ 2 $\frac{1}{2}$	143-00	- 47	- 150
	8	4-86 $\frac{1}{2}$	+ $\frac{1}{16}$	+ 1	154-25	- 107	- 300	20-39	+ $\frac{1}{2}$	- 1	121-10	- 185	- 375	12-08	+ $\frac{3}{8}$	+ 1 $\frac{1}{2}$	25-10	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	158-37	- 75	- 200
	15	4-86 $\frac{1}{2}$	+ $\frac{1}{16}$	+ 1 $\frac{1}{2}$	157-37	- 212	- 687	20-43	Par	Par	134-00	- 650	- 1050	12-09	+ $\frac{1}{4}$	+ 1 $\frac{1}{2}$	25-14	+ 1	+ 3	157-12	- 75	- 190
	22	4-86 $\frac{1}{2}$	+ $\frac{1}{16}$	+ 1 $\frac{3}{16}$	147-25	- 1	- 4	20-43	Par	Par	125-75	- 1 $\frac{1}{2}$	- 4 $\frac{1}{2}$	12-10	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	25-13	+ 1 $\frac{1}{2}$	+ 3	148-37	- 41	- 95
	29	4-86 $\frac{1}{2}$	+ $\frac{11}{32}$	+ 1 $\frac{7}{32}$	151-87	- 3 $\frac{1}{2}$	- 6 $\frac{1}{2}$	20-43	+ 1	+ 1 $\frac{1}{2}$	129-31	- 4	- 7	12-10	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	25-12	+ 1 $\frac{1}{2}$	+ 3 $\frac{1}{2}$	157-50	- 65	- 1-65

June	5	4.86½	+ ½	+ 1 1/16	158.37	- 3½	- 7	20.43	Par	- 1½	128.50	- 2½	- 6½	12.11	+ 1	+ 2½	25.12	+ 1	+ 4	155.87	- 30	- 1.35
	12	4.86½	+ ½	+ 1 1/16	166.81	- 2½	- 7½	20.43	+ ½	+ 1½	134.00	- 2½	- 6½	12.11	+ 1½	+ 2½	25.13	+ 1	+ 3½	163.87	- 45	- 1.35
	19	4.86½	+ ½	+ 1 1/16	175.31	- 2½	- 6½	20.44	+ ½	+ 1½	134.94	- 1½	- 5½	12.11	+ ½	+ 2½	25.14	+ 1½	+ 5½	171.66	- 35	- 1.35
	26	4.86½	+ ½	+ 1 1/16	168.81	- 2 1/16	- 5½	20.44	Par	+ 1½	133.50	- 87	- 2½	12.11	+ 1½	+ 2½	25.13	+ 1½	+ 4	169.62	- 40	- 1.35
July	3	4.86½	+ ½	+ 1 1/16	180.12	- 2	- 8	20.42	- ½	+ 1½	139.50	- 1½	- 5	12.11	+ 1	+ 2½	25.13	+ ½	+ 1½	184.87	- 1½	- 4½
	10	4.86½	+ ½	+ 1 1/16	187.60	- 4½	- 9½	20.42	Par	+ 1½	139.87	- 4½	- 9½	12.11	+ 1½	+ 3	25.11	+ 1½	+ 3½	206.00	- 3½	- 7½
	17	4.86½	+ ½	+ 1 1/16	201.25	- 8	- 15	20.43	+ ½	+ 1½	143.50	- 5	- 10	12.10	+ 1½	+ 2½	25.11	+ 1	+ 1½	202.50	- 7½	- 16
	24	4.86½	+ ½	+ 1 1/16	199.75	- 5½	- 15	20.43	+ ½	+ 1½	148.25	- 4½	- 9½	12.10	+ ½	+ 2½	25.12	+ 1	+ 3	195.25	- 6	- 14
	31	4.86	+ ½	+ 1 1/16	199.62	- 8½	- 19	20.42	+ ½	+ 1½	150.50	- 6½	- 13½	12.10	+ 1	+ 2½	25.12	+ 1	+ 2½	190.75	- 11	- 20
August	7	4.86½	+ ½	+ 1 1/16	162.37	- 3½	- 9	20.43	Par	+ 1½	144.50	- 1½	- 5½	12.12	+ 1½	+ 3½	25.16	+ 1	+ 3½	171.00	- 3½	- 9½
	14	4.86	+ ½	+ 1 1/16	177.37	- 3½	- 9½	20.40	Par	+ 1	147.81	- 3½	- 7½	12.11	+ ½	+ 2½	25.14	+ 1	+ 3½	180.75	- 3½	- 8½
	21	4.86	+ ½	+ 1 1/16	169.56	- 3½	- 9½	20.41	Par	- ½	148.00	- 3½	- 6½	12.12	+ 1½	+ 3	25.15	+ 1	+ 3½	176.25	- 2½	- 7½
	28	4.85½	+ ½	+ 1 1/16	168.50	- 4	- 10½	20.36	Par	- 1½	149.50	- 4½	- 9	12.11	+ ½	+ 2½	25.14	+ 1	+ 2½	175.43	- 2½	- 6½
September	4	4.85½	+ ½	+ 1 1/16	164.62	- 2½	- 8½	20.39	- 1½	- 2½	131.06	- 3½	- 8½	12.11	+ ½	+ 2½	25.13	+ ½	+ 1½	175.31	- 1½	- 5½
	11	4.86½	+ ½	+ 1 1/16	167.81	- 2½	- 8½	20.39	- 2	- 4½	134.12	- 3	- 8	12.11	+ 1	+ 2½	25.13	+ ½	+ 1½	176.87	- 2½	- 4½
	18	4.85½	+ ½	+ 1 1/16	172.31	- 3½	- 9½	20.38	- 1½	- 4½	133.25	- 2½	- 6½	12.11	+ ½	+ 2½	25.12	Par	+ ½	178.12	- 1½	- 5
	25	4.85½	+ ½	+ 1 1/16	174.31	- 3½	- 9½	20.37	- 2	- 5½	131.87	- 4½	- 7½	12.11	+ ½	+ 2	25.11	+ ½	+ 1	181.75	- 2½	- 7½
October	2	4.85½	+ ½	+ 1 1/16	173.00	- 4½	- 9½	20.37	- 1½	- 3½	129.00	- 2½	- 6½	12.12	+ 1	+ 2½	25.10	Par	+ ½	179.06	- 1½	- 5
	9	4.85½	+ ½	+ 1 1/16	168.31	- 1½	- 6½	20.38	- 1½	- 4	121.25	- 1½	- 4½	12.13	+ 1½	+ 3½	25.12	+ ½	+ 1½	174.81	- 62	- 2½
	16	4.85½	+ ½	+ 1 1/16	168.56	- 1½	- 6½	20.38	- 1	- 3	117.94	- 2½	- 5½	12.13	+ 1½	+ 3½	25.11	+ ½	+ 1½	172.75	- 62	- 2½
	23	4.84½	Par	+ 1 1/16	160.94	- 87	- 2½	20.38	- ½	- 2	111.50	- 2½	- 5½	12.12	+ 1	+ 2½	25.12	+ ½	+ 1½	172.00	- 6	- 87
	30	4.84½	+ ½	+ 1 1/16	154.00	- 48	- 2½	20.38	- 1	- 3	113.56	- 2½	- 5½	12.12	+ ½	+ 2½	25.14	+ ½	+ 1½	34.85	- 1	- 3
November	6	4.84½	Par	Par	145.94	- 56	- 2½	20.39	- 1	- 3	113.22	- 2½	- 5	12.12	+ ½	+ 2½	25.14	+ ½	+ ½	34.82	- ½	- 1
	13	4.85	+ ½	+ 1 1/16	146.50	- 94	- 3	20.42	- ½	- 2½	117.12	- 1½	- 4½	12.12	+ ½	+ 1½	25.15	Par	Par	34.84	+ 1	+ 1½
	20	4.84½	- ½	+ 1 1/16	130.50	- 15	- 1	20.43	- ½	- 2	115.75	- ½	- 2½	12.13	+ 1½	+ 2½	25.14	Par	Par	34.86	+ 1	Par
	27	4.85	Par	+ 1 1/16	134.75	- 60	- 2½	20.42	- 1½	- 2	114.75	- 1½	- 2½	12.13	+ 1	+ 2	25.15	Par	Par	34.87	+ 1	+ 3
December	4	4.85	- ½	- 1 1/16	121.62	- 95	- 3	20.40	- 1½	- 3	111.31	- 60	- 2½	12.13	+ ½	+ 1½	25.13	Par	Par	34.87	+ 1	+ 1
	11	4.85	- ½	- 1 1/16	122.75	- 95	- 3	20.39	- 1	- 2½	108.25	- 151	- 3½	12.13	+ ½	+ 1½	25.10	- 1	- ½	34.86	+ 1	+ 1
	18	4.85½	Par	Par	121.06	- 65	- 2	20.38	- 1½	- 2½	107.94	- 75	- 2½	12.13	+ ½	+ 1½	25.09	- 2	- 3½	34.89	+ 2	+ 3
	24	4.85½	+ ½	+ 1 1/16	122.31	- 50	- 2	20.36	- 2	- 6	107.66	- 40	- 2	12.13	+ ½	+ 1	25.10	- 1½	- 3½	34.89	+ 1	+ 2

FORWARD RATES—1927

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1927	\$	c.	c.	fr.	c.	fr.	Rm.	pf.	pf.	L.	c.	L.	fl.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	1	4-85½	Par	+ 1/16	122-72	-77	-2	20-39	-3	-6	107-70	-50	-1½	12-13	+ 1/4	+1	25-11	-2	-2	34-88	+1	+3
	8	4-85½	Par	+ 1/16	122-82	-85	-2½	20-44	-3	-6	109-62	-50	-1½	12-13	+ 1/4	+1	25-14	-2	-2	34-89	+1	+3
	15	4-85½	Par	Par	122-12	-90	-2½	20-45	Par	-1	110-56	-40	-1	12-14	+ 1/4	+1	25-17	-1	-1	34-90	+1½	+4
	22	4-85½	- 3/32	- 1/32	122-45	-68	-2	20-47	Par	-1	112-18	-40	-1	12-14	+ 1/4	+1½	25-19	Par	Par	34-90	+1	+2
	29	4-85	Par	Par	123-07	-62	-1-62	20-47	Par	-1	113-00	-52	-1-75	12-14	+ 1/4	+1½	25-21	+2	+4	34-88	+ 1/2	+1½
February	5	4-85	Par	Par	123-32	-62	-1-92	20-46	Par	Par	113-56	-47	-1-60	12-13	+ 1/4	+ 1/2	25-22	+1½	+4	34-87	-1½	- 1/2
	12	4-85	Par	+ 3/32	123-50	-47	-1-50	20-47	- 1/2	- 1/2	112-75	-42	-1-35	12-12	+ 1/4	+ 1/2	25-22	+2	+5	34-89	- 1/2	- 1/2
	19	4-85	Par	Par	123-79	-32	-1-12	20-46	Par	Par	111-00	-27	-1-05	12-12	+ 1/4	+ 1/2	25-22	+2	+4½	34-88	- 1/2	- 1/2
	26	4-85	+ 3/32	+ 3/32	123-94	-57	-1-57	20-46	Par	- 1/2	110-75	-27	-1-10	12-12	Par	+ 1/2	25-22	+2	+4½	34-88	- 1/2	- 1/2
March	5	4-85½	+ 1/16	+ 1/16	124-06	-55	-1-55	20-47	- 1/2	-1	110-26	-37	-1-10	12-12	+ 1/4	+ 1/2	25-23	+1½	+5	34-90	Par	Par
	12	4-85½	+ 1/16	+ 1/16	124-00	-32	-1-17	20-47	-1	-1½	108-90	-27	- 85	12-13	+ 1/4	+ 1/2	25-22	+2	+5½	34-90	Par	Par
	19	4-85½	+ 3/32	+ 3/32	123-99	-10	- 42	20-46	-1	-2½	105-62	-25	- 77	12-13	+ 1/4	+1	25-24	+2	+4½	34-92	Par	Par
	26	4-85½	+ 1/16	+ 1/16	124-02	-8	- 20	20-47	-1	-2	108-56	-40	-1-00	12-14	+ 1/4	+1½	25-24	+2	+4½	34-94	Par	Par
April	2	4-85½	+ 3/32	+ 3/32	124-01	-4	- 15	20-48	- 1/2	-1½	102-75	-20	- 65	12-14	+ 1/4	+1½	25-25	+1½	+5	34-93	+1	+1
	9	4-85½	+ 3/32	+ 1/4	124-01	+ 1½	- 1	20-49	-1	-1½	100-75	-32	- 72	12-14	+ 1/4	+1½	25-25	+2	+4½	34-93	Par	Par
	16	4-85½	+ 3/32	+ 3/32	124-01	+4	+4	20-49	- 1/2	-1½	99-00	-25	- 75	12-14	+ 1/4	+1½	25-24	+1½	+3½	34-92	Par	Par
	23	4-85½	+ 1/16	+ 3/32	124-01	+8	+11	20-49	- 1/2	-1½	91-65	-25	- 70	12-14	+ 1/4	+1½	25-25	+1	+2½	34-93	+ 1/2	+1
	30	4-85½	+ 1/16	+ 3/32	124-01	+19	+35	20-49	-1	-2	91-62	-27	- 95	12-14	+ 1/4	+ 1/2	25-26	+ 1/2	+ 1/2	34-93	Par	Par
May	7	4-85½	+ 1/32	+ 1/32	124-01	+21	+55	20-50	-1½	-3½	91-50	-25	- 77	12-14	+ 1/4	+ 1/2	25-26	Par	+ 1/2	34-95	- 1/2	- 1/2
	14	4-85½	+ 3/32	+ 3/32	124-07	+23	+77	20-50	-3	-7½	89-55	-22	- 75	12-14	+ 1/4	+ 1/2	25-25	+ 1/2	+1	34-96	+ 1/2	+ 1/2
	21	4-85½	+ 1/16	+ 3/32	124-01	+20	+41	20-49	-2½	-5	88-75	-21	- 70	12-13	Par	+ 1/2	25-24	+ 1/2	+1	34-94	- 1/2	- 1/2
	28	4-85½	+ 1/16	+ 3/32	124-01	+20	+54	20-50	-2½	-6	88-82	-23	- 80	12-13	Par	+ 1/4	25-24	Par	+ 1/2	34-96	Par	Par

June	4	4 85½	+ 1/16	+ 1/16	124-01	+19	+ 46	20-49	-3	- 5	87-25	-11	- 42	12-13	Par	+ 1/4	25-25	Par	+ 1/4	34-95	Par	Par
	11	4 85½	+ 1/16	+ 1/16	124-01	+23	+ 54	20-49	-3	- 5	88-07	-11	- 33	12-12	Par	+ 1/4	25-25	+ 1/4	+ 1/2	34-96	+ 1/4	+ 1/4
	18	4 85½	+ 1/16	+ 1/16	124-02	+23	+ 63	20-49	-2½	- 6	87-42	- 4	- 22	12-12	Par	+ 1/4	25-25	+ 1/4	+ 1/2	34-96	+ 1/4	+ 1/4
	25	4 85½	+ 1/16	+ 1/16	124-00	+19	+ 55	20-49	-2½	- 7	83-85	-16	- 40	12-12	Par	+ 1/4	25-23	+ 1/4	+ 2	34-96	+ 1/4	+ 1½
July	2	4 85½	+ 1/16	+ 1/16	124-01	+21	+ 61	20-49	-2	- 5	87-62	-14	- 35	12-12	+ 1/4	+ 1/4	25-23	+ 1/4	+ 1	34-95	+ 1/4	+ 1½
	9	4 85½	+ 1/16	+ 1/16	124-01	+19	+ 58	20-49	-2½	- 6	89-12	-17	- 40	12-12	Par	+ 1/4	25-22	Par	Par	34-90	+ 1/4	+ 1½
	16	4 85½	+ 1/16	+ 1/16	124-02	+19	+ 51	20-45	-3	- 7	89-23	-14	- 37	12-12	+ 1/4	+ 1/4	25-22	Par	Par	34-92	+ 1/4	+ 1
	23	4 85½	+ 1/16	+ 1/16	124-01	+ 6	+ 9	20-42	-3	- 7	89-32	-14	- 36	12-12	Par	+ 1/4	25-21	Par	Par	34-92	+ 1/4	+ 1
	30	4 85½	+ 1/16	+ 1/16	124-02	+14	+ 26	20-41	-3	- 8½	89-30	- 8	- 27	12-12	Par	+ 1/4	25-21	Par	Par	34-92	+ 1/4	+ 1/4
August	6	4 85½	+ 1/16	+ 1/16	124-04	+14	+ 35	20-42	-3	- 7	89-23	- 6	- 21	12-12	+ 1/4	+ 1/4	25-21	Par	Par	34-93	+ 1/4	+ 1/4
	13	4 86	+ 1/16	+ 1/16	124-01	+12	+ 24	20-44	-2	- 7	89-28	- 7	- 30	12-13	+ 1/4	+ 1/4	25-21	Par	Par	34-93	+ 1/4	+ 1/4
	20	4 86½	+ 1/16	+ 1/16	124-01	+ 9	+ 20	20-42	-2½	- 7	89-25	- 7	- 27	12-13	+ 1/4	+ 1/4	25-22	Par	Par	34-93	+ 1/4	+ 1/4
	27	4 86½	+ 1/16	+ 1/16	124-02	+10	+ 22	20-44	-3	- 7	89-80	-24	- 50	12-14	+ 1/4	+ 1/4	25-21	+ 1/4	+ 1/4	34-92	+ 1/4	+ 1/4
September	3	4 86	+ 1/16	+ 1/16	124-00	+13	+ 33	20-43	-3	- 7	89-60	-21	- 42	12-13	+ 1/4	+ 1/4	25-21	+ 1/4	+ 1/4	34-91	+ 1/4	+ 1/4
	10	4 86	+ 1/16	+ 1/16	124-02	+14	+ 39	20-44	-3½	- 9½	89-40	-15	- 38	12-13	+ 1/4	+ 1/4	25-21	+ 1/4	+ 1/4	34-91	Par	Par
	17	4 86½	+ 1/16	+ 1/16	124-02	+15	+ 35	20-44	-2½	- 9½	89-32	-10	- 27	12-14	+ 1/4	+ 1/4	25-21	+ 1/4	+ 1½	34-92	Par	Par
	24	4 86½	+ 1/16	+ 1/16	124-02	+13	+ 33	20-42	-3	- 8	89-26	-13	- 33	12-14	+ 1/4	+ 1/4	25-24	+ 1/4	+ 1½	34-94	+ 1/4	+ 1
October	1	4 86½	+ 1/16	+ 1/16	124-02	+13	+ 31	20-42	-3	- 8	89-15	- 7	- 23	12-14	+ 1/4	+ 1/4	25-23	+ 1/4	+ 1½	34-94	+ 1/4	+ 1
	8	4 87	+ 1/16	+ 1/16	124-02	+13	+ 33	20-41	-3½	- 10	89-08	- 4	- 15	12-14	+ 1/4	+ 1/4	25-24	+ 1/4	+ 1½	34-95	+ 1/4	Par
	15	4 87	+ 1/16	+ 1/16	124-09	+ 9	+ 27	20-41	-3½	- 9	89-10	- 4	- 11	12-11	- 1/4	- 1/4	25-25	+ 1/4	+ 2½	34-97	+ 1/4	+ 1
	22	4 87½	+ 1/16	+ 1/16	124-10	+ 7	+ 14	20-39	-4½	- 11	89-12	- 8	- 20	12-11	- 1/4	- 1/4	25-25	+ 1	+ 2½	34-99	+ 1/4	+ 1½
	29	4 87	+ 1/16	+ 1/16	124-09	- 3	- 8	20-39	-5½	- 12	89-12	- 7	- 20	12-08	-1½	-2½	25-25	+ 1½	+ 2½	34-95	Par	+ 1
November	5	4 87	+ 1/16	+ 1/16	124-03	- 1/4	- 2	20-40	-5	- 11	89-13	- 8	- 11	12-08	-1½	-2½	25-25	+ 1	+ 2	34-93	Par	Par
	12	4 87½	+ 1/16	+ 1/16	124-05	Par	- 9	20-43	-3½	- 11	89-67	-16	- 40	12-08	- 1	- 2	25-26	+ 1½	+ 2	34-94	- 1/4	- 1
	19	4 87½	+ 1/16	+ 1/16	124-04	- 4	- 13	20-42	-3	- 12	89-60	-25	- 70	12-07	- 2	- 3	25-27	+ 1½	+ 3	34-93	- 1/4	- 1
	26	4 88	+ 1/16	+ 1/16	124-03	+ 1/4	- 3	20-43	-3½	- 12	89-60	-14	- 44	12-08	-1½	-2½	25-30	+ 1½	+ 3	34-92	- 1/4	- 1/4
December	3	4 88	+ 1/16	+ 1/16	124-02	Par	- 2	20-42	-3½	- 12	89-80	-21	- 50	12-07	-1½	-2½	25-30	+ 1½	+ 2½	34-88	- 2	- 3
	10	4 88½	+ 1/16	+ 1/16	124-03	+ 3	+ 3½	20-45	-3½	- 12	90-15	-17	- 67	12-07	-1½	-2½	25-28	+ 1	+ 2½	34-89	- 1/4	- 2½
	17	4 89	+ 1/16	+ 1/16	124-02	+ 5	+ 13	20-43	-4	- 12	89-97	-37	- 85	12-07	-1½	-2½	25-27	+ 1/4	+ 1½	34-90	- 2	- 3
	24	4 88½	+ 1/16	+ 1/16	124-02	+ 8	+ 17	20-43	-4½	- 12	92-57	- 3	- 9	12-08	-1½	-2½	25-26	Par	Par	34-89	- 1	- 2
	31	4 88½	+ 1/16	+ 1/16	124-00	+ 8	+ 18	20-45	-4½	- 12	92-40	-12	- 18	12-07	-1½	-2½	25-28	+ 1/4	+ 1	34-90	- 3	- 5

FORWARD RATES—1928

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1928	\$	a.	c.	fr.	a.	c.	Rm.	pf.	pf.	L.	c.	c.	f.	a.	c.	fr.	a.	a.	B.	a.	c.	
January	7	4-87½	+ ⅜	+ 17/16	124-10	+ 7	+ 16	20-47	- 2½	- 7½	92-18	- 11	- 20	12-09	- 1	- 2	25-29	+ 1	+ 2½	34-95	+ ⅜	+ ½
	14	4-88	+ ⅜	+ 17/16	124-01	+ 8	+ 17	20-47	- 2	- 6	92-22	- 9	- 21	12-09	- 1	- 1½	25-32	+ 1	+ 3½	34-98	+ ⅜	+ ½
	21	4-87½	+ ½	+ ⅜	124-03	+ 4	+ 13	20-46	- 2	- 6	92-12	- 8	- 23	12-08	- 1½	- 2	25-30	+ 1½	+ 3½	34-98	+ 1½	+ 1½
	28	4-87½	+ ½	+ ⅜	124-01	+ 7	+ 16	20-45	- 2½	- 6½	92-06	- 9	- 22	12-08	- 1½	- 2½	25-31	+ 1½	+ 4	34-99	+ 1½	+ 3½
February	4	4-87	+ ½	+ ⅜	124-02	+ 4	+ 13	20-42	- 3	- 7	92-10	- 7	- 17	12-09	- ½	- 2	25-32	- 2	- 4½	34-98	- ½	- 1
	11	4-87½	+ ½	+ ⅜	124-02	+ 5	+ 15	20-44	- 2½	- 6½	92-05	- 5	- 14	12-11	- ½	- ½	25-33	+ 1½	+ 3½	35-01	+ ½	+ 1
	18	4-87½	+ ⅜	+ ⅜	124-02	+ 5½	+ 14½	20-43	- 2	- 6	92-03	- 5	- 15	12-11	Par	Par.	25-34	+ 1½	+ 3½	35-02	+ 1	+ 3
	25	4-87½	+ ⅜	+ ⅜	124-01	+ 5½	+ 16	20-43	- 2	- 6	92-10	- 3½	- 13	12-12	Par	+ ½	25-34	+ 1½	+ 3½	35-03	+ 1	+ 3
March	3	4-87½	+ ⅜	+ ⅜	124-02	+ 5½	+ 15	20-42	- 2½	- 7½	92-36	- 3½	- 7½	12-13	Par	+ ½	25-34	+ 1	+ 3	35-00	Par	Par
	10	4-88	+ ½	+ ⅜	124-03	+ 5½	+ 15½	20-41	- 3	- 7	92-34	- 3½	- 8	12-12	Par	+ ½	25-34	+ ½	+ 1½	35-00	- ½	- 1½
	17	4-88	+ ½	+ ⅜	124-02	+ 6½	+ 15½	20-40	- 3½	- 7½	92-40	- 4½	- 10	12-13	Par	+ ½	25-34	+ 1	+ 2	35-01	- ½	- 2½
	24	4-88½	+ ½	+ ⅜	124-02	+ 5½	+ 15½	20-42	- 2½	- 5	92-40	- 2½	- 5	12-12	- ½	- ½	25-34	+ 1	+ 2	35-00	Par	Par
	31	4-88½	+ ⅜	+ ⅜	124-02	+ 5½	+ 15½	20-41	- 3	- 7½	92-40	- ½	- 2	12-12	Par	Par	25-34	+ ½	+ 1½	34-97	- 1½	- 3½
April	7	4-88½	+ ½	+ ⅜	124-02	+ 5	+ 14	20-42	- 2½	- 7½	92-42	- ½	- 3	12-12	- ½	- ½	25-34	+ ½	+ 1½	34-95	- 2½	- 4½
	14	4-88½	+ ½	+ ⅜	124-02	+ 6½	+ 17½	20-41	- 2½	- 8	92-51	- 1½	- 2½	12-11	- ½	- ½	25-34	+ ½	+ 1	34-94	- 3½	- 5½
	21	4-88½	+ ⅜	+ ⅜	124-02	+ 6	+ 21	20-41	- 2½	- 7	92-61	- 1½	- 3½	12-11	- ½	- ½	25-33	+ ½	+ 1	34-96	- 3½	- 5½
	28	4-88	+ ⅜	+ ⅜	124-02	+ 5½	+ 25	20-40	- 3	- 8	92-58	+ ½	- 2½	12-10	- ½	- 1	25-33	Par	Par	34-93	- 3½	- 5½
May	5	4-88	+ ⅜	+ ⅜	124-02	+ 5	+ 29	20-40	- 3	- 7	92-63	Par	Par	12-10	- ½	- 1½	25-32	Par	+ ½	34-94	- 2½	- 5
	12	4-88½	+ ⅜	+ ⅜	124-02	+ 5½	+ 23	20-40	- 2½	- 7½	92-64	- ½	- 1½	12-10	- 1	- 1½	25-32	+ ½	+ ½	34-95	- 3	- 7
	19	4-88½	+ ½	+ ⅜	124-00	+ 6	+ 16	20-40	- 2	- 6½	92-60	- 1	- 3	12-10	- ½	- 1½	25-33	+ ½	+ ½	34-98	- 3	- 6
	26	4-88½	+ ½	+ ⅜	124-02	+ 5½	+ 16	20-39	- 2½	- 7	92-65	- ½	- ½	12-09	- ½	- 1½	25-33	+ ½	+ ½	34-98	- 1½	- 3½

June	2	4 88½	+ 1/16	+ 7/16	124-02	+ 5	+15	20-40	-2½	- 6½	92-67	- 1½	- 3	12-09	- ½	-1½	25-33	+ ½	+ ½	34-98	- 2	- 4
	9	4 88½	Par	+ 1/16	124-12	+ 5½	+12	20-43	-2	- 5½	92-73	- 3½	- 7	12-10	- ½	-1	25-33	+ ½	+ ½	34-95	- 3	- 7
	16	4 88½	Par	Par	124-19	- 1	- 1	20-43	-1½	- 6	92-77	- 1½	- 3½	12-10	- ½	- ½	25-33	Par	Par	34-94	- 4	- 8
	23	4 87½	- ½	- ½	124-19	- 1	- 1	20-41	-2½	- 6½	92-72	- 3	- 5½	12-10	- ½	- ½	25-30	Par	Par	34-92	- 2½	- 5
	30	4 87½	- 1/16	- 1/16	124-13	+ 1½	+ 3	20-41	-3½	- 7½	92-72	- 4	- 9	12-10	- ½	-1	25-30	Par	Par	34-91	- 2	- 6
July	7	4 87½	- ½	- 7/16	124-20	+ 7	+14	20-40	-3	- 8	92-78	- 4	- 8	12-09	-1	-2	25-27	- ½	- ½	34-91	- 2	- 5
	14	4 86½	- ½	- ½	124-22	+ 6	+15	20-42	-3	- 8	92-83	- 8	-21	12-08	-1	-2	25-25	-1	-2	34-90	-1½	- 4
	21	4 86½	- ½	- ½	124-21	+ 6	+16	20-37	-4	- 9	92-82	- 8	-23	12-08	-1	-2	25-25	-1	-2	34-90	-1½	-3½
	28	4 85½	- 1/16	- 1/16	124-06	+ 1½	+ 4½	20-34	-4½	-10	92-82	- 4	-15	12-08	-1	-2	25-22	- ½	-2	34-91	- 2	-3½
August	4	4 85½	- ½	- 3/16	124-19	+ 6	+12	20-35	-4½	-10	92-78	- 6	-19	12-09	- ½	-1	25-22	- ½	-2	34-90	- 1	- 3
	11	4 85½	- ½	- ½	124-22	+ 7½	+13	20-38	-3	- 9	92-79	- 6	-17	12-10	- ½	- ½	25-22	- ½	-2	34-90	- 1	- 3
	18	4 85½	- ½	- ½	124-21	+ 3½	+10	20-36	-3	- 9	92-81	- 5	-17	12-10	- ½	- ½	25-21	-1	-2	34-90	- 1	- 3
	25	4 85½	- ½	- ½	124-26	+10	+20	20-36	-3	- 9	92-66	-11	-24	12-10	- ½	- ½	25-20	-1	-2½	34-90	- 1	- 3
September	1	4 85½	- ½	- 3/16	124-28	+ 8	+18	20-36	-3	- 9½	92-66	- 9	-26	12-10	- ½	- ½	25-20	-1	-2	34-90	- 1	- 3
	8	4 85	- ½	- 3/16	124-23	+ 5	+13	20-36	-3	- 9	92-70	- 5½	-17	12-10	- ½	- ½	25-19	-1	-2	34-90	- 1	-3½
	15	4 85	- ½	- 3/16	124-19	+ 3	+11	20-35	-3	- 8	92-79	- 3½	-13	12-10	- ½	- ½	25-20	-1	-2	34-90	- 2	- 4
	22	4 85	- 3/16	- 1/16	124-15	+ 2½	+ 8	20-55	-3	- 8	92-74	- 9	-22	12-09	- ½	- ½	25-21	- ½	-1½	34-90	- 2	- 4
	29	4 85	- 3/16	- 1/16	124-06	- 3½	- 3½	20-35	-4	- 9	92-77	- 3	-15	12-09	- ½	-1	25-20	- ½	-1½	34-89	-1½	-3½
October	6	4 84½	- 7/16	-1	124-09	+ 7	+ 7	20-36	-3½	- 9	92-52	- 6	-22	12-09	- ½	- ½	25-19	- ½	-1½	34-89	-1½	-3½
	13	4 85	- 1/16	- 1/16	124-23	+ 8	+11	20-37	-2½	- 7	92-62	- 8	-24	12-10	Par	- ½	25-21	- ½	-1½	34-90	-1½	-3½
	20	4 85	- 1/16	-1½	124-19	+ 5	+11	20-37	-3	- 8	92-58	- 8	-23	12-10	- ½	- ½	25-20	Par	-1	34-89	-1½	-3½
	27	4 85	- 7/16	-1½	124-15	+ 3	+ 5	20-35	-3	- 9	92-58	- 7	-24	12-09	- ½	-1	25-20	Par	-1	34-89	- 2	- 4
November	3	4 85	- 7/16	-1½	124-12	+ 1	+ 1	20-36	-3	- 9	92-58	-10	-27	12-09	- ½	-1½	25-20	Par	-1	34-89	-1½	-3½
	10	4 84½	- 7/16	-1½	124-13	- ½	- 1	20-36	-3	- 9	92-58	-10	-27	12-08	-1	-2½	25-19	- ½	-1	34-89	-1½	-3½
	17	4 85	- 7/16	- 1/16	124-10	- ½	- 2½	20-36	-3	- 9	92-53	- 7	-21	12-08	-1	-2	25-19	- ½	-1	34-89	-1½	-2½
	24	4 85	- 7/16	- 1/16	124-12	+ ½	- 2	20-35	-3	- 8	92-58	- 7	-23	12-08	- ½	-2	25-18	- ½	-1½	34-89	-1	-2½
December	1	4 85	- ½	- 7/16	124-10	Par	- ½	20-35	-3½	- 8½	92-59	- 6	-21	12-08	- ½	-2	25-18	- ½	-2	34-89	-1½	-3½
	8	4 85	- 7/16	- 3/16	124-18	+ 2	+ 4	20-35	-4	- 8½	92-65	- 4½	-20	12-08	- ½	-1½	25-18	-1½	-2½	34-89	- 1	- 3
	15	4 85	- 3/16	- ½	124-15	+ ½	+ 1½	20-35	-4	- 8½	92-65	- 4½	-18	12-08	- ½	-1½	25-19	-1	-1½	34-89	- 1	- 3
	22	4 86½	- 7/16	- 1/16	124-03	- 6	- 8	20-36	-3½	- 8	92-67	- 4½	-16	12-08	- ½	-1½	25-18	-1½	-1½	34-87	-2½	-6½
	29	4 86½	- 7/16	- ½	124-06	- 6	- 8	20-39	-3	- 6	92-77	- 1½	- 5	12-08	- ½	-1½	25-17	-1½	-3	34-87	-2½	- 8

FORWARD RATES—1929

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1929	\$	c.	c.	fr.	c.	c.	Rm.	pf.	pf.	L.	c.	c.	f.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	5	4-85	- $\frac{11}{32}$	- $\frac{13}{16}$	124-07	- $\frac{1}{2}$	-1	20-38	-2	-6	92-64	-2 $\frac{1}{2}$	-10	12-08	- $\frac{1}{2}$	-1 $\frac{1}{2}$	25-19	-1	-1 $\frac{1}{2}$	34-89	-1	-1 $\frac{1}{2}$
	12	4-85	- $\frac{11}{32}$	- $\frac{13}{16}$	124-14	+2	+1	20-41	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	92-71	-1	-6	12-09	Par	Par	25-20	- $\frac{1}{2}$	- $\frac{1}{2}$	34-90	Par	Par
	19	4-85	- $\frac{11}{32}$	- $\frac{13}{16}$	124-08	Par	Par	20-40	-2	-5	92-68	-5	-15	12-10	Par	Par	25-22	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34-91	Par	Par
	26	4-84 $\frac{1}{2}$	- $\frac{11}{16}$	- $\frac{13}{16}$	124-06	- $\frac{1}{2}$	-1	20-41	-2	-5	92-64	-3 $\frac{1}{2}$	-12	12-10	- $\frac{1}{2}$	- $\frac{1}{2}$	25-21	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34-90	Par	Par
February	2	4-84 $\frac{1}{2}$	- $\frac{11}{32}$	- $\frac{7}{8}$	124-09	-1	-1	20-42	-1 $\frac{1}{2}$	-4	92-65	-5	-17	12-10	+ $\frac{3}{4}$	+ $\frac{3}{4}$	25-21	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34-89	- $\frac{1}{2}$	- $\frac{1}{2}$
	9	4-85 $\frac{1}{2}$	- $\frac{1}{4}$	- $\frac{17}{32}$	124-31	+11	+20	20-46	- $\frac{1}{2}$	-1 $\frac{1}{2}$	92-78	-3	-10	12-12	+ $\frac{3}{4}$	+1 $\frac{1}{4}$	25-24	+ $\frac{3}{4}$	+ $\frac{3}{4}$	34-90	- $\frac{1}{2}$	- $\frac{1}{2}$
	16	4-85 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{1}{2}$	124-28	+10	+20	20-46	- $\frac{3}{4}$	-1 $\frac{1}{2}$	92-75	-4	-10	12-12	+ $\frac{1}{2}$	+1	25-23	+ $\frac{3}{4}$	+2	34-94	+1	+1 $\frac{1}{2}$
	23	4-85 $\frac{1}{2}$	- $\frac{1}{32}$	- $\frac{13}{32}$	124-26	+11	+19	20-45	- $\frac{1}{4}$	-1 $\frac{1}{2}$	92-64	-3	-10	12-12	+ $\frac{1}{4}$	+ $\frac{1}{4}$	25-23	+1	+1 $\frac{1}{2}$	34-95	+1	+2
March	2	4-85 $\frac{1}{2}$	- $\frac{1}{4}$	- $\frac{11}{16}$	124-22	+4	+14	20-45	- $\frac{3}{4}$	-1 $\frac{1}{2}$	92-66	-5	-11	12-12	+ $\frac{1}{4}$	+ $\frac{1}{2}$	25-23	+ $\frac{1}{4}$	+1 $\frac{1}{2}$	34-94	+ $\frac{1}{2}$	+1
	9	4-85	- $\frac{1}{16}$	- $\frac{3}{8}$	124-23	+7	+14	20-45	- $\frac{3}{4}$	-1 $\frac{1}{2}$	92-70	-3 $\frac{1}{2}$	-9	12-11	+ $\frac{1}{2}$	+1	25-22	+1	+2 $\frac{1}{2}$	34-94	+ $\frac{1}{2}$	+1
	16	4-85 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{7}{32}$	124-26	+8	+16	20-46	- $\frac{3}{4}$	-1 $\frac{1}{2}$	92-69	-4	-14	12-12	+1	+1 $\frac{1}{2}$	25-23	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	34-95	+ $\frac{1}{2}$	+1 $\frac{1}{2}$
	23	4-85 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{7}{32}$	124-24	+7	+15	20-46	- $\frac{1}{4}$	-1	92-71	-4	-8	12-12	Par	Par	25-23	+ $\frac{1}{4}$	+1 $\frac{1}{2}$	34-96	+1 $\frac{1}{2}$	+2 $\frac{1}{2}$
	30	4-85 $\frac{1}{2}$	- $\frac{1}{4}$	- $\frac{7}{32}$	124-19	+4	+12	20-46	- $\frac{1}{4}$	- $\frac{1}{2}$	92-73	-3	-9	12-12	Par	Par	25-22	+ $\frac{1}{4}$	+1	34-94	+ $\frac{1}{2}$	+2
April	6	4-85 $\frac{1}{2}$	- $\frac{1}{4}$	- $\frac{9}{16}$	124-21	+6	+12	20-47	- $\frac{1}{2}$	- $\frac{3}{4}$	92-81	-3 $\frac{1}{2}$	-10	12-10	Par	Par	25-22	+ $\frac{1}{4}$	+ $\frac{1}{2}$	34-94	+ $\frac{1}{2}$	+1
	13	4-85 $\frac{1}{2}$	- $\frac{1}{16}$	- $\frac{7}{16}$	124-25	+5	+13	20-47	- $\frac{3}{4}$	-1 $\frac{1}{2}$	92-66	-8 $\frac{1}{2}$	-24	12-09	- $\frac{1}{2}$	- $\frac{1}{2}$	25-22	+ $\frac{1}{4}$	+1	34-96	+ $\frac{1}{2}$	+1 $\frac{1}{2}$
	20	4-85 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	124-25	+6	+16	20-48	- $\frac{1}{2}$	-1 $\frac{1}{2}$	92-68	-11	-31	12-08	- $\frac{1}{2}$	-1	25-21	+ $\frac{1}{4}$	+1	34-95	+ $\frac{1}{2}$	+1 $\frac{1}{2}$
	27	4-85 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{16}$	124-16	+2	+16	20-51	-5	-8	92-55	-12	-31	12-07	-1	-1 $\frac{1}{2}$	25-19	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34-94	- $\frac{1}{2}$	- $\frac{1}{2}$
May	4	4-85 $\frac{1}{2}$	- $\frac{3}{16}$	- $\frac{13}{16}$	124-17	+2 $\frac{1}{2}$	+9	20-47	-3	-9	92-60	-13	-21	12-07	-1	-1 $\frac{1}{2}$	25-19	Par	+ $\frac{1}{2}$	34-94	Par	Par
	11	4-85 $\frac{1}{2}$	- $\frac{3}{16}$	- $\frac{13}{16}$	124-22	+9	+15	20-46	-2 $\frac{1}{2}$	-7	92-65	-9	-25	12-07	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	25-19	+ $\frac{3}{4}$	+1 $\frac{1}{2}$	34-95	+ $\frac{1}{2}$	+ $\frac{1}{2}$
	18	4-85	- $\frac{1}{4}$	- $\frac{1}{2}$	124-13	+3 $\frac{1}{2}$	+8	20-39	-5	-9	92-66	-7	-23	12-06	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	25-19	+ $\frac{1}{2}$	+1	34-94	+ $\frac{1}{2}$	+ $\frac{1}{2}$
	25	4-85	- $\frac{1}{4}$	- $\frac{1}{2}$	124-09	+3	+8	20-35	-7	-14	92-69	-8	-24	12-06	-1	-1 $\frac{1}{2}$	25-19	+ $\frac{1}{2}$	+1	34-91	Par	Par

June	1	4.84	- $\frac{1}{8}$	- $\frac{1}{8}$	124.03	+ 1	+ 3	20.34	- 5	- 12	92.69	- 5 $\frac{1}{2}$	- 17	12.06	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	25.19	+ $\frac{1}{2}$	+ 1	34.89	- $\frac{1}{2}$	- 2 $\frac{1}{2}$
	8	4.84	- $\frac{1}{8}$	- $\frac{1}{8}$	124.04	+ 1 $\frac{1}{2}$	+ 4	20.33	- 4 $\frac{1}{2}$	- 10	92.70	- 5	- 18	12.08	- $\frac{1}{2}$	- $\frac{1}{2}$	25.19	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	34.91	- $\frac{1}{2}$	- $\frac{1}{2}$
	15	4.84	- $\frac{1}{8}$	- $\frac{1}{8}$	124.04	+ 2 $\frac{1}{2}$	+ 5	20.33	- 4	- 10	92.68	- 6	- 20	12.07	- $\frac{1}{2}$	- 1 $\frac{1}{2}$	25.20	+ 1	+ 1 $\frac{1}{2}$	34.93	Par	Par
	22	4.84	- $\frac{1}{8}$	- $\frac{1}{8}$	123.97	Par	+ $\frac{1}{2}$	20.33	- 5	- 11	92.67	- 7 $\frac{1}{2}$	- 21	12.07	- $\frac{1}{2}$	- 1	25.19	+ $\frac{1}{2}$	+ 1	34.92	+ $\frac{1}{2}$	+ $\frac{1}{2}$
	29	4.85	- $\frac{1}{8}$	- $\frac{1}{8}$	123.89	- 3	- 3	20.35	- 2 $\frac{1}{2}$	- 8	92.65	- 5	- 14	12.08	Par	- $\frac{1}{2}$	25.20	+ $\frac{1}{2}$	+ 1	34.90	- $\frac{1}{2}$	- $\frac{1}{2}$
July	6	4.85	- $\frac{1}{8}$	- $\frac{1}{8}$	123.97	+ 2	+ 3	20.36	- 2 $\frac{1}{2}$	- 7	92.70	- 3 $\frac{1}{2}$	- 11	12.08	- $\frac{1}{2}$	- $\frac{1}{2}$	25.21	+ 1 $\frac{1}{2}$	+ 3 $\frac{1}{2}$	34.92	Par	Par
	13	4.85	- $\frac{1}{8}$	- $\frac{1}{8}$	123.90	Par	Par	20.36	- 3 $\frac{1}{2}$	- 7	92.76	- 2	- 10	12.08	- $\frac{1}{2}$	- 1	25.22	+ 1	+ 3	34.90	- 1	- 1
	20	4.85	- $\frac{1}{8}$	- $\frac{1}{8}$	123.85	- 2 $\frac{1}{2}$	- 4	20.35	- 2	- 7	92.74	- 4	- 14	12.09	+ $\frac{1}{2}$	- $\frac{1}{2}$	25.22	+ 1	+ 2 $\frac{1}{2}$	34.90	- 1	- $\frac{1}{2}$
	27	4.85 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.74	- 4	- 5	20.35	- 3	- 7 $\frac{1}{2}$	92.78	- 1 $\frac{1}{2}$	- 11	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.22	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	34.90	- $\frac{1}{2}$	- 1
August	3	4.85 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.85	+ 2	+ 2	20.36	- 3	- 8	92.79	+ 1	- 8	12.11	+ 1	+ 1 $\frac{1}{2}$	25.22	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	34.90	- 1	- 2
	10	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.96	+ 7	+ 11	20.37	- 2	- 6	92.75	- 1	- 7	12.10	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	25.21	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	34.88	- 1 $\frac{1}{2}$	- 3 $\frac{1}{2}$
	17	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.84	+ 1	+ 4	20.36	- 2 $\frac{1}{2}$	- 6 $\frac{1}{2}$	92.73	- 4	- 9	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.20	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34.87	- 2 $\frac{1}{2}$	- 3 $\frac{1}{2}$
	24	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.86	+ 1	+ 4	20.36	- 2 $\frac{1}{2}$	- 6 $\frac{1}{2}$	92.68	- 4	- 10	12.10	Par	+ $\frac{1}{2}$	25.18	+ $\frac{1}{2}$	- $\frac{1}{2}$	34.86	- 1	- 3
	31	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.90	+ 3	+ 8	20.36	- 1 $\frac{1}{2}$	- 5 $\frac{1}{2}$	92.68	- 3	- 9	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.19	- $\frac{1}{2}$	- $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- 2 $\frac{1}{2}$
September	7	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.90	+ 3	+ 6	20.36	- 2 $\frac{1}{2}$	- 6	92.70	- 4	- 12	12.09	- $\frac{1}{2}$	Par	25.17	- $\frac{1}{2}$	- $\frac{1}{2}$	34.88	- 1	- 2 $\frac{1}{2}$
	14	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.90	+ 5	+ 7	20.36	- 2 $\frac{1}{2}$	- 6	92.69	- 4	- 10	12.09	- $\frac{1}{2}$	- $\frac{1}{2}$	25.16	- $\frac{1}{2}$	- $\frac{1}{2}$	34.88	- $\frac{1}{2}$	- 1 $\frac{1}{2}$
	21	4.84 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	123.85	- 1 $\frac{1}{2}$	Par	20.35	- 2 $\frac{1}{2}$	- 5 $\frac{1}{2}$	92.65	- 4 $\frac{1}{2}$	- 13	12.09	- $\frac{1}{2}$	- $\frac{1}{2}$	25.15	- $\frac{1}{2}$	- $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- 1 $\frac{1}{2}$
	28	4.85 $\frac{1}{2}$	+ $\frac{1}{8}$	+ $\frac{1}{8}$	123.82	- 1	Par	20.36	- 2	- 5 $\frac{1}{2}$	92.71	- 3 $\frac{1}{2}$	- 11	12.09	- $\frac{1}{2}$	- $\frac{1}{2}$	25.17	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34.87	- 1 $\frac{1}{2}$	- 1 $\frac{1}{2}$
October	5	4.86	+ $\frac{3}{8}$	+ $\frac{3}{8}$	123.94	+ 5 $\frac{1}{2}$	+ 10	20.39	- 1 $\frac{1}{2}$	- 3 $\frac{1}{2}$	92.86	- $\frac{1}{2}$	- 2	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.18	+ 1	+ 2	34.88	- $\frac{1}{2}$	- $\frac{1}{2}$
	12	4.86 $\frac{1}{2}$	+ $\frac{3}{8}$	+ $\frac{3}{8}$	123.94	+ 6 $\frac{1}{2}$	+ 13	20.40	- 1 $\frac{1}{2}$	- 3 $\frac{1}{2}$	92.95	Par	Par	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.18	+ 1	+ 2	34.87	- $\frac{1}{2}$	- 1
	19	4.87 $\frac{1}{2}$	+ $\frac{3}{8}$	+ $\frac{3}{8}$	123.88	+ 2	+ 7 $\frac{1}{2}$	20.40	- 1 $\frac{1}{2}$	- 4 $\frac{1}{2}$	93.08	Par	Par	12.10	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.18	+ 1 $\frac{1}{2}$	+ 2	34.88	- $\frac{1}{2}$	- $\frac{1}{2}$
	26	4.87 $\frac{1}{2}$	+ $\frac{3}{8}$	+ $\frac{3}{8}$	123.84	- $\frac{1}{2}$	+ 1 $\frac{1}{2}$	20.39	- 1 $\frac{1}{2}$	- 5	93.09	- 1	- 2 $\frac{1}{2}$	12.10	+ $\frac{1}{2}$	+ 1	25.17	+ 1 $\frac{1}{2}$	+ 2	34.87	- $\frac{1}{2}$	- $\frac{1}{2}$
November	2	4.88	+ $\frac{7}{8}$	+ 1	123.83	- 2	- 2	20.40	- 1 $\frac{1}{2}$	- 4 $\frac{1}{2}$	93.13	- 1	- 1	12.09	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.17	+ 1	+ 1 $\frac{1}{2}$	34.86	- $\frac{1}{2}$	- 1
	9	4.87 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.88	+ 3	+ 5	20.39	- 2 $\frac{1}{2}$	- 5 $\frac{1}{2}$	93.14	2 $\frac{1}{2}$	- 5	12.08	Par	Par	25.17	+ 1	+ 1 $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- $\frac{1}{2}$
	16	4.87 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.86	+ 3	+ 4	20.40	- 1 $\frac{1}{2}$	- 5	93.18	- 4	- 10	12.09	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.15	+ $\frac{1}{2}$	+ 1 $\frac{1}{2}$	34.88	- $\frac{1}{2}$	- $\frac{1}{2}$
	23	4.87 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.87	+ 4 $\frac{1}{2}$	+ 5	20.38	- 2 $\frac{1}{2}$	- 5 $\frac{1}{2}$	93.15	- 5	- 15	12.09	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.13	+ $\frac{1}{2}$	+ $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- $\frac{1}{2}$
	30	4.87 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.85	+ 4 $\frac{1}{2}$	+ 5	20.38	- 2 $\frac{1}{2}$	- 5 $\frac{1}{2}$	93.18	- 5	- 13	12.09	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.13	- $\frac{1}{2}$	- $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- $\frac{1}{2}$
December	7	4.88 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.98	+ 9	+ 15 $\frac{1}{2}$	20.38	- 3	- 6	93.25	- 7	- 16	12.10	+ $\frac{1}{2}$	+ 1	25.12	- $\frac{1}{2}$	- $\frac{1}{2}$	34.87	- $\frac{1}{2}$	- $\frac{1}{2}$
	14	4.88	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.93	+ 5 $\frac{1}{2}$	+ 10	20.38	- 3 $\frac{1}{2}$	- 6 $\frac{1}{2}$	93.19	- 7	- 17	12.09	+ $\frac{1}{2}$	+ $\frac{1}{2}$	25.11	- $\frac{1}{2}$	- $\frac{1}{2}$	34.86	- 1	- 1
	21	4.88 $\frac{1}{2}$	+ $\frac{7}{8}$	+ $\frac{7}{8}$	123.88	+ $\frac{1}{2}$	+ 5	20.38	- 3 $\frac{1}{2}$	- 6 $\frac{1}{2}$	93.24	- 5	- 14	12.10	+ $\frac{1}{2}$	+ 1	25.09	- 2 $\frac{1}{2}$	- 2 $\frac{1}{2}$	34.86	- 1	- 2
	28	4.88 $\frac{1}{2}$	+ $\frac{7}{8}$	+ 1	123.86	+ 1 $\frac{1}{2}$	+ 2 $\frac{1}{2}$	20.40	- 3	- 6 $\frac{1}{2}$	93.24	- 5 $\frac{1}{2}$	- 13	12.09	- $\frac{1}{2}$	Par	25.09	- 3	- 3	34.85	- 2	- 3

FORWARD RATES—1930

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium		
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months
1930	\$	c.	c.	fr.	c.	c.	Rm.	pf.	pf.	L.	c.	e.	fl.	c.	c.	fr.	c.	c.	B.	c.	c.
January 4	4-87½	+¼	+⅝	123-95	+ 6	+12	20-43	-1½	- 4½	93-18	- 6	-15	12-09	- ¼	- ¼	25-13	- ½	- ½	34-90	- ½	-1
11	4-87	+⅞	+⅜	123-90	+ 4½	+ 8½	20-39	- 3	- 7	93-05	-11	-25	12-09	+ ¼	+ ¼	25-13	Par	Par	34-94	+2	+3
18	4-86½	+⅜	+⅜	123-91	+ 3	+ 6	20-37	- 3	- 7½	92-99	-15	-33	12-11	+ ¼	+1½	25-19	+ ¼	+1	34-96	+2	+3½
25	4-86½	-⅜	+⅜	123-90	+ 4	+ 6½	20-36	-2½	- 6½	92-98	-14	-37	12-11	+1	+2	25-19	+ ¼	+1½	34-93	+1½	+2½
February 1	4-86½	+⅜	+⅜	123-97	+ 6	+13½	20-36	- 3	- 7	92-94	-11	-30	12-12	+1½	+2½	25-21	+1½	+2½	34-94	+ ½	+1
8	4-86½	+⅜	+⅜	124-11	+ 8½	+18	20-36	- 3	- 7	92-92	-14	-32	12-12	+ ¼	+1½	25-29	+ ¼	+1½	34-90	- ½	-1½
15	4-86¼	-⅜	-⅜	124-20	+12	+24	20-37	-2	- 6	92-91	-12	-31	12-13	+1	+2½	25-20	+ ¼	+2	34-90	- ½	-1
22	4-86	Par	-⅜	124-27	+11	+25	20-37	-2	- 6	92-82	-12	-31	12-12	+1	+2	25-20	+ ¼	+2	34-89	-1	-1½
March 1	4-86	-⅞	-⅝	124-26	+12	+25	20-37	-2	- 5½	92-73	-14	-33	12-12	+1	+2	25-19	+1	+2½	34-89	-1½	-1½
8	4-86	-⅜	-⅜	124-24	+11	+24	20-38	-2½	- 6	92-81	-11	-31	12-12	+1	+2	25-13	+ ½	+ ½	34-89	- ½	-1½
15	4-86½	-⅜	-⅜	124-26	+ 9	+23	20-38	-1½	- 6	92-82	-11	-23	12-12	+1	+2	25-12	Par	Par	34-89	- ½	-1
22	4-86½	+⅜	+⅜	124-28	+ 7	+17	20-39	-1½	- 5	92-93	-12	-30	12-13	+1	+2	25-12	- ½	- ½	34-89	- ½	-1
29	4-86½	+⅜	+⅜	124-28	+ 8	+18	20-37	-2	- 5½	92-82	-13	-33	12-12	+ ¼	+1½	25-13	- ¼	Par	34-87	- ½	-1
April 5	4-86½	Par	-⅜	124-39	+ 7½	+20	20-38	-1½	- 4½	92-79	-13	-32	12-12	+ ½	+1½	25-11	-1½	-1½	34-85	-1	-1½
12	4-86½	-⅞	-⅜	124-21	+ 7	+14	20-38	-1½	- 5½	92-81	-13	-32	12-11	+ ¼	+ ¼	25-10	-1½	-1½	34-84	-2½	-4½
19	4-86½	- ½	- ½	124-01	+ 2	+ 4	20-37	-1½	- 5	92-74	-12	-32	12-08	- ½	- ½	25-07	-1	-2½	34-84	-1½	-3
26	4-86½	-⅞	-⅜	123-92	+ ½	+ ½	20-36	-1½	- 4½	92-77	-13	-31	12-08	-1	-1½	25-08	-1	-2	34-82	-1½	-4
May 3	4-86	-⅝	-1½	123-82	- 8½	-11	20-36	-1½	- 4	92-72	-12	-31	12-08	- ½	-2	25-07	-1	-2	34-84	Par	-2
10	4-85½	-⅜	- ½	123-86	- 6½	-11	20-36	-1½	- 4½	92-67	-14	-23	12-07	- ½	-1½	25-10	- ½	-1½	34-81	-1½	-3½
17	4-86	- ½	- ½	123-86	- 5½	-11	20-37	-1½	- 3½	92-68	-13	-31	12-08	- ½	- ½	25-13	+ ¼	+ ¼	34-82	-1	-3
24	4-86	- ½	-⅜	123-94	+ 3½	+ 1	20-37	-1½	- 3	92-73	-11	-30	12-08	- ½	- ½	25-12	+ ¼	Par	34-82	- ½	-2½
31	4-85½	-⅜	-⅜	123-94	+ 4	+ 4½	20-36	-1½	- 3½	92-75	-13	-33	12-08	- ½	- ½	25-11	+ ¼	+ ¼	34-81	- ½	-2½

June	7	4 85½	- ½	- ½	123 90	+ 1½	+ 3	20 36	- 1½	- 3½	92 76	- 13	- 33	12 08	Par	- ½	25 10	Par	Par	34 81	- ½	- 2½
	14	4 86	- ½	- ½	123 81	+ 2	+ 2½	20 36	- 1½	- 3½	92 76	- 11	- 28	12 08	+ ½	+ ½	25 07	Par	Par	34 83	- ½	- 2
	21	4 85½	+ ½	- ½	123 76	+ 1½	+ 4	20 37	- ½	- 1½	92 76	- 13	- 31	12 09	+ 1	+ 1	25 09	Par	Par	34 82	- ½	- ½
	28	4 86	+ ½	+ ½	123 74	+ 2	+ 5	20 40	- ½	- ½	92 77	- 10	- 61	12 09	+ ½	+ 1½	25 08	- ½	- ½	34 82	- ½	- ½
July	5	4 86½	+ ½	+ ½	123 07	- 2	- 3	20 40	- ½	- ½	92 86	- 11	- 32	12 09	+ ½	+ 1	25 06	Par	Par	34 81	Par	- 1
	12	4 86½	+ ½	+ ½	123 64	- 3	- 4½	20 38	- ½	- 1	92 87	- 13	- 34	12 09	- ½	- 1	25 03	- 1	- 1½	34 83	Par	- ½
	19	4 86½	+ ½	+ ½	123 90	- 3	- 4	20 37	- 1½	- 2½	92 87	- 11	- 31	12 09	+ ½	+ ½	25 03	- ½	- ½	34 80	Par	- ½
	26	4 86½	+ ½	+ ½	123 69	Par	Par	20 38	- 1½	- 2½	92 89	- 11	- 30	12 09	+ ½	+ ½	25 04	- ½	- ½	34 79	- ½	- ½
August	2	4 87½	+ ½	+ ½	123 82	+ ½	+ 1½	20 38	- 1	- 2½	93 00	- 10	- 31	12 09	+ ½	+ ½	25 07	+ ½	+ ½	34 81	- ½	- ½
	9	4 87	+ ½	+ ½	123 80	Par	+ 1	20 39	- 1	- 3	92 97	- 12	- 31	12 08	+ ½	+ ½	25 04	+ ½	+ ½	34 80	- ½	- ½
	16	4 87½	+ ½	+ ½	123 87	+ 2½	+ 5	20 39	- ½	- 2½	92 98	- 11	- 29	12 09	+ ½	+ ½	25 04	+ ½	+ ½	34 84	+ ½	+ ½
	23	4 87	+ ½	+ ½	123 82	+ 3	+ 4½	20 39	- ½	- 2½	92 99	- 10	- 29	12 09	+ ½	+ 1	25 06	+ ½	+ ½	34 86	+ ½	+ 1½
30	4 86½	+ ½	+ ½	123 75	+ 1	+ 4½	20 39	- ½	- 2½	92 97	- 10	- 31	12 08	Par	+ ½	+ ½	25 04	+ ½	+ ½	34 84	+ ½	+ ½
September	6	4 86	Par	- ½	123 78	+ 2½	+ 5½	20 41	- 1	- 3	92 82	- 13	- 33	12 08	- ½	- ½	25 05	+ 1	+ 1½	34 84	+ ½	+ 1
	13	4 86	+ ½	+ ½	123 76	+ 1½	+ 4	20 40	- 1	- 3	92 79	- 12	- 32	12 07	Par	- ½	25 05	+ ½	+ 2	34 86	+ ½	+ 2
	20	4 86	+ ½	+ ½	123 70	+ 1	+ 3	20 39	- 2½	- 5	92 80	- 13	- 36	12 06	- ½	- ½	25 04	+ ½	+ 1½	34 86	+ 1½	+ 3
	27	4 86	+ ½	+ ½	123 80	+ 1	+ 3½	20 41	- 1½	- 7	92 78	- 13	- 39	12 05	- ½	- ½	25 05	+ ½	+ 2	34 86	+ ½	+ 2
October	4	4 86	+ ½	+ ½	123 83	+ 2½	+ 6	20 42	- 2½	- 8	92 80	- 14	- 39	12 05	- ½	- ½	25 03	+ ½	+ ½	34 84	+ ½	+ ½
	11	4 85½	+ ½	+ ½	123 87	+ 3½	+ 7½	20 43	- 3½	- 10	92 80	- 14	- 42	12 05	- ½	- ½	25 00	+ ½	Par	34 83	Par	+ ½
	18	4 86	+ ½	+ ½	123 86	+ 2½	+ 4½	20 43	- 3½	- 9½	92 81	- 18	- 47	12 06	- ½	- ½	25 02	+ ½	+ ½	34 84	+ ½	+ ½
	25	4 86	- ½	- ½	123 82	+ 1½	+ 1½	20 39	- 2½	- 9½	92 82	- 15	- 39	12 07	+ ½	+ ½	25 03	+ ½	+ ½	34 85	+ ½	+ ½
November	1	4 85½	- ½	- ½	123 78	- 1½	Par	20 39	- 4	- 10	92 80	- 15	- 37	12 06	+ ½	+ ½	25 03	+ ½	+ ½	34 85	+ ½	+ ½
	8	4 85½	- ½	- ½	123 63	- 9	- 17	20 38	- 3	- 10	92 80	- 15	- 40	12 07	+ ½	+ ½	25 03	+ ½	+ ½	34 82	+ ½	+ ½
	15	4 85½	- ½	- ½	123 65	- 7	- 18	20 38	- 2½	- 9	92 76	- 14	- 44	12 07	+ ½	+ 1½	25 06	+ ½	+ 2	34 82	Par	Par
	22	4 85½	- ½	- ½	123 60	- 6	- 20	20 38	- 3	- 10	92 77	- 16	- 45	12 07	+ ½	+ 1½	25 06	+ 2	+ 2	34 83	+ 1	Par
29	4 85½	- ½	- ½	123 59	- 7	- 18	20 37	- 3½	- 11	92 78	- 18	- 52	12 06	+ ½	+ 1	25 07	+ 2	+ 3	34 82	+ ½	- 1	
December	6	4 85½	+ ½	+ ½	123 58	- 7	- 14	20 36	- 4	- 10	92 66	- 22	- 62	12 07	+ ½	+ 1	25 06	+ 2	+ 3	34 78	- 2½	- 4½
	13	4 85½	+ ½	+ ½	123 60	- 8	- 13	20 36	- 3½	- 10	92 74	- 24	- 67	12 06	+ ½	+ ½	25 03	Par	+ ½	34 78	- 3	- 5
	20	4 85½	+ ½	+ ½	123 60	- 3½	- 6½	20 37	- 3½	- 9	92 76	- 20	- 60	12 06	+ ½	+ ½	25 00	- 2	- 1½	34 76	- 4½	- 6½
	27	4 85½	+ ½	+ ½	123 60	- 6	- 11	20 39	- 2½	- 8	92 76	- 18	- 55	12 06	Par	+ ½	25 02	- 3½	- 3½	34 73	- 4	- 6

FORWARD RATES—1931

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1931	\$	c.	c.	fr.	c.	c.	Rm.	pf.	pf.	L.	c.	c.	fl.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	3	4 85½	- ½	+ ¼	123-75	Par	- 2	20-40	- 1½	- 5½	92-75	- 15	- 43	12-06	+ ½	+ ¾	25-05	Par	Par	34-78	Par	- ½
	10	4 85½	- ¼	+ ¼	123-75	+ 1½	+ 2	20-41	Par	- 4½	92-74	- 18	- 45	12-06	+ ½	+ ¾	25-05	Par	+ 2	34-81	+ 1½	+ 1½
	17	4 85½	Par	+ ¾	123-88	+ ½	+ 1½	20-43	- 2	- 6	92-72	- 14	- 42	12-07	+ ¾	+ ¾	25-08	+ 1½	+ 3½	34-83	+ 1½	+ 2
	24	4 85½	+ ¾	+ ¾	123-87	Par	Par	20-43	- 1½	- 4½	92-72	- 15	- 43	12-07	+ ¾	+ ¾	25-09	+ 2	+ 4	34-82	+ ½	+ 1½
	31	4 85½	+ ½	+ ¼	123-92	+ 1½	+ 4½	20-43	- 1	- 3½	92-76	- 10	- 32	12-08	+ ½	+ 1½	25-13	+ 2½	+ 5	34-83	+ ½	+ 2
February	7	4 86½	+ ¾	+ ¾	123-98	+ 4½	+ 9	20-44	- 1	- 2½	92-81	- 13	- 33	12-11	+ 1½	+ 3	25-16	+ 2½	+ 5½	34-82	+ ½	+ ½
	14	4 86½	+ ¾	+ ¾	123-94	+ 6	+ 10	20-44	- 1	- 3	92-81	- 13	- 33	12-10	+ 1½	+ 3	25-18	+ 4½	+ 8½	34-87	+ 1½	+ 3½
	21	4 85½	+ ¾	+ ¾	123-90	+ 6	+ 16	20-43	- 1	- 2	92-80	- 10	- 30	12-10	+ 1½	+ 3½	25-18	+ 3½	+ 8½	34-84	+ 2	+ 4
	28	4 85½	+ ¾	+ ¾	123-97	+ 6	+ 20	20-44	- ½	- 1½	92-74	- 10	- 30	12-11	+ 1½	+ 3½	25-24	+ 4½	+ 9½	34-84	+ 1	+ 2
March	7	4 85½	+ ¾	+ ¾	124-04	+ 8½	+ 19	20-43	- ½	- 2	92-73	- 9	- 28	12-12	+ 1½	+ 3½	25-24	+ 3½	+ 8½	34-85	+ ½	+ 2
	14	4 85½	+ ¾	+ ¾	124-14	+ 11	+ 25	20-41	- 1½	- 3	92-73	- 8	- 25	12-12	+ 1½	+ 3½	25-25	+ 3½	+ 8½	34-85	+ ½	+ 2
	21	4 86	+ ¾	+ ¾	124-19	+ 14	+ 30	20-39	- 1½	- 3½	92-75	- 8	- 21	12-12	+ 1½	+ 3½	25-25	+ 3½	+ 8	34-91	+ 3	+ 4
	28	4 85½	+ ¾	+ ¾	124-22	+ 16	+ 32	20-39	- 1	- 3½	92-76	- 6	- 22	12-12	+ 1½	+ 3½	25-25	+ 2½	+ 7	34-93	+ 2	+ 4½
April	4	4 86	+ ¾	+ ¾	124-21	+ 15	+ 34	20-41	- ½	- 2½	92-82	- 6	- 21	12-12	+ 1½	+ 3½	25-25	+ 2½	+ 7	34-95	+ 3	+ 5
	11	4 86	+ ¾	+ ¾	124-26	+ 14	+ 35	20-41	- 1	- 2½	92-81	- 7	- 22	12-11	+ ½	+ 2½	25-23	+ 2½	+ 6½	34-95	+ 3	+ 6½
	18	4 85½	+ ¾	+ ¾	124-25	+ 14	+ 36	20-40	- 1	- 2½	92-77	- 8	- 25	12-10	+ 1	+ 1½	25-23	+ 3	+ 7	34-95	+ 3	+ 7½
	25	4 86	+ ¾	+ ¾	124-32	+ 15	+ 35	20-41	- 1	- 2½	92-82	- 7	- 22	12-10	+ ½	+ 1	25-23	+ 2½	+ 7	34-96	+ 3	+ 7
May	2	4 86½	+ ¾	+ ¾	124-43	+ 15	+ 37	20-42	- 1	- 2½	92-90	- 7	- 20	12-10	+ ½	+ ¾	25-25	+ 3	+ 7	34-96	+ 2½	+ 5½
	9	4 86½	+ ¾	+ ¾	124-40	+ 14	+ 36	20-42	- 1	- 2½	92-92	- 7	- 21	12-10	+ ½	+ 1	25-24	+ 1½	+ 4½	34-97	+ 2½	+ 6
	16	4 86½	+ ¾	+ ¾	124-30	+ 12	+ 30	20-42	- 1½	- 2½	92-92	- 7	- 26	12-11	+ 1	+ 2	25-23	+ 1½	+ 4½	34-95	+ 2	+ 5
	23	4 86½	+ ¾	+ ¾	124-38	+ 13	+ 32	20-44	- 1	- 2½	92-92	- 8	- 23	12-10	+ ½	+ 1½	25-20	+ 1½	+ 4	34-96	+ 3	+ 6
	30	4 86½	+ ¾	+ ¾	124-18	+ 9	+ 21	20-48	- ½	- ½	92-95	- 8	- 30	12-09	+ ½	+ 1	25-14	+ ½	+ 2½	34-93	Par	+ 3
June	6	4 86½	+ ¾	+ ¾	124-28	+ 11	+ 27	20-50	+ ½	+ ½	92-92	- 7	- 26	12-09	+ ½	+ 1½	25-09	+ ½	+ ½	34-93	+ 1	+ 3
	13	4 86½	+ ¾	+ ¾	124-20	+ 10	+ 27	20-49	- 2	- 5½	92-87	- 10	- 30	12-08	+ ½	+ 1½	25-04	- ½	- ½	34-93	+ 2	+ 4
	20	4 86½	+ ¾	+ ¾	124-22	+ 11	+ 30	20-50	- 2	- 4	92-92	- 10	- 30	12-08	+ ½	+ 1½	25-05	- ½	- ½	34-95	+ 2½	+ 5½
	27	4 86½	+ ¾	+ ¾	124-27	+ 11	+ 30	20-60	+ ½	+ ½	92-95	- 7	- 25	12-09	+ ½	+ 1½	25-15	+ 1	+ 2	34-93	+ 1½	+ 3½

July	4	4-86½	+ ⅞	+ ⅞	124-28	+ 9	+ 29	20-50	- ½	- 2	92-92	- 7	- 25	12-09	+ ½	+ 1½	25-13	+ ½	+ 2	34-90	+ 1½	+ 4	
	11	4-86½	+ ⅞	+ ⅞	123-92	+ 3	+ 7	20-51	- ½	- 3½	92-95	- 11	- 30	12-08	+ ½	+ 1½	25-07	+ ½	Par	34-84	- 2	- 1	
	18	4-84½	+ ⅞	+ ⅞	123-60	- 2½	- 2½	20-62	- ½	- ½	92-90	- 9	- 35	12-04	- ½	- ½	24-94	- 1½	- 1½	34-81	- 1½	- 1½	
	25	4-80½	+ ⅞	+ 1½	123-82	+ 12	+ 12	20-50	..	..	92-72	- 15	- 40	12-04	+ ½	+ ½	24-90	- ½	- ½	34-77	- 2	- 4
August	1	4-85½	+ ⅞	+ 2½	123-90	+ 15	+ 40	20-50	..	..	92-87	- 7	- 22	12-05	+ 1	+ 1½	24-90	+ ½	+ ½	34-80	+ 1	+ 1
	8	4-85	+ ⅞	+ 1½	123-88	+ 20	+ 50	20-55	..	..	92-85	- 12	- 35	12-04	+ 1½	+ 3½	24-86	+ 2	+ 3½	34-82	+ 2½	+ 4½
	15	4-85½	+ ⅞	+ 2	123-94	+ 12	+ 35	20-50	..	..	92-85	- 11	- 37	12-05	+ 1½	+ 4	24-89	+ 1½	+ 4	34-87	+ 4	+ 8
	22	4-86	+ ⅞	+ 2½	123-96	+ 19	+ 47	20-52	..	..	92-92	- 10	- 37	12-05	+ 1½	+ 4½	24-98	+ 4½	+ 7	34-86	+ 5	+ 11
	29	4-86	+ ⅞	+ 2½	123-96	+ 22	+ 67	20-47	(nominal)	92-90	- 5	- 22	12-05	+ 2½	+ 7	24-96	+ 3½	+ 9	34-85	+ 4½	+ 11
	September	5	4-86	+ ⅞	+ 2½	123-95	+ 20	+ 57	20-52	- 10	- 25	92-92	- 5	- 15	12-06	+ 2	+ 6½	24-93	+ 2½	+ 8	34-90	+ 6	+ 14
12		4-86	+ ⅞	+ 2½	123-96	+ 11	+ 47	20-62	- 15	- 35	92-90	- 2½	- 11	12-04	+ 2½	+ 8½	24-92	+ 3	+ 8½	34-94	+ 7	+ 15	
19		4-86	+ ⅞	+ 2½	123-96	+ 11	+ 45	20-54	..	..	92-90	- 2½	- 10	12-04	+ 2	+ 6½	24-87	+ 4½	+ 11	34-85	+ 7	+ 17
26		3-75	+ 2½	+ 6½	95-00	..	..	16	..	..	73-00	..	..	..	..	..	19	..	..	26-50	..	..
October	3	3-85	+ ½	+ ½	98-00	+ 12	+ 75	16-62	..	..	75-50	..	..	9-57	..	..	19-50	..	..	27-62	..	..
							fr.											fr.	fr.		B.	B.	
	10	3-87	Par	+ ½	98-25	+ 37	+ 1	16-50	..	..	75-00	..	..	9-55	Par	Par	19-62	+ ½	+ ½	27-62	+ ½	+ ½
							fr.																
	17	3-87	- 1	- 2	98-25	+ ½	+ 1½	16-56	..	..	74-75	..	..	9-53	- 1½	Par	19-70	+ ⅞	+ ⅞	27-50	+ ½	+ ½
November	24	3-91½	- ½	- 1½	99-37	+ ½	+ 1	16-80	..	..	75-00	- ½	- 1½	9-66	Par	+ 3½	19-67	+ ½	+ ½	28	+ ½	+ ½
	31	3-84	- ½	- ½	98-00	+ ½	+ ½	16-25	..	..	74-50	- ½	- 1½	9-51	Par	+ 4	19-70	+ ⅞	+ ½	27-60	+ ⅞	+ ½
							c.														c.	c.	
	7	3-79½	+ ½	+ ½	90-62	+ ½	+ ½	16	..	..	73-37	- ½	- 1	9-41	+ ½	+ 2½	19-40	+ ⅞	+ ⅞	27-20	+ 5	+ 17
December	14	3-75½	+ ½	+ 1½	90-00	+ ½	+ ½	15-85	..	..	73-00	- ½	- 1½	9-36	+ 1	+ 2½	19-30	+ ⅞	+ ⅞	27-02	+ 6	+ 12
							c.														c.	c.	
	21	3-73½	+ ⅞	+ 1	95-50	+ 17	+ 50	15-72	..	..	72-25	- ½	- 1½	9-31	+ 1	+ 2½	19-20	+ ⅞	+ ⅞	27-02	+ 10	+ 25
28	3-53	+ ⅞	+ 1½	90-25	+ 35	+ 105	14-92	..	..	68-50	- ½	- 1½	8-76	+ 1	+ 2½	18-22	+ ⅞	+ ⅞	25-45	+ 10	+ 25	
December	5	3-31½	+ ⅞	+ 1½	85-00	+ 37	+ 100	14-32	..	..	65-75	- ½	- 1½	8-24	+ 1	+ 3½	17-05	+ ⅞	+ ½	24	+ 10	+ 25
	12	3-36	Par	+ ½	85-75	+ 20	+ 75	14-12	..	..	65-75	- ½	- 1½	8-32	+ 1	+ 3	17-17	+ ⅞	+ ½	24-02	+ 9	+ 18
	19	3-36	Par	Par	86-00	+ 22	+ 95	14-25	..	..	66-50	- ½	- 1½	8-40	- 7	- 15	17-32	+ ⅞	+ ½	24-20	+ 5	+ 15
	24	3-43	Par	Par	87-25	+ 22	+ 95	14-45	..	..	67-50	- ½	- 1½	8-53	- 7	- 15	17-57	+ ⅞	+ ½	24-62	+ 5	+ 15

FORWARD RATES—1932

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1932	\$	c.	c.	fr.	e.	c.	Rm.	pf.	pf.	L.	L.	L.	fl.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	2	3-40½	+ ½	+ ⅞	86½	+30	+80	14-30	..	..	87½	-½	-1¼	8-47	-7	-16	17-40	+3	+12	24-45	+5	+15
	9	3-40½	+ ½	+ ⅞	87	+27	+80	14-35	..	..	87½	-½	-2	8-50	-2	-4	17-50	+3	+11	24-67	+5	+15
	16	3-40	Par	Par	88½	+15	+50	14-70	..	..	69	-½	-1½	8-70	-2	-5	17-90	+3	+10	25-07	+3	+6
	23	3-43½	Par	Par	87½	+15	+55	14-50	..	..	68½	-½	-1½	8-50	-2	-3½	17-60	+2½	+10	24-67	+3	+7
	30	3-45½	- ¼	- ¼	88	+10	+40	14-60	..	..	69½	-½	-2	8-60	-1½	-3	17-75	+3	+10	24-80	Par	+5
February	6	3-45½	- ¼	- ¼	87½	+10	+42	14-52	..	..	66½	-½	-1¼	8-56	-1	-2½	17-70	+3½	+10	24-75	Par	+2½
	13	3-44½	- ¼	- ⅞	87½	+17	+45	14-47	..	..	66½	-½	-2	8-52	-1	-2½	17-65	+3½	+10	24-67	Par	Par
	20	3-45½	- ¼	- ⅞	87½	+15	+60	14-55	..	..	66½	-½	-1½	8-54	-½	-1½	17-70	+3	+12	24-80	+1½	+1½
	27	3-48½	- ⅞	-1½	88½	+7	+17	14-65	..	..	67½	-½	-1½	8-65	Par	-1½	18-00	+2	+6½	25-05	Par	Par
March	5	3-51	-1½	-3	89½	-15	-30	14-80	..	..	67½	-½	-1½	8-72	-2	-4½	18-20	+1	+4	25-20	-12	-35
	12	3-65	-½	-1½	92½	-7	-15	15-25	..	..	70	-½	-1½	9-02	-1	-5	18-75	+1	+1½	26-00	-7	-20
	19	3-64	-½	-1½	92½	-5	-15	15-27	..	..	70½	-½	-1½	9-03	-1	-3	18-85	+1	+2	26-05	-10	-20
	26	3-73½	-1	-2½	95	-5	-20	15-67	..	..	71½	-½	-½	9-25	-1	-4½	19-25	+1	+2	26-75	-5	-20
April	2	3-77½	-½	-2½	95½	-5	-15	15-87	..	..	72½	-½	-1½	9-32	-1	-3½	19-40	+1	+2	27-00	-5	-17
	9	3-79½	-½	-2½	96	Par	Par	16-00	..	..	73½	-½	-1	9-35	Par	Par	19-47	+1	+2	27-07	Par	-5
	16	3-76½	-½	-1½	95½	+5	+15	15-85	..	..	73½	-½	-1	9-31	-½	-1	19-40	+1½	+3½	26-80	-2½	-5
	23	3-74½	-½	-1½	95	+5	+15	15-75	..	..	73	-½	-1	9-25	Par	Par	19-30	+1	+3	26-70	Par	Par
	30	3-66	-½	-½	93	+6	+15	15-35	..	..	71½	-½	-1	9-02	-1	-1	18-85	+2½	+4½	26-10	-2½	-2½
May	7	3-66½	-½	-2	93	+2½	+10	15-42	..	..	71	-½	-½	9-03	-½	-½	18-77	+1	+2½	26-15	-2	-4½
	14	3-64½	-½	-1½	92½	+2½	+2½	15-30	..	..	70½	-½	-½	9-00	Par	Par	18-60	+½	+3	26-00	Par	-2½
	21	3-67½	-½	-2	93½	+2½	+2½	15-40	..	..	71½	-½	-½	9-06	+½	+½	18-77	+½	+1	26-20	-1	-3
	28	3-69½	-1½	-3½	93½	+1	+2	15-55	..	..	71½	-½	-½	9-10	+½	+½	18-85	+1	+2½	26-33	+1	+1

June	4	3 60½	-1½	-4	93½	-2½	-2½	15 57	..	..	71½	-½	-½	9-10	+½	+½	18 85	+1	+3	26 41	Par	Par
	11	3 67½	-1½	-3½	93½	-1	-2½	15 50	..	..	71	-½	-½	9-08	+½	+½	18 82	+1	+3	26 35	Par	Par
	18	3 61½	-½	-2	92	-1	-4½	15 25	..	..	70½	-½	-½	8-96	Par	Par	18 57	Par	+1½	25 97	Par	Par
	25	3 61	-½	-1½	91½	-1½	-4	15 20	..	..	71	-½	-½	8-94	Par	Par	18 55	+½	+2	25 95	Par	Par
July	2	3 57½	-½	-½	91½	-1½	-4½	15 05	..	..	70	-½	-½	8 85	Par	Par	18 31	+½	+2	25 70	-1	-2½
	9	3 58	-½	-½	91½	+2	+3½	15 09	..	..	70½	-½	-½	8 88½	Par	Par	18 37	+½	+1½	25 77	-1	-1
	16	3 54½	-½	-1	90½	+1	+3	14 95	..	..	69½	-½	-½	8 81	Par	Par	18 22	+½	+1½	25 67	-1	-1
	23	3 55½	-½	-½	89½	+½	+3½	14 97	..	..	69½	-½	-½	8 82	Par	Par	18 25	+½	+1½	25 65	-2½	-6
	30	3 50½	-½	-½	89½	+1	+3½	14 75	..	..	69	-½	-½	8 72	Par	Par	18 04	Par	+1½	25 29	-7	-23
	August	6	3 45½	-½	-½	88½	+1½	+3	14 50	67½	-½	-½	8 59	+½	+½	17 75	Par	Par	24 92	-7	-25
13		3 47½	-½	-½	88½	+1½	+2½	14 60	..	..	68	-½	-½	8 63	-½	+½	17 85	Par	Par	25 05	-4½	-13
20		3 47	-½	-½	88½	Par	Par	14 58	..	..	67½	-½	-½	8 62	Par	Par	17 82	Par	Par	24 97	-7	-17
27		3 46½	-½	-½	88½	Par	Par	14 55	..	..	67½	-½	-½	8 60	Par	Par	17 82	Par	Par	24 95	-7	-20
September	3	3 47½	-½	-½	88½	Par	Par	14 80	..	..	67½	-½	-½	8 63	Par	Par	17 95	Par	Par	25 05	-9	-25
	10	3 40	-½	-½	89½	-4	-9	14 67	..	..	68	-½	-½	8 70	-½	+½	18 08	+½	+1½	25 20	-10	-30
	17	3 47½	-½	-½	88½	-1½	-4	14 57	..	..	67½	-½	-½	8 65	Par	Par	18 00	+½	+2½	25 06	-10	-30
	24	3 46½	-½	-½	88½	-2½	-10	14 55	..	..	67½	-½	-½	8 62	+½	+½	17 97	+½	+1	24 97	-7	-20
October	1	3 46	-½	-½	88½	-1	-5	14 52	..	..	67½	-½	-½	8 61	+½	+½	17 92	+½	+1½	24 92	-7	-20
	8	3 45½	-½	-½	87½	Par	Par	14 53	..	..	67½	-½	-½	8 67	Par	Par	17 83	Par	Par	24 83	-7	-15
	15	3 44½	-½	-½	87½	+2½	+4½	14 50	..	..	67½	-½	-½	8 66	+½	+½	17 82	+½	+1	24 78	-4	-13
	22	3 39½	+½	+½	80½	+3½	+9	14 25	..	..	66½	-½	-½	8 42	+½	+1	17 52	+1½	+2	24 35	-4	-9
	29	3 28½	-½	-½	83½	+4	+7	13 82	..	..	64½	-½	-½	8 16	+½	+1	17 02	+1½	+3	23 80	-4½	-10
November	5	3 20½	-½	-½	83½	Par	Par	13 90	..	..	64½	-½	-½	8 19	Par	+½	17 08	+½	+1½	23 67	-5½	-12
	12	3 32½	-½	-½	85	+2½	+2½	13 97	..	..	64½	-½	-½	8 27	Par	+½	17 27	+½	+2	23 95	-7	-25
	19	3 29½	-½	-½	84½	+2½	+2½	13 87	..	..	64½	-½	-½	8 20	+½	+½	17 12	+½	+1½	23 80	-7	-25
	26	3 21½	-½	-½	82½	+2½	+2½	13 50	..	..	63	-½	-½	8 00	+½	+½	16 72	+½	+2	23 20	-4½	-15
December	3	3 19	-½	-½	81½	+2½	+2½	13 37	..	..	62½	-½	-½	7 95	+½	+½	16 60	+½	+2	23 05	-8	-20
	10	3 22½	-½	-½	82½	+1	+3	13 55	..	..	62½	-½	-½	8 03	Par	+½	..	+½	+1½	23 27	-9	-25
	17	3 30½	-½	-½	84½	-2½	-2½	13 87	..	..	64½	-½	-½	8 22	Par	Par	17 18	+½	+1	23 90	-10	-25
	24	3 33½	-½	-½	85½	-2½	-10	13 98	..	..	65½	-½	-½	8 30	Par	Par	17 32	+½	+1	24 05	-12	-30
	31	3 31½	-½	-½	85	-5	-10	13 93	..	..	64½	-½	-½	8 25	+½	+½	17 24	+½	+1	23 92	-10	-25

FORWARD RATES²-1933

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium		
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months
1933	\$	c.	o.	fr.	e.	o.	Rm.	pf.	pf.	L.	L.	L.	fl.	c.	o.	fr.	c.	c.	B.	o.	c.
January 7	3-34	- $\frac{1}{8}$	- $\frac{1}{8}$	85 $\frac{1}{8}$	-5	-9	14-06	..	..	65 $\frac{1}{8}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-31	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-36	+ $\frac{1}{8}$	+1	24-12	-4	-15
14	3-35 $\frac{1}{2}$	- $\frac{1}{8}$	-1	85 $\frac{1}{2}$	-5	-15	14-12	..	..	65 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-35	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-42	+ $\frac{1}{8}$	+1	24-22	-5	-11
21	3-35 $\frac{1}{2}$	- $\frac{1}{8}$	-1	86	-5	-12	14-12	..	..	65 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-36	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-40	+ $\frac{1}{8}$	+1	24-22	-5	-10
28	3-38 $\frac{1}{2}$	- $\frac{1}{8}$	-1	86 $\frac{1}{2}$	-7	-17	14-21	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-42	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-50	+ $\frac{1}{8}$	+1	24-35	-5	-10
February 4	3-40	- $\frac{1}{8}$	-1	87	-5	-15	14-30	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-45	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-60	+ $\frac{1}{8}$	+1	24-42	-2 $\frac{1}{2}$	-12
11	3-43	- $\frac{1}{8}$	-1 $\frac{1}{2}$	87 $\frac{1}{8}$	-10	-30	14-42	..	..	67	- $\frac{1}{8}$	- $\frac{1}{8}$	8-54	+ $\frac{1}{8}$	+ $\frac{1}{8}$	17-77	+ $\frac{1}{8}$	+1 $\frac{1}{2}$	24-65	-2 $\frac{1}{2}$	-12
18	3-44 $\frac{1}{2}$	- $\frac{1}{8}$	-2 $\frac{1}{2}$	87 $\frac{1}{2}$	-15	-35	14-40	..	..	67 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-52	Par	Par	17-74	+ $\frac{1}{8}$	+2	24-55	-2 $\frac{1}{2}$	-12
25	3-41	- $\frac{1}{8}$	-1 $\frac{1}{2}$	86 $\frac{1}{2}$	-10	-25	14-25	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-42	Par	+ $\frac{1}{8}$	17-50	+ $\frac{1}{8}$	+1 $\frac{1}{2}$	24-25	-2 $\frac{1}{2}$	-12
March 3	3-45 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	87 $\frac{1}{2}$	-11	-30	14-52	..	..	67 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-53	Par	Par	17-67	+ $\frac{1}{8}$	+1 $\frac{1}{2}$	24-52	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$
11	No quotation			88 $\frac{1}{2}$	-15	-40	14-62	..	..	68 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-62	-2	-4	17-95	Par	Par	24-82	-2 $\frac{1}{2}$	-7
18	3-46 $\frac{1}{2}$	-2	-6	87 $\frac{1}{2}$	-10	-25	14-51	..	..	67 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-56	-1	-3	17-85	Par	Par	24-75	-1	-4
25	3-43	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	87 $\frac{1}{8}$	-6	-17	14-35	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-50	- $\frac{1}{8}$	-2	17-77	Par	Par	24-60	-1 $\frac{1}{2}$	-5
April 1	3-42 $\frac{1}{2}$	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	87 $\frac{1}{2}$	-7	-25	14-36	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-49	- $\frac{1}{8}$	-1 $\frac{1}{2}$	17-73	Par	+1	24-55	-1 $\frac{1}{2}$	-5
8	3-42	-1 $\frac{1}{2}$	-4	86 $\frac{1}{2}$	-7	-25	14-67	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-47	- $\frac{1}{8}$	-1	17-70	+ $\frac{1}{8}$	+ $\frac{1}{2}$	24-50	-1 $\frac{1}{2}$	-4
15	3-44 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4	86 $\frac{1}{2}$	-7	-25	14-41	..	..	66 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-44	- $\frac{1}{8}$	-1	17-65	+ $\frac{1}{8}$	+ $\frac{1}{2}$	24-43	-1 $\frac{1}{2}$	-4
22	3-81	-2	-5 $\frac{1}{2}$	89	-37	-75	15-30	..	..	67 $\frac{1}{2}$	-1	-2 $\frac{1}{2}$	8-73	-4 $\frac{1}{2}$	-9	18-25	-2 $\frac{1}{2}$	-2 $\frac{1}{2}$	25-15	-5	-15
29	3-80 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4	86 $\frac{1}{2}$	-10	-25	14-67	..	..	65 $\frac{1}{2}$	- $\frac{1}{8}$	-1 $\frac{1}{2}$	8-45	-2	-4 $\frac{1}{2}$	17-55	-1	-1 $\frac{1}{2}$	24-32	Par	Par
May 6	4-02	-1 $\frac{1}{2}$	-4	85 $\frac{1}{2}$	-10	-20	14-25	..	..	64 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-37	-5	-10	17-32	-1	-1 $\frac{1}{2}$	24-07	-2 $\frac{1}{2}$	-7
13	3-97	-1	-3 $\frac{1}{2}$	85 $\frac{1}{2}$	-10	-27	14-41	..	..	64 $\frac{1}{2}$	- $\frac{1}{8}$	-1	8-40	-10	-20	17-50	-2 $\frac{1}{2}$	-7	24-25	-2 $\frac{1}{2}$	-7
20	3-86 $\frac{1}{2}$	-1	-2 $\frac{1}{2}$	86	-7	-25	14-40	..	..	65	- $\frac{1}{8}$	-1	8-42	-2 $\frac{1}{2}$	-10	17-55	-2 $\frac{1}{2}$	-7	24-35	-2 $\frac{1}{2}$	-7
27	3-95 $\frac{1}{2}$	-1	-3	85 $\frac{1}{2}$	-7	-20	14-42	..	..	64 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	8-37	-2	-7	17-45	-1 $\frac{1}{2}$	-5	24-22	-3	-7

June	3	4 04	-1 1/2	-3 1/2	85 1/2	-2 1/2	-11	14 45	..	..	85 1/2	-1 1/2	-1 1/2	8 39	-3	-10	17 50	-4 1/2	-11	24 25	-2	-5
	10	4 12	-1	-3	85 1/2	-5	-11	14 45	..	..	84 1/2	-1 1/2	-1 1/2	8 41	-3	-12	17 50	-8	-30	24 25	-2	-5
	17	4 07 1/2	-1 1/2	-2	86 1/2	-4 1/2	-10	14 25	..	..	84 1/2	-1 1/2	-1 1/2	8 42	-2 1/2	-7	17 55	-4 1/2	-15	24 25	-2	-4 1/2
	24	4 22	-1	-3	86 1/2	-2 1/2	-8	14 30	..	..	84 1/2	-1 1/2	-1 1/2	8 47	-10	-20	17 60	-7	-17	24 30	-2	-4 1/2
July	1	4 30	-1	-3	86 1/2	-7	-20	14 28	..	..	84 1/2	-1 1/2	-1 1/2	8 45	-12	-30	17 60	-10	-30	24 25	-2	-4 1/2
	8	4 08 1/2	-1	-3	85	Par	Par	13 90	..	..	82 1/2	-1 1/2	-1 1/2	8 24	-5 1/2	-15	17 20	-2 1/2	-7	23 80	-2	-4 1/2
	15	4 77 1/2	-1 1/2	-2 1/2	85 1/2	Par	Par	13 97	..	..	83 1/2	-1 1/2	-1 1/2	8 26	-4	-12	17 25	-2 1/2	-9	23 95	Par	Par
	22	4 67	-1	-2 1/2	85 1/2	+2 1/2	+7	14 00	..	..	83 1/2	-1 1/2	-1 1/2	8 28	-4	-12	17 30	-2 1/2	-10	23 95	-2 1/2	-2 1/2
	29	4 50	-1 1/2	-3 1/2	85 1/2	+4	+15	13 95	..	..	83 1/2	-1 1/2	-1 1/2	8 28	-3	-7	17 25	-2	-6	23 90	-1 1/2	-1 1/2
August	5	4 51	-1 1/2	-3 1/2	84 1/2	-2 1/2	-2 1/2	13 85	..	..	82 1/2	-1 1/2	-1 1/2	8 19	-2 1/2	-6	17 10	-2	-6	23 70	-1 1/2	-1 1/2
	12	4 49	-1	-3	84 1/2	+2 1/2	+2 1/2	13 87	..	..	83	-1 1/2	-1 1/2	8 20	-1	-3 1/2	17 10	-1 1/2	-6 1/2	23 75	-2 1/2	-2 1/2
	19	4 48 1/2	-1	-3	84 1/2	+1	+1 1/2	13 85	..	..	82 1/2	-1 1/2	-1 1/2	8 19	-1	-3	17 12	-1 1/2	-5 1/2	23 65	-2 1/2	-2 1/2
	26	4 64 1/2	-2	-4	81 1/2	-7	-12	13 42	..	..	80 1/2	-1 1/2	-1 1/2	7 94	-1	-3	16 50	-1	-1	22 97	-1	-1
September	2	4 53 1/2	-1 1/2	-4 1/2	80 1/2	-2 1/2	-2 1/2	13 20	..	..	59 1/2	-1 1/2	-1 1/2	7 82	-1	-5	16 32	-2	-5	22 65	-1	-1
	9	4 53	-1	-4 1/2	81 1/2	-2 1/2	-7	13 35	..	..	60 1/2	-1 1/2	-1 1/2	7 92	-2	-3 1/2	16 50	-1	-2 1/2	22 87	-1	-2
	16	4 08	-2	-5 1/2	80 1/2	-2 1/2	-2 1/2	13 25	..	..	60	-1 1/2	-1 1/2	7 84	-1	-3	16 35	-1	-2 1/2	22 67	-1 1/2	-1 1/2
	23	4 78 1/2	-2	-5 1/2	79	-2	-5 1/2	12 95	..	..	58 1/2	-1 1/2	-1 1/2	7 67	-1	-2	15 95	Par	Par	22 17	-1 1/2	-1 1/2
	30	4 75 1/2	-1 1/2	-4 1/2	79 1/2	-2 1/2	-12	13 01	..	..	59	-1 1/2	-1 1/2	7 70	-1	-2	10 07	-2 1/2	-2 1/2	22 27	-2 1/2	-2 1/2
October	7	4 71 1/2	-1 1/2	-4 1/2	79	-3	-9	13 00	..	..	59	-1 1/2	-1 1/2	7 66	-1 1/2	-1 1/2	15 97	-1	-1 1/2	22 20	-2 1/2	-4 1/2
	14	4 56 1/2	-1 1/2	-4 1/2	80 1/2	-4 1/2	-11	13 17	..	..	59 1/2	-1 1/2	-1 1/2	7 80	-1 1/2	-2	16 27	-1	-3 1/2	22 60	-1	-2 1/2
	21	4 53	-1 1/2	-4 1/2	82 1/2	-5	-15	13 50	..	..	61 1/2	-1 1/2	-1 1/2	7 87	-1 1/2	-2	16 65	-1 1/2	-2	23 20	-1 1/2	-2
	28	4 70	-2 1/2	-6	81 1/2	-7	-20	13 35	..	..	60 1/2	-1 1/2	-1 1/2	7 89	Par	-1 1/2	16 45	+1	+1	22 85	-1	-3
November	4	4 85	-1 1/2	-4 1/2	79 1/2	-7	-20	13 10	..	..	59 1/2	-1 1/2	-1 1/2	7 75	-1 1/2	-1	16 15	Par	Par	22 42	-1	-2 1/2
	11	5 08	-1 1/2	-5	81 1/2	-7	-27	13 32	..	..	60 1/2	-1 1/2	-1 1/2	7 89	Par	Par	16 42	Par	Par	22 85	Par	Par
	18	5 26	-2 1/2	-7	82 1/2	-20	-47	13 53	..	..	61 1/2	-1 1/2	-1 1/2	8 00	-1 1/2	-1	16 66	-1	-3	23 15	-1	-2 1/2
	25	5 20	-3	-8	83 1/2	-30	-75	13 73	..	..	62 1/2	-1 1/2	-1 1/2	8 13	-1 1/2	-1 1/2	16 91	Par	Par	23 55	-2 1/2	-7
December	2	5 19	-4 1/2	-10	84 1/2	-25	-67	13 85	..	..	62 1/2	-1 1/2	-1 1/2	8 21	-1 1/2	-1 1/2	17 05	Par	Par	23 77	-2	-6
	9	5 16	-3	-7	83 1/2	-15	-40	13 70	..	..	62 1/2	-1 1/2	-1 1/2	8 12	Par	Par	16 90	Par	Par	23 55	-1 1/2	-4 1/2
	16	5 11 1/2	-3	-6	83 1/2	-15	-32	13 70	..	..	62 1/2	-1 1/2	-1 1/2	8 13	Par	Par	16 90	+1 1/2	+2 1/2	23 55	-1 1/2	-4
	23	5 10	-3 1/2	-7 1/2	83 1/2	-15	-35	13 75	..	..	62 1/2	-1 1/2	-1 1/2	8 15	Par	Par	16 95	+2	+3 1/2	23 55	-1	-2 1/2
	30	5 09 1/2	-3	-7 1/2	83 1/2	-10	-25	13 70	..	..	62 1/2	-1 1/2	-1 1/2	8 13	Par	Par	16 88	+1	+2	23 50	-1	-1 1/2

FORWARD RATES—1934

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1934	\$	o.	a.	fr.	o.	o.	Rm.	pf.	pf.	L.	L.	L.	fl.	o.	o.	fr.	o.	e.	B.	o.	o.	
January	6	5-10 $\frac{1}{2}$	-3 $\frac{1}{2}$	-7 $\frac{1}{2}$	83 $\frac{3}{8}$	-5	-15	13-71	..	..	62 $\frac{1}{8}$	- $\frac{1}{8}$	- $\frac{3}{8}$	8-10	Par	+ $\frac{1}{2}$	16-85	+1	+2 $\frac{1}{2}$	23-45	-1	-1 $\frac{1}{2}$
	13	5-09	-2	-5	82 $\frac{1}{2}$	-7	-20	13-70	..	..	62	- $\frac{1}{8}$	- $\frac{3}{8}$	8-08	+ $\frac{1}{2}$	+ $\frac{3}{8}$	16-77	+1 $\frac{1}{2}$	+3	23-35	-1	-1
	20	5-02	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	80 $\frac{3}{8}$	-7	-20	13-22	..	..	59 $\frac{3}{8}$	- $\frac{1}{8}$	- $\frac{3}{8}$	7-80	+ $\frac{1}{2}$	+ $\frac{3}{8}$	16-22	+2	+3 $\frac{1}{2}$	22-52	- $\frac{1}{2}$	-1 $\frac{1}{2}$
	27	4-96 $\frac{1}{2}$	-2	-4	79 $\frac{3}{8}$	-7	-25	13-25	..	..	59 $\frac{1}{8}$	- $\frac{1}{8}$	- $\frac{1}{2}$	7-81	Par	Par	16-20	+2	+3 $\frac{1}{2}$	22-55	-1	-1
February	3	4-90 $\frac{1}{2}$	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	77 $\frac{1}{2}$	-40	-95	12-87	..	..	58 $\frac{1}{2}$	- $\frac{1}{2}$	-1	7-60	- $\frac{1}{2}$	-1	15-80	Par	Par	21-87	-2	-4 $\frac{1}{2}$
	10	5-02 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	77 $\frac{1}{2}$	-62	-135	12-85	..	..	58 $\frac{1}{2}$	-1	-2	7-62	-2	-2	15-85	Par	- $\frac{1}{2}$	22-00	-3	-7
	17	5-09 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	77 $\frac{5}{8}$	-45	-115	12-98	..	..	58 $\frac{1}{2}$	-1	-2	7-63	-2	-4 $\frac{1}{2}$	15-90	-1	-3 $\frac{1}{2}$	22-00	-4 $\frac{1}{2}$	-10
	24	5-08	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{7}{8}$	-50	-132	12-85	..	..	59 $\frac{3}{8}$	- $\frac{1}{2}$	-2	7-57	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	15-75	-4	-7	21-85	-3 $\frac{1}{2}$	-7
March	3	5-07 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{1}{2}$	-30	-82	12-77	..	..	59	- $\frac{1}{2}$	-1 $\frac{1}{2}$	7-54	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	15-69	-5	-9	21-80	-4	-8
	10	5-08	Par	- $\frac{1}{2}$	77 $\frac{1}{2}$	-27	-82	12-80	..	..	59 $\frac{1}{2}$	- $\frac{3}{8}$	-1	7-55	-1 $\frac{1}{2}$	-4	15-72	-3	-7	21-80	-1	-4
	17	5-09	- $\frac{1}{2}$	- $\frac{1}{8}$	77 $\frac{1}{2}$	-20	-67	12-82	..	..	59 $\frac{1}{2}$	- $\frac{3}{8}$	- $\frac{7}{8}$	7-56	-1	-3	15-75	-3	-9	21-85	-2	-6
	24	5-10	- $\frac{1}{8}$	- $\frac{1}{8}$	77 $\frac{1}{2}$	-25	-67	12-84	..	..	59 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	7-57	-1	-3	15-77	-5	-17	21-85	-1	-4 $\frac{1}{2}$
	31	5-12 $\frac{1}{2}$	- $\frac{1}{8}$	- $\frac{1}{8}$	78	-37	-100	12-92	..	..	59 $\frac{3}{8}$	- $\frac{1}{2}$	- $\frac{1}{2}$	7-60	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	15-90	-5	-16	21-97	-2 $\frac{1}{2}$	-6
April	7	5-16 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	78 $\frac{1}{2}$	-20	-67	13-00	..	..	60	- $\frac{1}{2}$	- $\frac{3}{4}$	7-63	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	15-97	-3	-8 $\frac{1}{2}$	22-10	-2	-6
	14	5-15	- $\frac{1}{2}$	- $\frac{1}{2}$	78 $\frac{7}{8}$	-15	-52	13-03	..	..	60 $\frac{1}{2}$	- $\frac{1}{8}$	-1	7-61	- $\frac{3}{4}$	-3	15-90	-3 $\frac{1}{2}$	-11	22-03	-1	-3 $\frac{1}{2}$
	21	5-17 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{7}{8}$	-10	-32	13-03	..	..	60 $\frac{3}{8}$	- $\frac{1}{8}$	-1 $\frac{1}{4}$	7-55	-1	-3	15-80	-2	-6	21-87	-1	-3 $\frac{1}{2}$
	28	5-14 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{3}{8}$	-15	-35	12-95	..	..	60	- $\frac{1}{8}$	-1	7-54	-1	-2 $\frac{1}{2}$	15-76	-2	-5 $\frac{1}{2}$	21-85	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$
May	5	5-11 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{1}{2}$	-15	-40	12-93	..	..	59 $\frac{1}{2}$	- $\frac{3}{8}$	-1	7-52	-1	-2	15-72	-3	-9	21-82	-1	-4
	12	5-11 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{1}{2}$	-17	-37	12-93	..	..	60	- $\frac{1}{8}$	- $\frac{3}{4}$	7-54	- $\frac{3}{4}$	-2	15-75	-3	-9	21-86	-1	-4 $\frac{1}{2}$
	19	5-11	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{1}{2}$	-12	-35	12-92	..	..	60	- $\frac{1}{8}$	- $\frac{3}{4}$	7-52	- $\frac{1}{2}$	-1	15-67	-4 $\frac{1}{2}$	-8 $\frac{1}{2}$	21-82	-2	-6 $\frac{1}{2}$
	26	5-09 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	77 $\frac{1}{8}$	-7	-20	12-95	..	..	59 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{3}{4}$	7-51	- $\frac{1}{2}$	-1	15-65	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	21-75	-1 $\frac{1}{2}$	-4

June	2	5-06½	- ½	- ½	77	- 2½	- 15	12-98	..	..	58½	- ½	- 1	7-49	- ½	- 1	15-59	- 1½	- 3½	21-72	- 1½	- 3½
	9	5-06½	- ½	- ½	76½	- 2½	- 7	13-08	..	..	58½	- ½	- 1	7-44	- ½	- 1	15-55	- 1	- 3	21-62	- 2	- 6
	16	5-05	- ½	- ½	76½	- 2½	- 10	13-23	..	..	58½	- ½	- 1	7-45	- ½	- 1	15-53	- 1½	- 4	21-60	- 3	- 8
	23	5-03½	- ½	- ½	76½	- 2½	- 8	13-18	..	..	59	- ½	- ½	7-43	- ½	- ½	15-49	- 1	- 3½	21-57	- 3½	- 9
	30	5-04½	- ½	- ½	76½	- 3	- 10	13-05	..	..	58½	- ½	- ½	7-44	- ½	- ½	15-52	- 2	- 4	21-65	- 6	- 14
July	7	5-04½	- ½	- ½	76½	- 4½	- 12	13-15	..	..	58½	- ½	- 1	7-44	- ½	- ½	15-51	- 2	- 4½	21-60	- 4	- 11
	14	5-03½	- ½	- ½	76½	- 4	- 12	13-13	..	..	58½	- ½	- 1	7-43	- ½	- ½	15-46	- 1½	- 5	21-58	- 4½	- 12
	21	5-04½	Par	- ½	76½	- 2½	- 10	12-95	..	..	58½	- ½	- 1	7-45	- ½	- ½	15-48	- 1	- 4	21-65	- 3½	- 8
	28	5-03½	- ½	- ½	76½	- 3½	- 10	13-02	..	..	58½	- ½	- 1½	7-45	- ½	- ½	15-44	- 1	- 2½	21-48	- 4	- 11
	August	4	5-04½	- ½	- ½	76½	- 3	- 7½	12-93	58½	- ½	- 1½	7-44	- ½	- ½	15-41	- ½	- 2	21-44	- 4
11	5-08½	- ½	- 1	76½	- 1	- 2	12-87	58½	- ½	- 1	7-43	Par	Par	15-42	+ 1	+ 3½	21-42	- 3½	- 8½	
18	5-09½	- ½	- ½	76½	Par	- 1½	12-80	..	..	58½	- ½	- ½	7-42	Par	Par	15-41	+ 1	+ 1	21-42	- 2	- 5½	
25	5-06½	- ½	- ½	75½	+ 3½	+ 1½	12-76	..	..	58½	- ½	- ½	7-37	+ ½	+ ½	15-30	+ 1	+ 3½	21-26	- 1½	- 4½	
September	1	4-99½	- ½	- ½	74½	+ 4½	+ 6½	12-54	..	..	57½	- ½	- ½	7-27	+ ½	+ ½	15-08	+ 2	+ 4	20-97	- 1½	- 3½
	8	5-00	- ½	- ½	74½	+ 1½	+ 4	12-45	..	..	57½	- ½	- ½	7-29	+ ½	+ ½	15-11	+ 1	+ 2½	21-03	- 3	- 7
	15	5-01	- ½	- ½	75½	+ 1½	Par	12-39	..	..	57½	- ½	- ½	7-30	+ ½	+ ½	15-16	+ 1	+ 3	21-06	- 2	- 5
	22	4-99½	- ½	- ½	74½	+ 2½	+ 2½	12-36	..	..	57½	- ½	- ½	7-28	+ ½	+ ½	15-12	+ 1	+ 3	21-03	- 2	- 6
	29	4-96½	- ½	- ½	74½	+ 4½	+ 4½	12-27	..	..	57½	- ½	- ½	7-26	+ ½	+ 1	15-00	+ 1	+ 3	21-06	- 3	- 7
October	6	4-92½	- ½	- ½	74½	+ 4	+ 4	12-17	..	..	57½	- ½	- ½	7-21	+ ½	+ ½	14-98	+ 1½	+ 2	20-96	- 3	- 12
	13	4-93½	- ½	- ½	74½	+ 5	+ 9	12-15	..	..	57½	- ½	- ½	7-20	+ ½	+ 1	14-97	+ 2	+ 3½	20-95	- 3	- 11
	20	4-90½	- ½	- ½	74½	Par	Par	12-26	..	..	57½	- ½	- ½	7-27	+ ½	+ ½	15-13	+ 1	+ 1½	21-17	- 5	- 18
	27	4-96½	- ½	- ½	75½	+ 4	+ 4	12-32	..	..	58	- ½	- ½	7-33	+ ½	+ ½	15-22	+ 1½	+ 2	21-25	- 7	- 17
	November	3	4-98	- ½	- ½	75½	Par	Par	12-37	58½	- ½	- ½	7-36	Par	Par	15-30	+ 1	+ 1	21-35	- 10	- 47
10	4-99½	- ½	- ½	75½	- 2½	- 7	12-40	..	..	58½	- ½	- ½	7-38	- ½	- ½	15-32	+ 1½	+ 3	21-37	- 15	- 40	
17	4-99½	- ½	- ½	75½	- 4½	- 14	12-42	..	..	58½	- ½	- ½	7-39	- ½	- ½	15-38	- ½	- ½	21-42	- 20	- 52	
24	4-99	- ½	- ½	75½	- 3	- 12	12-40	..	..	58½	- ½	- ½	7-38	- ½	- 1½	15-40	+ ½	- ½	21-40	- 8	- 26	
December	1	4-98	- ½	- ½	75½	- 2½	- 7	12-40	..	..	58½	- ½	- ½	7-36	- ½	- ½	15-34	Par	Par	21-31	- 10	- 35
	8	4-94½	- ½	- ½	76	- 1½	- 5	12-32	..	..	58	- ½	- ½	7-31	- ½	- ½	15-26	+ 1½	+ 1½	21-17	- 8	- 30
	15	4-95	Par	- ½	75½	- 2½	- 9	12-32	..	..	58	- ½	- 1½	7-32	- ½	- ½	15-28	+ 1	+ 1	21-17	- 10	- 30
	22	4-94½	- ½	- ½	74½	- 2½	- 9	12-30	..	..	57½	- ½	- 1½	7-30	- ½	- ½	15-25	+ 1	+ 1	21-11	- 9	- 21
	29	4-93½	- ½	- ½	74½	- 4½	- 8	12-27	..	..	57½	- ½	- 1½	7-29	- ½	- ½	15-22	+ 1	+ 1	21-02	- 12	- 30

FORWARD RATES—1935

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1935	\$	c.	c.	fr.	c.	c.	Rm.	pf.	pf.	L.	L.	L.	f.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	5	4-92½	- ⅜	- ⅜	74½	- 3½	- 11	12-21	..	..	57½	- ½	- ⅝	7-25	- ⅜	- ⅜	15-13	+ 1	+ 1	20-95	- 7	- 20
	12	4-91½	- ⅜	- ⅜	74½	- 3½	- 11½	12-22	..	..	57½	- ⅜	- ⅝	7-25	+ ¼	+ ¼	15-14	+ 1	+ 1	20-94	- 7	- 20
	19	4-88	- ⅜	- ⅜	74½	- 12	- 25	12-18	..	..	57½	- ½	- ⅝	7-23	- ¼	- ¼	15-11	+ 1	+ 1	20-93	- 9	- 25
	26	4-87½	Par	Par	74½	- 17	- 40	12-23	..	..	57½	- ½	- ⅝	7-27	- ½	- 1	15-19	- ½	- 1½	21-07	- 12	- 40
February	2	4-87½	+ ½	+ ½	74½	- 10	- 30	12-20	..	..	57½	- ½	- ⅝	7-24	- 1½	- 1½	15-13	- ½	- 1½	21-00	- 12	- 35
	9	4-88	+ ½	+ ½	74½	- 12	- 35	12-21	..	..	57½	- ½	- ⅝	7-25	- ½	- 1½	15-13	- 1½	- 3½	21-01	- 12	- 35
	16	4-87½	+ ½	+ ½	73½	- 12	- 35	12-15	..	..	57½	- ½	- ⅝	7-21	- ½	- 1½	15-06	- 1	- 2½	20-87	- 7	- 25
	23	4-86	+ ½	+ ½	73½	- 7	- 25	12-07	..	..	57½	- ½	- ⅝	7-17	- ½	- 1½	14-96	- ½	- 2	20-75	- 9	- 30
March	2	4-79½	+ ½	+ ⅝	72½	- 5	- 15	11-82	..	..	56½	- ⅝	- 1	7-02	- ½	- 1	14-69	- ½	- 2	20-32	- 9	- 30
	9	4-78	+ ⅝	+ ⅝	71½	- 7	- 24	11-75	..	..	56½	- ⅝	- 2	6-97	- ½	- 1	14-55	- 1	- 2	20-25	- 12	- 35
	16	4-79½	+ ½	+ ⅝	72½	- 10	- 29	11-82	..	..	57½	- ½	- 1½	7-08	- ½	- 2½	14-81	- 1	- 3	20-55	- 62	- 125
	23	4-77	+ ½	+ ⅝	72½	- 7	- 25	11-80	..	..	57½	- 1	- 2	7-05	- ½	- 2½	14-74	- 1½	- 4½	21-00	- 82	- 175
	30	4-80½	+ ⅝	+ ⅝	73	- 20	- 57	11-95	..	..	57½	- 1½	- 3½	7-12	- 2½	- 6	14-87	- 10	- 30	25-50	- 100	- 200
April	6	4-84½	+ ½	+ ⅝	73½	- 22	- 82	12-05	..	..	58½	- 1½	- 3½	7-26	- 9	- 25	15-00	- 30	- 82	28-56	+ 10	+ 10
	13	4-84½	+ ½	+ ⅝	73½	- 14	- 45	12-02	..	..	58½	- ½	- 2½	7-16	- 7	- 18	14-94	- 16	- 45	28-56	+ 5	+ 13
	20	4-84½	+ ⅝	+ ⅝	73½	- 15	- 55	12-02	..	..	58½	- ⅝	- 2½	7-19	- 9	- 20	14-99	- 25	- 55	28-65	+ 5	+ 13
	27	4-81½	+ ½	+ ⅝	72½	- 9	- 35	11-92	..	..	58½	- ½	- 1½	7-11	- 7	- 17½	14-82	- 16	- 51	28-35	- 4	+ 12
May	4	4-83½	+ ½	+ ⅝	73½	- 12	- 70	12-00	..	..	58½	- ½	- 2	7-16	- 8	- 20	14-94	- 35	- 102	28-57	+ 7	+ 21
	11	4-85½	+ ½	+ ⅝	73½	- 14	- 70	12-08	..	..	59	- ½	- 2	7-18	- 4	- 13	15-02	- 30	- 87	28-72	+ 7	+ 17
	18	4-91½	+ ½	+ 1	74½	fr.	fr.	12-21	..	..	59½	- ½	- 2½	7-26	- 3½	- 14	15-22	- 30	- 82	29-10	+ 7	+ 22
	25	4-95½	+ ½	+ 1½	75½	- 1-25	- 2-25	12-30	..	..	60½	- ½	- 2½	7-35	- 7	- 20	15-37	- 25	- 70	29-15	+ 11	+ 30

June	1	4.92½	+½	+2	74½	-3.00	-4.50	12.17	..	..	60	-1	-3	7.28	-15	-32	15.22	-35	-105	28.85	+ 2½	+ 15
	8	4.91½	+½	+1½	74½	-1.00	-2.00	12.13	..	..	59½	-½	-2½	7.26	-5	-16	15.05	-15	-55	28.90	+ 10	+ 35
	15	4.94½	+½	+1½	74½	- .75	-2.75	12.25	..	..	60	-1	-3½	7.30	-5	-17	15.14	-13	-47	29.20	+ 9	+ 29
	22	4.93½	+½	+1½	74½	- .50	-2.00	12.22	..	..	59½	-1	-3½	7.26	-5	-13	15.07	-7	-35	29.15	+ 6	+ 23
	29	4.94½	+½	+1½	74½	- .50	-1.50	12.22	..	..	59½	-1	-3	7.24	-4	-10	15.07	-12	-40	29.20	+ 7	+ 23
July	6	4.94½	+½	+1½	74½	- .75	-2.25	12.26	..	..	59½	-1	-2½	7.25	-5	-13	15.10	-17	-45	29.33	+ 5	+ 21
	13	4.95½	+½	+1½	74½	- .62	-2.12	12.28	..	..	60½	-1½	-4½	7.27	-3	-11	15.13	-12	-45	29.30	+ 4	+ 9
	20	4.96	+½	+1½	74½	- .31	-1.12	12.27	..	..	59½	-1½	-5	7.27	-3	-9	15.12	-7	-25	29.34	+ 3½	+ 10
	27	4.96½	+½	+1½	75½	- .37	-2.25	12.32	..	..	60½	-2	-6½	7.37	-20	-40	15.22	-25	-70	29.25	+ 5	+ 16
August	3	4.95½	+½	+1½	74½	- .37	-1.50	12.27	..	..	60½	-1½	-5½	7.29	-6	-16	15.13	-10	-35	29.33	+ 3½	+ 15
	10	4.96½	+½	+1½	74½	- .31	-1.50	12.30	..	..	60½	-1½	-5	7.34	-6	-17	15.15	-7	-37	29.39	+ 3½	+ 12
	17	4.96½	+½	+1½	74½	- .37	-1.25	12.31	..	..	60½	-1½	-4½	7.31	-7	-18	15.17	-7	-35	29.40	+ 3½	+ 12
	24	4.97½	+½	+1½	75½	- .25	-1.25	12.33	..	..	60½	-2½	-6½	7.34	-7	-22	15.21	-5	-35	29.49	+ 2½	+ 12
	31	4.96½	+½	+1½	75½	- .25	-1.25	12.35	..	..	60½	-1	-5	7.34	-6	-20	15.22	-5	-32	29.51	+ 2½	+ 7
September	7	4.93	+½	+½	74½	- .18	-1.12	12.25	..	..	60½	-1½	-5	7.30	-7	-22	15.17	-7	-27	29.35	+ 2½	+ 7
	14	4.96½	+½	+1½	75½	- .25	-1.25	12.28	..	..	60½	-1½	-5½	7.34	-12	-32	15.21	-10	-30	29.28	+ 2½	+ 9
	21	4.91½	+½	+1½	74½	- .18	-1.12	12.21	..	..	60½	-1½	-6	7.26	-9	-22	15.12	-5	-22	29.15	+ 3½	+ 10
	28	4.91½	+½	+1½	74½	- .18	-1.00	12.20	..	..	60½	-1½	-5	7.27	-15	-30	15.13	-12	-37	29.09	+ 3½	+ 9
October	5	4.89	+½	+1½	74½	- .18	- .87	12.17	..	..	60½	-1½	-5½	7.24	-8	-21	15.05	-7	-27	28.97	+ 3½	+ 12
	12	4.90½	+½	+1½	74½	- .18	- .75	12.19	..	..	60½	-2	-5	7.24	-6	-17	15.06	-5	-25	29.12	+ 3½	+ 12
	19	4.91	+½	+1½	74½	- .18	-1.00	12.20	..	..	60½	-1½	-5½	7.24	-4	-15	15.07	-5	-25	29.17	+ 3½	+ 12
	26	4.91½	+½	+1½	74½	- .18	- .87	12.22	..	..	60½	-1	-4½	7.24	-3	-13	15.12	-5	-25	29.19	+ 3½	+ 9
November	2	4.91½	+½	+1½	74½	- .37	-1.50	12.22	..	..	60½	-1	-4	7.24	-4	-13	15.12	-5	-17	29.17	+ 3½	+ 9
	9	4.92½	+½	+1½	74½	- .31	-1.50	12.23	..	..	60½	-½	-2½	7.25	-3½	-12	15.14	-4½	-20	29.12	+ 3	+ 10½
	16	4.92	+½	+1	74½	- .31	-1.87	12.22	..	..	60½	-½	-2½	7.25	-2½	-12	15.13	-3½	-22	29.14	+ 3½	+ 10
	23	4.93½	+½	+1½	75	-1.00	-2.25	12.27	..	..	61	..	..	7.30	-4	-14	15.25	-7	-32	29.17	+ 3	+ 8
	30	4.93	+½	+1½	74½	-1.12	-2.50	12.25	..	..	..	..	..	7.29	-3	-11	15.26	-6	-28	29.17	+ 3	+ 7
December	7	4.92½	+½	+1½	74½	- .62	-1.75	12.25	..	..	..	..	..	7.26	-3	-11	15.18	-7	-25	29.25	+ 3	+ 8½
	14	4.92½	+½	+1½	74½	- .62	-1.87	12.23	..	..	..	..	..	7.27	-3	-10½	15.18	-6	-25	29.30	+ 3½	+ 8
	21	4.92½	+½	+1½	74½	-1.00	-2.50	12.26	..	..	..	..	..	7.27	-3	-11½	15.21	-12	-32	29.27	+ 3	+ 6
	28	4.93½	+½	+1½	74½	-1.12	-2.50	12.27	..	..	61½	..	..	7.27	-4½	-13	15.18	-13	-31	29.30	+ 3	+ 8

FORWARD RATES—1936

Date	New York			Paris			Germany			Italy			Holland			Switzerland			Belgium			
	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	Spot	1 month	3 months	
1936	\$	c.	c.	fr.	fr.	fr.	Rm.	pf.	pf.	L.	L.	L.	fl.	c.	c.	fr.	c.	c.	B.	c.	c.	
January	4	4-93	+ $\frac{1}{2}$	+ $\frac{1}{16}$	74 $\frac{13}{16}$	- $\frac{3}{8}$	-2 $\frac{1}{2}$	12-27	..	..	61 $\frac{1}{2}$	..	..	7-27	-3 $\frac{1}{2}$	-10	15-18	-12 $\frac{1}{2}$	-32	29-29	+2 $\frac{1}{2}$	+ 6 $\frac{1}{2}$
	11	4-96	+ $\frac{1}{2}$	+ $\frac{1}{8}$	74 $\frac{13}{16}$	- $\frac{3}{8}$	-1 $\frac{1}{2}$	12-27	..	..	61 $\frac{1}{2}$	..	..	7-27	-2 $\frac{1}{2}$	-8 $\frac{1}{2}$	15-18	-5 $\frac{1}{2}$	-20	29-30	+2	+ 5 $\frac{1}{2}$
	18	4-95 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{8}$	75	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-28	..	..	61 $\frac{1}{2}$	..	..	7-28	-1 $\frac{1}{2}$	-6 $\frac{1}{2}$	15-19	-4 $\frac{1}{2}$	-12 $\frac{1}{2}$	29-32	+2	+ 5 $\frac{1}{2}$
	25	5-00	+ $\frac{1}{2}$	+ $\frac{3}{8}$	75 $\frac{15}{16}$	- $\frac{1}{2}$	-2	12-30	..	..	61 $\frac{1}{2}$	..	..	7-29	-2	-7	15-22	-4 $\frac{1}{2}$	-12	29-29	+2	+ 4 $\frac{1}{2}$
February	1	5-00 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{5}{8}$	74 $\frac{13}{16}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-29	..	..	62 $\frac{1}{2}$	..	..	7-28	-1 $\frac{1}{2}$	-7	15-17	-3 $\frac{1}{2}$	-12 $\frac{1}{2}$	29-32	+1	+ 3 $\frac{1}{2}$
	8	5-01	+ $\frac{1}{2}$	+ $\frac{7}{8}$	75	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-30	..	..	62 $\frac{1}{2}$	..	..	7-30	-1 $\frac{1}{2}$	-C $\frac{1}{2}$	15-16	-3 $\frac{1}{2}$	-13 $\frac{1}{2}$	29-42	+1	+ 1
	15	4-99 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{7}{8}$	74 $\frac{13}{16}$	- $\frac{1}{2}$	-1 $\frac{1}{16}$	12-29	..	..	62 $\frac{1}{2}$	..	..	7-28	-1	-6	15-12	-4	-13 $\frac{1}{2}$	29-34	Par	Par
	22	4-98 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{13}{16}$	- $\frac{1}{16}$	-1 $\frac{1}{16}$	12-28	..	..	62 $\frac{1}{2}$	..	..	7-27	-1	-5	15-10	-3	-11 $\frac{1}{2}$	29-29	Par	Par
	29	4-99 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{13}{16}$	- $\frac{1}{8}$	-1 $\frac{1}{8}$	12-28	..	..	62 $\frac{1}{2}$	..	..	7-26	- $\frac{1}{2}$	-5	15-09	-3 $\frac{1}{2}$	-11 $\frac{1}{2}$	29-27	-1	- 1
March	7	4-99	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{7}{8}$	- $\frac{3}{16}$	-1 $\frac{1}{8}$	12-29	..	..	62 $\frac{1}{2}$	..	..	7-26	-1	-5	15-12	-3 $\frac{1}{2}$	-12 $\frac{1}{2}$	29-27	- $\frac{1}{2}$	- 1
	14	4-97	+ $\frac{3}{8}$	+1	74 $\frac{13}{16}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-28	..	..	62 $\frac{1}{2}$	..	..	7-26	-1	-5 $\frac{1}{2}$	15-14	-5	-15	29-29	- $\frac{1}{2}$	- 1
	21	4-96	+ $\frac{1}{2}$	+ $\frac{7}{8}$	74 $\frac{7}{8}$	- $\frac{1}{16}$	-2 $\frac{1}{8}$	12-27	..	..	62 $\frac{1}{2}$	..	..	7-27	- $\frac{1}{2}$	-4	15-14	-3	-13 $\frac{1}{2}$	29-29	- $\frac{1}{2}$	- 1
	28	4-94 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	75	-1 $\frac{1}{2}$	-4	12-31	..	..	62 $\frac{1}{2}$	..	..	7-29	-1 $\frac{1}{2}$	-7	15-16	-7 $\frac{1}{2}$	-25	29-25	- $\frac{1}{2}$	- 1
April	4	4-95 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{5}{8}$	75 $\frac{3}{4}$	- $\frac{7}{8}$	-3	12-31	..	..	62 $\frac{1}{2}$	..	..	7-30	-1 $\frac{1}{2}$	-6 $\frac{1}{2}$	15-21	-4 $\frac{1}{2}$	-23	29-29	+1	+ 2
	11	4-94 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{13}{16}$	- $\frac{7}{8}$	-3 $\frac{1}{2}$	12-28	..	..	62 $\frac{1}{2}$	..	..	7-27	- $\frac{3}{4}$	-6	15-16	-3 $\frac{1}{2}$	-19	29-20	Par	+ 1
	18	4-94	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{7}{8}$	-1	-3 $\frac{1}{2}$	12-27	..	..	62 $\frac{1}{2}$	..	..	7-27	-1 $\frac{1}{2}$	-6	15-16	-3 $\frac{1}{2}$	-17 $\frac{1}{2}$	29-20	+1	+ 3 $\frac{1}{2}$
	25	4-93 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	74 $\frac{13}{16}$	-1 $\frac{1}{2}$	-3 $\frac{1}{2}$	12-28	..	..	62 $\frac{1}{2}$	..	..	7-28	-1 $\frac{1}{2}$	-5 $\frac{1}{2}$	15-15	-3	-13 $\frac{1}{2}$	29-19	+1	+ 3 $\frac{1}{2}$
May	2	4-94	+ $\frac{3}{16}$	+ $\frac{1}{8}$	75	-1 $\frac{1}{2}$	-3	12-28	..	..	62 $\frac{1}{2}$	..	..	7-28	-1 $\frac{1}{2}$	-5 $\frac{1}{2}$	15-20	-4 $\frac{1}{2}$	-14 $\frac{1}{2}$	29-20	+1	+ 3 $\frac{1}{2}$
	9	4-98 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	75 $\frac{11}{16}$	-2 $\frac{1}{2}$	-6	12-31	..	..	63 $\frac{1}{2}$	..	..	7-39	-4 $\frac{1}{2}$	-11	15-43	-7 $\frac{1}{2}$	-27 $\frac{1}{2}$	29-26	+1	+ 3 $\frac{1}{2}$
	16	4-96 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	75 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	12-31	..	..	63 $\frac{1}{2}$	..	..	7-34	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	15-33	-4 $\frac{1}{2}$	-19	29-32	+2	+ 6 $\frac{1}{2}$
	23	4-97 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{3}{4}$	75 $\frac{1}{2}$	-1 $\frac{1}{2}$	-5	12-36	..	..	63 $\frac{1}{2}$	..	..	7-37	-2 $\frac{1}{2}$	-6	15-42	-5 $\frac{1}{2}$	-25	29-44	+2	+ 6
	30	4-99 $\frac{1}{2}$	+ $\frac{1}{2}$	+1	75 $\frac{13}{16}$	-3	-6 $\frac{1}{2}$	12-41	..	..	63 $\frac{1}{2}$	..	..	7-40	-5	-15	15-47	-8	-30	29-56	+3	+ 7 $\frac{1}{2}$

June	6	5-01 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	76 $\frac{1}{2}$	-4 $\frac{1}{2}$	-7 $\frac{1}{2}$	12-45	..	..	63 $\frac{1}{2}$	..	..	7-43	-5 $\frac{1}{2}$	-16	15-54	-15	-52	29-65	+3 $\frac{1}{2}$	+8
	13	5-02 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	76 $\frac{1}{2}$	-3 $\frac{1}{2}$	-6 $\frac{1}{2}$	12-48	..	..	63 $\frac{1}{2}$	..	..	7-44	-4 $\frac{1}{2}$	-15 $\frac{1}{2}$	15-56	-13	-42	29-71	+3	+8
	20	5-01 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	76 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	12-44	..	..	63 $\frac{1}{2}$	..	..	7-41	-3 $\frac{1}{2}$	-13 $\frac{1}{2}$	15-43	-10	-35	29-67	+3 $\frac{1}{2}$	+9 $\frac{1}{2}$
	27	5-02	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	75 $\frac{1}{2}$	- $\frac{1}{2}$	-3	12-44	..	..	63 $\frac{1}{2}$	..	..	7-38	-2 $\frac{1}{2}$	-9	15-36	-7	-27	29-72	+3	+7 $\frac{1}{2}$
July	4	5-02 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	75 $\frac{1}{2}$	- $\frac{1}{2}$	-3	12-45	..	..	63 $\frac{1}{2}$	..	..	7-36	-3	-10	15-34	-5 $\frac{1}{2}$	-20	29-67	+2 $\frac{1}{2}$	+6 $\frac{1}{2}$
	11	5-02 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	76	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-47	..	..	63 $\frac{1}{2}$	..	..	7-39	-3	-9	15-38	-4 $\frac{1}{2}$	-17 $\frac{1}{2}$	29-72	+2	+4 $\frac{1}{2}$
	18	5-03	+ $\frac{1}{2}$	+1	75 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-46	..	..	63 $\frac{1}{2}$	..	..	7-38	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	15-35	-4	-16	29-74	+2 $\frac{1}{2}$	+6 $\frac{1}{2}$
	25	5-01 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-46	..	..	63 $\frac{1}{2}$	..	..	7-39	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	15-36	-4 $\frac{1}{2}$	-16 $\frac{1}{2}$	29-74	+2	+3 $\frac{1}{2}$
August	1	5-01 $\frac{1}{2}$	+ $\frac{1}{2}$	+1	76 $\frac{3}{8}$	- $\frac{1}{2}$	-3	12-47	..	..	63 $\frac{3}{8}$	..	..	7-39	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	15-38	-4	-18	29-76	+2	+3 $\frac{1}{2}$
	8	5-02 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	12-50	..	..	63 $\frac{1}{2}$	..	..	7-41	-2 $\frac{1}{2}$	-9	15-43	-5	-20	29-83	Par	Par
	15	5-02 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	- $\frac{1}{2}$	-3 $\frac{1}{2}$	12-50	..	..	63 $\frac{1}{2}$	..	..	7-40	-2	-8 $\frac{1}{2}$	15-42	-3	-14	29-84	Par	+3 $\frac{1}{2}$
	22	5-03 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	- $\frac{1}{2}$	-3	12-49	..	..	63 $\frac{1}{2}$	..	..	7-41	-1 $\frac{1}{2}$	-8	15-43	-3	-16	29-81	+1	+2
	29	5-03	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-50	..	..	63 $\frac{1}{2}$	..	..	7-41	-2	-7 $\frac{1}{2}$	15-42	-3	-14	29-80	Par	Par
September	5	5-03 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-51	..	..	64	..	..	7-42	-1 $\frac{1}{2}$	-7	15-44	-3	-13	29-81	+1	+1
	12	5-06	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	12-57	..	..	64 $\frac{1}{2}$	..	..	7-45	-1 $\frac{1}{2}$	-7 $\frac{1}{2}$	15-53	-3 $\frac{1}{2}$	-14 $\frac{1}{2}$	29-95	+1	+3
	19	5-06 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	76 $\frac{1}{2}$	-1 $\frac{1}{2}$	-4 $\frac{1}{2}$	12-58	..	..	64 $\frac{1}{2}$	..	..	7-46	-1 $\frac{1}{2}$	-6 $\frac{1}{2}$	15-54	-2	-12	29-97	+1	+3 $\frac{1}{2}$
	26	5-03 $\frac{1}{2}$	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	76 $\frac{1}{2}$	-3 $\frac{1}{2}$	-7 $\frac{1}{2}$	12-53	..	..	64 $\frac{1}{2}$	..	..	7-46	-6	-17	15-50	-10	-28	29-84	+2	+7 $\frac{1}{2}$
October	3	4-93	+ $\frac{1}{2}$	+1 $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	- $\frac{1}{2}$	12-25	..	..	..	..	..	9-27	-4 $\frac{1}{2}$	-11	21-43	+1	+2	29-33	+3 $\frac{1}{2}$	+12
	10	4-90 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1	12-18	..	..	92 $\frac{1}{2}$	..	..	9-18	-5	-11 $\frac{1}{2}$	21-28	+2	+5	29-15	+2 $\frac{1}{2}$	+9
	17	4-89	+ $\frac{1}{2}$	+ $\frac{1}{2}$	108	- $\frac{1}{2}$	- $\frac{1}{2}$	12-15	..	..	93	..	..	9-07	-5	-10	21-28	+2	+4	29-07	+2	+6 $\frac{1}{2}$
	24	4-89	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-15	..	..	92 $\frac{1}{2}$	..	..	9-07	-3 $\frac{1}{2}$	-9	21-27	+1	+2	29-03	+1	+4
	31	4-88 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-16	..	..	92 $\frac{1}{2}$	..	..	9-03	-2 $\frac{1}{2}$	-7 $\frac{1}{2}$	21-27	+1	+3	28-94	+1	+4 $\frac{1}{2}$
November	7	4-87 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{3}{8}$	-1 $\frac{1}{2}$	-2 $\frac{1}{2}$	12-11	..	..	92 $\frac{3}{8}$	..	..	9-09	-3	-9	21-21	+1	+3	28-83	+1	+4 $\frac{1}{2}$
	14	4-88 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	-1	-2 $\frac{1}{2}$	12-12	..	..	92 $\frac{1}{2}$	..	..	9-06	-1 $\frac{1}{2}$	-6	21-24	+1	+3	28-87	+1	+4 $\frac{1}{2}$
	21	4-89	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-2	12-14	..	..	92 $\frac{1}{2}$	..	..	9-04	-1 $\frac{1}{2}$	-5	21-27	+1	+3	28-92	+1	+5
	28	4-89 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-17	..	..	93	..	..	9-02	-1	-3 $\frac{1}{2}$	21-31	+ $\frac{1}{2}$	+1	28-97	+1	+4 $\frac{1}{2}$
December	5	4-90	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-18	..	..	93 $\frac{1}{2}$	..	..	9-01	- $\frac{1}{2}$	-2 $\frac{1}{2}$	21-32	+1	+2	28-96	+2	+6 $\frac{1}{2}$
	12	4-90 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-2 $\frac{1}{2}$	12-18	..	..	93 $\frac{1}{2}$	..	..	9-01	-1	-2 $\frac{1}{2}$	21-32	+1	+2	29-00	+2	+6 $\frac{1}{2}$
	19	4-91	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-1 $\frac{1}{2}$	12-21	..	..	93 $\frac{1}{2}$	..	..	8-97	- $\frac{1}{2}$	-1	21-36	+ $\frac{1}{2}$	+2	29-03	+3	+7 $\frac{1}{2}$
	24	4-91 $\frac{1}{2}$	+ $\frac{1}{2}$	+ $\frac{1}{2}$	105 $\frac{1}{2}$	- $\frac{1}{2}$	-2	12-20	..	..	93 $\frac{1}{2}$	..	..	8-97	- $\frac{1}{2}$	- $\frac{1}{2}$	21-37	+1 $\frac{1}{2}$	+3	29-11	+3	+8 $\frac{1}{2}$

APPENDIX II

BANK RATE PARITIES

THE following tables compare the London Bank rate with the Bank rates prevailing in New York, Paris, Berlin, Italy, Holland, Switzerland and Belgium during the period 1920 to 1936. The rates used are those prevailing at the end of each month. Although scientifically it would have been more satisfactory to take the monthly averages of Bank rates for the purpose of comparison, I found existing statistical material in this respect far from complete or reliable. In any case, since Bank rate parities indicate only the broad trend to which forward rates should conform and since there is very seldom very close relationship between their movements and those of forward rates, the end-of-month rates may be considered sufficient for our purpose.

The Bank rate parities are calculated by means of the simple deduction of the overseas Bank rates from the London Bank rate, or of the deduction of the London Bank rate from the overseas Bank rates. In his thesis submitted in 1934 to the London School of Economics on "A Study of the Course of Forward Exchange Rates during the Last Few Years", Mr. L. C. Duncan makes some calculations of Bank rate parities and other Interest Parities, based on the percentage ratio of the foreign rate to the London rate. This not only unnecessarily complicates the matter but has no theoretical justification. After all, the substance of the Interest Parity theory is that forward rates, reduced to percentages per annum, tend to be equal to the *actual* difference (plus or minus) between the figures of interest rates prevailing in two centres. This difference, of course, is ascertained by simple deduction and not by the calculation of the percentage ratio of one interest rate to the other.

BANK RATE PARITIES

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Date	London	N. York + or -		Paris + or -		Berlin + or -		Italy + or -		Holland + or -		Switzerland + or -		Belgium + or -	
1920															
January .	6	6	..	5	-1	5	-1	6	..	4½	-1½	5	-1	4	-2
February .	6	6	..	5	-1	5	-1	6	..	4½	-1½	5	-1	4	-2
March .	6	6	..	5	-1	5	-1	6	..	4½	-1½	5	-1	4	-2
April .	7	6	-1	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
May .	7	6	-1	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
June .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
July .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
August .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
September .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
October .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
November .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
December .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	..
1921															
January .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
February .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
March .	7	7	..	6	-1	5	-2	6	-1	4½	-2½	5	-2	5½	-1½
April .	6½	7	+ ½	6	- ½	5	-1½	6	- ½	4½	-2	4½	-2	5½	-1
May .	6½	7	+ ½	6	- ½	5	-1½	6	- ½	4½	-2	4½	-2	5	-1½
June .	6	6	..	6	..	5	-1	6	..	4½	-1½	4½	-1½	5	-1
July .	5½	5½	..	5½	..	5	- ½	6	+ ½	4½	-1	4½	-1	5	- ½
August .	6½	5½	..	5½	..	5	- ½	6	+ ½	4½	-1	4	-1½	5	- ½
September .	5½	5	- ½	5½	..	5	- ½	6	+ ½	4½	-1	4	-1½	5	- ½
October .	5½	5	- ½	5½	..	5	- ½	6	+ ½	4½	-1	4	-1½	5	- ½
November .	5	4½	- ½	5½	+ ½	5	..	6	+1	4½	- ½	4	-1	5	..
December .	5	4½	- ½	5½	+ ½	5	..	6	+1	4½	- ½	4	-1	5	..
1922															
January .	5	4½	- ½	5½	+ ½	5	..	6	+1	4½	- ½	4	-1	5	..
February .	4½	4½	..	5½	+1	5	+ ½	5½	+1	4½	..	4	- ½	5	+ ½
March .	4½	4½	..	5	+ ½	5	+ ½	6	+1½	4½	..	3½	-1	5	+ ½
April .	4	4½	+ ½	5	+1	5	+1	6	+2	4½	+ ½	3½	- ½	5	+1

May	4	4½	+ ½	5	+1	5	+1	6	+2	4½	+ ½	3½	- ½	5	+1
June	3½	4	+ ½	5	+1½	5	+1½	6	+2½	4½	+1	3½	..	4½	+1
July	3	4	+1	5	+2	6	+3	5½	+2½	4	+1	3½	+ ½	4½	+1½
August	3	4	+1	5	+2	7	+4	5½	+2½	4	+1	3	..	4½	+1½
September	3	4	+1	5	+2	8	+5	5½	+2½	4	+1	3	..	4½	+1½
October	3	4	+1	5	+2	8	+5	5½	+2½	4	+1	3	..	4½	+1½
November	3	4	+1	5	+2	10	+7	5½	+2½	4	+1	3	..	4½	+1½
December	3	4	+1	5	+2	10	+7	5½	+2½	4½	+1½	3	..	4½	+1½
1923															
January	3	4	+1	5	+2	12	+ 9	5½	+2½	4½	+1½	3	..	5½	+2½
February	3	4½	+1½	5	+2	12	+ 9	5½	+2½	4½	+1½	3	..	5½	+2½
March	3	4½	+1½	5	+2	12	+ 9	5½	+2½	4½	+1½	3	..	5½	+2½
April	3	4½	+1½	5	+2	18	+15	5½	+2½	4½	+1½	3	..	5½	+2½
May	3	4½	+1½	5	+2	18	+15	5½	+2½	4½	+1½	3	..	5½	+2½
June	3	4½	+1½	5	+2	18	+15	5½	+2½	4½	+1½	3	..	5½	+2½
July	4	4½	+ ½	5	+1	18	+14	5½	+1½	4½	+ ½	3½	- ½	5½	+1½
August	4	4½	+ ½	5	+1	30	+26	5½	+1½	4½	+ ½	4	..	5½	+1½
September	4	4½	+ ½	5	+1	90	+86	5½	+1½	4½	+ ½	4	..	5½	+1½
October	4	4½	+ ½	5	+1	90	+86	5½	+1½	4½	+ ½	4	..	5½	+1½
November	4	4½	+ ½	5	+1	90	+86	5½	+1½	4½	+ ½	4	..	5½	+1½
December	4	4½	+ ½	5	+1	90	+86	5½	+1½	4½	+ ½	4	..	5½	+1½
1924															
January	4	4½	+ ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
February	4	4½	+ ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
March	4	4½	+ ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
April	4	4½	+ ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
May	4	4	..	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
June	4	3½	- ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
July	4	3½	- ½	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
August	4	3	-1	6	+2	90	+86	5½	+1½	5	+1	4	..	5½	+1½
September	4	3	-1	6	+2	10	+ 6	5½	+1½	5	+1	4	..	5½	+1½
October	4	3	-1	6	+2	8	+ 4	5½	+1½	5	+1	4	..	5½	+1½
November	4	3	-1	6	+2	8	+ 4	5½	+1½	5	+1	4	..	5½	+1½
December	4	3	-1	7	+3	8	+ 4	5½	+1½	4½	+ ½	4	..	5½	+1½

BANK RATE PARITIES—continued

Date	London	N. York + or -		Paris + or -		Berlin + or -		Italy + or -		Holland + or -		Switzerland + or -		Belgium + or -	
1925															
January .	4	3	-1	7	+3	9	+5	5½	+1½	4	..	4	..	5½	+1½
February .	4	3½	-1½	7	+3	9	+5	6	+2	4	..	4	..	5½	+1½
March .	5	3½	-1½	7	+2	9	+4	6	+1	4	-1	4	-1	5½	+½
April .	5	3½	-1½	7	+2	9	+4	6	+1	4	-1	4	-1	5½	+½
May .	5	3½	-1½	7	+2	9	+4	6	+1	4	-1	4	-1	5½	+½
June .	5	3½	-1½	7	+2	9	+4	6½	+1½	4	-1	4	-1	5½	+½
July .	5	3½	-1½	6	+1	9	+4	7	+2	4	-1	4	-1	5½	+½
August .	4½	3½	-1	6	+1½	9	+4½	7	+2½	4	-½	4	-½	5½	+1
September .	4½	3½	-1	6	+1½	9	+4½	7	+2½	4	-½	4	-½	5½	+1
October .	4	3½	-½	6	+2	9	+5	7	-3	3½	-½	3½	-½	5½	+1½
November .	4	3½	-½	6	+2	9	+5	7	+3	3½	-½	3½	-½	7	+3
December .	5	3½	-1½	6	+1	9	+4	7	+2	3½	-1½	3½	-1½	7	+2
1926															
January .	5	4	-1	6	+1	8	+3	7	+2	3½	-1½	3½	-1½	7	+2
February .	5	4	-1	6	+1	8	+3	7	+2	3½	-1½	3½	-1½	7	+2
March .	5	4	-1	6	+1	7	+2	7	+2	3½	-1½	3½	-1½	7½	+2½
April .	5	3½	-1½	6	+1	7	+2	7	+2	3½	-1½	3½	-1½	7	+2
May .	5	3½	-1½	6	+1	7	+2	7	+2	3½	-1½	3½	-1½	7	+2
June .	5	3½	-1½	6	+1	6½	+1½	7	+2	3½	-1½	3½	-1½	7	+2
July .	5	3½	-1½	7½	+2½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
August .	5	4	-1	7½	+2½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
September .	5	4	-1	7½	+2½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
October .	5	4	-1	7½	+2½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
November .	5	4	-1	7½	+2½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
December .	5	4	-1	6½	+1½	6	+1	7	+2	3½	-1½	3½	-1½	7	+2
1927															
January .	5	4	-1	6½	+1½	5	..	7	+2	3½	-1½	3½	-1½	6½	+1½
February .	5	4	-1	5½	+½	5	..	7	+2	3½	-1½	3½	-1½	6	+1
March .	5	4	-1	5½	+½	5	..	7	+2	3½	-1½	3½	-1½	6	+1
April .	4½	4	-½	5	+½	5	+½	7	+2½	3½	-1	3½	-1	6½	+1

May	4½	4	-½	5	+½	5	+½	7	+2½	3½	-1	3½	-1	5½	+1
June	4½	4	-½	5	+½	6	+½	7	+2½	3½	-1	3½	-1	5	+½
July	4½	4	-½	5	+½	6	+½	7	+2½	3½	-1	3½	-1	5	+½
August	4½	3½	-1	5	+½	6	+½	7	+2½	3½	-1	3½	-1	5	+½
September	4½	3½	-1	5	+½	6	+½	7	+2½	3½	-1	3½	-1	5	+½
October	4½	3½	-1	5	+½	7	+½	7	+2½	4½	..	3½	-1	5	+½
November	4½	3½	-1	5	+½	7	+½	7	+2½	4½	..	3½	-1	4½	..
December	4½	3½	-1	4	-	7	+2½	7	+2½	4½	..	3½	-1	4½	..
1928															
January	4½	3½	-1	3½	-1	7	+2½	7	+2½	4½	..	3½	-1	4½	..
February	4½	4	-½	3½	-1	7	+2½	7	+2½	4½	..	3½	-1	4½	..
March	4½	4	-½	3½	-1	7	+2½	7	+2½	4½	..	3½	-1	4½	..
April	4½	4	-½	3½	-1	7	+2½	6	+1½	4½	..	3½	-1	4½	..
May	4½	4½	..	3½	-1	7	+2½	6	+1½	4½	..	3½	-1	4½	..
June	4½	4½	..	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
July	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
August	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
September	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
October	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
November	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
December	4½	5	+½	3½	-1	7	+2½	5½	+1	4½	..	3½	-1	4	-½
1929															
January	4½	5	+½	3½	-1	6½	+2	6	+1½	4½	..	3½	-1	4	-½
February	5½	5	-½	3½	-2	6½	+1	7	+1½	4½	-1	3½	-2	4	-1½
March	5½	5	-½	3½	-2	6½	+1	7	+1½	5½	..	3½	-2	4	-1½
April	5½	5	-½	3½	-2	7½	+2	7	+1½	5½	..	3½	-2	4	-1½
May	5½	5	-½	3½	-2	7½	+2	7	+1½	5½	..	3½	-2	4	-1½
June	5½	5	-½	3½	-2	7½	+2	7	+1½	5½	..	3½	-2	4	-1½
July	5½	5	-½	3½	-2	7½	+2	7	+1½	5½	..	3½	-2	5	-½
August	5½	5	-½	3½	-2	7½	+2	7	+1½	5½	..	3½	-2	5	-½
September	6½	5	-1½	3½	-3	7½	+1	7	+½	6½	-1	3½	-3	5	-1½
October	6	5	-1	3½	-2½	7½	+1	7	+1	5	-1	3½	-2½	5	-1
November	5½	4½	-1	3½	-2	7	+1½	7	+1½	4½	-1	3½	-2	4½	-1
December	5	4½	-½	3½	-1½	7	+½	7	+2	4½	-½	3½	-1½	4½	-1½

BANK RATE PARITIES—continued

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Italy	+ or -	Holland	+ or -	Switzerland	+ or -	Belgium	+ or -
1930															
January .	5	4½	- ½	3	-2	6½	+ 1½	7	+2	4	-1	3½	-1½	3½	-1½
February	4½	4	- ½	3	-1½	6	+ 1½	7	+2½	4	-1½	3½	-1	3½	-1
March .	3½	3½	..	3	- ½	5½	+ 2	6½	+3	3	- ½	3½	..	3½	..
April .	3½	3½	..	3	- ½	5½	+ 2	6	+2½	3	- ½	3	- ½	3½	..
May .	3	3	..	2½	- ½	4½	+ 1½	5½	+2½	3	..	3	..	3	..
June .	3	2½	- ½	2½	- ½	4	+ 1	5½	+2½	3	..	3	..	3	..
July .	3	2½	- ½	2½	- ½	4	+ 1	5½	+2½	3	..	3	..	3	..
August .	3	2½	- ½	2½	- ½	4	+ 1	5½	+2½	3	..	2½	- ½	2½	- ½
September	3	2½	- ½	2½	- ½	4	+ 1	5½	+2½	3	..	2½	- ½	2½	- ½
October .	3	2½	- ½	2½	- ½	5	+ 2	6½	+2½	3	..	2½	- ½	2½	- ½
November	3	2½	- ½	2½	- ½	5	+ 2	5½	+2½	3	..	2½	- ½	2½	- ½
December	3	2	-1	2½	- ½	5	+ 2	5½	+2½	3	..	2½	- ½	2½	- ½
1931															
January .	3	2	-1	2	-1	5	+ 2	5½	+2½	2½	- ½	2	-1	2½	- ½
February	3	2	-1	2	-1	5	+ 2	5½	+2½	2½	- ½	2	-1	2½	- ½
March .	3	2	-1	2	-1	5	+ 2	5½	+2½	2½	- ½	2	-1	2½	- ½
April .	3	2	-1	2	-1	5	+ 2	5½	+2½	2½	- ½	2	-1	2½	- ½
May .	2½	1½	-1	2	- ½	5	+ 2½	5½	+3	2	- ½	2	- ½	2½	..
June .	2½	1½	-1	2	- ½	7	+ 4½	5½	+3	2	- ½	2	- ½	2½	..
July .	4½	1½	-3	2	-2½	10	+ 5½	5½	+1	2	-2½	2	-2½	2½	-2
August .	4½	1½	-3	2	-2½	10	+ 5½	5½	+1	2	-2½	2	-2½	2½	-2
September	6	1½	-4½	2	-4	8	+ 2	7	+1	3	-3	2	-4	2½	-3½
October .	6	3½	-2½	2½	-3½	8	+ 2	7	+1	3	-3	2	-4	2½	-3½
November	6	3½	-2½	2½	-3½	8	+ 2	7	+1	3	-3	2	-4	2½	-3½
December	6	3½	-2½	2½	-3½	7	+ 1	7	+1	3	-3	2	-4	2½	-3½
1932															
January .	6	3½	-2½	2½	-3½	7	+ 1	7	+1	3	-3	2	-4	3	-2½
February	5	3	-2	2½	-2½	7	+ 2	7	+2	3	-2	2	-3	3½	-1½
March .	3½	3	- ½	2½	-1	6	+ 2½	6	+2½	3	- ½	2	-1½	3½	..
April .	3	3	..	2½	- ½	5	+ 2	6	+3	2½	- ½	2	-1	3½	+ ½

May	2½	3	+ ½	2½	..	5	+ 2½	5	+ 2½	2½	..	2	- ½	3½	+ 1
June	2	2½	+ ½	2½	+ ½	5	+ 3	5	+ 3	2½	+ ½	2	..	3½	+ 1½
July	2	2½	+ ½	2½	+ ½	5	+ 3	5	+ 3	2½	+ ½	2	..	3½	+ 1½
August	2	2½	+ ½	2½	+ ½	5	+ 3	5	+ 3	2½	+ ½	2	..	3½	+ 1½
September	2	2½	+ ½	2½	+ ½	4	+ 2	5	+ 3	2½	+ ½	2	..	3½	+ 1½
October	2	2½	+ ½	2½	+ ½	4	+ 2	5	+ 3	2½	+ ½	2	..	3½	+ 1½
November	2	2½	+ ½	2½	+ ½	4	+ 2	5	+ 3	2½	+ ½	2	..	3½	+ 1½
December	2	2½	+ ½	2½	+ ½	4	+ 2	5	+ 3	2½	+ ½	2	..	3½	+ 1½
1933															
January	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	3½	+ 1½
February	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	3½	+ 1½
March	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	3½	+ 1½
April	2	3	+ 1	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	3½	+ 1½
May	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	3½	+ 1½	2	..	3½	+ 1½
June	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	4½	+ 2½	2	..	3½	+ 1½
July	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	3½	+ 1½	2	..	3½	+ 1½
August	2	2½	+ ½	2½	+ ½	4	+ 2	4	+ 2	3	+ 1	2	..	3½	+ 1½
September	2	2½	+ ½	2½	+ ½	4	+ 2	3½	+ 1½	2½	+ ½	2	..	3½	+ 1½
October	2	2	..	2½	+ ½	4	+ 2	3½	+ 1½	2½	+ ½	2	..	3½	+ 1½
November	2	2	..	2½	+ ½	4	+ 2	3½	+ 1½	2½	+ ½	2	..	3½	+ 1½
December	2	2	..	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	3½	+ 1½
1934															
January	2	2	..	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	3½	+ 1½
February	2	1½	- ½	3	+ 1	4	+ 2	3	+ 1	2½	+ ½	2	..	3½	+ 1½
March	2	1½	- ½	3	+ 1	4	+ 2	3	+ 1	2½	+ ½	2	..	3½	+ 1½
April	2	1½	- ½	3	+ 1	4	+ 2	3	+ 1	2½	+ ½	2	..	3	+ 1
May	2	1½	- ½	3	+ 1	4	+ 2	3	+ 1	2½	+ ½	2	..	3	+ 1
June	2	1½	- ½	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	3	+ 1
July	2	1½	- ½	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	3	+ 1
August	2	1½	- ½	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	2½	+ ½
September	2	1½	- ½	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	2½	+ ½
October	2	1½	- ½	2½	+ ½	4	+ 2	3	+ 1	2½	+ ½	2	..	2½	+ ½
November	2	1½	- ½	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	2½	+ ½
December	2	1½	- ½	2½	+ ½	4	+ 2	4	+ 2	2½	+ ½	2	..	2½	+ ½

BANK RATE PARITIES—continued

Date	London	N. York + or -		Paris + or -	Berlin + or -	Italy + or -	Holland + or -	Switzerland + or -	Belgium + or -				
1935													
January .	2	1½	- ½	2½	+ ½	4	+2	2½	+ ½	2	..	2½	+ ½
February .	2	1½	- ½	2½	+ ½	4	+2	2½	+ ½	2	..	2½	+ ½
March .	2	1½	- ½	2½	+ ½	4	+2	3½	+1½	2½	+ ½	2	..
April .	2	1½	- ½	2½	+ ½	4	+2	3½	+1½	4½	+2½	2	..
May .	2	1½	- ½	6	+4	4	+2	3½	+1½	4	+2	2½	+ ½
June .	2	1½	- ½	5	+3	4	+2	3½	+1½	4	+2	2½	+ ½
July .	2	1½	- ½	3½	+1½	4	+2	3½	+1½	6	+4	2½	+ ½
August .	2	1½	- ½	3	+1	4	+2	4½	+2½	5	+3	2½	+ ½
September	2	1½	- ½	3	+1	4	+2	5	+3	6	+4	2½	+ ½
October .	2	1½	- ½	3	+1	4	+2	5	+3	5½	+3½	2½	+ ½
November	2	1½	- ½	6	+4	4	+2	5	+3	4	+2	2½	+ ½
December	2	1½	- ½	5	+3	4	+2	5	+3	3½	+1½	2½	+ ½
1936													
January .	2	1½	- ½	4	+2	4	+2	5	+3	3	+1	2½	+ ½
February .	2	1½	- ½	3½	+1½	4	+2	5	+3	2½	+ ½	2½	+ ½
March .	2	1½	- ½	5	+3	4	+2	5	+3	2½	+ ½	2½	+ ½
April .	2	1½	- ½	5	+3	4	+2	5	+3	2½	+ ½	2½	+ ½
May .	2	1½	- ½	6	+4	4	+2	4½	+2½	3½	+1½	2½	+ ½
June .	2	1½	- ½	4	+2	4	+2	4½	+2½	3½	+1½	2½	+ ½
July .	2	1½	- ½	3	+1	4	+2	4½	+2½	3	+1	2½	+ ½
August .	2	1½	- ½	3	+1	4	+2	4½	+2½	3	+1	2½	+ ½
September	2	1½	- ½	5	+3	4	+2	4½	+2½	3	+1	2	..
October .	2	1½	- ½	2	..	4	+2	4½	+2½	2½	+ ½	2	..
November	2	1½	- ½	2	..	4	+2	4½	+2½	2½	+ ½	1½	- ½
December	2	1½	- ½	2	..	4	+2	4½	+2½	2	..	1½	- ½

APPENDIX III

DISCOUNT RATE PARITIES

THE following tables give the discount rate parities between London on the one hand and New York, Paris, Berlin, Italy, Holland, Switzerland and Belgium on the other, for the period 1921 to 1936. The figures are based on the monthly averages of market rates of discount for three months' prime bills in the various centres. The averages have been compiled from the following sources: *Statistical Year Book of the League of Nations*; London and Cambridge Economic Service; Harvard Economic Service; *Statistisches Jahrbuch des Deutschen Reiches*; *Bulletin mensuel*, Banque National Suisse; *Bulletin d'information et de documentation*, Banque Nationale de Belgique; *Revue d'économie politique*; and Annual Report of the Nederlandsche Bank.

DISCOUNT RATE PARITIES

492

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Italy	+ or -	Holland	+ or -	Switzerland	+ or -	Belgium	+ or -
1921															
January .	6-63	6-00	- .63	..	..	..	..	..	..	3-62	-3-01	4-33	-2-30	..	..
February .	6-69	6-19	- .50	..	..	..	..	..	..	3-83	-2-86	4-23	-2-46	..	..
March .	6-38	6-19	- .19	..	..	..	..	..	..	4-35	-2-03	4-17	-2-21	..	..
April .	6-04	5-83	- .21	..	..	..	..	..	..	4-50	-1-54	3-90	-2-14	..	..
May .	5-65	5-87	+ .22	..	..	..	..	..	..	4-35	-1-30	3-62	-2-03	..	..
June .	5-50	5-87	+ .37	..	..	..	..	..	..	4-35	-1-15	3-52	-1-98	..	..
July .	4-94	5-41	+ .47	..	..	..	..	..	..	4-13	- .81	3-24	-1-70	..	..
August .	4-72	5-16	+ .44	..	..	..	..	..	..	4-38	- .36	2-95	-1-77	..	..
September .	4-19	5-05	+ .86	..	..	..	..	..	..	4-40	+ .21	2-69	-1-50	..	..
October .	4-03	4-75	+ .72	..	..	..	..	..	..	4-37	+ .34	2-69	-1-34	..	..
November .	3-89	4-53	+ .64	..	..	..	..	..	..	4-37	+ .48	2-75	-1-14	..	..
December .	3-55	4-27	+ .72	..	..	..	..	..	..	4-36	+ .81	2-84	- .71	..	..
1922															
January .	3-47	4-00	+ .53	5-00	+1-53	..	..	6-31	+2-84	4-31	+ .84	2-66	- .81	5-00	+1-53
February .	3-22	4-00	+ .78	5-00	+1-78	..	..	6-50	+3-28	3-99	+ .77	2-30	- .92	5-00	+1-78
March .	3-37	3-50	+ .13	4-59	+1-22	..	..	6-31	+2-94	4-33	+ .96	2-01	-1-36	5-00	+1-63
April .	2-55	3-25	+ .70	4-12	+1-57	..	..	6-25	+3-70	4-30	+1-75	1-72	- .83	5-00	+2-45
May .	2-31	3-12	+ .81	4-00	+1-69	..	..	6-00	+3-69	4-24	+1-93	1-44	- .87	5-00	+2-69
June .	2-44	3-00	+ .56	4-00	+1-56	..	..	5-87	+3-43	3-92	+1-48	1-36	-1-08	4-62	+2-18
July .	1-87	3-00	+1-13	4-00	+2-13	..	..	5-44	+3-57	2-67	+ .80	1-22	- .65	4-50	+2-63
August .	2-14	3-00	+ .86	4-00	+1-86	..	..	5-40	+3-26	2-88	+ .74	1-12	-1-02	4-50	+2-36
September .	2-56	3-38	+ .82	4-00	+1-44	..	..	5-37	+2-81	3-28	+ .72	1-10	-1-46	4-50	+1-94
October .	2-40	4-00	+1-60	4-31	+1-91	..	..	5-37	+2-97	3-80	+1-40	1-13	-1-27	4-50	+2-10
November .	2-63	4-00	+1-37	4-34	+1-71	..	..	5-37	+2-74	3-82	+1-19	1-83	- .80	4-50	+1-87
December .	2-49	4-00	+1-51	4-15	+1-66	..	..	5-40	+2-91	3-83	+1-34	2-25	- .24	4-50	+2-01
1923															
January .	2-28	4-00	+1-72	4-25	+1-97	..	..	5-37	+3-09	3-73	+1-45	2-20	- .08	5-00	+2-72
February .	2-54	4-00	+1-46	4-25	+1-71	..	..	5-34	+2-80	3-34	+ .80	1-86	- .68	5-50	+2-96
March .	2-43	4-00	+1-57	4-37	+1-94	..	..	5-37	+2-94	2-98	+ .55	1-36	-1-07	5-50	+3-07
April .	2-11	4-12	+2-01	4-37	+2-26	..	..	5-50	+3-39	3-46	+1-35	1-25	- .86	5-50	+3-39

May	2 07	4 12	+2 05	4 37	+2 30	..	..	5 50	+3 43	3 64	+1 57	1 45	- 62	5 50	+3 43
June	2 05	4 12	+2 07	4 37	+2 32	..	..	5 56	+3 51	3 70	+1 65	2 15	+ 10	5 12	+3 07
July	3 55	4 12	+ 57	4 37	+ 82	..	..	6 00	+2 45	3 35	- 20	2 87	- 68	5 00	+1 45
August	3 29	4 12	+ 83	4 40	+1 11	..	..	5 92	+2 63	2 97	- 32	3 62	+ 33	5 00	+1 71
September	3 30	4 12	+ 82	4 37	+1 07	..	..	6 00	+2 70	3 14	- 16	3 71	+ 41	5 00	+1 70
October	3 19	4 12	+ 93	4 47	+1 28	..	..	6 00	+2 81	2 90	- 29	3 72	+ 53	5 19	+2 00
November	3 32	4 12	+ 80	4 59	+1 27	..	..	6 00	+2 08	3 62	+ 30	3 67	+ 35	5 25	+1 93
December	3 22	4 12	+ 90	4 47	+1 25	..	..	6 00	+2 78	4 34	+1 12	3 59	+ 37	5 31	+1 09
1924															
January	3 29	4 00	+ 71	4 80	+1 51	..	..	6 00	+2 71	4 70	+1 41	3 58	+ 29	5 25	+1 96
February	3 64	4 12	+ 48	5 00	+1 36	..	..	6 00	+2 36	4 95	+1 31	3 57	- 07	5 25	+1 61
March	3 20	4 00	+ 80	5 50	+2 30	..	..	5 50	+2 30	4 92	+1 72	3 69	+ 49	5 25	+2 05
April	3 10	3 50	+ 40	5 50	+2 40	..	..	5 50	+2 40	4 94	+1 84	3 73	+ 63	5 25	+2 15
May	3 10	3 00	- 10	5 18	+2 08	..	..	5 50	+2 40	3 92	+1 82	3 39	+ 29	5 25	+2 15
June	2 96	2 00	- 96	5 12	+2 16	..	..	5 50	+2 54	3 27	+ 31	3 19	+ 23	5 25	+2 29
July	3 56	2 00	-1 56	5 25	+1 69	..	..	5 50	+1 94	2 91	- 63	3 56	..	5 25	+1 69
August	3 82	2 25	-1 57	5 12	+1 30	..	..	5 50	+1 68	2 15	-1 67	3 70	- 12	5 25	+1 43
September	3 79	2 12	-1 67	5 12	+1 33	..	..	5 50	+1 71	2 90	- 89	3 69	- 10	5 25	+1 46
October	3 70	2 25	-1 45	5 16	+1 46	..	..	6 00	+2 30	4 60	+ 90	3 69	- 11	5 25	+1 55
November	3 72	2 62	-1 10	5 44	+1 72	..	..	6 00	+2 28	4 75	+1 03	3 32	- 40	5 25	+1 53
December	3 68	3 00	- 68	6 31	+2 63	9 20	+5 52	6 00	+2 32	3 80	+ 12	6 01	- 67	5 25	+1 57
1925															
January	3 82	3 00	- 82	6 37	+2 55	8 31	+4 49	6 00	+2 18	2 70	-1 12	2 69	-1 13	5 25	+1 43
February	3 77	3 25	- 52	6 37	+2 60	8 01	+4 24	6 00	+2 23	2 22	-1 55	2 25	-1 52	5 25	+1 48
March	4 00	3 25	- 75	6 31	+2 31	8 00	+4 00	6 50	+2 50	2 38	-1 62	2 44	-1 56	5 25	+1 25
April	4 29	3 12	-1 17	6 43	+2 14	8 00	+3 71	6 50	+2 21	3 28	-1 01	2 50	-1 79	5 25	+ 96
May	4 69	3 25	-1 44	6 25	+1 56	7 97	+3 28	6 56	+1 87	3 49	-1 20	2 46	-2 23	5 25	+ 56
June	4 41	3 25	-1 16	6 00	+1 59	7 76	+3 35	6 92	+2 61	3 08	-1 33	2 29	-2 12	5 25	+ 84
July	4 43	3 25	-1 18	5 41	+ 98	7 88	+3 45	7 46	+3 03	2 73	-1 70	2 16	-2 27	5 22	+ 79
August	4 02	3 50	- 52	5 22	+1 20	7 68	+3 66	7 50	+3 48	3 76	- 26	2 02	-2 00	5 12	+1 10
September	3 79	3 50	- 29	5 28	+1 49	7 18	+3 39	7 50	+3 71	4 12	+ 33	2 00	-1 79	5 25	+1 46
October	3 42	3 50	+ 08	4 87	+1 45	7 09	+3 67	7 50	+4 08	3 44	+ 02	2 00	-1 42	5 25	+1 83
November	3 90	3 50	- 40	4 81	+ 91	6 78	+2 88	7 50	+3 60	3 33	- 57	2 22	-1 68	6 37	+2 47
December	4 71	3 50	-1 21	4 78	+ 07	6 75	+2 04	7 50	+2 79	3 46	-1 25	2 29	-2 42	6 75	+2 04

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Date	London	N. York + or -		Paris + or -		Berlin + or -		Italy + or -		Holland + or -		Switzerland + or -		Belgium + or -	
1926															
January	4-86	3-62	-1-24	4-40	-46	6-27	+1-41	7-92	+3-06	2-93	-1-93	2-44	-2-42	6-71	+1-85
February	4-36	3-62	-74	4-40	+04	5-46	+1-10	8-00	+3-64	2-18	-2-18	2-22	-2-14	6-59	+2-23
March	4-40	3-62	-78	4-40	..	5-00	+60	8-00	+3-60	2-72	-1-68	2-18	-2-22	6-70	+2-30
April	4-38	3-12	-1-20	4-50	+12	4-96	+48	8-00	+3-62	2-90	-1-48	2-30	-2-08	6-75	+2-37
May	4-46	3-38	-1-08	5-20	+74	4-69	+23	8-00	+3-54	3-01	-1-45	2-38	-2-08	6-75	+2-29
June	4-27	3-38	-89	5-50	+1-23	4-52	+25	8-00	+3-73	2-83	-1-44	2-38	-1-80	6-65	+2-38
July	4-31	3-38	-93	5-70	+1-39	4-53	+22	8-00	+3-69	2-78	-1-55	2-37	-1-94	6-70	+2-39
August	4-36	3-88	-48	6-00	+1-64	4-61	+25	8-00	+3-64	2-67	-1-69	2-34	-2-02	6-75	+2-39
September	4-53	3-88	-65	7-00	+2-47	4-98	+35	8-00	+3-47	2-90	-1-63	2-52	-2-01	6-72	+2-19
October	4-69	3-88	-81	7-25	+2-56	4-84	+15	8-00	+3-31	2-80	-1-89	2-80	-1-89	6-64	+1-95
November	4-74	3-75	-99	6-25	+1-51	4-63	-11	8-00	+3-26	3-20	-1-54	2-96	-1-78	5-77	+1-03
December	4-47	3-75	-72	5-00	+53	4-73	+26	8-12	+3-65	3-37	-1-10	3-35	-1-12	4-34	-13
1927															
January	4-23	3-38	-85	4-40	+17	4-20	-03	8-50	+4-27	3-00	-1-23	3-16	-1-07	3-90	-33
February	4-14	3-62	-52	4-30	+16	4-23	+09	8-50	+4-36	3-46	-68	2-87	-1-27	3-99	-15
March	4-33	3-62	-71	3-90	-53	4-59	+26	8-50	+4-17	3-50	-83	2-98	-1-35	4-19	-14
April	4-23	3-62	-61	3-00	-1-23	4-62	+39	8-50	+4-27	3-47	-76	3-13	-1-10	4-33	+10
May	3-62	3-62	..	2-20	-1-42	4-90	+1-28	8-50	+4-88	3-46	-16	3-19	-43	4-23	+61
June	4-35	3-75	-60	2-00	-2-35	5-39	+1-04	8-25	+3-90	3-58	-77	3-42	-93	4-17	-18
July	4-34	3-25	-1-09	2-00	-2-34	5-90	+1-56	7-00	+2-66	3-55	-79	3-47	-80	3-80	-54
August	4-34	3-12	-1-22	2-00	-2-34	5-83	+1-49	8-00	+3-66	3-45	-89	3-44	-97	3-89	-45
September	4-32	3-12	-1-20	2-00	-2-32	5-90	+1-58	8-00	+3-68	3-56	-76	3-39	-93	3-79	-53
October	4-31	3-25	-1-06	1-80	-2-51	6-09	+2-38	8-88	+2-67	4-14	-17	3-38	-93	3-83	-48
November	4-34	3-25	-1-09	2-70	-1-64	6-76	+2-42	6-50	+2-16	4-47	+13	3-39	-95	4-17	-17
December	4-31	3-25	-1-06	2-90	-1-41	6-87	+2-56	6-50	+2-19	4-48	+17	3-40	-91	4-24	-07
1928															
January	4-29	3-50	-79	2-80	-1-49	6-27	+1-98	6-50	+2-21	4-26	-03	3-29	-1-00	3-96	-33
February	4-20	3-50	-70	2-60	-1-60	6-20	+2-00	6-12	+1-92	3-95	-25	3-12	-1-08	3-88	-32
March	4-17	3-75	-42	2-60	-1-57	6-72	+2-55	5-49	+1-32	3-90	-27	3-20	-97	4-09	-08
April	4-03	3-88	-15	2-60	-1-43	6-70	+2-67	5-25	+1-22	4-15	+08	3-29	-74	4-27	+24

May	3 96	4 00	+ 04	2 60	- 1 36	6 66	+ 2 70	5 25	+ 1 29	4 28	+ 32	3 32	- 64	4 40	+ 44
June	3 74	4 12	+ 38	2 60	- 1 14	6 62	+ 2 88	5 25	+ 1 51	4 23	+ 49	3 40	+ 34	4 40	+ 66
July	3 95	4 62	+ 67	2 70	- 1 25	6 74	+ 2 79	5 25	+ 1 30	4 11	+ 16	3 44	- 51	3 94	- 01
August	4 28	4 50	+ 22	3 20	- 1 08	6 69	+ 2 41	5 25	+ 97	4 12	- 16	3 41	- 87	3 94	- 34
September	4 25	4 50	+ 25	3 20	- 1 05	6 65	+ 2 40	5 25	+ 1 00	4 36	+ 11	3 37	- 88	3 94	- 31
October	4 33	4 50	+ 17	3 50	- 83	6 58	+ 2 25	5 25	+ 92	4 45	+ 02	3 37	- 96	3 94	- 39
November	4 38	4 50	+ 12	3 20	- 1 18	6 28	+ 1 90	5 45	+ 1 07	4 45	+ 07	3 35	- 1 03	3 97	- 41
December	4 36	4 50	+ 14	3 40	- 96	6 31	+ 1 95	5 50	+ 1 14	4 51	+ 15	3 32	- 1 04	3 97	- 39
1929															
January	4 31	5 00	+ 69	3 40	- 91	5 80	+ 1 49	5 80	+ 1 49	4 18	- 13	3 28	- 1 03	3 97	- 34
February	5 23	5 25	+ 02	3 40	- 1 83	5 81	+ 58	6 00	+ 77	4 38	- 85	3 31	- 1 92	3 97	- 1 26
March	5 38	5 50	+ 12	3 40	- 1 98	6 30	+ 92	6 31	+ 93	4 64	- 74	3 39	- 1 99	3 97	- 1 41
April	5 27	5 38	+ 11	3 50	- 1 77	6 63	+ 1 36	6 75	+ 1 48	5 35	+ 08	3 45	- 1 82	3 97	- 1 30
May	5 23	5 50	+ 27	3 50	- 1 73	7 49	+ 2 26	6 83	+ 1 60	5 33	+ 10	3 34	- 1 89	3 96	- 1 27
June	5 28	5 38	+ 10	3 50	- 1 78	7 50	+ 2 22	6 75	+ 1 47	5 29	+ 01	3 26	- 2 02	3 97	- 1 31
July	5 33	5 12	- 21	3 50	- 1 83	7 40	+ 2 07	6 75	+ 1 42	5 17	- 16	3 19	- 2 14	4 04	- 1 29
August	5 47	5 12	- 35	3 50	- 1 97	7 18	+ 1 71	6 85	+ 1 38	5 02	- 45	3 33	- 2 14	4 93	- 54
September	5 49	5 12	- 37	3 50	- 1 99	7 18	+ 1 69	7 01	+ 1 52	5 37	- 12	3 38	- 2 11	4 94	- 55
October	6 24	4 62	- 1 62	3 50	- 2 74	7 28	+ 1 04	7 18	+ 94	5 16	- 1 08	3 38	- 2 86	4 94	- 1 30
November	5 66	3 88	- 1 78	3 50	- 2 16	6 89	+ 1 23	7 00	+ 1 34	4 13	- 1 53	3 32	- 2 34	4 57	- 1 09
December	4 80	4 00	- 80	3 40	- 1 40	6 98	+ 2 18	7 00	+ 2 20	3 47	- 1 35	3 15	- 65	4 37	- 43
1930															
January	4 11	3 88	- 23	3 40	- 71	6 37	+ 2 26	7 00	+ 2 89	3 03	- 1 08	2 97	- 1 14	3 40	- 71
February	3 96	3 75	- 21	2 90	- 1 06	5 58	+ 1 62	6 95	+ 2 99	2 73	- 1 23	2 71	- 1 25	3 42	- 54
March	3 03	3 75	+ 72	2 50	- 53	5 13	+ 2 10	6 57	+ 3 54	2 64	- 49	2 60	- 43	3 31	+ 28
April	2 49	2 88	+ 39	2 50	+ 01	4 47	+ 1 98	6 43	+ 3 94	2 39	- 10	2 61	+ 12	3 35	+ 86
May	2 14	2 38	+ 24	2 30	+ 16	3 01	+ 1 77	5 81	+ 3 67	2 31	+ 17	2 44	+ 30	2 89	+ 75
June	2 33	1 88	- 45	2 30	- 03	3 60	+ 1 27	5 50	+ 3 17	2 06	- 27	2 06	- 27	2 77	+ 44
July	2 37	1 88	- 49	2 00	- 37	3 41	+ 1 04	5 50	+ 3 13	1 86	- 51	1 92	- 45	2 79	+ 42
August	2 29	1 88	- 41	2 00	- 29	3 24	+ 95	5 50	+ 3 21	1 84	- 45	1 75	- 54	2 47	+ 18
September	2 09	1 88	- 21	2 00	- 09	3 27	+ 1 18	5 48	+ 3 39	1 93	- 16	1 50	- 59	2 40	+ 31
October	2 11	1 88	- 23	2 00	- 11	4 65	+ 2 54	5 25	+ 3 14	1 59	- 52	1 29	- 82	2 31	+ 20
November	2 23	1 88	- 35	2 00	- 23	4 81	+ 2 58	5 43	+ 3 20	1 26	- 97	1 16	- 1 07	2 12	- 11
December	2 30	1 75	- 55	2 00	- 30	4 83	+ 2 53	5 50	+ 3 30	1 31	- 99	1 18	- 1 12	2 32	+ 02

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Date	London	N. York + or -		Paris + or -		Berlin + or -		Italy + or -		Holland + or -		Switzerland + or -		Belgium + or -	
1931															
January .	2-17	1-59	- 58	1-89	- 28	4-71	+2-54	5-50	+3-33	1-35	- 82	1-17	-1-00	2-38	+ -21
February .	2-52	1-39	-1-13	1-77	- 75	4-87	+2-35	5-50	+2-98	1-08	-1-44	1-00	-1-52	2-31	- 21
March .	2-62	1-50	-1-12	1-57	-1-05	4-77	+2-15	5-50	+2-88	1-02	-1-60	.99	-1-63	2-25	- 37
April .	2-61	1-43	-1-18	1-47	-1-14	4-65	+2-04	5-50	+2-89	1-37	-1-24	1-06	-1-55	2-25	- 36
May .	2-26	1-01	-1-25	1-28	- 98	4-64	+2-38	5-48	+3-22	1-39	- 87	1-12	-1-14	2-22	- 04
June .	2-12	.88	-1-24	1-06	-1-06	5-99	+3-87	5-25	+3-13	1-01	-1-11	1-12	-1-00	2-12	..
July .	2-14	.88	-1-26	1-20	- 94	8-50	+6-36	5-25	+3-11	1-26	- 88	1-55	- 59	2-14	..
August .	4-31	.88	-3-43	1-50	-2-81	11-24	+6-93	5-25	+ 94	1-34	-2-07	1-98	-2-33	2-41	-1-90
September	4-28	.98	-3-30	1-50	-2-78	7-99	+3-71	5-47	+1-19	.58	-3-70	1-80	-2-48	2-44	-1-84
October .	5-71	2-47	-2-24	1-80	-3-91	8-00	+2-29	7-50	+1-79	2-69	-3-02	1-90	-3-81	2-44	-2-27
November	5-76	2-90	-2-77	1-90	-3-86	8-00	+2-24	7-50	+1-74	1-75	-4-01	1-77	-3-99	2-44	-3-32
December	5-84	3-00	-2-84	1-75	-4-09	7-32	+1-48	7-50	+1-66	1-33	-4-51	2-75	-4-09	2-44	-3-40
1932															
January .	5-65	2-85	-2-80	1-75	-3-90	6-99	+1-34	7-50	+1-85	2-18	-3-47	1-68	-3-97	2-96	-2-69
February .	5-11	2-75	-2-36	1-75	-3-36	6-74	+1-63	6-92	+1-81	1-87	-3-24	1-52	-3-59	3-28	-1-83
March .	2-63	2-51	- 12	1-80	- 83	6-15	+3-52	6-53	+3-90	1-10	-1-53	1-50	-1-13	3-36	+ 73
April .	2-56	1-42	- 94	1-86	- 50	5-23	+2-87	6-00	+3-64	.84	-1-52	1-50	- 86	3-25	+ 89
May .	1-57	.91	- 66	1-50	- 07	4-87	+3-30	5-52	+3-95	.64	- 93	1-50	- 07	3-22	+1-65
June .	1-06	.87	- 19	1-22	+ 16	4-77	+3-71	5-50	+4-44	.44	- 62	1-50	+ 44	3-19	+2-13
July .	.98	.75	- 23	.99	+ 01	4-59	+3-61	5-50	+4-52	.37	- 61	1-50	+ 52	3-19	+2-21
August .	.72	.75	+ 03	1-02	+ 30	4-50	+3-78	5-50	+4-78	.31	- 41	1-50	+ 78	3-04	+2-32
September	.69	.75	+ 06	1-00	+ 31	4-27	+3-58	5-50	+4-81	.27	- 42	1-50	+ 81	3-12	+2-43
October .	.84	.59	- 25	1-01	+ 17	4-87	+4-03	5-37	+4-53	.25	- 59	1-50	+ 66	3-00	+2-16
November	.77	.50	- 27	1-00	+ 23	3-87	+3-10	5-00	+4-23	.25	- 52	1-50	+ 73	3-00	+2-23
December	.93	.39	- 54	.91	- 02	3-87	+2-94	5-00	+4-07	.25	- 68	1-50	+ 57	2-97	+2-04
1933															
January .	.92	.33	- 59	1-12	+ 20	3-87	+2-05	4-42	+3-50	.25	- 67	1-50	+ 58	3-36	+2-44
February .	.88	.47	- 41	1-89	+1-01	3-87	+2-99	4-25	+3-37	.25	- 63	1-50	+ 62	2-90	+2-02
March .	.68	2-49	+1-81	2-04	+1-36	3-87	+3-19	4-20	+3-52	.54	- 14	1-50	+ 82	2-80	+2-12
April .	.66	2-83	+2-17	1-87	+1-21	3-87	+3-21	4-00	+3-34	.49	- 17	1-50	+ 84	2-51	+1-85

May	.53	.50	-.03	1.76	+1.23	3.87	+3.34	4.00	+3.47	1.88	+1.35	1.50	+ .97	2.42	+1.89
June	.48	.38	-.10	1.50	+1.02	3.87	+3.39	4.00	+3.52	1.98	+1.50	1.50	+1.02	2.31	+1.83
July	.51	.48	-.03	1.39	+ .88	3.87	+3.36	4.00	+3.49	3.62	+3.11	1.50	+ .99	2.31	+1.80
August	.40	.45	+ .05	1.45	+1.05	3.87	+3.47	4.00	+3.60	1.28	+ .88	1.50	+1.10	2.31	+1.91
September	.40	.25	-.15	1.13	+ .73	3.87	+3.47	3.55	+3.15	.74	+ .34	1.50	+1.10	2.27	+1.87
October	.72	.25	-.47	1.25	+ .53	3.87	+3.15	3.50	+2.78	.39	-.33	1.50	+ .78	2.25	+1.53
November	1.07	.39	-.68	1.85	+ .78	3.87	+2.80	3.50	+2.43	.37	-.70	1.50	+ .43	2.17	+1.10
December	1.22	.62	-.60	2.28	+1.04	3.87	+2.66	3.00	+1.78	.36	-.86	1.50	+ .28	2.17	+ .95
1934															
January	.98	.50	-.48	2.12	+1.14	3.87	+2.89	3.00	+2.02	.37	-.61	1.50	+ .52	2.22	+1.24
February	.94	.50	-.44	2.59	+1.65	3.87	+2.93	3.00	+2.06	.68	-.36	1.50	+ .56	2.07	+1.13
March	.94	.31	-.63	2.75	+1.81	3.87	+2.93	3.00	+2.06	1.06	+ .12	1.50	+ .56	2.12	+1.18
April	.97	.23	-.74	2.70	+1.73	3.87	+2.90	3.00	+2.03	1.87	+ .90	1.50	+ .53	2.10	+1.13
May	.90	.19	-.71	2.80	+1.70	3.87	+2.97	3.00	+2.10	1.38	+ .48	1.50	+ .60	2.00	+1.10
June	.91	.19	-.72	2.09	+1.18	3.78	+2.85	3.00	+2.09	.99	-.22	1.50	+ .59	2.04	+1.13
July	.88	.19	-.69	1.78	+ .90	3.75	+2.87	3.00	+2.12	.62	-.26	1.50	+ .62	2.14	+1.26
August	.81	.19	-.62	1.75	+ .94	3.75	+2.94	3.00	+2.19	.68	-.13	1.50	+ .69	2.30	+1.49
September	.66	.19	-.47	1.50	+ .84	3.75	+3.09	3.00	+2.34	.54	-.12	1.50	+ .84	2.18	+1.52
October	.77	.17	-.60	1.45	+ .68	3.81	+3.04	3.00	+2.23	.50	-.27	1.50	+ .73	2.12	+1.35
November	.43	.12	-.31	1.44	+1.01	3.64	+3.21	3.19	+2.76	.50	+ .07	1.50	+1.07	2.23	+1.80
December	.56	.12	-.44	1.50	+ .94	3.50	+2.94	4.00	+3.44	.48	-.08	1.50	+ .94	2.37	+1.81
1935															
January	.39	.12	-.27	1.79	+1.40	3.46	+3.07	4.00	+3.61	.45	+ .06	1.50	+1.11	2.37	+1.98
February	.31	.12	-.19	2.12	+1.81	3.37	+3.06	4.30	+3.99	.53	+ .22	1.50	+1.19	2.37	+2.06
March	.57	.12	-.45	2.12	+1.55	3.37	+2.80	3.89	+3.32	.49	-.08	1.50	+ .93	2.37	+1.80
April	.59	.12	-.47	2.14	+1.55	3.37	+2.78	3.50	+2.91	3.33	+2.74	1.80	+1.21	2.37	+1.78
May	.59	.12	-.47	2.56	+1.97	3.11	+2.52	3.50	+2.91	3.76	+3.17	2.39	+1.80	2.15	+1.56
June	.68	.12	-.56	5.72	+5.04	3.00	+2.32	3.50	+2.82	4.32	+3.64	2.60	+1.92	1.87	+1.19
July	.63	.12	-.51	4.08	+3.43	3.00	+2.37	3.50	+2.87	3.15	+2.52	2.79	+2.16	1.87	+1.24
August	.81	.12	-.49	3.08	+2.45	3.00	+2.39	4.17	+3.56	4.65	+4.04	2.47	+1.86	1.87	+1.26
September	.59	.12	-.47	2.85	+2.26	3.01	+2.42	4.87	+4.28	5.37	+4.78	2.40	+1.81	1.87	+1.28
October	.63	.12	-.51	2.71	+2.08	3.04	+2.41	5.00	+4.37	4.73	+4.10	2.37	+1.74	1.87	+1.24
November	.56	.12	-.44	3.89	+3.33	3.01	+2.45	5.00	+4.44	3.04	+2.48	2.44	+1.88	1.87	+1.31
December	.67	.12	-.55	5.89	+5.22	3.00	+2.33	5.00	+4.33	3.11	+2.44	2.50	+1.83	1.87	+1.20

DISCOUNT RATE PARITIES—*continued*

Date	London		N. York + or -		Paris + or -		Berlin + or -		Italy + or -		Holland + or -		Switzerland + or -		Belgium + or -	
1936																
January .	.56	.12	- .44	4.26	+3.70	3.00	+2.44	5.00	+4.44	2.39	+1.83	2.48	+1.92	1.51	+ .95	
February .	.55	.12	- .43	3.81	+3.26	3.00	+2.45	5.00	+4.45	1.29	+ .74	2.37	+1.82	1.45	+ .90	
March .	.54	.19	- .35	3.74	+3.20	3.00	+2.46	5.00	+4.46	1.13	+ .59	2.26	+1.72	1.37	+ .83	
April .	.55	.19	- .36	5.03	+4.48	3.00	+2.45	5.00	+4.45	1.14	+ .59	2.25	+1.70	1.37	+ .82	
May .	.59	.19	- .40	5.60	+5.01	2.93	+2.34	4.78	+4.19	2.13	+1.54	2.25	+1.66	1.37	+ .78	
June .	.83	.19	- .64	5.60	+4.77	2.87	+2.04	4.50	+3.67	4.01	+3.18	2.25	+1.42	1.37	+ .54	
July .	.59	.19	- .40	3.30	+2.71	2.87	+2.28	4.50	+3.91	2.12	+1.53	2.25	+1.66	1.37	+ .78	
August .	.53	.25	- .28	3.00	+2.47	2.89	+2.36	4.50	+3.97	1.31	+ .78	2.25	+1.72	1.37	+ .84	
September .	.53	.25	- .28	3.38	+2.85	3.00	+2.47	4.50	+3.97	1.27	+ .74	1.98	+1.45	1.37	+ .84	
October .	.55	.25	- .30	2.52	+1.97	2.96	+2.41	4.50	+3.95	1.94	+1.39	1.60	+1.14	1.29	+ .74	
November .	.55	.25	- .30	1.98	+1.41	3.00	+2.45	4.50	+3.95	.95	+ .40	1.36	+ .91	1.00	+ .45	
December .	.82	.25	- .57	1.99	+1.17	3.00	+2.18	4.50	+3.18	.84	+ .02	1.25	+ .43	1.00	+ .18	

APPENDIX IV

CALL MONEY RATE PARITIES

THE following tables give the call money rate parities between London on the one hand and New York, Paris, Berlin, Holland, Switzerland and Belgium on the other, for such periods as it was possible to obtain monthly average quotations of call money rates. The sources are identical with those quoted in the preamble to Appendix III.

CALL MONEY RATE PARITIES

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -
1919								1921							
January .	2.88	4.62	+1.74	..	..	..	..	January .	4.81	6.69	+1.88	..	..	..	..
February .	3.19	5.06	+1.87	..	..	..	..	February .	6.50	7.25	+ .75	..	..	..	..
March .	2.75	4.88	+2.13	..	..	..	..	March .	5.75	6.80	+1.05	..	..	..	..
April .	2.88	5.40	+2.52	..	..	..	..	April .	5.50	6.44	+ .94	..	..	..	..
May .	2.94	5.25	+2.31	..	..	..	..	May .	4.38	6.85	+2.47	..	..	..	..
June .	2.50	6.62	+4.12	..	..	..	..	June .	4.19	5.81	+1.62	..	..	..	..
July .	2.38	6.55	+4.17	..	..	..	..	July .	4.12	5.62	+1.50	..	..	..	..
August .	3.06	5.12	+2.06	..	..	..	..	August .	4.19	5.60	+1.41	..	..	..	..
September .	3.31	6.00	+2.69	..	..	..	..	September .	2.75	5.12	+2.37	..	..	..	..
October .	2.88	7.94	+5.06	..	..	..	..	October .	3.50	5.25	+1.75	..	..	..	..
November .	4.38	11.06	+6.68	..	..	..	..	November .	3.63	5.05	+1.42	..	..	..	..
December .	3.00	8.85	+5.85	..	..	..	..	December .	2.44	5.12	+2.68	..	..	..	..
1920								1922							
January .	3.63	7.81	+4.18	..	..	..	..	January .	2.63	4.70	+2.07	..	..	..	..
February .	4.50	9.97	+5.47	..	..	..	..	February .	2.00	4.81	+2.81	..	..	..	..
March .	3.50	8.05	+4.55	..	..	..	..	March .	3.12	4.25	+1.13	..	..	..	..
April .	3.19	7.19	+4.00	..	..	..	..	April .	2.13	3.94	+1.81	..	..	..	..
May .	5.25	7.00	+1.75	..	..	..	..	May .	1.75	4.00	+2.25	..	..	..	..
June .	4.41	7.70	+3.29	..	..	..	..	June .	2.10	3.62	+1.52	..	..	..	..
July .	4.88	8.12	+3.24	..	..	..	..	July .	1.58	3.93	+2.35	..	..	..	..
August .	4.38	7.30	+2.92	..	..	..	..	August .	1.88	3.74	+1.86	..	..	..	..
September .	5.12	7.00	+1.88	..	..	..	..	September .	1.79	4.31	+2.52	..	..	..	..
October .	4.75	7.81	+3.06	..	..	..	..	October .	1.58	4.38	+2.80	..	..	..	..
November .	5.31	7.75	+2.44	..	..	..	..	November .	1.91	4.94	+3.03	..	..	..	..
December .	4.63	7.00	+2.37	..	..	..	..	December .	1.29	4.66	+3.37	..	..	..	..

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -
1923								1925							
January .	1.21	4.30	+ 3.00	..	..	..	..	January .	2.85	4.61	+ 1.76	..	..	9.99	+ 7.14
February .	1.79	4.81	+ 3.02	..	..	..	..	February .	2.94	4.64	+ 1.70	..	..	10.57	+ 7.63
March .	1.92	5.19	+ 3.27	..	..	..	..	March .	3.50	4.61	+ 1.11	..	..	8.97	+ 5.47
April .	1.98	4.94	+ 2.96	..	..	..	..	April .	3.92	4.62	+ .70	..	..	8.49	+ 4.57
May .	1.63	4.75	+ 3.12	..	..	..	..	May .	4.27	4.55	+ .28	..	..	8.78	+ 4.51
June .	1.40	5.00	+ 3.60	..	..	..	..	June .	3.70	4.55	+ .85	..	..	8.79	+ 5.09
July .	2.42	4.75	+ 2.33	..	..	..	..	July .	3.50	4.55	+ 1.05	..	..	9.46	+ 5.96
August .	2.10	5.00	+ 2.90	..	..	..	..	August .	3.60	4.66	+ 1.06	..	..	9.00	+ 5.40
September .	2.40	4.94	+ 2.54	..	..	..	..	September	3.13	4.62	+ 1.49	..	..	8.85	+ 5.72
October .	2.48	4.80	+ 2.32	..	..	..	..	October .	3.06	4.62	+ 1.56	..	..	9.41	+ 6.35
November	2.54	4.81	+ 2.27	..	..	..	..	November	3.31	4.62	+ 1.31	..	..	8.49	+ 5.18
December	1.67	4.81	+ 3.14	..	..	..	..	December	3.90	4.60	+ .70	..	..	8.20	+ 4.30
1924								1926							
January .	2.04	4.78	+ 2.74	..	..	87.64	+ 85.60	January .	4.10	4.38	+ .28	4.75	+ .65	7.13	+ 3.03
February .	2.65	4.78	+ 2.13	..	..	34.94	+ 32.29	February .	4.06	4.88	+ .82	4.75	+ .69	6.04	+ 1.98
March .	2.10	4.86	+ 2.76	..	..	33.09	+ 30.99	March .	4.29	4.60	+ .31	4.75	+ .46	5.70	+ 1.41
April .	2.23	4.75	+ 2.52	..	..	45.49	+ 43.28	April .	4.04	4.00	- .04	4.75	+ .71	4.64	+ .60
May .	2.17	4.74	+ 2.57	..	..	27.82	+ 25.65	May .	3.94	3.38	- .56	4.75	+ .81	4.80	+ .86
June .	1.80	4.67	+ 2.87	..	..	22.60	+ 20.80	June .	3.79	4.18	+ .39	4.75	+ .96	4.81	+ 1.02
July .	2.40	4.80	+ 2.20	..	..	16.83	+ 14.45	July .	4.12	4.25	+ .13	5.00	+ .88	5.00	+ .88
August .	2.92	4.61	+ 1.69	..	..	17.13	+ 14.21	August .	3.87	4.44	+ .57	5.75	+ 1.88	4.96	+ 1.09
September .	2.71	4.64	+ 1.93	..	..	14.97	+ 12.26	September	3.87	5.08	+ 1.21	6.00	+ 2.13	5.11	+ 1.24
October .	2.79	4.62	+ 1.83	..	..	14.09	+ 11.30	October .	4.12	4.69	+ .57	5.50	+ 1.38	5.00	+ .88
November	2.90	4.61	+ 1.71	..	..	13.03	+ 10.13	November	4.00	4.44	+ .44	5.25	+ 1.25	4.77	+ .77
December	2.46	4.65	+ 2.19	..	..	11.11	+ 8.65	December	3.95	5.15	+ 1.20	5.25	+ 1.30	6.03	+ 2.08

CALL MONEY RATE PARITIES—continued

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Amsterdam	+ or -	Switzerland	+ or -	Belgium	+ or -
1927													
January .	3-79	4-31	+ .52	5-44	+1-65	4-33	+ .54	..	..	..	..	..	..
February .	3-85	4-00	+ .15	4-94	+1-09	5-41	+1-56	..	..	..	..	..	..
March .	4-08	4-20	+ .12	4-60	+ .52	5-11	+1-03	..	..	..	..	..	..
April .	3-92	4-19	+ .27	3-31	- .61	5-84	+1-92	..	..	..	..	..	..
May .	3-63	4-31	+ .68	2-75	- .88	6-31	+2-68	..	..	..	..	..	..
June .	3-50	4-35	+ .85	2-87	- .63	6-04	+2-54	..	..	..	..	..	..
July .	3-47	4-00	+ .53	2-87	- .60	7-16	+3-69	..	..	..	..	2-43	-1-04
August .	3-85	3-70	- .15	3-25	- .60	5-74	+1-89	..	..	..	..	3-01	- .84
September .	3-87	3-88	+ .21	3-12	- .55	6-07	+2-40	..	..	..	..	2-74	- .93
October .	3-60	3-94	+ .34	3-31	- .29	7-32	+3-72	..	..	..	..	2-73	- .87
November .	3-56	3-65	+ .09	3-37	- .19	6-05	+2-49	..	..	..	..	3-34	- .22
December .	3-60	4-47	+ .87	3-00	- .60	7-26	+3-66	..	..	..	..	2-56	-1-04
1928													
January .	3-40	4-22	+ .82	3-00	- .40	5-48	+2-08	..	..	..	..	1-71	-1-69
February .	3-56	4-45	+ .89	3-00	- .56	6-66	+3-10	..	..	..	..	2-50	-1-06
March .	3-79	4-50	+ .71	3-00	- .79	7-00	+3-21	..	..	..	..	3-57	- .22
April .	3-75	5-12	+1-37	3-00	- .75	6-80	+3-05	..	..	..	..	3-42	- .33
May .	3-63	5-65	+2-02	3-00	- .63	7-01	+3-38	..	..	..	..	2-85	- .78
June .	3-17	6-19	+3-02	3-00	- .17	6-55	+3-38	..	..	..	..	2-81	- .36
July .	3-38	6-12	+2-74	2-87	- .51	7-46	+4-08	..	..	..	..	2-18	-1-20
August .	3-48	6-25	+2-77	2-75	- .73	6-16	+2-68	..	..	..	..	2-95	- .63
September .	3-69	7-31	+3-62	2-75	- .94	6-66	+2-97	..	..	..	..	2-63	-1-16
October .	4-06	7-00	+2-94	2-81	-1-25	6-80	+2-74	..	..	..	..	2-94	- .12
November .	3-52	6-62	+3-10	3-00	- .52	6-85	+3-33	..	..	..	..	2-73	- .79
December .	3-25	8-50	+5-25	3-00	- .25	7-46	+4-21	..	..	..	..	2-44	- .81

1929													
January	3 54	7 35	+ 3 81	3-00	- -54	5-16	+1-62	3-26	- .28	..	..	2-11	- -1 43
February	5-06	7 09	+ 2 03	3-00	- 2-06	6 44	+1-38	4-04	-1-02	..	..	2-66	- 2-40
March	4 58	9-38	+ 4-80	3-00	- 1-58	7 08	+2-50	4 23	- .35	..	..	2 58	- 2-00
April	4 44	8 50	+ 4-06	3-00	- 1-44	6 94	+2-50	5-06	+ .62	..	..	2 63	- 1-81
May	4 69	9-10	+ 4 41	3-62	- 1-07	9-38	+ 4-69	5-61	+ .92	..	..	3 24	- 1-45
June	4 23	7-69	+ 3-46	3-00	- 1 23	8-11	+ 3-88	4 58	+ .65	..	..	2 80	- 1-43
July	4-73	9-30	+ 4-57	3-00	- 1-73	8-56	+ 3-83	4 78	+ .05	..	..	3-18	- 1-55
August	4-13	8-06	+ 3-93	2-94	- 1-19	7-64	+ 3-51	4-61	+ .48	..	..	3-35	- .78
September	4-21	8-56	+ 4-35	3-00	- 1-21	8-17	+ 3-96	5-26	+ 1-05	..	..	3-18	- 1-03
October	5-27	6-55	+ 1-28	3-25	- 2-02	8-38	+ 3-11	4-12	- 1-15	..	..	5-42	- 1-85
November	6-38	5-38	..	3-37	- 2-01	7-98	+ 2-60	3-80	- 1-58	..	..	2-34	- 3-04
December	4-64	5-00	+ .36	3-00	- 1-64	8-27	+ 3-63	3-10	- 1-54	..	..	2-50	- 2-14
1930													
January	4-04	4-50	+ .46	3-00	- 1-04	6-43	+ 2-39	2-24	- 1-80	..	..	1-59	- 2-45
February	3-85	4-38	+ .53	2-62	- 1-23	6-36	+ 2-51	2-55	- 1-30	..	..	2-59	- 1-26
March	3-35	3-69	+ .34	2-37	- .98	5-88	+ 2-53	1-84	- 1-51	..	..	2 55	- .80
April	2-23	4-00	+ 1-77	2-37	+ .14	4-80	+ 2-57	2-52	+ .29	2-00	- .23	2 38	+ .15
May	1-94	3-06	+ 1-12	1-94	..	4-34	+ 2-40	1-89	- .05	2-00	+ .06	1-74	- .20
June	2-13	3-69	+ 1-56	1-87	- .26	4-04	+ 1-91	.93	- 1-20	2-00	- .13	1-64	- .49
July	1-88	2-25	+ .37	2-87	+ .99	4-46	+ 2-58	1-07	- .81	1-62	- .26	1-60	- .28
August	1-96	2-25	+ .29	2-00	+ .04	3-82	+ 1-86	1-44	- .52	1-50	- .46	1-07	- .89
September	1-69	2-25	+ .56	1-81	+ .12	4-07	+ 2-38	1-82	+ .13	1-50	- .19	.90	- .79
October	1-65	2-00	+ .35	1-75	+ .10	5-22	+ 3-57	.93	- .72	1-50	- .15	..	..
November	2-04	2-00	- .04	1-56	- .48	5-70	+ 3-66	1-18	- .86	1-50	- .54	..	..
December	1-52	2-28	+ .76	1-69	+ .17	5-66	+ 4-14	1-10	- .42	1-59	+ .07	..	..

CALL MONEY RATE PARITIES—continued

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Amsterdam	+ or -	Switzerland	+ or -	Belgium	+ or -
1931													
January . . .	1-87	1-50	- .37	1-62	- .25	5-10	+ 3-23	1-30	- .57	1-50	- .37	1-14	- .73
February . . .	2-50	1-50	-1-00	1-56	- .94	5-78	+ 3-28	-62	-1-88	1-50	-1-00	1-08	-1-42
March . . .	2-23	1-56	- .67	1-50	- .73	5-31	+ 3-08	-76	-1-47	1-50	- .73	1-04	-1-19
April . . .	2-31	1-50	- .81	1-34	- .97	5-88	+ 3-57	1-50	- .81	1-50	- .81	-78	-1-53
May . . .	1-98	1-44	- .54	1-09	- .89	5-64	+ 3-66	1-59	- .39	1-69	- .29	-91	-1-07
June . . .	1-56	1-50	- .06	1-00	- .56	7-07	+ 5-51	-84	- .72	1-31	- .25	-97	- .59
July . . .	1-75	1-50	- .25	1-19	- .56	12-00	+10-85	-87	- .88	1-00	- .75	1-27	- .48
August . . .	3-58	1-50	-2-08	1-12	-2-46	16-50	+12-92	-61	-2-97	-4-00	-2-58	1-12	-2-46
September . .	3-69	1-50	-2-19	1-00	-2-69	9-41	+ 5-72	-67	-3-02	1-00	-2-69	-91	-2-78
October . . .	4-31	2-16	-2-15	1-25	-3-06	9-52	+ 5-21	1-01	-3-30	1-00	-3-31	1-24	-3-07
November . .	5-03	2-50	-2-53	1-50	-3-53	9-17	+ 4-14	-74	-4-29	1-00	-4-03	-87	-4-06
December . .	4-21	2-72	-1-49	1-50	-2-71	8-45	+ 4-24	-56	-3-65	1-00	-3-21	1-07	-3-14
1932													
January . . .	4-46	2-62	-1-84	1-50	-2-96	7-50	+ 3-04	1-23	-3-23	1-00	-3-46	1-29	-3-17
February . . .	4-27	2-50	-1-77	1-50	-2-77	7-50	+ 3-23	-95	-3-32	1-00	-3-27	1-78	-2-49
March . . .	2-48	2-50	+ .02	1-00	-1-48	8-00	+ 5-52	-69	-1-79	1-00	-1-48	2-26	- .22
April . . .	1-98	2-50	+ .52	1-00	- .98	6-70	+ 4-72	-44	-1-84	1-00	- .98	1-14	- .84
May . . .	1-38	2-50	+1-12	1-00	- .38	5-70	+ 4-32	-38	-1-00	1-00	- .38	-94	- .44
June . . .	-94	2-50	+1-56	-75	- .19	5-75	+ 4-81	-45	- .69	1-00	+ .06	-88	- .06
July . . .	-67	2-06	+1-39	-62	- .05	5-50	+ 4-83	-25	- .42	1-00	+ .33	-97	+ .30
August . . .	-71	2-00	+1-29	-62	- .09	5-75	+ 5-04	-25	- .46	1-00	+ .29	1-47	+ .76
September . .	-65	2-00	+1-35	-62	- .03	5-88	+ 5-23	-25	- .40	1-00	+ .35	1-25	+ .60
October . . .	-71	1-38	+ .67	-56	- .15	5-00	+ 4-29	-25	- .46	1-00	+ .29	1-09	+ .38
November . .	-69	1-00	+ .31	-69	..	4-88	+ 4-19	-25	- .44	1-00	+ .31	1-03	+ .34
December . .	-75	1-00	+ .25	-56	- .19	4-81	+ 4-06	-25	- .50	1-00	+ .25	1-20	+ .45

1933													
January	.75	1.00	+ .25	1.05	+ .30	4.88	+ 4.13	.25	- .50	1.00	+ .25	1.07	+ .32
February	.75	1.00	+ .25	1.28	+ .53	4.75	+ 4.00	.25	- .50	1.00	+ .25	.98	+ .23
March	.50	3.19	+ 2.69	1.69	+ 1.19	4.94	+ 4.44	.56	+ .06	1.00	+ .50	.97	+ .47
April	.63	1.34	+ .71	1.27	+ .64	5.00	+ 4.37	.33	- .30	1.00	+ .37	.99	+ .36
May	.58	1.00	+ .42	1.27	+ .69	4.94	+ 4.36	1.38	+ .80	1.00	+ .42	.82	+ .24
June	.58	1.00	+ .42	1.25	+ .67	4.88	+ 4.30	.78	+ 1.20	1.00	+ .42	.80	+ .22
July	.58	1.00	+ .42	1.20	+ .62	4.88	+ 4.30	3.39	+ 2.81	1.00	+ .42	.79	+ .21
August	.62	.95	+ .33	1.11	+ .49	4.75	+ 4.13	.62	..	1.00	+ .38	.75	+ .13
September	.63	.75	+ .12	1.19	+ .56	4.94	+ 4.31	.39	- .24	1.00	+ .37	.97	+ .34
October	.75	.75	..	1.15	+ .40	5.00	+ 4.25	.25	- .50	1.00	+ .25	.95	+ .20
November	.75	.75	..	1.91	+ 1.16	4.62	+ 3.87	.25	- .50	1.00	+ .25	.72	- .03
December	.75	.94	+ .19	1.76	+ 1.01	4.88	+ 4.13	.25	- .50	1.00	+ .25	.81	+ .06
1934													
January	.90	1.00	+ .10	1.76	+ .86	4.88	+ 3.98	.25	- .65	1.00	+ .10	.84	- .06
February	.88	1.00	+ .12	2.68	+ 1.80	4.50	+ 3.62	.46	- .42	1.00	+ .12	.79	- .09
March	.88	1.00	+ .12	2.63	+ 1.75	4.56	+ 3.68	.73	- .15	1.00	+ .12	.75	- .13
April	.88	1.00	+ .12	2.37	+ 1.49	4.88	+ 4.00	1.45	+ .57	1.00	+ .12	.75	- .13
May	.79	1.00	+ .21	2.40	+ 1.61	4.50	+ 3.71	.80	+ .01	1.00	+ .21	.76	- .03
June	.88	1.00	+ .12	1.83	+ .95	4.37	+ 3.49	.33	- .55	1.00	+ .12	.94	+ .06
July	.88	1.00	+ .12	1.65	+ .77	4.37	+ 3.49	.58	- .30	1.00	+ .12	1.21	+ .33
August	.88	1.00	+ .12	1.53	+ .65	4.50	+ 3.62	.31	- .57	1.00	+ .12	1.26	+ .38
September	.75	1.00	+ .25	1.03	+ .28	4.37	+ 3.62	.25	- .50	1.00	+ .25	.94	+ .19
October	.75	1.00	+ .25	.59	- .16	4.25	+ 3.50	.30	- .45	1.00	+ .25	.85	+ .10
November	.67	1.00	+ .33	.63	- .04	4.25	+ 3.58	.29	- .38	1.00	+ .33	2.08	+ 1.41
December	.63	1.00	+ .37	.87	+ .24	4.25	+ 3.62	.28	- .35	1.00	+ .37	1.41	+ .78

CALL MONEY RATE PARITIES—continued

Date	London	N. York	+ or -	Paris	+ or -	Berlin	+ or -	Amsterdam	+ or -	Switzerland	+ or -	Belgium	+ or -
1935													
January .	.69	1.00	+ .31	1.11	+ .42	4.15	+3.46	.38	- .31	1.00	+ .31	1.51	+ .82
February .	.63	1.00	+ .37	1.37	+ .74	4.22	+3.59	.25	- .38	1.00	+ .37	2.00	+1.37
March .	.73	1.00	+ .27	1.17	+ .44	4.34	+3.61	.25	- .48	1.00	+ .27	2.24	+1.51
April .	.75	.64	- .11	1.59	+ .84	4.13	+3.38	2.73	+1.98	1.00	+ .25	.79	+ .04
May .	.75	.25	- .50	1.79	+1.04	3.78	+3.03	3.47	+2.72	1.75	+1.00	.67	- .08
June .	.75	.25	- .50	4.87	+4.12	3.67	+2.92	4.12	+3.37	2.50	+1.75	.67	- .08
July .	.75	.25	- .50	3.89	+3.14	3.69	+2.84	1.92	+1.17	2.50	+1.75	1.00	+ .25
August .	.75	.25	- .50	3.00	+2.25	3.65	+2.80	4.72	+3.97	2.50	+1.75	.50	- .25
September .	.75	.25	- .50	2.18	+1.43	3.73	+2.98	5.16	+4.41	2.50	+1.75	.50	- .25
October .	.75	.29	- .46	1.88	+1.13	3.49	+2.74	4.33	+3.58	2.50	+1.75	.50	- .25
November .	.75	.75	..	2.63	+1.88	3.17	+2.42	2.06	+1.31	2.50	+1.75	.50	- .25
December .	.75	.75	..	5.26	+4.51	3.47	+2.72	1.26	+ .51	2.50	+1.75	.50	- .25
1936													
January .	.75	.75	..	3.62*	+2.87	3.17	+2.42	1.29	+ .54	2.50	+1.75	.50	- .25
February .	.75	.75	..	3.50*	+2.75	3.10	+2.35	.57	- .18	2.50	+1.75	.50	- .25
March .	.75	.75	..	3.75*	+3.00	3.41	+2.66	.48	- .27	2.50	+1.75	.50	- .25
April .	.75	.75	..	4.25*	+3.50	3.13	+2.38	.25	- .50	2.50	+1.75	.50	- .25
May .	.75	.93	+ .18	5.37*	+4.82	3.12	+2.37	.35	- .40	2.50	+1.75	.50	- .25
June .	.75	1.00	+ .25	4.25*	+3.50	2.98	+1.23	1.39	+ .64	2.50	+1.75	.50	- .25
July .	.75	1.00	+ .25	3.37*	+2.82	3.32	+2.57	1.12	+ .37	1.75	+1.00	.50	- .25
August .	.75	1.00	+ .25	3.00*	+2.25	3.32	+2.57	.72	- .02	1.75	+1.00	.50	- .25
September .	.75	1.00	+ .25	5.00*	+4.25	3.37	+2.62	.55	- .20	1.75	+1.00	.50	- .25
October .	.75	1.00	+ .25	1.62*	+ .87	3.37	+2.62	1.68	+ .83	1.75	+1.00	.50	- .25
November .	.75	1.00	+ .25	1.94*	+1.19	3.00	+2.25	.65	- .20	1.25	+ .50	.50	- .25
December .	.75	1.00	+ .25	1.88	+1.13	..	..	..	..	1.00	+ .25	.50	- .25

* End of month.

APPENDIX V

PARITY BETWEEN THE LONDON DISCOUNT RATE AND THE NEW YORK TIME MONEY RATE

THE following table compares the monthly average London market rate of discount (London and Cambridge Economic Service) with the monthly average New York time money rate (Harvard Economic Service). It provides an example of Interest Parities based on the interest rates on two different types of short-term investments.

PARITY BETWEEN THE LONDON DISCOUNT RATE AND THE NEW YORK TIME MONEY RATE

Date	New York			London			New York			London		
	Discount Rate	Time Money Rate	+ or -	Discount Rate	Time Money Rate	+ or -	Discount Rate	Time Money Rate	+ or -	Discount Rate	Time Money Rate	+ or -
1920				1924			1928			1932		
January .	5-63	7-31	+1-68	3-29	4-80	+1-51	4-29	4-32	+ -03	5-65	3-71	-1-94
February .	5-72	8-12	+2-40	3-64	4-75	+1-11	4-20	4-48	+ -28	5-11	3-62	-1-49
March .	5-75	8-15	+2-40	3-20	4-72	+1-52	4-17	4-58	+ -41	2-67	3-16	+ -49
April .	5-94	8-12	+2-18	3-10	4-38	+1-28	4-03	4-90	+ -87	2-36	2-49	+ -13
May .	6-34	8-25	+1-91	3-10	4-03	+ -93	3-96	5-19	+1-23	1-57	1-63	+ -06
June .	6-66	8-10	+1-44	2-96	3-41	+ -45	3-74	5-77	+2-03	1-06	1-50	+ -44
July .	6-63	8-28	+1-65	3-56	2-93	- -63	3-85	5-96	+2-11	-98	1-42	+ -44
August .	6-69	8-72	+2-03	3-82	2-89	- -93	4-28	6-33	+2-05	-72	1-38	+ -66
September	6-78	8-26	+1-48	3-79	3-09	- -70	4-25	6-95	+2-70	-69	1-34	+ -65
October .	6-66	7-91	+1-25	3-70	3-00	- -70	4-33	6-09	+2-66	-84	-94	+ -10
November .	6-78	7-75	+ -97	3-72	3-28	- -44	4-38	6-81	+2-43	-77	-70	- -07
December	6-78	7-11	+ -33	3-68	3-64	- -04	4-36	7-47	+3-11	-93	-56	- -37
1921				1925			1929			1933		
January .	6-69	6-54	- -15	3-82	3-70	- -12	4-31	7-58	+3-27	-92	-58	- -34
February .	6-66	6-78	- -12	3-77	3-80	+ -03	5-23	7-65	+2-42	-88	-84	- -04
March .	6-38	6-74	+ -36	4-50	4-15	- -35	5-38	7-88	+2-50	-68	2-88	+2-20
April .	6-12	6-68	+ -56	4-29	4-02	- -27	5-27	8-56	+3-29	-66	1-26	+ -60
May .	5-53	6-62	+1-09	4-69	3-78	- -91	5-23	8-64	+3-41	-53	1-08	+ -55
June .	5-59	6-70	+1-11	4-41	3-85	- -56	5-28	8-25	+2-97	-48	-94	+ -46
July .	5-09	6-12	+1-03	4-43	3-99	- -44	5-35	7-92	+2-57	-51	1-24	+ -73
August .	4-75	5-99	+1-24	4-02	4-35	+ -33	5-47	8-82	+3-35	-40	1-16	+ -76
September	4-09	5-66	+1-57	3-79	4-51	+ -72	5-49	8-94	+3-45	-40	-40	+ -28
October .	4-12	5-50	+1-38	3-42	4-88	+1-46	6-21	7-71	+1-50	-72	-69	- -03
November .	3-91	5-20	+1-29	3-90	4-91	+1-01	5-66	5-52	- -14	1-07	-82	- -25
December	3-50	5-12	+1-62	4-71	4-99	+ -28	4-40	4-82	+ -02	1-22	1-18	- -06

1922				1926			1930			1934			
January .	3 47	4 75	+1 28	4 86	4 76	- 10	4 11	4 68	+ 57	.98	1 10	+ 12	
February	3 22	4 85	+1 63	4 36	4 70	+ 34	3 66	4 68	+ 72	.94	1 00	+ 06	
March .	3 34	4 75	+1 41	4 40	4 66	+ 26	3 03	4 11	+1 08	.94	.88	- 06	
April .	2 55	4 41	+1 86	4 38	4 22	- 16	2 49	4 08	+1 59	.97	.88	- 09	
May .	2 31	4 20	+1 89	4 46	4 06	- 40	2 14	3 66	+1 52	.90	.88	- 02	
June .	2 44	4 14	+1 70	4 27	4 18	- 09	2 33	3 14	+ 81	.91	.88	- 03	
July .	1 87	4 08	+2 21	4 31	4 41	+ 10	2 37	2 91	+ 54	.88	.88	- 00	
August .	2 14	4 12	+1 98	4 36	4 70	+ 34	2 29	2 85	+ 56	.81	.88	+ 07	
September	2 56	4 58	+2 02	4 53	4 92	+ 39	2 09	2 75	+ 66	.66	.88	+ 22	
October .	2 40	4 83	+2 43	4 69	4 96	+ 27	2 11	2 62	+ 51	.77	.88	+ 11	
November	2 63	4 98	+2 35	4 74	4 69	- 05	2 23	2 30	+ 07	.43	.88	+ 46	
December	2 59	4 91	+2 32	4 47	4 69	+ 22	2 30	2 50	+ 20	.56	.88	+ 32	
1923				1927			1931			1935			
January .	2 28	4 67	+2 39	4 23	4 53	+ 30	2 17	2 12	- 05	.39	.88	+ 49	
February	2 54	4 91	+2 37	4 14	4 42	+ 28	2 52	1 94	- 58	.31	.88	+ 57	
March .	2 43	5 28	+2 85	4 33	4 42	+ 09	2 62	2 10	- 52	.59	.88	+ 29	
April .	2 11	5 32	+3 21	4 23	4 41	+ 18	2 61	2 06	- 55	.59	.60	+ 01	
May .	2 07	5 10	+3 03	3 62	4 38	+ 76	2 26	1 72	- 54	.59	.31	- 28	
June .	2 05	4 88	+2 83	4 35	4 49	+ 14	2 12	1 42	- 70	.68	.25	- 43	
July .	3 55	5 12	+1 57	4 34	4 49	+ 15	2 14	1 50	.84	.63	.25	- 38	
August .	3 29	5 22	+1 93	4 34	4 20	- 14	4 31	1 55	-2 76	.61	.25	- 36	
September	3 30	5 47	+2 17	4 32	4 63	+ 31	4 28	1 78	-2 50	.59	.25	- 34	
October .	3 19	5 27	+2 08	4 31	4 21	- 10	5 71	3 24	-2 47	.63	.32	- 31	
November	3 22	5 03	+1 81	4 34	4 18	- 16	5 78	3 57	-2 19	.55	1 00	+ 44	
December	3 22	5 00	+1 78	4 31	4 13	- 18	5 84	3 36	-2 48	.67	1 00	+ 37	
				1936									
				January56	1 00	+ 44				
				February55	1 00	+ 45				
				March54	1 00	+ 46				
				April55	1 00	+ 45				
				May59	1 12	+ 53				
				June83	1 25	+ 42				
				July59	1 25	+ 66				
				August53	1 25	+ 72				
				September53	1 25	+ 72				

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