what, through domestic production and international trade, it can be made to yield. It is not only development and the associated investment that are responsible for inflationary tendencies, but the entire social climate of a demand-oriented economy. We must be aware of the deep roots of these forces when we talk about whether and how to control inflation.

INVESTMENT, INCOME AND THE MULTIPLIER IN AN UNDERDEVELOPED ECONOMY*

by **V. K. R. V. Rao**

IT IS CONVENIENT TO BEGIN BY SUMMARIZING THE MAIN CONTENT of the Keynesian theory on the subject, which, incidentally, makes no attempt to give a separate treatment to under-developed economies. The volume of employment and of income is determined by the level at which aggregate demand price is equal to aggregate supply price. The propensity to consume is such that when Y_w increases, C_w increases but not to the same extent. The gap has to be made up by I_w or investment. The nature of the propensity to consume is such that marginal propensity to consume declines with increasing income and unless investment increases sufficiently, aggregate demand price will fall short of aggregate supply price, so that income and employment will decline till equality is attained between the two. Savings and investment are always equal, but this equality is brought about because of appropriate changes in the volume of income and employment. Saving is a residual, while it is investment which is the crucial factor. Increase in investment results in increase in income and the increase in income leads to an increase in saving. The marginal propensity to consume determines the relation between an increment of investment and the appropriate increment of income such as will induce the increment of saving necessary to maintain the equality of saving and investment. This relationship between increment of investment and that of income is determined by k or what is called the multiplier, the formula being $\Delta Y_w = k \ \Delta I_w$, where $1 - \frac{1}{k}$ is equal to the marginal propensity to consume. As the marginal propensity to consume declines with increasing income, increasingly larger increments of investment become necessary for securing

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given increments of income at increasing levels of income. As the marginal propensity to consume is likely to be not far short of unity in the case of poor communities, the multiplier has a high value in their case with the result that comparatively small increments of investment are likely to bring about full employment. At the same time, as their average propensity to consume is also high, investment accounts for a smaller portion of the value of their aggregate output which is the same thing as the volume of their income; fluctuations in investment, therefore, account for smaller fluctuations in total employment than they do in the case of richer communities whose average propensity to consume is less and in whose case, therefore, investment accounts for a larger share of the value of the aggregate output. The paradoxical situation, therefore, arises that the poorer the community the greater the ease of obtaining for it a condition of full employment and the smaller the fluctuations in its employment caused by changes in its net investment; while the richer the community the more difficult it is to secure full employment, while the greater are the fluctuations in its total employment due to fluctuations in its net investment. Add to this the fact that fluctuations in net investment are more likely in a richer community, the conclusion seems to follow that instability in employment is a characteristic of increasing national income, and with it there is an increasing tendency towards the growth of involuntary unemployment unless offset by an increased investment that is possible only with the abandonment of both *laissez faire* and balanced budgeting. Keynes is mainly concerned with the problem of involuntary unemployment in the richer communities, and his whole thesis relates to the question of how to secure full employment in the case of these countries. The remedies he puts forward, viz. cheap money, deficit financing, redistributive taxation, and public investment have all become current coin in national economic policies, with full employment as the major objective. Unfortunately Keynes did not formulate the economic problem of underdeveloped countries, nor did he discuss the relevance to these countries of either the objective or the policy that he proposed for the more developed, i.e. the industrialized countries. The result has been a rather unintelligent application—not on Keynes's

part—of what may be called Keynesian economics to the problems of the underdeveloped countries. Thus it is common ground with most writers on the economics of underdeveloped countries that what was required for their economic development was an increase in the purchasing power of the people. Deficit financing and created money have figured in practically all the plans, both official and unofficial, that have been put forward, e.g. for the economic development of India: while cheap money seems to have become as much an article of financial faith in the underdeveloped countries as in the industrialized economies. It is, therefore, of some importance to examine the problem of investment, income and the multiplier in the special context of underdeveloped economies with a view to finding out how far Keynesian ideas on economic policy are relevant and applicable to the problems of economic development. I shall deal with this question with special reference to my own country, viz. India.

Take first the question of full employment. Everyone is agreed that full employment is a major desired goal of economic policy. According to Keynes, in a poor country where the marginal propensity to consume is high and the multiplier, therefore, also high, comparatively small increments of investment are sufficient to secure full employment. It must be pointed out that according to Keynes an increase in employment is identical with an increase in real income whether measured in terms of wage units or of output. Full employment, therefore, involves the maximization of output that is possible with the elimination of involuntary unemployment and the full utilization of existing capacity and technical knowledge. Once this stage is reached, any attempt to increase investment sets up a tendency in money prices to rise without limit or leads to the emergence of a state of true inflation, where rising prices will no longer be associated with an increasing aggregate real income. Progress beyond this stage is not discussed in Keynes, the implicit assumption being that there is a unique level of full employment and when that is reached the desired objective has been attained. Even when subsequent writers have discussed the next step by linking up the multiplier principle with that of acceleration, what is visualized is a change in the nature of employment, with a larger proportion now going into investment industries, rather than an increase in total employment. Let me now examine these concepts in the context of an underdeveloped economy like India.

To begin with, we have here a predominantly agricultural country, where capital equipment is low and the standard of technical knowledge applied to production vastly inferior to that in the west. Moreover, the number of employees or workers employed on a wage is comparatively small, the vast majority of earners falling under the category of self-employees or household enterprises. Added to this is the fact that a significant proportion of the national output is not produced for the market but is intended for self-consumption. Under these circumstances, the multiplier principle does not work in the simple fashion visualized by Keynes primarily for the industrialized economies. An increase in investment leads to an increase in income and in employment. The next increase ought to come from a secondary increase in income, employment and output in the consumption-goods industries, to be followed by a tertiary increase and so on, till income, output and employment have increased by k times the initial increase in investment, and saving has increased by an amount equal to the additional investment. I am aware that the investment multiplier and the employment multiplier are not identical, and that increase in output cannot be proportional either to the increase in money income, or to that in employment, but for purposes of argument, it is convenient to ignore these differences at this stage. Now in the case of a country like India the secondary, tertiary and other increases in income output and employment visualized by the multiplier principle do not follow, even though the marginal propensity to consume is very high and the multiplier should, therefore, function in a vigorous fashion. This is because the consumption-goods industries to which the increased demand is directed are not in a position to expand output and offer effective additional employment. The most important reason for this is the technical nature of the chief consumption industry to which the additional demand would presumably be directed, viz. food. This means in most underdeveloped countries primarily the agricultural industry. Now, agriculture all over the world is notoriously

an industry where the supply curve is steeply inelastic in the short period. Further, variations in agricultural output in a country like India, where irrigation accounts for less than 20 per cent of the cultivated area, are largely dominated by the vagaries of nature, and response to price increases is less effective in terms of aggregate output than in those of individual crops. Moreover, the belief is widely held, and not without justification, that the supply curve of agricultural industry as a whole is not only inelastic but also tends to be backward-rising, so that an increase in the value of output need not necessarily lead to a subsequent increase in the volume of output. The primary increase in income following on a given increment of investment does get spent to a large extent on the output of agriculture, and leads, therefore, to an appropriate increase in the income of the agricultural producers. But it is not followed up by these producers increasing their own output and thus adding to both employment and real income.

Apart from the reasons mentioned above, the agricultural producer is rather reluctant to act in the way postulated for entrepreneurs by classical economists or even by Keynes himself in response to increase in profits. The presence of price control and governmental procurement both act as psychological disincentives, while uncertainty regarding the duration of high prices and their future also has the effect of dampening immediate response to price stimuli. Moreover, even to the extent to which agricultural producers want to increase output, they do not get the facilities necessary either by way of technique or of supplies to carry out their intentions. One may call all this either bottlenecks or shortages or inelasticity in the supply curves of the factors of production ; the net result is the same, viz. that it is not possible significantly to increase output in the short period in spite of willingness to expend money on doing so. This means that while income increases, output does not increase in anything like the same measure in the agricultural sector. In other words, the income multiplier is much higher in money terms than in real terms, and to that extent prices rise much faster than an increase in aggregate real income.

The same conclusion also applies when we consider the behaviour of agriculturists as consumers in response to the increase in their money income resulting from the initial investment. Marginal propensity to consume being high, the larger proportion of the increased income will be sought to be spent on consumption goods. As the agriculturists are themselves producers of food, the increase that follows in their consumption of foodgrains—the increase in consumption may take the form of either increasing the quantity consumed or substitution of better quality grains for coarse grains—leads to a reduction in the marketable surplus of foodgrains. This means in turn that the non-agricultural sector of the economy now has to pay still higher prices for its foodgrains without an appropriate response on the part of production in the agricultural sector. The tendency, therefore, for prices to rise without a rise in aggregate real income is further strengthened by the working of the marginal propensity to consume on the part of the receivers of additional agricultural incomes. One may perhaps expect that the position would be different in respect of the increased consumption of non-agricultural goods on the part of the agriculturist consumers. But, even here, the position is not far different in the case of a country like India. This is due to many reasons such as the absence of effective excess capacity in industries, difficulty of obtaining raw materials and other ingredients for additional production, inelastic supply of skilled workers, and various bottlenecks arising out of controls and the general environment of a shortage-dominated economy. To the extent, therefore, that agriculturist consumers do spend a part of their additional income on non-agricultural goods, the tertiary increase in money income does take place, but not a corresponding or even a noticeable increase in either output or employment. To the extent that agriculturists find that they are unable to effect an increase in their real income in terms of non-agricultural goods in spite of expending a larger money income, the effect is to decrease the marginal utility of the additional income with the result that in terms of Keynes' second proposition presented in Chapter II of his *General Theory*, identity between utility of the wage—in this case the cultivator's income—and the marginal disutility of that amount of employment—in this case the cultivator's own labour—is reached at the existing level of the volume of labour in the agricultural industry, in spite of an increase in

producers eat the increase in output

the money value of the output of that labour, and may even be reached at lower levels of the volume of labour expended in the agricultural industry. Thus the primary increase in investment and, therefore, increase in income and employment leads to a secondary and a tertiary increase in income, but not to any noticeable increase in either output or employment in either the agricultural or the non-agricultural sector. The multiplier principle, therefore, works with reference to money income but not with reference either to real income or employment. To the extent that the increases in money income do not get absorbed by a rise in prices and leave a margin of additional real income in certain sections of the community such as agricultural producers and industrial producers, they are dissipated either by an increase in food consumption on the part of the former or by an increase in imports or in cash balances on the part of the latter; in neither case do they lead to an increase either in real income or in employment for the community as a whole.

The position may be summed up as under. In the Keynesian scheme of things the supply curve of output as a whole is comparatively elastic in the short period under conditions of involuntary unemployment. Therefore there is a relation, if not of identity, of at least comparative identity in value between the multipliers relating increment of money investment to increment of money income, of increment of money investment in terms of wage units to increment of money income in terms of wage units, of increment in investment output to increment in total output and of increment of employment in investment industries to increment in total employment. It is only on these assumptions that an increment of investment, operating on the basis of the multiplier principle, helps to increase output, real income, and employment, and leads to what may be called an automatic self-financing of the increased investment.[1]

[1] 'An increment of investment in terms of wage-units cannot occur unless the public are prepared to increase their savings in terms of wage-units. Ordinarily speaking, the public will not do this unless their aggregate income in terms of wage-units is increasing. Thus their effort to consume a part of their increased incomes will stimulate output until the new level (and distribution) of incomes provides a margin of saving sufficient to correspond to the increased investment. The

Undoubtedly the multipliers k and k' would be smaller than the multiplier linking up increment in money investment to increment in money income, for the supply curve of output is not perfectly elastic but is, on the other hand, inelastic, though the inelasticity becomes marked and increasing only as one approaches full employment. But there is no doubt that all the multipliers mentioned above must be positive and moving in the same direction if the Keynesian thesis is to apply in practice. This implies in turn that for the multiplier principle to work, there must exist the following:

(*a*) Involuntary unemployment.

(*b*) An industrialized economy where the supply curve of output slopes upwards towards the right but does not become vertical till after a substantial interval.

(*c*) Excess capacity in the consumption-goods industries.

(*d*) Comparatively elastic supply of the working capital required for increased output.

These assumptions do not hold in the case of an underdeveloped economy. Involuntary unemployment of the Keynesian type is necessarily associated with a free-enterprise wage economy where the majority of earners work for wages and where production is much more for exchange than for self-consumption. But this type of economy is of comparatively recent origin, which also explains the fact that over the whole range of human history unemployment in the modern sense is, comparatively speaking, a rare and local phenomenon. Mrs Robinson has pointed out that in a society in which there is no regular system of unemployment benefit, and in which poor relief is either non-existent or 'less eligible' than almost any alternative short of suicide, a man who is thrown out of work

multiplier tells us by how much their employment has to be increased to yield an increase in real income sufficient to induce them to do the necessary extra saving, and is a function of their psychological propensities. If saving is the pill and consumption is the jam, the extra jam has to be proportioned to the size of the additional pill. Unless the psychological propensities of the public are different from what we are supposing, we have here established the law that increased employment for investment must necessarily stimulate the industries producing for consumption and thus lead to a total increase of employment which is a multiple of the primary employment required by the investment itself.' Keynes, *The General Theory of Employment, Interest, and Money*, pp. 117-18.

must scratch up a living somehow or other by means of his own efforts: Mrs Robinson goes on to point out that such persons do not figure in the list of unemployed but take up some other work, subject however to the proviso that their productivity is less than in the occupations they have left. She continues: 'Thus a decline in demand for product of the general run of industries leads to a diversion of labour from occupations in which productivity is higher to others where it is lower. The cause of this diversion, a decline in effective demand, is exactly the same as the cause of unemployment in the ordinary sense, and it is natural to describe the adoption of inferior occupations by dismissed workers *disguised unemployment*.'[1] Mrs Robinson has pointed out further that the existence of disguised unemployment introduces a complication into the formal scheme of the General Theory of Employment, the function relating total investment ceasing to be unique, since a given rate of investment will be accompanied by a greater rate of consumption the more unemployment is disguised. Underdeveloped economies are conspicuous for the extent to which they contain disguised unemployment. Only the kind of disguised unemployment they have is not of the type visualized by Mrs Robinson, where it results from a decline in effective demand and can exist in an industrialized economy only provided there is no unemployment dole or other not disagreeable social means for enabling the unemployed to exist. In an underdeveloped and agrarian economy with little capital equipment and a somewhat low state of technical knowledge like India, on the other hand, disguised unemployment is a normal feature of the economy. The term is not applied, as Mrs Robinson applies it, to wage labour taking to less productive work on account of unemployment. It is applied in the case of India to persons who are employed in the sense that they are engaged in household enterprise but who are really in a state of disguised unemployment in the sense that no difference will be made to output by their withdrawal from the occupations concerned. As is pointed out in the recent report of the U.N. Committee of Experts on *Measures for the Economic Development of Underdeveloped Countries*, 'the disguised unemployed are those

[1] Joan Robinson, *Essays in the Theory of Employment*, p. 84.

disguised unemployment,

persons who work on their own account and who are so numerous, relatively to the resources with which they work, that if a number of them were withdrawn for work in other sectors of the economy the total output of the sector from which they were withdrawn would not be diminished even though no significant reorganization occurred in this sector, and no significant substitution of capital'[1]. This kind of disguised unemployment makes a significant difference to the working of the theory of the multiplier. If unemployment in underdeveloped economies takes the form of disguised unemployment rather than that of involuntary unemployment, then the secondary, tertiary and other effects of the initial primary employment created by the initial increment of investment do not follow, apart from other reasons, for this reason that there is no labour force willing to accept employment at the current wage, and involuntarily unemployed because of lack of employment opportunities. By definition, involuntary unemployment implies an elastic supply of labour at the current wage level. Those who are suffering from disguised unemployment do not fall under this category. They are, first of all, not aware that they are unemployed and are not, therefore, on the look-out for employment. Secondly, they are already in receipt of a real income which presumably gives them at least the same satisfaction as they would get by taking up employment at the current wage level. In actual fact, a wage considerably higher than the income they are receiving in their existing occupations would be necessary in order to induce them to offer themselves for employment. In other words, they are not really involuntarily unemployed in the Keynesian sense; and yet they are unemployed in clearly economic sense in which we have defined disguised unemployment. The particular form which unemployment takes in the underdeveloped countries, viz. that of disguised unemployment, makes the economy for Keynesian purposes practically analogous with one of full employment; and to that extent prevents the multiplier from working in the direction of an increase in either output or employment. The presence of disguised unemployment thus prevents the working of the Keynesian law that

[1] p. 7 of the Report.

'increased employment for investment must necessarily stimulate the industries producing for consumption and thus lead to a total increase of employment which is a multiple of the primary employment required by the investment itself'.

Apart from the difficulties caused by the presence of disguised unemployment, the agrarian nature of the economy makes for a supply curve that, at best, is much more inelastic than that of an industrialized economy such as Keynes primarily had in mind when formulating his theory of employment. This, in turn, tends to widen the difference between the multiplier linking up increments of money investment with increments of money income from that linking up increments of investment output with increments of total output, with the result that money incomes and prices rise much faster than real incomes and output. Savings, therefore, fail to rise to equality with investment; and with deficit financing, the inflationary process sets in earlier and proceeds faster in an agrarian or underdeveloped economy as compared with an industrialized or developed economy. The case for investment supported by deficit-financing for the purpose of inducing a given increase in output is, therefore, much weaker in an underdeveloped economy as compared with that in a developed economy.

This conclusion gets further reinforcement when we look at the organizational nature of an underdeveloped economy. In an industrialized economy the community consists of a small number of employers and a large number of employees, production for market is the rule, and consumers purchase the goods and services they require, with the result that when there is an increase in income, the marginal propensity to consume leads to an increase in the market demand for consumption goods and thereby to an increase in output and employment in the consumption-goods industries. In the case of an underdeveloped economy, however, household enterprises predominate, and production is much more for self-consumption than for the market with the result that when there is an increase in income the marginal propensity to consume leads to an increase in the demand for self-consumption rather than for purchases in the market. While this increased demand may partly be met by increased output on the part of the consumers themselves, at least a portion, if not actually the bulk, of the increased demand will be met by a diversion of output from the market to their self-consumption. Thus a reduction in the marketable surplus rather than an increase in output makes available the extra quantity of consumption goods required by this class following an increase in their income, and to this extent the extra employment induced by their increased consumption is less than what it would have been if their increased consumption had been purchased in the market. In Keynesian terms, the effect of this is to reduce the value of the multiplier below the level calculable from the marginal propensity to consume. Such a conclusion would appear to undermine the theory of the multiplier, the whole basis of which is the marginal propensity to consume, and yet that seems inevitable in an underdeveloped economy dominated by household enterprises and production for self-consumption. It is, of course, possible to preserve the formal structure of the multiplier theory by regarding an increment of self-consumption as a leakage analogous to the leakage that takes place when the increased consumption resulting from increased income takes the form of increased imports. It may perhaps be added that the former type of leakage is more likely in underdeveloped economies while the latter is more likely in industrialized economies.

Another factor preventing the appropriate increase in the output of consumption-goods industries and the employment therein following an increase in income, arises from the absence of excess capacity in consumption-goods industries, coupled with a comparatively inelastic supply of the working capital needed for increasing production, which is characteristic of an underdeveloped economy. In effect, this is but analogous to the conditions that obtain in an industrialized economy as it approaches conditions of full employment ; but there is this difference, viz. that it begins to operate much earlier and is quite consistent with the existence of disguised unemployment in the underdeveloped economy.

My conclusion, therefore, is that the multiplier principle as enunciated by Keynes does not operate in regard to the problem of diminishing unemployment and increasing output in an

underdeveloped economy, an increment of investment based on deficit financing tending to lead more to an inflationary rise in prices than to an increase in output and employment. It would, however, be possible to give formal validity to the Keynesian law even in the case of underdeveloped economies by treating them as economies in a state of full employment or near-full employment. Full employment, however, is identified in the public mind with an optimum economic condition and carries with it the implication that it is accompanied by the maximum utilization of labour, capital and natural resources in the economy. That is why it is regarded as the major objective of present-day national and international economic policy and figures so prominently in the aims and objects of the U.N.O. and its specialized agencies. To describe underdeveloped economies as being in a state of full or near-full employment, therefore, is to do violence to the accepted connotation of that phrase even though it may satisfy the formal requirement of the Keynesian concept of full employment. Under the circumstances, I would prefer to say that the economic policy of deficit financing and disregard for thrift advocated by Keynes for securing full employment does not apply in the case of an underdeveloped economy. The policy that holds good for an underdeveloped economy is more on the lines formulated by the classical economists ; and if the Keynesians would say that this is because of the existence of full employment in the underdeveloped economies, there can be no *formal* objection to their statement. In any case it would follow that the economic policy that would be advocated for underdeveloped economies for increasing incomes, output, and employment would be radically different from that so universally associated with Keynes and formulated by him primarily for application to the developed or industrialized economies. In that sense, the multiplier principle with its accepted relationship between increments of investment and increments of incomes, output, and employment does not hold for an underdeveloped economy like India.

The further conclusion also seems to follow that the existence of disguised unemployment, household enterprise, production for self-consumption, dominance of agriculture, and deficiency of capital equipment and of technical knowledge—all characteristic of an underdeveloped economy—create conditions analogous to those of the full employment visualized by Keynes, when in actual fact there is no full employment in the economic, or even the popularly accepted, sense of the term. The formal effect of this on the General Theory of Employment still remains to be undertaken; but I have the feeling that the answer lies in giving up the assumption that there is one unique level of full employment. Apart from the level of full employment visualized by Keynes, there are as many levels of full employment as there are different stages of economic development. Indeed it is the transition from the level of full employment appropriate to a lower stage to another appropriate to a higher stage which constitutes the process of economic development. The economic process consists of two distinct categories, one where given the level of economic development, you move from low employment to full employment, and the other where you move from full employment at a given level of economic development to full employment at the next level of economic development. The Keynesian thesis applies only to one of these categories, viz. where, given the level of economic development, you move from low employment to full employment; it is the classical thesis which is operative for the other category where you move from one level of economic development to a higher level of economic development. The mixing up of these two categories and a consequent blind application of the Keynesian formulæ to the problems of economic development has inflicted considerable injury on the economies of underdeveloped countries and added to the forces of inflation that are currently afflicting the whole world. The old-fashioned prescription of 'work harder and save more' still seems to hold good as the medicine for economic progress, at any rate as far as the underdeveloped countries are concerned.

GROWTH MODELS AND UNDERDEVELOPED ECONOMIES*

by **Henry J. Bruton**

THE POST-WAR LITERATURE ON GROWTH ECONOMICS HAS TENDED to distinguish the growth process in a relatively highly developed country from that in a so-called 'underdeveloped' area. In the former case the analyses have been characterized by severe rigour, with consequent imposition of restrictive assumptions setting definite and specific boundaries to the problems. To a large extent, work in this area is an extension of the savings-investment analysis of Keynes into more dynamic formulations. In discussions of the developmental process of underdeveloped countries, however, there is the exactly opposite approach; the problem is usually very generally defined, rigour is frequently completely absent, and the variables considered inevitably spill over into areas which economists have long treated as beyond the scope of the discipline (for example, population, and technological change). In the absence of a general framework—a model—within which to examine the problems of the underdeveloped country, much of the discussion has taken place in a virtual theoretical vacuum and consequently is often unsatisfactory both logically and practically.

The purpose of this paper is to examine a modified version of the growth theory developed by Domar, Harrod, Fellner,[1] and others in the light of the more commonly known

* *The Journal of Political Economy*, August 1955. Reprinted with the permission of the University of Chicago Press, the publishers of this journal, and of the author.

[1] See R. F. Harrod's *Towards a Dynamic Economics* (London: Macmillan & Co., Ltd, 1952); Evsey D. Domar, 'Capital Expansion, Rate of Growth, and Employment', *Econometrica*, Vol. XIV (April 1946); William Fellner, 'The Capital-Output Ratio in Dynamic Economics', in *Money, Trade, and Economic Growth* (New York: Macmillan Co., 1951). There are many other articles, of course; Professor Fellner's paper has a short bibliography on the subject.