position and his own. But this is not what I meant to convey. My argument was that Keynes `was convinced of the necessity of complementing his positive contribution with a logical critique of the `classical' theory' (p. 89 above) and that in the early stages Keynes showed a concern for issues which would today be identified with problems in the theory of capital' (p. 85 above, italics omitted). However, `Keynes never really specifies why the internal consistency of the `classical' position turns on its treatment of capital' and, in fact, `the limited scope of his undeveloped criticism' led him to have recourse to liquidity-preference (p. 89 above). How little Keynes was aware of the `serious and fundamental character' of the problems of the orthodox theory of capital that have been exposed more recently is shown, I believe, by his using liquidity preference in this way (and, as Garegnani says, the presence of the marginal efficiency of capital only testifies further to this). The inference I drew from this was that if we developed Keynes's `initial intuition' by completing the negative task with the full-scale critique of the marginalist conception of capital (rather than using liquidity preference as is done in chapter 14 of the General Theory) we would have availed ourselves of a criticism of the conventional wisdom that was quite independent of the presence of uncertainty and expectations. It seems to me that this is to reach, by a slightly different route, one of Garegnani's own conclusions (p. 22 and 73-4 above).  

6

Theories of value, output and employment

John Eatwell

Theories of value and theories of the general level of output (as opposed to theories of the output of particular commodities) are often treated separately, too little regard being paid to the congruence of the particular theories advanced. The objective of this paper, following the approach initiated by Garegnani (Chapter 2 above) is to examine alternative theories of the determination of the general level of output in the light of the theories of value with which they are associated; our ultimate purposes being a critique of recent attempts to `re-interpret' Keynesian analysis within the framework of neoclassical general equilibrium theory (Clover, 1965; Leijonhufvud, 1968, 1971; Benassy, 1975; and Malinvaud, 1977) and a contribution to the constructive task of relating Keynes's principle of effective demand to the framework of Marxist analysis.

Section I of this paper is devoted to a discussion of the long-period method (Garegnani, Chapter 7 below) in theories of value and theories of output. Sections II and III deal with theories of output set within the framework of classical and Marxist analyses - first the classical version of Say's Law, then Marx's rejection of Say's Law and his discussion of the `possibility of crises'. Section IV presents the neoclassical version of Say's Law, exemplified by Irving Fisher's theory of investment. We then turn in section V to Keynes's theory of output as presented in the General Theory and subsequent articles, and in section VI to the interpretation of the General Theory generally known as the neoclassical synthesis (Hicks, 1937; Modigliani, 1944). Section VII is devoted to a critique of general-equilibrium analyses of `rationing' and unemployment. Finally, in sections VIII and IX, it is demonstrated that a more satisfactory critique of neoclassical theories of output than that advanced by Keynes himself may be found in the critique of the neoclassical theory of
value and distribution based on the analysis of Piero Sraffa's *Production of Commodities by Means of Commodities*; and that the framework of the classical analysis of value and distribution provides a congenial setting for the Keynesian theory of output. Moreover, the characteristics of a capitalist economy, identified by Marx as creating the 'possibility of crises' are, it will be argued, just those characteristics which define the institutional setting for the principle of effective demand.

This is clearly a rather extensive programme for a single paper, and some of the topics will necessarily be treated in a somewhat sketchy fashion. The purpose of this perhaps excessively rapid Grand Tour is to provide an overview of the issues involved, and hence to establish the central theme in an hitherto disparate literature. The reader would do well to keep in mind Garegnani's argument (Chapter 2 above) in which the particular relationship between saving and investment is shown to be the crucial link between a theory of output and a theory of value. Much of our discussion will accordingly focus on the manner in which the saving-investment relationship is formulated in the variety of theoretical structures examined.

1

In relating theories of output to theories of value we must specify the object of the joint analysis with particular care to ensure consistency in the characterisation of the economic circumstances to which the theories refer.

A primary issue in the development of theoretical knowledge in the social sciences (or, indeed, in any science) is the problem of abstraction and the definition of abstract categories. This problem has two dimensions: first, the object on which the enquiry is to be focussed must be defined in terms that will permit statements of general validity; secondly, the theory which is to explain the magnitude or state of the object must itself be constructed at a particular level of abstraction. Although these two dimensions are not unrelated they are essentially sequential. If they were to be simultaneous (as they are in present day 'intertemporal' models) the object might be defined to fit the theory, and the theory would in consequence reveal little other than its own structure.

In defining the object of the analysis and identifying the forces which determine it, the assumption is made, implicitly, that the forces of which the theory is constituted are the more dominant, systematic and persistent. Transitory and arbitrary phenomena are abstracted from intentionally; as are those forces which are related to specific circumstances as opposed to the general case. The dominant forces are expressed in algebraic form, as functions and constants, and constitute the data of the theory. The model may then (if it has been specified correctly) be solved to determine the magnitude of the object. It is known that, except by a fluke, the magnitude determined as a solution will not be exactly that observed in reality. It cannot be, since a variety of transitory forces, known and unknown, have been excluded. None the less, since the theory is constructed on the basis of dominant and persist-
specification of short-period normal prices and long-period normal prices, the concepts he substituted for the market prices and natural prices of Smith and Ricardo (Marshall, 1961, Book 5, chs 3, 5). But the same continuity may be found in the work of Walras (1954, pp. 224, 380), Jevons (1970, pp. 36, 135-6), Böhm-Bawerk (1959, p. 380) and Wicksell (1934, p. 97).

Two important aspects of the specification of this familiar framework for the analysis of capitalist economies should, perhaps, be clarified.

First, the notion of the tendency towards a uniform general rate of profit on the supply price of capital goods derives from the two-fold character of capital in a market system: money-capital and commodity-capital. In a system in which production and distribution are organised by means of a generalised process of exchange money assumes the form of the general equivalent of value, and ownership of money or access to finance endows the ability to own and control the production and distribution processes. Hence the accumulation of monetary wealth becomes, by the nature of the competitive system, the ultimate objective of each individual capitalist, leading him to attempt to maximise the return on the value of the means of production in which he invests his money. But the production of surplus (profits) in the economy as a whole is not a financial phenomenon, it takes place in the process of production. The realisation of a financial return and the organisation of the process of production are two dimensions of the same phenomenon, two phases in the circuit of capital, which find their conceptual unity in the general rate of profit.

Second, the determination of natural prices and the general rate of profit is associated with the ‘socially-necessary’ or ‘dominant’ technique of production. At any one time a given commodity may be produced by means of a variety of techniques: some ‘fossils’ embodying out-of-date methods, which are not being reproduced since at existing prices they would yield a rate of return on their supply price lower than the general rate of profit, but which none the less do yield positive quasi-rents; some ‘superior’ techniques which are used only by a limited number of producers and yield super-profits. The various theories of value and distribution are not concerned with these, but with ‘the conditions of production normal for a given society’ (Marx, 1976, p. 129), the ‘normality’ being defined by dominance throughout the competitive market.

These considerations amount to the proposition that satisfactory analysis of value and distribution in a capitalist economy should endeavour to explain and determine the normal or long-period position of the system – where by long-period is meant not that which occurs in a long period of time, but rather that which is determined by the dominant forces of the system within a period in which those forces are constant or changing but slowly. Hence if we are to present a coherent analysis of the relationship between prices, distribution and the general level of output, then the object, the determination of which is to be explained by the theory of output, must be the natural, or normal, level of output, itself the centre of gravity of the transitory forces which affect output at any given time. Thus a long-period analysis of the formation of natural prices must be accompanied by a long-period analysis of output.

This proposition would seem to contradict the popular interpretation of Keynes’s theory of effective demand as presented in his General Theory. Joan Robinson has argued, for example, that Keynes started from a Marshallian short period. Here we are today with whatever stock of capital equipment, training of labour and business organisation that the past has produced; ... (Robinson, 1978, p. 5).

Similarly, Malinvaud (1977) identifies Keynesian analysis with ‘short-run equilibrium’.

While there can be no doubt that Keynes developed his theory within what he saw as a short-period setting, it will be argued that it is the long-period implications of his analysis, as a theory of employment, which represent the significant contribution. Indeed, even on its own terms, Keynes’s analysis does not warrant the appellation short-period. For example, the fixed composition of the capital stock which defines Marshall’s short period plays no role in Keynes’s theory of employment – unemployment is, according to Keynes, not due to the shortage of a particular capital good, but to a lack of effective demand. Moreover his assumption that

We take as given the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique, the degree of competition, the tastes and habits of the consumer, the disutility of different intensities of labour and of the activities of supervision and organisation, as well as the social structure including the forces ... which determine the distribution of the national income (Keynes, 1936, p. 245)

although it might appear to be intended as a definition of a short period in the Marshallian sense, is really designed to rule out the effect of accumulation, for Keynes continues:

This does not mean that we assume these factors to be constant; but merely that, in this place and context, we are not considering or taking into account the effects and consequences of changes in them ... (ibid.).

Hence Keynes rules out changes in the dominant and persistent forces acting in a given situation, changes which Marshall argued would lead to:

Secular movements of normal price, caused by the gradual growth of knowledge, of population and of capital, and the changing conditions of demand and supply from one generation to another (Marshall, 1961, p. 379).

Finally, if Keynes had argued in the General Theory merely that the economy might be in a disequilibrium in the short period, then he would have added nothing to the prevailing theory (or indeed to his own argument in the
Treatise on Money). Since a short-period position is by definition a disequilibrium, the only novelty of his theory might be the particular form the disequilibrium is presumed to take (as we shall see this is just the approach adopted by modern proponents of ‘rationing’ theory; see Ström and Werin, 1978). There would remain the question of what would, in such circumstances, be the level of output toward which the system would tend to gravitate? Would it, for example, be the full-employment level?

Keynes was not concerned with short-period disequilibria. He claimed that the nature of the components of his theory was...

...adequate to explain the outstanding features of our actual experience; namely, that we oscillate, avoiding the gravest extremes of fluctuation in employment and in prices in both directions, round an intermediate position appreciably below full employment and appreciably above the minimum employment a decline below which would endanger life.

But we must not conclude that the mean position thus determined by ‘natural’ tendencies, namely by those tendencies which are likely to persist, by laws of necessity. The unimpeded rule of the above conditions is a fact of observation concerning the world as it is or has been, and not a necessary principle which cannot be changed (Keynes, 1936, p. 254).

The persistent forces establish the long-period level of output: it is these forces and that level which Keynes’s theory is designed to explain.

In our appraisal of alternative theories of output, and their relationship to theories of value, we should, therefore, bear in mind that

1. the theories of output should be theories which determine the normal level of output in terms of the dominant and persistent forces comprising the theory;

and in consequence

2. in relating a theory of output to a theory of value we will be concerned with the effect that prices and the distribution of income may have on the determination of the normal level of output and the tendency towards it;

3. following Garegnani (Chapter 2) we will look to the saving-investment relationship as the key to the elucidation of (1) and (2); and

4. an important role will therefore be played by theories of the rate of profit, both because this rate is related (in radically different ways in different theories) to the saving-investment relationship, and because it provides a link between monetary phenomena and the determination of real output.

II

As we are now well aware (Sraffa in Ricardo, 1951a; Garegnani, 1960; Sraffa, 1960), the classical theory of value takes as its data

the size and composition of output,

the conditions of reproduction of commodities, and

the real wage;

and these data are sufficient for the determination of relative prices and the general rate of profit. Since output is a datum there is no place in the theory of value for functional relationships between quantities and prices, or between saving, investment and the rate of profit. Changes in output will, in general, lead to changes in prices and the rate of profit, but nothing can be said, a priori, about the form of such changes, which reflect variations in the conditions of production. So the theory of value and the theory of output are formally separable from one another. In Ricardo’s case this separability is expressed in the combination of a comprehensive and consistent theory of value with a ‘theory’ of output, Say’s ‘Law’ of markets, which is no theory at all.

The law of markets proposed by Say in his Traité d’Économie Politique (1803) was constructed from two elements: the first, anti-mercantilist, locating the problem in terms of exchanges of commodities, with money being merely a medium of exchange; the second, physiocratic, portraying the interacting forces of demand and supply within the circular flow of commodities in the process of reproduction. Thus to purchase a commodity in the circular flow of production, one must produce a commodity – the supply of one commodity is the demand for another. Suppose, for example, that a hat-maker wishes to buy shoes, then he must produce a hat, take it to the market place and attempt to exchange the hat for shoes. If the shoes are available there will be a balance of supply and demand. If, however, the hat is produced but shoes are not, then there will be a ‘glut’ of hats, and a shortage of shoes. There will be an excess of a particular commodity, but there will not be an excess of all commodities – that, Say argued, is impossible. Ricardo agreed:

M. Say has, however, most satisfactorily shown, that there is no amount of capital which may not be employed in a country, because demand is only limited by production. No man produces, but with a view to consume or sell, and he never sells, but with an intention to purchase some other commodity, which may be immediately useful to him, or which may contribute to future production. By producing them, he necessarily becomes either the consumer of his own goods, or the purchaser and consumer of the goods of some other person. It is not to be supposed that he should, for any length of time, be ill-informed of the commodities which he can most advantageously produce, to attain the object which he has in view, namely, the possession of other goods; and, therefore, it is not possible that he will continually produce a commodity for which there is no demand (Ricardo, 1951a, p. 290).

Two elements of this argument should be noted. First, it refers only to the employment of capital, not to the employment of labour. As in all classical analyses it is presumed that there will, in general, be unemployed labour. The level of employment is determined by the current level of accumulation
and the social productivity of labour. If there is any tendency toward 'full employment' this must derive either from accumulation having outstripped the growth of the available labour force or by means of some form of the Malthusian population principle. Such forces are quite unrelated to the 'law' which ensures that capacity is fully utilised. Second, since, in this formulation, supply is demand, then saving, the production of commodities other than for consumption, is investment. This proposition is not based on the ex post identity of saving and investment, but on the characterisation of the motivation of production. 'It therefore seems possible to conclude that in Ricardo "Say's Law" was not the result of an analysis of the investment-saving process, but rather the result of the lack of any such analysis' (Garegnani; see Chapter 2, p. 28).

Since full utilisation of capacity is assured by the proposition that decisions to save are decisions to invest, and this proposition was accepted not only by James Mill and Ricardo, but also by Malthus. Malthus's argument for the possibility of a general glut is, at first sight, rather puzzling: Malthus's confusion is a reflection of his confusion concerning the theory of value and distribution. He identified the general glut with a fall in the rate of profit brought about by an excess supply of capital:

...how is it possible to suppose that the increased quantity of commodities, obtained by the increased number of productive labourers, should find purchasers, without such a fall of price as would probably sink their value below the costs of production or, at least, very greatly diminish both the power and the will to save (Malthus, in Ricardo, 1951b, p. 303).

As Garegnani has shown this is an extension of Adam Smith's argument that accumulation of capital will lead to a decline in the rate of profit, an argument which Ricardo had already refuted by demonstrating that the rate of profit will fall with accumulation only because wages rise due to the increased difficulty of producing wage goods (p. 27 above). As long as Malthus assumed that saving is spending there could be no logical foundation for his argument, for there would be no shortfall in the demand for capital; and to Ricardo the argument that the normal rate of profit might fall with given conditions of reproduction and a given real wage was completely incomprehensible.

The separability of the classical theory of value from the 'theory' of output adopted by Ricardo, leaves the way open for a critique of the tautological status of Say's Law and its replacement by a satisfactory theory of output, while the classical analysis of value and distribution is retained. The foundations for the first task were laid by Marx.

III

Attacks on Say's Law are scattered throughout Marx’s works, the most detailed being his critique of Ricardo's theory of accumulation in part two of *Principles of Surplus Value*. There he argues that Say's Law is false because it is based on a false conception of capitalist production; a conception which likens capitalist production to the barter of use values:

The conception that over production is not possible, or at least that no general glut of the market is possible is based on the proposition that products are exchanged against products... It must never be forgotten that in capitalist production what matters is not the immediate use-value, but the exchange value and, in particular, the expansion of surplus value. This is the driving force of capitalist production, and it is a pretty conception that—in order to reason away the contradiction of capitalist production—abstracts from its very basis and depicts it as a production aimed at the direct satisfaction of the producers (Marx, 1968, pp. 493 and 495).

Once it is recognised that capitalist production is organised and directed by the necessity of producing commodities, i.e., exchange values, and of transforming those values into the general form of value, money, the barter analysis is revealed as a profoundly deceptive portrayal of 'harmonious' capitalist accumulation:

...money is an essential aspect of the commodity and... in the process of metamorphosis it is independent of the original form of the commodity.

Crises are thus reasoned out of existence here by forgetting or denying the first elements of capitalist production: the existence of the product as a commodity, the duplication of commodity in commodity and money, the consequence separation which takes place in the exchange of commodities and finally the relation of money or commodities to wage labour (Marx, 1968, p. 502).

Marx constructs his analysis of output in two stages: first he seeks to establish the possibility of crises, those conditions which imply "that the framework for a crisis exists" (p. 509); second, he presents arguments establishing the actuality of crises (see Kenway, Chapter 8 below).

The possibility of crises is derived from just those characteristics of capitalist production which Ricardo has ignored: the commodity and money. The circuits of capital from money to commodity to money and so on, are the necessary form of the production and expansion of surplus value, but the realisation of that surplus is not unproblematical, for the circuit may be broken:

The difficulty of converting the commodity into money, of selling it, only arises from the fact that the commodity must be turned into money, but the money need not be immediately turned into commodity, and therefore sale and purchase can be separated (Marx, 1968, p. 509).

Thus Marx's notion of 'the separation of sale and purchase', refers to the separation in a monetary economy between a decision to initiate production and the ability to sell the commodities produced. The possibility of crisis is inherent in this aspect of capitalist production.

Marx's discussion of the actuality of crises is less innovative. He falls back on the idea that commodities are both independent of human consciousness and weighed down by reality. His analysis of crises is thus more speculative and less rigorous than his analysis of the existence of crises.
on just those conditions of disproportionality and disruption which Ricardo had conceded may occur – the difference being that, given the phenomena which establish the possibility of crises, these conditions lead to ‘crisis’, which is nothing but the forcible assertion of the unity of phases of the production process which have become independent of each other (Marx, 1968, p. 509).

This discussion of the actuality of crises is essentially a short-period analysis, related not to the dominant and persistent forces of the system, but to transitory elements. Marx argued forcefully that the positions of Smith and Malthus whereby an overproduction of capital might lead to a permanent diminution of the rate of profit were wrong both because of their erroneous theories, and because they attempted to present long-run analyses of crises: When Adam Smith explains the fall in the rate of profit from an over-accumulation of capital, an accumulation of capital, he is speaking of a permanent effect and this is wrong. As against this, the transitory over-accumulation of capital, over-production and crises are something different. Permanent crises do not exist (Marx, 1968, p. 497).

The character of Marx’s discussion is also evident in the contrast between the analysis of the circuits of money capital, in which ‘it is ... taken for granted ... that commodities are sold at their values’ (Marx, 1967, p. 24) and the discussion of crises in which ‘the market prices of commodities ... fall far below their cost prices’ (Marx, 1968, p. 494). But a short-period theory must always be related to some centre of gravitation defined by the persistent forces of the system. Transitory disruptions are characteristic of all analyses (including Ricardo’s), and though Marx may attempt to argue that such disruptions may be repetitive and severe, it is far from obvious that they can bear the weight which he clearly wishes to place on them unless they are related to a theory of output which contains the possibility of a level of output permanently lower than that implied by past levels of accumulation. If a theory of value, based on the conditions of reproduction of a given output, is to encapsulate the dominant and normal forces in a capitalist economy, then that output must also be the outcome of dominant forces. A satisfactory theory of crises must be linked with a theory of output which locates crises as something other than transitory phenomena. Marx failed to provide such a theory because he, like Ricardo, identified saving and investment, proposing no theory of the relationship between them, and relying on time-lags to create transitory disruption:

If the interval in time between the two complementary phases of the complete metamorphosis of a commodity become too great, if the split between the sale and purchase become too pronounced, the intimate connexion between them, 1968, p. 495).

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So while providing important insights into the possibility of crises, Marx’s analysis of the actuality of crises is severely limited by his lack of any theory of the general level of output.

IV

The construction of the neoclassical theory of value involved the provision of a logical foundation for the idea that prices are determined by supply and demand. This required that a method be found of expressing the ‘forces’ of supply and demand in homogeneous units as functions of prices (Mill, 1945). The requisite homogeneity was constructed by Jevons, Menger and Walras in terms of individual utility maximisation, balancing marginal utility and marginal disutility at the margin of constrained choice. The essential structure of the model involves the relationship between utility maximisation and the constraint provided by a fixed endowment of commodities and/or factors, the process of maximisation being based on the possibility of substitution (either direct or indirect) between the fixed elements. Taking as data utility functions technology endowments distribution of the endowments demand and offer functions (or the equivalent sets) may be constructed and counterposed to determine the set of prices and quantities consistent with competitive market clearing. The necessity of the simultaneous determination of equilibrium prices and quantities means that the theory of value and the theory of output are the same theory. In marked contrast to classical analysis the neoclassical theories are completely inseparable. (The peculiar case of the non-substitution theorem in which separability apparently exists, derives from the very basis of neoclassical theory, the possibility of substitution between factors, having been assumed away; Eatwell, 1977). What we will characterise as the neoclassical version of Say’s Law is quite different from the classical version. It consists of two propositions (Garegnani, pp. 29-30 above). First, that there exists a set of market-clearing prices for all commodities and all factors. By definition these prices equalise the supply and demand for all commodities including factors of production; except when commodities are in excess supply at a zero price. It is usually presumed that there is sufficient substitutability in the system to ensure that the price of labour is not zero. Second, that competitive forces will cause prices to tend to their market-clearing levels. Thus the equilibrium set of prices will contain a wage which clears the labour market and a rate of interest which equalises the demand for investible funds to the supply of savings.

Our examination of the neoclassical theory of output will consider the version of the theory proposed by Irving Fisher, but the argument which follows
is quite general (see also Garegnani pp. 29-41 above). Fisher's analysis is especially useful for our purposes both because he presents a particularly clear analysis of the relationship between utility maximising consumer choice and saving and investment in the determination of the general level of output, and because it provides a particularly apposite basis of comparison with Keynes's analysis, for Keynes identified part of his theory with that of Fisher:

Professor Fisher uses his 'rate of return over cost' in the same sense and for precisely the same purpose as I employ 'the marginal efficiency of capital' (Keynes, 1936, p. 141).

Fisher conducts his argument in various stages (which he calls approximations). The first approximation is an analysis of the exchange of immutable consumption streams, the second approximation includes the possibility of altering consumption streams by productive activity. Within each stage the argument proceeds from an examination of an individual's saving and spending decisions to the determination of the rate of interest by the 'market equilibrium' of the economy as a whole. For the individual 'the rate of interest is cause, and his lending and borrowing is effect. For society as a whole, however, the order of cause and effect is reversed' (Fisher, 1930, p. 119).

Intertemporal production possibilities are introduced in Fisher's second approximation in the form of alternative streams of income:

... the owner of any item of capital wealth or capital property, including, of course and especially, his own person, is not restricted to a sole use to which he may put it, but has open to his choice several possible or alternative uses, each of which will produce a separate optional income stream. He has, therefore, two kinds of choice: first, the choosing of one from any optional income streams, and secondly, as under the first approximation, the choosing of the most desirable time shape of his income stream by exchanging present income against future (Fisher, 1930, p. 125).

Saving for the economy as a whole may now be defined as taking part of the flow of production and adding it to the pre-existing stock. Production techniques are distinguished by the amount of capital required with a given quantity of land and labour to produce a unit of output.

With the introduction of techniques of production, Fisher needed to postulate a relationship between the stock of capital and the rate of return to investment of capital. He assumes that there are diminishing returns to increased investments of capital, other factors of production being fixed.

The set of available techniques defines the transformation frontier

\[ c_2 = f(c_1, x) \]  

(1)

where \( c_1, c_2 \) are consumption per head at time 1 and at time 2, and \( x \) is the initial endowment of capital per head at time 1. The rate of return on increased saving at time 1, say from \( x - c_1 \) to \( x - c_1 + h \) is defined as

\[
r = \frac{\text{gain} - \text{sacrifice}}{\text{sacrifice}} = \frac{f(x - c_1 + h) - f(x - c_1) + (x - c_1 + h) - (x - c_1)}{(x - c_1 + h) - (x - c_1)}
\]

(2)

The limit of (2) as \( h \to 0 \) is \( f' - 1 \), the marginal rate of return over costs.

The relation between the amount of saving and the marginal rate of return gives the demand for saving as a function of the rate of interest. The assumption of diminishing returns to substitution between capital and labour means that the greater the amount saved the lower is the marginal rate of return or, alternatively, the lower the rate of interest the greater is the demand for saving. By the assumptions made concerning individuals' preferences the supply of saving is lower the lower is the rate of interest. The market rate of interest is that at which the supply of, and demand for, saving are equal. This rate of interest is equal to the marginal rate of return over the cost of the marginal increase in the stock of capital. Equilibrium in the market for saving and investment will be accompanied by equilibrium in the markets for land and labour.

Hence in neoclassical analysis there exists an analysis of the relationship between saving and investment: desire to save and desire to invest are brought into equality by the functioning of the price mechanism. The essential assumption for this to take place is that there should be the possibility of substitution between capital and labour, from which is derived the elastic demand for investment as a function of the rate of interest – or, to be more accurate, the combination of the rate of interest and wage rate which clears the savings-investment market and the labour market.

(It is worth noting at this point that neither the classical economists nor Marx saw any role for the rate of profit, or indeed the rate of interest on money, as an equilibrating mechanism in the market for saving and investment. The rate of interest on money was regarded as a derivative concept 'merely a portion of the profit, i.e., of the surplus value, which the functioning capitalist, industrialist or merchant has to pay to the owner and lender of money-capital whenever he uses loaned capital instead of his own' (Marx, 1967, p. 370). Hence the rate of interest was not susceptible to significant variation other than that due to variation in the social productivity of labour and/or the real wage; see Panico, Chapter 9).

The existence of a market-clearing set of prices does not, of course, mean that such prices will actually be established. Analyses of short-period disruptions, or of trade-cycles and similar disequilibria, by neoclassical economists have therefore assumed the form of particular imperfections which limit the
competitive tendency toward market-clearing equilibrium. Such imperfections might be sticky wages and prices, 'disruptive' monetary and financial phenomena, uncertainty or lack of information leading to miscalculation by economic agents, or simply 'imperfect competition'. All of these are, however, defined by their relation to the market-clearing, full-employment level of output implicit within the neoclassical theory of value.

V

The argument of Keynes's General Theory is constructed in two essentially distinct parts. In the first section of the book, chapters 1 to 10, Keynes advances the proposition that the equality between desired saving and the volume of investment is maintained by variation in the level of aggregate output and employment. Then in chapters 11 to 18 he attempts to argue that there is no tendency for the level of investment to adjust to a level commensurate with full-employment saving. This involves both the formulation of his own theory of investment and a critique of the neoclassical theory. The structure of the book thus mirrors the intellectual development which led to the formulation of the basic propositions of the General Theory:

... the initial novelty [of the General Theory] lies in my maintaining that it is not the rate of interest, but the level of incomes which ensures equality between saving and investment. The arguments which lead up to this initial conclusion are independent of my subsequent theory of the rate of interest, and in fact I reached it before I had reached the latter theory. But the result of it was to leave the rate of interest in the air. If the rate of interest is not determined by saving and investment in the same way in which price is determined by supply and demand, how is it determined? One naturally began by supposing that the rate of interest must be determined in some sense by productivity - that it was, perhaps, simply the monetary equivalent of the marginal efficiency of capital, the latter being independently fixed by physical and technical considerations in conjunction with the expected demand. It was only when this line of approach led repeatedly to what seemed to be circular reasoning, that I hit on what I now think to be the true explanation. The resulting theory, whether right or wrong, is exceedingly simple - namely, that the rate of interest on a loan of given quality and maturity has to be established at the level which, in the opinion of those who have the opportunity of choice - i.e. of wealth holders - equalises the attractions of holding idle cash and of holding the loan. It would be true to say that this by itself does not carry us very far. But it gives us firm and intelligible ground from which to proceed (Keynes, 1937, p. 250, italics added).

The 'initial novelty' is based on the proposition that while saving is dependent on the level of income (output), the volume of investment which entrepreneurs may undertake at any one time is independent of the current level of income. This independence derives from the existence of the monetary system; i.e. of money, credit and finance. The prospective investor can acquire purchasing power, command over real resources, from the financial sector in excess of the current flow of savings:

If investment is proceeding at a steady rate, the finance (or commitments to finance) required can be supplied from a revolving fund of a more or less constant amount, one entrepreneur having his finance replenished for the purpose of a projected investment as another exhausts his on paying for his completed investment. But if decisions to invest are (e.g.) increasing, the extra finance involved will constitute an additional demand for money ... But 'finance' has nothing to do with saving. At the 'financial' stage of the proceedings no net saving has taken place on anyone's part, just as there has been no net investment. 'Finance' and 'commitments to finance' are mere credit and debit book entries, which allow entrepreneurs to go ahead with assurance ... if the banking system chooses to make the finance available and the investment projected by the new issues actually takes place, the appropriate level of incomes will be generated out of which there will necessarily remain over an amount of saving exactly sufficient to take care of the new investment (Keynes, 1937, pp. 247-8).

It is in this crucial sense that Keynes's theory is a monetary theory of employment. The independence with which the monetary system endows the investment decision, combined with the propensity to consume and hence the multiplier, establishes a theory of the determination of the general level of output and hence of employment.

But this particular role of money was not a novel idea. In his analysis of money Wickens (1935) had pointed out that the banks may provide capitalists with command over resources in excess of the current level of output. The essential difference is that Wickens was assuming that the real forces established a natural rate of interest and the natural rate of wages at which capital and labour were fully employed (on Wickens's monetary theory, and its relationship to Keynesian theory see Garegnani, Chapter 2 above). Keynes, however, was advancing a different theory of the relationship between saving and investment, though the task remained of establishing that there were no forces present in the economy which would push the level of investment toward the full employment rate.

This similarity between Keynes and Wickens should alert us to the fact that Keynes's analysis of output does not constitute a critique of the neoclassical theory of output, but simply poses an alternative. A suitably 'neoclassical' theory of investment could, as we shall see, transform his analysis into something remarkably similar to the neoclassical formulation.

Keynes's analysis of the determinants of investment consisted of two elements. First, he argued that the relationship between the volume of investent and the prospective yield on that investment could be represented by the elastic schedule of the marginal efficiency of capital. Second, to determine the volume of investment this schedule was related to the rate of interest which, Keynes argued, was determined not by the relationship between the demand for investible funds and the supply of saving, but by the demand for the stock of monetary assets. This is derived from the demand for money for transactions purposes, and, what is more important with respect to the determination of the rate of interest in any given circumstances, the speculative
demand to hold money as a means of holding wealth, a necessary condition for which is uncertainty as to the future rate of interest (Keynes, 1936, p. 168).

This latter proposition was to play a central role in the subsequent development of Keynes's argument. For his formulation of the determinants of investment immediately raises the question: why does the rate of interest adjust to that level which ensures a full employment rate of investment? Keynes's answer rests squarely on the monetary character of the rate of interest, rather than on any inelasticity of the marginal efficiency schedule:

Thus in the absence of money and in the absence — we must, of course, also suppose — of any other commodity with the assumed characteristics of money, the rates of interest would only reach equilibrium when there is full employment (Keynes, 1936, p. 235).

So Keynes appears to be resting his case for a less-than-full employment equilibrium not on the proposition that a full employment rate of interest does not exist, but on the proposition that monetary phenomena will inhibit (or prohibit?) the tendency of the rate of interest to attain the full employment rate.

The emphasis on the theory of interest is reinforced by Keynes's consideration in chapter 19 of the General Theory of the effect of flexibility in money wages on the level of employment. Given the structure of his model wage flexibility can only alter the general level of activity if the propensity to consume, or the marginal efficiency of capital, or the rate of interest are affected. Examining these relations in turn, Keynes argued that the employment effect of a fall in money wages on the propensity to consume and the marginal efficiency of capital would be either neutral or tend to reduce the level of employment. The only manner, therefore, in which a fall in wages could lead to an increase in employment would be through its effects on the real value of the stock of monetary assets and hence on the rate of interest; effects which may be likened to effects of open-market operations designed to increase the quantity of money:

Just as a moderate increase in the quantity of money may exert an adequate influence over the long-term rate of interest, whilst an inmoderate increase may offset its other advantages by its disturbing effect on confidence; so a moderate reduction in money-wages may prove adequate, whilst an immoderate reduction would shatter confidence even if it were practicable (Keynes, 1936, pp. 266-7).

Keynes also attempted to lend support to his own theory by criticising the neoclassical theory of output (Keynes, 1936, ch. 14). This critique was based on the propositions that (i) the neoclassical theory of the determination of the rate of interest and of the level of output was false because saving and investment are necessarily equal at any level of employment, and thus there could not be separate schedules of saving and investment the interaction of which would determine the rate of interest; and (ii) that the rate of interest was not determined by the relationship of saving to investment but by the demand for the stock of monetary assets.

The first criticism is related to Keynes's assertion that neoclassical economists assumed that the economy operates at full employment, and like that assertion it does not hold water. The full-employment level of output is not assumed by neoclassical economists, it is proved to be the equilibrium output of the economy. Similarly, while it is obvious that in an accounting sense saving and investment are identically equal, this does not mean that the causal relationship between saving and investment may not be characterised by two elastic schedules. If it is supposed that such schedules exist and that wages and the rate of interest are flexible, then as Garegnani has pointed out (p. 31 above) Keynes can argue that the system will not tend toward a full-employment level of activity only by supposing that investment does not react in such a manner as to validate a desire to increase saving. Suppose, for example, that the level of output is below the full-employment level. Wages fall, and individual capitalists decide to hire more labour. The consequent increase in output can be sold only if a fall in the rate of interest leads to increased investment which 'absorbs' the consequent increase in saving. By such a process the system tends towards full employment, with saving always equal to investment (in the accounting sense).

Keynes's second criticism, which relies on the juxtaposition of his theory of the rate of interest and the neoclassical theory is, as Garegnani has also shown (pp. 53-4 above) seriously undermined by the fact that fluctuations in liquidity preference are based on fluctuations of the expected rate of interest around the conventional or normal rate — but no theory is presented for the determination of that conventional rate. It might be argued, for example, that in the long run the normal rate would be determined by the real rate of return on capital, itself determined by the long run relationship of the supply and demand for capital.

So not only does an important element of Keynes's theory of output rest on the monetary analysis of the determination of the rate of interest, but his critique of neoclassical theory does too. But the analysis of interest was just that part of his theory which Keynes was to argue was 'independent' of the initial novelty of his position, and which 'does not carry us far'. The reason for the seemingly peculiar elevation of the analysis of the rate of interest to the centre of the stage has been identified as stemming from the weakness of his critique of neoclassical theory once the very tentative critical remarks made in draft concerning the logical status of the neoclassical theory of capital had been removed following criticism by Harrod (Milgate, Chapter 5 above) and from the necessity of providing an inhibition to the movement of the rate of interest toward the full-employment level once the existence of an elastic demand schedule for investment, the marginal efficiency of capital schedule, had been assumed (Garegnani, Chapter 4 above).
So Keynes was ultimately forced into defending his theory on the rather weak grounds that the effects of uncertainty linked with monetary phenomena would inhibit the tendency of investment to the full-employment level:

Thus, after giving full weight to the importance of the influence of short-period changes in the state of long-term expectation as distinct from changes in the rate of interest, we are still entitled to return to the latter as exercising, at any rate, in normal circumstances, a great though not a decisive, influence on the rate of investment. Only experience, however, can show how far management of the rate of interest is capable of continuously stimulating the appropriate volume of investment.

For my own part I am now somewhat sceptical of the success of a merely monetary policy directed toward influencing the rate of interest (Keynes, 1936, p. 164).

But scepticism is not enough. The possibility of the establishment of a full-employment rate of interest was inherent in Keynes's model:

It is, therefore, on the effect of a falling wage – and price – level on the demand for money that those who believe in the self-regulating quality of the economic system must rest the weight of their argument; though I am not aware that they have done so (Keynes, 1936, p. 266).

He would not have long to wait!

VI

The characterisation of Keynes's argument as 'Mr Keynes's special theory', and the subsequent integration of apparently Keynesian propositions into the corpus of neoclassical analysis was launched by Hicks (1937). This and the development of what has come to be known as the 'neoclassical synthesis' has been ably surveyed by Garbagnani (pp. 54-6 above), and there is no need for us to do anything other than summarise the main points of the argument.

The development of the neoclassical synthesis was based on the limitation of the effects which uncertainty and instability might be expected to have in the longer run, as opposed to their effects on short-run fluctuations of the economy around the long-run position. In the long run it might be argued, for example, that the demand for money would not be dominated by uncertainties concerning the deviation of interest rates from the conventional rate, but would instead be derived from the relative convenience and risk involved in holding wealth in money form:

The theory of risk-avoiding behaviour has been shown to provide a basis for liquidity preference and for an inverse relationship between the demand for cash and the rate of interest. This theory does not depend on the inelasticity of expectations of future interest rates, but can proceed from the assumption that the expected value of capital gain or loss from holding interest-bearing assets is always zero. In this respect, it is a logically more satisfactory foundation for liquidity preference than the Keynesian theory (Tobin, 1958, p. 84).

Tobin prefaced his 'reconstruction' of liquidity theory with the proposition that:

What needs to be explained is not only the existence of a demand for cash when its yield is less than the yield on alternative assets but an inverse relationship between the aggregate demand for cash and the size of this differential in yields (Tobin, 1958, p. 65).

Having constructed a stable demand function for money one may readily conclude that, other than in the case in which the demand for money is highly elastic with respect to the rate of interest (Mr Keynes's special theory), a fall in money wages or an increase in the quantity of money will lead to a fall in the rate of interest and a tendency of investment to the full-employment level:

It is the fact that money wages are too high relative to the quantity of money that explains why it is unprofitable to expand employment to the 'full-employment' level (Modigliani, 1944, p. 255).

Employment may be expanded either by a decrease in money wages or by an increase in the quantity of money, if money wages are constant.

The Keynesian analysis of unemployment is thus confined to the short-period influence of 'rigidities', and of uncertainty and similar 'psychological' effects. The permanent forces in the economy would establish a full-employment equilibrium if it were not for short-period imperfections which cause deviations, of lesser or greater size and length, from the full-employment level of output.

VII

The 'neoclassical synthesis' involves an attempt to derive essentially neoclassical conclusions from a bowdlerised version of Keynesian ideas, focussing in particular on the relationships between the stock of money, measured in wage-units, the rate of interest and the level of investment. An apparently different direction has been taken with the development of theories of 'rationing' in which an attempt is made to derive quasi-Keynesian conclusions from restricted versions of neoclassical general equilibrium models – including models of pure exchange and of non-capitalistic production.

Theories of rationing are descended from Clower's idea of the dual-decision hypothesis relating 'notional' and 'effective' excess demands (Clower, 1965), and similar developments by Leijonhufvud (1968, 1971). The 'rationed' equilibrium does not necessarily satisfy Walras' Law, and thus in equilibrium some markets, such as the market for labour, may display
negative excess demands, while all other excess demands are equal to zero.

The concept of a ration derives from the idea that the quantity traded in a particular market at a given price is determined by the ‘short-side’ of the market. So if, for example, the Walrasian notional supply and demand functions for labour are indicated by \( S_L(\bar{w}) \) and \( D_L(\bar{w}) \) where \( \bar{w} = w/p \) is the real wage, and at \( \bar{w} = \bar{w}^* \), \( D_L(\bar{w}^*) < S_L(\bar{w}^*) \) then jobs are ‘rationed’, for workers can only ‘supply’ an amount of labour equal to \( D_L(\bar{w}^*) \). Similarly, entrepreneurs’ opportunities to sell goods may be ‘rationed’ if the demand for goods is less than the quantity they would be willing to sell at the going price; or buyers may be ‘rationed’ in the quantity of a good they are able to purchase, if the quantity available is less than the notional demand at the going price.

Clower (1965) uses this concept to explain unemployment in a model in which there exists but one good and labour. Suppose that the real wage is at such a level that the notional demand for labour is less than the notional supply, then the demand for the good will be a function of the real wage and the quantity of labour demanded which is equal to the effective supply of labour. The money wage and the price level may be such that supply is equal to effective demand in the market for the good. So if \( D_L, S_L \) are notional demands for \( i \), and \( S, D \) are effective demands for \( i \), then the situation just described may be characterised as

\[
D_L(\bar{w}^*) = S_L(\bar{w}^*) < S_L(\bar{w}^*)
\]

As far as the entrepreneur is concerned the market for the good is in equilibrium and there is no incentive to increase output and hence demand more labour; and equally there is no pressure to change the good price. But labour is unemployed. The situation has been characterised by both Clower and Leijonhufvud as peculiar to a monetary economy.

If the unemployed demanded ‘payment’ in the form of the products of the individual firms, producers would perceive this as demand for a larger volume of output than is being produced. As long as the unemployed did not demand more in exchange than their marginal physical product, competitive producers would have no reason to turn such barter-bargains down. But, just as workers find that their labour is not a source of direct purchasing power over output, producers find that their output is not a means of payment for the purchase of labour inputs. In offering their services to firms that do not produce a balanced basket of consumer goods, workers ask for money wages. From the standpoint of prospective employers, therefore, the offer of labour services is not directly connected with a demand for additional output. Not perceiving that more output is called for, individual firms will, consequently, turn such offers down (a) even if no more than labour’s marginal value product (evaluated at going prices) is being asked for, and (b) even if no more than the money wage rate that the system would have in equilibrium is being asked for (Leijonhufvud, 1971, p. 35).

As Hahn has pointed out (1977, p. 31) this is a very limited definition of a monetary economy, and under the conditions postulated the absence of money would lead to greater ‘market-failure’ than its presence.

But the ‘transmission of information’ is not really the issue. Suppose, for example, that in a capitalist economy in which all profits are saved, unemployed workers guarantee to employers that they will spend all the wages they might earn on the goods they produce. The information is conveyed, but clearly no capitalist would offer employment for there would be no possibility of profit – the total increase in expenditure would be equal to the increased wage bill. If employment is to increase there must be an increase in investment. Here Leijonhufvud’s analysis is quite traditional. He argues that the fall in the rate of interest required to stimulate the investment which will absorb increased saving (he must mean increased potential saving) will be inhibited by liquidity preference (1971, p. 38). Thus, the amount of effective saving will be rationed by the ‘short-side’ of the saving-investment market. The substance of ‘rationing’ theory comes down to an inhibition on the adjustment of the rate of interest to the market-clearing rate.

A new version of rationing theory which combines the Clower-Leijonhufvud emphasis on relative prices with earlier ideas on the relationship between the average level of wages and prices, the quantity of money and the overall level of spending, has been developed by Malinvaud (1977). In the discussion which follows we will utilise a simplified version of Malinvaud’s model developed by Kahn (Chapter 12 below).

Malinvaud assumed that investment expenditure (and hence employment in the investment sector) is autonomously fixed. Variations in the level of output and employment can then be due only to variations in the output of consumption goods. Saving behaviour is determined by a relatively complex analysis in terms of individual utility maximisation in the light of dividends, the wage rate, employment, the price of consumption goods, and the size of money stocks. To simplify the story it may be assumed that all profits are saved, and that the pattern of saving out of wages and the expenditure of money stocks (by the employed and the unemployed) is such that the sum of the two is constant at \( S_m \). This assumption is clearly unrealistic if the average level of wages and prices is very low relative to the size of money stocks, a question I will return to later. If investment sector profits are also fixed at \( P_I \), then total profits in the consumption sector, \( P_C \), are determined from the condition that investment equal savings:

\[
I = S_m + P_I + P_C
\]

So for any given money wage level, the price of the consumption good must be such as to yield a profit on the total output of consumer goods equal to \( P_C \). This relationship is shown by the curve \( D \) in Figure 1, in which a unit of the consumption good is defined as the average amount produced by one unit of
Figure 1

Employment in the consumption sector

 labour employed. The curve is a rectangular hyperbola around the y-axis and the level of the money-wage rate.

On the supply side Malinvaud assumes that an arbitrary capital stock embodying many vintages will be used in ascending order of cost per unit output, so that increased output may only be produced at an increased marginal cost. The resultant ‘well-behaved’ supply function is indicated by the curve S in Figure 1.

Finally, Malinvaud argues that the essential characteristic of macro-economic analysis of ‘modern society’ is that it should be short run, and hence that on the basis of empirical evidence of administered pricing and the determination of wages in a highly institutionalised environment ‘the theory under consideration here is justified in assuming full price rigidity, i.e. in working with models in which prices and wage rates are exogenous’ (Malinvaud, 1977, pp. 11-12).

The model may now be used to classify types of unemployment with respect to a given configuration of wage rate and consumption good price. Suppose, for example, that with reference to Figure 1 in which $E_C^*$ indicates the level of consumption sector employment which corresponds to full employment in the economy as a whole, and $W$ is the (sticky) money-wage rate, that the price of the consumption good is fixed at $p_1$. Then the amount

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of employment is determined by demand, producers are ‘rationed’ as to the quantity of consumption goods they can sell, and jobs are rationed to the less than full-employment demand for labour. In these circumstances a fall in the price (an increase in the real wage) would lead to increased employment. This situation Malinvaud describes as ‘Keynesian unemployment’. Now suppose that the price is set at $p_2$. Employment is determined by the supply condition, consumers are rationed as to the amount they can buy, and jobs are also rationed. A rise in $p_1$ (a fall in the real wage) would result in increased employment. This situation Malinvaud refers to as ‘classical unemployment’. Finally, if the level of consumption sector employment which would result in full employment in the economy were $E_C^0$, then any fixed price level between $p_1$ and $p_2$ would result in ‘repressed inflation’.

The relationship between these three characterisations of the economy is illustrated in Figure 2. For any given money wage we may find a price which corresponds to full-employment demand, that which corresponds to full employment on the supply side, or that which defines the boundary between ‘Keynesian’ and ‘classical’ unemployment. Varying the level of money wages and the price level will trace out loci of such wage-price relations, the shape of the curves being considerably influenced by the change in the real value of the stock of monetary assets. There will be a particular real wage and price level, $WE$, which will correspond to full employment – this point Malinvaud refers to as Walrasian equilibrium.

Figure 2

$WE$ - Walrasian equilibrium
Malinvaud asserts that if the data of his model were "constant through time ... then the long run equilibrium resulting from price theory will be the Walrasian equilibrium". But "since prices and wages are sticky, we cannot expect the growth path to coincide permanently with the changing Walrasian equilibrium in our short-term model" (Malinvaud, 1977, p. 93). Institutional factors, which introduce rigidities into the price system are, therefore, to blame for the economy not being at a full-employment equilibrium.

Two major criticisms have been made of the Malinvaud model. Kahn (Chapter 13 below) has argued that the form of the cost curve on which the analysis depends is incompatible with the assumption of administered prices:

Fixed or 'sticky' prices are found in manufacturing and distribution, where products are not homogeneous and labour costs are constant or decreasing up to the limits of capacity. The result, which has been well confirmed by various empirical studies and is widely known as Okun's Law, is that productivity in industry increases with short run increases in output, while prices are sticky.

Flexible prices are found in those markets for a limited range of primary products where products are homogeneous, demand to the individual producer is almost perfectly elastic, and costs rise with output due to fixed natural resources.

Malinvaud mixes the two ... (Kahn, p. 224 below).

Hahn has argued that the rationing model as formulated by Malinvaud (and indeed by Clower and Leijonhufvud) amounts merely to the proposition that prices and wages are insufficiently flexible for the determination of full-employment output, without any argument being made as to the origin of such flexibility (Hahn, 1977, pp. 32-3). He argues that inflexibility in the face of, say, persistent unemployment, may be explained in terms of 'conjectural equilibria':

Let us stick for the moment to the labour market and think of money wages as being quoted by the sellers of labour. One now needs to supplement the description of the household by a demand curve conjectured by it ... The household must have some beliefs as to how its ration of labour would respond to a change in the wage it quotes. If there is an equilibrium it is what I call a conjectural equilibrium. That is, it is a state such that actions of agents are compatible and such that, given the conjectures no price can be advantageously changed by any agent ... If an equilibrium is a state where rational actions are compatible and if amongst possible actions one includes changing of price, then there exist non-Walrasian unemployment equilibria. The wage is neither fixed nor arbitrary nor flexible. It is what it is because no agent finds it advantageous to change it. (Hahn, 1977, p. 34).

Hahn has also used the concept of conjectural equilibrium to argue that Malinvaud’s identification of a given set of prices with Walrasian full-employment equilibrium is too limited, for rationed conjectural equilibria

with unemployment may be associated with the 'Walrasian' prices (Hahn, 1978). Hahn’s argument is illustrated in Figure 3. The economy consists of two individuals (or two groups of individuals) a and b, with endowments e_a and e_b of commodities x and y. The competitive equilibrium supported by the prices shown involves a selling e_a.s_a of x and buying s_a.t_a of y; b sells e_b.s_b of y and buys s_b.t_b of x. Suppose now that a is rationed (by conjecture) to the sale of e_a.s_a of x, then there exists a ration for b, namely the conjecture that b can only sell e_b.s_b of y, such that the rationed (conjectural) equilibrium is sustained by the Walrasian equilibrium prices.

But Hahn’s criticism does not take us very far (apart from showing how arbitrary is the fixed price approach). In any disequilibrium position agents act on false information and these actions may, in the short run, exacerbate and perpetuate the disequilibrium. But the crucial question is whether forces endogenous to the system will push it towards a full-employment position. Hahn admits that it seems likely that in competitive economies rationed conjectural
equilibria will be unstable and that Walrasian equilibrium will be the only rational conjectural equilibrium possible (Hahn, 1978, p. 3). So his conjectural analysis reduces to an evocation of monopolistic elements as an explanation for sticky prices or 'perceived rations'.

However both Kahn and Hahn seem to miss the main failing of rationing models in general and Malinvaud's model in particular, which is that such models do not address themselves to the fundamental issue in the interpretation of Keynesian analysis — the relationship between saving and investment. In Malinvaud's model, for example, all the weight of adjustment in employment is placed on varying output in the consumption sector, the investment sector output being fixed. The label 'Walrasian' which he attaches to a full-employment position attained primarily through operation of the real balance effect is quite spurious, for no 'Walrasian' analysis of saving and investment is present other than the off-hand remark that:

It would be still more interesting to introduce into our prototype model a market for bonds with a flexible interest rate and to recognize that 'autonomous' demands depend on the rate of interest (Malinvaud, 1977, p. 114).

In so far as rationing models are constructed on Walrasian lines they amount merely to particular examples of the wide variety of 'imperfections' models: i.e. models upon which particular imperfections are imposed which inhibit the gravitation of prices towards equilibrium. These might even be pure exchange models. They certainly have nothing essential to do with the central issue of Keynes's General Theory: the establishment of an under-employment 'equilibrium' by the normal working of the saving-investment relationship through the multiplier. The rationing models hence appear to be a remarkable example of intellectual atavism and spurious sophistication. Under the guise of complex general equilibrium analyses they contrive to produce pre-Keynesian propositions by means of un-Keynesian devices — and triumphantly label the result 'Keynesian'.

VIII

The variety of attempts to generate neoclassical results in a 'Keynesian' framework, and 'Keynesian' results in a neoclassical framework, together point to important failings in the General Theory: the inadequacy of Keynes's critique of the neoclassical theory of output and the important ambiguities introduced by Keynes's marginalist treatment of the labour market and by his portrayal of the marginal efficiency of capital as an elastic demand schedule for investment. Garyregani (Chapter 2 above) has argued that these failings may be remedied by application of the results of the debate on the neoclassical theory of capital derived from Sraffa's Production of Commodities. I will illustrate this point by reference to the implications of the debate for Fisher's analysis of investment and the rate of interest which, as we saw above, Keynes identified with his own analysis.

But first we will examine Keynes's definition of the marginal efficiency of capital:

If there is an increased investment in any given type of capital during any period of time, the marginal efficiency of that type of capital will diminish as the investment in it is increased, partly because the prospective yield will fall as the supply of that type of capital is increased, and partly because, as a rule, pressure on the facilities for producing that type of capital will cause its supply price to increase; the second of these factors being usually the more important in producing equilibrium in the short run, but the longer the period in view the more does the first factor take its place. Thus for each type of capital we can build up a schedule, showing by how much investment in it will have to increase within the period, in order that its marginal efficiency should fall to any given figure. We can then aggregate these schedules for all the types of capital, so as to provide a schedule relating the rate of aggregate investment to the corresponding marginal efficiency of capital in general which that rate of investment will establish. We shall call this the investment demand schedule; or, alternatively, the schedule of the marginal efficiency of capital (Keynes, 1936, p. 136).

Keynes's argument is more complicated than may at first appear, involving as it does assumptions on both the supply and demand conditions for individual capital goods in both short and long run and, finally, at both individual and aggregate levels — the ultimate objective being the derivation of the relationship between the 'rate of aggregate investment' and 'the corresponding marginal efficiency of capital in general', or, to put it another way, the general rate of return.

Taking first the short-period aspect of the argument, Keynes's assumption that increased investment in a given type of capital good will lead to higher cost of production — rising supply price — is quite unfounded. Any short-period situation, and particularly a short-period in which capacity is widely under-utilised, will be characterised by excess stocks of materials and machines in some (maybe all) sectors, with (perhaps) shortages in a few sectors too. In such a situation no definite hypothesis may be made as to the likely effect of increased output on cost, though in conditions of widespread excess capacity it seems reasonable to suppose that costs will tend to fall as fixed costs are averaged over higher output. 'Pressure on the facilities' for producing a given capital good will only tend to become significant as full employment is approached, and even then the consequences for the cost of production of an increase in supply of any one capital good cannot be predicted with confidence.

The short run influence of the demands for capital goods on 'prospective yield' to be derived from further investment are likewise unpredictable and, as to the aggregate effect of all this — nothing can be said at all. Indeed, there is no short-run 'marginal efficiency of capital in general' to say anything about! The relationship which Keynes sought must be a long-run relationship, in the sense that it is sufficiently unambiguous and persistent to
allow definite conclusions to be drawn concerning the influence of a given
volume of investment on the rate of return.

Now in the longer run Keynes himself suggested that increased output will
not result in any increase in cost. Any diminution in return must, therefore,
derive from the fall in prospective yield as more capital goods compete to sell
their services. What then is the relationship between the volume of investment
and the rate of return in the longer run, that is in a situation in
which the cost minimising combination of factors is chosen? At the partial
level Keynes first considers, the answer seems clear: if all other prices in
the economy are taken as given, then \textit{ceteris paribus} it may be argued that there is
an inverse relationship between the rate of return and the quantity of capital
invested in the production of a given output. But Keynes's argument is on
very shaky ground when he attempts to define the relationship for the economy
as a whole by simple aggregation of these partial effects, for he can
no longer use the \textit{ceteris paribus} condition to keep at bay some fundamental
problems.

These fundamental difficulties in Keynes's characterisation of the
marginal efficiency of capital may be clarified by returning to Fisher's
analysis of the incremental rate of return on investment which Keynes tell us is
'identical with my definition' (Keynes, 1936, p. 140).

Fisher's analysis is based on the substitution of capital for labour in a full-
employment equilibrium, and throughout his discussion of the theory of
saving, investment and interest, he imposes a major limitation on his
argument – he assumes that all prices, wages and rents are fixed, and do not
vary with variations in the rate of interest (Fisher, 1930, p. 131n). This 'fixed-
price' assumption allows Fisher to express all magnitudes in terms of
'money', and to move between discussion of individual behaviour and that of
the economy as a whole without considering the interrelationship between
the rate of interest and prices.

An attempt to generalise Fisher's analysis to a many-commodity model,
and hence to relate the determination of prices to the determination of the
rate of interest, has been made by Solow (1963, 1967). I have analysed
Solow's model and the debate it provoked elsewhere (Eatwell, 1976); for our
purposes we need only summarise my main conclusions.

It is assumed by Solow that the economy is in a stationary state, producing
a consumption good, corn, by means of many reproducible inputs and
labour. To enable the definition of limits we may further assume that the
technical possibilities of the economy are characterised by a wage-profit
frontier which is an envelope to an infinity of wage-profit curves, such that
these techniques are arrayed continuously along the frontier. Furthermore,
consumption and value of capital per head associated with the variation in
technique may be described by differentiable functions.

Since the techniques used in the production of corn require inputs of
commodities other than corn, the wage-profit line for each technique may
assume any negatively sloped curvature. But consumption good output per
capita, \( c \), (i.e. net output per head) and the value of produced inputs per
capita, \( k \), are continuous differentiable functions of the rate of interest (rate of
profit), \( r \), even though the technique in use varies continuously with \( r \):

\[
c = z(r) \\
k = \frac{\text{net output} - \text{wages}}{\text{rate of profit}} = \frac{z(r) - g(r)}{r} = \frac{z(r) - g(r)}{r}
\]

where \( g(r) = w \) is the equation of the wage-profit frontier.

The rate of return over cost of a transition between the technique in use at
\( r \) and the 'adjacent' technique at \( r + h \) is the ratio of the value of the difference in
the perpetual consumption streams to the value of the difference in the capital
stocks (i.e. the sacrifice required to effect the transition):

\[
\frac{z(r + h) - z(r)}{r + h} - \frac{z(r) - g(r)}{r}
\]

(6)

'In the limit, as the number of techniques grows denser', \( h \rightarrow 0 \), and expression (6) becomes:

\[
\frac{z'(r)}{r[z'(r) - g'(r)] - z(r) + g(r) \neq r}
\]

(7)

the marginal rate of return over cost is not equal to the rate of profit. The
equality would hold iff:

\[
z(r) = g(r) - rg'(r)
\]

(8)

This would be the case of an economy having the properties of Samuelson's
(1962) surrogate production function, and would indicate that, to all intents
and purposes, the economy under consideration was set in a one-commodity
world. The inequality does not depend on the presence of reswitching or even
perversity. So long as the economy contains more than one produced input
the rate of profit is not equal to the rate of return over cost. Or, more
generally, no demand schedule for investment as a function of the rate of
interest may be constructed (Garegnani, pp. 65-7 above).

The lack of any logical foundation for the construction of an elastic
demand schedule for investment as a function of the rate of interest is
simultaneously a critique of the neoclassical theory of output and of Keynes's
concept of the marginal efficiency of capital – which was itself derived from
the neoclassical schedule. This follows from the fact that the neoclassical
theory of output is synonymous with the neoclassical theory of value and so
an effective critique of the latter necessarily constitutes an effective critique of
the former. There is no logically consistent foundation to the idea that
variation in relative prices, or in the rate of interest, or in money wages, will
cause the system to tend to a full-employment level of output. Keynes's
utilisation of the notion of a demand schedule for investment may perhaps be
explained by the pioneering nature of the General Theory, in which the main propositions of a new theory of output are combined with vestiges of the old theory; by the need to present an apparently 'complete' theory; and by the pragmatic ambiguity with which many neoclassical propositions were presented in the then dominant Marshallian formulation. Garegnani has argued that...
permits between the decision to produce and the ability to sell.

But there is more to Marx's conception of the possibility of crises than the fact that a capitalist economy is of necessity a monetary economy. Production in a capitalist system is the production of commodities, i.e., of exchange values, and the object of investment is the expansion of the production of exchange values, not the production of use values. Thus, as Keynes put it, investment is undertaken for future profit — not for future consumption (Keynes, 1936, pp. 210-12; see also Keynes, 1971, ch. 2). But since Marx advanced no theory of the relationship between saving and investment, his case for the actuality of a general failure to realise the value of output was based on the time-lags induced by disproportionalities and the anarchy of capitalist production (Marx, 1968, p. 529).

In this context 'anarchy' does not mean incoherence, but that what is rational for the individual may be irrational for the system as a whole. In a capitalist economy the individual capitalist may decide to hold his wealth in terms of money rather than commit himself to future production. This may be a rational act in the light of a pessimistic view of future returns. But with Keynes's principle of effective demand it may be seen that the outcome will not be irrational merely in the sense of a 'breakdown', but will lead to a permanently lower level of output from which there is no inherent tendency for the system to move. Permanent 'crises' do exist, in the sense of permanently lower output, though they do not necessarily exist as a permanently lower rate of profit.

The Keynesian perception of the working of a capitalist system is not inconsistent with the more comprehensive Marxian characterisation. Indeed if Keynes's principle of effective demand is appended as a theory of the actuality of crises, Marx's conception of crises is expanded from a notion of transitory time-lags and breakdowns into a theory of output, an essential precondition of which is the existence of a monetary commodity economy.

The formal structure of a model combining a surplus theory of value and distribution with the Keynesian theory of output may best be approached through a consideration of Kalecki's version of the theory of output. Kalecki's version of the principle of effective demand (see Kalecki, 1971) is constructed from two relationships: a rather simplistic theory of distribution based on the idea that the mark-up contained in individual commodity prices is determined by the degree of monopoly, and a theory of aggregate profits, determined by the volume of autonomous investment and the propensity to save out of profits (the propensity to save out of wages being set equal to zero). If the mark-up is such that the share of profit is equal to \( \pi \) then from the multiplier condition that

\[
s_p = 1
\]  

(9)

where \( s_p \) is the saving propensity out of profits, \( P \) total net profits and \( I \) net investment, we may derive the result that the level of net income, \( Y \), is
This brings us to the question of the determinants of investment, an issue which is apparently left open with the dissolution of Keynes's investment theory. An understanding of the determinants of investment can only be attained by locating the problem within the context of a general theory of capitalist accumulation adapted to the specific circumstances of any given time and place. The fundamental characteristic of capitalist accumulation is the competitive struggle for markets. The competitive process is shaped by the evolution and utilisation of technology, the cumulative decline of the 'weak' relative to the 'strong', the policies of nation states, the penetration of non-capitalist markets, the structure of industry and competition, relations between capital and labour, and pricing policy. All these factors, plus the institutional setting—financial, political and social—in which they operate, affect the growth of demand and the pattern, scale and rapidity of accumulation in a complex recursive process. The reduction of a theory of investment to two parameters, 'expectations' and the rate of interest, is as empirically vacuous as it is theoretically empty. It could only be taken seriously in a supply-and-demand model.

How then, do we interpret the role of uncertainty in the theory of effective demand, and more generally in the analysis of accumulation?

At the level of the individual capitalist the uncertainties of the competitive process will have a significant influence on investment plans. But, as Keynes pointed out, this does not mean that the long-period position of the economy depends on waves of irrational psychology. On the contrary, the state of long-term expectation is often steady ... (Keynes, 1936, p. 162).

Moreover, in a draft of the General Theory, Keynes had argued that

Having ... made clear the part played by expectation in the economic nexus and the reaction of realised results on future expectation, it will be safe for us in what follows to discard reference to expectation. It is important to make the logical point clear and to define the terminology precisely ... But when once this has been done, considerations of practical convenience may legitimately take charge, in the light of the fact that in practice the process of revision of expectation is a gradual and continuous one, carried on mainly in the light of realised results; so that expected and realised results run into and overlap one another in their influence. (Keynes, 1973, p. 397; see also Kregel, 1976, pp. 211-14)

and in a lecture following the publication of the General Theory he commented:

I now feel that if I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled ... (Keynes, 1973, p. 181).

Thus Keynes is arguing that the effect of expectations and uncertainties is manifest in the form of the real and persistent forces in the system; but the fact of uncertainty is not the fundamental issue in the interpretation of the systematic behaviour of the economy. The issue is a correct understanding of the principle of effective demand — the operation of which is independent of the fact of uncertainty. The prevalence of the idea that uncertainty plays a central determining role in Keynes's contribution (rather than simply defining the environment in which the forces of the theory operate) has been attributed to the incorporation by Keynes of ideas on uncertainty into the corpus of the discussion of the General Theory (see also Keynes 1937a) in order to keep at bay the tendency to full employment implicit in the elastic marginal efficiency of capital schedule (Garegnani, Chapters 2 and 7; Milgate, Chapter 5). But once that schedule is abandoned, 'uncertainty' can be treated as, on the one hand, an element in the short-period fluctuations of output around its long-period position, and, on the other hand, as an element, together with 'convention', of the general environment in which the systematic processes of capitalist production and accumulation must operate.

In the construction of our theory of normal output we will come across a difficulty not encountered in the theory of normal price formation. In the latter theory we argued that prices were determined by the dominant technique; in the former case, however, some output is produced using 'fossils' or 'superior' techniques. The problem has two aspects. First, flexibility in the level of output derives both from the excess capacity carried by capitalist firms as a component part of their competitive strategy, and from the fact that if there is a rapid upswing in demand 'fossils' will be more fully utilised. None the less, the normal level of output in a stationary or slow-changing system would be related to the technical and distributional characteristics of the dominant technique. But, secondly, there is no reason to suppose that the pace of accumulation is slow, and hence, in general, equation (12) must be modified to take account of the actual pattern of accumulation. This will present greater difficulties when the pace and pattern of accumulation is changing than when the pace of change is fairly steady.

I do not mean to suggest by this remark that we should look to the growth models of recent years, with their emphasis on proportionately growing economies, for any significant insight into the actual process of accumulation. Rather we should ally Keynesian insights to the general theories of the nature of capitalist accumulation which are to be found in Smith and Marx. These theories include the recognition that the commodity composition of output (other than the broad divisions between investment goods and wage goods) is of little general relevance in the accumulation of capital. Although changes in commodity composition, both quantitative and qualitative, may be an important element in competition, the ultimate purpose is the production and accumulation of value in general.

These issues should alert us to the amount of work which needs to be done in order to fully utilise the tools provided by classical, Marxian and
Keynesian theory. The task involves both ridding the particular theories of inconsistencies and obfuscations; and elucidating the implications they present for the interpretation of each other. At the core of the resultant analytical schema will stand the surplus theory of value and distribution, supplemented by the Keynesian insight into the theory of output.