



ACTIVITY IN THE FINANCIAL
MARKETS - FLOWS OF FUNDS, AN APPRAISAL

by

David K. Sheppard and Vincent Homolka

UNIVERSITY OF BIRMINGHAM

**Faculty of Commerce and
Social Science**

UNIVERSITY OF BIRMINGHAM

ACTIVITY IN THE FINANCIAL
MARKETS - FLOWS OF FUNDS, AN APPRAISAL

by

David K. Sheppard and Vincent Homolka

Series A

No. 169

Dhananjayrao Gadgil Library



GIPE-PUNE-155507

DISCUSSION PAPER

Series A

Economic Theory and Econometrics

March 1974

This is an informal discussion
paper. Please do not refer to it
in your own writings without the
authors' agreement.

ACTIVITY IN THE FINANCIAL MARKETS - FLOWS OF FUNDS,

AN APPRAISAL*

David K. Sheppard and Vincent Homolka

Preface

The introduction sets out why the flows of funds should be collected, examined and analysed. Next, there is a discussion of the accounting practices which are reflected in the flow of funds tableau with special reference to the U.K. presentation as represented by official and private compilations. This is followed by an analysis of some recent empirical studies in an attempt to see how they contribute to an understanding of the operations and the impact of financial market activity and provide pointers to the direction for research. Finally, there is the conclusion. In it, we endeavour to draw together the array of considerations which have emerged from the more recent descriptive, theoretical and empirical evaluations of financial activity in the market place.

We stress "endeavour," for though we do feel that a 'common theoretical core' seems to emerge as the basic foundation of modern monetary analysis namely , the theory of portfolio balance, it is far from clear how to apply this in detail. The more variables are considered the more we will see, but this does not mean that we will be able to comprehend their import. The necessary arrangement of the facts is

* We are grateful to A.D. Bain, C.A.E. Goodhart, and Graeme S. Dorrance for generously providing us with useful references and copies of unpublished papers.

We thank C.R. Barrett, G.R. Fisher and A.R. Nobay for some most helpful observations.

as Hicks' stresses a 'delicate' as well as an expensive and complicated operation. (1)

Certainly, with respect to the information obtained from the large scale macro-economic models which are discussed in Section III, even the professional model builders have difficulty in assessing the products of their competitors. "It is usually difficult, if not impossible, for outsiders to trace the development of the structure of the model, and often almost as difficult to understand the workings of the structure". (2) Much more often than not, then, the outsider is constrained to just guessing as to the validity of the import which the insiders ascribe to their findings. This guessing game is made even more complex in the sense that even the most dedicated large scale model adherents, such as L. Klein, represent that their tested structures are incomplete. The extent as well as the frequency of adjustments to the existing stock of operating macro-econometric models demonstrate the depth of the chasms in the previous formulations; especially in respect to their "Keynesian" approach to the financial sector in general and associated phenomena price expectations, asset prices and yield differentials.

Nevertheless, while the collection of facts, their arrangement, the specification of the structure into which the data is fed and the statistical processing are all subject to imperfections, there is no doubt that this empiricism has paid handsome dividends. It has enhanced our understanding of the past operation of the economy and our ability to design policies to tackle future problems.

(1) J.R. Hicks, The Social Framework, 2nd ed., Oxford, Clarendon Press, 1952, page 3.

(2) Robert H. Rasche, "Simulations of Stabilisation Policies for 1966-1970;" Journal of Money, Credit and Banking, February 1973, p. 3.

The fact of under-full employment induced Keynes to write the General Theory. It, in turn, provided the structure for the subsequent development of national income and product accounts, and for the consequent building of inductively developed models of the income-expenditure process. Together, these achievements mitigated the problems of cyclical oscillations of capital and labour utilisation in the post World War II years. The empirical investigations into inter and intra-industry relationships, as represented by Leontief's⁽¹⁾ development and analysis of input/output matrices, act as the backbone to the national development plans of socialist states. Similarly, such matrices provide the structure for Western governments to tackle the Kaldor type of specificity problems which arise in times of national emergencies - e.g. power allocations in the U.K. during the 1974 energy crisis.

In much the same way, the empirical investigations of Warburton in the 1940's have led to the inductive development of the new monetarism of the Chicago School in the 1950s and to the widespread acceptance of its import in the 1960s: money matters.

So too, it appears, empirical assessments of financial market activity, as represented by flow of funds tableaux, are now bearing fruit. The early observations of Lavington and Keynes in the 1920's of credit market imperfections, Hicks' nascent theory of asset and liability substitutability and of portfolio balance in the 1930s, Copeland's study of money-flows in the 1940's and the subsequent refinements to Hicks' 'Suggestion for Simplifying the Theory of Money by Tobin and Markowitz, are all now regarded as having important theoretical and practical implications.⁽²⁾

-
- (1) W.W. Leontief, The Structure of American Economy, 1919-1939, 2nd ed Fairlawn, N.J.: Oxford University Press, 1951.
(2) J. Tobin, Liquidity Preference as Behaviour Towards Risk, Review of Economic Studies, 1958, and H. Markowitz, Portfolio Selection, N.Y.: Wiley, 1959.

On the practical level, management of interest rate differentials on credit market instruments is seen to be one of the tasks of the monetary authority. The responsiveness of private portfolio managers to the interest rate differentials has created difficulties in official attempts to stabilise international capital flows and conditions in the somewhat segmented national mortgage markets. Academic and government economists too have been busy incorporating the newly emerging understanding of financial market activities, set within the context of the theory of portfolio balance, into macro-economic models of the financial sector and of the whole economy in the U.S. and Australia.

In the U.S., the FRB-MIT December 1968 model and its successor, the FRB-MIT-PENN Model, (FMP) 1970, were quite path-breaking in this respect; especially when compared with their competitors. In the FRB-MIT model, financial market developments, as expressed through three interest rate channels (cost of capital, net worth and credit rationing,) are incorporated in the model and shown to exert a pronounced impact on real spending decisions. In the FMP version, the role of price expectations is also shown to be important. To outside assessors, G. Fisher and D. Sheppard, and to one of the FRB-MIT and FMP model builders, F. Modigliani, the import of these models is clear: "...consumption is one of the most important, and probably the most important, single channel through which monetary policy, directly and indirectly, can affect the level of aggregate real and money demand and thus the level of output, employment and prices."⁽¹⁾

As we record in Section III, however, more has been done to broaden the consideration given to financial markets activities and to their

(1) Gordon Fisher and David Sheppard, "Effects of Monetary Policy on the United States Economy, A Survey of Econometric Evidence", OECD Economic Outlook, Occasional Studies, December 1972, p. 55.

consequences in the real sector. As Cohen's survey shows⁽¹⁾, numerous articles were published in the 1960's and early 1970's - see Stone, 1963, 1966, Atkinson, 1965, Goldsmith 1965 and '69, Goldfeld 1966, Cohen 1965 and 1968 and Hendershott 1969 and 1971 - which indicate the general nature of the extension: the process of utility maximisation through adjustments to selected sectors' portfolio balance sheets.

Now, in three unpublished papers (Bosworth-Duesenberry, June 1973, Parkin-Cooper-Henderson-Dane August 1973, and Hendershott-Lemmon, January 1974), it seems clear that this consideration is already being built into new formulations of large scale macro-economic models of the economy.⁽²⁾ Sectoral balance sheets, and financial asset as well as real asset demand and supply functions will be built into the structures of these models. Flow of funds data will be used in testing the theory and the time path of adjustment of portfolio positions. With these innovations, the consequences of balance sheet constraints and symmetry conditions may be evaluated. Avenues will be opened to assess the implications of 'preferred habitats' for savings flows and of institutionally imposed market imperfections on developments in certain sectors such as the mortgage market. Large scale macro-economic models are now being structured so that the financial sector receives a great deal more attention.

Unfortunately, for a multiplicity of reasons which are set out in some detail in a review, the predictive powers of even the most well specified and tested existing macro-economic models are far from perfect. Over-reliance on their forecasts has led to serious mistakes in assessing the effects of stabilisation measures in the United

(1) Jacob Cohen, "Copeland's Moneyflows After Twenty-Five Years," Journal of Economic Literature, March 1972.

(2) Barry Bosworth and James Duesenberry, "A Flow of Funds Model and Its Implications," presented at the F.R.B. of Boston's Money Conference, June 1973.

J.M. Parkin, R.J. Cooper, J.F. Henderson, M.K. Dane, An Integrated Model of Consumption, Investment and Portfolio Decisions, Reserve Bank of Australia, August 1973. Patricia H. Hendershott and Richard C. Lemmon, "A Flow of Funds Model: First Estimates and Forecasts", Unpublished Mimeograph, January 1974.

States⁽¹⁾. Moreover, the recent incorporation of flow of funds and sectoral balance sheet considerations into large scale macro-economic models will not eradicate these problems, though they may mitigate their severity due to the fact that the financial sector is more adequately specified. Nevertheless, for the reasons noted above, the recent attempts to synthesise our knowledge of the economic system in a comprehensive inter-acting financial and real sector framework are useful. Similarly, with special reference to the U.K., much will be gained at a relatively small cost if the authorities present their flow of funds data in a format which allows model builders to devote more attention to the operations and impact of our financial markets. The recent record of U.K. financial policy, 1971-1974, indicates that both the policy makers and those affected by policy should benefit from this development.

SECTION I

Introduction

Flows of funds represent market activity in sundry capital and money markets. The existence of many of these flows mirrors activities in the markets for goods and services and for factors of production. The financial flows reflect the repercussions, both direct and indirect, of spending on goods and services and of the production process on financial markets. The four types of accounts (national income and product accounts, the national input-output matrix representing the activities of the productive sector, flow of funds accounts and sectoral balance sheets) provide the raw material on which our understanding of

(1) Gordon Fisher and David Sheppard, op. cit., Chapter 3.

our economy is based. (1)

Obviously, the pace and pattern of our economic performance in the past as reflected by the published ex-post accounts is of interest. They add to our comprehension of how we arrived here from there, and, by extrapolation, they give us some idea of where we may arrive in the future. More, inasmuch as we are able to process their import and adjust our behaviour accordingly, the information obtain from the published accounts enables us to take pre-emptive actions which give us command over the future. It is to this end that many economists address their discipline, especially if it is remunerative, and this effort is reflected now in what is known as model building and the creation of the ultimate products - ex-ante (forecasted) national income and product accounts, input-output matrices, flows of funds tableaux and sectoral balance sheets.

The interest in balance sheet positions is almost all-encompassing to the processes of financial analysis as conducted by economists and accountants. (2) On the micro-economic level, for a firm or for a household, with respect to "... those with a high ratio of debts (particularly short-term debts) to assets, a rise in interest rates represents an increase in the cost of solvency". (3) For years, and with merit, accountants and portfolio managers have paid a great deal of attention to the recorded balance sheets of their customers and have drawn up a veritable slew of rules of thumb to evaluate them. This traditional ratio type of analysis to measure the profitability, liquidity and solvency of borrowers and lenders features prominently

(1) A.D. Bain, "Flow of Funds Analysis: A Survey", Economic Journal, December 1973, page 1060.

(2) Graeme S. Dorrance, The Search for Tranquillity: An Essay in Financial Analysis, I.M.F., Washington D.C., 1 December 1973, Chapter 3, page 13.

(3) Ibid., page 13.

in the established loan officers' practices of building societies and banks. It is built into the regulatory framework within which financial institutions in the U.K., the Common Market, and the United States are constrained to operate. From the beginning of March 1974, this type of official interest in the balance sheet positions of certain financial institutions was well represented in discussions between the Department of Trade and Industry and the British Insurance Association; new regulations relating to non-life insurance companies' solvency margins, asset valuations and loan concentrations are likely to emerge from these discussions.

The message which may be read from the importance of the micro-economic decision units' balance sheets should be inescapable as far as economists are concerned. Their discipline is related to the actual behaviour of the economic decision units. Habits, financial or otherwise, matter: they provide the security, the identity and the continuity of the environment in which these actors conduct their business. (1) So, given that current ratios, working capital to total asset ratios, sales/total asset ratios & equity/debt ratios are both used and have been shown to be of use in evaluating credit rationing (2), it seems that these habits of the micro-economic units merit attention. In particular, given that an understanding of the macro-economy seems to be facilitated by some consideration of the operation of its parts, the development of sectoral balance sheets and measures to record their adjustments (the flow of funds matrix) are more than academic exercises.

No matter what degree of scepticism is levied at the products

(1) We are indebted to Gail Anderson of the Department of Sociology University of Birmingham, for a presentation of the functions of habits in a sociological context.

(2) Edward I. Altman, "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", Journal of Finance, Sept. 1968, pp. 589-610.

of the large scale econometric models or at their eventual utility, the fact remains that in the U.K. today and in the future the overnment needs sectoral balance sheets and flow of funds information. The extraordinary developments which have taken place in the U.K. financial markets in the 1960s and 1970s, especially since the inauguration of Competition and Credit 'Control' in September 1971 should make this point clear - see Revell,⁽¹⁾ chapters 9-11 and Section III. Academic economists have not been remiss in trying to underline the importance of the facts. "If the portfolio adjustments of a period of euphoria (4% plus growth targets, Common Markets, et al) have been very drastic, then the subsequent return to reality may involve a very large number of such losses (bankruptcies)."⁽²⁾ These views are shared by members of the business community too as the burden of such losses are distributed. A. Dobbs, the Chief Executive of the National Westminster Bank had a point when he publicly underlined the need for closer supervision of the U.K. banking system. He quite clearly recognises the risks that the traditionally stable banks face as they are cajoled into granting stand-by lending facilities to highly geared banking types of institutions.

Indeed, it is for these very practical reasons that we commend the Bank of England's and the Central Statistical Office's recent efforts to provide us with flow of funds data and sector balance sheets. Through them, the evidence of burgeoning bank loans to the personal sector, and of ^{the effects of} the extra-ordinary oscillations in market interest rates, of the Wall Street type of volatility of the F.T. Index and of the increasing sensitivity of fund placements to the presence of interest rate differentials and latterly of risk differentials

(1) Jack Revell, The British Financial System, London, Macmillan, 1973.

(2) A.R. Rce, "The Case for Flow of Funds and National Balance Sheets", Economic Journal, June 1973, page 411.

seeps through even to the most myopic financial analyst.⁽¹⁾ A potential consequence, the erosion of asset values through rising interest rates and oscillating market values of the collateral underwriting the proliferation of loan extensions, could become very serious; especially if the income streams of the final borrowers are cut back by budgetary measures or a serious recession. The evident consequence of the phenomenon of disintermediation due to a change in investor risk appraisals has already hit the secondary banks; now, the other phenomenon of institutional disintermediation due to the spread between building societies borrowing rates and market rates is becoming newsworthy. Macmillan's own statement in the opening paragraphs of the final report of the Committee on Finance and Industry in 1931 should become a portent for future financial policy: " . . . in the case of our financial . . . institutions we . . . have (again) reached the state when an era of conscious and deliberate management must succeed an era of undirected evolution."⁽²⁾

SECTION II

The Flow of Funds Accounts

Flow of funds accounts have received an increasing amount of interest in many countries over the past few years. In the U.K., these accounts are published now on a quarterly basis in the Bank of England's Quarterly Bulletin, and for each separate sector, in the monthly issues of the Central Statistical Office's Financial Statistics. In this section, we examine these accounts as they are presented in the U.K. in order to ascertain the principles underlying their construction as well as to evaluate the data that they contain.

(1) See Tables 2 to 5 in the Appendix.

(2) Committee on Finance and Industry, Report, Cmd. 389, London, H.M.S.O., 1931, page 5.

Obviously the bias in any accounting framework as well as the suitability of the data need to be closely examined in order to assess their import.

One of the main difficulties which arise in constructing flow of funds accounts lies in establishing clear-cut rationales for the division of the economy into separate sectors and of assets and liabilities into distinct categories. With respect to sectoring, the main contrast with the national income accounts lies in the desirability of separating out and disaggregating the activities of the financial sector. In the flow of funds accounts the financial sector's intermediating activities must be spelt out as fully as possible in order to ascertain a reasonable picture of the variations in each of the other sector's balance sheets.

This requirement is met in the U.K. accounts by breaking out the financial sector's transactions from those of the other sectors, and then representing them as the transactions of two separate sub-sectors: the banking sector and financial institutions other than banks. Unfortunately, the degree of sub-sectoring is nowhere near enough. It would be useful to make a distinction between banks which are engaged in the wholesale business and those which primarily concentrate on the retail end of the market.⁽¹⁾ This would be an innovation of a Schumpeterian type. However, the lumping together of such a heterogeneous collection of other financial institutions into one sector (assurance and insurance companies, pension funds, investment trusts, unit trusts, building societies, finance houses, savings banks, et al), violates even the most rudimentary postulates of seeking to attain homogeneity. These institutions are

(1) Jack Rev 11, op.cit.

subject to different types of legal regulations and different types of tax treatment. Similarly, they most certainly have preferred habitats in the sense that they specialise in widely varying types of lending and borrowing business. This deficiency in the U.K. flow of funds account is well recognised. The time has arrived for publication on a regular basis of sub financial sector flow of funds accounts. In 1972 the Bank of England made an effort, publishing 7 sub sector accounts out of the gross 'other financial institutions' category for four selected years.⁽¹⁾ We hope that this effort will be sustained.

The same aggregation problems to interpretation are equally applicable to the U.K.'s 'personal sector' and the 'industrial and commercial companies' accounts; though any of the desired further sectoralisation is unlikely for quite some time. The personal sector contains a conglomerate of decision units - households, universities, other charities, farmers and all other incorporated businesses. The degree of heterogeneity would be reduced and the accounts thereby improved if the household sector could be given its deserved eminence. As far as the sector called 'industrial and commercial companies' is concerned, here too a division between industrial and commercial and, indeed, perhaps multi-national, would provide a better chance of ascertaining the significance of the reported data.

Certainly the time and expense of seeking and attaining this desired degree of sectoralisation may be considerable, but it would be well spent if adequate information influences the formation of official policy measures. The disadvantages of having too few

(1) Bank of England, An Introduction to Flow of Funds Accounting, 1952-1970, Economic Intelligence Department, B.O.E., December 1972.

decision sectors; not only in the mismatched mass of interpretable information shown on the aggregated accounts; it also means that important flows which should be broken out are simply not recorded. The argument that a greater degree of disaggregation will lead to less reliable figures for each sector is specious, in the sense that the user could quite readily aggregate the sub-sectors if he chose, whereas the reverse process is just not possible.

Certainly, the U.K. statisticians who compile these accounts may well argue that some of the problems which stem from the lack of disaggregation may be overcome through the use of supplementary information which they publish elsewhere. For example, for new net capital issues raised in the domestic market, the statistical annexe of the B.O.E. Quarterly Bulletin disaggregates the issues of industrial and commercial companies into 13 categories. This search for missing details, though time absorbing, is often rewarding. However, the product of the quest is not readily spliced on to the published flow of funds data, as the asset/liability categories, the methods of compilation and/or account periods are likely to vary between one source and another. As Roe points out, the use of other statistics in conjunction with those reported in the flow of funds tables requires a very intimate knowledge of the sources, and ". . . it is not self-evident either that the average user is in this position or that he should be expected to be".⁽¹⁾ In effect, efforts to derive the desired collection of statistics from several different official sources in the U.K. is likely to be misleading.

(1) A. Roe, "The Financial Interdependence of the Economy, 1957-66", A Programme for Growth, No. 11, Department of Applied Economics, University of Cambridge, 1971.

The classification of assets/liabilities in the accounts also impairs the utility of the data. For assessments of the changes in the degree of liquidity which are taking place in the various sectors' underlying balance sheets, for instance, the very limited classification of the maturity structure of the changes in holdings of financial instruments is far from ideal. Berman, for example, suggests that an ideal classification for such purposes would be along the following lines - (a) up to 7 days, (b) 7 days to 3 months, (c) 3 months to 1 year, (d), 1 year to 5 years, (e), 5 years to 10 years, etc.⁽¹⁾ Unfortunately, this data is not recorded. If it was, of course, it would serve yet another purpose. It would illustrate in detail the degree of sensitivity of the term structure of borrowers' loan placements in times of rapidly rising interest rates. As such, it would buttress the emerging evidence of the extent of this sensitivity in the U.K. as recorded in a recent Midland Bank Review, and as reflected by the extraordinary upward surge in company borrowing from banks since the second quarter of 1973.⁽²⁾

Other sub-classifications of the asset categories in the flow of funds accounts would also be helpful, especially for the purpose of analysing their import for the sundry capital markets. For example, it would be useful if issues of company securities could be divided into the categories of quoted and unquoted, and, similarly, if further sub-division were made to distinguish between the amounts raised by type of negotiable instrument: debentures, preference or ordinary shares. These classifications do appear in the figures on capital issues which are published in the Quarterly Bulletin's

(1) L.S. Berman, "Flow of Funds in the U.K.", Journal of the Royal Statistical Society, Series A, 1965.

(2) In the U.S.A. Cross-section surveys by the Federal Reserve Bank of state and local governments' new issues and similar surveys conducted by the Department of Commerce of the loan placements of large manufacturing companies illustrates that these entities are very sensitive to interest rate considerations in managing the maturity structure of their liabilities. See G. Fisher & D. Sheppard, op.cit., pp. 23-27. Also see Table 2 in the Appendix.

statistical annexe; however, they are not explicitly incorporated into the relevant sector's accounts in the U.K. flow of funds statistics.

The problems which arise from inadequate sectoring and asset classification are linked, as Mendelson points out, with another problem which arises in flow of funds data for capital market analysis.⁽¹⁾ This relates to the degree of grossness or netness of the recorded flows.

To illustrate the connection between sectoring and grossness or netness, it should be clear that if a sector is sub-divided into two or more sectors, then transactions between these sub-sectors (say back-to-back loans between industrial and commercial companies) will be recorded; without these sub-divisions, however, these flows will not appear. The same point holds for an asset/liability reclassification, say capital issues into debentures and shares.

Independent of the effect that these considerations have on the grossness or netness of the accounts, the design of the accounts will have a decided imprint on what the degree of grossness or netness will be. Unfortunately, the U.K. flow of funds accounts are designed so that with given sectors and asset/liability classifications the recorded flows are as net as they could possibly be. This feature too creates problems for the analyst. For example, if non-financial companies are shown to have issued net £100m of capital in a given period, they could have funded £400m falling due in that period and issued an extra £100m; or, alternatively, perhaps none fell due and there was just a new issue of £100m. These two quite different events would not be revealed in the U.K. flow of funds

(1) M. Mendelson, "The Optimum of Grossness in the Flow-of-Funds Accounts", The Fund of Funds Approach to Social Accounting, New York, NBER, 1962.

statistics, but they obviously have a different impact in the securities market. Then again, turning to loans for house purchases or hire purchase debt, these like all other items on the accounts are recorded as net flows between sectors; that is all new credits minus all repayments. As Mendelson points out, this may lead to misinterpretations. "Logically, the volume of consumer durables and real estate purchases . . . are more highly correlated with gross credit extensions than with net credit extensions".⁽¹⁾ To illustrate this point, in the U.S. during the 1966 credit crunch, the net mortgage loans of U.S. Savings and Loan Associations was negative - more was repaid than lent out; nevertheless gross mortgage advances were still being made and the purchase of new homes were being financed.

This net bias in the U.K. flow of funds accounts should be eliminated. There seems to be a lot to be gained and nothing lost by presenting the flow of funds data on the grossest basis, especially as net flows may be readily calculated. To be sure, this would entail a change in the presentation of the statistics from the present single column layout to the more conventional, and we add useful, double column sources and uses system. Certainly, it is probably true that given the U.K. statistics available, it may be impossible to record all flows on a gross basis, and the discontinuities of a partial presentation might be confusing. However, the statistics on gross flows which are available could be given in supplementary tables.

Roe suggests, for example, that the empty cells in such presentations could perhaps be estimated by combining with the

(1) Ibid., page 413.

recorded net figure, information on turnover which is available on some claims in the capital market - corporate and government securities.⁽¹⁾ Indeed with respect to the desirability of finer sectoring and asset classification, Roe's own flow of funds presentation seems to provide a useful yardstick which the compilers of the official statistics might usefully emulate. Roe's accounts distinguish 34 sectors and 51 assets/liabilities, while the Bank of England's tables represent 6 sectors and 22 transaction categories.

Besides the points raised relating to the principles underlying the construction of the official flow of funds accounts, it is appropriate to question the reliability of the data which is reported in the matrices. Like most official U.K. statistics, the flow of funds data are being continually revised and the data adjustments are so substantial that users should hesitate before employing any series which has been compiled at a relatively recent date. As an illustration of this point, readers should examine the process of refinement with respect to sectors' financial surpluses or deficits which come from the income and product accounts; the refinements are large and the time of adjustment protracted.

Even when the initial 'errors in variables' seem to have been rectified, however, other problems with respect to data reliability have by no means been eliminated.

In the case of company securities statistics, there are special problems, as non-financial companies do not make comprehensive financial returns. The magnitude of the difficulty may be indicated by comparing the figures for new capital issues for the years 1963-66 as

(1) A. Roe, op.cit., page 14.

determined by the Bank of England and by Roe. Though endeavouring to derive totals for the same category of liabilities, the fact that each compiler used different sources resulted in the B.O.E. producing totals which range from £336m to £572m per annum while Roe's range from £916m to £2,424m per annum over the same period.^{1/} Similar large discrepancies appear between the B.O.E.'s and Roe's estimates of the banks' lending to local authorities as the Bank used data provided by the local authorities whilst Roe used figures published by the British Bankers Association. It would be a useful exercise if someone successfully reconciled these discrepancies. Other difficulties also need to be faced before the flow of funds may be used with much effectiveness for capital market analysis in the U.K. These are two-fold. As presented, the official statistics do not show the prices at which the transactions took place (interest rates). As seriously, with respect to the demands of modern portfolio theory, they do not show the underlying balance sheet positions. Flows without the interest rates which relate to them provide as much information as quantities transacted in the goods market without the relevant prices. In either case it makes the specification of supply and demand functions impracticable. Without the underlying stock information, attempts to estimate the relevant supply and demand functions, the ex-ante flow of funds matrix, will not be successful, as there is no way for the econometrician to impose the necessary balance sheet constraints and symmetry conditions on the estimating procedure.

Certainly, in its Bulletin, the Bank of England does provide a considerable amount of interest rate information. Nevertheless, many

^{1/} Roe, op.cit., p.48. The discrepancies in these series arose because the B.O.E. naturally used its own series for capital issues in Britain, whereas Roe calculated his data from information on nominal and market values of securities outstanding derived mainly from the Council of the London Stock Exchange's annual publication: Interest and Dividends upon Securities Quoted on the Stock Exchange London.

important series, such as institutional loan rates, are absent, and it is in this market that the bulk of the lending and borrowing takes place! With respect to the basic sectoral balance sheet data, Revell made the initial pioneering effort to estimate them in the U.K.^{1/} Recently too, in December 1973, the Bank of England published the balance sheets for the banking sector for the 1963-72 period, presenting the annual balance sheets of this sector are in conjunction with the flows connecting the successive balance sheet positions. This seems to be an ideal method of presentation and hopefully will be extended to the other five sectors.

Here, too, however, there is some question as to what the successive banking sector balance sheets actually measure, as it seems that unlike Roe's presentation, adjustments have not been made for asset revaluations due to changes in market values which took place within the accounting period - one quarter. An argument, though may be made for the historical cost valuation approach which the Bank seems to have adopted for compiling its banking sector balance sheet adjustments and levels. Due to the nature of their business, bankers' behaviour could well be more influenced by the adjusted book values of their assets and liabilities than by the market's appraisal of the worth of current financial claims.

Overall, then, the U.K. flow of funds statistics, though intuitively informative, are not likely to be especially useful to econometricians who seek to emulate the comparatively sophisticated studies of the U.S. financial sectors recorded in the next section. As they stand, the accounts are not sectored enough. The result: relatively disparate groups of economic actors lumped somewhat uncomfortably into one sector or another. Next, the fixation on netness manages to scrub out a great deal of information from the

^{1/} Jack Revell, The Wealth of the Nation, Cambridge University Press, 1967.

accounts which could be profitably employed in the estimation of selected asset demand and supply schedules in the relevant markets. Moreover, even if the suggested improvements are effected, the revised accounts need to be complemented by more statistical information. Much more effort should be spent on recording both sector balance sheets and asset prices or rates of return if the authorities expect either their own economists or other economists to make good use of the financial statisticians' work. Certainly data developments are costly; more paper or hopefully an officially sponsored micro-film lending library must be used to record and disseminate the products of the proposed expansion of financial and real sector statistics. But certainly a too rich reward is in the offing: the development of some firm quantitative substance to qualify the intuitive feel the revealed trends in the current flow of funds provide the policy makers.

SECTION III

An Appraisal - Flow of Funds and Capital Markets

Flow of funds accounts incorporate real and financial elements. They reflect adjustments over prescribed time intervals of the underlying double entry balance sheets of the main sectoral groupings of economic actors whose decisions determine the pace and composition of economic activity in the macro economy. In turn, the sectoral balance sheets depict snapshot representations of past accumulations of real and financial assets and of financial liabilities plus the balancing item, net worth, of each sector. The sum of all sectors' net worth is a measure of wealth of the particular economy for which the accounts have been collected.

In their seminal paper which synthesised the seemingly conflicting messages of the Keynesian and the new monetarists' approach, Brainard and Tobin set out the new stage in 1968. Prices and interest rates determined in the financial markets, " . . . and the quantities to which they refer both influence and are influenced by the 'real economy', the complex of markets for current produced goods and services."^{1/} At the same time, Brainard and Tobin spelt out some of the complexities which the incorporation of this consideration entails. Other economists, Christ^{2/}, Hendershott^{3/}, Fand^{4/}, Parkin et.al.^{5/} and Bosworth and^{6/} Duesenberry have elaborated on the details as they affect the theoretical formulations of sectoral and multi-sectoral models as well as their empirical counterparts - testable macro-economic models.

Brainard and Tobin stress the point that in the real world " . . . everything depends on everything else."^{7/} Parkin et.al. illustrate how such a point should be specified in theory and practice: " . . . all the possible substitutions between and within financial and real assets and current consumption, investment and production flows " should be specified in a dynamic equilibrium context so that the "complex of real balance effects are present in the adjustment process."^{8/} Fand represents what this means in the context of monetarism: " . . . the monetary effect on spending, the monetary effect on asset prices, and the monetary effect on implicit

-
- ^{1/} William C. Brainard and James Tobin, "Pitfalls in Financial Model Building", American Economic Review, Papers and Proceedings, May 1968, page 99.
 - ^{2/} Carl F. Christ, "Econometric Models of the Financial Sector", Journal of Money, Credit and Banking, May 1971.
 - ^{3/} Patrick H. Hendershott, "A Flow-of-Funds Model: Estimates for the Non-Bank Finance Sector", Journal of Money, Credit and Banking, November 1971.
 - ^{4/} David I. Fand, "The Monetary Theory of Nine Recent Quarterly Econometric Models of the United States, Comment", Journal of Money, Credit and Banking, May 1971.
 - ^{5/} J. M. Parkin, et.al., op.cit.
 - ^{6/} Barry Bosworth and James Duesenberry, op.cit.
 - ^{7/} William C. Brainard and James Tobin, op.cit., page 99.
 - ^{8/} J. M. Parkin, et.al., op.cit., page 6.

yields all come simultaneously."^{1/} Others would argue that the feedback effects come as promptly too. The tasks which are demanded are certainly complex ones.

Again, though Tobin and Brainard set out some of the guidelines of how these tasks should be tackled within the framework of financial analysis, they stress the need " . . . for explicit recognition of the essential interdependence of markets in theoretical and empirical specifications of financial models."^{2/} This means that explicit recognition must be taken of sectoral balance sheet constraints. Balance sheet identities must hold in equilibrium and disequilibrium, so that in both states the effect of a change in any variable on all items in the balance sheet must sum to zero. Christ, in his 1971 review of the financial sectors of nine of the main operating U.S. macro-economic models, endorses this view of the desirable properties and adds a few of his own. The financial sector should be sub-divided into a very minimum of three sectors - the government, the banks and the non-banking financial institutions. In addition, each sector should have its own balance sheet including net worth, and these should be so constructed as to show in full inter-sectoral claims.^{3/} He observed that none of the nine models was " . . . so completely specified as to have an explicit or derivable balance sheet equation for each sector."^{4/} The failure to observe these guidelines, especially the absence of the Government's Budget constraint, means that the models are not well specified and therefore not overly useful in examining the empirical validity of an economic theory in which the interactions between the real and the financial sector are held to be important.

As Cohen records^{5/}, Hendershott was one of the first to . . . set about the task of filling in the pitfalls Tobin and Brainard had

1/ Ibid., page 6.

2/ David I. Fand, op.cit., page 456.

3/ William C. Brainard and James Tobin, op.cit., page 99.

4/ Carl F. Christ, op.cit., page 422.

5/ Jacob Cohen, op.cit.

portrayed as existing in the traditional treatment of the financial sector. He set about the task by obtaining the banks' reserve market term structure of interest rates determination approach, and substituted a multi-sector, multi-security model of financial markets in which all the observed interest rates reflect the market clearing prices of the demand and supply schedules of the identified financial assets/liabilities.^{1/} His 1971 specified financial structure contained five sectors and five different classifications of securities, and it was designed to provide a simultaneous equation model " . . . of the United States flow of funds accounts . . . " which was " . . . sufficiently large to explain all financial variables that seem to be relevant to real expenditure functions."^{2/} The complete model contained 16 financial asset demand equations, five security supply equations, three market clearing equations and the five essential balance sheet identities.

Hendershott proceeded to obtain empirical estimates using quarterly data over the 1953-67 period, but in doing so he both explicitly recognised the importance of balance sheet constraints and enforced them in his estimating procedure. By doing so, he had, as he acknowledged, accepted and incorporated the points made by Tinbergen in 1939^{3/}, by de Leeuw in an unpublished work in 1965, and by Tobin and Brainard: given a change in the n-th interest rate, an increase in holdings of any one group of assets must be matched by offsetting decreases in the holdings of other assets. Given total real asset holdings, an increase in net worth must be exactly absorbed by some combination of financial asset increases or liability decreases in that sector's balance sheet. Finally, given net worth, an increase in the holding of a real asset must be financed by some combination of

1/ Patric H. Hendershott, op.cit., page 185.

2/ Ibid., page 815.

3/ J. Tinbergen, Business Cycles in the United States of America, 1919-32, Geneva, League of Nations, 1939.

increases in financial liabilities and/or some combination of the decreases that sector's holdings of financial assets.^{1/}

He points out that these properties of the balance sheet constraint may be imposed on the estimating equations by employing the same set of explanatory variables in each equation with " . . . net worth less real asset holdings included in this set as the constraint variable."^{2/} He notes how the imposition of the balance sheet constraint may be adjusted to reflect the observed behaviour of a particular group in the financial sector. For example, if that group is a rate setter with respect to liabilities (banks) and a rate taker with respect to its asset holdings, the financial liability equations may be estimated with no constraint; then, however, estimates of that sector's financial asset equations would have total financial assets as the constraint variable. Finally, and again with respect to constraining the estimating equations, he notes the point made by Gramlich and Kalchbrenner^{3/} and by Parkin^{4/} with respect to the desirability of imposing " . . . symmetry on the interest rate coefficients in demand equations."^{5/} The rate of change of demand for asset A with respect to a change on the yield on asset B, should be the same as the rate of change of demand for asset B with respect to a change of yield on asset A. As he records, however, the task of imposing these symmetry constraints in models which have built in lagged responses is both complicated and perhaps misleading - the adjustment responses to rate changes may well take place at different speeds.

While new empirical insights emerged from Hendershott's multi-sector/multi-security financial sector model (he found for example that the portfolio adjustment process was much faster than had previously been estimated), his model has been superseded. As noted in the preface, Hendershott and Lemmon, Bosworth and Duesenberry, Parkin (et.al.) have since made major contributions to this particular field of economic

1/ Patric H. Hendershott, op.cit., page 818.

2/ Ibid., page 819.

3/ E. M. Gramlich, and J. H. Kalchbrenner, "A Constrained Estimation Approach to the Demand for Liquid Assets", Federal Reserve Bulletin Special Studies Paper, No. 3, December 1969.

4/ M. Parkin, "Discount House Portfolio and Debt Selection", Review of Economic Studies, October 1970.

5/ Patrick H. Hendershott, op.cit., page 819.

research. It is to these three studies that we now turn..

In their recent study, Hendershott and Lemmon^{1/} expanded on Hendershott's earlier multi-sectoral financial model. True, the same five sectors remain - households, non-financial firms, state and local governments, Federal agencies, and financial institutions. However, instead of just dividing the financial institutional sector into two sub-sectors, commercial banks and non-banks, now the residual financial sub-sector is divided up two further segments - non-bank savings institutions and other financial institutions. This extra sub-division is well warranted by the "preferred habitat" approach and by Federal tax exempt treatment of interest on deposits in the savings banks due to the protective umbrella of the various States' constitutions. In addition, the number of separate asset/liability classifications has been expanded to 17 categories. These now consist of equities, corporate bonds, state and local government obligations, home mortgages, non-home mortgages, consumer credit, all long and short-term negotiable debt obligations, money, demand deposits, various forms of savings deposits and certain types of contractual savings. The complete model contains 23 sectoral demand equations, 14 sectoral supply equations, three market clearing equations and several identities.^{2/} As in his previous study, the constraints of the flow of funds discipline were enforced in the process of estimation. U.S. seasonally adjusted quarterly data for the 66-1 to 71-IV period was used to obtain the estimates.

Surprisingly, and in contrast to the practice adopted in the previous paper, Hendershott and Lemmon provide none of the standard statistical tests to assess the goodness of fit of their estimated equations. Indeed, only estimates of three equations are reported^{3/}, and these just contain the regression coefficients of the explanatory variables. No t, DW, R or

^{1/} Patrick H. Hendershott and Richard C. Lemmon, op.cit.

^{2/} All the demand and supply equations are in linear form. In addition, when interest rates were entered as arguments they were scaled by the total financial assets held by that sector. Ibid., page 5.

^{3/} Ibid., page A2. It is stressed that this is just a preliminary draft. Undoubtedly, Hendershott and Lemmon will report both their method of estimation and measures of the goodness of fit of their estimated equations in the published version.

R²'s, F or See statistics are revealed. Instead, Hendershott and Lemmon (H & L) devote their attention to comparing the computed results of an ex-post dynamic simulation of the full model with actual events over the period 1966-71, and then again making the same comparison for 1966-72. It should be noted that their derived results for the 1972 period are genuine forecasts in the sense that this period lies outside the one from which data was drawn to estimate the underlying structural equations.

H and L present graphs which record the actual and the simulated values of six asset flows (issues) and three interest rates over the full period - 1966 through 1972.

Broadly speaking, their model tracks the actual observed issues of consumer credit and home mortgages over the sample period reasonably well. The results for corporate bond issues, equity issues, State and local government issues and non-home mortgages are not as satisfactory. Outside the sample period, their real forecasts of home mortgage issues, corporate bond issues and non-home mortgages issues are not good; in the second half of 1972, for instance, they underestimated the actual amount of home mortgages issued by \$5 billion which represents a 25% shortfall.

Turning to their charted simulated and observed values of the three selected interest rates, the results obtained for the corporate bond rate both within and outside the sample period seem remarkably good. With respect to the other two recorded rates, the commercial paper rate and the home mortgage rate, the model tracks the observed rates quite well within the sample period, except during 1970. The genuine forecast simulations for 1972, however, are rather poor, particularly the home mortgage rate which overstates the actual rate in 1971-III of 7.60 by 110 basis points. This result could well have occurred due to the fundamental change in the institutional mortgage market structure

which took place after the Housing Act of 1968.^{1/} H and L attribute this overestimate to their underestimates of the growth of deposits in non-bank savings institutions in 1972^{2/}, which in turn might well be explained by post-1968 changes in savings institutions' rate ceilings.

In accord with the standard practice, H and L report the root mean square error (standard deviation of calculated values from actual values) and the root mean square error divided by the mean of the actual values (coefficient of variation) for all their charted simulations over the 1966-71 interval and for 1972. Overall, the results for both periods are reasonable, especially for the corporate bond rate which is shown to have a coefficient of variation of 0.04 and 0.01 respectively (4% and 1% of the mean values).^{3/}

Overall, we find this preliminary paper of H and L fairly impressive. Considering that their results were obtained despite the absence of a model of the real sector of the economy, we, like them, " . . . are encouraged by the level of explanatory power achieved."^{4/} This conclusion is of course biased, for we, like them, feel " . . . the sources-and-uses approach provides a reasonable blend of theory and institutional considerations."^{5/}

Bosworth's and Duesenberry's paper is in some ways similar to H and L's. Like H and L, they use the flow-of-funds approach with considerable consolidation.^{6/} Similarly, their theoretical core, their foundation for financial analysis, is the theory of portfolio balance, and they see transactions in financial assets as being just the means by which asset owners seek to optimise their portfolios. However, there are striking differences.

Bosworth's and Duesenberry's paper (B and D) may well be described

^{1/} Barry Bosworth and James Duesenberry, op.cit., page 3.

^{2/} Patric H. Hendershott and Richard C. Lemmon, op.cit., page 13.

^{3/} Ibid., page 14.

^{4/} Ibid., page 16.

^{5/} Ibid., page 16.

^{6/} Barry Bosworth and James Duesenberry, op.cit., page 9.

as the current masterpiece of studies of this kind. The first 69 pages contain a rich tapestry. They provide a comprehensive and readily comprehensible discussion of the theoretical, the institutional and the statistical considerations underlying the formulations of the equations they eventually tested. There is more too. They also discuss the results of their ex-post policy simulations in full.

Naturally, in such a complete product, there is an appendix in which all the equations in their model of the financial sector and in their model of the real sector are listed showing the estimated form and the standard statistical measures of goodness of fit. This in turn is supplemented by Attachment I, in which the results of dynamic policy simulations illustrate the role that a change in unborrowed reserves, that a change in the Federal National Mortgage Associations purchases of outstanding mortgage obligations and that a change in Federal purchases of goods and services would have had on a host of variables: income flows, expenditure flows, financial assets and liabilities, interest rates, prices, wages and unemployment rate. Obviously, given the nature of this study, it is extremely difficult to produce any synthesis which would do justice to its content.

Given this task of digestion, it seems best to highlight some of the main features of the work. This will be done partly by a discussion of the basic structure of their financial model after a few limited references to their model of the real sector. Then, we will make a few comments on their simulation results and on their estimates of the various sectors' asset/liability demand and supply equations. We close our assessment with some complimentary and a few critical observations on B and D's contribution.

The model of the real sector is cast in 1958 prices. In structure it is an abbreviated form of the FRB-MIT 1969 model; though it does contain various modifications. As such, it consists of an 85 equation aggregate demand model in which total spending, sector spending and the

distribution of income between sectors are determined endogenously. Many of these are used to specify the expenditure functions of those sectors which appear in the financial model, though 25 of the 85 equations are used to determine wage and price level changes.

As it stands, the model of the real sector is an appendage to the model of the financial sector rather than a definitive exercise in its own right. There are parts of it which are open to criticisms; especially the fact that the influence of price expectations is omitted as being a channel of the financial sector's influence on the formulation of real spending decisions. It should be noted that this channel along with the wealth effect are shown to play a major role in the large scale FMP 1970 model's dynamic simulations.^{1/} Nevertheless, it is a very useful appendage. It both picks up the model of the financial structure and it contains some very interesting innovations in its own right: see, for example, the use which is made of dummy variables for structural shifts in the supply of consumer credit in the consumer durable goods demand equations listed in the Appendix.^{2/}

The model of the financial sector is cast in market prices. It is the most fully specified to date. None of the other existing large scale models including the FMP have treated the financial sector with the same degree of sophistication.^{3/} As noted, following its flow-of-funds orientated portfolio adjustment approach, B and D see the major market participants as consisting of five ultimate economic actors (households, the Federal Government, State and local governments, the business sector and the foreign sector) and four financial intermediaries (Commercial Banks, Savings and Loan Associations, Savings Banks and Life Insurance

^{1/} Gordon Fisher and David Sheppard, op.cit., page 80.

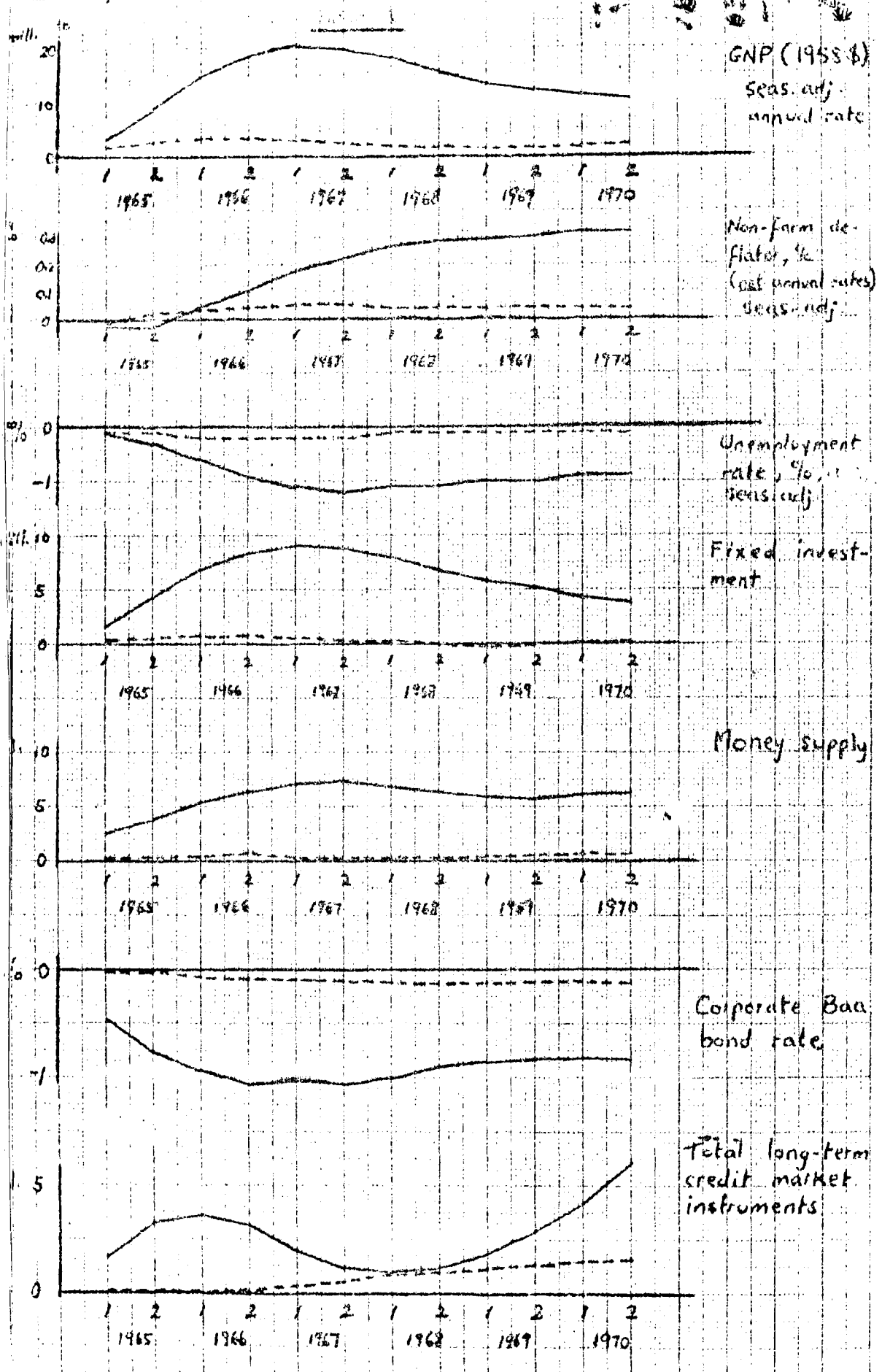
^{2/} Barry Bosworth and James Duesenberry, op.cit., page 34 of Appendix.

^{3/} Gordon Fisher and David Sheppard, op.cit., page 56.

Companies plus Pension Funds). Each of these nine financial market actors is represented as having a demand for, or providing a supply of four major groups of asset categories. The full financial system consists of 75 sectoral supply and demand equations and balance sheet identities. Estimates are obtained from data drawn from the 1965 through 1970 period, presumably on a quarterly basis; the actual statistics and the simulation results are reported in half yearly intervals.

In designing their model, that is in specifying the underlying structural demand and supply equations, they take into account a number of important considerations, besides stressing that in its design, their approach is best suited to account for short-run cyclical changes: explaining changes in the flow of funds which occur concomitantly with real sector surpluses or deficits on the income and product accounts. In particular, they attach great weight to the nature of the financial structure in which these flows take place. They see that changes in this structure, ". . . changes in the powers of financial institutions, in their competitive relationships, or in the types of financial instruments in use, will surely influence the cost and availability of credit to different types of borrowers."^{1/} Where possible, they adjusted their demand and supply formulations to account for some of the changes in this structure which took place in the same period, 1965-70. (The financial community and the Federal Government had been sensitised by the 1966 credit crunch events, and a number of structural changes were made as a result during the period.) In addition, of course, and in keeping with their approach, their treatment of the process of interest rates determination differs considerably from the conventional Keynesian format. The rate-setting equations are adjusted to reflect their market clearing function for the securities in question, special institutional considerations, and the expectation factor (as it appears in

^{1/} Barry Bosworth and James Duesenberry, op.cit., page 6.



Source: Bosworth & Duesenberry, op. cit., Attachment I.

Effect of \$1 billion increase in unbarrowed reserves

Effect of \$1 billion increase in federal purchases (1958 \$)

the term structure approach) when it appears relevant, (viz., when the assets in question have near substitutes in the market place). As already noted, the discussion of their specification of the financial structure is a tour de force.

With respect to their estimates, several features attract attention. As noted, the coefficients of determination, the t statistics and the standard errors of the estimated equations are all reported, though there is no statistic which measures the degree of autocorrelation in the residuals. As they stand, the results certainly seem satisfactory. However, as B and D record, they are subject to simultaneous equation bias, as the authors employ the classical single equation ordinary least squares method to obtain their estimates. This bias in turn is complicated by another consideration: some of their estimated equations contain non-linearities, as is the case for most large scale models of the financial and/or the real sectors of the macro economy. This means that not ". . . only are (the) standard tests inappropriate, but the standard errors may even be incorrectly calculated," ^{1/}

No matter (that is disregarding these econometric qualifications which are usually made of the empirical findings of all such models), on a comparative basis their estimates are certainly good enough to warrant their dynamic policy simulations of the full model - the real and the financial sectors.

As Table I shows, in the 2 reported policy simulations, a \$1 billion increase in unborrowed reserves and a \$1 billion increase in Federal purchases, the use of the monetary policy instrument has a far more potent impact than the fiscal policy instrument on some of the most important variables: real GNP, price levels, unemployment rates, fixed investment, the money supply, the corporate bond rate and the total amount of long-term credit market instruments outstanding. Jaffee writes that

^{1/} Gordon Fisher and David Sheppard, op.cit., page 80.

these simulations indicate that though monetary policy operates slowly, it has " . . . a strong cumulative effect . . . , in contrast, fiscal policy has a strong short-run impact, but the n cycles towards what appears to be a zero long-run value."^{1/} Jaffee's observations of B and D's simulations seem to be far more suited to the ex-post policy simulations of other large scale econometric models than those that B and D present - see Fisher and Sheppard 1972.^{2/} B and D's simulations indicate that monetary policy has a stronger impact than fiscal policy in the very short-run too (six months to a year) besides illustrating that the medium term effects were much larger as well.

These large short and intermediate run effects of a change in unborrrwed reserves on real GNP, on the non-farm price deflator, on the unemployment rate, on the money supply, and on the corporate bond rate, etc., should be viewed with caution. First, if the simulated results are taken as illustrating the actual effects of fiscal or monetary policy actions, the simulations suggest that a Central Bank should hesitate in employing monetary policy as a contra-cyclical tool and why it should urge the fiscal authorities to take up the bulk of the responsibility for fine tuning. In essence, B and D's simulations show that once started and though potent the effects of monetary measures are hard to stop. In contrast the effects of fiscal measures, though less potent, taper off much more rapidly so that the fiscal accelerator or brake is a far more flexible and efficient implement. Its use makes it easier to start or stop when desired.^{Second,} and just as important, these simulations are only strictly applicable to the U.S. economy in the short to the intermediate run - no long-run simulations were made.

1/ D. M. Jaffee, "Discussion of the Bosworth-Duesenberry Flow-of-Funds Model", unpublished paper, FRB of Boston, Monetary Conference, June 27-29, 1973, page 2.

2/ Gordon Fisher and David Sheppard, op.cit., pages 72-74, 79 and 80.

As a result, it would be dangerous to suggest that the B and D simulations provide an accurate reflection of the consequences a programme of monetary stimulation or fiscal stimulation would have for the U.K. economy. In the long run, three years plus, as Evans suggests, stimulatory monetary policy may have " . . . only rapid growth to recommend it; there is a perverse long-run effect on unemployment, a rapid price increase, and the largest decrease in the balance of payments.^{1/}" In the U.K., Mr. Heath's real world simulations of the British economy over the 1970-73 period indicate that these could be the consequences of excessive monetary stimulation for the U.K. economy too. The U.K. has experienced an increase in real output, but it has also experienced very rapid increases in product prices, soaring long and short term interest rates and a crushing cumulating balance of payments deficit on the current account as well. We add that considering the facts that the foreign sector is more important relatively in the U.K. than it is in the U.S. and that the amount of unutilised capacity seems to be so much less, we believe that there is some substance in our negative assessment of the consequences of "competition and credit control".^{2/}

1/ Michael K. Evans, Macroeconomic Activity, Theory, Forecasting and Control, New York, Harper and Row, 1969, page 581.

2/ We very much regret that we are not able to elaborate more on this point on the management of the British economy over the 1971-73 period. Indeed, the only reason we agreed to participate in the conference as paper presenters was that we hoped we would be able to shed some light on this issue. Unfortunately, we were not able to obtain much published or unpublished information which would have enabled us to come up with anything other than hesitant opinions. Perhaps, however, the information does exist in the main centres of U.K. model building - Southampton, London, Cambridge and perhaps Manchester. If so, it should be more widely disseminated. Nevertheless, we did endeavour to start off on the task. Our findings are so preliminary that they do not bear recording in the body of the text. Nevertheless, for illustrative purposes, we present in the Appendix, Tables II-V. They show Loans granted to Industrial and Commercial Companies, Loans granted to the Personal Sector, cumulated changes in selected financial stocks, and the F.T. share index and selected interest rates yearly from 1967 through 1971, and quarterly from 1971-II through 1973-IV. An inspection of these Tables seems to reveal the tale we have told and more besides, but we are not in a position to substantiate it.

In keeping with the thoroughness of their report, B and D make it quite clear that their estimates and their policy simulations are only strictly applicable to the U.S. over the prescribed period - 1965 through 1970. In this sense, they too would not generalise from these results as providing good indicators as to the consequences of some policy change at other times or places. Nevertheless, it does seem that they would argue that at least two of their findings would have general applicability, both in the U.S., and in other countries in which the financial system is relatively well developed. First, the numerous significant regression coefficients of the differences between the yields of selected assets (the relative interest rate effects) " . . . in the individual equations is demonstrative of the usefulness of the portfolio balance approach to monetary analysis."^{1/} Second, " . . . the model provides an impressive amount of evidence that the financial structure does matter."^{2/} The institutions, the legislative framework in which they operate, their preferred borrowing and lending arrangements and those of businesses and households are seen to exert an influence on the volume and composition of financial activity, and this in turn is represented as inter-acting with real sector developments.

If they actually made these two generalisations, then at least four other economists besides us would support them: Parkin, Cooper, Henderson and Dane (PCHD) used a similar type of approach in assessing the role and the operations of the financial sector in the Australian economy and came to similar conclusions. "The main emphasis is on the integration of both stock and flow and real and financial decisions."^{3/}

1/ Barry Bosworth and James Duesenberry, op.cit., page 69.

2/ Ibid., page 69.

3/ J. M. Parkin, J. R. Cooper and F. Henderson, M. K. Dane, op.cit., page 1.

Sector balance sheet data, their changes, sector flows of funds, real stocks of capital, their yields, labour income and eight different interest rates are all considered in the decision process. In turn, the decisions are reflected in the adjustments to the decision takers' portfolio of all real assets and all financial assets and liabilities which each decision taker believes will maximise his inter-temporal utility at each point in time.

PCHD represent that the validity of their approach may be tested by considering the aggregated decisions of two sectors, the personal sector and the corporate sector, and examining how each sector maximises its own inter-temporal utility over time by adjusting its holdings of real assets and financial liabilities (14 and 10 respectively).

Explicitly, the personal sector is seen to maximise its inter-temporal utility function subject to a set of stock-flow constraints which must hold at all points in time.^{1/} In turn, the corporate sector is seen to maximise its inter-temporal utility function; it maximises the " . . . present value of the net cash flow subject to a production function and certain stock flow constraints".^{2/} PCHD make their objective quite clear. " . . . (S)imple consideration of the way in which we know households and firms behave lead us . . . to consider the simultaneous and inter-related decisions concerning all aspects of economic choice."^{3/} They proceed to set out on the task of deriving a rigorous theoretical framework which embodies all these properties and then test their derivation using seasonally adjusted quarterly data drawn from the Australian economy from the 1961-1 to 1972-IV period.

While the approaches of H and L, B and D and PCHD's papers are broadly similar, PCHD differs quite considerably in its substance and its objective. For example, PCHD devote a considerable amount of effort

1/ Ibid., page 3.

2/ Ibid., page 3.

3/ Ibid., page 2.

to deriving, given each of the decision units' utility function, the final form of the estimated real or financial stock demand equations. These must have those properties which result in inter-temporal utility maximisation. Neither H and L nor B and D made any attempt to do this, and this omission would probably lead PCHD to dismiss the products of these two other studies as being of the ad hoc variety: PCHD indicate that H and L and B and D have plenty of company. Unlike H and L but like B and D, however, PCHD present their structural estimated equations in detail. All three groups of authors argue that there is much merit in the chosen approach and a considerable amount of information may be read from the results of their empirical results: we agree.

We are tempted to proceed directly to commenting on PCHD's empirical results and representing some of their interesting observations right now; indeed, we felt just like doing this after glancing at the theoretical core, pages 17 to 24 and A.1 to A.16.^{1/} However, insofar as we could understand the matrix manipulation, PCHD seem to have succeeded in their task of deriving the specific estimating equations which maximise the pre-specified household and corporate utility functions. We say "seem" as W_2 is undefined in the households' utility function because \hat{V}_2 on page 18 is not specified.^{2/} We presumed \hat{V}_2 to be a diagonal matrix of exogenous asset prices of the same dimension as x_2 . Again, though, we ran into the same problem with V_2 on the same page^{3/}, and there are definitive ambiguities to D: x_2 is described as assets on page 17 and as liabilities on page 22.

Other problems, besides these definitional ones, arise in making an economic interpretation of their derivations. The assumed expectations of price levels, of interest rate levels and of labour income (static prices, static interest rates and constant rate of growth of labour income) and

1/ Ibid., pp 17 to 24, and pp. A.1 to A.16.

2/ Ibid., page 18.

3/ Ibid., page 18.

then regarding uncertainty (there seems to be none) are dubious and cause problems. This point is underlined by the fact that price levels, interest rate levels and income levels are used in the Appendix in deducing the form of the estimated equations which will maximise each sector's utility function, W^* and F^* . As can result, households and corporations to adjust their behaviour if their expectations on prices, interest rates and income levels were not realised. PCHD produce no evidence which suggests that the assumed expectations or absence of uncertainty were realised during the 1961 through 1972 period in Australia.^{1/}

The empirically based criticisms of the assumptions PCHD introduced in deriving their specific estimating equations R(1) and R(2) may also be made with respect to specification of the actual utility functionals households and firms are supposed to maximise. PCHD acknowledge the utility of this empirical check. Indeed, they argue that ". . . the simple consideration of the way in which we know households and firms behave"^{2/} justifies the incorporation of financial assets in the household sector's utility functional and, similarly, of financial assets in the firm's production function. They make it quite clear just how dependent the specification of the utility functionals is on inductive empirical investigations: they ". . . should be allowed to stand or fall on empirical grounds."^{3/} We looked for direct and rigorous tests of the functionals they presented in their paper. We found none, except to the extent they are implicit in their asset demand equation estimates. Thus, though we accept with alacrity that PCHD's incorporation of financial assets into the household sector's welfare function and into the firm's production

^{1/} We are indebted to C. R. Barrett for some of the above observations.

^{2/} PCHD, op.cit., page 1.

^{3/} Ibid., page 8.

function are intuitively appealing, critics might describe the specification of these functionals as being of an ad hoc type relevant for PCHD's case alone.^{1/}

PCHD spell out their empirical findings for the constant price asset demand functions of the personal and corporate sectors of the Australian economy as succinctly as possible. This is no mean task. Each of the 14 personal sector asset demand equations has 12 rates of return, three exogenous liabilities (savings bank advances, building society advances, life insurance advances), labour income and then 14 lagged stocks of personal sector financial and physical assets as explanatory variables. Each of the 10 corporate sector's asset demand equations has 10 financial and real rates of return and 10 lagged stocks of financial and physical assets as arguments. They accomplish this task by setting up several matrices of the regression coefficients and t statistics of the explanatory variables which reflect the intra-relationships between financial assets demands and financial determinants, between physical assets demands and real arguments and the inter-relationships between the financial sector and the real sector asset demand relationships for both the household and the corporate sector. These full result matrices are then reprocessed so as to record only those relationships significant by the t test > 2 criterion. Then long-run responses and long-run mean elasticities of the household and of the corporate sectors' asset demand functions with respect to the chosen determinants are set out. They round out their presentation of their results by showing ^{that} the results of their "integrated" asset demand model compare favourably with those obtained from the estimated equations of a modified stock adjustment model which closely resembles that of the Reserve Bank of Australia's econometric model - RBAI. In terms of the number of interesting observations which stand out in the presentation of their results, PCHD's endeavours to make them succinct

^{1/} We are indebted to A. R. Nobay for stimulating us to bring out some of the points made in this paragraph.

are certainly successful.

They found significant relationships between the demand for financial assets and financial rates of return, between the demand for financial assets and the real rates of return on selected physical assets, between the demand for physical assets and financial rates of return,^{and} between the demand for physical assets and real rates of return for the household and^{for} the corporate sectors of the Australian economy. Similarly, they report significant relationships between the demand for financial assets and the lagged stock of financial assets, between the demand for financial assets and the lagged stock of certain physical assets, between the demand for physical assets and the lagged stock of certain financial assets, and between the demand for physical assets and the lagged stock of certain physical assets for both sectors too. Moreover, they record that the current level of labour income influenced the personal sector's demand for a number of financial and real assets, and that the marginal productivity of labour employed, as expressed by the implicit real rate of return on labour, affected the corporate sector's demand for a number of financial assets (currency, fixed deposits, bank advances) as well as this sector's demand for physical assets and labour (plant and machinery and buildings). PCHD certainly have a point if any credence whatsoever may be read into the products of these statistical results: "This impressive battery of highly plausible cross impact effects (between financial asset demand and real rates of return plus lagged real stocks and between physical asset demands and financial rates of return plus lagged financial stocks) . . . are very important aspects of the monetary transmission process . . . (which) have^{been} (previously) missed."^{1/} As their empirical results stand,

PCHD have certainly come up with some very interesting and important new evidence on the nature of the financial-real sector transmission mechanism.

^{1/} PCHD, op.cit., page 26.

The new PCHD insights are certainly numerous. It appears that a substantial number of interest rates and implicit rates of return on physical capital play a significant role in determining the personal sector's and the corporate sector's demands for financial and real assets measured in constant prices. In the 14 personal sector's asset/liability demand equations, 44 out of the 168 interest rates or implicit rates of return had significant regression coefficients.^{1/} In the 10 corporate sector's asset/liability demand equations, 28 out of the 100 rates had significant regression coefficients.

It seems though that the personal sector and the corporate sector responses to rate changes differ quite markedly in degree. PCHD depict the corporate sector's long-run cross elasticity between bank advances and instalment credit rates as -16.5, the long-run cross elasticity between corporate structures and the rates on bank advances as 1.83, and the own elasticity of corporate demand for government securities and for net instalment credit as 5.3 and 7.3 with respect to government security and instalment credit interest rates. The comparable household sector elasticities are much lower: 0.67, -0.43, 0.32 and 1.15.^{2/}

It also appears that the speed of the corporate sector's asset demands response to their determinants is somewhat slower than that of the household sector (seven out of the 10 own lagged asset regression coefficients were significant with the expected sign in the former while only six of the 14 were significant with the expected sign in the latter), and that there is much more feedback from the financial to the real in the corporate sector's asset demand decisions. Only three out of 40 lagged holdings of financial assets/financial liabilities had any impact on the household sector's demand for real assets (cars, other durables, dwellings or land) while nine out of 24 lagged holdings of financial assets/financial liabilities influenced the corporate sector's

1/ The multiplicity of so many non-significant regression coefficients should be expected; the evident widespread problem of multi-collinearity must have taken its toll.

2/ PCHD, op.cit., Tables 6 and 10.

demands for real assets (inventories, plant and equipment, buildings and labour).

With findings like these, their conclusions certainly attract attention: The ". . . interaction between the real asset demands and hence real spending decisions, and financial asset stocks and interest rates . . . (have) impact effects and long-run effects . . . (which) are probably larger and more pervasive than the existing literature suggests."^{1/}

The degree of credence which may be given to PCHD's empirically based insights is a little obscure; though we feel PCHD have certainly established an excellent case for further investigation. To start with, their approach seems too aggregative and too demand orientated. There is no explicit government sector, foreign sector or financial sector and the supply schedules of the assets or liabilities demanded are not specified or estimated. In this respect, PCHD's work falls short of H and L and B and D's more comprehensive portfolio balance approach. Again, too, their study in depth of all possible determinants of the 24 asset demand functions entails statistical problems. There is the evident problem of multicollinearity among many of the regressors in each equation, and there is the associated problem of determining whether the characteristic roots of the estimated models of the personal and corporate sector have the desired stability properties. PCHD did not report any simulations which would help to resolve this issue, and their preliminary investigations of the nature of the underlying characteristic roots produced unfortunate results: "In both models there were some unstable roots."^{2/}

^{1/} Ibid., page 36.

^{2/} Ibid., page 29.

Nevertheless, though the above considerations do tend to blunt the force of their statistical findings, their main observations are very much in keeping with H and L's work, B and D's study and a large number of recent empirical investigations of the U.S. economy.^{1/} It does appear, for instance, that in the U.S. and Australia both the household sector's and the corporate sector's demands for durable goods are influenced by financial considerations. Likewise, there is evidence which suggests that the speed of response of the household sector spending decisions exceeds that of the corporate sector. Similarly, studies imply that both the corporate sector and the household sector exhibit a considerable degree of sensitivity to the presence of yield differentials in managing their portfolios of financial assets and liabilities. As a consequence, we feel that there is a substantial amount of evidence to support PCHD's final conclusion: ". . . the channels whereby "money" affects the level of economic activity are many All expenditure flows are affected in the process."^{2/} Like H and L and B and D, PCHD's research must be commended; it is an important inductive study of the real and financial behaviour of the household and of the corporate sectors.

Insofar as these three studies have shed some light on what goes on in the Friedmannian lake, there is on the channels of interaction among monetary and real variables, they vindicate the efforts of those economists and statisticians who have compiled sectoral flow of funds and balance sheet statistics. In our opinion, these works have succeeded in this task; they have produced empirical evidence which clarifies to a considerable extent the nature of the transmission mechanism between the financial and the real sectors. There are now quantitative studies which imply that sector balance sheets, that balance sheet adjustments as represented by the flow of funds, that a range of asset prices or . . .

1/ Gordon Fisher and David Sheppard, op.cit., chapters 2 and 3.

2/ PCHD, op.cit., page 37.

ther reciprocals (interest rates or implicit real rates of return) and that financial market imperfections are taken into account by the decision takers whose behaviour dictates the pace and pattern of economic activity. True, the results of these pieces of empirical research^{and} of the supportive investigations catalogued by Cohen are only indicative of the causal interpretations read from them. Nevertheless the rigour their authors employed to establish and test their hypotheses compares favourably with other econometric investigations of the more conventional Keynesian or new quantity theory approaches to the inter-action between the financial and real sectors. The synthesis of the interest rate transmission mechanism with the money stock adjustment-expenditure linkage within the framework of the theory of portfolio balance certainly seems to be a promising approach for understanding the development and the role of the financial system.

THE CONCLUSION

The success which H and L, B and D and PCHD have achieved in specifying and testing models of the real and financial behavioural decisions of important sectors in the U.S. and Australia should be gratifying to financial statisticians and to financial market practitioners bankers, investment analysts and the like. The former should be pleased in the sense that the maze of financial statistics they have provided (balance sheet statistics, flow of funds statistics and records of financial rates of return) have been put to good use. The latter should be comforted in the sense that now academic economists have made an explicit attempt to appraise the behaviour of key groups of financial market actors and produced findings which at least partially accord with how the practitioners view their activities. Interest rate levels, interest differentials, government injected market imperfections, flows of certain funds,^{and} sector balance sheet positions are shown to influence the demands for financial assets and for real assets as well as being

influenced by the pace and pattern of real economic activity. The quantitative impact that the Friedman type monetarists' research had on how economists regard the financial sector may well be extended as a result of H and L's, B and D's and PCHD's papers.

In effect, it appears that the care these authors have taken in specifying their models and tackling the problems of interdependence, of identification and of disaggregation in examining the validity of the portfolio balance approach as a means of obtaining good estimates of sector asset demand and supply equations has produced a handsome dividend. Contrary to Bain's conclusion that to date the evidence produced by other researchers in the field " . . . does not add up to a coherent body of analysis . . ." ^{1/} now seems that we have a mental construct, a theory of economic behaviour, which serves reasonably well in tracing out the mechanism which underlies the financial and the real sector decisions of a number of important groups of economic actors.

As PCHD point out, a very good feature of this approach is its intuitive appeal to our good sense too; that is, it accords with how we observe ourselves and others reach their decisions in the market place. The availability of mortgage finance has a good deal to do with whether or not we enter the housing market as effective market participants. The presence of interest differentials on similar savings instruments does influence how we store our net worth. Our current portfolio of assets and liabilities (real and financial) has an influence on a host of economic decisions we plan to take. As certainly, our expectations about the future level of rates, of prices, of employment, and of our earnings, coupled with the degree of uncertainty with which we hold these expectations, influences our desired portfolio of assets and liabilities.

1/ A. D. Bain, op.cit., page 1037.

The fact that this approach accords with this ^{good} sense, and, what's more, has been shown to produce supportive empirical results does make it an attractive one to explore.

We stress "explore" as it is certainly clear that both theorists and econometricians have a great deal more to do before actual market practitioners will be able to be confident in either the descriptive or prescriptive content of this type of academic research. In the meanwhile, that is, while we wait for more definitive results from such explorations, we can at least garner some insights from the already completed studies which should assist the policy maker.

First there is the rather obvious point, which has been well documented by the work of the Chicago type of quantity theorist, that financial developments, and especially changes in the money stock, have a pronounced influence on the pace and pattern of economic activity. Next, however, there is the somewhat less well established point that changes in other assets or in certain liabilities (mortgages and instalment credit) may well play a similar role by easing or tightening the feasible budget constraint of certain spending units. Thus, inasmuch as monetary authorities feel that they have a duty to stabilise domestic demand, there is the implication that they should pay a considerable amount of attention to the operations of other financial intermediaries besides the banks, especially the home mortgage granting institutions, in designing their policy measures.

A third feature which stands out is that the financial markets are far from perfect. Lenders and borrowers develop habits which tend to channel savings flows in particular directions; a practice which both tends to establish the framework within which market participants are constrained to operate - the State often takes a hand in ensuring the ground rules are enforced - and which in time generates excess demands for or supplies of certain types of finance. This

feature seems to have two implications for the national policy maker - (a) on the grounds of efficiency, liquidity and profitability the State should encourage the main financial institutions (banks, insurance companies, building societies) to diversify their borrowing and lending practices, and (b) such a stimulus towards a more competitive posture should be gently done as the abrupt legislative elimination of the habitual constraints, as in the case of Competition and Credit Control, may lead to sudden and very destabilising changes in the pace of financial market activity.

A fourth feature seems to reinforce the above conclusion. The evidence presented by H and L, B and D and PCHD does suggest that at the margin the demands for real and financial assets are influenced by real or financial rates of return and by rate differentials. In effect, within each preferred habitat, there is plenty of evidence to suggest that the market participants certainly pay attention to asset prices and asset price differentials in planning and executing the degree of their participation. As a consequence, given the presence of preferred habitats has tended to generate excess demands and excess supplies, a fusing of these habitats may well lead to consequences which are not predicted by the authorities: as they put it, their estimated money demand function may break down.^{1/}

Finally, the products of H and L's, B and D's and PCHD's research does not conflict with the general policy conclusions which stem from the monetarists' research work. If anything, these products provide a readily understandable rationale as to why monetarists generally recommend that in the interests of economic stability, the rate of increase of the stock of money should be carefully managed; it should

^{1/} A reading of the various issues of the Bank of England Quarterly Bulletin since September 1971 suggests that the Bank of England takes such a view.

not be allowed to oscillate wildly around the long-run trend line.

In effect, the findings which have emerged from these rather sophisticated portfolio balance studies of the role and of the operations of the financial sector indicate that other financial variables as well as money have an influence and are influenced by real sector developments. As a consequence, until determinants and the effects of these other financial variables are worked out with some precision, the authorities should be cautious when they meddle with what could well be a fairly fragile financial equilibrium.

B I B L I O G R A P H Y

- Altman, Edward I., "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", Journal of Finance, September 1968.
- Bain, A. D., "Flow of Funds Analysis: A Survey", Economic Journal, December 1963.
- Bank of England, An Introduction to Flow of Funds Accounting 1952-1970, Economic Intelligence Department, B.O.E., December 1972.
- Berman, L. S., "Flow of Funds in the U.K.", Journal of the Royal Statistical Society, Series A, 1965.
- Bosworth, Barry, and J. Duesenberry, A Flow of Funds Model and its Implications, presented at the Federal Reserve Bank of Boston's Money Conference, June 1973.
- Brainard, W. C., and J. Tobin, "Pitfalls in Financial Model Building", American Economic Review, Papers and Proceedings, May 1968.
- Christ, Carl F., "Econometric Models of the Financial Sector", Journal of Money, Credit and Banking, May 1971.
- Cohen, J., "Copeland's Moneyflows After Twenty-Five Years", Journal of Economic Literature, March 1972.
- Committee on Finance and Industry, Report, Cmnd. 389, London, H.M.S.O., 1931.
- Dorrance, G. S., The Search for Tranquility: An Essay in Financial Analysis, I.M.F., Washington D.C., 1 December 1973.
- Fand, D. I., "The Monetary Theory of Nine Recent Quarterly Econometric Models of the United States, Comment", Journal of Money, Credit and Banking, May 1971.
- Fischer, G., and D. Sheppard, "Effects of Monetary Policy on the United States Economy, A Survey of Econometric Evidence", OECD Economic Outlook, Occasional Studies, December 1972.
- Granlich, E. M. and J. H. Kalchbrenner, "A Constrained Estimation Approach to the Demand for Liquid Assets", Federal Reserve Bulletin Special Studies Paper, No. 3, December 1969.
- Hendershott, P. H., "A Flow-of-Funds Model: Estimates for the Non-Bank Finance Sector", Journal of Money, Credit and Banking, November 1971.
- Hendershott, P. H., and R. C. Lemmon, "A Flow of Funds Model: First Estimates and Forecasts", Unpublished Mimeograph, January 1974.
- Hicks, J. R., The Social Framework, 2nd ed., Oxford, Clarendon Press, 1952.
- Jaffee, D. M., "Discussion of the Bosworth-Duesenberry Flow of Funds Model", Unpublished Paper, Federal Reserve Bank of Boston, Monetary Conference, June 27-29, 1973.

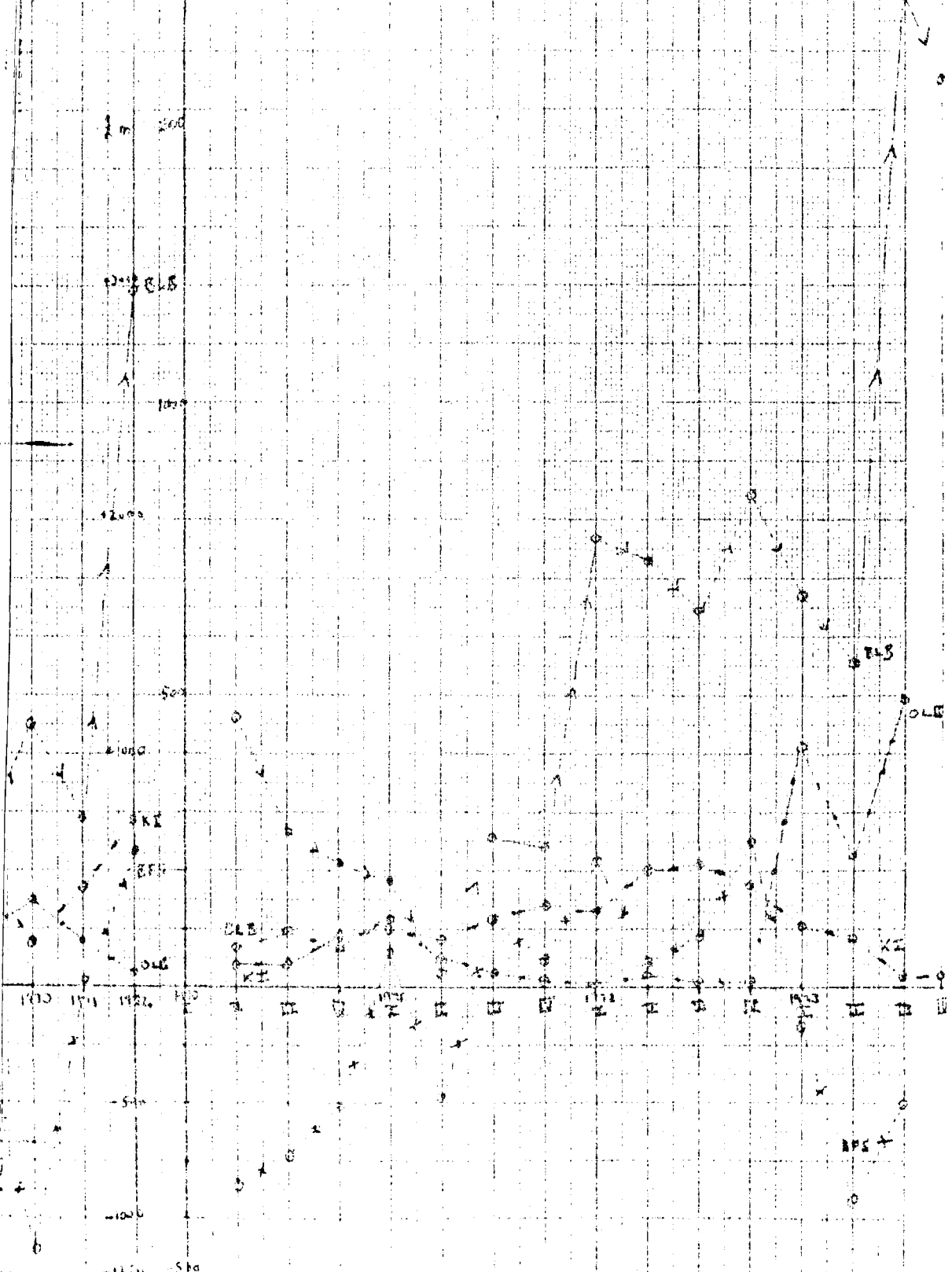
- Markowitz, H., Portfolio Selection, N.Y.: Wiley, 1959.
- Mendelson, M., "The Optimum of Grossness in the Flow-of-Funds Accounts", The Flow of Funds Approach to Social Accounting, New York, NBER, 1962.
- Parkin, J. M., "Discount House Portfolio and Debt Selection", Review of Economic Studies, October 1970.
- Parkin, J. M., R. J. Cooper, J. F. Henderson, and M. K. Dance, An Integrated Model of Consumption, Investment, and Portfolio Decisions, Reserve Bank of Australia, August 1973.
- Rasche, R. H., "Simulations of Stabilisation Policies for 1966-1970", Journal of Money, Credit and Banking, February 1973.
- Revell, J., The British Financial System, London, Macmillan, 1973.
- Revell, J., The Wealth of the Nation, Cambridge University Press, 1967.
- Roe, A., "The Financial Interdependence of the Economy 1957-66", A Programme for Growth, No. 11, Department of Applied Economics, University of Cambridge, 1971.
- Tinbergen, J., Business Cycles in the United States of America 1919-32, Geneva, The League of Nations, 1939.
- Tobin, J., "Liquidity Preference as Behaviour Towards Risk", Review of Economic Studies, 1958.
- Evans, Michael K., Macroeconomic Activity: Theory, Forecasting, and Control, New York, Harper and Row, 1969.
- Leontief, Wassily W., The Structure of American Economy, 1919-1939, Fair Lawn, New Jersey, Oxford University Press, 1951.

TABLE XI

Flow of funds: Loans granted to the industrial and commercial companies industry, 1968-1972, and quarterly, 1970-III to 1973-III
 \$ millions

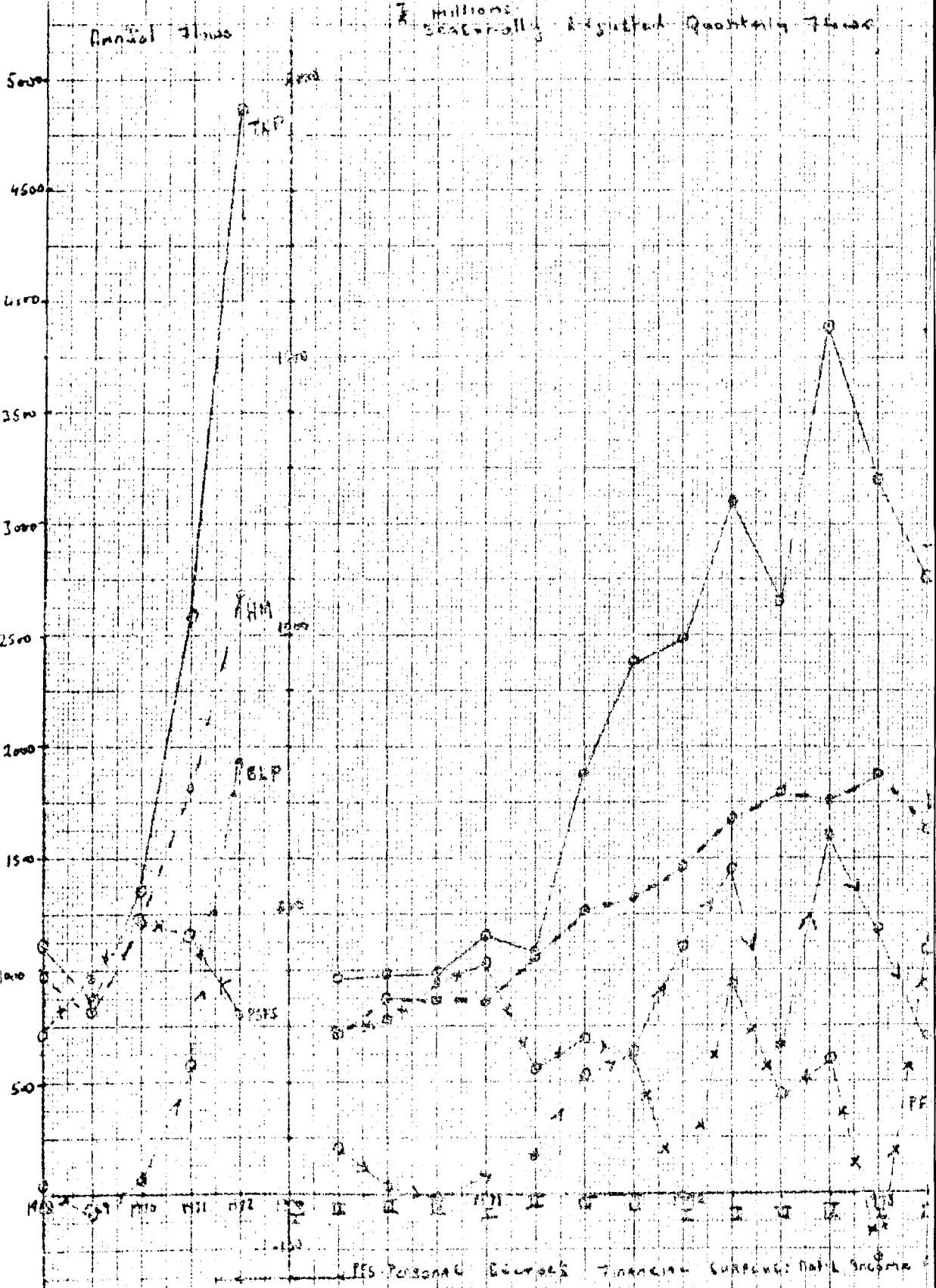
Annual flows

Seasonally adjusted quarterly flows



Legend:
 O: Business sector's financial surplus, net income accounts
 △: Business sector's capital issues
 □: Business sector's deposits
 ×: Business sector's loans

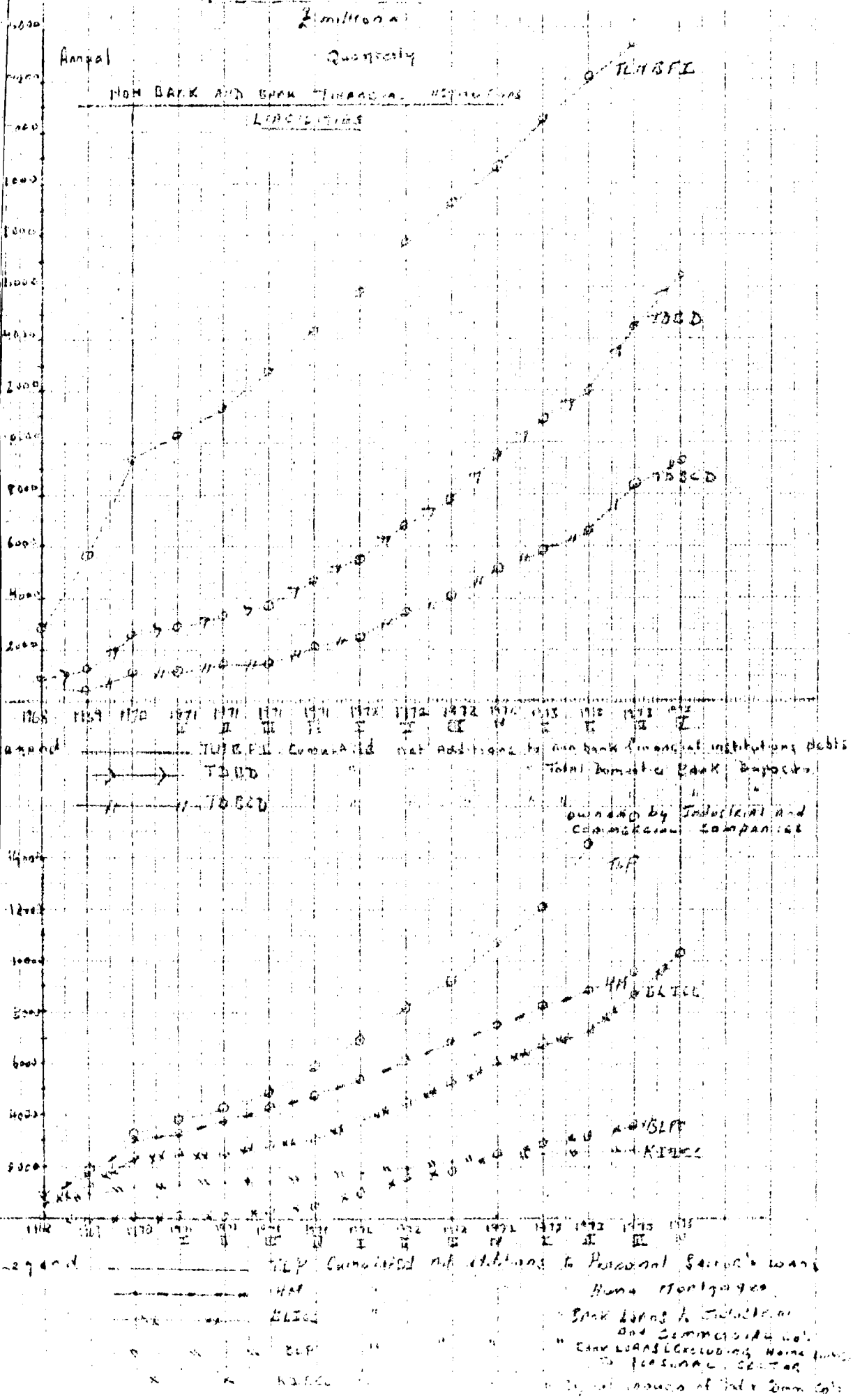
Annual flows (Billions) seasonally adjusted Quarterly flows (Billions)



Legend: TLP TOTAL NET LOANS PERSONAL; HM TOTAL NET HOME LOANS; BLP TOTAL NET BANK LOANS (EXCLUDING HOME LOANS TO PERSONAL SECTOR); PF PERSONAL FINANCE SURPLUS; NATL SECUR.

Source: S.E. Q.E. Dec. 1973, June 1973, June 1972, June 1971 & Co. Note: Totals exclude all inter-sectoral personal loans.

U.K. Trends of Funds: Cumulated changes in Selected Financial

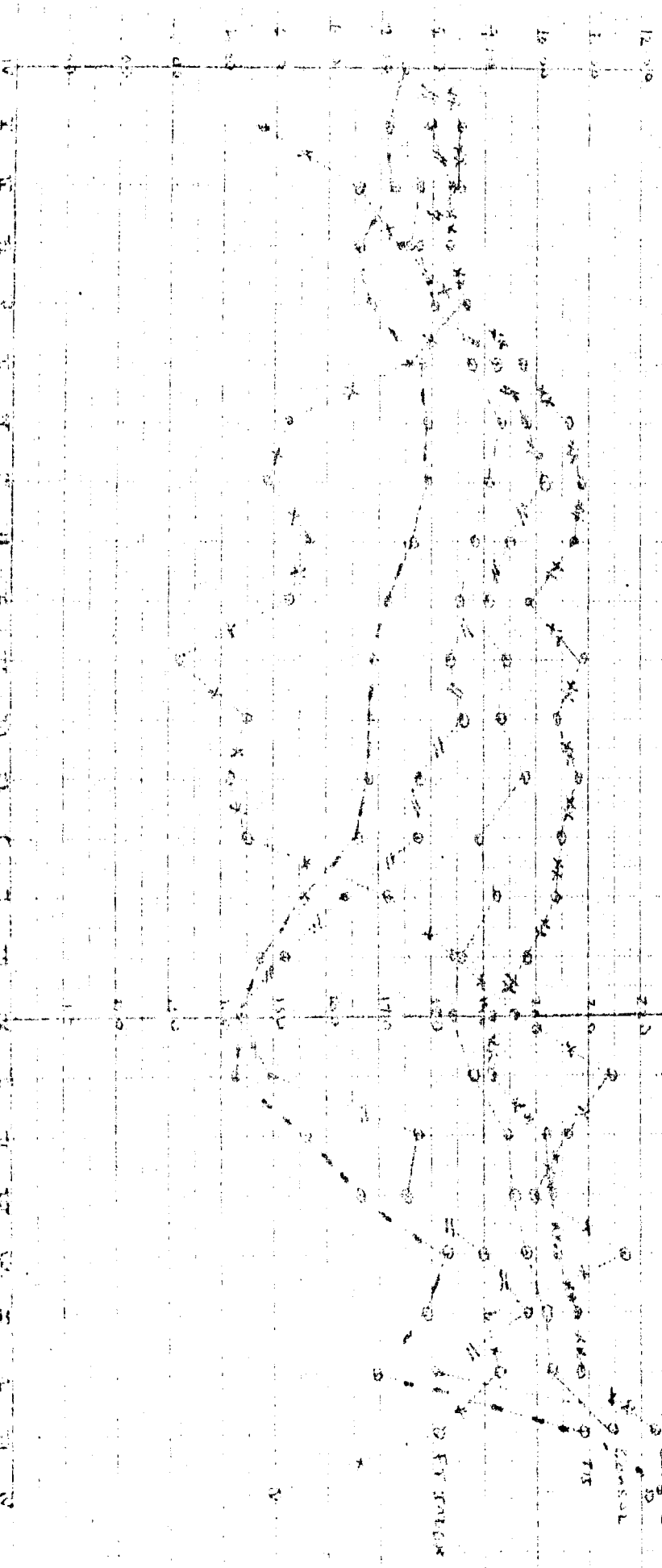


INDEX

TABLE V

FT Price Index

CHECKED
DOORS



1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924

Legend

FT Price Index

DOORS

CHECKED

X64: 87: (B26)

155507

1-1