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Reflections on Economic Growth
and Progress

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Reflections on Economic Growth and Progress

It is very generous of the authorities of the Gokhale School to invite me to deliver its Founder's Day Address. This School is entrusted with important practical, no less than academic, responsibilities and it is discharging these under its able Director with a devotion and efficiency which stand in no need of testimony from me or anybody else. With no lesser men than Ranade, Joshi and Gokhale as pioneers, the tradition of Economics in Maharashtra is singularly high. Circumstances have made it more and more difficult rather than more and more easy to preserve and enrich the tradition. To contribute to the understanding, appreciation and solution of contemporary economic challenges is hard enough; it is much harder to ensure a continuous line of younger economists who will be equal to the greater challenges of the future.

As these thoughts were passing in my mind my eyes fell on a singularly thoughtful address by a British Economist of great fame and ripe judgment on 'The Teaching of Economics in Schools and Universities'. The many important ideas presented in that address will no doubt receive due attention from all teachers, administrators and businessmen in our country. I shall take the liberty, however, of pressing on your attention to one or two things in that address which echo my own feelings as a teacher and student of Economics. It is important to be told and borne in mind that the study of Economics is properly undertaken only by those whom age has brought some maturity of judgment and some insight into the social process. As the British economist puts it, Economics is essentially a subject for grown-ups. In other words, introduction to Economic studies at a premature stage in life is likely to end in more harm than good. The second significant assertion in that address is that short of study and mastery at the highest levels, Economics is of little use for any technical purposes. As the distinguished economist expresses it, in contrast to some subjects, in which an indifferent performance still implies some minimum of technical equipment, economics as a technical qualification is not of much use unless at a high level of competence. These truths are a much needed admonition which deserves to be inscribed on the portals of our Schools and Colleges of Economics.

The present state of training in and study of Economics is not a matter of exclusive concern to Schools and Colleges of Economics and Business as such. Since the Depression and during and after

World War II, our knowledge of and approach to the whole economic process have widened to an amazing extent and with this widening, there has taken place an equally amazing expansion of the role of public authority in the economic process. With the adoption of planned growth as our public policy, the economist is now no longer merely an adviser—grave as that responsibility is. Economists are more and more needed to undertake the responsibilities of economic administration and economic decisions. There have been some suggestions even of economic services to run parallel with general administrative services. It is not too early, therefore, to look a little more carefully and objectively into the state of training in and study of economics in this country.

We are now on the threshold of the Second Five Year Plan. With the many practical issues raised in the course of the formulation of the Plan and the practical advice tendered by our economists, this audience must be quite familiar by now. While many of the controversies still remain controversies, the work of the economist is not at an end after he has stated his views and propounded his perfect or imperfect solutions. As in other sciences, there is in the field of our labours the same over-riding distinction between fundamental economics and applied economics. There is, however, this difference that economic problems when they arise cannot wait for their solution on the resolution of issues in fundamental economics. Yet, there can be no more compelling or in the long run, more fruitful obligation on the student of economics than to test and examine the problem and its proposed solutions in the light of fundamental economics and to ask himself whether his articles of faith sustain or contradict his conclusions. The unfortunate inattention to fundamental economics is the besetting sin of economic studies in India.

We embarked on our First Five Year Plan in 1950-51 when our national income per head was Rs. 228 computed at 1955-56 prices. This is all the economic level of welfare India could achieve in the course of 50 years during which free enterprise and competition were operating under more or less modernised conditions with a minimum of government interference and public investment. The First Five Year Plan raised our per head income to Rs. 251 from the aforesaid level of Rs. 228. We now propose to raise by 1960-61 our per head national income to Rs. 296 an improvement of 18 per cent of which about 13 per cent will be consumable income.

Nobody would claim for our Five Year Plans that they embody planned economy or are an initial step even towards a clearly defined

and accepted objective of a planned economy. The absence of a doctrinaire ideology behind the plans gives no excuse, however, either to deny or to belittle the magnitude of the effort which the country has and is expected to put forth. The allocation of Rs. 2,500 crores for investment in the Public Sector for the next Plan is a sufficient indication of our drastic break with the economy under which we lived before the era of planning. What ultimate shape our economy will assume, it is difficult to foretell at this stage. Much will depend on world-forces and the attitude towards our efforts of capital-surplus countries like the U. K. and the U. S. A. But, of one thing, we can rest assured. If our political leadership does not prove unspeakably incompetent, our people will not willingly place more material goods above moral and mental freedom. Whatever the ultimate shape of our economy at the end of 20 or 25 years after 3 or 4 more plans have gone into execution, it is self-evident that we are acting on some faith in or theory of economic growth and progress however much or little that faith and theory are explicit to our minds.

The last hundred years have witnessed a remarkable contrast indeed in economic progress. Under free enterprise and competition, many countries like the U. K., Germany, the U. S. A. and to a qualified degree, Japan have recorded spectacular progress in national wealth and per head income. On the other hand, almost all the countries inhabited by non-white populations have stagnated or made very slow progress even though they were exposed to free enterprise and competition in a more or less similar manner. It is computed that in the non-communist parts of the world, the under-developed countries contain 48 per cent of the total population but not more than 8 per cent of the total income of this area accrues to them. Different explanations have been forthcoming to explain the contrast. Some explanations account for the difference by pointing to the social postulates of capitalist economy and their absence in the regions of coloured populations. In particular, these thinkers deprecate the rapid expansion of non-white peoples and the alleged preponderance of non-economic forces behind this expansion. According to others, the absence of social pre-conditions of capitalist growth does not cover more than a fraction of the truth. It is pointed out that some countries at least which have made and are making spectacular economic progress are as much distinguished as non-white peoples for high rates of population growth. Nobody suggests in their case a preponderance of non-economic causes in the growth of population. It is also clear that high rates of population growth are not the only or indeed the most significant

distinguishing feature of the alleged correlation of poverty and colour during the last two hundred years. Much more significant perhaps is the fact that till recently coloured peoples have lived in political subordination to European countries and have suffered from the drawbacks of colonial economics. How exactly colonial economics have operated to the disadvantage of their populations is self-evidently a large subject which cannot be pursued further in this place.

It is a curious fact of economic history that the contrast which held till now between white and non-white countries is emerging on an equally spectacular scale as between Western Europe and the U. S. A. during the present century. Before the 1st World War, the output of the U. S. A. was smaller than the aggregate output of Western Europe. To-day, the output of the U. S. A. is twice as large as that of Western Europe. The extent to which output has grown during recent years is only 35 per cent for Western Europe while it has been 100 to 200 per cent for the U. S. A., Canada, Australia and New Zealand. Self-evidently, the shift in economic power has been on a tremendous scale.

The broad facts I have placed before you indicate the difficulty and magnitude of the task before economists. It is practically an invitation or challenge to formulate a theory of economic progress which will apply to whole human groups and will hold true under diverse conditions. Such a theory must explain why economic progress in India was so painfully slow before the planning period and why it may be expected to be rapid as a consequence of our plans. It must account adequately for the grave and obstinate disparities of economic conditions between white and non-white populations. It must also cover in its range the economic dichotomy in the non-communist world—the astonishing shift of economic balance in favour of the U. S. A. and against Western Europe. Clearly, this is a gigantic enterprise the success of which is by no means assured. There is the obvious peril that in attempting this task, the economist is likely to stray far beyond what is his proper field of labour—perhaps into the uncharted terrain of sociology, morality, religion and what not, and cease to be an economist. But signs are not wanting in recent literature and publications that economists think such a theory of economic growth to be not altogether unfeasible. One can only pray for strength to their pens and success to their private enterprise.

It would not be fair or accurate to suggest that the theory of economic progress is a recent emergence in economic thought. As

a matter of fact, economic thought has passed through very significant phases in relation to this important subject. The founders of English Political Economy did indeed start with this fundamental approach, why nations and peoples are endowed with more wealth or less wealth; with higher or lower standards of life. Adam Smith's great work bore the significant title 'Wealth of Nations'. His Chapter entitled 'Of the Natural Progress of Opulence' has for its main theme the constant enlargement of the market for the 'rude produce of land' first by the rise and growth of towns and latter by the rise of foreign commerce; and the interaction between town and country. If Adam Smith's exposition dealt with the causes of wealth and economic progress, the famous essay of Malthus on Population deserves to be described as an inquiry into the causes of poverty.

With these two precursors of modern economics, and I must add, Karl Marx and Schumpeter much later, this most promising and relevant line of inquiry came to a sudden and prolonged halt. Ricardo, 'that wrong-headed man' placed the Theory of Value at the centre of the stage and for nearly a hundred years thereafter, economists were largely concerned to explain how prices of commodities and prices of the factors of production which enter into the manufacture of those commodities, are what they are and why they rise and fall. Indeed Ricardo described inquiry into growth of wealth as 'vain and delusive' on the characteristic ground that it could lead to no 'laws'. This approach to production and distribution was perhaps natural to a society in which every individual was supposed to be free to exploit to the fullest extent his natural endowments of heart and head and the social good was supposed to be an arithemetical total of separate individual goods. Ricardo's successors pictured a stationary state which evoked as a climax a most amusing chapter from John Stuart Mill. His strong disapproval of 'the trampling, crushing, elbowing and treading on each other's heels, which form the existing type of social life', his plea for limited population as a condition of that solitude which is 'essential to any depth of meditation or character', and finally, his identification of the economically unprogressive state with 'as much scope as ever for all kinds of mental culture and moral and social progress' must rank among the most curious of philosophic speculations.

Perhaps, I am unfair to John Stuart Mill. Perhaps, he was thinking not of the year 1956 but 2056 or 2156. In that year perhaps, the marginal output of agriculture will equal exactly the

then minimum of subsistence, the rate of interest and profit will be zero, further accumulation of capital will cease, births will evenly balance deaths and all shall have become meditative philosophers. But if in the meanwhile inter-planetary travel develops?

By the time that the theory of value appeared to attain fullness and completion, the European countries had reached unexpected levels of economic achievement. A new evil now forced itself on the attention of the economists. Even at the high levels of economic achievement, it was found that at different time intervals, factories, machines and labour were thrown out of work and social peace and security were imperilled. Unemployment even at the highest levels of productive capacity, with its intricate bearings on management of money, techniques and volumes of investment and saving, etc. engrossed so much attention that causes of national wealth and poverty appeared irrelevant and relatively at least, unimportant. The mainsprings of economic progress remained in the background of economic thought till the irruption of Russia and under-developed countries into the international arena spotlighted a new danger to the Western and Atlantic world.

The dynamic causes of economic changes could for convenience be grouped under the following heads—Population; Techniques and Invention; Capital Formation; Entrepreneurship; Social and Political Framework and Integration; and Occurrence of War and Peace. In evolving a theory of economic progress out of these forces, we have to answer very largely two questions. Does each of these forces conform to some law of increase or decrease related to economic change? Secondly, how far does each in its increasing or decreasing phase stimulate sympathetic and complementary changes in others? If we seek our answers in the light of conditions in our own country before and after planning, there is perhaps some hope of finding some kind of solution to the interrogation with which I began my speech.

It is very doubtful whether population has a law of growth or decline in relation to standards of life and economic progress generally. It is difficult to define a level of life or consumption, so low that people cannot live below that line and, therefore, births and deaths must balance at it. One has only to recall at what desperate levels of life mankind lived and multiplied a thousand or two thousand years ago and at what desperate standards people are living and multiplying today. It is also impossible to define a standard of life or consumption so much above human needs that a substantial fall in it will not cause appreciable hardship and suffering. The

whole history of consumption proves that luxuries of yesterday become necessities of today. In short, it is futile to try to establish or presume a relationship between levels of consumption and birth or death rates. Even the statistical approximation that the curve of long term growth of population must conform to a particular shape has been falsified in post-war U. S. A.

The main facts of population growth over the last 200 years falsify assumptions of any such law. Between 1850 and 1950, Europe with its rising standard of life has increased in population by more than 100 per cent. During the same 100 years, the standard of life in Asia has stagnated or improved very insignificantly while its population growth is a little less than 100 per cent. The vacant spaces of the earth in North America and Latin America have during that time recorded population accretion of more than 500 to 600 per cent due in a large measure to immigration and partly to natural increase. In short, there is no correlation of any particular kind between population growth and standards of life taken by themselves.

I have cited population as an illustration only because it is capable of more precise measurement and is, therefore, capable of better verification. Explorations of the behaviour of other forces in the economic system have yielded no more definite results. There are no laws which explain the course of entrepreneurship, techniques and inventions or any other conceivable single force at work in our modern economics. This is hardly a surprising conclusion. None of them has a meaning or significance for life except in collaboration with the other forces. It is their relationship of interdependence which together make up the subject matter of economics and economic progress. The riddle of economic progress is well approached as a study of these interdependent relationships and how this interdependence operates to stimulate economic progress rather than economic stagnation or retrocession.

A theory of economic growth cannot avoid the question of how to measure economic growth with some degree of precision. The ratio of income to population—per head income—suggests itself as one such measure. I submit that per head income is related more to volume of employment and welfare than growth as such. Another possible measure would be the ratio of investment to output—the relationship, rising or falling, between marginal increments of investment and output. This relationship is significant because it highlights the state of arts and inventions—the technological level. But it is really a hybrid concept compounded of

human efficiency, technological level and the stage of industrial achievement—whether from less capital-intensive to more capital-intensive production or vice versa. To some, investment-employment ratio appeals more—since man lives as much by bread as by work. But this ratio clearly indicates not economic growth but technological choice in relation to a moral and sociological attitude. On the surface of it, our own 2nd Five Year Plan seems to hinge on the total volume of possible investment—although the scheme of priorities will show that there is implied a certain concept of a desirable process of growth. The aggregate volume of investment is obviously related to the ratio of income and consumption or what is the reciprocal of it—the rate of savings. Some people talk of all kinds of austerities—despite Gautam Buddha's sane advice not to over-indulge the body nor to over-discipline it. It appears to me growth must ensue more out of an expanding surplus than a contracting volume of consumption. The weakness of this index lies in the fact that it seems to regard economic growth as a matter of mere initiative and parasitical adoption of foreign techniques. While all these ratios suggest important corrections, I am assuming for my purposes almost pragmatically arising output or productivity per worker as the most suitable index of economic growth—leaving qualifications to be invoked when necessary to the particular argument before us.

It is perfectly true that wealthy countries are wealthy because they employ much capital per head and under-developed countries are under-developed because the per head capital employed is very small. But a statement like this throws little light on the process of economic progress. It merely records the outcome of a long historical development. England in 1770, Germany in 1870 and the U. S. A. in 1820 may be described as poverty-stricken in relation to the affluence they achieved by 1914. What exactly their level of consumption and standard of life was in those years, it is difficult to say. Certain statistics—perhaps not very reliable and on purely analytical grounds, certainly subject to grave qualifications—could be cited to indicate that even in 1820, the per head dollar income of the U. S. A. was several times the per head income in India in the year 1955. But for our present argument, it is enough to know that the capital employed per head in those years was relatively small in the U. K. and the U. S. A. and certainly insignificant in Germany. What was the exact process then by which the capital employed per head became so large in those countries while under-developed countries like India continued to have small capital in employment per head?

When the question is put in this manner, the essential character of the problem confronting under-developed countries becomes a little clearer. If capital employment is to increase, there must be in a society of private enterprise and competition, an increase in productivity of existing resources. The increase in productivity could occur in one or two sections at a time or even in a few sections. In any circumstances, inducement and opportunity to invest and increased productivity per head always march together.

For the purposes of our present argument, it is not necessary to raise the further question of conditions under which expanded output means expanded aggregate welfare. It introduces no serious logical inaccuracy if we take it for granted that the position of individuals relatively to one another is not adversely affected by the expansion of aggregate output. It is sufficient for our present purpose to grasp the proposition that accelerating capital formation could accrue only from rising output and productivity per worker.

It is not necessary to my present argument to raise the question of the disposition of increased output per head as between savings or capital-formation and consumption. Statistical material on this subject is not adequate and does not admit of conclusive inferences. It has been claimed for example that in certain countries while the absolute volume of savings has grown with output, the proportion saved has remained constant. Again, while it is correct to say that higher incomes admit of high proportions of savings, it is simply arbitrary to suggest that the additional expenditure on the health and education of the mass of children made possible by equalised incomes is not the best form of saving and capital formation. It would also be arbitrary to assume that the State could not play a far more effective role in national savings than a system of vastly unequal incomes. Analysed by sources, profits are claimed to be a very significant source of savings. But this is no clue to how its allocation will alter with changes in its institutional basis—particularly its relationship with wages and labour. Besides, if depreciation—dividend—expansion policies determine the allocation of profits, investment to a large extent becomes autonomous and independent of consumption even under competitive conditions. In short, it is not correct to assume a relationship of cause and effect between the volume of savings and capital formation, and a particular institutional set-up and pattern of income distribution.

A general examination of the course of national output in the U. K. illustrates how this growth in productivity and expansion of investment have taken place. Till 1855, the industries which dis-

close the top rates of growth are iron and steel, coal, copper and building. Between 1855 and 1913, these industries are displaced in their top ranking by aluminium, zinc, rubber products and jute products. Between 1923 and 1935 rubber, lead, electricity and motor car industries record the highest rates of growth. This is the story of producer goods industries generally. Cotton yarn and piece-goods industry which embarked on its march towards modern technique as early as 1770, practically exhausted its potentialities of technical improvements by 1850.

It will be observed how the distinguishing feature of the growth of national output in the U. K. has the appearance at intervals of time of new products, of new processes, of untiring inventions and innovations. Technical productivity and opportunities of investment are shifted to and enlarged in one field after another. The record of Germany is well known to be similar. In the case of the U. S. A., the factors of imports of capital from Europe and immigration are apt to impress out of proportion. This is partly because we are too familiar with the course of the so-called Industrial Revolution in the U. K.—really it was more an evolution than revolution—and too little aware of the achievements of other countries. If the ordinary Indian student were asked to name American inventors and innovators of the 19th and early 20th Century, he will probably halt at Edison. Very few will show awareness of the achievements of Whitney, McCormick, Howe, Bell, Wright and a host of less arresting figures. Many of them were indeed no more than mechanics, labourers and farmers who solved practical difficulties from their practical knowledge and bent and hardly pretended any technical or scientific knowledge of principles involved. A close examination reveals that the technical improvements and innovations which occurred in the U. S. A. during 1821 to 1861 and 1861 to 1913 make a very long and formidable list indeed. American effort on research and innovations in industry after World War I and particularly after 1939 is a colossal performance which needs no special elaboration.

Are inventions and innovations sporadic accidents? I am inclined to the view that in the economic and industrial field at least sporadic accidents are rare and under modern conditions of organised research and laboratories are becoming rarer. True, a very quarrelsome wife drove Arthur Young out of home to travel far and wide and bring home great knowledge of agricultural improvements in Europe. A grave private disadvantage turned out to be an epoch-making public advantage. True, a peremptory call

for lunch from his wife led the scientist husband to the accidental mixing of sulphur with rubber and revolutionised the industry. But by and large, industrial techniques and innovations have a law of causation and a law of exploitation. The law of causation is that one change in a process or technique directs and brings about a concentration of attention on the urgency of complementary changes just as impending war expedites experimentation in radar or splitting the atom. It is well said that early British inventors and innovators were mere thinkers and hardly scientific men. Application of steam power to the spinning frame produced yarn on such a scale that there was a cotton-shortage which caused the appearance of Whitney's gin. The abundance of cotton and, therefore, yarn almost compelled the invention of powerloom. Exhaustion of wood drove men to coal and fear of exhaustion of low phosphorus content iron ore suggested to two amateur Welsh boys the simple logic that if acid refractory lining can eliminate basic impurities, basic lining—limestone and dolomite—should remove acid impurities, i. e. phosphorus. The law of exploitation of improvements and innovations is that, whether accumulated during depression or routine conditions, exploitation is expedited under conditions of prosperity and high profits or under conditions of war expenditure.

Technical improvements and innovations occur more or less continuously—although at intervals they are spectacular in their scale and consequences. Their incorporation into the production process is not, however, a matter of mere scientific technique isolated from the economic situation. Sometimes, more than one improvement or technique compete for adoption. Two economic regions will not find the same technique equally suitable to their economic welfare and advantage. The economic forces and factors which end in the adoption of some techniques and rejection of others present some of the most difficult intricacies of economic analysis. In a country like ours where the most modern and the most mediaeval techniques, economic practices and economic and social attitudes co-exist cheek by jowl and even insist on such co-existence, no apology is perhaps needed to make a pause to obtain and appreciate our own bearings in relation to this vital subject.

It is an empirical fact that most technical improvements and innovations are labour saving and ensue in vast investments of capital. Labour saving improvements and inventions have been more common than those which lead to economy of capital. It is also natural that labour saving improvements should be more easily

noted and remembered since they are embodied in some material form. Capital saving improvements are a story of total displacement and disappearance of pre-existing capital goods and, therefore, are to be met with only in scientific records. If the miraculous carpet of Arabian Nights became a reality, railways and road vehicles must vanish and future generations will become aware of this economy of capital only through scientific works. There is indeed a suggestion to the veracity of which I am not in a position to testify that the investment of capital needed to implement more recent inventions and innovations has been on smaller and smaller scale.

If the existing technique means less investment of capital and more employment for labour while the new technique means more of the former and less of the latter, it is clear that the adoption or rejection of the new technique is a matter of comparison of total outputs and total costs. Speaking generally, 100 fishermen working with ordinary boats which for a day's use equal the labour of 10 men raise much less fish than 10 men who work a trawler which for a day's use is equal to the labour of 100 men. This fact is partly empirical and partly logical. The higher productivity of the trawler is an empirical fact in the same sense that the imperceptible atom contains such power that if a fission is started in a chain reaction, the atom bomb results. Power inherent in nature is far greater than human power. It is a logical fact in the sense that 100 men are set to work on the construction of a trawler rather than any other known alternative techniques only when the trawler with 10 workers is estimated to raise more fish than any other technique could with the aid of 100 men.

If the net output—net i. e. after allowing for depreciation and interest—with the boats and the trawler is per head in the ratio of 6 to 40 (which is the ratio of handloom output and textile mills output per head) it is clear that the wages of the workers with the boats and the trawler should approximate to the same ratio. But this by itself will not decide whether the boats or the trawler will be employed. The wage level which will decide in favour of this technique or the other will be the wage obtainable in an alternative employment, i. e. the general economic situation of the country. If 100 men can be obtained at a wage level much below 6, employment of the boat technique will be more profitable. If the wage-level is nearer 40, the employment of 10 men and the trawler will be unavoidable. In other words, the choice of technique will be decided by the abundance of scarcity in the country of labour

relatively to capital which is only another way of saying—the price to be paid for labour relatively to the price of capital.

If the choice of techniques is decided by the abundance or scarcity of labour relatively to capital, it is implicit in the argument that the range of available techniques is almost limitless. In other words, labour and capital are supposed to have almost a limitless substitutability. Actual experience, however, is that while capital may be said to have a limitless capacity to displace labour, labour is not able to replace capital to the same extent—particularly when enormous power, utmost precision, etc. are required. If this were not so and the techniques available were only two or three, it would mean that we are confronted with fixed factor-proportion combinations. With one technique 'X' quantity of labour only must work with a unit of capital. With another technique 'Y' quantity of labour only could work with the same unit of capital. If all available capital absorbs the labour the production technique requires and a surplus of labour is still left out, that surplus will remain unemployed.

Hence, every technique high or low has its own investment-employment ratio and its investment-output ratio. It is an empirical rule that the higher the technique, i. e. larger the investment per worker, the lower is the aggregate employment and the higher the aggregate and per worker output. The under-developed regions are, therefore, confronted with a hard choice. Should they achieve economic growth by adopting higher techniques with large productivity per head, leaving the question of full employment to be solved by the more rapid capital formation accruing from higher per head productivity? Or, should they moderate the pace of growth by adopting lower techniques with larger employment and run the risk of the per head productivity being too low to act as a general stimulus to advancement?

While it is certainly not inaccurate to speak of the general technological level of an economy, each particular technique can only be specific to a particular industry. Much depends of course on how we define the area of particular industries. But by and large, it would not be inconceivable to seek demarcation of areas by product or process or some other practical criterion. This has suggested to some the idea of prescribing and enforcing different levels of technique for different industries in the interest of employment.

The difficulties of this solution are clear. Different technical levels in the same industry or in different industries mean different

productivity per worker and consequently, different wage levels. It is impossible in the face of trade unions to hold down the rise of wages in the higher technique industries. It is impossible to offer comparable wages to the lower technique industries except by heavy subsidisation which means only a check on capital formation in the long run. If labour is non-competing because it is physically and socially tied to particular areas, there might be some scope for employment of lower techniques and prohibition of expansion of the higher techniques industry. The encouragement to immobility of labour and mental immobility which is inseparable from lower techniques are by no means the only drawbacks of such policies. As I shall presently show, limitation of the size and technological levels of some industries imply limitation of markets and technological progress and efficiency of many other industries. Many capital goods, engineering and special steel industries must for example suffer if the market for textile machinery is restricted to mere replacement demand of the existing industry. If half a dozen comparable industries like this were affected, the aggregate effect on the momentum of industry generally will be much more serious than some persons imagine.

The present controversy about small scale industry versus mechanised production, therefore, stems ultimately either from lack of faith in unlimited substitutability of labour and capital or from unwillingness to allow wages to find their par with technical productivities. As in most such controversies, the truth lies somewhere in the middle. Neither traditional or medieval techniques nor the most advanced American techniques suit the economic situation of this country. What we need most are continuously rising and progressive techniques with an occupational redistribution of population in conformity with them.

Be this as it may, investment in new opportunities is supposed to be related to entrepreneurship just as higher productivity per worker is inseparable from technical improvements and innovations. Entrepreneurship is, broadly speaking, of three kinds—imitative or parasitical, predatory, and original or constructive. Efforts have been made by Sombart, Max Weber and others to connect the predominant types of entrepreneurship with prevailing social values which themselves are apt to reflect prevailing social philosophies like natural harmony of the physiocrats and Adam Smith, hedonism and utilitarianism of Bentham and Mill, etc. These efforts to my mind are in a measure infructuous. There is little warrant for the grotesque exaggeration of the pecuniary character of social values to which

many of these writers like Veblen are prone. In our own times, with the more or less complete divorce of technical craftsmanship from business enterprise brought about by the joint stock company, entrepreneurship consists largely of financial venturing at the risk of other people's money and tends for that reason to be more and more predatory. To predatory entrepreneurship profit, howsoever made, is the only motive-force and justification of business. To constructive entrepreneurship, profit is only a sign-post to guide its efforts and to test its expectations. Its inspiring impulses are largely non-pecuniary. Individual entrepreneurship did play a great role in the first, i. e. 19th Century phase of economic growth. But, there is little analytical reason today to distinguish between entrepreneurship and other industrial ranks and skills and seek a separate theory and law for its presence and growth. Entrepreneurship, engineering and technological direction, administrative and skilled labour are in our times the outcome of economic opportunity and political and institutional framework. Conditions of economic opportunity are different in advanced and under-developed countries. It is generally true that in under-developed regions, entrepreneurship and, therefore, technique tends to be of the imitative or parasitical type. Productivity can be raised for a while by mere imitation but a stage must arrive when the undependable nature of the progress and growth becomes quite clear. The creation, widening and regulation of economic opportunity becomes, therefore, an important task of under-developed countries.

Entrepreneurship and innovation have been more evident in industry and transport than in agriculture. They have been prominent in agriculture only in those countries or at those stages of economic growth in which social institutions and practices have been favourable to the existence of the big, capitalist farmer. They could hardly be thought of in connection with older countries and millions of small or subsistence owner cultivators. Since social institutions and objectives are decisive in the creation of these conditions, it is natural and unavoidable that the role of entrepreneurship and innovation should fall in these circumstances to society at large, i. e. the government. The community projects of our Five Year Plans illustrate excellently the extent and scope of the entrepreneurship and innovation urge legitimately to be demanded of the State.

If no political or social obstacles interfere with the free flow of technical improvements and inventions; productivity may in

consequence be expected to rise continuously; and business ability, technical and production skills to multiply in response to economic growth, are these conditions sufficient to assure increasing returns and economic growth? Except at low levels of subsistence farming and primitive economic life, all production is for markets. Unless there are markets already in existence or potential markets which can be brought into existence, technical progress of which division of labour is undoubtedly a great feature must come to a halt very prematurely. Allyn Young converted Adam Smith's unsophisticated proposition 'Industry is limited by capital' into the highly sophisticated thesis 'Industry is limited by markets', and made it the starting point of his stimulating exposition of the law of Increasing Returns. How markets expand, what part markets have played and could play in economic growth—these are indeed crucial points in the process of economic growth.

Increasing returns in the present context are, it must be observed, not the same as those analysed by Marshall. To Marshall increasing returns was essentially a phenomenon of partial equilibrium and related to one particular industry. Marshall's main concern in developing the idea of increasing returns was to explain how all firms in an industry could supply the product at falling prices and yet none of them could have supply prices falling faster than those of others and, therefore, could thrust all others to the wall. It was to resolve this difficulty that Marshall distinguished between internal economies which reach their limit at a certain point of expansion in the size of the firm and external economies which operate for the industry as a whole. I think it would not be unfair to say that Marshall went astray in his exposition of the character of external economies because of his pre-occupation with problems of partial equilibrium—an abstraction which he created largely as an intellectual exercise without weighing properly its lack of realism.

With all the fire to which it has been exposed recently, J. B. Say's Law of Markets embodies to my mind a simple and permanent truth. The output of one commodity is a demand for the outputs of all other commodities. From this he deduced the further important proposition that general over-production as such could not exist. It is clear that as applied to periodic fluctuations in employment and shortfall of demand, Say's proposition requires the qualification that investment should not fall short of current savings *ex ante*. But this flaw in the proposition is hardly relevant when we are discussing the law of secular economic growth.

The inadequacies of Say's proposition—it would be unfair to describe them as flaws—deserve careful attention. The proposition relates entirely to the domestic market or in other words, a closed economy. In these circumstances, the expansion of one industry is naturally limited by the size and capacity of other industries. The limitations of partial equilibrium analysis are then no theoretical abstractions but economic realities. Individual elasticities of demand and supply, factor supplies and costs are then serious restrictions on the optimistic expectations of the law of markets. If, however, the proposition is extended from the output of one industry to the outputs of several or many industries, the Law of Markets acquires a much deeper significance. The relationships and interdependence between intermediate products and producers goods generally are far more intricate and varied than are to be met with in the field of consumer goods. Some industries are in essence multi-product and cannot exist economically unless markets for their major products at least arise by the emergence of other appropriate industries. Some industries are single product which however have multiple uses and therefore are precluded unless several industries using the product offer a sufficient market for it. In the case of some basic industries, replacement of their equipment itself requires other industries which depend mainly on its product but which are themselves limited by their multi-product or multi-purpose character. This interdependence and relationships are apt to extend in an unbroken chain not at one level but several levels. We are thus in the domain of economic growth and the operation of increasing returns not in one industry but in industry in general. No industry has then a demand schedule or supply schedule of its own which is not a part of the demand or supply schedules of ten or twenty other industries.

As a matter of historical fact, the proposition about markets even when restricted to the rise and expansion of particular industries has operated to the benefit and economic growth of particular countries like the U. K. and Germany. In the case of the U. K. I have indicated a while ago, how economic growth shifted from one industry, or one set of industries to another. But this happened because of two specially favourable circumstances to the pioneer epoch of economic history. Firstly, the industries operated not in a closed economy but had access to large foreign markets. Secondly, because of grave time lag in economic growth and other severe disabilities, the foreign markets in India and elsewhere were incapable of any resistance. In those industries in which growth was on a bigger scale, it is found that the U. K. depended substantially on

foreign markets. Between the forties and the seventies of the last century, the proportion of output exported abroad was 57 to 75 per cent in cotton, 27 to 24 in iron and steel, 30 to 50 per cent in woollens. The proportion of exports to output was smaller in those industries like coal and jute which were complementary to the more expanding industries. The rate of growth throughout the 19th century was distinctly much higher for those industries which produced substantially for export markets and much smaller for those which produced for home markets. Germany and Japan arrived on the international economic stage later but very much earlier than many other countries. The role which foreign markets have played in their economic growth is probably very much the same as in the case of the U. K.

This suggests that if industry is limited by markets the task before an under-developed country like India is enormous. Such countries have no foreign markets or colonial economics with the support of which one home industry could, after a time lag, be followed by a second industry and the second by a third and so on. If each industry is limited by the size of the market, the size of this market is itself limited by the growth of other industries and the growth of all industries is limited by their productivity, i. e. the rate at which increasing returns operate—self-evidently, creation of conditions favourable to general growth becomes the main concern of under-developed countries. The Indian experience is quite illuminating from this particular angle.

Leaving aside industries producing commodities which like sugar enter into mass consumption or like cement, are the raw materials of general demand and use, it will be found that most industries which have grown after 1920-21 are beset with difficulties inseparable from markets small in size. In many of them the units of production could be counted on the fingers of one hand and even these units have each limited an installed capacity. These small size units have to obtain their special raw materials or components from other domestic industries. These intermediate products are apt to be high priced because the aggregate demand for the products of these industries is itself small. If to avoid the expensiveness of domestic production on small-scale, raw materials or components are imported from abroad, the supplies are undependable or are charged such high export premiums that the producer in India is at a serious disadvantage compared with producers in the exporting countries.

The size of a particular unit and of a particular industry must not be mistaken as the most general or even the most important cause of its high costs. Where the raw materials, etc. bought from outside make up 80 to 90 per cent of the costs of production, it is clear that mere expansion in size offers little scope for fall in per unit costs. It is the size of the markets for these intermediate products and other components which cause the disadvantage and this cause is external to the industry in question. This is how each market of small size takes its turn in restricting the sizes of other markets and Say's proposition about markets operates in the reverse direction.

Even more significant to the size of markets and capacity of each industry is the relationship between consumer goods industries and producer goods industries including transport and power supply. It is suggested that the order of growth for under-developed countries is for consumer goods industries to precede producer goods industries. It is not easy to discover conclusive historical proof for this in the experience of pioneer countries which started on their pioneer career because of the discoveries of the stationary steam engine, coal and coke, smelted iron and steel or others, which followed subsequently. The logical proof probably rests on the supposition that producer goods are more complicated and involve higher technologies and labour skills. While this point may be granted in the case of some primitive regions of the earth, it may be doubted whether there is any significant region of the earth where the basis for a rapid multiplication of such knowledge and skills is not already present. A much more convincing reason for the historical precedence of consumer goods industries probably is that the market for staple goods of consumption is co-extensive with the population and needs relatively much smaller effort to establish.

On the other hand, if producer goods industries do not grow side by side with consumer goods industries, the under-developed economies are exposed to two or three severe disadvantages. If producer goods, whether for the production of consumer goods or other producer goods are not available domestically, they must be imported from abroad. Importation and installation of producer goods from abroad have been found to involve such high cost investment that the service or output can hardly be offered at reasonable prices. The element of depreciation and obsolescence itself becomes a very large part of the output costs. The erection and other technical and nontechnical expenditures are by no means moderate. In India, this is particularly true of electricity which is the key to the success

of so many other producer and consumer goods industries. The price of electricity in India is as high as 3-4 pies in some areas, 6-8 pies in other areas, and 12 pies and more per kilowatt elsewhere while it is less than 4 pies in many industrial areas of the U. S. A. (hydro), about 3-4 pies in the U. K. (thermal), less than 4 pies in Germany, less than 3 pies in Switzerland, and less than 1 pie in Scandinavia (hydro). This high supply price of electricity is a major obstacle in the development of industries like aluminium, special steels, basic chemicals like caustic soda, calcium carbide, fertilisers, etc. The electricity cost of caustic soda in four regions of this country is calculated at 18.6 per cent to 47.2 per cent of the total cost. It has been actually suggested by many that the capital cost of electrical installations should be written off and supply-price equalised all over the country. Perhaps, though one cannot affirm it with certainty, an equally serious disadvantage relates to the volume of employment caused directly or indirectly by such investment in industries dependent on equipment from abroad. Investment in a consumer goods industry like textiles, offers a certain volume of direct employment. If the equipment of textile industry were manufactured in India, there would be further indirect employment on manufacture of textile machinery, steel and other materials for textile machinery, iron ore, coke, electricity, etc. for such steel and raw materials and so on. When the equipment of textile machinery is imported from abroad, the total employment created by the investment in the cotton goods industry is difficult to trace and compare. Imports must be balanced by exports and our imports of textile equipment must create an equivalent demand for our exports. Since India's exports are largely concentrated on 6 products like jute, tea, raw cotton, etc. which account for 67 per cent of her exports, the earnings of the foreign manufactures of textile machinery must be diffused all over the world to be finally canalised into the demand of our exports. Who could estimate and compare the direct employment in cotton goods, cotton textile machinery, steel, iron ore, coke, electricity, etc. with largely indirect employment in cotton goods, jute, tea, raw cotton etc.? The question becomes much more complicated when we take a dynamic rather than static view of employment. As consumer goods industries expand, the expansion in the concomitant producer goods industries has to be much more rapid. This is so because the producer goods industries have to supply output for new consumer goods units, some more output for replacement requirements of pre-existing units and quite an appreciable output for their own replacement needs. A survey of consumer and producer goods

industries of the U. K. over more than 150 years discloses a much higher coefficient of expansion for the latter throughout these years—even allowing for the complication of the export factor.

I have stressed till now very largely those external economies which ensue from the size and complementarity of different industries. There is an observable tendency particularly in relation to under-developed regions to stress external economies of a different kind. Firstly, there are those economies which private enterprise does not create because there is what Prof. Pigou contradicting his own definition of economic-welfare has described a divergence between private net product and social net product. Social overheads like education, health, measures tending to social integration fall under this head. Then, there are other economies which private enterprise could create but the benefits of which are so vital to all economic activities that they could not be left to private exploitation. Transport, power supply, etc. fall under this head. While I do not under-rate the significance of these social and economic overheads—particularly roads, railways and transport generally, I feel that India has reached a stage of development at which the other economies are more important and the absence of these economies and the consequent low level of output are themselves holding back investment in social and economic overheads. The very high cost of electricity supply and relatively poor level of technical and scientific training and education may be cited as proofs of how initial high costs of investment with capital goods imported from outside restrict the expansion of social and economic overheads. It is deeply significant that even today the investment pattern of most advanced countries reveals that of the total annual investment, housing, public works and construction claim 25 and 35 per cent respectively while manufactures and agriculture receive only 30 per cent.

Bearing in mind the special circumstances of India, we have to ask ourselves this fundamental question. As between an economy largely of private enterprise and competition and an economy of planned growth, which economy is likely to satisfy the basic conditions of economic progress? The basic conditions are three. First, per head productivity must rise by a continuous replacement of lower techniques by higher techniques. Second, replacement of lower technique by higher techniques is not a matter of parasitical imitation but of active improvements and inventions. Third, the growth has to be all along the line—industries of consumer goods, producer goods necessary for consumer goods and producer goods to produce producer goods inclusive of the most vital service, viz,

transport—with rates of growth which are properly balanced. We have had experience of private enterprise for over fifty years if not 100 years experience of our big industry, of small-scale and cottage industry, of small and large farming. Has our private enterprise disclosed a proved tendency to replace existing techniques by higher and still higher techniques? Has it stimulated and encouraged technical improvements and inventions? Is private enterprise capable of taking simultaneous initiative in many industries simply because progress of each depends on the progress of others? Your answer will be probably as good as any I could offer.

A verdict against an economy very largely of private enterprise and competition does not prove that an economy of planned growth is necessarily better. It only proves that an economy of planned growth is an alternative to be given a trial. It is always possible to suggest that it might prove worse. It is necessary, therefore, to pause and inquire into the special weakness to which such an economy is prone.

So far as the first condition of progress is concerned, when the planning authority is also the political authority, there is always the grave menace of political pressure of vested interests. Vested interests, particularly those which arise out of money power or mere number will always range themselves on the side of status quo except when change promises direct profit and benefits. The ruthlessness of some planned economies is not a proof of mere human depravity. More often, it is the counterblast—indiscriminate, many times—to mere blind and selfish resistance. As for improvements and innovation, the planning authority must learn and accept the position once and for all that the ordinary civil servant never improves and never innovates. Self-preservation teaches him to avoid risks and to take all decisions by seeking precedents to be found in files 30, 50 and even 100 years old. Even in relatively innocuous fields like education, nothing is to be expected from him except dogmatic self-assurance and resistance to innovations. This evil can be diminished by creating—as we hear from the highest quarters—a differently trained personnel for industrial and economic services. It is not the quality that is at fault. Those who are employed even at top business levels in this country bear no comparison with our administrative personnel in point of talent, adaptability and mental background.

As for balanced and integrated growth, the planned growth should prove decisively superior. The planning authority has

access to and can raise larger investment resources, is not inhibited by prospects of distant or limited profits, can harness the incalculable impelling force of patriotism and public enthusiasm to the tasks. These are indeed essential conditions for the creation of those pre-requisites of economic growth like transport and power-supply which have many times preceded the industries which came into being much later. But for the expensively built railways of the U. K., the economically and more carefully constructed railways and waterways net-work of Germany and the wastefully constructed and wastefully operated railways of the U. S. A., the economic record of these countries might have related a different tale. It is significant that the railway milage of the U. K. completely ceased to expand after 1895—25 years in advance of serious competition of road traffic. All these countries were so well and so rapidly covered with railways that further additions were not needed.

Democratic planned growth suffers from other dangers of which it would be well to make a note. It expects of the citizen a high degree of self-restraint and understanding. As a wage-earner, he is expected not to demand wage-increases or wage stabilisation if such measure is likely to cause inflation. As a consumer, he is presumed not to desire goods or indulgences which impair savings of the community. As a politician, he is endowed with such wisdom and public-spirit that he votes for imposition of taxation or relief from taxation quickly enough to offset inflationary or deflationary tendencies or refrain from pressure on the central bank. As a producer, he is prepared to check his predatory instincts, conform willingly to anti-monopoly laws, not to evade taxes and to welcome technical improvements and innovation.

This brings us to the end of our journey in a very under-developed region of Economics. Many must have noted that in our journey we did not come across the very common signposts of consumption, investment and public expenditure functions and others like income, interest rate and marginal capital efficiency which lie further beyond. Nor did we note any output functions on the other side of the road. This is not accidental. In my opinion, these are very relevant when we are exploring the terrain of upswings and downswings of economic activity and unemployment but not for the theory of economic growth and progress. It appears to me almost certain that these upswings and downswings are not inherent in, much less identical with, the process of economic growth and progress. Our proper guide to the law of secular economic growth and progress is not Keynes; still less others, who

on arbitrary assumptions about propensity to consume and inability of technological changes and investment opportunities to keep pace with postulated rates of consumption would convert the theory of employment into a theory of secular stagnation; but Adam Smith, and those others much better equipped, who follow in his footsteps.

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