Hayek And Keynes: A Retrospective Assessment

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Abstract
There has been a great deal of controversy and debate in recent years over the meaning of Keynes' message as that message was embodied in The General Theory. Professor Leijonhufvud's book on Keynes has brought out into the open the question as to how much Keynesian (i.e., of Keynes) content there is in orthodox economic theory. Those who would present us with their version of the “authentic” Keynes have in common the belief that Keynes offered us a theory that was essentially dynamic, but that in re-casting this theory in static terms (and they believe the theory has been re-cast) modern theorists have lost its radical message. Implicit in these various views, and present in varying degrees, is a criticism of macroeconomic and monetary theory that is essentially static in nature.

Disciplines
Behavioral Economics | Economic History | Economic Theory | Other Economics

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Introduction

There has been a great deal of controversy and debate in recent years over the meaning of Keynes' message as that message was embodied in *The General Theory*. Professor Leijonhufvud's book on Keynes has brought out into the open the question as to how much Keynesian (i.e., of Keynes) content there is in orthodox economic theory. Those who would present us with their version of the "authentic" Keynes have in common the belief that Keynes offered us a theory that was essentially dynamic, but that in re-casting this theory in static terms (and they believe the theory has been re-cast) modern theorists have lost its radical message. Implicit in these various views, and present in varying degrees, is a criticism of macroeconomic and monetary theory that is essentially static in nature.

The purposes of this paper are several-fold. First, we will examine how we got where we are. The influence of Sir John Hicks' interpretation of Keynes will be emphasized in answering this question. Second, we will examine whether, even given the view of Keynes that his new interpreters have offered, the Keynesian system presents a fruitful approach to the analysis of cyclical fluctuations. We will see that Keynes, whether he be the Keynes of Hicks, or the Keynes of Leijonhufvud, Clower or even Shackle, made use of a system characterized by serious conceptual errors with respect to the relationship

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between capital and the rate of interest on the one hand, and investment and consumption on the other. This analysis of Keynes' thought will involve examining the criticisms of his eminent rival in economic questions in the thirties, F. A. Hayek. Finally we will conclude by posing a question that Sir John Hicks implicitly asked himself forty years ago, and which he re-posed eight years ago: Have we been correct as economists in adopting the Keynesian system?

"...A True Mirror the Age."

We, as economists, live in the Age of Hicks. There is no doubt that the current economic millennium has been called many things other than that which is most descriptive of it. Professor Ludwig Lachmann has perhaps been the most perspicacious of all in his assessment of Hicks' position in twentieth century economics:

When, forty years hence or so, the history of economic thought in the twentieth century comes to be written, historians will find, no doubt to their delight, that in the work of Sir John Hicks they hold in their hands a true mirror of the age. The interplay of ideas, the impact some had and the changes all underwent as a consequence, are to be found there, reflected as in a glass. We are no less in his debt for being his contemporaries.

It has been Sir John's great ability to take the ideas of his day, often conflicting and contradictory in nature, to assess the merit of each, determine which will be viewed as of enduring value, and to meld those of importance into a coherent whole. But it would be clearly to do this great economist a profound disservice to treat him as a mere middleman of ideas. He has at

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once made his own contributions, and, where he has borrowed ideas, he has always re-shaped and re-worked them. He is the synthesizer of ideas... and much more. Further, to say that he has been talented in determining which ideas will be viewed as of enduring value is only partially true. For what has come to be viewed as of enduring value has often been what Sir John Hicks has treated as such. Professor Hicks' role in the (attempted) integration of Keynes' ideas into general equilibrium theory is but an instance among many.

In contributing to economics, then, Professor Hicks altered economists' perception of what economic theory consists. It is, therefore, not surprising that economists tend to agree with his perception of what is important and essential in the works of others. Virtually every economic question of the day has come to be cast in the Hicksian mold, be the subject monetary theory, growth theory or capital theory. The Hicksian mold casts all problems so that they fit into a general equilibrium framework. What remains are shavings, to be discarded, or perhaps saved, much in the way of curios; and vended by those collectors of curios, the historians of thought.

But there is irony in this story. For by his very influence, Professor Hicks has obscured the work of those he himself has acknowledged to have been his teachers or mentors, and who, in turn, have had great influence on him. One could name three outstanding examples of this in the cases of F. A. Hayek, Sir Dennis Robertson and Lord Keynes.\(^5\) Whoever the 'real' Keynes may be,
he still has his able expositors. But in eclipsing the work of figures like
Professors Hayek and Robertson, two of the dominant figures of his early
career, Professor Hicks has obscured important traditions in economics.

If Keynes, Robertson and Hayek all had something in common (and I believe
that they did), then it as in their rejection of what Professor Shackle has
tered "the theory of general, perfectly competitive, full-employment
stationary (or better, timeless) equilibrium." More precisely, each in his
own characteristic way and with varying degrees of success, rejected the
approach of framing economic problems in terms of general equilibrium.

It could not be said accurately that these aforementioned economists
were reacting against the neo-Walrasian analysis that was to dominate economic
thinking only in a later period. But they rejected the approach implicit
in neo-Walrasianism. They rejected the assumptions of the unimportance of
time and that of its virtual corollary, perfect knowledge. Professor Hayek,
alone among the figures that I have mentioned, having been educated on the
continent, was familiar with Walras' system. He had seen the future, and
did not believe it to be bright. But we have lived through what was then
(i.e., the twenties and thirties) only the future, to a large extent because
of the force and brilliance of Sir John Hicks' work.

6 G. L. S. Shackle, The Years of High Theory (Cambridge: Cambridge

7 Thus, when Robertson made use of long run equilibrium analysis, it was
of "the looser Marshallian concept of the long period," in which "the chronic
uncertainties of personal and business life [that] may find no place in
'equilibrium analysis' of the Continental type..." are given full play.
D. H. Robertson, "Mr. Keynes and the Rate of Interest," in Essays in Monetary
Theory (London: P. S. King & Son, Ltd., 1940), p. 26. It must be noted that
Robertson was of course Marshall's most radical interpreter in this respect.
His colleagues at Cambridge were more willing to cast Marshall's analysis
in more static terms.
Professor Shackle has written of this era as spawning a "new theory": "One thing above all divided the new theory from the old: the discarding of the assumption (which had often been quite tacit) of universal perfect knowledge." This rejection of the assumption of perfect knowledge was seen by many (and I here speaking of the dominant theorists of the day) as a prerequisite for making economics into a social science applicable to real world problems, particularly to the problem of economic fluctuations.

It is not our purpose to chronicle the development of Professor Shackle's "new theory." That would be both beyond the scope of this paper and unnecessary for the purpose at hand. Rather two questions will be posed, and tentative answers to each suggested. First, we must ask ourselves why a century, which began as a revolt against "the theory of general, perfectly competitive, full-employment stationary... equilibrium" moves into its last quarter with that approach more firmly established than ever. Second, we must consider why Keynes, virtually alone among the theorists of disequilibrium that I have mentioned, has retained his stature and importance in economics. Indeed, he towers over figures whose names filled the journals with important articles in the twenties and thirties.

The First Flaw in The General Theory

You have perhaps already seen part of the answer to the first question. Sir John Hicks has done much to solidify the position of equilibrium theory in economics. He has done so in part by making it appear that many of the problems that seemingly could not be answered by such a theory (be the problems of growth or of economic fluctuations) could be put into a general

8 Shackle, p. 6.
equilibrium framework. This has been an accomplishment of no mean feat. If this could in fact be done, economics would at minimum be a more elegant subject.

One might ask why, in the midst of perhaps the greatest depression that the West has experienced since the Black Death, economists would find it desirable or worthwhile to attempt a reformulation of equilibrium theory? One could respond by saying that economists backed into this formulation. And there would undoubtedly be some truth to this. There would seem to be another element present, however—a sociological or psychological element, as it were. One should expect that in a world of "restless anarchy and disorder," men would search out for a theory of order and tranquility. Most writers have looked to the experience of the thirties as the catalyst for the work that appeared in that era. But this view is unhistorical. Much of the writing in question predates either the great collapse, or even any visible signs of that impending doom, with which a reasonable man could have been said to be able to predict that occurrence. The basic ideas for the world of that unfortunate decade of unemployment and disorder were generated in the relative tranquility and stability of the twenties. Men speak of the threat of war in times of peace. In times of war, they wish to hear of the possibilities of peace, not the inevitability of more war. If economists embraced a (stagnationist) Keynes, in their hearts they longed for a Hicks.

9 Shackle, p. 6.

10 For instance, D. H. Robertson's Banking Policy and the Price Level—"the beginning of new things in monetary theory," according to Shackle—was published in 1926. Shackle, p. 6.

The psychological and sociological elements were right. And so was the economic or technical element. Hicks offered the promise of succeeding where others had failed, by making use of a developed theory of general equilibrium, and by bringing the power of mathematics to bear on the theoretical problems at hand. Everything was ripe then for the new equilibrium theory.

We then come to the second question. Reading the journals in the thirties, one could have scarcely guessed that Keynes would come to be viewed as the intellectual giant of his age. It was not that there were not other contenders, a number of whom have been judged to be superior theoreticians. Sir John Hicks has posed the problem for us in relation to one of these other figures:

When the definitive history of economic analysis during the nineteen-thirties comes to be written, a leading character in the drama (and it was quite a drama) will be Professor Hayek. Hayek's economic writings... are almost unknown to the modern student; it is hardly remembered that there was a time when the new ideas of Hayek were the principal rival of the new theories of Keynes. Which was right, Keynes or Hayek? There are still living teachers of economics, and practical economists, who have passed through a time when they had to make up their minds on that question; and there are many of them (including the present writer) who took quite a time to make up their minds. How was it that this happened?11

I am suggesting that by answering Sir John's question, we will be answering our own. Two aspects of Keynes' work, particularly of The General Theory, stand out as contributing to its ultimate success. In speaking of Keynes, particularly the Keynes of The General Theory, Schumpeter noted that he must be credited "with the fatherhood of modern stagnationism." As Schumpeter pointed out: "In any prolonged period of economic malaise economists, falling in like other people with the humors of their time,

11Hicks, p. 203.
proffer theories that pretend to show that depression has come to stay." In this Keynes appealed to his generation, who were in the midst of a spiritual as well as an economic depression. Second, if the world has fundamentally changed, economists could not be held totally responsible for being unable to account for what was occurring, armed as they were with 'classical' theory. That theory was geared to a different epoch. Keynes, more than any of his contemporaries--certainly more than Hayek or even Robertson--fell in with the humors of that time.

But pessimism is not a viable philosophy of life; at least not for a society. It is thus that economists sought to integrate Keynes' insights into a new theory of long-run equilibrium. If Schumpeter's portrayal of Keynes were completely accurate here, then this attempted integration might seem doomed for the start. It is Professor Shackle who has suggested why the attempt would not appear so. Of The General Theory he wrote:

A book which concludes, by difficult and entangled steps, that stable curves and functions are allergic to the real human economic Scheme of Things, proceeded to state this idea in terms of stable curves or functions. No wonder the critics have worn the Keynesian garmet inside-out.

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13 Thus Robertson ended his essay, "Mr. Keynes and the Rate of Interest" (first written in 1938) as follows: "...I now find myself in reaction against the pessimism as to the future of enterprise which has been spread, especially apparently in certain circles in the United States...To me, as I have said, it now seems that our present difficulties are very largely political; and that so far as they are not political, they are largely institutional rather than fundamental..." (p. 38 of Essays in Monetary Theory).

It is not my purpose to support Professor Shackle's contention that it was Keynes intention to deny the existence of stable, macroeconomics relationships, but simply to note many readers have reasons to interpret The General Theory in quite another way. It is thus that Professor Hicks could suggest the IS-LM apparatus as a means of interpreting that most difficult and at times turgid book. In so interpreting Keynes, Professor Hicks was "a true mirror of his age."

Thus, the first flaw in The General Theory--but the one which at first made the book so attractive to economists--is that it is couched in static terms, and written in a manner that would suggest the existence of stable, macroeconomic relationships. It is this static quality of the work that made it appear amenable as the basis for integrating a theory of economic fluctuations with a theory of general equilibrium. That the marriage between general equilibrium theory and Keynesian macroeconomics has not always been a happy one can surely be attributed in part to the dynamic or disequilibrium content of The General Theory. This static quality is a flaw, of course, if, as Leijonhufvud has argued, Keynes was dealing with dynamic, adjustment problems, rather than the determination of an "underemployment equilibrium."  

But there are other qualities of The General Theory, and indeed, of all of Keynes' work, which make it subject to criticism. This is true even if we accept the interpretation that would see The General Theory as concerned not with comparative statics, but dynamics. We can even accept the proposition that, according to Keynes, the essential quality of entrepreneurial expectations

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15"The analytical apparatus of The General Theory is, first essentially static." Schumpeter, p. 1174.

16Cf. Leijonhufvud, pp. 50-51.
is their tendency to be altered frequently and unpredictably; so that, for instance, the important aspect of the marginal efficiency of capital analysis is not what occurs when we move along a stable schedule, but the important aspect is the instability of the relationship between the interest rate and investment. Even if we accept all this and more, it cannot be denied that, inter alia, Keynes' treatment of investment is faulty; so that certain apparent and stable relationships between investment and consumption, investment and income, and consumption and income do not exist at all. The belief in the stability of such relationships is due to a neglect of the microeconomic structure, or the microeconomic relationships in production. It was precisely in his treatment of these microeconomic relationships that Hayek, the other figure in Sir John Hicks drama, was superior. It is to establish the theoretical failings of Keynes' system, and the importance of these microeconomic relationships that we turn Keynes' earlier presentation of his ideas in the Treatise.

"A Book Which No One Reads"

We begin this section with a quote from Leijonhufvud:

A 'classic' is often defined as 'a book which no one reads.' The General Theory may now be in danger of falling irrevocably into this category. The Treatise has not been widely read for a long time. This is hardly because it has attained the status of a classic--rather, because of the belief that The General Theory made it superfluous to study the Treatise.  

17 Hayek's Prices and Production, 2nd ed. (London: Routledge & Kegan-Paul, Ltd., 1935) would be the starting point for any appreciation of Professor Hayek's own system. But, while it is clear that the specifically Hayekian "vision" is present in this work, this work is by no means the whole Hayek story, as Professor Hicks evidently thought.

18 Leijonhufvud, pp. 20-21.
Professor Sir Roy Harrod has put forcefully the reasons why economists should be acquainted with the Treatise: "It is not his [i.e., Keynes'] last word on his central theme, but it supports that theme by a whole host of characteristic views about all the details of the complex subject of money which are only to be found in this volume." Keynes had presented his theory of money in great detail in the two volume Treatise. It is for this reason in part that The General Theory contains less detailed discussion of the role of money than one might have expected in a work that purported to link up the theory of a monetary economy "with our fundamental theory of value." Professor Leijonhufvud has emphasized the continuity of thought between the Treatise and The General Theory. He is not alone, of course, in perceiving this continuity. It would, however, be impossible in this paper to demonstrate that continuity in great detail; we are thus compelled to some extent to rely on the judgment of Professor Leijonhufvud and others. But if this continuity between the Treatise and The General Theory exists, then criticisms of the Treatise may be relevant to an assessment of The General Theory.


22 Schumpeter has seen more continuity in Keynes' thought than perhaps anyone else: "So far as this line of endeavor of a man of many interests [i.e., Keynes] was concerned, the whole period between 1919 [the publication date of The Economic Consequences of the Peace] and 1936 was then spent in attempts, first unsuccessful, then increasingly successful, at implementing the particular vision of the economic process of our time that was fixed in Keynes' mind by 1919 at latest." Schumpeter, p. 42.
Theory; and the criticism might even be relevant to an assessment of the various models that were spawned by the latter book. Indeed, one such criticism presents itself almost immediately. The most trenchant—and lengthiest—criticism of the Treatise was authored by (soon to be) Professor Hayek. It will be argued that by an accident of history, as it were, the most important and theoretically interesting assessment of the economics of John Maynard Keynes was leveled against not The General Theory, but the Treatise.

We can turn to Keynes himself for a statement of his purpose in writing the Treatise:

My object has been to find a method which is useful in describing, not merely the characteristics of static equilibrium, but also those of disequilibrium, and to discover the dynamical laws governing the passage of a monetary system from one position to another.

The Treatise on Money was divided into two volumes and seven books. The heart of Keynes' theoretical edifice appears in Books three and four of the first volume. It is here that Keynes' intention to break with his Quantity

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23 One must keep in mind, however, how much of modern "Keynesian" analysis is the product of Professor Hicks and Hansen, and others.

24 Professor Hayek never reviewed The General Theory. As I understand it, the following serves as at least a partial explanation for this fact. After the first part of the review of the Treatise appeared, Professor Hayek met Keynes, and was told by the latter that he no longer believed all that he had written in the Treatise. Professor Hayek had spent a great deal of time on the review, and was thus rather upset by this remark. When The General Theory appeared, Professor Hayek evidently decided to wait for the final version of Keynes' system. The irony is that if (then) Lord Keynes had lived longer, Professor Hayek's judgment in this respect might have been vindicated. For Professor Hayek would have it that Keynes planned a new work in which he would have modified much of what he had written in The General Theory. Cf. Friedrich A. Hayek, "Personal Recollections of Keynes" and the "Keynesian Revolution," The Oriental Economist (January, 1966), 78-80.

25 J. M. Keynes, A Treatise on Money (New York: Harcourt, Brace and Co., 1930) I, p. v. The reader will note that it is characteristic statements of intention that lend most support to Professor Shackle's interpretation of Keynes' message.
Theory background becomes clear:

The Fundamental Problem of Monetary Theory is not merely to establish identities or statical equations relating (e.g.) the turnover of monetary instruments to the turnover of things traded for money. The real task of such a Theory is to treat the problem dynamically, analyzing the different elements involved, in such a manner as to exhibit the causal process by which the price-level is determined, and the method of transition from one position of equilibrium to another. 26

Keynes argued that the "forms of the Quantity Theory...on which we have been brought up...are but ill adapted for this purpose." He specifically felt that these forms failed to separate out "those factors through which, in a modern economic system, the causal process actually operates during a period of change." 27

Many have now noted to what extent Keynes' new theory was broadly Wicksellian in form, with its emphasis on the bank rate and investment. This Wicksellian lineage is perhaps clearest in chapter 13, "The 'Modus Operandi' of Bank-Rate." Keynes himself was explicit on what he perceived as the origins of his theory. Referring to the question of the monetary transmission mechanism, he said: "...I feel that what I am to say is the same at root as what Wicksell was trying to say." 28

Keynes found the Quantity Theory "ill adapted" for dynamic analysis because he felt that, in its various forms, the theory obscured the very dynamic processes that occur between the time a change in a monetary variable

26 Keynes, Treatise, I, p. 133.
27 Keynes, Treatise, I, p. 133.
28 Keynes, Treatise, I, p. 198 n. We will examine below to what extent Keynes' views reflected those of Wicksell.
occurs, and a new equilibrium position is attained. For the Keynes of the Treatise, the bank rate (through its effects on investment) was of crucial importance in effecting monetary policy: "...The influence of the rate of interest on the price-level operates by its effect on Investment..."29

A remarkable aspect of the Treatise is the fact that Keynes chose to express himself in terms of static identities--"The Fundamental Equations for the Value of Money," which are first introduced in chapter 10.30 These equations were introduced for purposes of analyzing the determination of the value of money. They bear a striking resemblance to the static equations of the Quantity Theory, a fact Keynes himself noted:

...They are mere identities; truisms which tell us nothing in themselves. In this respect they resemble all other versions of the Quantity Theory of Money. Their only point is to analyze and arrange our material in what will turn out to be a useful way for tracing cause and effect, when we have vitalized them by the introduction of extraneous facts from the actual world.31

As immediately apparent, Keynes was unable to avoid the very problems faced by any Quantity Theorist in using the equation of exchange to analyze a transition period between two equilibrium states. Keynes had devised equations, which described relationships that held true only in equilibrium.

29 Keynes, Treatise, I, p. 198.

30 For a recent attempt to take us through terminological morass of this book ("It is bound to look, at a first impression, like a work written in a foreign language"), the reader is referred to Hicks', "A Note on the Treatise," in Critical Essays, pp. 189-202; the passage quoted in the parentheses is on p. 189.

The Fundamental Equations are reproduced in the appendix to this paper.

31 Keynes, Treatise, I, p. 138.

"Though the 'Fundamental Equations' look like accounting identities, the terms of which they are composed are economic-theoretical, not accounting categories; that is why they can be used in a way in which accounting identities could not be used." Hicks, p. 191.
Despite a long excursus on price indices—a section that was almost de rigueur at the time—Keynes entangled himself in an insurmountable problem by attempting to measure changes in real magnitudes, when these very changes precluded any such attempt; and certainly precluded any such attempt with the tools that Keynes had equipped himself. Keynes first designated "units of quantities of goods in such a way that a unit of each has the same cost of production at the base date." He then designated "O" as "the total output of goods in terms of these units in a unit of time"; "R" as "the volume of liquid Consumption-goods and Services flowing on to the market and purchased by consumers"; and "C" as "the net increment of Investment." Thus, O = R + C.  

We need only quote for the first time from Professor Hayek's review article to see the essential failing of this approach: "...The fact that these units are based on a relation existing at an arbitrarily-chosen base date makes them absolutely unsuitable for the explanation of any dynamic process."  

Keynes was concerned with processes of change; and, in particular, with processes in which changes in the quantities of consumer goods (R) and capital goods (C) will occur. But, as Professor Hayek noted:

...If, as a consequence of such a change, the relative costs of consumer goods and investment goods change, this means that the measurement in units which are produced at equal cost at some base date is a measurement according to an entirely irrelevant criterion.

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32 Keynes, Treatise, I, p. 135.


34 Hayek, "Reflections...", Part I, 287. The reader familiar with the Treatise will note that, in general, the present author does not consistently employ terms exactly as Keynes did in that work. The problem here is that Keynes was far from consistent in his use of terms, as Hayek and others noted. Unless one wished to go into this issue in great detail, one must simply adopt some convention, and stick with it.
Professor Hayek pointed out yet further difficulties with Keynes' Fundamental Equations. In each of them there appears a magnitude \((E/O = W_1)\), which is designated the "money rate of efficiency earnings." With \(E\) equal to the community's money income, and \(O\) equal to total output, this strange term is revealed to be nothing other than "the average cost of production of some more or less arbitrarily-chosen units of output (i.e., such units as had 'equal costs at the base date')." This is, of course, an economically (i.e., causally) meaningless magnitude. For, as Professor Hayek noted, it is a magnitude that will change with virtually every conceivable real change in production, and not merely with the changes in the supply of money, or the velocity of circulation of money (i.e., a change in "the effective circulation" of money, in Professor Hayek's words) that Keynes considered. The insignificance of the "money rate of efficiency earnings of the factors of production" is due to the fact that there is no market in which this magnitude is determined, "and no price or group of prices which would correspond to that concept."

In short, one of the two terms in Keynes Fundamental Equations is a magnitude which is not acted upon directly by any economic agent, and which affects no economic agent directly. It is neither a market magnitude, nor a marginal...

35 Actually, Keynes made \(E\) equal to (simultaneously) the money income of the community and the costs of production. Cf. Keynes, Treatise, I, pp. 123 and 135. But Keynes' treatment of "\(E\)" is an example of his treatment of relationships that hold in equilibrium as though they were true at all times. Cf. Hayek, "Reflections...," Part I, 282-84; and Hicks, p. 194.

36 Hayek, "Reflections...," Part I, 289.

37 Keynes did consider one type of real change that would alter the price level, viz., a change in "the coefficient of efficiency" of factors (\(e_1\)). Cf. Keynes, Treatise, I, pp. 166-70; and Hayek, "Reflections...," Part I, 288-89.

38 Hayek, "Reflections...," 289.
quantity. Once one adopts methodological individualism in economics, one can find no place for constructs such as the "money rate of efficiency earnings," because they have no import in decision making. How could one expect such a construct to aid in the discovery of "the dynamical laws governing the passage of a monetary system from one position to another"?  

Indeed, it was undoubtedly considerations such as these that led Professor Hayek to wonder whether "he [i.e., Keynes] has not been seriously hampered by the fact that he has not devoted the same amount of effort to understanding those fundamental theorems of 'real' economics on which alone any monetary exploration can be successfully built, as he has to subsidiary explanations..."  

Before we go on, it would perhaps be best to justify the diversion on the Fundamental Equations. For it is precisely this aspect of the Treatise that virtually all agree was a mistake. Keynes' basic insight may be praised; but the execution is faulted. There appears to be some danger that a belief will arise (if it has not already arisen) that most of the faults of the Treatise can be attributed to Keynes' unfortunate decision to attempt to determine what will happen to "output as a whole," and "the price-level of output as a whole" as the result of a monetary disturbance. Professors Leijonhufvud and Hick have given the Treatise its most recent and ablest "boost" in the profession; but one suspects that most economists will continue to leave the Treatise an unread book, and merely revise upwards their estimation of the

39 Cf. footnote 25 above.


41 Thus Professor Leijonhufvud has described Professor Hayek's two part review of the Treatise as dealing "the coup de grace to the unhappily baptized 'Fundamental Equations'..." Leijonhufvud, p. 23n.
importance of the work, in light of the efforts of Professors Leijonhufvud and Hicks. Thus, the reader who relies on Professor Leijonhufvud's assessment—and nothing else—is apt (in this author's opinion) to be misled:

In the Treatise, however, Keynes did not succeed in distilling a logically consistent model from this vision of how income changes are generated. The trouble was that the Fundamental Equations still incorporated a variable purporting to represent the total physical volume of output, in the way of the traditional Equation of Exchange, and thus they were inconsistent with the verbal explanation of the processes studied.

The trouble was with the Fundamental Equations...and much more. If the trouble was a "mere" index number, then one suspects the difficulties could have been surmounted in the author's next work (i.e., The General Theory). But upon closer examination of the analytical framework of the Treatise, one is led to suspect that there was something more fundamentally wrong in the Treatise than the manner in which a "vision" was presented. What is at the root of the

42Leijonhufvud, p. 23. The reader is reminded that an attempt to measure changes in (real) output as a whole was troublesome for Keynes, because his theory was one in which monetary disturbances work through interest rates and investment expenditures. It is thus a theory (as is any neo-Wicksellian theory) in which there are sectional price level changes. Once these price changes occur, units arbitrarily chosen in base period for their equality of cost become meaningless.

43"In the General Theory, the Fundamental Equations (and mathematical ambitions generally) were given up." Leijonhufvud, p. 24.

The reader may have noted that the problem again raised here, and referred to in the previous footnote does not exist as such in the standard income-expenditure theory, which is a theory of a world in which there is only one produced good—"output." As Professor Leijonhufvud went on to note in the previous passage: "Quite ironically, Keynes' successors immediately reverted to an algebraic model devoid of relative prices and with only a single commodity aggregate—a model which showed no trace of the analytical problem that Keynes had wrestled with for a decade." Of course, by abstracting from the effects of a monetary disturbance on relative prices, the income-expenditure theorists are ignoring a problem; they have not thereby solved the problem.
analytical difficulties of that work is exactly what Professor Hayek first 
seized upon: Keynes' "whole concept of investment is ambiguous..." In 
what follows we will examine Keynes' concept of investment, and its place in 
the theoretical framework of the Treatise.

"This Jungle of Differing Definitions"

Any reader who attempts to disentangle Keynes' various definitions of 
"investment" is bound to feel some sympathy with the difficulties experienced 
by Professor Hayek, who obviously did not have the wisdom of hindsight in 
doing this. Keynes contradicted himself in a most revealing fasion in 
his discussions of investment. On the one hand, we are told that:

We shall mean by the rate of Investment the net increment 
during a period of time of the capital of the community...and 
by the value of Investment, not the increment of the value of 
the total capital, but the value of the increment of capital during 
during any period.

This is clear enough, as is the following:

Investment, on the other hand, is the act of the entrepreneur whose function it is to make the decisions which determine 
the amount of the non-available output, and consists in the 
positive act of starting or maintaining some process of produc 
tion or of withholding liquid goods. It is measured by the net

44 Hayek, "Reflections...," Part I, 274.

45 Hayek concluded, after two pages in which he presented the various ways 
in which Keynes defined investment, that: "I am afraid it is not altogether 
my fault if at times I feel altogether helpless in this jungle of differing 
definitions." Hayek, "Reflections...," 282.

46 Keynes, Treatise, I, p. 126. Italics added in this and the following 
passage.
addition to wealth whether in the form of fixed capital, working capital or liquid capital.\textsuperscript{47}

In general, Keynes, where he conceded to criticism by Professor Hayek, seemed to treat any confusion as merely verbal. His critic apparently took the confusion as conceptual and fundamental.\textsuperscript{48} This distinction between a verbal and a conceptual error is an important one. And the question of the soundness of Keynes' views on investment and capital devolve in large part on this issue.

Keynes dealt with essentially macro constructs. He sought to analyze the effects of monetary disturbances on the price-level of consumption goods as a whole, and that of investment as a whole. In making changes in profits "the main-spring of change in the existing economic system,"\textsuperscript{49} Keynes was, on the face of it, adopting a micro approach to monetary problems. Many macrotheorists would undoubtedly be happy to see a return to the approach of the Treatise in this respect. But the price-theoretic basis of the Treatise is more apparent than real. Keynes presented virtually no analysis of the capital-theoretic problems inherent in what he was doing. The reader is given surprisingly little in the way of Keynes' insights into what capital is, or what capital does. One is not always sure whether Keynes means by "capital" a value, or the real capital goods. At most we get a few sundry

\textsuperscript{47}Keynes, Treatise, I, p. 172. On this, Professor Hayek remarked, in a characteristic under-statement, that: "It is perhaps somewhat misleading to use the term investment for the act as well as the result..." Hayek, "Reflections...," Part I, 280.


\textsuperscript{49}Hayek, "Reflections...," Part I, 273.
observations. In moving to level of aggregation adopted in the Treatise, Keynes apparently made no effort to ascertain whether his description of the effects of a change in demand and profits at the firm level could be carried over to the economy (or world) level. Instead relationships are established between consumption and investment demand in the aggregate, profits on the output of consumption and investment goods in the aggregate and the price level of consumption and investment goods in the aggregate. From these, deductions are made about the direction that economic activity will take as a consequence. It is here that criticisms on the lack of theoretical foundations becomes particularly relevant, for the Treatise is innocent of even the most elementary elements of a capital theory. And this in a work in which changes in profits, and concomitant changes in investment are the transmission mechanism for monetary disturbances of all kinds.

Consider Keynes' definition of profits as:

...The difference between the actual remuneration of entrepreneurs... and their normal remuneration...[so that] when the actual rate of entrepreneurs exceeds (or falls short of) the normal as thus defined, so that profits are positive (or negative), entrepreneurs will—in so far as their freedom of action is not filtered by existing bargains with the factors of production which are for the time being irrevocable—seek to expand (or curtail) their scale of operations at the existing costs of production.51

Armed with his definition of profits, Keynes then aggregated from the micro level to the macro level with the aid of his fundamental equations. He established an equilibrium condition for the system:

50 And they are little more than observations of the following sort: "Working Capital is necessary because some goods take time to produce; and Fixed Capital is necessary because some goods take time to use or consume. Liquid Capital is only possible when goods will 'keep.'" Keynes, Treatise, I, p. 128.

51 Keynes, Treatise, I, pp. 124-25.
...Both the value and the cost of current investment must be equal to the amount of current savings, and profits must be zero; and in such circumstances the Purchasing Power of Money and the price-level of output as a whole will both correspond to the money-rate of efficiency earnings of the Factors of Production.\(^\text{52}\)

The "profits" referred to are aggregate profits.\(^\text{53}\) Once again, Keynes employed a macro construct, which must, in terms of the exigencies of his system, affect decision making; but, this magnitude as such is, once again, not affected directly by decision making and does not directly affect decision making. Only an investigation of how the individual components of aggregate profits and aggregate investment affect behavior could have yielded a satisfactory theory. Let us now see why this is true.

Professor Hayek pointed out that the production of any consumer good involves various stages of production.\(^\text{54}\) Some of the "earlier" stages (i.e., those processes of production that are prior to the final stage, in which the ultimate consumer good is produced) are chiefly involved in supplying capital (fixed or working capital, in Keynes' terminology) to other, later stages in the production process; while some stages are mainly affected by the state of demand in the consumer goods industries, as these stages supply services

\(^{52}\text{Keynes, Treatise, I, p. 152.}\)

\(^{53}\text{The reader will appreciate that the condition of zero-profits means that the aggregate profits are zero. For a stability of the price-level as a whole is perfectly compatible with the profits of particular entrepreneurs or particular classes of entrepreneurs being positive or negative, just as it is compatible with the prices of particular commodities rising or falling.} \text{\cite{Keynes152}}\)

\(^{54}\text{Professor Hayek's model was most recently presented in his LSE Lectures, which were printed as Prices and Production (1931). Some of his own views were} \text{\cite{Hayek54}}\text{also elaborated in more detail in the second part of his review article. The present author is taking the liberty of using the second edition of Prices and Production (1935) to fill out some of the points made in the original review piece.}\)
directly to the consumer goods industries (or to their direct suppliers). Where there is a mal-distribution of resources between stages, losses may be earned by some firms and profits by others. Aggregate profits would then be zero. Yet some of the characteristic processes that Keynes attributed to the emergence of total profits (here, negative) could occur. For one, total employment of labor in the economy might fall, as some firms (suffering losses) released factors more quickly than other firms (experiencing profits) could absorb these factors.\(^55\) To quote Professor Hayek here directly:

...There are no total profits in Mr. Keynes' sense in this case, and yet there occur those very effects which he regards as only conceivable as the consequence of the emergence of net total profits or losses. The explanation of this is that while the definition of profits which I have quoted before [i.e., Keynes' definition] serves very well when it is applied to individual profits, it becomes misleading when it is applied to entrepreneurs as a whole.\(^56\)

The picture presented by Professor Hayek is one of production as a series of interrelated processes, in which capital goods are combined, as it were, across time and across stages, in order to produce a stream of consumption goods over time; and that this stream of planned output is consistent in equilibrium with the plans of consumers with regard to the disposal of their income over time, where this income has been generated in these selfsame production processes.\(^57\) In this view Keynes' crucial "slip of the tongue"

\(^{55}\) Cf. Hayek, "Reflections...," Part I, 274-75.

\(^{56}\) Hayek, "Reflections...," Part I, 275. Also explained (on this and the subsequent page) was how "'total profits' [could] emerge for reasons other than those contemplated in his analysis."

\(^{57}\) This is very likely close to the view that Keynes would have liked to have articulated. That much is certainly granted. But Keynes never made the necessary investigation of the complex questions of capital theory that are necessary for the construction of a sound theory around this "vision."
over the measurement of the value of investment may be received as bespeaking a more fundamental confusion. And the differences between Keynes and his critic are seen to be more than merely verbal.

In Professor Hayek's system, any change in either the demand for or supply of consumer goods, or in the supply of any capital good will produce changes in the value of existing capital goods. This change occurs not merely because there will be changes in the interest rate typically associated with such changes in the parameters of a system, but because the streams of quasi-rents associated with the various capital goods will typically be changed in the process. This latter effect is one which, at most, Keynes was willing to relegate to the second order of smalls. For Keynes, the "immediate, direct and obvious" effect of a change in the bank rate is a change in "the rate of interest at which the prospective money-yield of fixed capital is capitalized..."

Professor Hayek responded to Keynes' approach as follows:

...Capitalization is not so directly an effect of the rate of interest; it would be truer to say that both are effects of one common cause, viz. the scarcity of abundance of means available for investment, relative to the demand for those means. Only by changing this relative scarcity will a change in the Bank Rate also change the demand price for the services of fixed capital.

But, for Professor Hayek, in changing the relative scarcity of these means, the banking system alters the way the stream of money impinges on the

58 The reader is referred to the quotations from the Treatise reproduced on pp. 19-20.

59 "...A change in the bank-rate is not calculated to have any effect (except, perhaps, remotely and of the second order of magnitude) on the prospective real yield of fixed capital." Keynes, Treatise, I, p. 202.


61 Hayek, "Reflections...," Part II, Economica (February, 1932), 25.
Excerpts from "Reflections on the History of Economic Thought" by F.A. Hayek

various stages of production. This, in turn, means that price-cost margins will be altered in various stages and firms, resulting in changes in the return stream to various capital goods—and by no means all in the same direction. An endogenous change in the bank rate has its effects, then, because of an alteration in the pattern of investment. What happens to aggregate investment (and aggregate profits), if not indeterminate, is at least irrelevant.

The differences between Professor Hayek and Keynes on investment amounted to fundamentally different conceptions of how a monetary disturbance affects real investment, and of the concomitant real changes in the economy; this is true, despite the similarity between their theories when considers their purely monetary aspects. If Professor Hayek was correct, a change in monetary conditions acts by altering the pattern of expenditure on investment goods; or precisely, monetary policy has effects by changing the profitability of alternative output streams. "The alternative is not [as it is for Keynes] between producing consumption goods or producing investment goods, but between producing investment goods which will yield consumption goods at a more or less distant date in the future." The profitability of output streams distributed differently over time will be altered as the costs of producing these various streams change. And the changed cost conditions will be due to the change in "the scarcity or abundance of means available for investment..." If capital goods are arranged in a structure, then these altered cost conditions will not only change the form, and possibly the "amount" of new investment—the factor Keynes focused on—but will cause changes in the value...
of existing investment. One can only conclude that Keynes did not see, when he wrote the Treatise, the important distinction between defining investment as: 1) "not the increment of the value of the total capital, but the value of the increment of capital during any period"; and 2) "measured by the net addition to wealth." Nor, apparently, did Keynes perceive that what Professor Hayek, in pointing up the various and differing definitions of investment in the Treatise, was calling into question was Keynes' very concept of investment.

To recapitulate: for Professor Hayek, a crucial aspect of net investment is its effects on the value of existing capital goods. The values of existing capital goods is affected both because of a change in the rate of interest at which the stream of quasi-rents is capitalized (the "Keynes factor"); and because the various streams of quasi-rents will typically change as the result of the kinds of disturbances that lead to net investment (positive or negative). For Keynes, it is sufficient to focus on changes in the price level of investment goods (and consumption goods) relative to costs to ascertain whether there is equilibrium. Professor Hayek responded to Keynes' conception by pointing out that once we recognize that the kinds of disturbances envisioned by Keynes can lead to changes in the value of existing capital goods, the role played by

64 See the citation in footnotes 46 and 47 above.


66 A very important issue is being completely skirted in this paper. This is the question of what it means to say "capital" is merely being maintained at its preexisting level, when, on account of technological change or entrepreneurial discovery, different capital goods are used to replace old, worn-out machines, etc. Cf. Hayek, "Reflections...," Part I, 278-79; and Keynes, "The Pure Theory...," 396-97. Also, cf. Friedrich A. Hayek, "The Maintenance of Capital," in Profits, Interest and Investment (New York: Augustus M. Kelley, 1970), pp. 83-134. On the idea that entrepreneurs discover what has already occurred (but which is unknown to others), cf. Israel Kirzner, Competition and Entrepreneurship (Chicago: University of Chicago Press, 1974).
total profits cannot be that attributed to it by Keynes.

In the simplest possible terms, capital goods for Keynes are all substitutes for one another in the process of producing "consumption output"; while for Professor Hayek some capital goods are complements with each other in the production of a specific, time-dated output consumer goods. This may not seem like a mere restatement of what has been previously said, but I believe that, properly understood, it is in fact a mere restatement. The trading of liquid funds for new investment will produce successively smaller marginal yields for Keynes because each new "piece" of capital merely replicates the work of the previous "piece." This is the view one must necessarily adopt, if one adopts macro constructs such as "consumption" and "investment."

For Professor Hayek, the additional (i.e., net) investment of available means not only alters the "amount" of consumption output, but its time distribution (and probably the kinds of consumer goods produced). Indeed, the two effects are inseparably linked for any student of Bohm-Bawerk, Wicksell and von Mises. One only gets "more" consumption output (for given knowledge) by altering its time distribution. And as Professor Lachmann has emphasized, perhaps more than anyone else, capital goods then must be seen as an inter-related structure, the value of which depends on the output stream (and its composition) that is desired over time. 67

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It was Professor Lachmann who first suggested the paradoxical distinction between the two views of capital goods that is presented above. He, in turn, informed me that it was a (now unknown) student at LSE in the thirties who presented the distinction to him in this way. Ideas do seem to have their own life!

If one were to trace out the origin of the concept of capital as a structure of complementary capital goods, one should probably go back to Menger.
Nowhere else does the radical nature of the differences between Professor Hayek and all "Keynesians" (i.e., all who follow Keynes on this point) than in his 1937 article, "Investment that Raises the Demand for Capital." This piece is one of the most important, most brilliant and most ignored articles by this prolific writer. If a "seminal" work is one in which an important, new idea is presented, which no one else has perceived, then this is such a work. In his own words: "Each separate step of the argument which leads to [my] conclusion is a familiar and obvious proposition."\(^6\) But, of course, the conclusion is not!

In fine, he concluded that because capital goods are grouped together, and are thus complementary, an existing stock of capital goods can raise the demand schedule for funds to complete the capital structure or process of production. Only an investigation of what he called the "real" aspects of capital theory would enable one to perceive these relationships. One who takes the purely monetary approach to investment, and who therefore ignores the price and cost relationships in the various stages of production, would almost necessarily adopt policy recommendations akin to those espoused by Keynes in the Treatise. For Keynes, "the price-level of output as a whole" will be at its equilibrium level (i.e., equal to factor cost) when investment \(I\), equals savings, \(S\). A period in which there has been an investment "boom" creates the danger that the bank rate will be maintained at a dangerously high level, particularly as the degree of "bearishness" (i.e., pessimism as to any future price rise in asset prices) increases.\(^6\) As the yield on real capital falls due to the previous

\(^6\)Hayek, "Investment that Raises the Demand for Capital," in Profits, Interest and Investment, p. 74.

\(^6\)"A 'bear'...is one who prefers at the moment to avoid securities and lend cash..." Keynes, Treatise, I, p. 250. No appreciation of the analytical scheme of this work is possible if one is unfamiliar with the Keynesian bear speculator of chapter 15. It would be beyond the scope of this paper to pursue this zoological quest, and the reader is referred to the short, but excellent discussion by one who has at least metaphorically captured the beast, in Leijonhufvud, pp. 309-10.
accumulation of capital, the lagging bank rate will result in S>I. A general
deflation and unemployment will result. This approach is now so ingrained
in us (more as the result of The General Theory than the Treatise) it scarcely
seems questionable. But it is a very questionable theory, once one delves
beneath the surface phenomena, and examines the underlying real relationships.
(to employ a very Hayekian metaphor).

In the graph below we will attempt to present the microeconomics of a
cyclical expansion rather late in the cyclical upswing. We have had, ex hypothesi,
a "Keynesian" investment boom. We are cutting into the midst of the process
at the midway point--or beyond. And necessarily we are making use of an
essentially macro-construct to illustrate micro relationships. One must note
this because the procedure is fraught with danger; but, having warned the
reader, one can continue.

![Graph](attachment:graph.png)

Dia. 1

70 This is necessarily a very summary presentation of some of Keynes' views
presented in chapter 13 and Book four of the Treatise.

71 "Let us suppose that circumstances have come about which lead entrepre-
neurs to believe that certain new investments will be profitable; for example,
a new technical discovery, such as steam or electricity or the internal-combus-
tion engine, or a shortage of houses due to a growth of population, or more
settled conditions in a country were previously the risks or normal develop-
ment had been excessive, or a Capital Inflation due to psychological causes,
or a reaction stimulated by cheap money from a previous period of underinvest-
ment, i.e., a previous slump." Keynes, Treatise, I, pp. 282-83. Footnote
reference omitted.

Keynes surely had nothing against eclecticism!
We have assumed that at an interest rate of 5% planned saving would equal planned investment. But the actual rate has been 4% for some time. Investment has accordingly been at a rate of $I_1$ per period. The previous investment can, under certain circumstances, raise the demand for additional funds to complete the capital structure that has already been begun. The existing capital goods add to the demand, as it were, for the goods necessary to complete the remaining, unfinished parts of the capital structure. The greatest advantage of diagram 1 is that it illustrates in what sense the existing stock of capital goods (designated as though a measurable quantity, $K_1$) does add to the demand for the funds to compile the various projects. It would not have paid to commence investment projects that required an investment of $I_1$ dollars per period at a rate of interest above four percent. But, once these projects have been begun and partially completed, that portion of the price of the final output, which would have been devoted to the payment of interest and depreciation on the existing capital goods, becomes available to finance the completion of the projects. It is out of the resources released by the owners of existing

72 As in Professor Hayek's example, we are assuming the investments have only been undertaken with the expectation that the 4% rate would continue for some time. But, "that in order to complete the investments which have been undertaken in this expectation a greater supply of loanable funds would be required that is actually forthcoming." Hayek, "Investment...," p. 77.

73 One must either assume that prices--both relative and absolute are constant--or, having constructed the "ideal" price index, measure these magnitudes in real terms.

74 "...The effect which the current production of capital goods will have on the future demand for investible funds will depend not so much on the quantity of capital goods produced, as on the kind of capital goods which are produced or on the particular form which current investment takes..." Hayek, "Investment...," p. 74. The aggregation of investment demand curves--as has been done in this paper--becomes even more suspect when one sees that Professor Hayek emphasized the composition of the capital goods that have been produced. One can only hope that the procedure elucidates the discussion more than it befogs it.
capital goods—which resources are represented by the capital losses that will be suffered by these owners—that the higher interest rates can be paid to finish the production process.

Some assumption must be made about the supply of loanable funds, S (voluntary savings plus newly created judiciary money). For a given savings function a rise in the interest rate would increase the quantity supplied. But the capital loss suffered by owners of existing capital goods would probably tend to shift the savings function to the left. One could only guess how financial intermediaries would respond to all this. The easiest assumption is to postulate that the quantity of loanable funds remains constant, though no conclusion depends on its doing so. The entire additional investment demand is then met or financed by $I_2 - I_1$—the amount by which current gross investment in the current capital goods decreases.

Nor can it be said that the Hayekian analysis fails to consider the role of expectations, while the Keynesian analysis does. Rather, the article in question points out a real factor that leads to changes in expectations that would cause rates of return to move quite in the opposite direction as that conceived by Keynes. Professor Hayek based his thesis regarding expectations on real factors, thus making them endogenous to the system.

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75 Cf. Hayek, "Investment...", p. 79.

76 Higher interest rates might induce to reduce excess reserves and lend more. But the capital losses of entrepreneur might lead them to believe that the "quality" of loans was less than they had believed; this could lead to a desire to build up their cash and cash equivalents in their portfolios.

77 It should be clear that at this point there would be no way to ascertain whether the capital stock will have increased or decreased after the capital losses on old investment have occurred, and the new investment has been completed.

78 It does seem that if expectations are autonomous with respect to real factors, at the same time everything and nothing can be demonstrated.
an understanding of the microeconomics of investment that one would ever see the possibility raised by Professor Hayek. It is true that Keynes raised the possibility of monetary complications, of which Professor Hayek apparently never conceived. But it is equally true that only when one considers the monetary factors alone will a purely monetary theory of cyclical fluctuations be possible. When one brings in the real factors, the question becomes much more complex, and purely monetary considerations are no longer sufficient to yield a determinate solution.

Nor has there been any attempt here to claim that the Hayekian theory is complete and sufficient to explain all that there is to know about cyclical fluctuations and the attendant problems of capital theory. Indeed, an admirer of the Hayekian approach could profit from a study of Keynes' Treatise. But, then, Professor Hayek's claims were very modest in this respect. In explaining that he wished to put a fundamental theorem of his theory in form that is unassailable, Professor Hayek noted that:

This, of course, does not necessarily mean that the theories which rely on this proposition provide an adequate account of all or any trade cycles. But it should do something to show the inadequacies of these current theories which completely disregard the effect in question.79

It is the contention of this paper that Professor Hayek was correct in criticizing Keynes' theoretical edifice for, inter alia, its neglecting to analyze carefully the relationships that exist between new and old capital goods; and for its consequently developing an erroneous and incomplete concept of investment.

79 Hayek, "Investment...," p. 73.
Professor Hayek's criticism of the *Treatise* is revealed to be fundamental; and not merely to involve (a much deserved) criticism of a futile attempt to measure total output. The only substantive issue that remains concerns whether in any significant way Keynes improved or modified his concept of investment in the *General Theory*.

"Results Which Are Truly Remarkable"

We have seen that Professor Hayek's most important criticism of Keynes concerned the inadequacy of his treatment of investment. In the first part of his review Professor Hayek suggested that Keynes' major error had been his attempt to elaborate on some of the implications of the Wicksellian system, without at the same time paying heed to the theoretical foundations of that system. He concluded by observing that

It is *a priori* unlikely that an attempt to utilize the conclusions drawn from a certain theory without accepting that theory itself should be successful. But, in the case of an author of Mr. Keynes' intellectual caliber, the attempt produces results which are truly remarkable.  

Hayek continued by pointing out that: "Mr. Keynes ignores completely the general theoretical basis of Wicksell's theory." Keynes' response to this is remarkable both for its candor and its imperception:

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80 Hayek, "Reflections...," Part I, 279.

81 Hayek, "Reflections...," Part I, 279. On the following page he queried: "Would not Mr. Keynes have made his task easier if he had not only accepted one of the descendants of Bohm-Bawerk's theory, but had also made himself acquainted with the substance of the theory itself?"
Dr. Hayek complains that I do not myself propound any satisfactory theory of capital and interest and that I do not build on any existing theory. He means by this, I take it, the theory of capital accumulation relatively to the rate of consumption and the factors which determine the natural rate of interest. This is quite true; and I agree with Dr. Hayek that a development of this theory would be highly relevant to my treatment of monetary matters and likely to throw light into dark corners. It is very possible that, looking back after a satisfactory theory has been completed, we shall see that the ideas which Bohm-Bawerk was driving at, i.e., at the heart of the problem and that the neglect of him by English pre-war economists was as mistaken as their neglect of Wicksell. But there is no such theory at present, and, as Dr. Hayek would agree, a thorough treatment of it might lead one rather a long way from monetary theory. Nevertheless, substantially I concede Dr. Hayek's point. I agree with him that a clear account of the factors determining the natural rate of interest ought to have a place in a completed Treatise on Money, and that it is lacking in mine: and I can only plead that I had much to say for which such a theory is not required and that my own ideas about it were still too much in embryo to deserve publication. Later on I will endeavor to make good this deficiency.82

To repeat, Professor Hayek's point had been that Keynes' views did not consider in any detail the real factors that determine saving, investment, the kinds of capital goods produced, etc. To have constructed a theory of the interaction between real and monetary forces on such foundations is to have built on shaky grounds indeed. In thus conceding his critic's argument, Keynes by implication accepted this conclusion by the inescapable force of logic. It

82 Keynes, "The Pure Theory...", 394-95. Italics have been added for emphasis. Professor Hayek's response to this was in part: "He now contends that we have no satisfactory theory of capital. To a certain extent, I should be quite willing to concede this point. But the obvious answer, of course, is that we do at least possess a far better one than that on which he is content to rely, namely that of Bohm-Bawerk and Wicksell. That he neglects this theory, not because he thinks it is wrong, but simply because he has never bothered to make himself acquainted with it, is amply proved by the fact that he finds unintelligible my attempt to develop certain corollaries of this theory—corollaries which are not only essential for the very problem we are discussing, but which, as experience has shown me, are immediately intelligible to every student who has ever studied Bohm-Bawerk or Wicksell seriously." Hayek, "A Rejoinder to Mr. Keynes," Economica, (November, 1931), 401-02.
would be a difficult task, indeed, for one to salvage what the author himself has, at least by implication, forsaken.

It is true that we have Professor Harrod's judgment as to the place of the Treatise.\footnote{See p. 11 above.} His is supportive of Keynes' own defense, expressed above: "I can only plead that I had much to say [on the theory of money]."\footnote{See the reference in footnote 82 above.} If by "monetary theory," Keynes meant the classical quantity theory, with its emphasis on the determination of the value of money, then it is probably true an author could have "much to say" without having to attend to problems of capital theory. It is also true that much of the Treatise is couched in terms of price levels.\footnote{Professor Leijonhufvud's observation, that Keynes' algebraic presentation was inconsistent with his verbal explanations, is relevant here. See the reference in footnote 42 above.} But we have Keynes' own word that this is emphatically what he was not interested in doing. Rather, we have been told that he wished "to discover the dynamical laws governing the passage of a monetary system from one position to another."\footnote{See the reference in footnote 25 above.} It would not seem to have been unfair or irrelevant to have chided him for not having laid the necessary groundwork.\footnote{Myrdal made a more general indictment of the insularity of British economy in an essay that only appeared in English in 1939, but that had been written much earlier. He condemned the "Anglo-Saxon kind of unnecessary originality which has its roots in certain systematic gaps in the knowledge of the German language on the part of the majority of English economists." Keynes was among those he picked out to mention by name. Gunnar Myrdal, Monetary Equilibrium (London: William Hodge & Co., Ltd., 1939), pp. 8-9.}
by his quantity theory background. It then becomes relevant to consider whether Keynes made a clean break with this tradition in writing the book that was for him "a long struggle of escape... from habitual modes of thought and expression." Particularly, do the criticisms of Keynes' capital concept apply equally to The General Theory? I believe a detailed examination of that most difficult book would produce an answer in the affirmative. Lest this paper exceed all reasonable bounds of length, we cannot analyze in detail the treatment of investment and capital in The General Theory. But we can consider the assessment of one who has done just this.

Professor Leijonhufvud has produced a sympathetic, yet critical reinterpretation of Keynes as theorist. By far the most difficult chapter of his book is the fourth, "The General Theory of Liquidity Preference," in which not only the state of capital theory, in the thirties, but Keynes' views on the subject are considered. We are told there that: "No generally accepted theory of capital and interested existed in the thirties." There is little question that this is correct. But what is interesting about Professor Leijonhufvud's discussion is the parade of major figures across the pages of this chapter. It almost seemed to de rigueur for established theorists in this generation to wrestle with the problems of capital theory. The names of Knight, Hayek, Fisher, Wicksell and Cassel come to mind immediately; among younger theorists one would mention Hicks and Boulding as examples. But from Keynes we have nothing

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90 Leijonhufvud, p. 207.
in the way of a contribution, but only "his eclectic attitude toward the conflicting theories in the field." A major source of the complexity of this fourth chapter is not so much these conflicting views, as the state of capital theory in The General Theory: "This chapter will be a lengthy affair, partly because of the intrinsic difficulty of capital theory, partly because Keynes did not work out his ideas on the subject in much detail so that we are left with only what amounts to an unfinished sketch." In short, Keynes never made up the self-admitted deficiency of the Treatise. Indeed, there is scant evidence he profited at all in the interim from the detailed and path-breaking discussions of capital theory that were going on all around him.

The Fundamental Flaw: A Conclusion

We have argued that aside from the failings of Keynes' work that have been pointed out by so many, there is a more fundamental flaw in his work, including The General Theory. Instead of a capital theory, Keynes presented his "Sundry Observations on the Nature of Capital" in chapter 16 of The General Theory. The promise was never fulfilled. A new coherent system in which the interactions between real and monetary factors were worked out was never presented. The promise of the Treatise, viz., to develop a new branch of the Wicksellian family, was never completely fulfilled.

91Leijonhufvud, p. 207.
92Leijonhufvud, p. 43.
93"Keynes' discussion is too sketchy to be made the basis for a systematic interpretation of his (implicit) theory of capital. But it is significant that whereas as Keynes (like Cassel) was quite critical of Bohm-Bawerk, his 'observations' on capital stress the roundaboutness notion of the Austrians," Leijonhufvud, p. 250n.
94But cf. Leijonhufvud, p. 201n.
One of the reasons for presenting Professor Hayek's criticisms of Keynes' earlier attempt at formulating a neo-Wicksellian theory is to present a contrast. For it was the later Austrians--particularly the late Professor Mises and Professor Hayek--who developed Wicksell's ideas most fully. Successive generations of economists have made much of the deficiencies, real and imagined, of Austrian capital theory. But it is a general maxim of science that one supplants a theory with another theory. The critics of the Austrian approach have offered no coherent alternative, which is capable of dealing with the range of problems for which the Austrian theory was developed. One of the unfortunate legacies of the Keynesian Revolution was the loss of interest in questions of capital theory. Capital theory itself entered a period of stagnation and degeneration. We are at best no better off today in this respect than we were in the thirties. Surely the current, so-called Cambridge capital controversies are a result of inattention to fundamental theoretical problems.

A final conclusion is surely in order here, especially as it represents an attempt to bring us back to where we began. This paper has been titled A Retrospective Assessment of Hayek and Keynes. Most of this assessment involved a criticism of the theoretical foundations of Keynes' system. As Professor Hayek's work was the chief source of this criticism, the paper has by implication proposed a substitute for Keynes' approach to the analysis of capital in cyclical fluctuations. Having read just this part, the reader might legitimately ask: "Why, then, are we all Keynesians instead of Hayekians, if Keynes' system was so flawed?" The purpose of the first part of this paper was, inter alia,

95 For purposes of doctrine-history, the late Professor Fisher should probably be classified as an "Austrian," though he was somewhat eclectic. The present author views the Fisherine theory as an incomplete Austrian theory, and hence, not really a separate alternative theory.
to anticipate this very question. Moreover, the argument of these earlier sections was intended to suggest, in a tentative fashion, that Keynes' work was adopted not for its force and brilliance, but because of the force and brilliance of its expositors. It is now increasingly acknowledged that we do not have the "authentic" Keynes--whoever he may be. The second part of this paper questions whether there is much to gain by going back and discovering the "real" Keynes. Indeed, the devotees of Professor Leijonhufvud's book on Keynes have virtually ignored the note on which that work ends:

The unclear mix of statics and dynamics would seem to be the main reason for later muddles. One cannot assume that what went wrong was simply that Keynes slipped up here and there in his adaptation of standard tools, and that consequently, if we go back and tinker a little more with the Marshallian toolbox his purposes will be realized. What is required, I believe, is a systematic investigation, from the standpoint of the information problems stressed in this study, of what elements of the static theory of resource allocation can without further ado be utilized in the analysis of dynamic and historical systems. This, of course, would be merely a first step: the gap yawns very wide between the systematic and rigorous modern analysis of the stability of the simple, "featureless," price exchange systems and Keynes' inspired sketch of the income-constrained process in a monetary exchange--cum--production system. But even for such a first step, the prescription cannot be to "go back to Keynes." If one must retrace some steps of past developments in order to get on the right track--and that is probably advisable--my own preference is to go back to Hayek. Hayek's Gestalt-conception of what happens during business cycles, it has been generally agreed, was much less sound than Keynes'. As an unhappy consequence, his far superior work on the fundamentals of the problem has not received the attention it deserves.96

96Leijonhufvud, pp. 400-01. The three works of Hayek that Professor Leijonhufvud lists are the ones that I would have chosen: "Economics and Knowledge," "The Use of Knowledge in Society," and "The Meaning of Competition." All are reprinted in F. A. Hayek, Individualism and Economic Order (Chicago: University of Chicago Press, 1948).
Appendix A

The Fundamental Equations

\[ E \] - "the total money-income or earnings of the community in a unit of time."

\[ I' \] - "the part of it [i.e., E] which has been earned by the production of investment-goods, so that \( I' \) measures the cost of production of new investment;"

\[ E-I' \] - "the cost of production of the current output of consumption goods."

\[ S \] - "the sum of the differences between the money-incomes of individuals and their money-expenditure on current consumption."

\[ E-S \] - "the current expenditure of income on consumption goods."

"Let us choose our units of quantities of goods in such a way that a unit of each has the same cost of production at the base date; and let

\[ O \] - be the total output of goods in terms of these units in a unit of time,

\[ R \] - the volume of liquid consumption-goods and services flowing on the market and purchased by consumers, and

\[ C \] - the net increment of investment in the sense that \( O = R + C. \)

\[ F \] - "the price-level of liquid consumptions-goods."

\[ P.R \] - "the current expenditure on consumption goods."

\[ E \cdot \frac{C}{O} (=I') \] - "the cost of production of new investment."

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1 As presented in the Treatise, Book III, Chapter 10; especially pp. 135-38 of Volume I.
2 p. 126
3 cf. pp. 128-29.
\[ P \cdot R = E - S = \frac{E}{O(R+C)} - S = \frac{E}{O} \cdot R + I' - S; \]

or

\[ P = \frac{E}{O} + \frac{I' - S}{R}, \] the first Fundamental Equation.

Then,

\[ W = "the rate of earnings per unit of human effort (so that the inverse of W measures the Labour Power of Money)."^4 \]

\[ W_1 = "the rate of earnings per unit of output, i.e., the rate of efficiency-earnings." \]

\[ e = "the coefficient of efficiency (so that W = e \cdot W_1)." \]

The following involves substitution of the new terms into the first Fundamental Equation:

\[ \frac{P}{W} = \frac{W_1 + \frac{I' - S}{R}}{\frac{1}{e} \cdot W + \frac{I' - S}{R}} \]

The price level of investment goods is determined in a manner that is explained verbally, and which involves considerations of a complex nature.\(^5\)

But in the following, Keynes treated this second price level as a given:

\[ P' = "the price-level of new investment-goods." \]

\[ \pi = "the price-level of output as a whole." \]

\[ I(=P' \cdot C) = "the value (as distinguished from I', the cost of production) of the increment of new investment goods." \]

\(^4\) cf. pp. 63f.

\(^5\) cf. section iii of Chapter 10 and Chapter 15 of Book IV.
\[
\pi = \frac{P \cdot R + P' \cdot C}{0}
\]

\[
= \frac{(E-S) + I}{0}
\]

\[
= \frac{E + I - S}{0}
\]

, the second Fundamental Equation.

Again, by substitution:

\[
\pi = W_1 + \frac{I-S}{0}
\]

\[
= \frac{1}{e} \cdot W + \frac{I-S}{0}
\]

The present author must, for the sake of brevity, refer the reader to the original text for a fuller explanation of the meaning of these terms. Suffice it to note that Keynes, pace his comments on dynamic analysis, was here concerned with the determination of equilibrium price levels.
Appendix B

Keynes' Reply

There is a danger in writing a paper of this type that one will treat one party in a theoretical debate unfairly. The author has quoted directly from the *Treatise on Money* frequently in order to let Keynes speak for himself wherever possible. Nonetheless, the reader will no doubt have noted that there is little direct reference to Keynes' "The Pure Theory of Money. A Reply to Dr. Hayek." This was a reply of substance, in terms of length (11 pages). Unfortunately, most of the reply is simply not usable for the purposes of analyzing critically Keynes' response to Professor Hayek's criticisms. For Keynes gave the reader very little in the way of a reply.¹ Rather, in what must surely be one of the less edifying spectacles in the history of intellectual debate, Keynes launched a series of *ex parte* attacks on Professor Hayek's own work, *Prices and Production*, then only recently published in its first edition.² The "review" ran over 5 pages. In addition, Keynes' reply contains approximately 2 pages which are paraphrases and quotes from part one of Professor Hayek's review article. This leaves approximately 4 pages of reply, from which this paper has quoted and to which this paper has referred where appropriate.

Keynes left succeeding generations of readers of his reply little choice but to ignore most of it; widespread quotation from it would not prove edifying.

¹And a substantial part of his reply has been cited in the text above (pp.
²Robertson also came in for some criticism. This is ironic, since as Keynes noted in the Preface of the *Treatise*, that book "would never have taken its present shape with the help of his [i.e., Robertson's] ideas."