

The Theory of Inflation

by

F. H. HAHN

The purpose of this paper is to discuss certain problems in the theory of inflation. The reflections which follow were inspired by a recent work in this subject by Dr. Bent Hansen (1). This article is therefore in the nature of a review article although I have found it convenient, for reasons which will become apparent, to develop my own general analysis of various problems and compare it with that of Dr. Hansen, rather than to go through Hansen's work step by step and chapter by chapter.

The plan of the paper is as follows: in the first section we discuss the question of a definition of inflation and our general approach to problems raised is made clear. In the second section certain specific situations and the effect of different government policies on these are discussed. In the third section problems raised by a dynamic analysis are examined, while the last section concludes with certain general reflections on Dr. Hansen's work.

I

The question of a definition of inflation and inflationary pressure is important, partly because the terms are used loosely in ordinary parlance and partly because the presence of inflation is normally regarded as raising problems of policy which cannot be examined without an adequate and rigorous definition. But when that much has been said, the definitions actually chosen still remain arbitrary and their value can only be assessed with reference to the practical problems we wish to examine.

(1) B. HANSEN: *A Study in the Theory of Inflation*, George Allen and Unwin, 1951.

Inflation is normally used in an aggregative sense and refers to a situation in which aggregate demand for goods and services valued at current prices exceeds aggregate supply valued in a similar way. This definition is a direct consequence of the older concept of monetary equilibrium which was defined to exist when aggregate monetary demand was equal to aggregate monetary supply.

But it so happens that while if there is equilibrium in every market in the economy there must necessarily also be monetary equilibrium, the reverse is not the case. Monetary equilibrium therefore does not have the same meaning as in normal economic usage. But as we shall argue at greater length later (section III), as long as individual plans are not fulfilled, they will tend to change, so that if there is monetary equilibrium in one period, it is unlikely to hold for subsequent periods. In the last analysis monetary equilibrium through time requires equilibrium in every single market of the economy. The distinction between monetary equilibrium and the equilibrium of the system as a whole seems to me misleading from both a policy and theoretical point of view. For the prime reason why, at least in a closed economy, the government is concerned with inflation is because it leads to a breakdown of the market system of allocation of resources and such a mal-allocation is quite compatible with monetary equilibrium.

In what follows we shall attempt to identify inflation with a particular sort of disequilibrium. But before we proceed a word must be said about the meaning of equilibrium in this context. We shall say that equilibrium is established if all excess demands are and remain zero through time. At a later stage we shall examine the concept of excess demand in

greater detail. But here we wish to note that the equilibrium values of the variables we are interested in will be different in different institutional situations. In particular the role of government must be specified. This can be done in two ways. Either we can insert certain parameters such as tax rates, government expenditure, rationing (*i.e.* constant amounts of certain commodities) etc. into the system, or we can specify certain governmental functional relationships, *e.g.* the rate of tax levied as a function of money incomes etc. In either case government activity is taken as given either in the sense that certain government decisions have been taken and are not altered, or in the sense that government decisions are related in a given constant way to other variables in the system. A change in government policy must then be interpreted either as a change in the parameters or as a change in the government functional relationships.

That being understood we can now proceed. Suppose first that there exists a set of prices and quantities produced which will yield equilibrium in the sense defined above. Suppose further that this equilibrium is dynamically stable in the sense that whatever the initial conditions, equilibrium is established. In this situation I will say no inflation is possible, because with the given government policy, equilibrium is always achieved. Suppose next that the equilibrium is dynamically unstable, so that when it is disturbed there will be permanent excess demand and/or excess supply in at least some markets. If then a situation arises where there is permanent excess demand in some markets without there being any excess supply in any other markets, I will say that there is total inflation.

Total inflation can occur without the condition that equilibrium should be dynamically unstable — namely when no equilibrium is possible. As will emerge, this is a case to which we shall attach great importance. It may for instance occur if the government policy is to keep a given number of men always employed. (It should be remembered here that the fact that the number of equations describing a system is equal to the number of unknowns is no guarantee that a solution to these equations can be found).

Before we proceed to compare our definition with that of Dr. Hansen, something must be said in justification of our approach. In a closed economy the prime disadvantage normally associated with inflation is that it entails the break-down of the price mechanism. Our definition applies to such a situation *par excellence*. The other disadvantage sometimes mentioned is that it entails a redistribution of income against those whose incomes are fixed. But almost any change in the economy is associated with some redistribution of incomes and this is therefore not specific to any particular change. Further our definition is such that in order to «cure» inflation some of the functions of the system must change — in particular the functional relationships of government. That again is well in accord with common usage. Moreover, on our definition the answer to the question posed by Dr. Hansen: «how much demand must be decreased (or supply increased) in order that the market considered shall have attained equilibrium?» (p. 63), is only relevant to government policy if there is inflation, for otherwise equilibrium will be established any way, without a change in government policy as defined. The answer to the second of Dr. Hansen's questions: «how will prices develop if nothing is done to bring the market into equilibrium?» will clearly depend on whether there is a tendency to equilibrium without «anything being done» (which I understand to mean «without a change in government policy») or not, can also be adequately answered on our definition. (But more of this later.) What I hope to have indicated and hope to develop further presently is that our definition is well suited to form a basis for answering the questions we wish a theory of inflation to answer.

Now Dr. Hansen's definition differs from mine in several respects. Dr. Hansen distinguishes between only two main sectors of the economy (2): goods markets and factor markets. Let x_i ($i=1 \dots n$) stand for the demand for the i^{th} good and \bar{x}_i ($i=1 \dots n$) for its supply, let p_i ($i=1 \dots n$) be its price. Let X_j ($j=1 \dots m$) stand for the demand for the j^{th} factor and \bar{X}_j ($j=1 \dots m$) for its supply

(2) *Ibid.*, Ch. I and II.

and P_j ($j=1 \dots m$) for its price, then according to Dr. Hansen monetary inflationary pressure exists if:

$$\sum_i^b p_i(x_i - \bar{x}_i) + \sum_j^m P_j(X_j - \bar{X}_j) > 0 \quad (i)$$

$$\sum_i^n p_i(x_i - \bar{x}_i) \geq 0$$

and

$$\sum_j^m P_j(X_j - \bar{X}_j) \geq 0 \quad (ii)$$

Despite Dr. Hansen's discussions of this definition I have been unable to find anything substantial to recommend it. This is so for the following reasons:

(1) The absence of Hansen's inflationary pressure does not mean that prices somewhere in the economy may not be rising continuously, or, to put it differently, it does not imply the absence of excess demand in any one sector.

(2) The two-fold division between sectors is arbitrary. From both a policy and analytical view there is no reason to attach any special significance to Hansen's sub-aggregates. It is true that factors can be taken as being « substitutes » to goods (see later) and that is of special significance. But some goods may be substitutes and some factors may be substitutes also (3).

(3) Hansen's definition implies nothing about the development of prices through time. This, as I have already argued, seems to me the crucial part of any definition of inflation.

(4) Hansen has shown (4) that when certain assumptions concerning price reactions etc. are made, the absence of his monetary pressure of inflation also implies the constancy of either a Divisia or Laspeyre price index. It is an impressive achievement to have established this correspondence, but is it relevant for any practical purpose? We are not for policy or

(3) It may be noted already at this stage that all the relationships which hold between goods and « factors » also hold for goods that are produced and goods that are used up in production. It is also an open question whether from a policy point of view the total excess demand for labour was in recent years say in the U.K. as important as, for instance, the continued excess demand for coal, and whether the closing of the Hansen gap would have made the economic position of the country any better.

(4) *Ibid.*, pp. 220-27.

analytical purpose interested so much in the constancy of an index but in the existence of equilibrium.

The final objections to Hansen's definition can only emerge as the analysis based on its application proceeds.

Up to now we have used the expressions excess demand and supply without clearly specifying what is meant by these terms. On this point no better guide could be found than Hansen who, perhaps for the first time, presents to English readers a clear exposition of the Swedish approach to these definitional problems. Assuming single-valued expectations Dr. Hansen takes us point by point through the distinction between expected sales, the actual quantity of goods available, planned purchases, optimum purchases and active attempts to purchase. He then uses these concepts in an analysis of national income accounts. His most important conclusion here is to show that the old definition of inflation as an excess of *ex ante* investment over *ex ante* savings is insufficient. This is immediately obvious when it is remembered that the investment and savings concept is an aggregative one which says nothing about the absence or presence of excess demands in any of the sectors.

For the purposes of this paper the most relevant question raised by these discussions concerns the difference between *ex ante* and what may loosely be called *ex post* excess demands (5). Thus if planned purchases exceed planned sales, there will be an *ex ante* excess demand. This however may differ from the excess of active attempts to purchase over available supplies. Now the excess demands we had in mind in our definition of inflation were in terms of the difference between the optimum purchases and expected sales (assumed = planned supply = optimum supply). As we shall see again later, our definition is appropriate to an analysis of equilibrium. If however we wish to examine the system when not in equilibrium and, in particular, the development of prices, the *ex post* definition is probably the relevant one. That is to say the equations which describe the behaviour of

(5) We say « loosely » because in a strict *ex post* sense demand is identically equal to supply.

the system when out of equilibrium need not be the same as those which describe it when in equilibrium. But this will in general not affect the relevance of our definition of inflation.

Let us suppose that there are m basic unproduced inputs needed in certain variable proportions to produce the outputs of the system. At any given set of input prices we can find the maximum amount of any output j that can be produced at the optimum input ratios given all the other outputs. To describe these maximum outputs we should probably have to resort to the technique of linear programming. But in any case the « maximum » outputs can in principle be defined as lying on some particular surface. As long as the equilibrium outputs are below the surface there is no problem. If however they lie on or above the surface then planned supply may be more than actual supply. But as long as we can assume that active and optimum purchases coincide — and for most cases we probably can — it is clear that if there is *ex ante* excess demand there must also be *ex post* excess demand. The permanence of the former thus implies the permanence of the latter. But we must remember that the *ex post* relationships will be the relevant ones for describing the system when out of equilibrium.

This leads me to another difficulty, to which we shall return again later and which is not faced squarely by Dr. Hansen. If a system is out of equilibrium, in particular if there is inflation on our definition, the allocation of resources is to a large extent arbitrary. It is therefore impossible in such a situation either to find *a priori* the amount of any commodity actually produced or to give meaning to such terms as the actual total output. Thus while the *ex post* gaps can be found nothing *a priori* can be said about their development through time. We could not therefore sensibly say that there is inflation in one market if *ex post* excess demand is permanent, simply because nothing can be said about its permanence. As long as planned supply is equal to actual supply these difficulties are avoided. When these two however diverge it is difficult to say anything about the development of the system. In the special case where the equilibrium values

of at least some outputs are above what can be produced, we can say that at least partial inflation is likely.

II

But let us proceed to an analysis of various special problems.

The supply of goods and services depends on expected demand. The demand for goods and services depends on expected incomes and prices. Let us now suppose all prices fixed by decree at a level such that there is total inflation on our definition. What measures can the government take to deal with it?

Let us first assume that the government levies new income taxes to reduce demand. It may now happen that while the excess demand for some goods is reduced, the excess demand for others is increased. This will be so either because some goods are « inferior » (6) goods and/or because the income tax changes the distribution of income. It may therefore be impossible for the government to do away with excess demand by these means alone.

Let us look at this in a little more detail. Given constant returns to scale, the ratio in which inputs are combined to produce outputs is fully determined by the relative prices of inputs. The demand for outputs is determined by their relative prices and the expected real incomes of individuals, and assuming perfect competition, the supply of output is fully determined by expected prices. Now if prices are fixed by decree, and there is total inflation, then reduction of real incomes of individuals by taxation can only bring about equilibrium if such a reduction is an alternative to changes in prices. Now while a reduction in real incomes is in some sense an alternative to a rise in the absolute price level, it may not be an alternative to changes in relative prices. In particular, the relative prices of inputs to outputs must be such that the demand for inputs is equal to their supply. But under perfect competition, when prices are fixed by decree, the demand for inputs is independent of the

(6) That is goods such that the demand for them increases with decreases in income and vice versa.

demand for output, so that since changes in real incomes operate only on the latter, such changes will not affect the excess demand for inputs if such an excess demand is present.

But this conclusion does not only apply to inputs as a whole, but also as between different inputs. For the relative demand for inputs as already noted depends only on their relative prices, and if these remain fixed, it may be necessary to create excess supply of many of these inputs before the excess demand for any one particular input becomes zero.

The burden of this argument then is that equilibrium may only be possible at a certain limited set of relative prices, so that if the fixed prices are not in this set, government operations on real incomes will not be successful in bringing about equilibrium. We should emphasise that this conclusion does not depend on the assumption of perfect competition, for as long as all prices are fixed by decree (not maximum prices) there is no distinction between the two situations. Nor are these results modified if we assume that the equilibrium outputs and inputs are in excess of what it is physically possible to produce. For by reducing real incomes of individuals sufficiently (that is, by altering the government's functional relationships), it will be possible to reach a physically attainable equilibrium, always provided the fixed set of relative prices is an admissible set.

The question might now be legitimately asked, why fix prices at all? If equilibrium can only be established at certain definite relative prices, why not leave it to the market to establish these? The answer to this question is two-fold:

(a) It may well be that free relative prices do not reflect social costs,

(b) equilibrium may only be stable if prices are fixed. The first one of these reasons does not concern us here. The second one however is of some importance to the argument. As long as prices are fixed and « effective », the demand curve facing producers is horizontal irrespective of the form of competition. If there is not perfect competition everywhere it follows that with one excep-

tion (7), planned output will be different when prices are fixed from when they are not. Doing away with control would therefore alter the *shape* of the demand curve facing the producers and may therefore lead to renewed excess demand. There would therefore be good reason to maintain price control.

Suppose next that the prices of some goods at present in excess demand are fixed while those of others (also in excess demand) are free to vary. Is this compatible with the achievement of equilibrium? Let us now adopt the convention that X_i ($i=1 \dots n$) > 0 is an output and X_i ($i=1 \dots n$) < 0 is an input. Then following Mosak (8) we shall say that if $\frac{\partial X_i}{\partial P_j} > 0$, X_i and X_j are gross substitutes and when $\frac{\partial X_i}{\partial P_j} < 0$, X_i and X_j are gross complements. Making use of this definition it is clear that if the price of a good or input j being in excess demand is fixed while the price of another good or input k , also in excess demand, is free to vary, this cannot lead to equilibrium if j and k are gross substitutes, provided also that the planned supply of the controlled good is a function of its price only. (It should be remembered that under a regime of perfect competition the planned supply of a good depends only on its price). If the goods are gross complements the equilibrium may be possible depending on where the prices are fixed.

We may put all this in a more general form. If there is perfect competition, then there may exist one unique set of prices at which equilibrium is established. Now, provided each individual's money income always changes in the same proportion as prices, the level of prices will not disturb equilibrium as long as relative prices are in equilibrium. Fixing one price only, at any arbitrary level, is therefore compatible with equilibrium *provided* that the money income of each individual is properly adjusted. If the latter is not the case then this price fixing will not in general be compatible

(7) The exception occurs if the output at which marginal revenue is equal to marginal cost when prices are controlled, is the same as when prices are not controlled.

(8) J. L. MOSAK: *General Equilibrium Theory in International Trade*, Bloomington, 1944, pp. 44-45.

with equilibrium. Let us put this precisely. Let X_i be the excess demand for the i^{th} good (or input) expressed as a function of $(n-1)$ price ratios and the real money income. We have $(n-1)$ equations of the form:

$$X_i = X_i \left(\frac{P_i}{P} \dots \frac{P_{n-1}}{P}, \frac{M}{P} \right) (i=1 \dots n)$$

where P is an index of the level of prices defined by an appropriately weighted price index. M is stock of cash (9). We assume there to be « no government ».

By Walras' law (about which, more later) one equation follows from the rest. We thus have n equations, $(n-1)$ excess demand equations, and one defining the price index, in the $(n-1)$ price ratios and in P . Set the $(n-1)$ excess demand equations equal to zero and assume that a unique solution exists in the unknowns.

Let these equilibrium values be $\left(\frac{P_i}{P} \right)^0$ ($i=1 \dots n-1$) and P^0 . If now we arbitrarily fix P_j at \bar{P}_j , then if equilibrium is to be possible all prices must change so as to preserve the equilibrium price ratio, that is P must change and hence M must change in the same proportion as P . If however M is fixed and given, and equilibrium is unique, then only price we can fix is the equilibrium price. It should be noted that we are assuming that there is a tendency for equilibrium to be established.

Thus as long as there is perfect competition and the government fixes some prices arbitrarily *and does nothing else*, equilibrium is only possible if they fix the equilibrium price, but then there is nothing to be gained. If however there is not perfect competition then as we have already noted, the fixing of prices changes the demand curves facing producers and that is only another way of saying that the functions of our system will change. In general, anything that causes a change in these functions will lead to a change in the equilib-

(9) It is assumed that the distribution of income remains given and constant throughout. The equations here used are based on Patinkin: « A Reconsideration of the Equilibrium Theory of Money », *Review of Economic Studies*, No. 45, 1949-50. See also my « Comment on a Reconsideration of the Equilibrium Theory of Money » in a forthcoming issue of the *Review*.

rium prices. It is even possible that whereas no equilibrium existed before prices were fixed, the fixing will make equilibrium possible. Not much can be said here on *a priori* grounds, but the distinction is important and must be borne in mind.

Lastly let us examine an autonomous shift in any of the functions such as may occur when the productivity of an input changes. A change in productivity will change the supply functions of output provided the latter prices remain given and thus change the demand for inputs. On the other hand the changes in productivity will affect the whole system and demands and supplies will tend to change everywhere. It is therefore again quite impossible to make any *a priori* predictions. For instance the fall in the productivity of a factor i , will tend to reduce the demand for it and increase the demand for i 's substitutes. Moreover it will affect different sectors of the economy differently, and hence relative demands and supplies at current prices will tend to change. Nothing is gained by classifying possible outcomes.

Before we turn to Dr. Hansen's analysis of this problem it will be useful to sum up the analysis of this section in somewhat more general terms.

Throughout we have treated inflation as a particular sort of disequilibrium. That is, if equilibrium is one of the aims of government, then on our definition inflation is one particular case where the aims of government and those of individual sectors are all basically incompatible. If we like, we have treated inflation as a special case of the wider genus of incompatibility of aims in the economy. This is in contrast to Dr. Hansen who doesn't care very much about equilibrium, and who is preoccupied with aggregate relationships and the constancy of price indices. This is well within the traditional of Swedish monetary theory. It is also to some extent a hangover from the old distinction between real and monetary analysis and real and monetary equilibrium.

In this section we have assumed that the functions describing private actions are given, and that with the given government policy there is inflation in our sense. We have then

examined a number of cases of changes in government policy, e.g. fixing prices and their effects. But the really important point is this. It may well be that with the given private functions government aims cannot be realised, e.g. it may be impossible to have full employment and equilibrium. The only way open to the government is then to alter these private relationships, by physical control, direction of labour etc. In the modern world of full employment policies, the incompatibility of aims in the economy most frequently finds expression in inflation or if we like in the breakdown of the market mechanism. How to make aims compatible and the extent to which the private sector must be « controlled » seems to me the really important problem. The constancy of price indices seems trivial in comparison.

Dr. Hansen in analysing these problems suffers from two disadvantages: (1) his definition of inflationary pressure which obscures certain important problems and (2) his insistence on analysing them in terms of a clumsy aggregative apparatus. For Dr. Hansen carries on this part of his work by means of simple diagrams using aggregate demand curves and aggregate supply curves, distinguishing only between the labour market and all other markets. Nothing at all is gained by this approach and much is lost.

The diagrams themselves — once the first one has been explained — are numerous and all very similar, and the answers they yield to our questions are the sort we know before using them. By means of them for instance Dr. Hansen shows that if there is excess demand for both goods and factors, closing the goods gap will not necessarily close the factor gap. But this is immediately obvious, as already pointed out above. When it is considered that as long as planned supply of any good i is only a function of its price, the demand for that good cannot influence the demand for inputs as long as P_i remains constant. Similarly Dr. Hansen shows that for instance keeping wages constant and allowing prices to rise may increase inflationary pressure by widening the factor gap. This again is immediately obvious once it is remembered that inputs and outputs are gross substitutes.

While therefore nothing seems gained by Hansen's mode of procedure which on an Occamite principle could not have been put equally well without making all sorts of unnecessary « aggregation » assumptions, the procedure itself, together with his definition of inflation, may easily lead to error. Thus for instance Hansen's policy prescriptions are directed to the end of bringing about an intersection of the aggregate planned supply curve with the aggregate (planned) demand curve and the aggregate curve of actual output, for in this situation there would be no pressure of inflation on his definition. But it is clear that this is perfectly compatible with excess demand in some parts of the system. Let us see why this may be important.

Firstly Hansen defines the maximum actual output with reference to the labour supply only. This assumes both a perfectly mobile labour force and the absence of any physically scarce limitational factors such as coal. Neither of these assumptions seems to me justified. But let us suppose that they are fulfilled. The intersection of Hansen's curves, i.e. the absence of his inflationary pressure, he later shows to imply, making certain assumptions about the price reaction equations (see later), the constancy of certain price indices. But why should policy be directed towards stabilising such price indices, for the prime disadvantage of inflation and deflation may still be present — the breakdown of the price mechanism. Indeed not one single sector of the economy need be in equilibrium and yet the price index may be stable.

But that is not all. For unless the price mechanism is « working », the allocation of resources is to a large extent arbitrary. That being so I am totally unable to understand Hansen's aggregate actual supply curve. As he himself points out, such a curve can only be drawn if relative outputs remain constant which they clearly will not. Hansen recognises, indeed points out this difficulty, and then contrives to ignore it. It is however crucial and invalidates much of his analysis.

But most important of all, Hansen's diagrams can tell us nothing about the possibility of equilibrium being achieved without or with government interference. Since his curves

must be redrawn for every change in relative prices and indeed can tell us nothing about these, they are quite unable to be of help in this problem. But as I have already argued at length, it is this question of the possibility of equilibrium which is of crucial importance for government policy, to illuminate which, most of the diagrams are offered. Moreover, consider a position where there is no monetary pressure of inflation. Unless this is also a position of equilibrium, there is no reason why it should be stable. For relative prices may be changing and this will shift all curves and in general not leave the aggregate of all excess demands valued at current prices equal to zero. Thus it is not even true to say that if monetary pressure of inflation a la Hansen is zero today it will be zero tomorrow. This makes it even more remarkable why we should be interested in such situations, or how the diagrams should be useful in describing them since their curves are likely to shift from period to period.

III

Up to now we have considered only static equilibrium positions, and referred only vaguely to the concept of dynamic stability conditions. It is time that our analysis were broadened to take into account certain specifically dynamic aspects of inflation.

In an economy with positive net investment, the stock of capital is growing and hence output will be growing through time. Moreover as long as people continue to save, some people (or government) must continue to invest if equilibrium is to be preserved through time. By equilibrium we shall mean that all plans are fulfilled. Moreover since in such a situation output cannot be stationary, expectations cannot be static, if they are to be compatible with equilibrium. This is an important point to bear in mind. Given the technique of production and the consumption functions of individuals (or groups of individuals), there will normally be only one time expansion path for each sector of the economy, which is compatible with equilibrium. This path can be found by assuming initially that all plans are continuously fulfilled. If equilibrium is to be

possible, plans must in fact develop in the manner in which the equilibrium system assumes them to develop.

The stability of such a system cannot be assessed from the equilibrium functions. For a disturbance of equilibrium will lead to changing plans and these changes must be postulated and cannot be deduced from the equilibrium system. In general a very useful distinction can be made between « routine » behaviour and « decision » behaviour (10). Routine behaviour occurs when the same past events are always acted upon in a given way, while decision behaviour occurs if the same past events are acted upon in different ways. It must be noted that « past events » can be interpreted very broadly, e.g. as rates of change in income over the last m periods, or the m past levels of income or both or any other thing. Equilibrium implies routine behaviour, if the equilibrium paths of the various sectors are systematic, for individuals will have the same past experience at regular intervals. A disturbance of equilibrium, which does not upset routine behaviour will therefore not lead to permanent disequilibrium. If however the disturbance is sufficiently large to upset routine behaviour, and substitute decision behaviour instead, then these decisions must be followed out step by step to see whether they lead to the re-establishment of the old routine behaviour. Nothing can be said *a priori*.

If the system therefore is out of dynamic equilibrium and there is no tendency to move towards it, the prime aim of government must be to attempt to establish the correct form of routine behaviour. In the absence of this the only way to cope with continuous excess demand is by physical controls. For however it manipulates and prices, unless the correct routine behaviour is established, disequilibrium will continue. The difficulty of manipulating private behaviour seems to me to be one of the more important arguments on the side of those who favour physical controls.

We must now also note a point of special interest. Suppose that the equilibrium paths are such as to lead to a steady growth in all

(10) See K. KATONA: *Psychological Analysis of Economic Behaviour*, McGraw-Hill, 1951.

outputs. If now one input is limited in supply and its productivity is constant, this can only be accomplished by changing the inputs ratios. Hence if excess demand for the scarce input is to be avoided its price must rise relatively to that of other inputs. But such price rises may not occur smoothly and in any case may upset routine behaviour. Hence equilibrium may break down. In general if the rate of growth in outputs which preserves equilibrium is greater than that possible with existing resources and rises in productivity, there will be a permanent tendency for inflation to develop. The aim of government must be here to reduce the equilibrium rate of growth — say by reducing the equilibrium propensity to save. But on the other hand it should be noted that equilibrium of this sort is perfectly compatible with rising prices, as long as these are planned for and anticipated. Stable prices and dynamic equilibrium may be incompatible.

Now a number of writers have sought to extend the concept of dynamic equilibrium just presented to cover the case of what Hansen calls quasi-equilibrium, which is a situation such that certain variables exhibit a regular movement (normally constant rate of growth) without requiring excess demands to be zero everywhere at every moment of time. Hansen employs this concept to analyse open inflation which is characterised by a constant rate of growth in all (really goods and factors) prices, while keeping relative prices constant. He shows that if the Samuelson-Metzler (11) analysis yields dynamic stability of a static Hicks system, it will also yield dynamic stability of Hansen's quasi-equilibrium. The analysis here is very stimulating and this reader at least was greatly refreshed to turn from Hansen's two-dimensional geometry to a proper analysis of the whole system.

Hansen is interested in this quasi-equilibrium for two reasons: (a) because it is a plausible model of open inflation, and (b) because he believes that it overcomes what he terms the homogeneity problem of the classical

(11) See P. A. SAMUELSON: « The Relation between Hicksian Stability and True Dynamic Stability », *Econometrica*, XII (1944) and L. METZLER: « Stability of Multiple Markets: The Hicks Conditions », *Econometrica*, XII (1945).

stationary model of exchange. Let us deal with these in turn.

(a) The existence of Hansen's quasi-equilibrium depends on individuals having static expectations (12). But as Hansen rightly suspects, few readers will be willing to take this as a plausible long term assumption, yet he does not modify his analysis. But I believe it is here that the crucial distinction between equilibrium and quasi-equilibrium is to be found. In the former, because routine behaviour is implied, the function are stable through time, whereas in the latter they are not. It is therefore doubtful whether it is worth while investigating the dynamic stability of such a system. How long will it take for rising prices to induce expectations of rising prices? Surely not much longer than it would take for a divergence from quasi-equilibrium to be rectified. Nevertheless Hansen's analysis is very valuable for two reasons: (a) he shows how open inflation may develop even with static expectations and (b) he gives a formal analysis to the looser statement of Wicksell's famous cumulative process. It must however be remembered that throughout, a perfectly elastic supply of money is assumed.

(b) The « classical » analysis of static exchange equilibrium can be summarised as follows. Let there be n commodities of which one is the numeraire-money. Assume that all demand and supply functions are homogeneous of zero degree in the prices. It is well known that a homogeneous function in n variables can always be reduced to a homogeneous function in $(n-1)$ variables, since the value of the function depends only on the ratio of the variables. In equilibrium all excess demands must be zero. We thus have n equilibrium excess demand equations in $(n-1)$ price ratios. The system is clearly over-determined.

The way this difficulty is normally overcome is by the use of Walras' Law. Since the demand for commodities constitutes the supply of the numeraire and the supply commodities the demand for the numeraire, it is normally argued that the excess demand equation for the numeraire follows from the $(n-1)$ excess demand equations for the commodities. Thus

(12) That is the existence of routine behaviour.

the n excess demand equations are not independent, and one can be dropped out. We will then be left with $(n-1)$ equations to determine $(n-1)$ price ratios — but the absolute level of prices cannot be determined from this system. Now, Hansen in a brilliant piece of analysis shows that unless expectations are consistent, Walras' Law need not hold. This of course is not true in equilibrium where Walras' Law must always hold, but it is true for other positions: in other words Walras' Law is not an identity and we can therefore not strike out one equation in all situations.

The reason for this is that planned supply need not equal actual supply and planned demand need not equal actual supply. In other words *ex ante* excess demands need not equal *ex post* excess demands. Then if the excess demand for the numeraire (money) is interpreted *ex post*, i.e. in Hansen's inflationary pressure sense, this may differ from the excess demand for money *ex ante*.

We must now make quite certain to understand what is involved. In equilibrium *ex ante* and *ex post* values coincide, and therefore Hansen's objections do not apply. It is therefore still perfectly valid to use the classical system to determine the equilibrium price ratios. No circularity is involved in this, nor is Hansen correct when he maintains that if in such a situation we strike out one of the excess demand equations — say for labour — there is no guarantee that in equilibrium there will not be excess demand for labour, for we can only strike out the excess demand equation if there is equilibrium everywhere. But we cannot use Walras' Law to investigate the dynamic stability or the laws of motion (other than equilibrium motions) of the system, unless it is maintained that price reactions depend on the *ex ante* rather than the *ex post* excess demands. But it is clear that the system may be in equilibrium *ex ante* and not *ex post*, e.g. when it is planned to supply more than is physically available. Clearly we cannot take prices to remain constant in this situation and the *ex post* excess demands become relevant in determining the course of prices. In short, Walras' Law cannot be relied on in a dynamic analysis and Hansen has done a great service in drawing attention to this.

But when it comes actually to carrying out the dynamic analysis, Hansen continues to use the assumption that all excess demands depend on relative prices only, while the excess demand for money depends on absolute prices (and is assumed homogeneous of degree one in these). This procedure is open to grave objections, which are at least as old as Mr. Hicks' *Value and Capital*. For the assumption that excess demands depend on relative prices only is equivalent to assuming that money only acts as a unit of account (13). For the price of money is constant (equal to unity) so that for instance rising prices must mean a fall in the real quantity of money. Now as long as no one holds any stocks of money, nor demands any to hold, this will make no difference, but then we shall be explaining an economy which has nothing to do with the world we live in, for our economy is a monetary economy. I cannot therefore accept Hansen's dynamic model, elegant though it is, as having any connection with the real world — not only because he assumes static expectations, but because he also assumes that the quantity of money has no influence on the situation.

Suppose for instance that instead of making all excess demand functions of relative prices only, we had inserted a term for the absolute quantity of money. Suppose further that there is excess demand everywhere. Suppose further that the rate of change in any price P_j is a function of the excess demand for j . If now a quasi-equilibrium is to exist, not only must all prices rise in the same proportion, but the quantity of money must rise in the same proportion as prices. But that is not all — each individual's stock of money must rise in the same proportion as prices. We must therefore assume that the monetary authority sees to it that each individual's cash balance increases by a certain amount each

(13) See the following discussion: DON PATINKIN: « Relative Prices, Say's Law and the Demand for Money », *Econometrica*, Vol. 16, April 1948, and by the same author, « The Indeterminacy of Absolute Prices in Classical Economic Theory », *ibid.*, Vol. 17, January 1949, and « The Invalidity of Classical Monetary Theory », *ibid.*, Vol. 19, April 1951. Other participants in the discussion have been Braddock Hickman, Wassily Leontief and Cecil G. Phipps, all in *Econometrica*, Vol. 18, January 1950 and Brunner in *Econometrica*, Vol. 19, April 1951. Also J. MARSCHAK: « The Rationale of the Demand for Money and "Money Illusion" », *Metroeconomica*, Vol. II, August 1950.

period. Unless this happens, even though the monetary authority increases the total stock of money in the same proportion as prices, the distribution of real cash balances will change and hence real excess demands will change and hence prices will cease increasing in the same proportion. In any realistic model, the old-fashioned concern with the supply of cash is a correct one, and it is a pity that throughout the book this is hardly mentioned.

IV

We may conclude with a few general remarks. Throughout his book, Hansen is concerned with government policies which will result in a zero monetary pressure of inflation at «full employment». We have already questioned the relevance of this criterion. We must now also note that the requirement that there should be «full employment» adds an additional constraint to the system. This problem is not analysed by Hansen at all and yet it forms the major part of some of the most important recent contributions to the study of economic dynamics. If equilibrium is only possible at levels of output etc. above full employment, chronic inflationary pressure may result. In fact the great controversy between those favouring fiscal and those advocating physical measures by government must probably be decided on this issue (see section II above).

Hansen is silent on these matters and yet the fact that a system in which the full employment constraint is operative may not have an equilibrium position is surely worthy of analysis.

One would also have liked to see a more careful analysis of what is meant by «full employment». This is a question which can be answered best by what has come to be known as linear programming. For the full employment constraint must appear in our system as some sort of «maximum» transformation function and the aggregative procedure used by Hansen seems to me quite inadequate.

The frequent criticism expressed in this paper of Hansen's work stems from the belief that the primary problem of inflation is one of allocation, which must not be obscured by simple and unsophisticated aggregates. Hansen's book is frankly theoretical — in a work of this nature we are entitled to expect the most refined tools of analysis. But high-powered discussion of this sort we find in only a few pages. It was certainly a step forward to distinguish between at least two sectors, the goods and factors sectors; the discussion of the Swedish approach is lucid and highly instructive; the criticism of older theories is penetrating and just; yet the book does not add up to a theory of inflation, and certainly not to a theory of government policy. It can therefore be regarded as no more than a first rough, if stimulating, survey of the field.

STATISTICAL APPENDIX

ITALIAN BUDGET SUMMARY - ASSESSMENTS AND OBLIGATIONS
(milliards of lire)

Table A

Financial year beginning 1st July	Assessed revenue					Engaged expenditure					Surplus or deficit		
	Current revenue			Movement of capital	Total	Current expenditure			Movement of capital	Total	Current revenue & expenditure	Movement of capital	Total
	Re-current	Non-re-current	Total			Re-current	Non-re-current	Total					
1938-39	27	0.9	28	3	31	23	17	40	2.8	43	- 12	+ 0.2	- 11.8
1945-46	125	3	128	92	220	160	349	509	44	553	- 381	+ 48	- 333
1946-47	346	6	352	335	687	318	614	932	303	1,235	- 580	+ 31	- 549
1947-48	674	154	828	200	1,028	615	932	1,547	262	1,813	- 719	- 66	- 785
1948-49	919	96	1,015	45	1,060	796	723	1,519	98	1,617	- 504	- 53	- 557
1949-50	1,081	368	1,449	344	1,793	892	1,771	213	1,984	- 322	+ 131	- 191	
1950-51	1,265	411	1,676	247	1,923	1,015	838	1,853	341	2,194	- 177	- 94	- 271
1951-52 (a)	1,458	262	1,720	337	2,057	1,170	1,036	2,206	274	2,480	- 486	+ 63	- 423
1952-53 (b)	1,457	247	1,704	40	1,744	1,327	805	2,132	109	2,141	- 428	- 69	- 497

(a) Provisional; (b) Estimates.

Source: Conto riassuntivo del Tesoro.

ITALIAN BUDGET SUMMARY - FINANCING OF CASH DEFICIT
(millions of lire)

Table B

	1947-48	1948-49	1949-50	1950-51 (c)	1951-52
Assessments and Obligations (a) - Deficit . . .	- 784,764	- 556,705	- 191,768	- 270,707	- 423,000
Receipts and Payments (b) - Cash deficit . . .	- 505,454	- 419,964	- 83,619	- 159,103	- 188,494
Financing of cash deficit:					
Treasury Bills	+ 203,709	+ 262,564	- 24,530	+ 98,024	+ 105,396
Advances of the Bank of Italy	+ 107,509	- 2,884	+ 19,077	- 19,077	-
Interest bearing current accounts {					
Cassa DD.PP. and insurance instit. (c) .	+ 86,288	+ 223,443	+ 159,514	+ 142,216	+ 30,088
Banking institutions .	+ 20,726	- 39,449	- 10,176	- 751	- 13,591
Floating debt - Total	+ 418,232	+ 443,674	+ 143,885	+ 220,914	+ 121,893
Other Treasury Debits and Credits (d)	+ 41,301	- 67,773	+ 40,282	- 8,381	+ 139,188
Changes in cash position	+ 45,921	+ 44,063	- 100,548	- 53,430	- 72,587
GRAND TOTAL	+ 505,454	+ 419,964	+ 83,619	+ 159,103	+ 188,494

(a) Current revenue and expenditure and movements of capital;

(b) Receipts and payments on year account and arrears; current revenue and expenditure and movements of capital;

(c) For more than 90%, a/c.s. with «Cassa Depositi e Prestiti» (Cassa DD.PP.) which collects the deposits of the Postal Savings Banks;

(d) Debits and credits with government's agencies and other public bodies;

(e) Rectified.

Source: Conto riassuntivo del Tesoro.

ITALIAN DOMESTIC PUBLIC DEBT
(milliards of lire - Index Numbers, 1938=100)

Table C

End of period	Consolidated and others		Redeemable debt		Floating debt					Treasury notes	Total of domestic public debt	
	A-mount	I.N.	A-mount	I.N.	Treasury bills	Interest bearing current accounts	Advances by the Bank of Italy	Total			Amount	I.N.
								Amount	I.N.			
1938 - June	53	100	49	100	9	20	1	30	100	1.5	133.5	100
1947 - »	53	100	429	875	279	188	366	833	2,777	6.9	1,321.9	990
1948 - »	53	100	419	855	483	295	473	1,251	4,170	7.1	1,730.1	1,296
1949 - »	53	100	392	800	744	479	470	1,693	5,643	8.4	2,146.4	1,608
1950 - »	53	100	586	1,196	719	628	490	1,837	6,123	9.0	2,486.0	1,862
1951 - »	53	100	691	1,410	817	770	471	2,058	6,860	9.0	2,811.0	2,106
1952 - January	53	100	682	1,392	882	786	471	2,139	7,130	10.5	2,884.5	2,161
February	53	100	682	1,392	892	781	471	2,144	7,147	10.5	2,889.5	2,164
March	53	100	829	1,681	926	792	471	2,189	7,296	10.6	3,081.6	2,224
April	53	100	829	1,681	931	789	471	2,191	7,303	10.8	3,083.8	2,310
May	53	100	829	1,681	928	774	471	2,173	7,243	14.1	3,069.1	2,290
June (a)	53	100	829	1,681	923	786	471	2,180	7,267	15.0	3,077.0	2,305

(a) Provisional.

Source: Conto riassuntivo del Tesoro.

DEPOSITS AND CURRENT ACCOUNTS OF ITALIAN BANKS (a)

Table D

End of period	Time and Demand Deposits			Current accounts (b)			% of 4 to 1	Total		
	Amounts outstanding	Quarterly changes	Index Number	Amounts outstanding	Quarterly changes	Index Number		Amounts outstanding	Quarterly changes	Index Number
	1	2	3	4	5	6		8	9	10
1947 - December	528,516	—	100	485,373	—	100	91.8	1,013,889	—	100
1948 - December	805,497	+ 65,005	152.4	714,781	+ 50,161	147.4	88.7	1,520,278	+ 115,166	149.7
1949 - June	860,859	+ 15,683	162.8	811,444	+ 37,022	167.2	94.2	1,672,303	+ 52,705	164.9
December	1,015,937	+ 66,717	192.2	932,787	+ 76,226	192.1	91.8	1,948,724	+ 142,943	192.2
1950 - March	1,051,762	+ 35,825	209.1	947,449	+ 14,662	195.2	90.1	1,999,211	+ 50,487	197.2
June	1,059,031	+ 7,269	209.2	945,700	— 1,749	194.8	89.3	2,002,731	+ 5,520	197.7
September	1,112,499	+ 53,468	210.5	1,003,932	+ 58,232	206.8	90.2	2,116,431	+ 111,700	208.7
December	1,172,391	+ 59,892	221.8	1,062,515	+ 58,583	218.9	90.6	2,234,906	+ 118,475	220.4
1951 - March	1,179,784	+ 7,393	223.2	1,091,270	+ 28,755	224.8	92.4	2,271,054	+ 36,148	223.9
June	1,187,815	+ 8,031	224.7	1,090,487	— 783	224.6	91.8	2,278,302	+ 7,248	224.7
September	1,256,753	+ 68,938	237.7	1,179,351	+ 88,864	242.9	93.8	2,436,104	+ 157,802	240.2
December	1,364,093	+ 107,340	257.7	1,323,944	+ 144,593	271.8	93.8	2,688,037	+ 251,933	264.4
1952 - March	1,419,966	+ 55,873	268.7	1,355,400	+ 31,456	279.2	95.5	2,775,366	+ 87,329	273.7
June	1,454,922	+ 34,956	275.3	1,434,770	+ 39,370	296.0	98.6	2,889,692	+ 114,326	285.4

(a) The data refer to 365 banks (commercial and savings banks) which hold about 99% of the total deposits collected by all Italian banks.

(b) Interbank current accounts and valuta-accounts are excluded.

Source: *Bollettino* of the Bank of Italy.

DEPOSITS, CURRENT ACCOUNTS AND ASSETS OF ITALIAN BANKS (a)

(millions of lire)

Table E

Items	New Series (b)					
	31.12.49	31.12.50	31.3.51	30.6.51	31.12.51	31.3.52
	Amounts outstanding					
Deposits and current accounts . . .	1,948,720	2,234,906	2,271,054	2,278,302	2,686,037	2,776,883
Cash and sums available at sight . .	228,140	221,621	178,859	171,502	294,938	224,778
Fixed deposits with the Treasury and other Institutions	265,898	280,417	275,475	281,552	342,529	392,791
Government Securities (c)	427,761	545,755	576,213	570,945	645,494 (e)	703,467
Credits to clients (d)	1,473,679	1,772,344	1,824,318	1,889,950	2,107,101	2,159,509
Index Numbers: 31-12-1948=100						
Deposits and current accounts . . .	128.2	147.0	149.4	149.9	176.8	182.6
Cash and sums available at sight . .	134.9	131.0	105.8	101.5	174.5	133.0
Fixed deposits with the Treasury and other Institutions	149.4	157.7	155.0	158.4	192.7	221.0
Government Securities (c)	103.2	131.7	139.1	137.8	155.8	174.0
Credits to clients (d)	130.5	156.9	161.6	167.4	186.6	191.2
% of deposits and current a/cs						
Cash and sums available at sight . .	11.7	9.9	7.9	7.5	10.9	8.0
Fixed deposits with the Treasury and other Institutions	13.6	12.5	12.1	12.4	12.7	14.1
Government Securities (c)	21.9	24.4	25.4	25.1	24.0	25.3
Credits to clients (d)	75.6	79.3	80.3	82.9	78.4	77.7

(a) The data refer to 365 banks (commercial and savings banks) which hold about 99% of the total deposits collected by all Italian banks.

(b) The Bank of Italy has revised the quarterly series on banking assets, beginning from December 1948. For back figures (old series) see, *Recent Banking Developments in Italy*, this Review, No. 11, October-December 1949, pp. 230-231.

(c) Treasury bills and other Government securities. Nominal value.

(d) Includes: bills on hand, rediscount at the Bank of Italy, contangoes, advances, current accounts, credits abroad, loans recoverable on salaries, credits on note of hand, mortgage loans, current accounts with sections for special credits, non-Government securities, participations.

Source: *Bollettino* of the Bank of Italy.

ADVANCES OF THE BANKING SYSTEM AND MEDIUM AND LONG-TERM CREDIT INSTITUTES
(amounts outstanding - end of period data)

Table F

Categories of credit institutes	1938		1950		1951			
	millions of lire	%	milliards of lire	%	milliards of lire	%	Index numbers	
							1938=1	1950=100
Banking system (a)	35,027	65.0	1,670.7	71.0	1,980.4	70.1	56	118
Institutes for industrial credit (b)	9,767	17.8	471.4	19.7	613.2	21.7	63	130
Institutes for mortgage real estate credit	6,091	11.1	54.4	2.3	74.3	2.6	12	136
Institutes for agrarian credit:								
— Commodity pools	2,113	3.9	123.4	5.2	133.3	4.7	63	108
— Land improvement credit	1,260	2.2	18.9	0.8	23.9	0.8	19	126
Total	54,767	100	2,338.8	100	2,825.1	100	52	121

(a) Includes commercial and savings banks. The figures for « credits to clients » given for the banking system in this Table differ from the data reported on Table E owing to a different recording system (see on this matter, this Review No. 8, January-March 1949, Explanatory Notes, pag. 70).

(b) Includes the Institutes recorded in the Table H.

Source: Report of the Governor of the Bank of Italy for 1951.

ADVANCES OF THE BANKING SYSTEM, BY BUSINESS BRANCHES (a)

(amounts outstanding)

Table G

Business branches	December 31, 1938		December 31, 1950		December 31, 1951			
	millions of lire	% of total	milliards of lire	% of total	milliards of lire	% of total	Index numbers	
							1938=1	1950=100
1. Personal (professional consumer, etc.)	4,139	11.81	120.6	7.20	136.5	6.8	32	113
2. Public Institutions (Institutions for specialized etc. activities excluded)	5,163	14.74	66.4	3.95	102.4	5.1	19	154
3. Banks, exchanges, fin. and insurance Cos.	3,398	9.70	83.5	5	88.5	4.4	26	105
4. Transport and communications	547	1.55	39.4	2.35	50.1	2.5	91	127
5. Electric Power, gas, water	319	0.91	11.6	0.70	31.3	1.5	98	269
6. Hotels, entertainments	286	0.81	19.3	1.15	22.7	1.1	71	117
7. Building and real estate, public works, landreclamation	4,211	12.02	116.7	7	132.0	6.6	31	113
8. Agriculture and agricultural equipment and supply trades	2,942	8.39	122.0	7.30	162.1	8.1	55	132
9. Cereals, foodstuffs, drink	4,315	12.40	368.6	22.05	410.3	20.7	95	111
10. Wood and related products	510	1.45	42.0	2.50	47.1	2.3	92	112
11. Non-metallic mineral ores	909	2.59	76.4	4.55	104.8	5.2	115	137
12. Steel, metal and engineering products	3,184	9.09	176.0	10.55	219.9	11.1	69	124
13. Chemical products	588	1.67	53.4	3.20	62.6	3.1	106	116
14. Paper and printing	351	1.00	21.6	1.30	28.3	1.4	80	131
15. Hide and skins	576	1.64	44.1	2.65	43.1	2.1	74	97
16. Textile products and clothing	2,238	6.38	204.9	12.25	222.2	11.2	99	108
17. Other trades and industries	172	0.49	26.1	1.55	32.5	1.6	188	124
18. Retail trade and miscellaneous services	1,179	3.36	77.4	4.65	84.1	4.2	71	108
Total	35,027	100	1,670.7	100	1,980.4	100	56	118
Index numbers: 1938=1	1		47		56			

(a) Commercial and savings banks.

Source: *Bollettino* of the Bank of Italy.

MEDIUM AND LONG TERM INDUSTRIAL CREDIT, BY SOURCE OF LOANS
(amounts outstanding)

Table H

Institutes	December 31, 1949		December 31, 1950		December 31, 1951			
	milliards of lire	% of total	milliards of lire	% of total	milliards of lire	% of total	Index numbers	
							1938=1	1950= =100
Istituto Mobiliare Italiano (Institute for medium and long term industrial credit) . . .	51.4	18.72	78.8	16.60	95.6	15.29	80.2	121.3
Consorzio per sovvenzioni su valori industriali (Consortium for loans on industrial values)	19.8	7.21	18.5	3.92	20.1	3.92	11.6	108.6
Consorzio di credito per le opere pubbliche (Credit Consortium for public works) . . .	16.0	5.83	68.3	14.54	70.3	11.16	11.7	102.9
Istituto di credito per le imprese di pubblica utilità (Public Utility Credit Institute) . . .	38.1	13.87	44.0	9.39	55.6	9.07	70.9	126.4
Banca di credito finanziario (Mediobanca) (Bank for financial Credit)	7.0	2.55	12.2	2.62	17.0	2.77	—	139.3
Ente Finanziamenti Industriali (Institute for industrial financing)	—	—	1.1	0.23	2.7	0.44	—	245.5
Special Sections of the Banca Nazionale del Lavoro:								
— Section for hotel and tourist credit . . .	0.4	0.15	1.0	0.21	1.9	0.31	—	190.0
— Section for credit to minor industries . .	1.8	0.65	2.1	0.44	2.3	0.38	—	109.5
— Section for co-operative credit	0.8	0.30	1.0	0.21	1.5	0.24	—	150.0
— Section for cinema credit	2.0	0.73	3.5	0.74	4.1	0.67	97.6	117.1
Banco di Napoli:								
— Section for industrial credit	7.9	2.87	13.6	2.88	17.7	2.85	—	130.1
Istituto per lo sviluppo economico del Mezzogiorno (Institute for the economic development of Southern Italy)	1.5	0.55	3.4	0.72	5.2	0.85	—	152.9
Banco di Sicilia:								
— Section for industrial credit	4.3	1.56	6.0	1.27	8.8	1.44	—	146.7
— Section for mineral credit	4.3	1.56	3.3	0.70	2.6	0.42	—	78.8
Banco di Sardegna:								
— Section for industrial credit	—	—	—	—	0.1	0.01	—	—
Istituto di credito fondiario delle Venezie:								
— Section for public utilities	—	—	—	—	1.1	0.18	—	—
Cassa per il credito all'artigianato (Institute for credit to handicraft)	0.8	0.30	1.3	0.28	1.7	0.28	—	130.8
Total	156.5	56.85	258.1	54.75	308.3	50.28	31.6	119.4
<i>Industrial Financing with Italian Treasury or E.R.P. Funds:</i>								
— Italian Government Loans (under the Act No. 449 of May 8, 1946) (a)	11.7	4.27	10.9	2.31	9.8	1.60	—	89.9
— Fondo Industrie Meccaniche (Engineering Industry Fund) (b)	43.6	15.88	46.7	9.91	53.8	8.77	—	115.2
— Grants to the ship-building industry (under the Act. No. 75 of March 3, 1949)	—	—	0.2	0.04	2.8	0.46	—	1,400.0
— Import Financing from the Sterling Area (c)	3.0	0.9	37.9	8.04	65.8	10.72	—	174.0
— Financing of iron industry (d)	—	—	12.9	2.74	14.1	2.30	—	109.3
— Financing of industrial equipments on domestic market (e)	—	—	—	—	11.6	1.89	—	—
— E.R.P. Loans	6.3	2.29	51.0	10.82	102.2	16.67	—	200.4
— Export-Import Bank Credit (f)	53.9	19.62	53.7	11.39	44.8	7.31	—	83.4
GRAND TOTAL	274.6	100.00	471.4	100.00	613.2	100.00	62.8	130.1
<i>Index numbers: 1938=1</i>	<i>28.2</i>		<i>48.3</i>		<i>62.8</i>			

(a) On May 8, 1946 an appropriation was authorized for making advances to industrial enterprises in an amount of 3 milliard lire, subsequently raised to 13, to be granted through the *Istituto Mobiliare Italiano*.

(b) On September 8, 1947 (D.L. No. 889) the Italian Government decided to appropriate 55 milliard lire for financing the Italian engineering industry. (See on this matter *Premises and Tasks of the Special Fund for financing the Italian Engineering Industry*, by R. Tremelloni, in this Review, No. 3, October 1947, pag. 169 ff.).

(c) On April 18, 1950 (Act No. 258) the Treasury was authorized to withdraw from the *Ufficio Italiano dei Cambi* (Italian Exchange Office) the sum of 50 million pounds sterling, in order to finance the imports of plants and equipments from the sterling area on the part of Italian industrial companies.

(d) On July 28, 1950 a withdrawal from the lira-fund was authorized, of 14.2 milliard lire, for financing the development and rationalization of the Italian Iron Industry.

(e) The above mentioned Act No. 258 authorized the Treasury to withdraw from the 1950-1951 Lira-Fund the sum of 20 milliard lire for financing the buying of industrial equipments on the Italian market, on the part of Italian industrial enterprises.

(f) As is known, in 1947 the Export-Import Bank granted to Italian industry a credit of about 100 million dollars.

Source: Report of the Governor of the Bank of Italy for 1951.

FUNDS RAISED IN THE CREDIT
AND CAPITAL MARKET, IN 1951, BY SOURCE AND ECONOMIC BRANCHES
(annual increases - in milliards of lire)

Table I

Branches of economic activity	Banking system loans (a)	Loans of institutes for industrial credit	Loans of institutes for agrarian and real estate credit	Shares	Debentures	Total	%
1. Personal (professional, consumer, etc.) . . .	15.9	—	—	—	—	15.9	2.8
2. Public Institutions (Institutions for specialized activities excluded)	35.9	3.7	—	—	—	39.6	6.9
3. Banks, exchanges, fin. and ins. Cos.	5.0	0.5	—	6.8	1.0	12.3	2.1
4. Transport and communications	10.6	17.0	—	5.2	0.1	32.9	5.7
5. Electric power, gas, water	19.6	47.4	—	10.2	—	77.2	13.5
6. Hotel, entertainments	3.3	1.6	—	0.3	—	5.2	0.9
7. Building and real estate, public works, land-reclamation	15.2	1.0	23.1	1.6	—	38.9	6.8
8. Agriculture and agricultural equipment and supply trades	40.0	—	4.8	—	—	44.8	7.8
9. Cereals, foodstuffs, drink	41.7	3.6	6.9	1.1	—	53.3	9.3
10. Wood and related products	5.1	0.5	—	0.4	—	6.0	1.0
11. Non-metallic mineral ores	28.4	13.7	—	3.8	0.1	46.0	8.0
12. Steel, metal and engineering products	43.8	38.5	—	19.3	0.2	101.8	17.8
13. Chemical products	9.0	2.3	—	16.0	4.0	31.3	5.5
14. Paper and printing	6.7	2.0	—	0.7	—	9.4	1.6
15. Hides and skins	1.0	0.4	—	—	0.1	0.5	0.1
16. Textile products and clothing	17.4	8.8	—	12.0	1.9	40.1	7.0
17. Other trades and industries	6.4	3.5	—	0.8	—	10.7	1.9
18. Retail trade and miscellaneous services	6.7	0.3	—	1.5	—	8.5	1.5
Total 1951	309.7	141.8	34.8	79.7	7.4	573.4	100
%	54.0	24.7	6.1	13.9	1.3	100.0	
Total 1950	292.5	172.4	26.0	65.5	32.7	589.1	
%	49.7	29.3	4.4	11.1	5.5	100.0	
Total 1949	323.2	90.8	30.0	89.6	107.6	641.2	
%	50.4	14.2	4.7	13.9	16.8	100.0	
Total 1948	321.6	116.2	9.6	86.1	24.4	557.9	
%	57.6	20.9	1.7	15.4	4.4	100.0	
Total 1938 (million lire)	2.192	1.974	0.340	1.697	1.32	5.235	
%	41.87	18.61	6.49	32.42	6.11	100.0	

(a) Commercial and savings banks.

Source: Report of the Governor of the Bank of Italy for 1951.

INTEREST RATES ON THE ITALIAN MONEY AND CAPITAL MARKET
(per cent per annum)

Table L

	1938 (a)	December 1950	December 1951
<i>Bank rate</i>	4.50	4.00	4.00
<i>Commercial and savings banks: (b)</i>			
— Sight deposits	1.50	0.50	0.50
— Ordinary time deposits	2.50 - 3.00	1.50 - 2.00	1.50 - 2.00
— Special time deposits	—	3.00	3.00
— Blank credits	5.625 - 6.25	6.00 - 7.50	6.00 - 7.50
— Advances	5.00 - 5.75	4.75 - 7.00	4.75 - 7.00
— Discounts	5.00 - 6.125	5.25 - 6.75	5.25 - 6.75
<i>Postal savings bonds</i>	5.00 - 6.00	4.50 - 5.25	4.50 - 5.25
<i>Government securities:</i>			
— Consolidated debt	5.40	5.09	5.35
— Redeemable debt	5.66	6.20	6.48
— Treasury Bills	5.29	6.09	6.21
<i>Bonds issued by industrial credit Institutes</i>	5.72	7.07	7.31
<i>Bonds issued by mortgage credit Institutes</i>	5.47	6.42	6.47
<i>Bonds issued by industrial concerns</i>	6.12	7.42	7.28
<i>Shares</i>	5.11	5.50	6.59

(a) Annuale average.

(b) For passive transactions are given the maximum rates, for active transactions the minimum rates, both as authorised by current regulations (the so-called « banking cartel »).

Source: Reports of the Bank of Italy for 1950 and 1951.

NOTE CIRCULATION, PRICES, WAGES AND SHARE QUOTATIONS IN ITALY

(Index Numbers, 1938=100)

Table M

Year or month	Note Circulation (a)		Wholesale prices (c)		Cost of Living (c)	Wage rates in industry (c)	Share quotations (b)	Fine gold	
	Amount (b) (milliards of lire)	Index	All commodities	Foodstuffs				Price of one gram (lire) (d)	Index
1945 December	389.8	1,732	2,764	..	517	823	3,165
1947 December	795.0	3,533	5,526	6,196	4,929	5,105	1,206	827	3,180
1948 December	970.9	4,315	5,696	5,969	4,917	5,415	1,416.9	995	3,826
1949 December	1,058.2	4,703	4,747	4,954	4,753	5,791	1,511.3	957	3,680
1950 December	1,176.4	5,228	5,424	5,567	5,009	5,962	1,589.1	919	3,535
1951 March	1,101.7	4,896	5,746	5,539	5,199	5,972	1,727.8	932	3,585
June	1,100.3	4,890	5,595	5,456	5,394	6,329	1,618.3	868	3,338
September	1,164.1	5,173	5,438	5,446	5,371	6,685	1,711.0	888	3,415
December	1,304.2	5,796	5,454	5,478	5,416	6,685	1,714.9	885	3,403
1952 March	1,216.9	5,408	5,320	5,350	5,475	6,732	1,930.4	859	3,304
April	1,209.0	5,373	5,255	5,293	5,501	6,732	1,826.4	819	3,150
May	1,216.0	5,404	5,168	5,221	5,522	6,732	1,809.9	800	3,077
June	1,220.0	5,422	5,133	5,194	5,559	7,055	1,872.3	795	3,058

(a) End of year or month. Includes: Bank of Italy notes, Treasury notes, and A-M-lire; (b) *Bollettino* of the Bank of Italy; (c) *Bollettino Mensile di Statistica* issued by the Central Institute of Statistics; (d) Business Statistics Centre of Florence.

PRICES AND YIELDS OF ITALIAN SECURITIES BY MAIN CATEGORIES
(annual or monthly averages)

Table N

Year or month	Government Securities										Share Securities	
	Bonds				Treasury Bills		Average		Price (index number '38=100)	Yield (per cent per annum)		
	Consolidated		Redeemable		Price (index number '38=100)	Yield (per cent per annum)	Price (index number '38=100)	Yield (per cent per annum)				
	Price (index number '38=100)	Yield (per cent per annum)	Price (index number '38=100)	Yield (per cent per annum)								
1938 - a. av.	100.0	5.40	100.0	5.66	100.0	5.29	100.0	5.45	100.0	5.11		
1947 - " "	94.4	5.72	98.1	5.77	71.9	7.36	84.8	6.43	2,248.5	0.59		
1948 - " "	99.4	5.43	85.8	6.60	89.2	5.93	87.6	6.22	1,319.5	2.31		
1949 - " "	105.9	5.10	96.1	5.89	94.6	5.59	96.0	5.68	1,567.7	3.97		
1950 - " "	105.4	5.13	93.4	6.06	93.6	5.68	93.6	5.83	1,528.2	5.44		
1951 - March	102.5	5.27	87.6	6.46	85.9	6.16	88.0	6.19	1,727.8	6.16		
June	101.5	5.32	87.3	6.48	87.1	6.07	88.6	6.15	1,618.3	7.12		
September	101.7	5.31	89.4	6.33	89.8	5.89	91.1	5.98	1,711.0	6.83		
December	100.9	5.35	87.3	6.48	85.2	6.21	87.5	6.23	1,714.9	6.59		
1952 - March	99.6	5.42	87.3	6.48	86.4	6.12	88.2	6.18	1,930.4	6.13		
April	98.9	5.46	86.8	6.52	86.3	6.13	88.0	6.19	1,826.4	6.56		
May	100.0	5.40	88.6	6.39	88.3	5.99	90.1	6.05	1,809.9	6.70		
June	100.9	5.35	90.6	6.25	92.0	5.75	93.3	5.84	1,872.3	6.57		

Source: *Bollettino* of the Bank of Italy.WHOLESALE PRICES BY GROUPS OF COMMODITIES
(Index Numbers, 1938=100)

Table O

Period	All Commodities	Foodstuffs		Textiles	Hides, Skins and Footwear	Raw materials, metal and engineering products	Fuels and lubricants	Chemical raw materials and products	Lumber	Paper goods	Bricks, Lime and Cement	Glass
		Vegetable	Animal									
1949 - a. av.	5,169	4,830	6,481	5,939	4,609	5,402	3,945	5,603	5,663	4,726	6,108	4,903
1950 - " "	4,905	4,746	6,401	6,015	4,191	5,228	3,784	5,302	5,677	4,778	6,106	4,928
1951 - " "	5,581	4,821	7,289	7,621	5,213	6,689	4,666	6,008	7,250	8,318	6,603	4,878
1951 - January	5,652	4,979	7,392	7,941	6,190	6,355	4,327	5,858	6,029	7,299	6,100	4,928
February	5,738	5,015	7,046	8,141	6,333	6,645	4,509	6,076	6,479	8,408	6,231	4,928
March	5,724	4,952	6,968	8,279	6,127	6,636	4,727	6,206	6,879	8,829	6,277	4,886
April	5,697	4,980	6,819	8,146	5,656	6,689	4,735	6,219	7,000	8,796	6,373	4,886
May	5,677	4,979	7,012	7,830	4,950	6,696	4,722	6,164	7,042	8,693	6,560	4,886
June	5,595	4,842	6,970	6,995	4,619	6,708	4,745	6,132	7,272	8,610	6,680	4,886
1952 - January	5,415	4,699	7,184	6,778	4,753	6,957	4,610	6,006	8,356	7,651	7,039	4,707
February	5,380	4,720	7,126	6,778	4,616	7,022	4,644	5,986	8,543	7,486	7,141	4,707
March	5,323	4,709	6,969	6,604	4,406	7,060	4,597	5,866	8,599	7,340	7,150	4,707
April	5,255	4,709	6,725	6,429	4,208	6,978	4,524	5,800	8,575	6,950	7,213	4,707
May	5,168	4,683	6,524	6,283	3,909	6,853	4,473	5,741	8,531	6,742	7,242	4,707
June	5,127	4,646	6,295	6,242	3,945	6,777	4,388	5,720	8,419	6,168	7,321	4,707

Source: *Bollettino Mensile di Statistica*.

NATIONAL INDEX OF LIVING COST

(1938=100)

Table P

Year or month	All Items	Foodstuffs	Clothing	Heating and lighting	Housing	Miscellaneous
1948 - a. av.	4,844	6,083	6,004	2,634	377	4,318
1949 - " "	4,915	6,069	5,956	3,255	543	4,469
1950 - " "	4,849	5,877	5,742	3,480	730	4,610
1951 - " "	5,320	6,279	6,975	3,746	1,232	5,248
1951 - March	5,199	6,105	7,065	3,665	1,258	5,070
April	5,317	6,280	7,129	3,673	1,267	5,092
May	5,323	6,297	7,144	3,671	1,265	5,097
June	5,394	6,412	7,108	3,338	1,260	5,108
1952 - March	5,475	6,419	6,596	3,997	1,539	5,532
April	5,501	6,471	6,524	4,000	1,548	5,501
May	5,522	6,508	6,445	3,990	1,565	5,497
June	5,559	6,566	6,410	3,991	1,576	5,436

Source: *Bollettino Mensile di Statistica*.

WAGES AND SALARIES IN ITALY

(gross retributions - inclusive of family allowances)

(Index Numbers, 1938=100)

Table Q

Categories	1950 a. av.	1951 a. av.	1951			1952		
			april	may	june	april	may	june
Industry:								
Specialized workers	4,956	5,616	5,436	5,436	5,590	5,916	5,916	6,168
Skilled workers	5,607	6,182	5,983	5,983	6,126	6,507	6,507	6,812
Ordinary workers and semi-skilled labourers	6,009	6,544	6,323	6,323	6,482	6,895	6,895	7,232
Labourers	6,513	7,013	6,742	6,742	6,940	7,415	7,415	7,796
General index of Industry	5,825	6,386	6,165	6,165	6,329	6,732	6,732	7,055
Agriculture	6,942 (d)	7,135	7,009	7,045	7,113	7,416	7,416	6,789
Government Civil Employees:								
Group A (a)	3,191	3,373	3,373	3,373	3,373	3,373	3,962	3,962
Group B (b)	3,224	3,424	3,424	3,424	3,424	3,424	3,927	3,927
Group C (c)	4,131	4,223	4,223	4,223	4,223	4,223	4,693	4,693
Subordinate staff	4,845	4,928	4,928	4,928	4,928	4,928	5,297	5,297
General index of Government Civil Employees	3,798	3,936	3,936	3,936	3,936	3,936	4,425	4,425

(a) Administrative grade; (b) Executive grade; (c) Clerical grade.

Source: *Bollettino Mensile di Statistica*.ITALIAN INDUSTRIAL PRODUCTION INDEXES (a)
(unadjusted, 1938=100)

Table R

Year or month	General Index	Mining	Manufactures										Electric Power
			Total	Food	Textiles	Lumber	Paper	Metal-lurgy	Engineering	Non-metallic ores	Chemicals	Rubber	
1948 a. av.	99	82	93	93	96	54	73	87	104	90	93	103	148
1948 - " "	105	90	101	111	99	58	91	85	115	96	105	115	136
1949 - " "	121	101	116	134	104	59	106	105	122	119	127	132	160
1950 - " "	137	119	131	139	109	62	114	135	130	128	171	152	186
1951 - March	141	109	136	142	123	63	124	128	138	130	171	172	183
April	138	109	133	133	119	63	117	136	133	130	169	164	180
May	143	109	137	134	116	62	118	151	136	135	180	171	196
June	139	108	133	133	111	65	111	144	134	132	173	160	193
1952 - March	138	139	132	144	104	68	111	143	134	138	169	134	183
April	137	134	131	140	100	67	105	147	134	143	169	122	183
May	147	139	140	147	101	70	116	161	154	156	176	144	205
June	139	132	131	139	97	62	106	149	143	133	166	131	200

(a) On the problem of index numbers on Italian industrial production, see this Review, No. 16, January-March 1951: *A Note on the Index Numbers of Italian Industrial Production*, by E. D'ELIA, pag. 34; and *National Income, Consumption and Investments in Italy*, *ibid.*, pag. 3.

Source: *Bollettino Mensile di Statistica*.

ITALY'S FOREIGN TRADE IN 1938 AND 1946-51

Table S

Year	Imports			Exports			Percent of exports to imports	Deficit		
	milliards of current lire	1938 lire (a)		milliards of current lire	1938 lire (a)			milliards of current lire	1938 lire (a)	
		milliards	Index number		milliards	Index number			milliards	Index number
1938	11.26	11.26	100	10.5	10.5	100	93.1	— 0.76	— 0.76	100
1946	91.5	3.2	27	64.6	2.2	21	70.6	— 26.9	— 1.—	129
1947	930.6	18.—	159	339.2	6.6	63	36.5	— 591.4	— 11.4	1,493
1948	822.8	15.4	135	570.6	10.5	100	69.3	— 252.2	— 4.9	636
1949	857.—	16.5	151	634.6	12.3	118	74.2	— 222.4	— 4.2	558
1950	900.3	18.8	166	746.9	15.3	146	83.0	— 153.4	— 3.5	454
1951	1,323.6	23.7	210	1,017.9	18.2	173	76.9	— 305.7	— 5.5	714

(a) Current lire have been converted in 1938 lire on the basis of wholesale price index calculated by the Central Institute of Statistics.

Source of absolute figures: « Statistica del Commercio con l'Estero » by the Central Institute of Statistics.

ITALY'S IMPORTS AND EXPORTS IN 1951 AND 1952: FIRST SIX MONTHS
(milliards of lire)

Table T

Period	1951				1952			
	Imports	Exports	Surplus (+) or deficit (—)	% of exports to imports	Imports	Exports	Surplus (+) or deficit (—)	% of exports to imports
January	96.6	75.5	— 21.1	78.1	123.3	84.6	— 38.7	68.6
February	94.0	71.5	— 22.5	76.0	113.8	76.9	— 36.9	67.5
March	100.3	82.5	— 17.8	82.0	130.—	75.3	— 54.7	57.9
April	115.7	79.8	— 35.9	68.9	125.6	68.8	— 56.8	54.8
May	122.4	81.9	— 40.5	66.9	130.—	71.2	— 58.8	54.7
June	123.4	86.2	— 37.2	69.9	118.9	65.3	— 53.6	54.8
January-June	652.4	477.4	— 175.0	73.2	741.1	442.1	— 299.5	59.6

Source: « Statistica del Commercio con l'Estero », by the Central Institute of Statistics.

ITALY'S BALANCE OF PAYMENTS IN 1951
(millions of dollars)

Table U

Items	Free Currencies		E. P. U. Currencies		Other currencies	Total
	dollars	other currencies	sterlings	other currencies		
Credits:						
Exports	227.0	6.1	620.4	583.0	157.4	1,593.9
Freights	38.5	0.2	41.3	37.1	15.1	132.2
Tourism	12.4	2.7	28.8	44.9	0.4	89.2
Remittances	16.4	4.8	12.1	25.8	10.2	69.3
Other services	70.4	4.8	36.5	35.1	14.6	161.4
Total	364.7	18.6	739.1	725.9	197.7	2,046.0
Debits:						
Imports	651.0	3.9	592.5	592.8	192.2	2,032.4
Tourism	2.5	0.5	1.8	8.9	0.2	13.9
Other services	61.1	1.0	17.2	49.7	24.8	153.8
Total	714.6	5.4	611.5	651.4	217.2	2,200.1
Balance:						
Goods	— 424.0	2.2	27.9	— 9.8	— 34.8	— 438.5
Services	74.1	11.0	99.7	84.3	15.3	284.4
Total	— 349.9	13.2	127.6	74.5	— 19.5	— 154.1
Sundry Items	23.3	1.1	— 8.3		12.3	28.4
General Balance	— 326.6	14.3		193.8	— 7.2	— 125.7

Source: Report of the Bank of Italy for 1951.