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HAYEK ON NEUTRAL MONEY AND THE CYCLE*

by

David Laidler

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I. INTRODUCTION

Friedrich von Hayek's work occupies an important place in recent political and economic thought. No one did more, and very few did as much, to preserve and then rejuvenate the Liberal tradition that the Great War and the economic and political upheavals which followed it seemed, for three or more decades, to have destroyed. But Hayek's earliest contributions to Economics were in a much narrower area. From the early 1920s until the late 1930s, he was primarily an economic theorist, working on problems of monetary theory and the cycle, what we would nowadays call macroeconomics. His reputation in this particular field has been uncertain: in the 1930s, so Deutscher (1990) tells us, Hayek stood third in citations in English language journal articles in the area of macroeconomics, behind Keynes and Robertson, but ahead of Hawtrey and Pigou; and Hayek, it should be recalled, was of a younger generation than any of these. 1 In Shackle's Years of High Theory which appeared in 1967, and purported to tell the story of the development of economic theory over the period 1926-1939, Hayek's name appeared only as the editor of the 1933 volume in which the German version of Gunnar Myrdal's Monetary Equilibrium was published; but by 1974 the rehabilitation of Hayek's work on the cycle had proceeded far enough to help bring a Nobel Prize (shared with Myrdal), and a widespread reputation for having anticipated Milton Friedman's (1968) "accelerationist hypothesis" about the inflationary process.

This essay discusses Hayek's contributions to macroeconomics in the 1920s and earlier 1930s, and attempts to assess their importance relative to contemporary as well as to later work. It begins with a brief account of the roots of his analysis as they appear in the writings of Wicksell, Böhm-Bawerk and von Mises, and goes on to describe Hayek's own theory of the cycle. It then argues that, though there is much to admire in that theory, the features that most clearly distinguish it from the work of such contemporaries as Robertson, and indeed the Stockholm School, are also
the least defensible, and indeed were recognised as such at the time. It also suggests that the links between Hayek's accelerationism and Friedman's are at best tenuous. It concludes that, though the significance of Hayek's work for the development of economics in the 1930s is amply confirmed, so is the view that his specific analytic conclusions have little direct relevance for more recent debates. Nevertheless many of the issues which he addressed figure prominently in those later debates, and if his contributions are judged with regard to the questions he raised, rather than the answers he gave, then a more favourable verdict is warranted.

II. WICKSELL, BÖHM-BAWERK AND MISES

Wicksell's "cumulative process" analysis provided the starting point for many attempts to model the business cycle in the interwar years, even though he himself did not think that it was of any particular importance for understanding the cycle. Rather Wicksell believed he was providing a theory of secular inflation in an economy with a monetary system dominated by banks whose capacity to create credit meant that simple versions of the Quantity Theory of "Money" (which to Wicksell was synonymous with currency) were of little, or, in the limit, of no relevance. According to Wicksell, inflation would arise in such a system whenever the "natural" rate of interest, to be defined in a moment, exceeded the "market" rate at which banks stood ready to lend. Such a discrepancy would lead to an expansion of bank loans, and a bidding up of the prices of both inputs and output. In the limiting case of a "pure credit economy", in which commodity currency had no role to play, such a discrepancy could persist and inflation could go on forever, but Wicksell, writing before World War I, treated this case as having only theoretical significance. As a practical matter he believed that rising prices would lead to a drain of currency from the banks, reduce their reserves, and force them to curtail their lending by raising the market interest rate. The latter
would eventually reach equality with the natural rate, at which point inflation would cease.\(^3\)

In the current context, the crucial feature of Wicksell’s analysis is its association of inflation with a failure of the interest rate to co-ordinate inter-temporal choices, to equate saving and investment, and its identification of this failure with the operation of the monetary system. This co-ordination failure was not inevitable. Money could be "neutral", and, according to Wicksell, it would be: when the market rate of interest was equal to the natural rate defined as that which would equilibrate saving and investment if the economy under analysis operated by an hypothetical process of barter, when the market rate of interest was equal to the natural rate defined as the marginal product of capital per unit of capital; and when the market rate of interest was at a value compatible with the maintenance of zero credit and money creation on the part of the banks, and hence (again according to Wicksell) with price stability. But would saving and investment be equal to each other in a barter economy at a rate equal to the marginal product of capital even when their equilibrium values were positive? And if their values were positive, so that the economy was growing, zero credit creation would no longer involve a stable price level: which of the two conditions would then provide neutrality, zero credit growth or zero inflation? And, finally, if neutrality did not prevail, just what consequences would follow for real variables?

Here we have an intellectual muddle of impressive proportions, but, as it turned out, a seminal muddle, for as I have already suggested, a significant proportion of the business cycle analysis of the 1920s and 1930s, not least that of Hayek, may be read as the outcome of attempting to come to grips with the puzzles bequeathed by Wicksell. The particular tack taken by "Austrian" analysis, of which Hayek's work provides the most fully worked out example, began by investigating the real consequences of non-neutral money and bringing the insights yielded by this investigation to bear on the rival claims of zero credit creation and price level stability to
characterise its neutrality. As Gunnar Myrdal remarked in (1932), (tr. 1939)

"It is not surprising that it was the Austrians who found the connexions with Wicksell: Wicksell himself was a pupil of Böhm-Bawerk and he put his thoughts into forms and constructions based directly on Austrian habits of thought." (1939, p. 7)

The ideas which Wicksell had taken from Böhm-Bawerk (see 1884, tr 1890) lay in the area of capital theory and were therefore particularly suited to investigating the real consequences of a failure of the intertemporal allocation mechanism. In those "Austrian habits of thought" consumption goods, known as "goods of the first order" were produced with the aid of intermediate goods, known as "goods of higher orders" by way of a "roundabout" process in which the passage of time was of the very essence. A decision to save was simultaneously a decision to consume at some time in the future, and a decision to invest was a decision to devote currently available resources to the production of goods of a higher order which would then be used to produce goods of the first order at some future time.

According to Böhm-Bawerk, more roundabout methods of production were inherently more productive, but the productivity of roundaboutness diminished on the margin. It was the role of the rate of interest to co-ordinate saving and investment decisions so that the marginal productivity of the capital created by the latter was just sufficient to compensate for the sacrifice of current consumption implicit in the former. For example, a shift of preferences towards more saving would lead to a lower rate of interest and a more roundabout method of production would therefore be adopted; in due course, when it came to fruition, this would provide the extra consumption goods the demand for which had been implicit in the initial act of saving. Wicksell had explicitly used this analysis of Böhm-Bawerk's to underpin the concept of the natural rate of interest in his most
careful exposition of his views on the interaction of the monetary system with the real economy, that set out in Chapter 9 of Interest and Prices (1898), the only place in his work in which he completely and self-consciously abstracted from commodity money; and in his Theory of Money and Credit (2nd German ed. 1924, tr. 1934) Ludwig von Mises characterised the problem raised by Wicksell's work for Böhm-Bawerk's analysis of inter-temporal allocation in the following way:

"...it would be entirely within the power of banks to reduce the rate of interest... provided that in so doing they did not set other forces in motion which would automatically re-establish the rate of interest at the level determined by the circumstances of the capital market, i.e., the market in which present goods and future goods are exchanged for one another. The problem that is before us is usually referred to by the catch-phrase gratuitous nature of credit." (1934, p. 352, italics in original).

Wicksell had, as we have seen, usually argued that, where bank money was convertible into commodity money, the capital market equilibrating value of the rate of interest would always reassert itself eventually and he had treated this as the empirically relevant case. By 1924, however, in the wake of the widespread abandonment of the gold standard during the First World War, his theoretical possibility, the "pure credit economy", had acquired considerable practical relevance. Hence Wicksell's attempt to solve the problem posed by the "gratuitous nature of credit" by focusing upon the behaviour of banks' reserves of commodity money could not be generally satisfactory. Thus, the problem which Mises raised, apparently referring to Chapter 9 of Interest and Prices, namely that

"...if we start with the assumption, as Wicksell does, that only fiduciary media are in circulation and that the quantity of them is not legislatively restricted, so that the banks are entirely free to extend their issues of them, then it is impossible to see why rising prices and an increasing demand for loans should induce them to raise the rate of interest they charge for loans." (1934, p. 356, italics added)
was, in the post-war years, of more than merely theoretical interest.

Mises attacked this problem by focusing upon a consequence of bank credit creation which Wicksell had assumed away, namely that "...if the rate of interest on loans is artificially reduced below the natural rate...then entrepreneurs are obliged to enter upon longer processes of production" (1934, pp. 360-361). This insight was not unique to Mises. Cassel (1923, p. 416) had made a similar point, but Mises went further. He asserted that, though investment would thus be affected, saving would not be, with the result that "[a] time must necessarily come when the means of subsistence available for consumption are all used up although the capital goods employed in production have not yet been transformed into consumption goods" (1934, p. 362). Such a dislocation of saving and investment could not persist, because the resulting excess demand for consumption goods would raise their price relative to that of intermediate goods. "That is, the rate of interest on loans...again approaches the natural rate" (1934, p. 363).

But this view of the operation of banking, thought Mises, "...leads ultimately to a theory of business cycles" (1934, p. 365). At the heart of that theory lay a vision of banks (even under commodity convertibility) engaging in credit creation and generating excess investment, which in due course would be cut short before coming to fruition by a shortage of saving. A further injection of bank credit could prolong the process but, according to Mises, would not prevent its ultimately coming to an end in a crisis characterised by a stock of partly completed investment projects. Indeed, the longer this outcome was delayed by continued inflation, the more severe was the crisis likely to be.

III. INTERTEMPORAL ALLOCATION, FORCED SAVING AND NEUTRALITY

In 1924 Mises had provided only a sketch of what would in due course come to be known
as Austrian business cycle theory. Though his insights were picked up by Hayek as early as 1925, it was not until the early 1930s that they were fully developed; and in the interim Hayek had brought a strong element of Walrasian general equilibrium theory into the analysis. Indeed, in his important 1928 article "Intertemporal Price Equilibrium and the Value of Money" (Hayek 1984 ch.4), the Walrasian influence is at least as apparent as the Austrian, (even though Walras is not explicitly cited there). This paper is built on the notion, which we nowadays associate with Arrow and Debreu, that physically similar goods separated in time are appropriately treated as distinct entities whose relative prices are determined within a general equilibrium system which extends over time. Its central message is first that "...given a general expansion of production, the maintenance of equilibrium requires a corresponding reduction in prices, and in this case any failure of prices to fall must give rise to temporary disruptions of the equality between supply and demand" (1928, tr. 1984, p. 74) and second that a monetary economy is highly likely to suffer such temporary disruptions.

"It would be possible to conceive of a structure of money prices at successive points in time being established which corresponds to the intertemporal equilibrium system, only if the monetary system was one in which any change in the quantity of money was excluded. In practice...it is impracticable to regulate the monetary system in this way." (1928, tr. 1984, p. 97)

Now the arguments advanced by Hayek in this paper for requiring falling money prices to maintain equilibrium in a growing economy are incomplete. They hinge on the outcome of a conceptual experiment in which nominal costs of production are held constant while nominal output prices vary, depending upon the behaviour of the quantity of money; but the prediction that variations in the quantity of money will distort relative prices, and its implication that the distortion in question will create disequilibrium between the supply and demand for output, are asserted rather
than derived.

"If, during such a general expansion in output, the expectation is held with certainty that the prices of products will not fall but will remain stable or even rise, hence that at the point more distant in time the same or even a higher price can be obtained for the product produced at lesser cost, the outcome must be that production for the later period, in which supply is already at a relatively adequate level, will be further expanded at the cost of that for the earlier period, in which supply is relatively less adequate." (1928, tr. 1984, pp. 92-93, original in italics)

This conclusion involved rejecting the Wicksellian identification of price level stability (Hayek, of course, objected to the very notion of "the price level") with monetary neutrality in the context of a growing economy, and would remain central to Hayek's subsequent writings on the matter. What was missing in 1928, however, was an analysis of the mechanism known as forced saving, which lay at the heart of his subsequent accounts of how money creation in any amount affected relative prices, though it is clear enough that, at that time, he was well aware of how this would fit into the broader picture. His failure to deal with it in 1928 arose rather from the fact that this paper was not primarily a contribution to the monetary theory of the cycle: "It is not our task here to elaborate these reflections into a theory of economic crises, especially since our neglect of the phenomena of credit would mean that any such theory at which we arrived would be completely lacking in reality" (1928, tr. 1984, p. 102). The elaboration in question was soon to follow, in Monetary Theory and the Trade Cycle (1929, tr. 1933) and Prices and Production (1931).

Hayek, like many of his contemporaries, was distinctly ambivalent towards the Quantity Theory of Money. Though he told readers of Prices and Production that "...it would be one of the worst things which would befall us if the general public should ever again cease to believe in the elementary propositions of the quantity theory" (1931, p. 3), he also pointed out to them that "...it is on the assumption of a knowledge of the decisions of individuals that the main propositions of
non-monetary economic theory are based" (1931, p. 4) and that those individual decisions were responses to relative prices. The Quantity Theory, however, dealt with "...aggregates or general averages, [and] this means that monetary theory lags behind the development of economics in general" (1931, p. 4). The proper focus for monetary theory was relative prices; and in particular the rate of interest, the intertemporal relative price. From this standpoint, the Quantity Theory was inadequate according to Hayek.

Now Marshall and Fisher among others had in fact paid attention to the distorting effects of asymmetries between borrowers' and lenders' expectations about the time path of the general price level on saving and investment decisions and the rate of interest; and this analysis had provided a means for linking the Quantity Theory to the explanation of the cycle based on the behaviour of this intertemporal relative price.\(^8\) Hayek was well aware of this line of reasoning. In his (1931-32) review of Keynes' *Treatise on Money* (1930) he used it to great effect in criticising Keynes' discussion of the "Gibson Paradox", and he also referred explicitly to it in *Prices and Production*, noting in passing that it had been anticipated by Henry Thornton in 1811. Even so, his discussion of it in this book ended with the remark that "This theory, however, does not concern us here" (1931, p. 14). Rather, he told his readers, the relevant theory of how monetary factors distort the intertemporal relative price, and disrupt the coordination of saving and investment, was one in which

"...everything depends on the point where the additional money is injected into circulation (or where money is withdrawn from circulation), and the effects may be quite opposite according as the additional money comes first into the hands of traders and manufacturers or directly into the hands of salaried people employed by the State." (1931, p.11)

This theory too, as Hayek knew and drew to his contemporaries' attention, was a revival
of Classical ideas (see 1932b). Like the Classics (and Wicksell for that matter) Hayek took for granted a commercial banking system whose monetary liabilities entered circulation by way of loans to the above mentioned traders and manufacturers; and he emphasised the potential implicit in this institutional fact for the creation of money to interfere with the capital market's co-ordination of saving and investment. In this view of things, banks played a dual role in the financial system, acting not only as creators of money, but also as intermediaries between savers and investors, and any expansion of credit on their part involved placing in the hands of investors newly created purchasing power which was not offset by an increase in voluntary saving. This purchasing power, however, would be used by investors to bid resources away from consumers, thus creating an involuntary cut in real consumption below its intended level, and the label forced saving was attached to this phenomenon. For Hayek, it was this, as we would now term it, first round effect of money creation that was critical in undermining the market's capacity to co-ordinate saving and investment, rather than the ultimate effect of money on the general price level and inflation expectations, which was stressed by Quantity Theory based cycle theories. In his view, any net creation of credit on the part of the banks, whether in response to a cut in the market rate of interest engineered by the banks, or an increase in the natural rate arising from technical change that was not immediately matched by an increase in the market rate, was a potential source of disturbance. Thus, zero credit creation was established as the sine qua non of monetary neutrality, and one puzzle bequeathed by Wicksell was solved.

The logic of the argument up to this point cannot be challenged; nor however can any claim of originality be made for it. Among others, in England, Robertson (1926, 1928) and Pigou (1927) had come to similar conclusions -- without, it should be noted being at that time aware of Wicksell's work -- while in Sweden, Lindahl (1929, 1930) building on similar Wicksellian and
Walrasian foundations to Hayek (though writing in Swedish), had also done so. It was Hayek's next step which was both distinctive and more controversial. Whereas the non-neutrality of money had little or nothing to do with the cycle in Wicksell's analysis, and credit creation was only a potential source of trouble in the views of Robertson, Lindahl, and others, because they thought its effects could include the generation of voluntary saving by way of "induced lacking" or changes in the level or distribution of income, for Hayek it was always disruptive, and provided the key ingredient to his explanation of the recurrence of economic crises. In this, as we have seen, he was following the lead of Mises (1924).

IV. THE INEVITABLE CRISIS

Hayek, unlike many of his contemporaries, was always careful to acknowledge the contributions of others of which he was aware, and he was clear that the predictions of his theory which set it apart from other analyses of forced saving involved the alleged

"...tendency for capital accumulated by 'forced saving' to be, at least partly, dissipated as soon as the cause of 'forced saving' disappears. This latter point is...a peculiar characteristic of my own theory of the credit cycle, since it has, so far as I know, never been as explicitly stated before; and it is upon the truth of this point that my theory stands or falls" (1932a, p. 239).

This prediction depended upon two characteristics of Hayek's analysis; namely, his insistence on beginning all exercises from a state of full employment equilibrium, and his neglect of variables other than the rate of interest that might influence voluntary saving. According to Hayek's methodological principles, as set out in his Monetary Theory and the Trade Cycle,

"...we can gain a theoretically unexceptionable explanation of complex phenomena only by first assuming the full activity of the elementary economic interconnections
as shown by the equilibrium theory, and then introducing, consciously and successively, just those elements which are capable of relaxing these rigid inter-relationships." (1933, p. 95-96, italics in original)

All of Hayek's analytic exercises, therefore, begin from a situation of full employment equilibrium with zero credit creation and the rate of interest at a "natural" level at which saving and investment are equal. This equilibrium is then disturbed by an injection of bank credit to the business sector, caused either by an increase in the natural rate of interest or by a lowering of the market rate of interest. More roundabout methods of production are thus set in motion, using resources bid away from consumers, but no mechanism that might lead to a corresponding tendency on the part of consumers voluntarily to defer their consumption plans is allowed to intrude. In due course, therefore, consumption demand materialises before the new investments have borne fruit, and hence before the goods necessary to meet that demand are available.

At this point, unless there is a further injection of bank credit which creates another round of forced saving, the price of current relative to future consumption goods rises, which is, of course the same thing as saying that the market rate of interest increases. However, resources already committed to lengthening the period of production are now locked into partially completed projects and cannot be reallocated to meet consumption demand. According to Hayek, such excess demand for consumption goods, coupled with the existence of a stock of partially completed capital equipment, are the essential characteristics of an economic crisis, the upper turning point of the business cycle. Moreover, given the restrictive assumptions with which he starts, namely that the economy is already at full employment and that only an increase in the rate of interest can bring about an increase in voluntary saving, these phenomena cannot help but materialise. Two questions arise at once: why would further injections of bank credit not enable the economy finally to achieve
and then sustain indefinitely a more roundabout structure of production? And why should the appearance of uncompleted capital equipment on the scene bring with it a general downturn in economic activity and the onset of unemployment among the labour force? We will discuss in turn the answers which Hayek gave to these questions.

Mises (1924), who was, it should be recalled, writing in the immediate aftermath of the great post-war hyperinflations, had answered the first of these questions by simply asserting that attempts to stave off trouble by further credit creation would lead to rising inflation and the ultimate collapse of the currency. This remained a standard Austrian argument, and Lionel Robbins’ (1934) version of it is quite representative.

"Once costs have begun to rise it would require a continuous increase in the rate of increase of credit to prevent the thing coming to disaster. But that itself, as we have seen in the great post-war inflations, would eventually generate panic. Sooner or later the initial errors are discovered. And then starts a reverse rush for liquidity. The Stock Exchange collapses. There is a stoppage of new issues. Production in the industries producing capital-goods slows down. The boom is at an end." (1934, pp. 41-42)

Hayek discussed this all-important matter in a number of places, but though his treatment of it is far more complete than the brief arguments by assertion that we encounter in the writings of Mises or Robbins, it is not totally convincing. In Monetary Theory and the Trade Cycle he put things as follows:

"If the new processes of production are to be completed, and if those already in existence are to continue in employment, it is essential that additional credits should be continually injected at a rate which increases fast enough to keep ahead, by a constant proportion, of the expanding purchasing power of the consumer." (1933, p. 223)

But surely a constant proportional rate of credit expansion would enable the new higher
relative price of capital goods to be perpetuated. There seems to be nothing here to require that inflation must accelerate to stave off a crisis. Hayek seemed to recognise this logic in Monetary Theory and the Trade Cycle, because he went on to claim only that "...a moment must inevitably arrive when the banks are unable any longer to keep up the rate of inflation [Note: not the rate of increase in the rate of inflation] required..." (1933, p. 223, italics added). It would be a travesty, nevertheless, to argue that, after all, Hayek did not believe in the necessity of accelerating inflation for sustaining a boom and staving off the crisis. In his most careful discussion of the matter, which occurs in an essay entitled "Capital and Industrial Fluctuations, a Reply to Criticism", first published in Econometrica (1934) and subsequently appended to the second edition of Prices and Production (1936) he argued unequivocally that

"It is only a question of time when this general and progressive rise of prices becomes very rapid. My argument is not that such a development is inevitable once a policy of credit expansion is embarked upon, but that it has to be carried to that point if a certain result - a constant rate of forced saving, or maintenance without help of voluntary saving of capital accumulated by forced saving - is to be achieved." (1936, p. 151, italics in original)

He could hardly have been clearer about what he believed, then, but this still leaves open the question of whether the belief in question could actually be deduced from his analysis. The quotation from Monetary Theory and the Trade Cycle discussed above suggests that it could not, as does the following quotation from an earlier passage of the 1934 "...Reply to Criticism".

"A constant rate of forced saving...requires a rate of credit expansion which will enable the producers of intermediate products, during each successive unit of time, to compete successfully with the producers of consumers' goods for constant additional quantities of the original factors of production. But as the competing demand from the producers of consumers' goods rises (in terms of money) in consequence of, and in proportion to, the preceding increase of expenditure on the factors of production (income), an increase of credit which is to enable the producers of intermediate products to attract additional original factors, will have to
be, not only absolutely but even relatively, greater than the last increase which is now reflected in the increased demand for consumers' goods. Even in order to attract only as great a proportion of the original factors, i.e., in order merely to maintain the already existing capital, every new increase would have to be proportional to the last increase, i.e., credit would have to expand progressively at a constant rate. But in order to bring about constant additions to capital, it would have to do more: it would have to increase at a constantly increasing rate." (1936, pp. 149-150, italics in original)

The argument is logically correct. If capital is to become progressively deeper, inflation must accelerate, but note that the above discussion also appears to repeat that of Monetary Theory and the Trade Cycle and to concede that a constant proportional rate of monetary expansion would suffice to sustain and render viable a once and for all step change in the time structure of production.¹⁰

Hayek had, as we have noted, argued continuously for the preceding decade that neutrality of money in Wicksell's sense required zero credit creation, and that, in a growing economy, any credit expansion even at a rate necessary only to maintain price level stability would eventually lead to a crisis. This argument was not advanced merely for the sake of logical completeness. It was relevant to an important fact of recent economic history which Hayek and his colleagues in Vienna had predicted before the event, namely that 1929 had seen the onset of a severe crisis in the United States after almost a decade of non-inflationary expansion. Hayek's analysis certainly appeared to imply that, with new money being injected into the economy through loans to producers, a stable price economy, such as that of the U.S. in the 1920s would end up with a deeper capital stock than one characterised by zero money growth and falling prices; but, as Haberler (1937) argued specifically with respect to this situation, it is less obvious that the process was bound to collapse into crisis and disequilibrium. If Haberler was correct, and the passages quoted above suggest that Hayek's own logic could not dispose of this possibility, then, even though he had predicted it,
Hayek's explanation of the 1929 crisis was nevertheless inadequate and an important empirical element of the case that both he and his supporters made for his theory was discredited. And Haberler's 1937 criticism was all the more telling, coming as it did from someone who, in 1932, had been an exponent of Hayek's position. Though Haberler did not also raise the issue of the sustainability of forced saving through a constant rate of price inflation in an economy growing more slowly than the rate of money creation, the "critics" to whom Hayek was replying in 1934, namely Hansen and Tout (1933) had, and it would appear, once again on the basis of Hayek's own words, that the logic of his reply was not sufficient to dispose of their arguments.

Other commentators too, even those who, unlike Keynes (1931), treated Hayek's work with respect, pointed to a logical weakness at just this point in his argument. Thus Bresciani-Turroni (1934) who found much merit in Hayek's (1933) discussions of forced saving, noting that the analysis accounted for certain phenomena observed during the great hyperinflations, nevertheless found the conclusions for cycle theory that Hayek drew from those discussions to be "...too sweeping..." (1934, p. 345). Hawtrey in his (1932) review of Prices and Production complained about the "...intolerably cumbersome theory of capital..." that Hayek deployed there, and concluded that "...he himself has been led by so ill-chosen a method of analysis to conclusions which he would hardly have accepted if given a more straightforward form of expression." (1932, p. 125); and in his subsequent (1933) review of Monetary Theory and the Trade Cycle, Hawtrey remarked that

"Professor Hayek finds the explanation of the trade cycle in the characteristic of a growing community, that the banks must be constantly putting the rate of interest below the equilibrium level to induce the appropriate increase in the means of payment. But he does not explain why this cause should operate periodically rather than continuously..." (1933, p. 671 italics in original).

Piero Sraffa (1932) too observed that, in his view, as in the case of capital accumulation induced
by voluntary saving, "...equally stable would be the position if brought about by inflation; and Dr. Hayek fails to prove the contrary..." (1932, p. 47). The original element in Hayek's theory, in his own view, was the claim that any rate of credit creation on the part of the banking system, other than zero, would lead to unsustainable forced saving, and hence to an inevitable crisis. But as Colonna (1990, p. 56) has noted, and as the above examples illustrate, he was unable to produce a foundation for this claim logically tight enough to convince his contemporaries of its validity. I shall return to this matter below when I assess Hayek's contribution in the light of more recent analysis.

First, however, something must be said about Hayek's answer to the second of the two questions posed earlier, namely why, given that forced saving could not be sustained indefinitely, its collapse would lead to an economic crisis marked by declining employment. There can be no doubt that Hayek attached great importance to this question. As he remarked in *Prices and Production*,

"To provide an answer to this problem [of how it comes about at certain times that some of the existing resources cannot be used, and how, in such circumstances, it is impossible to sell them at all -- or, in the case of durable goods, only to sell them at a very great loss] has always seemed to me the central task of any theory of industrial fluctuations..." (1931, p. 85)

Why could labour that had been misdirected to producing capital goods during the upswing not simply return to producing consumption goods, and why, in the real world were complete and usable capital works, such as factories, standing idle even though the labour necessary to run them was readily available? Hayek's attempts to deal with these issues in the first edition of *Prices and Production* were perfunctory. They rested on the assertion that the degree of substitution between labour and similar inputs on the one hand, and capital on the other, was sufficiently small that a
shortage of finished and hence usable capital equipment would make it impossible to employ
existing supplies of those other inputs.

"In the actual world...the single workman will not be able to produce enough for a
living without the help of capital and he may, therefore, temporarily become
unemployable. And the same will apply to all goods and services whose use
requires the co-operation of other goods and services which, after a change in the
structure of production of this kind, [i.e., incomplete capital deepening] may not be
available in the necessary quantity." (1931, p. 84)

The ad hoc character of this argument will make it appear unsatisfactory indeed to a modern
reader, but in the context of the 1930s literature it is fairly typical. Before 1936, everyone had
difficulty explaining unemployment. Even so Hayek himself must have been dissatisfied with this
treatment, because the section of Prices and Production in which it appears was considerably
extended in the second (1936) edition. It now incorporated an argument to the effect that the
existence of unused capital equipment, far from demonstrating the feasibility of increasing the
economy's output,

"...is a symptom that we are unable to use the fixed plant to the full extent because
the current demand for consumers' goods is too urgent to permit us to invest current
productive services in the long processes for which (in consequence of
"misdirections of capital") the necessary durable equipment is available." (1936, p. 96)

In this edition also, there occurs a brief reference to downward stickiness of money wages as a
possible contributing factor to the onset of unemployment, a phenomenon not mentioned in the first
edition, nor in the earlier Monetary Theory and the Trade Cycle. This addition presumably reflects
the influence of British discussion on Hayek's thinking, for the phenomenon was much invoked
there.13 Haberler's (1937) verdict on Hayek's analysis of these matters was nevertheless that
"This...explanation of the depression is...incomplete and unsatisfactory." (1937, p. 54) and it is hard to disagree with that verdict; though, as I have already remarked it is one which can be applied with equal justice to virtually all of the pre-\textit{General Theory} literature.

V. POLICY PESSIMISM

It has already been noted that there was nothing unique about Hayek's emphasis on forced saving as an important phenomenon of the business cycle. What set his analytic work apart from that of most of his contemporaries was his insistence that a change in the rate of investment engendered by credit expansion was unsustainable and bound to lead to an economic crisis characterised by the simultaneous occurrence of an excess demand for consumption goods and an excess stock of incomplete and unemployable capital goods. There is a parallel contrast to be drawn between Hayek's policy views and those of the majority of macroeconomists writing during the 1930s, because the very characteristics of his positive analysis that set it apart from the mainstream also yielded policy implications that placed him in opposition to prevailing orthodoxy.

In Britain, though there were many differences of opinion among them, not all of them minor, Hawtrey (1919) Robertson (1926, 1928), Pigou (1927), and Keynes (1930) all believed that monetary policy, whose principal weapon was Bank Rate, could, and by and large should, be deployed for stabilisation purposes. In the United States too, the policy pessimism expressed by the contributors to Brown et al. (1934), (who included Schumpeter) was a minority position, as readers of Wright (ed.) (1932) are soon aware. And the Stockholm School, with some of whose work, namely that of Myrdal, Hayek was undoubtedly familiar from the beginning of the 1930s onwards, were equally convinced not only that the maintenance of monetary neutrality required the active participation of the monetary authorities, but that activist monetary policy could be used to
the good. As to what we would nowadays call fiscal policy, though coherent *theoretical* arguments in its favour are hard to find in the British literature before the publication of the *General Theory*, the majority of British economists had nevertheless favoured "public works" as a means of combatting unemployment since before World War I; Hawtrey was, as Deutscher (1990) has shown, an almost unique exception here. American economists often saw deficit finance as a means of bringing about monetary expansion. And a theoretical case for deficit financed public expenditure was developed by Swedish economists in the early 1930s, and made available to English readers by Brinley Thomas in (1936).

In short, contrary to the mythmaking that would later accompany the "Keynesian Revolution", the prevailing climate of opinion about macroeconomic policy in the early 1930s was profoundly activist. Hayek and his associates, notably Robbins (1934), were very much in a minority in their views on these issues, which, of course, followed directly and inevitably from the very aspects of Hayek's positive analysis which made it unique, and which have been discussed in the preceding section of this paper. To begin with, as Hayek pointed out in his review of Keynes' *Treatise on Money*, if economic crisis was the inevitable consequence of forced saving, and if credit creation on the part of the banking system created forced saving, then once an economic downturn had begun

"Any attempt to combat the crisis by credit expansion will...not only be merely the treatment of symptoms as causes, but may also prolong the depression by delaying the inevitable real adjustments." (1931-32, part 2, p. 44)

So much for the feasibility of using monetary policy actively to counter a depression!

It might, though, seem that Hayek's analysis at least provided a recipe for avoiding crises inasmuch as it implied that holding the quantity of money constant would prevent forced saving
occurring in the first place. Though the purely theoretical exercises which Hayek presented to his readers led to this result, it was, nevertheless, in his view, too simple to be translated directly into a policy doctrine. To begin with, changes in the degree of vertical integration in the economy would complicated matters:

"...changes in the demand for money caused by changes in the proportion between the total flow of goods to that part of it which is effected by money...should be satisfied by changes in the volume of money if money is to remain neutral towards the price system and the structure of production." (1931, p. 105)

Nor was this

"...the only exception to which our original maxim of policy, that the quantity of money should remain invariable, may be deemed to be subject. There is another occasioned by changes which are more familiar...any change in the velocity of circulation would have to be compensated by a reciprocal change in the amount of money in circulation if money is to remain neutral towards prices." (1931, p. 106-107)

These difficulties, combined with distributional effects arising from the fact that the abovementioned changes would occur in specific sectors of the economy, and not across the board, and hence needed to be offset by injections (withdrawals) of money into (out of) the sectors in which they had taken place, meant that the maintenance of monetary neutrality was, as a practical matter, impossible. Furthermore

"...it could be attempted only by a central monetary authority for the whole world: action on the part of a single country would be doomed to disaster. It is probably an illusion to suppose that we shall ever be able entirely to eliminate industrial fluctuations by means of monetary policy. The most we may hope for is that the growing information of the public may make it easier for central banks both to follow a cautious policy during the upward swing of the cycle, and so to mitigate the following depression, and to resist the well meaning but dangerous proposals to fight depression by 'a little inflation'." (1931, pp. 108-109)
And if conventional monetary policy could not be expected to help much, nor could other more innovative measures designed to influence aggregate demand. For example, since a defining feature of economic crisis was an excess demand for consumption goods "...the granting of credit to consumers, which has recently been so strongly advocated as a cure for depression, would in fact have quite the contrary effect" (1931, pp. 85-86). In general the only cure for depression

"...is the most speedy and complete adaptation possible of the structure of production to the proportion between the demand for consumers' goods and the demand for producers' goods as determined by voluntary saving and spending....The only way permanently to 'mobilise' all available resources is, therefore, not to use artificial stimulants -- whether during a crisis or thereafter -- but to leave it to time to effect a permanent cure by the slow process of adapting the structure of production to the means available for capital purposes." (1931, pp. 86-87)

Advice to the effect that the only way to deal with the worst depression ever experienced was to await its end was hardly calculated to contribute to the popularity of those who offered it, and indeed there is some anecdotal evidence, including that recounted by Friedman (1974, pp. 162-163), that Hayek's policy pessimism was a powerful factor in undermining the influence of the whole body of his macroeconomic analysis, not only, but particularly, among the younger members of the academic community. This willingness to court unpopularity surely implies that Hayek's theoretical beliefs were honestly and strongly held, and provides an early example of the intellectual integrity which has been the hallmark of his career; but this still leaves open the question of whether the beliefs in question were in fact defensible. I shall attempt to deal with this issue in the final section of this essay, both from the standpoint of the state of knowledge as it stood in the 1930s, and as it stands now.
VI. AN ASSESSMENT OF HAYEK'S CONTRIBUTION

It cannot, I think, be questioned that Hayek's policy pessimism was indeed implicit in his positive analysis, and that questions about whether or not it was justified must be answered with reference to the logical and empirical validity of that analysis. As we have seen, his conclusion that the neutrality of money involved not price level stability, but rather zero credit creation, solved an important theoretical puzzle that had been left unresolved by Wicksell, but as we have also seen, Hayek was neither the first nor the only economic theorist to reach such a conclusion. What was unique to the "Austrian" business cycle theory, which he did so much to create, was not the proposition that credit creation involving loans to the business community would lead to a deepening of the economy's capital stock, but that in this particular effect were to be found the seeds of an inevitable economic crisis. The latter conclusion in turn stemmed from Hayek's view that credit creation would bring about no corresponding change, or because of its effect on the rate of interest even a fall, in voluntary saving, and hence could not help but dislocate the co-ordination of inter-temporal choices; and this view in turn derived from his insistence on beginning his analytic exercises at full employment and from his ignoring the possibility of factors other than the rate of interest affecting voluntary saving.

It is now a commonplace that, if saving depends upon real income, and if the latter is free to vary, then variations in the rate of investment induced by credit creation, among other factors, will bring about changes in the level of real income and therefore the rate of voluntary saving as an integral part of the mechanisms that re-equilibrate intertemporal choices. But this commonplace was not fully worked out until the General Theory, and Hayek should not be faulted for being unaware of this possibility before it was fully developed by others. Even so, in their writings of the early 1930s, Swedish economists had analysed Wicksellian cumulative processes in which
output varied and had suggested that, in the course of such processes, changes, for example in the 
distribution of income, might be engendered which would transform initially forced into voluntary 
saving. Myrdal, the German version of whose work Hayek edited for publication in 1933, was one 
of these, and Hayek's own colleague Brinley Thomas had also introduced these Swedish ideas to 
the London School of Economics between 1934 and 1936, as his book of the latter date makes 
clear. Moreover, as early as 1926, Dennis Robertson had suggested that, if inflation created by 
forced saving eroded the real value of consumers' cash balances, then this would induce them to 
increase their saving in order to maintain their value; Banking Policy and the Price Level should 
have been known to Hayek, having been cited by Robbins in his introduction to Prices and 
Production as the "...one work...in English since the war with which...[Prices and Production] can 
be compared." (1931, p. xi)

To be sure, these lines of enquiry were not fully worked out by their exponents, and I am 
not suggesting that the arguments advanced in support of them were sufficiently compelling to have 
required Hayek to abandon his own model as a vehicle for further research. Even so, the possibility 
of the voluntary saving rate responding in an equilibrating fashion to the very type of monetary 
non-neutrality that Hayek analysed was sufficiently widely entertained among his contemporaries 
that a little skepticism about the necessary truth of results which hinged on assuming away this 
possibility was perhaps in order.

Hayek was strictly deductivist in his theoretical method, believing that if one starts from self 
evidently true premises, and applies valid logic to deriving conclusions from them, then the latter 
too must be true. The trouble with deductivism, however, is that the self evident truth of the 
premises lies in the eye of the beholder. A little more willingness to entertain alternatives might 
have caused Hayek to be less certain about his conclusions than his method of presenting them
suggests that he was. Or perhaps that fact that, beginning in 1937, he began to propagate a very
different view of market processes to the Walrasian equilibrium approach which underlay his
business cycle theory should be taken to indicate that Hayek did after all, at about that time, come
to just this conclusion for himself.\textsuperscript{18} Moreover, to push a particular line of reasoning a little
further than its logic will bear is hardly a unique fault among economic theorists, especially those
as young as Hayek was in the 1930s. There is then, nothing in the record I have presented to
suggest that Hayek’s work did not merit the attention which his contemporaries gave it; though
there are grounds enough to justify the skepticism that many of them expressed about some of his
conclusions.

An assessment of Hayek’s work in the light of more recent developments must surely begin
with the relationship between Hayek’s “accelerationist hypothesis” and that developed by Friedman
in the course of the “monetarist controversy” of four decades later, and it should be apparent that
there is little if any \textit{logical} connection between the two doctrines. Friedman’s hypothesis was
derived from a consideration of the interaction of the effects of an excess demand for labour on the
time path of money wages, and therefore prices, relative to their expected time path, with the
influence of the actual time path of inflation on those same expectations. Hayek’s hypothesis, as
we have seen, was based upon an analysis of the role of the relative price of capital and
consumption goods in the forced saving process. Labour market behaviour never entered his
discussion of the issue, nor did endogenous inflation expectations. This latter omission is especially
notable, because the Stockholm School in general, and Myrdal in particular, with whose work
Hayek was familiar, made much of this phenomenon, showing that its influence on the nominal rate
of interest had important implications for the analysis of “neutral money”. Even the Stockholm
School, however, did not take the crucial step of incorporating inflation expectations into their
treatment of the money-wage-price formation process; and Hayek, who had explicitly denied the relevance of Marshall and Fisher's analysis of the influence of inflation expectations on the business cycle, systematically downplayed the significance of expectations in his work, a matter for which he was criticised by some of his contemporaries.19

In the light of all this it is hard indeed to make a strong case for Hayek as having anticipated Friedman. We must be careful, though, about how far we push this point. Qualms about the manner in which he derived the conclusion in question cannot alter the fact that Hayek did frequently and clearly state the opinion that attempts to prolong a cyclical upswing by continued credit creation would lead to accelerating inflation, nor can it alter the fact that Friedman was later to make exactly the same claim. This is by no means the only occasion in the history of economic thought in which a conclusion, later agreed to be valid on the basis of subsequent developments in economic theory, has been propounded on the basis of an intuition that was sounder than the logic deployed in its defence. Malthus' denial of Say's Law of which Keynes (1936) made so much, is a famous example of just this phenomenon. It is not clear that the Hayek of the 1930s, who took such pains to base his analysis on careful deductive reasoning, would have been very pleased had he foreseen that the most durable of his contributions to macroeconomic analysis was the result of his intuition running ahead of his logic.

There is, nevertheless, a little more to be said about the importance of Hayek's analysis. He and his associates undoubtedly lost the debates of the 1930s, and as we noted at the outset of this essay, for a while his contribution vanished from view altogether, probably because much of the powerful simplicity of the "Keynesian" macroeconomic orthodoxy which emerged from the debates in question stemmed from assuming away precisely those, as we would now call them, "supply side" phenomena to which he paid particular attention. Subsequent developments in
economic theory have however demonstrated beyond any reasonable doubt the importance of confronting and analysing those same phenomena. Once economists had developed more fully than they had in the 1930s the notion of anticipated inflation and its effect on the demand for real balances, and once the basic neo-classical growth model had been created, then it became possible to analyse the effects of nominal money creation on the economy’s capital-output ratio, not to mention the level of economic welfare it generates. The answers which the literature on what we nowadays call the "super-neutrality of money" has provided are not those that Hayek envisaged, but they are nevertheless answers to questions closely related to those which he was posing. And once the possibility of incorporating price anticipations as an argument in an aggregate supply curve was appreciated, and combined with the notion of rational expectations, it also became possible to develop a logically viable Walrasian approach to the analysis of the business cycle.\textsuperscript{20}

Now Tobin (1965), Johnson (1967), Sidrauskis (1967), Friedman (1968, 1969), and Lucas (1972) did not begin from explicit consideration of problems left unsolved by Hayek, in the way in which Hayek did with respect to Wicksell.\textsuperscript{21} But Hayek’s work nevertheless takes on an attractive appearance when viewed in the light of their work. In the longer run macroeconomists had to rediscover for themselves the problems on which Hayek had worked, and, now that we have the results of their efforts to guide us, we can see clearly that, whatever we may think of his answers, Hayek at least asked good questions, and that the neglect into which his contributions fell in the immediate post-war period was undeserved. Perhaps, then, after a lapse of sixty years, Lionel Robbins’ assessment of Hayek’s contribution is again, and will henceforth remain, apposite:

"I would not urge that Dr. Hayek has solved all the riddles of cyclical fluctuations. I am sure that Dr. Hayek himself would be the first to repudiate such a suggestion. But I do think that he has advanced considerations which any future work on this problem will have to take very seriously into account" (1931, p. xi).

2. I have discussed Wicksell's analysis in considerable detail in Laidler (1991a) ch. 5., and therefore deal with it only briefly here. The reader is also referred to Leijonhufvud's essay on "The Wicksell Connection", (1981) Ch. 7, for an alternative account of the importance of Wicksell's work on the co-ordination of intertemporal choices for the development of macroeconomics in the 20th century.

3. Note that Wicksell did not systematically incorporate the so-called "Fisher effect" of inflation expectations on the nominal interest rate into his analysis. On this matter see Laidler (1991a) pp. 139 et seq..

4. The reader will note that the foregoing analysis takes it for granted that an aggregate production function characterised by diminishing returns to "capital" exists. There are of course grave difficulties here. Wicksell was aware of them, but he set them to one side when discussing monetary matters. His Swedish successors, for example Lindahl (1929, 1930, tr. 1939) and Myrdal (1931, tr. 1939) paid much more attention to these issues, and as I argued in Laidler (1991b), this is one reason why they made no attempt to ground their development of Wicksell's idea of a "natural" rate of interest in the technical properties of a production function. Sraffa (1932) made much of the absence of a unique "natural" rate
of interest in a multi-good world in his review of *Prices and Production*, and in his (1934) review of Myrdal, Hicks also drew attention to this matter, reminding his English speaking readers that this particular criticism of Austrian capital theory had also been raised by Piero Sraffa. As I noted in (1991b), and as Steedman also demonstrates in his contribution to this conference, Hayek had, by (1941) become fully aware of these problems. I do not make more of this point in this essay because I do not believe that it is necessary to rely on it in order to mount an effective critique of Hayek's earlier work.

5. Mises (1924) is of course the second edition of a book first published in 1912. Its seminal arguments about the relevance of Wicksellian analysis to the understanding of business cycles, which are what concern us here, were not developed in its first edition.

6. See Hayek (1925), reprinted as Ch. 1 of Hayek (1984) fn. 4, pp. 27-28 for his first sketch of the theory which he developed from the insights of Mises. Hayek does not refer explicitly to Walras in his writings on the trade cycle, but a footnote on p. 42 of the English translation (1933) of *Monetary Theory and the Trade Cycle* makes it clear that by "equilibrium theory" he meant the theory developed by what he termed "the Lausanne school". Hagemann's contribution to this conference analyses the relationship between Hayek's concern with equilibrium analysis and the views of his German contemporaries.

7. This paper is, therefore, an important contribution to the development of general equilibrium theory per se. Note that Lindahl (1929) presented a similar extension of Walrasian analysis to encompass the passage of time.
8. That is to say, Hayek was unfair to suggest that quantity theory based approaches to cycle theory, utilising what we now call the Fisher effect, neglected relative price behaviour.

9. "Induced lacking" is Robertson's idiosyncratic label for the tendency of agents who see that inflation is eroding their cash balances to cut down consumption in order to maintain the real value of their money holdings. In modern vocabulary, it represents the voluntary payment of an inflation tax. Robertson, who tended to treat this phenomenon as arising along with, and in addition to, forced saving, was unable to integrate this insight into his analysis in a manner that we would now regard as satisfactory. The missing ingredients were a clear conception of the distinction between anticipated and unanticipated inflation, and the effect of the former on the demand for money. Although Robertson's Swedish contemporaries did know about anticipated inflation and its effect on nominal interest rates, the complete story here was not worked out until the contribution of Martin Bailey (1956). See also fn. 12 below.

10. All in all, it is hard to allay the suspicion that Hayek was not always clear about the distinctions among, first a constant arithmetic rate of change of money and prices and a constant proportional rate of change, and second among rates of change and rates of acceleration, both arithmetic and proportional, of the relevant variables.

11. Thus Robbins referred explicitly to the 1929 U.S. crisis as confirming Hayek's analysis in his introduction to Prices and Production, as did Haberler (1932); while Hayek himself
cited the events of 1927-1933 in his (1934) "Reply to Criticism".

12. Nowadays, armed with the concept of fully anticipated inflation, we would hardly bother to distinguish between these two cases, arguing correctly that they were essentially the same. Credit creation which first put purchasing power into the hands of firms would, provided its effects on the price level were fully anticipated, appear in a modern "money and growth" model as a redistribution of the proceeds of a tax on cash balances to firms, combined with a requirement that those proceeds be used to acquire capital equipment. It would have real consequences for the capital output ratio to be sure, whose magnitude would vary with the amount of the tax, but no tendency to destabilise the economy.

13. As Laidler (1991c, pp. 95 et seq.) argues wage stickiness was a central feature of Cambridge cycle analysis from the late 1870s onwards, and figured prominently in the work of Marshall, Pigou, Robertson and Keynes, long before the publication of The General Theory. It plays at best a peripheral role in Austrian analysis, even in that version of the latter deployed by Robbins (1934).

14. And the Stockholm School knew enough about expectations to argue that if monetary policy was to be "neutral" in the sense of equilibrating saving and investment at full employment, it had to set the money rate of interest at a level that was compatible with the inflation expectations which were in turn implicit in that monetary policy. Because they did not extend their analysis of expectations to wage formation, and because they did regard money wages as following a rather sticky time path, largely independent of market forces, they
tended to opt for a monetary policy that would adapt price inflation to the rate of wage inflation. On this see Laidler (1991b).

15. Nowadays we would subsume both of the above effects under the heading "shifts in the income velocity of circulation". Hayek distinguished between them because, like most of his contemporaries, when he used the term "velocity" he thought in terms of a transactions concept.

16. And Brinley Thomas (1936) explicitly criticised Hayek for assuming away the effects of real income changes as a result of his insistence on always starting his conceptual experiments from a state of full employment.

17. Though when referring to Robertson's work in his (1931-32) review of the Treatise, Hayek mentioned explicitly only the much less thorough account given in the second edition of Money (1928). It is not until the second edition that a reference to Banking Policy and the Price Level appears in the text of, as opposed to Robbins' introduction to, Prices and Production (See 1936, p. 25, fn.)

18. I am referring here to Hayek's 1937 Economica paper on "Economics and Knowledge" which as I suggested in (1991b) seems to be the beginning of a new direction in Hayek's work. On this matter, see also Roy McClughry's introduction to Hayek (1984) where he refers to the publication of this paper in 1937 as representing "a watershed in Hayek's thought." (p. viii)
19. Brinley Thomas (1936) was particularly vehement on this point. Given his support for the analysis of the Stockholm School, this is hardly surprising. For my own views on this issue, see Laidler (1991b).

20. In (1991b) I argued that the similarities between what Hayek was attempting in the area of business cycle theory, and what Robert Lucas and his associates later accomplished, are sufficiently great to justify labelling the latter as "neo-Austrians" rather than "new-classicals". Axel Leijonhufvud (1991), in his "Comment" on my paper made the case against doing so. There was no difference about substance between us, only about the appropriateness of the label in the light of the evidence, and interested readers are invited to make up their own minds about this matter. See also the contributions of Arena and Rühl to this conference, which outline the similarities and differences between Hayek's analysis and that of Lucas.

21. But it is fair to draw the readers' attention to the fact that that perennial source of trouble for Neoclassical economics, the assumption of the existence of an aggregate production function, underlies all these contributions, and makes it dangerous to claim any uncontroversial validity for their implications. All I claim here is that the abovementioned authors took up problems similar to those addressed by Hayek, and that, using a framework in some respects the same as his, got a good deal further in analysing their logic.
REFERENCES


Böhm-Bawerk, E. von (1884), Capital and Interest (1st ed., tr. into English 1890), London: Macmillan.


Hagemann, H. (1992), "Hayek and the Kiel School: Some Reflections on the German Debate on Business Cycles in the Late 1920s and Early 1930s" (this volume).


(1928), "Intertemporal Price Equilibrium and Movements in the Value of Money" (English tr. in Hayek, 1984).


(1931-32), "Reflections on the 'Pure Theory of Money' of Mr. J.M. Keynes" (2 parts), *Economica* 11 (August), 270-295, and 12 (February), 22-44.


Lindahl, E. (1930), "The Rate of Interest and the Price Level" (English tr. in Lindahl, 1939).


