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## Three essays in macroeconomics

Bobbie Lee Horn  
*Iowa State University*

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THREE ESSAYS IN MACROECONOMICS

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**Three essays in macroeconomics**

by

**Bobbie Lee Horn**

A Dissertation Submitted to the  
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## INTRODUCTION

The three essays collected here have as one common element that interest in the topics arose out of research revolving around Thorstein Veblen, though no mention is made of Veblen in any of the papers.

The first essay represents an effort to establish a simple point. Keynes's concept of full employment, and thus involuntary unemployment, does not involve any commitment on the matter of labor market clearing. Thus, involuntary unemployment could coexist with a labor market which cleared. The essay does not contribute much in the sense of positive analysis; the mechanism that is used to illustrate something of the possibility is not at all new, being a version of the "Thornton effect." The intention was to simply eliminate certain preconceptions that may unnecessarily constrain thinking on, and approaches to, the issues involved.

The second essay is the least satisfactory of the three, in the sense that it is the most underdeveloped relative to its potential. As with the other two essays, but more directly and intimately, interest in Hilferding arose from work on Veblen. One need not be too involved to wonder about a relationship between Veblen's Theory of the Business Enterprise and Hilferding's Finance Capital, for at a bare minimum there is a superficial resemblance, and perhaps much more.

The matter of Hilferding is made even more intriguing when combined with another loose end in Veblen scholarship, namely J. Laurence Laughlin. Veblen's quip that "our peripheries don't even touch" has

perhaps been taken too seriously by some, for it is clearly not the case. The interesting twist on this is some amazing similarities between Hilferding and Laughlin, two very dissimilar characters. The immediate impetus for putting the words on paper explains its style, content, and brevity.

The third essay, as it currently stands, represents a more on-going or evolving effort; it has not as yet received that stamp of finality associated with formal reproduction.

It is in part motivated by the recognition that the orthodoxy has a strong proclivity to lay claim to more knowledge or more generality than is perhaps legitimate, through a judicious appropriation of words. One recent example of this tendency might be the notion of "regular economies" as a route around the now more bumpy road of traditional capital theory. One might doubt that the selection of the term "regular" was motivated solely by a desire to represent certain arbitrary conditions. This tendency, of course, has a long and honorable tradition with terms such as "natural," "real," "normal," etc. Something similar seems to be a part of the "rational expectations revolution," for it implicitly casts all alternatives to a Gehenna for the irrational, or at least a purgatory for the arational. This essay tries to slide Keynes, unscathed, through this relatively inhospitable territory, while laying claim to much insight and analysis along the way.

PART I. RUDOLF HILFERDING: THE DOMINION OF CAPITALISM  
AND THE DOMINION OF GOLD

Rudolf Hilferding: The dominion of capitalism and the  
dominion of gold

Bobbie L. Horn and William A. Darity, Jr.

From the University of Tulsa, Tulsa, OK 74104, and University of North  
Carolina, Chapel Hill, NC 27514

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## INTRODUCTION

In November 1918, the USPD-SDP provisional revolutionary government established a commission to study the socialization of German industry. Its members included Karl Kautsky, Emil Lederer, and, of all people, Joseph Schumpeter. Later, when asked how he could have been connected with such a commission, Schumpeter reportedly replied that if somebody wants to commit suicide, it is a good thing if a doctor is present. Weimar Germany had its "doctor," a trained physician, also a member of the socialization commission, in Rudolf Hilferding. As the economic expert of the SDP and twice Finance Minister in coalition governments, Hilferding sought to prescribe treatments as German socialism's humanitarian midwife.

Hilferding's name probably is most familiar to economists for his early skirmish with the dreaded Böhm-Bawerk over the equally dreaded transformation problem and for the qualified recognition of his treatise Finance Capital in Lenin's Imperialism. A number of factors should stimulate a renewed interest in this early theoretician of corporate capitalism. First, the recent publication of an English translation of Finance Capital (1981) means fewer will be limited to accepting authoritative summaries without some perusal of its contents. Second, there is a continuing and important interest in Marx's theory of money. Third, finance and financial crises persist in intriguing economists and still await satisfactory treatment. Combined with the receding tides of Keynesianism and Monetarism, and the resurgence of "Classicals" of all

colors, it may prove interesting to reconsider Hilferding's efforts.

In this paper, we address three issues. First, we look at Hilferding's career and his contributions to Austro-Marxist doctrine. Second, we consider his two experiences as Finance Minister: 1) facing the crisis of the infamous German hyperinflation; and 2) pursuing deflationary policies on the eve of the Great Depression. Last, we offer some very brief comments on the relationship between his political activities and his intellectual work as a socialist theoretician.

## AUSTRO-MARXISM

Born into what Paul Sweezy described as a "well-to-do Jewish mercantile family" (1949, p. xv) in Austria in 1877, Hilferding trained in medicine at the University of Vienna, receiving his doctorate in 1901. While at the university, he became actively involved in the socialist movement and was drawn to the study of political economy. His contact with the central figures of the "Austrian school" laid the foundation for his Marxist critique of subjectivist approaches in economics.

Hilferding soon became a leading figure in the Austro-Marxist school. In 1904 with Max Adler, he inaugurated the Marx-Studien, the theoretical organ of the Austro-Marxists. In 1906, he was lecturing at the Workers University at Berlin, along with Rosa Luxemburg. He subsequently edited Vorwärts, a major socialist newspaper, and in 1910 published his major work Finance Capital: A Study of the Latest Phase of Capitalist Development. After the war, he edited Freiheit, the journal of the Independent German Social Democratic Party (USPD) and upon the fragmentation of the USPD moved with other right wing independents to the German Social Democratic Party (SDP). He obtained German citizenship in 1920 and served as Weimar's Minister of Finance briefly in 1923 and again, for a somewhat more extended period, in 1928-29. While not holding a cabinet post, Hilferding served as a member of the Reichstag and edited the SDP's theoretical monthly, Die Gesellschaft. With the victory of the National Socialists--a possibility denied by Hilferding only a few days before Hitler's appointment to the Chancellorship--he was

compelled to flee into exile and forced to redirect his attention from the Communist threat to the harder reality of the National Socialists. Eventually turned over to the Gestapo by the French authorities in 1941, he reportedly hung himself in his jail cell.

Hilferding is considered the leading economic theoretician of Austro-Marxism, a movement that is of special importance to economists because of a common historical and intellectual environment shared with the Austrian school of economics. Both Austro-Marxism and Austrian economics reflected similar influences and demonstrated mutual awareness of their respective approaches. Hilferding displayed sensitivity to the Austrian tradition (along with the German monetary tradition) in the pages of Finance Capital and felt obliged to defend Marx from critiques launched from such perspectives. Both Hilferding's Austro-Marxist economics and that of the Austrian school placed special emphasis on distortions in the structure of prices as fundamental to the propagation of capitalist crises. Hilferding's interesting attitude toward the price system is apparent in his last publication (1963). However, for the Austrians, the source of these distortions was autonomous to the market process, coming particularly from the state. In contrast, for Hilferding these distortions had an endogenous origin in the normal workings of a capitalist economy, even under thorough-going laissez-faire, though the state could be one source.

Hilferding's Austro-Marxist economics produced two related theories of capitalist crises. The primary theory was his conversion of Marx's "law of the tendency of the rate of profit to fall" into simply a



statement about the capitalist business cycle. Hilferding, in rejecting what he termed "the dogma of the falling interest rate" (1981, p. 104), shifted to a treatment where the rate of profit is something that swings periodically rather than secularly downward. Thus, he moved away from Marx's conceptual interpretation of the rate of profit in pure form. This move from Marx's original approach may have been due to Hilferding's inclination to view Marx's work as the culmination of classical political economy rather than the most substantive critique advanced to that date (Henryk Grossman, 1977, p. 48). For better or worse, Hilferding's Austro-Marxist economics was a variant of Marxism, without immunity to influences from Austrian economics or other "modern" movements--an idiosyncratic species of Marxism indeed!

While Hilferding viewed capitalism as historically doomed, he did not (as did Marx) attribute its demise directly to the tension between the progressive reduction of socially necessary labor time and the fact that labor power constituted the sole source of profit. Hilferding foresaw a transformation of the economy with growing centralization and concentration of capital as the normal outcome of competition under capitalism.

Hilferding's second major explanation for capitalist crises, in addition to cyclical swings in the rate of profit, was the classic Volume II problem of disproportionality in production. The failure of the capitalist pricing mechanism to produce the appropriate signals would lead to imbalances in the production of goods across the various sectors--especially between wage goods and capital goods. In fact, Hilferding

even suggested that the cyclical drop in the rate of profit would go hand in hand with "the disruption of these proportional relations." (For a complete discussion, see pp. 239-66.)

In exploring the crystallization of crisis, Hilferding identified three primary factors in the recurrent fall in the profit rate: 1) the extension of turnover time; 2) the rise in the wage rate associated with the growth in demand during the upturn of the cycle; and 3) the rise in the rate of interest above normal levels adversely affecting entrepreneurial profit. However, somewhat strangely, the crisis appeared to lack inevitability: "A monetary crisis is not an absolutely necessary feature of the crisis, and may not always occur" (p. 274). Banks could avert the crisis if they would continue to make credit available to producers. But the private banks could not, or would not, make funds available for two major reasons, according to Hilferding (p. 260):

In the first place, speculation in both commodities and securities is in full spate and makes increasing demands on the supply of credit. Second, . . . , the circulation credit which producers extend to each other becomes inadequate to meet the increased demands, and here too the banks must help out.

The banks would do their utmost to keep their retained profits "in liquid form, as money"; therefore, the conversion into "productive capital," that brings high employment and continued prosperity, does not take place. A Hilferding crisis of economic depression, although finding its origins outside of the specific characteristics of the financial apparatus, is often confirmed by the withdrawal of credit. It is in keeping with Hilferding's position, as the economic theoretician of the Austro-Marxist school, to construct such a vision of capitalism--unstable, volatile,

prone to crises--the antithesis of the vision of Austrian economics, yet sharing many of the same views about the mechanisms of the capitalist economic system.

## THE SOCIALIST FINANCE MINISTER

Hilferding's brief first tenure as Finance Minister began in August 1923, at the height of the hyperinflation, when Gustav Stresemann was called upon to form a coalition government. Hilferding clearly inherited a situation which called for immediate and radical action. Hilferding had the opportunity to adopt Lenin's dictum (as reported by Keynes, 1963, p. 77) and attempt to "destroy the Capitalist System" by debauching the currency. But Hilferding did not want to destroy capitalism; he was not looking for an economic collapse, but rather "a collapse which will be political and social" (1981, p. 366), amounting to a social and political transformation of the capitalist economy. For Hilferding, the pressing problem was that of domestic inflation. Renegotiation on reparations, and almost all else, required monetary stabilization as a precondition.

It is difficult, if not impossible, to gauge the nature and extent of the gulf between the theory of Finance Capital and Hilferding's policies as Finance Minister. One would assume that Part I of Finance Capital, "Money and Credit," would be relevant to his political practice, particularly in an era of hyperinflation. For some of his critics, it was relevant; that was one of Hilferding's problems.

Part I is probably the most controversial portion of the book. It was about this section that Lenin expressed the reservation that Finance Capital "gives a valuable theoretical analysis" despite an unspecified "mistake the author commits on the theory of money" (p. 11). Even Hilferding's theoretical ally Kautsky (see Harold James, 1981, p. 852)

voiced disagreement, and Schumpeter dismissed it as "rather old-fashioned monetary theory" (1954, p. 881). So too with modern commentators: The editor of the new English translation describes it as "[p]erhaps the least successful part of the book" (p. 5); reviewer Anthony Brewer (1983, p. 102) suggests skipping the section; and David Harvey (1982, pp. 290-92), following de Brunhoff, situates many of Hilferding's errors in his misreading of Marx on money.

One of the primary tasks in Hilferding's (1981) treatment of money is to offer an explanation of the determination of the value of a pure, nonredeemable, state paper money; an explanation of the "modern monetary experience" of Holland, Austria, and India.

Hilferding's monetary doctrines do not rest comfortably in any of the standard monetary camps. He accepts that "ever since Tooke's demonstration, the quantity theory of money has been rightly regarded as untenable" (p. 47); however, "there is a reluctance to give due recognition to the influence of quantity on the value of money even where it really is the determining factor, as in the case of paper money and depreciated currency" (p. 50).

From Hilferding's perspective, the theoreticians of the Cuno government, the Knapp-Helfferich school, simply went too far in their rejection of the quantity theory and were stymied by their value theory from devising a theoretically satisfactory explanation. For Hilferding, "The quantity theory, then, holds good for a currency with suspended coinage. After all, the theory was formulated as a generalization of the experience with unsettled currencies at the end of the eighteenth century

in America, France and England" (p. 55).

He gives a number of reasons for the impossibility of a pure paper currency system. "A pure paper currency is, therefore, impossible as a permanent institution, because it would subject circulation to constant disturbances" (p. 57). However, he lays out a system in the "abstract" in which the quantity of "legal tender state paper money" could not be increased, and "[t]he impossibility of increasing the supply of paper money would protect it against depreciation" (p. 57), while banks could provide an endogenous credit money component to prevent appreciation. "Under such circumstances, paper money would behave as gold does today. . . ." However, "reality" throws up three obstacles to such a scheme (pp. 57-58):

In the first place, this paper money would be valid only within the boundaries of a single state. For settlement of international balances, metallic money with an intrinsic value would be required; and if this requirement is to be satisfied, the value of the money in domestic circulation must be kept on a par with the medium of international payments to avoid the disruption of commercial relations.

Second, "there is no possible guarantee that the state will not increase the issue of paper money." He ends with a third reason: "money with an intrinsic value--such as gold--is always needed as a means of storing wealth in a form in which it is always available for use." For Hilferding, explanation of Germany's inflation was straightforward.

Hilferding's analysis would require linking of the mark to gold, primarily to constrain the state's financial activities. But also, for him capitalism maintains a certain infatuation:

Credit collapses, and thus suddenly deserted capitalism returns in

despair to its first love, to gold. . . . Capitalism thought that it had long since liberated itself from the domination of gold, but now it experiences a bitter disillusionment, and shaken by panic reorganizes its continuing dependence. But such crises are cathartic. . . . Nevertheless, the more capitalism succeeded in establishing its own domination, the less did it allow itself to be bound by this golden chain. The loved one, once so demanding, learns to be more modest and is eventually satisfied with the role of someone in reserve. . . . Her demands may become excessive, and she may occasionally refuse her favors altogether, but these moods do not last long and things soon return to normal. Gold has lost, once and for all, its absolute domination. . . (p. 274).

He saw that even the authority of the state was limited ultimately under the laws (and loves) of capitalism. In October of 1923, Keynes was writing (1963, pp. 208-09):

A regulated non-metallic standard has slipped in unnoticed. It exists. Whilst the economists dozed, the academic dream of a hundred years, doffing its cap and gown, clad in paper rags, has crept into the real world by means of the bad fairies--always so much more potent than the good--the wicked Ministers of Finance.

The Minister Hilferding, perhaps not sufficiently wicked, accepted limits on the powers of even the bad fairies.

To most interests, any return to gold appeared strongly deflationary in the context of the German situation. But in Hilferding's theory, it was not necessarily the case. For with a stable money, the banking system could create a sufficient quantity of domestic credit money to maintain the "social minimum of circulation." But, moreover, in spite of any deflationary implications, there appeared no alternative.

Opponents to the return to gold possessed as one alternative, Helfferich's "ryemark/rentenmark" scheme, which appeared to avoid the deflationary implications of returning to gold while instilling public confidence in a new currency; partly a scheme, partly a bluff (see Erich

Eyck, 1963).

Hilferding's role in the ultimate action is unclear. He served as Finance Minister from mid-August to the end of September, and the currency reform was introduced in mid-October after Hilferding had been forced to resign. The ultimate plan adopted was a hybrid of the two proposals with a Rentenbank being established, issuing notes backed by mortgages with the value not tied to rye, but instead to gold. The other crucial aspect was a restriction on the Reich in terms of discounting its bills with the Reichsbank.

Hilferding returned to the post of Finance Minister in June of 1928 in the coalition government of Hermann Muller. This year marked the last of the "golden years" with unemployment of 7 percent, just before the massive collapse driving unemployment beyond 30 percent by 1932. Hilferding remained in office until December 1929 when he resigned in a controversy surrounding the negotiations of a state loan with an American banking concern. The primary concern of Hilferding in this period was the control of the budget and arrangements to "fund," as opposed to monetize, that portion that could not be covered by taxes. The deficits from the budgets of 1926 and 1927 had created funding problems and the unemployment insurance credits were rapidly mounting. Hilferding proposed both budget reductions and tax increases, policies that met with wide opposition, all the while resisting "inflationist" schemes.

So, though not necessarily a "hard-money" man, Hilferding was a "sound-money" one. His position seems remarkably close to that of an individual who politically could not be more different, an American



contemporary, J. Lawrence Laughlin, who also thought of himself as a monetary doctor of sorts. Both rejected the quantity theory, except for the case of inconvertible state paper money; and, moreover, both rejected the viability of such an institution as a permanent arrangement. Both accepted some form of the so-called "real bills" doctrine and possessed some form of "objective" value theory. Theoretical consistency and policy construction often produces peculiar bedfellows.

## THEORY AND PRACTICE

Given Hilferding's notion of the increasing concentration and centralization of finance capital, an idea that ultimately matured into his concept of "organized capitalism," he seems to have thought that it would be better to simply let the system evolve, according to its own inherent logic. Let the system develop organizational forms and mechanisms to cope with the surface manifestations of the underlying contradictions, and then simply take it over, by democratic means, with its essentially "socialistic" organizational structure already in place.

Analysis of Hilferding's theoretical stance is both complemented and complicated by the fact that his political activity seems to have offered the opportunity to test his theory. It is a widely held view, particularly on the left, that, to quote Sweezy: "his record, like that of the Social Democratic Party itself, was one of unbroken failure. As Finance Minister, he was equally ineffective in dealing with inflation in 1923 and with impending depression in 1929" (1949, pp. xvii-xviii).

Gerd Hardach et al. (1978) echo this view and write that Hilferding "made drastic mistakes on virtually every relevant economic question of the time: on structural unemployment in the 1920s on the outbreak of the world crisis and finally on stabilization policy" (p. 56). These authors attribute these "drastic mistakes" to Hilferding's ". . . complete reformism. Marxist theory was . . . only a rhetorical reference point--for concrete analysis social democracy relied on bourgeois economics" (p. 56).

Hilferding seemed to view Marxian political economy as having an almost positivistic scientific autonomy.

. . . [S]o far as Marxism is concerned the sole aim of any inquiry--even into matters of policy--is the discovery of causal relationships. . . . According to the Marxist conception, the explanation of how such class decisions are determined is the task of a scientific, that is to say a causal, analysis of policy. The practice of Marxism, as well as its theory, is free from value judgments (1981, p. 23).

This view of Marx and this separation of Marxist political economy from some inherent working class perspective can be sensed from Schumpeter's evaluation of Hilferding's as Finance Minister (1939, p. 715):

The minister Hilferding, much too good an economist not to see what was wrong and much too good a Marxist not to realize that there are situations in which anticapitalist policy is in the end anti-socialist, actually went so far as to attempt a very "capitalistic" fiscal reform.

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**PART II. INVOLUNTARY UNEMPLOYMENT RECONSIDERED**

Involuntary unemployment reconsidered

Bobbie L. Horn and William A. Darity, Jr.

From the University of Texas, Austin, Texas.

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## INTRODUCTION

. . . you go on to say that you must confess that you do not understand my doctrine of involuntary unemployment or full employment. But, heavens, my doctrine of full employment is what the whole of my book is about! Everything else is a side issue to that. If you do not understand my doctrine of full employment, it is perfectly hopeless for you to attempt to explain the book to anyone (Keynes, 1973b, p. 24).

The problems are semantic and conceptual and hence cannot be settled by recourse to algebra or geometry until we have a prior consensus on the use of terms. . . (Leijonhufvud, 1974, p. 164).

A recent paper by Reuven Brenner (1979) reveals a continuing tendency to discuss Keynes' notion of involuntary unemployment primarily as an ethical matter--a matter of social justice.<sup>1</sup> Less attention has been devoted to the analytical content of the concept, despite the fact that the issue was joined at least as early as Viner's (1936) classic review of The General Theory. Keynes apparently still was dissatisfied with his own development of the concept at that time. Replying to Viner, Keynes (1937, p. 210) acknowledged the need for improvement of the "definition and treatment of involuntary unemployment" in The General Theory.

Despite his dissatisfaction with his own "definition and treatment," Keynes seemed to have felt the idea was elementary and fundamental to his theory. Once economists had cast off their Classical skins, they could intuit the concept with ease. But casting off the old skins was the hard task. Nevertheless, once that was accomplished, Keynes tended to embrace a wide variety of ways of expressing the notion of involuntary unemployment. Many alternative definitions were acceptable to him.

Ultimately, the particular definition used became the one most convenient for the problem at hand.

The unifying theme in all the definitions Keynes viewed as acceptable was the subversion of the Classical doctrine that the economy naturally would tend toward full employment. Keynes' definitions of involuntary unemployment were inextricably bound up with his rejection of what he viewed as Classical economics.

It is the object of this essay to provide a reassessment of the meaning of Keynes' various definitions of involuntary unemployment from an analytical standpoint. This inquiry is not intended solely as an exercise in doctrinal history. Our major purpose is to detect some important implications for the research agenda of modern macroeconomics. To the extent that we are concerned with doctrinal issues, it is because of our awareness of the symbiotic relationship between definitions and analytical constructs. Specifically, we want to see what limits--if any--Keynes' definition of full employment sets for the analytical structure of The General Theory.

Our central argument is that Keynes' notion of involuntary unemployment was sufficiently general to be independent of whether or not one treats the aggregate labor market or all aggregate markets as clearing.<sup>2</sup> An appropriate extension of Keynes' "definition and treatment" yields sensible meaning to involuntary unemployment even when demand and supply for labor as a whole are equal. Less-than-full employment in Keynes' terms is a condition divorced from whether or not all macro-markets clear.



At the outset, we note that there are at least two ways to conceive of macro-equilibrium. Paul Davidson (1967) has labelled these two notions Marshallian and Walrasian. The Marshallian conception denotes a resting point--a stationary position of the economy from which no further change occurs. The Walrasian conception of equilibrium requires all markets to clear.<sup>3</sup>

Stationarity is the crucial feature of the Marshallian equilibrium. It is irrelevant whether or not supplies and demands in all markets are in balance. Even if one or more markets fail to clear, there may be no "inherent" forces sufficient to bring about a movement away from such a position. In the Walrasian case, demands and supplies must be equal everywhere.

It is widely believed that Keynes' unemployment equilibrium is incompatible with a Walrasian equilibrium. We argue that Keynes' less-than-full-employment equilibrium can be consistent with complete market clearing. Keynes was a Marshallian in method and the Marshallian conception of equilibrium is more general than the Walrasian, for it can include resting points with or without universal market clearing. Correspondingly, so can Keynes' General Theory. Therefore, the existence of unemployment equilibrium on Marshallian terms does not preclude the existence of unemployment equilibrium on Walrasian terms. As we will argue below, it, of course, depends under which of Keynes' various models (and assumptions) the matter is posed.

## SEVERAL DEFINITIONS OF INVOLUNTARY UNEMPLOYMENT

To begin our case, we start with the first definition Keynes offered of full employment in The General Theory. Initially, Keynes (1936, p. 15) treated full employment as the absence of involuntary unemployment for which he gave the following seemingly tedious definition:<sup>4</sup>

Men are involuntarily unemployed if, in the event of a small rise in the price of wage-goods relatively to the money wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment.

Immediately after the passage above, Keynes (1936, p. 15) says, "An alternative definition, which amounts, however, to the same thing, will be given in the next chapter (p. 26 below)."

In Chapter three of The General Theory, Keynes (1936, p. 26) can be found observing:

In the previous chapter we have given a definition of full employment in terms of the behaviour of labour. An alternative, though equivalent, criterion is a situation in which aggregate employment is inelastic in response to an increase in the effective demand for its output.

Although Keynes treats these two definitions as "the same thing," they are not necessarily. Moreover, neither definition means, unequivocally, that a condition of excess supply for labor exists.

By Keynes' chapter two definition of "involuntary unemployment," less than full employment would exist if the real wage from labor's perspective could be lowered while employment increases. Indeed, this first definition is consistent with a situation where the supply exceeds the demand for labor as a whole if (1) the demand schedule for labor is a

decreasing function of the real wage, (2) the supply schedule for labor is an increasing function of the real wage, (3) both the demand and supply for labor are functions only of the real wage rate, and (4) there is only one sector. If assumptions (1), (2), (3), and (4) apply, there is only one possible level of employment consistent with labor market clearing. Then, by Keynes' first definition, involuntary unemployment only could exist when there was excess supply in the labor market.

These four assumptions would provide the labor market story for the most stringent of Keynes' models--the assumptions that would give the Classical consistency in their perspective. Under these assumptions, an unemployment equilibrium is virtually a contradiction in terms. Unemployment equilibrium could not be consistent with labor market or complete market clearing.

But Keynes plainly rejected the third and fourth assumptions.<sup>5</sup> The thrust of Keynes' (1936, pp. 272-9) Appendix to Chapter 19, where he launched a detailed attack on Pigou's Theory of Unemployment, was the complaint that Pigou was mistaken in his view that only one level of employment could be consistent with labor market clearing.

As Keynes pointed out, Pigou began his analysis with a two-sector world ("wage-goods" and "capital-goods"), but somehow managed to cross over into a one-sector model that obscured compositional changes in output as a whole. The two-sector character of Keynes' own model insured that the market for labor could clear at many different levels of employment, a possibility of which he was well aware. Keynes (1936, p. 275) argued explicitly that the demand for labor in the nonwage goods

sector would depend not only on the relative price of labor but also on the interest rate and business expectations.

It is, indeed, strange that Professor Pigou should have supposed that he could furnish a theory of unemployment which involves no reference at all to changes in the rate of investment (i.e., to changes in employment in the non-wage-good industries) due, not to a change in the supply function of labour, but to changes<sub>6</sub> in (e.g.) either the rate of interest or the state of confidence.

Keynes further pointed toward the possibility of the existence of several levels of employment consistent with labor-market clearing when he observed that Pigou's own analysis suggested that Pigou omitted a shift variable in the labor supply function. This conclusion was drawn from Pigou's admission of one of Keynes' (1936, p. 275) central points-- that labor typically can bargain directly only over the money wage rather than the real wage:

Moreover, he [Pigou] stipulates that within certain limits labor in fact, often stipulates, not for a given real wage, but for a given money-wage. But in this case the supply function of labour is not a function of . . . [the general real wage rate] alone but also of the money-price of wage-goods: --with the result that the previous analysis breaks down and an additional factor has to be introduced, without there being an additional equation for this additional unknown.

Keynes' Appendix to Chapter 19 reveals that he envisioned aggregate labor demand and supply schedules that varied with movements in variable other than the real wage rate measured in terms of the general price level.<sup>7</sup> Keynes' labor market could clear at many levels of employment. As a result, his first definition of involuntary unemployment can be reconciled with a condition of equality between labor demand and supply.

Less-than-full employment or involuntary unemployment would exist if more employment could be attained by lowering real wages from labor's

perspective. The reduction in real wages would be accomplished by raising the price of wage-goods via a stimulus to aggregate demand. Keynes' first criterion for identifying full employment was that level of employment at which a further increase in the price of wage goods and the concomitant fall in real wages will not push employment higher.<sup>8</sup>

To clarify how Keynes' concept of full employment can depart from modern orthodoxy, consider a reduced form equation for employment from a macromodel of simultaneous equations (see Appendix). In deriving the reduced form equation, all markets can be assumed to clear. An initial Walrasian equilibrium will be associated with a given set of values of the macro-stabilization variables; i.e., a given level of government expenditure-cum-deficit and a given rate of growth of the money supply. If an increase in government spending or a stepped up monetary expansion lowers the real wage in terms of wage-goods but employment increases, then the initial level of employment was characterized by involuntary unemployment. If the macro-policy change can move the economy to a higher level of employment at a lower real wage, then by Keynes' chapter two definition the economy has moved closer to full employment. This prospect can arise under complete market clearing with the multivariate labor demand and supply schedules Keynes depicted that shift simultaneously with every movement in aggregate demand and supply.

To reinforce this point, Keynes consistently did not identify a surplus of labor in terms of excess supply in the labor market. Instead, he (1936, p. 289) identified the surplus in terms of whether or not more employment would be forthcoming at constant or falling real wages:

There is underemployment of labor until a point comes at which there is no surplus of labour available at the then existing real wage; i.e., no more men (or hours of labour) available unless money-wages rise (from this point onwards) faster than prices.

Keynes (1936 pp. 10-13) emphasized that labor contracts were typically set in nominal terms, which precluded direct bargains over the real wage, especially in a climate of unmeasurable, subjective uncertainty.<sup>9</sup> Labor collectively might have been willing to take a larger real wage bill, at a lower real wage, due to a sufficient increase in total employment. But there was no way to insure this through wage contracts made in nominal terms. In addition, even if laborers were willing to accept lower real wages in terms of wage-goods, that would not guarantee the employers in the non-wage-goods sector a lower real wage. It would depend upon what was happening to the prices of new capital goods in Keynes' system.

If the prices of wage-goods go up while money wages remain unchanged, real wages fall from the perspectives of both workers and employers in the wage-goods sector. But for employers in the non-wage goods sector, the level of real wages depends not on the prices of wage-goods, but the prices of their own products. If laborers accept a nominal wage bargain which lowers their real purchasing power in terms of wage-goods, they may not be simultaneously offering non-wage goods employers a lower real cost of hiring them. Capital goods prices might be falling more sharply than money wages.

Based upon his chapter two definition, one could generalize Keynes' approach to the collective "involuntariness" of unemployment to argue

that labor is unable to set the entire vector of relative prices, including real wages from all employers' perspective, that will raise total employment.<sup>10</sup>

Moreover, Keynes' second definition need not be viewed as equivalent to the first. In chapter three's definition, Keynes made no mention of changes in the ratio of money wages to the price of wage-goods. His chapter three definition has it that full employment is reached when the elasticity of employment with respect to an increase in the effective demand reaches zero.<sup>11</sup> It makes no explicit reference to what happens to the real wage rate. Taking the second definition in isolation means if an aggregate demand expansion leads to higher employment, with or without higher real wages measured in terms of wage-goods, the previous condition is less than full employment.<sup>12</sup>

In Chapter 20 of The General Theory entitled "The Employment Function," Keynes (1936, pp. 280-91) worked explicitly with Cambridge-styled elasticities to redevelop his argument in algebraic terms. Once more the notion of full employment is linked to a condition where the elasticity of employment with respect to effective demand finally reaches zero.<sup>13</sup>

Keynes also introduced his original concept of a neutral rate of interest, providing a discussion that makes it even clearer that a reduced form equation for employment is relevant for identifying his full employment threshold. The neutral rate of interest represented Keynes' final coming to terms with Wicksell's natural rate of interest. For Keynes, Wicksell's natural rate was the rate of interest prevailing at

any equilibrium level of employment, but the neutral rate was the rate of interest prevailing at Keynes' (1936, p. 243, emphasis in original) full employment:

I am now no longer of the opinion that the concept of a "natural" rate of interest, which previously seemed to me a most promising idea, has anything very useful or significant to contribute to our analysis. It is merely that rate of interest which will preserve the status quo, and, in general, we have no predominant interest in the status quo as such.

If there is any such rate of interest, which is unique and significant, it must be the rate which we might term the neutral rate of interest, namely the natural rate in the above sense which is consistent with full employment given the other parameters of the system; though this rate might be better described, perhaps as the optimum rate.

The neutral rate of interest can be more strictly defined as the rate of interest which prevails in equilibrium when output and employment are such that the elasticity of employment as a whole is zero.

We personally make no claims about the "social optimality" of this particular level of employment. We only wish to make clear that it is the level Keynes referred to as full employment.

The final place in the General Theory where Keynes provided an explicit discussion of his notion of full employment is in Chapter 21 entitled "The Theory of Prices." Here, less-than-full employment is a condition where the economy has not yet crossed the threshold to what Keynes called "true inflation." As long as an expansion in effective demand could continue to raise output or employment, Keynes' involuntary unemployment would exist.

Chapter 21 proves that Keynes did not believe that prices would stay constant at less-than-full employment. Quite the contrary, up to the point of "true inflation," both prices and output could rise in tandem.



As long as both employment and prices could rise together, Keynes (1936, p. 303) said "the effect of monetary expansion is entirely a question of degree, and there is no previous point at which we can draw a definite line and declare that conditions of inflation have set in." Thus, full employment is reached when the consequence of additional monetary growth is neutral in the sense of having no effect on output and employment.<sup>14</sup> When a monetary expansion becomes neutral, the result is "true inflation." Under conditions of true inflation, monetary growth leads to a proportionate increase in all prices, leaving undisturbed relative prices. Only at Keynes' full employment position did he claim that the simplest version of the quantity theory of money would become operative.

Neutrality of money as Keynes' condition for full employment is entirely compatible with his prior definition of full employment as a condition where the elasticity of employment with respect to effective demand is zero. Thus, full employment in The General Theory is the maximum level of employment attainable by expanding aggregate demand.<sup>15</sup> This conception is independent of whether or not the labor market or all markets clear in equilibrium.<sup>16</sup> We might interpret the case of a movement from one level of employment with general market clearing to a higher level of employment with general market clearing as a representation of Keynes' notion of "shifting equilibrium."<sup>17</sup>

When the labor market clears, no workers have an incentive to alter wage contracts at prevailing prices and the prevailing level of effective demand. No new bids for labor services will be forthcoming. But the collective position of labor need not reflect the highest level of

employment attainable in the absence of direct government control over the wage bargaining process. With "free" labor market contracting, a higher level of employment could be reached with an increase in aggregate demand. The mere fact that the labor market clears or all markets clear need not mean money has become neutral.

## SOME IMPLICATIONS

We believe our interpretation of Keynes' conception of full employment can bear some rich fruit for various problems and issues that have been raised in modern macroeconomics. These include the following:

1. By the conventional definition of full employment; i.e., labor market clearing, if there are many levels of employment where the supply and demand for labor equalize, all of them must be positions of "full employment."<sup>18</sup> Keynes' conception of full employment, in contrast, provides a selection criterion among all the labor market-clearing levels of employment.

2. Keynes' definition of involuntary unemployment permits an "unemployment equilibrium" to hold on either Marshallian or Walrasian terms. There is no need to go down the tortured road of persistent macro-"disequilibrium" analysis. Say's Law or Walras' Law can hold, but they are quite unimportant since they can hold at many different levels of output and employment. Keynes' economics need not be the economics of "non-Walrasian" equilibria.<sup>19</sup>

3. The customary treatment of involuntary unemployment and unemployment equilibrium frequently is based upon rigidity of the money wage rate.<sup>20</sup> None of this is necessary for the interpretation of Keynes' views once it is recognized that labor market "disequilibrium" is not what is at stake.

In Chapter 19 of The General Theory, Keynes (1936, pp. 157-71) described in detail the destabilizing consequences of variations in the

money wage rate. Keynes plainly thought that complete money wage flexibility would not prevent an unemployment equilibrium from developing. Falling goods prices would chase downward falling money wages leaving employment as depressed as ever.

In Keynes' model, money wage reductions would lower aggregate demand price since consumption expenditures came primarily out of the wage bill. This decline in aggregate demand price could more than offset the incentive effect for producers created by a lower aggregate supply price due to the wage decline.

Furthermore, in Chapter 21 Keynes (1936, p. 296) recognized the possibility that the money wage could rise at less-than-full employment. Keynes mentioned five complications that qualified the view that at less-than-full employment, output and employment would change in the same proportion as the quantity of money. One of the five complications was a rise in the wage-unit before the elasticity of employment with respect to effective demand reaches zero.<sup>21</sup>

4. Given Keynes' conception of full employment, unemployment equilibrium is possible in the absence of price inflexibilities or market imperfections. This means that Keynes' fundamental explanation of stagnant economic activity--an anticipated and ongoing collapse of private investment expenditure--can be restored to center stage. Under laissez faire, there was no reason for investment spending, and hence effective demand, to be maintained at a level to sustain Keynes' full employment.<sup>22</sup>

5. Search theoretic explanations of unemployment remain irrelevant

from the vantage point of Keynes' system. Keynes (1936, pp. 6-15) also quite vigorously stated that The General Theory was not concerned with unemployment associated with search behavior or refusal to work. For the implicit assumption of those who now claim all current unemployment is voluntary in character is that the labor market tends to clear. But Keynes' conception of involuntary unemployment is compatible with the labor market clearing at a level of employment before the onset of "true inflation." The current unemployment can still be understood as a consequence of inadequate effective demand due to relatively low private investment.

6. There is no intrinsic paradox to an observed procyclical movement of real wages if the analysis is one where depression levels of employment are interpreted as a condition where the labor market clears at too low a level of employment. The paradox only arises from conceptualizing depression level employment as being associated with excess supply in the labor market. Then, economic expansion and rising employment theoretically are linked to falling real wages. If, however, the labor market clears at too low a level of employment, it could move toward clearing at a higher level--after a rise in effective demand--with higher real wages.

7. Neither labor market clearing nor general market clearing is a sufficient condition for full employment in Keynes' sense. Keynes as a proper Marshallian probably did not tend to think in terms of market clearing or nonmarket clearing anyway. But to the extent that even contemporary Marshallians can slip into Walrasian language, it is useful

to demonstrate that Keynes' unemployment equilibrium could be a Walrasian equilibrium.<sup>23</sup>

To conclude, the inadequacies of previous interpretations of Keynes' General Theory described here are traceable, at least in part, to a failure to confront Keynes' concept of full employment. This has led, in turn, to a parallel failure to grasp the very literal meaning Keynes attached to the concept of less-than-full employment equilibrium. On Keynes' own definitions and assumptions, an "unemployment equilibrium" takes on a generality and logical validity that cannot be grasped under the interpretations of Keynes' economics that have currency.

## ENDNOTES

1. A similar tendency is evident in Elizabeth and Harry Johnson's (1978) description of Keynes' development of the concept of involuntary unemployment as a reflection of an aristocratic Victorian's vision of the requirements for a happy society. One of the few recent assessments to go beyond limiting the significance of the concept of voluntary unemployment to Keynes' moral compass has been Richard Kahn's (1976) contribution to a conference in Durham, England in March 1974. However, Kahn (1976, pp. 23-24) says that at the time of the writing of the General Theory, the depression was so prolonged and severe in Britain that he placed little importance in making precise distinctions between voluntary and involuntary unemployment; therefore, he did not contribute to "the wording of Chapter 2 of the General Theory" where Keynes offered his first definition of involuntary unemployment.

2. It is so customary to treat Keynes' notion of involuntary unemployment as requiring the aggregate labor market to be in excess supply that it hardly needs documentation. However, we offer some examples to highlight the point. In one of the earliest assessments of The General Theory, Charles Hardy (1936, p. 492) concluded that one of Keynes' major theoretical claims was "The price system cannot clear the market for labor." In his highly influential development of the IS-LM framework a decade later, Franco Modigliani (1944, pp. 76-77) laid the general cause of Keynes' unemployment equilibrium at the doorstep of wage rigidities that left the market for labor with a greater supply than

demand. Finally, in a rare recent attempt actually to discuss Keynes' definitions of involuntary unemployment, James Tobin (1972) remained committed to the view that Keynes' unemployment requires "persistent disequilibrium" in the labor market.

An additional weakness of Brenner's (1979) discussion is that it remains entangled with the contemporary view that involuntary unemployment must mean a failure of the aggregate labor market to clear.

We do not claim that these interpretations are invalid; we do claim that they are too restrictive. Keynes' involuntary unemployment is meaningful when the labor market clears.

3. Victoria Chick (1978, p. 17) has made a similar distinction: "There are two concepts of equilibrium extant in economics: 1. Equilibrium is a point of rest; forces leading to change are either absent or countervailing. 2. Equilibrium is a point at which supply equals demand." Oddly, Chick attributes an earlier recognition of the distinction to Robert Clower (1960) in a paper where he examined Keynesian and Classical views of the labor market. Chick (1978, p. 17) says Clower distinguished between an "equilibrium" and "market clearing." On close inspection of Clower's essay, we could not find such a distinction.

4. Kahn (1976, p. 21) has wondered "why it was necessary to be so complicated." Hopefully, this essay will help demonstrate why.

5. Leijonhufvud (1968) has argued that Keynes' model has two productive sectors. However, Froyen (1959) has made a persuasive case, based in large part upon Keynes' correspondence and drafts of The



General Theory that preceded publication, that Keynes' model consisted of a single productive sector. The one-commodity was on this interpretation put to two separate uses--both as a flow of consumer goods and new capital goods. The difficulty with this interpretation is Keynes' explicit tendency to distinguish between the prices of wage-goods and non-wage-goods. This led him, in turn, to recognize that the real wage in the eyes of entrepreneurs in each sector would be different.

Note also that if Keynes had rejected either the first or second assumptions--if he had assumed increasing returns to the employment of labor on a backward bending labor supply curve in terms of the real wage--by Keynes' first definition, involuntary unemployment could exist if the labor market was clearing.

6. Pigou was further excoriated by Keynes (1936, p. 275) for failing to analyze what factors determine the proportions of employment across the two sectors by collapsing incorrectly the two demand schedules for labor into a demand curve for labor as a whole, ". . . [Pigou's] omission to discuss what determines the connection between . . . employment in the wage-goods and non-wage-goods industries, respectively, still remains fatal."

7. In the early pages of The General Theory (1936, pp. 6-11), Keynes challenged what he viewed as the Classical labor supply function with his rejection of what he termed the "Second Classical postulate," the notion that the real wage is equal to the marginal disutility of labor. Keynes' (1936, p. 8) repudiation of the "Second Classical postulate" led him to argue that the supply of labor depends upon more

variables than the real wage. Keynes (1936, p. 8, n. 1) referred the reader to the Appendix for Chapter 19.

8. Keynes (1936, pp. 8-15) viewed laborers as unwilling to accept a reduction in the real wage brought about by cuts in money wages but willing to accept a reduction brought about by an inflation in the price of wage-goods. Keynes argued that since a reduction in real wages brought about by cutting money wages would be a piecemeal process--conducted employer by employer--it would affect adversely the relative wage position of those laborers who were first to accept a drop in their nominal wage rate. In contrast, an inflation of wage-goods prices would affect all laborers' real wage simultaneously and in the same proportion, leaving everybody's relative wage position unchanged. By Keynes' line of reasoning, a fall in the real wage accomplished by money wage cuts would be acceptable to labor if an equiproportionate, simultaneous fall in all money wage rates could be mandated by a central authority. This would, however, constitute a direct intrusion by the state in setting of wage contracts. (Also, see Tobin, 1972.)

S. C. Tsiang (1980, p. 468, n. 2) has claimed that Keynes simply was wrong--that labor tends to resist reduction in the real wages accomplished by any course:

Another "revolutionary" feature of the Keynes theory is in the theory of employment, where the classical assumption that the supply of labor is a function of the real wage rate is replaced by a new assumption that workers would be content with a fixed money wage rate until full employment is reached. This has proved false also. Trade unions nowadays not only are deeply concerned with the real wage rate but would even seek to raise it periodically regardless of the increase in productivity.

However, after a prolonged exposure to conditions of less than full employment labor's desire to resist real wage cuts may be just as strong but labor's capacity to resist such cuts may be softened considerably. Household savings will be depleted. In England of the 1920s and early 1930s, social insurance programs for the unemployed were still in their infancy. Short of a revolution, ultimately workers will accept a lower real wage out of the necessity of obtaining work to support themselves and their families. Keynes simply concluded that it would be politically easier to lower the real wage by inflation rather than by piecemeal downward revisions in wage contracts.

Regardless, in the appendix where we sketch a model to demonstrate the argument of this essay, we eschew the assumption that the supply of labor is infinitely elastic at a fixed money wage rate in favor of far more conventional labor supply functions.

9. Given the central emphasis Keynes placed on subjective uncertainty, both his demand and supply schedules for labor must be treated as dependent on the state of expectations. Mishan (1964), while still trapped within the customary view of full employment, argued that the demand for labor in Keynes' model should be viewed as a demand derived from the effective demand for output as a whole. In an earlier paper, Edgar Edwards (1959) treated the demand for labor as derived from Keynes' aggregate demand and supply price schedules (see Appendix). Edwards also grasped the importance of the interdependency between the demand and supply functions for output as a whole and their immersion in uncertainty in Keynes' analysis.

10. It means, further, that on this view one would not make a hard and fast distinction between the official or measured unemployed and non-labor force participants. Keynes' involuntarily unemployed also could include Joan Robinson's (1936) disguised unemployed who have been discharged, by a decline in effective demand, from "the general run of industries." Keynes (1973b, p. 364) himself included the following passage in the first and second proofs of The General Theory: "This does not imply that labor, which is suffering involuntary unemployment, is idle. It may be employed as a pis aller in some occupation where it earns a real wage less than the wage potentially available. And, of course, a man who is not 'out of work' might prefer to be working for a longer work week even at a lower hourly real wage than he is actually earning."

11. There are several other places where Keynes offered definitions of less-than-full-employment similar to the one in chapter two of The General Theory. In correspondence with R. F. Kahn in September 1931, Keynes (1973a, p. 373) commented that, "When resources are fully employed, the supply schedule for goods as a whole is inelastic." Writing to Beveridge on July 28, 1936, Keynes (1973b, p. 58) observed, "The only reason why the orthodox theory denies the multiplier is because it is in fact assuming that there is always full employment, so that output as a whole has a zero elasticity."

In his 1937 contribution to the Irving Fisher festschrift (1946, p. 423), Keynes said, "Indeed the condition in which the elasticity for output as a whole is zero, is, I now think, the most convenient criterion

for defining full employment." In none of these cases is market clearing nor the labor market, in particular, at the center of Keynes' attention.

12. In Keynes' view, the chapter two and chapter three definitions were equivalent because he did not believe that employment and real wages could increase at the same time. At the time he wrote The General Theory, Keynes was convinced that employment as a whole was inversely related to real wages. But under some parameterizations, given a reduced form equation for employment (see Appendix), an increase in aggregate demand might push money wages up faster than prices and employment still could rise. This is consistent with the observed procyclical movement of real wages. Jean de Largentaye (1979, pp. 7-10) has explained that Keynes was misled, by statistical evidence that purported to demonstrate an inverse relationship between real wages and employment, into thinking labor's real wage must fall for employment to rise.

But Tobin (1972, p. 3) acknowledged in his AEA Presidential address that the possibility of simultaneously raising real wages and employment actually gives added support to the usefulness of Keynes' criterion for less than full employment:

When employment could be reduced by expansion of aggregate demand, Keynes regarded it as involuntary. He expected expansion to raise prices and lower wages, but this expectation is not crucial to his argument. Indeed, if it is possible to raise employment without reduction in the real wage, his case for calling the employment involuntary is strengthened.

Tobin's observation suggests that Keynes' full employment is the maximum level of employment attainable by expanding aggregate demand. What could be a more natural concept of full employment for Keynes, since

the core of The General Theory is a rehabilitation of the principle of effective demand?

Moreover, Keynes' (1936) Chapter 19 model, his complete or most general model, with which he explored the consequences of a change in the money wage rate, suggests some ambivalence which was confirmed fully in Keynes' (1939) later essay evaluating the Dunlop and Tarshis studies which finally overturned the prior empirical basis for the claim that real wages move countercyclically. Keynes' ultimate position seemed to be anything could happen to the real wage depending upon prevailing elasticities.

13. Hicks (1937, p. 158) only confused matters by suggesting that "full employment can be defined as a condition where "any rise in income calls forth a rise in money wage rates. . . ." A rise in money wage rates need not preclude a rise in output and employment in Keynes' most general model.

14. The issue of what Keynes conceived of as "money" is a difficult one in its own right. Chapter 17 of The General Theory is the textual location where Keynes offers a definition of money based upon its "essential properties." We prefer his analytical definition of money-- whatever has a liquidity premium exceeding its carrying cost. But this is not an issue we intend to pursue in this essay.

15. Consider also the alternative definition of unemployment Keynes (1973b, p. 26, emphasis in original) offered during a lengthy correspondence with Hawtry in early 1936: "'There is less than full employment if the propensity to consume being assumed unchanged, an

increase in investment will cause an increase in consumption. As against this the normal assumption of the classical theory is that an increase in investment will involve a decrease in consumption." Less than full employment exists in the absence of crowding out no matter what happens to the price level or in the labor market.

16. Only in chapters 2 and 19 does Keynes discuss the labor market at all in The General Theory. Chapter two lays the basis for the critique of the Classicals and chapter 19 displays his full model in operation (see n. 12 above). It is difficult to trace precisely how many assumptions about the nature of the labor market are broken in the transition from chapter two to 19.

17. This broadens the range of interpretation of Keynes' "shifting equilibrium" even beyond the limits set by Jan Kregel (1976) in his valuable essay on Keynes' methodology. Kregel (1976, p. 220, n. 1) still retains the view that Keynes' involuntary unemployment requires that "some markets . . . not clear."

18. This is the anomaly that led Davidson and Smolensky (1964, p. 170) to make the following odd statement in their textbook:

This level of employment, where the quantity of labor demanded equals the quantity of labor supplied, is called full employment. At full employment, all workers who are willing to work at the going real wage rate can find new jobs. Since the number of people who will be willing to work is an increasing function of the real wage rate, full employment does not connote a fixed number of employed workers. It is possible for the economy to move from one full employment level to another.

It is a strange definition of "full employment" that makes it "possible for the economy to move from one full employment level to another." But

that is precisely the type of definition that has gained widespread acceptance in modern economics.

19. Therefore, Keynes' economics does not require a turn toward the non-market clearing economics popularized by Barro and Grossman (1976) and generalized by Hal Varian (1977). Nor does it necessitate a defense of Keynes based upon the Austrian-styled concerns over market signalling and communications breakdowns of the sort undertaken by Leijonhufvud (1968).

20. Recent cataloguings of possible explanations for money wage rigidity have been advanced by Robert Solow (1979, 1980). In addition to Keynes' (1936, p. 14) own relative wage hypothesis (see footnote 8 above), modern economic theory has thrown up a formidable list of reasons why money wages may not fall in the face of excess supply in the labor market. These range from the invocation of worker irrationality associated with the venerable "money illusion" argument, e.g., Tobin (1947), to the hyperrationality of the implicit contracts literature, e.g., Baily (1974), Azariadis (1975), and Gordon (1974).

21. In addition, Keynes' assumption that the money wage was fixed throughout much of The General Theory can be viewed as a consequence of his treatment of labor as the numeraire commodity. If labor's nominal price is fixed, while all other prices are free to vary, there is no rigid relative price in Keynes' system. The following passage from The General Theory supports the view that labor was Keynes' (1936, pp. 213-14, emphasis in original) numeraire commodity:



I sympathise . . . with the pre-classical doctrine that everything is produced by labor, aided by what used to be called art and is now called technique, by natural resources which are free or cost a rent according to their scarcity or abundance, and by the results of past labor, embodied in assets, which also command a price according to their scarcity or abundance. It is preferable to regard labor, including, of course, the personal service of the entrepreneur and his assistant, as the sole factor of production, operating in a given environment of technique, natural resources, capital equipment and effective demand. This partly explains why we have been able to take the unit of labor as the sole physical unit which we require in our economic system apart from units of money and of time.

Even Arthur Marget (1942, p. 597, n. 101) in his self-professed polemical attack on Keynes' contributions to monetary theory acknowledged that "Mr. Keynes has simply followed an 'old Cambridge' practice in making use of the 'wage-unit' as a numeraire." However, while "old Cambridge's" "wage-unit" was the real wage rate, Keynes' "wage-unit" was the money wage rate.

22. Victoria Chick (1978, p. 2) has observed that Keynes, "by demonstrating the possibility of underemployment equilibrium, drew attention to the possibility that unemployment might persist if left untouched by policy. The private sector in this state generates no force for adjustment toward full employment.

23. Modern Marshallians like Chick (1978), Davidson (1967), and Kregel (1976) all share the view that Keynes' involuntary unemployment requires a persistent imbalance in supply and demand in at least one market.

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## APPENDIX

The Walrasian two-sector "shifting equilibrium" case can be discerned in Hicks' (1937) SILL model. Adapting the Weintraub (1957) and Wells' (1978) development of Keynes' (1936) aggregate demand and supply price framework, we illustrate a Walrasian one-sector "shifting equilibrium."

Define aggregate supply price as the volume of money proceeds that would just make it worthwhile for entrepreneurs to hire each possible level of employment,  $N$ --the minimum amount of revenue entrepreneurs must receive to cover their costs of production as well as earn "acceptable" profits at each possible level of employment. Aggregate supply price can be specified as follows:

$$Z = wN + F + \pi \quad (\text{A.1})$$

where  $w$  is the nominal wage rate,  $F$  is the fixed costs (independent of the level of employment), and  $\pi$  is the acceptable quantity of profits associated with employment level  $N$ . The nominal wage rate and fixed costs are known with certainty to the entrepreneurs at the time they make their hiring decisions.

Define aggregate demand price,  $D$ , as the money proceeds entrepreneurs anticipate will be forthcoming at each possible level of employment. Under laissez-faire in the one sector model aggregate demand price is the sum of expected consumption and investment expenditures as  $N$  varies. Aggregate demand price can be specified as follows:

$$D = c^*[wN + F + \pi] + \tilde{D}_2. \quad (\text{A.2})$$

$c^*$  is the anticipated propensity to consume. Entrepreneurs, given the nominal wage rate and fixed costs, are able to forecast  $c^*$  accurately for any level of employment.

For Keynes,  $\tilde{D}_2$ , the expected investment expenditure, was determined by the marginal efficiency of capital schedule and the rate of interest on money. The volatility of the former, due to its dependence on the state of long term expectation, led Keynes to contend that the relationship between  $\tilde{D}_2$  and  $N$  was weak. For simplicity,  $\tilde{D}_2$  will be treated as an "autonomous" variable here.

Profit maximization drives entrepreneurs to hire laborers up to the point where aggregate supply and demand price equalize. Thus, the demand for labor--given  $w$ ,  $F$ , and  $\tilde{D}_2$ --is set at the point of effective demand, or at the point where  $Z=D$ :

$$wN + F + \pi = c^*[wN + F + \pi] + \tilde{D}_2. \quad (\text{A.3})$$

Total differentiation of equality A.3 under the assumptions that  $c^*$  is less than unity and that  $\pi$  is an increasing function of  $N$  implies that the demand for labor is a decreasing function of the nominal wage rate, a decreasing function of fixed costs, and an increasing function of anticipated investment expenditures:

$$N^d = f(w, F, \tilde{D}_2) \quad f_1 < 0, f_2 < 0, f_3 > 0. \quad (\text{A.4})$$

The demand for labor curve will be negatively sloped in money wage-

employment space (see Figure 1). Fixed costs and the expected proceeds from investment spending are held constant. Once a nominal wage rate is set contractually, the demand for labor is determined precisely. For example, in Figure 1 at money wage rate  $w_0$ , the demand for labor will be  $N_0$ .

But would  $N_0$  units of labor be forthcoming at nominal wage rate  $w_0$ ? For Keynes, involuntary unemployment existed if the supply of labor would be forthcoming to validate a rise in the demand for labor associated with an increase in effective demand. Keynes's chapter two definition constrains the labor warranted by higher effective demand to be made available at a lower real wage rate. The chapter three definition, however, does not require the real wage rate to fall with an expansion in effective demand and employment.

To determine whether the quantity of labor warranted by the increase in effective demand will be forthcoming requires introduction of a labor supply function. The characteristics of the labor supply function will be important in what follows.

First, consider the model with a customary labor supply function. The supply of labor is an increasing function of the real wage rate,  $w/p$ , where  $p$  is the money price of the only type of output in the model (see Figure 2)

$$N^S = g(w/p) \quad g' > 0 \quad (A.5)$$

Price level variations shift the labor supply curve.

If the supply equals the demand for labor, the following equality

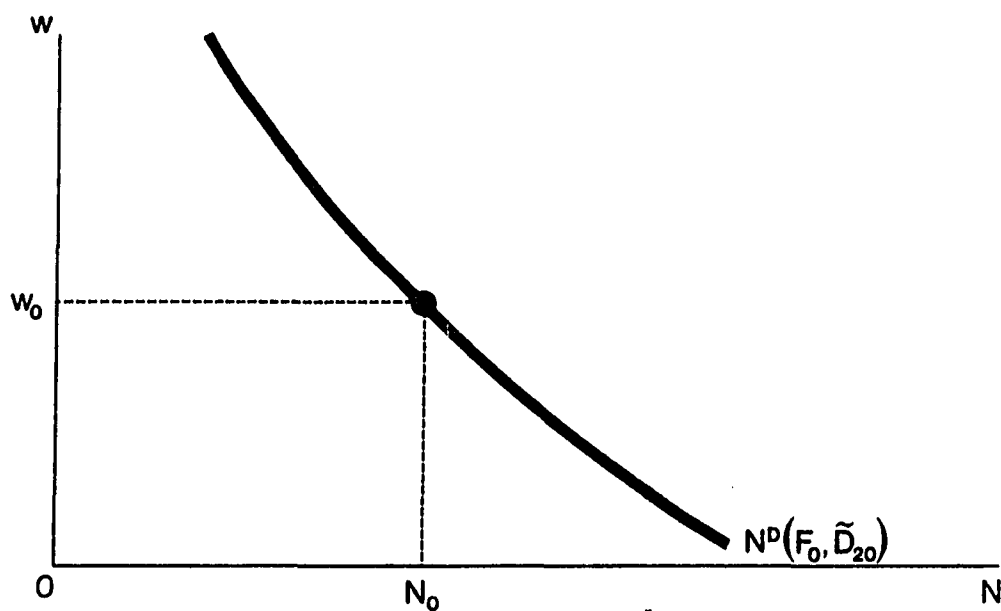


Figure 1. The demand for labor

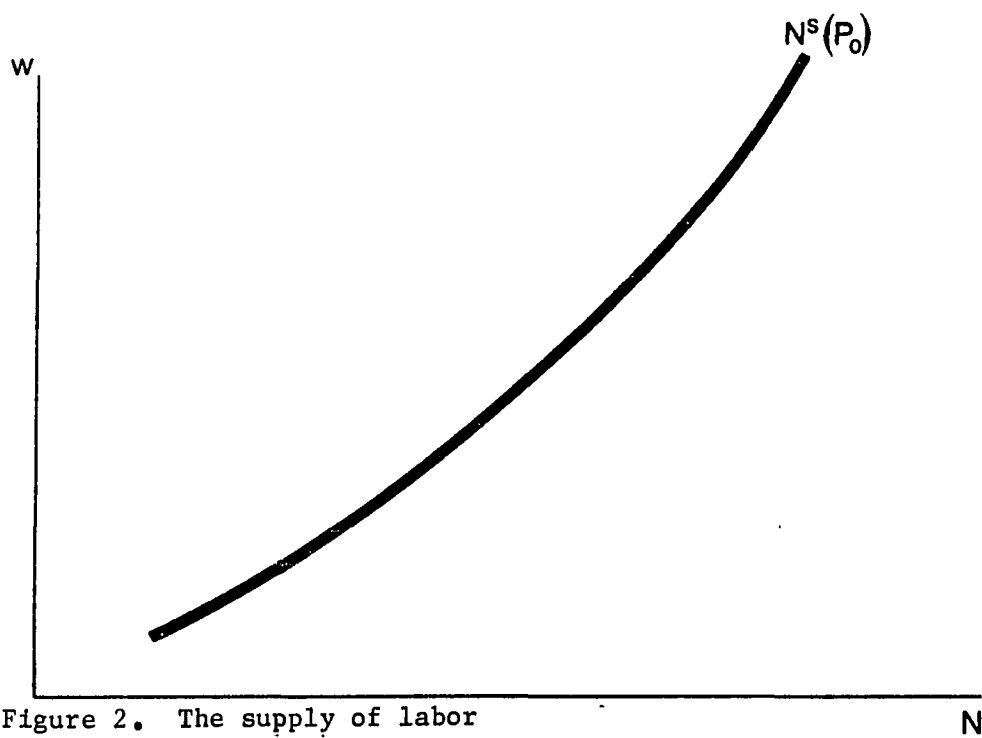


Figure 2. The supply of labor



must hold:

$$f(w, F, \tilde{D}_2) = g(w/p). \quad (\text{A.6})$$

Equality A.6--the labor market-clearing condition--implies the following reduced form equation for employment:

$$N^* = G(w, w/p, F, \tilde{D}_2) \quad (\text{A.7})$$

$$G_1 < 0, \quad G_2 > 0, \quad G_3 < 0, \quad G_4 > 0.$$

The nature of the labor supply function coupled with the implicit labor market clearing condition underlying function A.8 means that  $N^*$  cannot rise without an increase in the real wage.

When there is persistent excess demand in the labor market, the actual level of employment is determined by the labor supply function:

$$N = N^S \quad \text{when } N^D > N^S. \quad (\text{A.8})$$

In parallel fashion, when there is persistent excess supply in the labor market, the actual level of employment is determined by the labor demand function:

$$N = N^D \quad \text{when } N^S < N^D. \quad (\text{A.9})$$

With the model based upon equations A.4 and A.5 by Keynes's first definition, involuntary unemployment is only possible when the labor market fails to clear. With labor supply function A.4, there is no

logical possibility of moving from a market-clearing combination of money wage rate,  $w^*$ , real wage rate,  $w^*/P_0$ , and employment level,  $N^*$  (see Figure 3) to both a higher level of employment and a lower real wage rate.

More employment at a lower real wage only can be obtained by moving from a condition of excess supply in the labor market, e.g., achieved by lowering the money wage rate while the price level is held constant (although Keynes's chapter 19 stress on the money wage-price level nexus suggests this is impossible).

Alternatively, assume the money wage rate is stuck at  $w_0$  and consider Keynes's chapter two test for involuntary unemployment. Expand effective demand, e.g., by introducing government spending, thus shifting the labor demand curve rightward from  $N^D$  to  $N^{D'}$  as entrepreneurs come to expect a higher level of money proceeds at each level of employment.

There will be an accompanying inflation as entrepreneurs expand their hiring, shifting the labor supply function leftward as the price level goes from  $P_0$  to  $P_1$ . The supply and demand for labor now equalize at real wage  $w_0/P_1$  and employment level  $N_1$ . Both the demand and supply for labor at  $N_1$  are greater at a lower real wage than the original level of employment at  $N_0$ .

Thus far, there is no difference between Keynes's definition of less-than-full employment and the conventional view that involuntary unemployment means excess supply in the labor market. To break with the conventional view, include at least one other variable in the labor supply function besides the real wage. We introduce the real value of

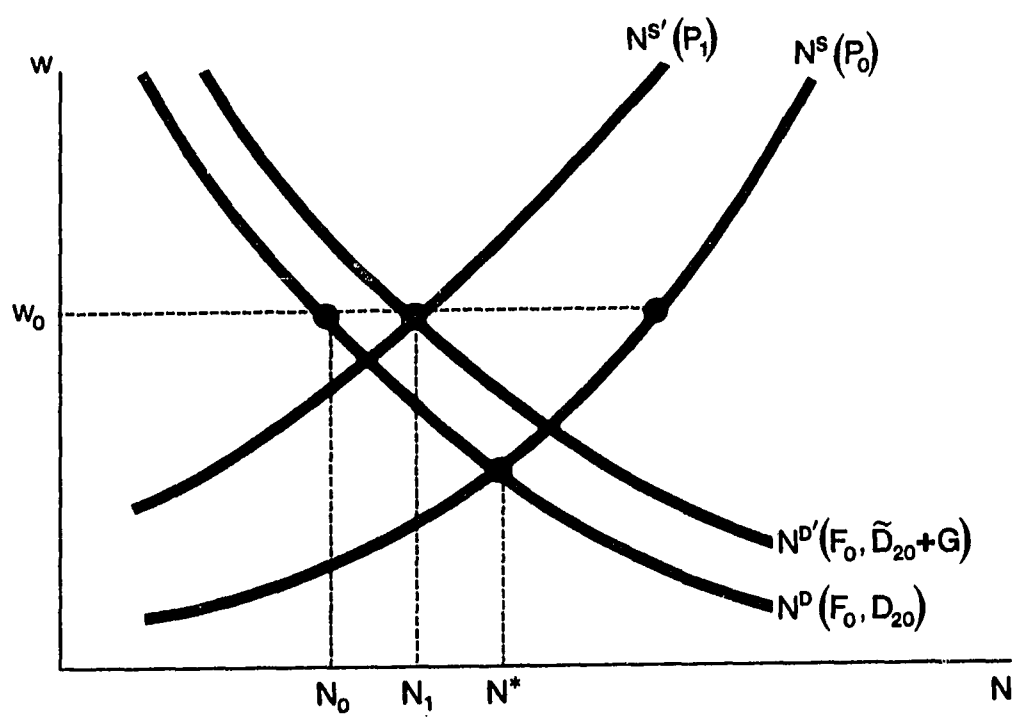


Figure 3. Case 3

assets (or wealth),  $A/P$ , where  $A$  is a measure of the nominal value of assets held by workers. The magnitude of  $A$  depends on the size of workers' accumulated personal savings. Assume that the labor supply is inversely related to these non-labor sources of income:

$$N^S = g(w/P, A/P) \quad g_1 > 0 \quad g_2 < 0. \quad (\text{A.10})$$

Now, when the labor market clears, the relevant equality becomes:

$$f(w, F, \tilde{D}_2) = g(w/P, A/P) \quad (\text{A.11})$$

and the associated reduced form equation for employment will be:

$$N^* = G(w, w/P, A/P, F, \tilde{D}_2) \\ G_1 < 0, \quad G_2 > 0, \quad G_3 < 0, \quad G_4 < 0, \quad G_5 > 0. \quad (\text{A.12})$$

Now, an inflationary expansion in effective demand achieved by additional government expenditure when the nominal wage is fixed will lower the real wage rate as well as the real value of assets held by workers. The situation will be aggravated if workers must deplete their savings to survive in the midst of high unemployment. If the real asset effect dominates the real wage effect, it becomes possible in the one-sector world to move from a market-clearing level of employment,  $N^*$ , to a higher level of employment,  $\tilde{N}$ , at a lower real wage (see Figure 4).

When the real asset effect dominates the real wage effect, an inflation that raises the price level from  $P_0$  to  $P_1$  will shift the labor supply curve to the right instead of to the left. At the price level attained after the expansion of effective demand,  $P_1$ , both the supply

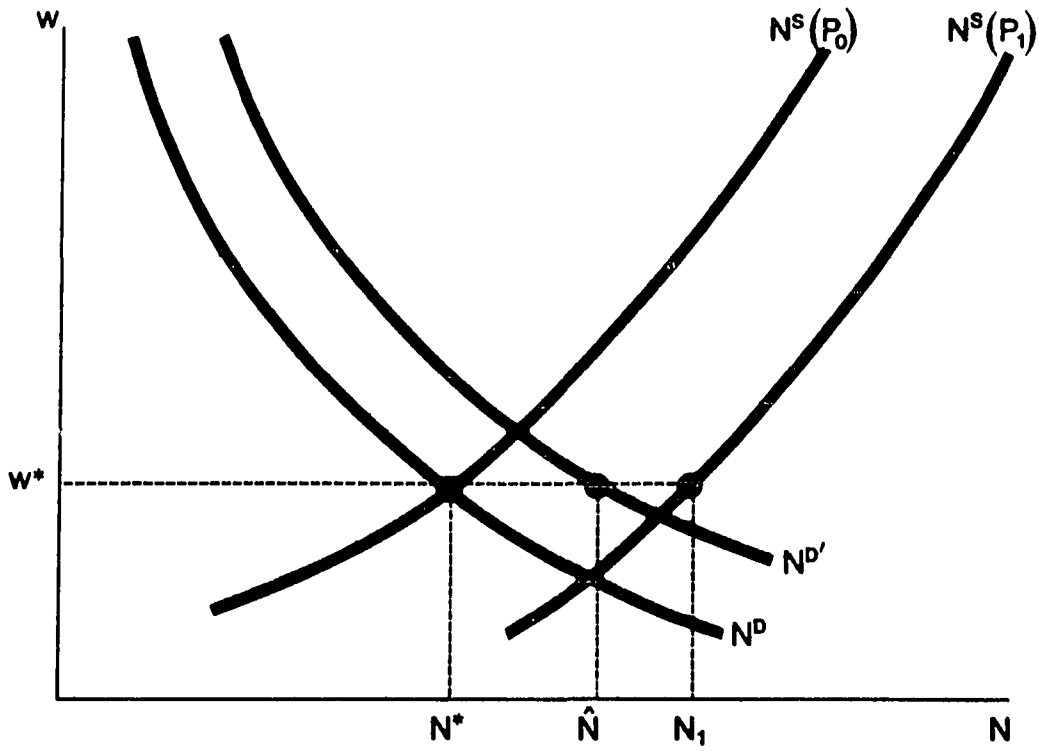


Figure 4. Case 4

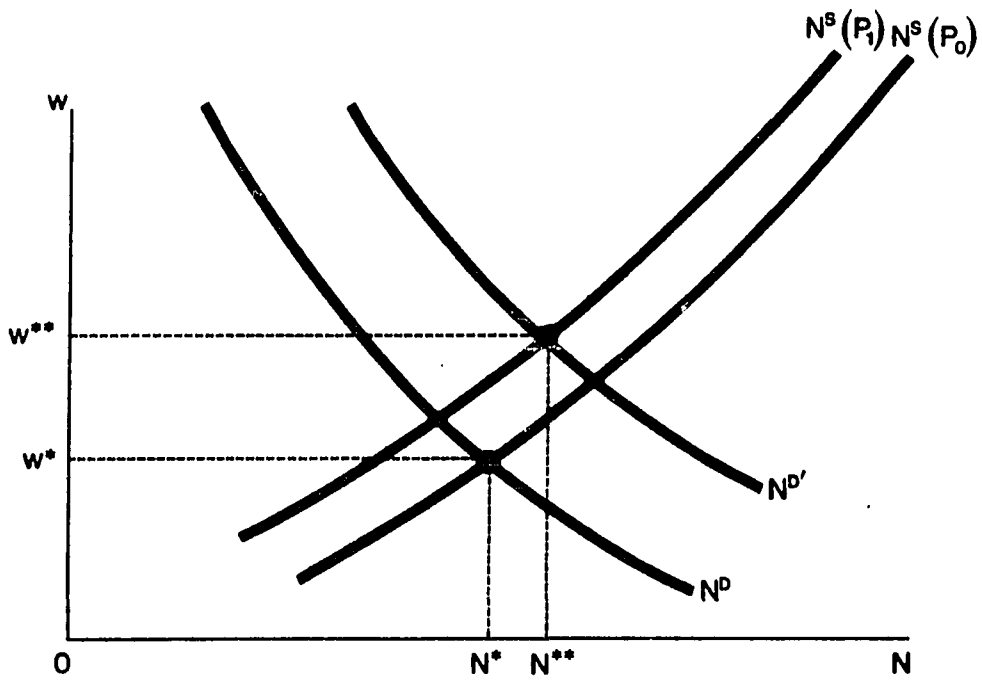


Figure 5. Case 5

( $N_1$ ) and demand ( $\tilde{N}$ ) for labor exceed the original level of employment  $N^*$ . Although the labor market clears at real wage rate ( $w^*/P_0$ ), this is not full employment by Keynes's first definition. In fact, at employment level,  $\tilde{N}$ , the labor market does not clear but it still represents a higher level of employment than the initial market-clearing level!

Another break with the conventional view of involuntary unemployment is to turn exclusively to Keynes's chapter three definition. This definition permits us to relax the constraint that the real wage rate must fall with an effective demand induced increase in employment. We can retrieve the customary labor supply function A.5 to illustrate this argument. We now assume further that the money wage rate can be recontracted until the labor market clears.

In Figure 5, the money wage rate can rise with the increase in effective demand. Moreover, it can go up proportionately more than the associated rise in the price level, resulting in an increase in the real wage rate from  $w^*/P_0$  to  $w^{**}/P_1$ . If the rightward shift of the labor demand curve is more pronounced than the leftward shift in the labor supply curve, employment and the real wage rate can rise simultaneously. This depicts in simple fashion a procyclical change in the real wage. Moreover, although  $N^*$  is a labor market clearing level of employment, it is not full employment by Keynes's chapter three definition. The expansion of effective demand raised employment to  $N^{**}$ . Consequently, the elasticity of employment with respect to aggregate demand was not zero at employment level  $N^*$ .

PART III. RATIONAL EXPECTATIONS AND KEYNES' GENERAL THEORY

Rational expectations and Keynes' General Theory

Bobbie L. Horn and William Darity Jr.

From the University of Tulsa, Tulsa, Oklahoma, and the University of  
North Carolina, Chapel Hill, North Carolina



## INTRODUCTION

. . . the driving force of the economy lies in the future, but in the future as visualized in the present (Hart, 1950, p. 415).

The actually realised results of the production and sale of output will only be relevant to employment in so far as they cause a modification of subsequent expectations. Nor, on the other hand, are the original expectations relevant, which led the firm to acquire the capital equipment and the stock of intermediate products and half finished materials with which it finds itself at the time when it has to decide the next day's output. Thus, on each and every occasion of such a decision, the decision will be made, with reference indeed to this equipment and stock, but in the light of the current expectations of prospective costs and sale proceeds (Keynes, 1936, p. 46).

There can be little doubt that for macroeconomics, this is the era of rational expectations. The notion forms the backbone of the New Classical Economics, a formidably consistent theoretical structure whose proponents are clearly able, and more than willing, to call all competitors to answer for perceived shortcomings in rigor and consistency. Indeed, this modern approach has not been swallowed by all and certainly not in the dosage prescribed by some, but the prescription is a popular one and must be confronted by the unconvinced.

If Keynes' economic legacy is to find shelter in contemporary theoretical quarters, it must come to terms with the powerful, and somewhat seductive, notion of rational expectations. Keynesians will not succeed in eliminating the idea by ignoring it. Neither carping criticisms, nor criticisms simply on the grounds of realism, seem altogether productive. A careful reconsideration of rational expectations may reveal that not much is really at stake for Keynes' vision. We wish to demonstrate that the theoretical vision advanced by

Keynes can come to terms with the notion of rational expectations without major concessions.

Of course, this perspective makes the characterization of rational expectations crucial, but, in fact, that characterization has always been problematic. We are attracted to Lucas Papademas' more general definition of rational expectations as "model-consistent expectations" (Hart, 1982, p. 87). Rational expectations is a technique for construction of anticipations based upon postulated structural determinants of the variable being forecast.

This means that the use of rational expectations need not be restricted to the province of the New Classical School. Assumptions in addition to rational expectations are required to produce the New Classical School's policy neutrality result, for example, the so-called Lucas supply function. Incorporating rational expectations into models with alternative specifications need not produce the policy neutrality outcome.<sup>1</sup> Models that postulate that real national income is determined by exogenous "real" factors will display neutrality with respect to variations in the quantity of money without incorporating rational expectations.<sup>2</sup> As Kevin Hoover (1984, p. 60, emphasis in original) has observed:

While the rational expectations hypothesis is a fundamental part of the new classical economics, it is, nevertheless, independent of the other tenets. A new classical economist necessarily believes in rational expectations. But a belief in rational expectations by itself is not sufficient for one to be a new classical.

Many of those who are critical of, or at least possess reservations

about rational expectations, point to a distinction between risk and uncertainty. Usually, this distinction is referred to as attributable to Knight and Keynes, though occasionally as only "Knightian."<sup>3</sup> Those who emphasize such a distinction seem to be more enticed and tempted by Knight than by Keynes. One could speculate as to why, but our attention here will be devoted exclusively to clarification of Keynes' views on uncertainty and the ways in which human beings cope with uncertainty--views that are not identical with Knight's.<sup>4</sup>

Our discussion proceeds in four sections. In the next sections, we discuss Keynes' critical line of demarcation between short- and long-term expectation. In section two of the paper, we explore the relationship between Keynes' treatment of uncertainty in A Treatise on Probability and his treatment in The General Theory. In particular, we focus on Keynes' distinction between rational belief and a rational or nonrational belief. That distinction leads to the discussion in section three where we examine exactly how rational expectations might fit within the framework of Keynes' General Theory. Finally, in the fourth section we consider the implications of the New Classical School's policy neutrality conclusion for Keynes' theory.

## SHORT-TERM AND LONG-TERM EXPECTATION

In a review essay on The General Theory appearing immediately after publication of Keynes' book, Hicks (1936, p. 240) gave pride of place to Keynes' treatment of anticipations:

From the standpoint of pure theory, the use of the method of expectations is perhaps the most revolutionary thing about the book. . . .

Particular prominence was given by Keynes (1936, p. 46) himself to those expectations that govern the decisions of men of business:

. . . the entrepreneur (including both the producer and the investor in this description) has to form the best expectations he can as to what the consumers will be prepared to pay when he is ready to supply them (directly or indirectly) after the elapse of what may be a lengthy period; and he has no choice but to be guided by these expectations, if he is to produce at all by processes which occupy time.

Keynes (1936, p. 24, n. 3) allowed these entrepreneurial expectations to be treated as certainty-equivalents as an analytical convenience, although he did not believe that they, in fact, possess such characteristics:

An entrepreneur, who has to reach a practical decision as to his scale of production, does not, of course, entertain a single undoubting expectation of what the sale-proceeds of a given output will be, but several hypothetical expectations held with varying degrees of probability and definiteness. By his expectations of proceeds which, if it were held with certainty, would lead to the same behaviour as does the bundle of vague and more various possibilities which actually makes up his state of expectations when he reaches his decision.

Keynes' notion of "certainty-equivalence" should be placed in the context of his overall endeavor to explicate the generality of The General Theory. The assumption of certainty-equivalence can be made, but it does

not have to be made.<sup>5</sup>

In The General Theory, business decisions involve two types of expectations--short-term and long-term. Keynes (1936, p. 46) even argued that ". . . certain individuals or firms [are] specialized in the forming of the first type of expectation and others in the framing of the second type." Hicks (1936, p. 243) identified this pattern of specialization as being partitioned sectorally.<sup>6</sup> For Hicks, wage-goods or consumption-goods producers formulate short-term expectations, focusing on current receipts; the capital goods producers formulate long-term expectations.

Even if Hicks' partition is accepted, Hicks himself still indicated that the influence of each type of expectation does not operate on each set of entrepreneur's decisions with complete independence. The demand for the output of wage-goods sector ". . . comes partly from people engaged in the investment industries. . ." (Hicks, 1936, p. 243). Therefore, the state of long-term expectation affects the decisions of consumption-goods producers, although the decisions of capital-goods producers may be independent of the state of short-term expectation. One need not, however, accept Hicks' dichotomy if the specialization between types of forecasters occurs among individuals involved with a single enterprise. Managers might be more concerned with forming short-term expectations while owners might be more concerned with forming long-term expectations.

But precisely how did Keynes distinguish between the two types of expectations? In his words (Keynes, 1936, p. 46), "[Short-term expectation] is concerned with the price which a manufacturer can expect

to get for his finished output at the time when he commits himself to starting the process which will produce it; output being 'finished' (from the point of view of the manufacturer) when it is ready to be used or to be sold to a second party." In contrast, Keynes (1936, p. 47) described long-term expectation as being ". . . concerned with what the entrepreneur can hope to earn in the shape of future returns if he purchases (or, perhaps, manufactures) 'finished' output as an addition to his capital equipment."

In Chapter 12, which is devoted to a full development of Keynes' views on long-term expectation, Keynes offered a still more concise distinction between his two categories of anticipations. He treated long-term expectation as governing decisions involving expansion of plant and equipment while short-term expectations provide ". . . the basis [on] which a producer estimates what he will get for a product when it is finished if he decides to begin producing it today with the existing plant. . ." (Keynes, 1936, p. 148). Dissolving Hicks' partition altogether permits short-term expectation to determine how intensively existing plant is used--how great or small is excess capacity--while long-term expectation determines alterations in the size of the plant for an existing enterprise.

Consistent with this latter distinction are Keynes' (1936, p. 47, emphasis in original) observations following his initial definitions of the two types of expectations:

The behaviour of each individual firm in deciding its daily output will be determined by its short-term expectations--expectations as to the cost of output on various possible scales and expectations as

to the sales-proceeds of this output; though, in the case of additions to capital-equipment and even of sales to distributors, these short-term expectations will largely depend on the long-term (or medium-term) expectations of other parties.

Aside from the important suggestion that individual producers must gauge the expectations of other products, Keynes (1936, p. 47, n. 1, emphasis in original) placed stress directly on short-term expectations' influence on "daily output": "Daily here stands for the shortest interval after which the firm is free to revise its decision as to how much employment to offer. It is, so to speak, the minimum effective unit of time."

Although the state of short-term expectation is crucial in Keynes' analytical apparatus as a direct determinant of employment, it is not the object of intense scrutiny in The General Theory. Keynes (1936, pp. 50-51, emphasis added) explained his passive attitude toward the discussion of short-term expectation in the following passage:

Express reference to current long-term expectations can seldom be avoided. But it will often be safe to omit reference to short-term expectation, in view of the fact that in practice the process of revision of short-term expectation is a gradual and continuous one, carried on largely in the light of realised results; so that expected and realised results run into and overlap one another in their influence. For, although output and employment are determined by the producer's short-term expectations and not by past results, the most recent results usually play a predominant part in determining what these expectations are. It would be too complicated to work out the expectations de novo whenever a productive process was being started; and it would, moreover, be a waste of time since a large part of the circumstances usually continue substantially unchanged from one day to the next. Accordingly it is sensible for producers to base their expectations on the assumption that the most recently realised results will continue, except in so far as there are definite reasons for expecting a change. Thus in practice there is a large overlap between the effects on employment of the realised sale-proceeds of recent output and those of the sale-proceeds expected from current input; and producers' forecasts are more often gradually modified in the light of results than in anticipation of prospective changes.

On the face of it, one might view Keynes' short-term expectations as autoregressive or adaptive--changing or adjusting based upon discrepancies between the expectations and the realizations. But, analytically, it would do no harm to treat the realizations as identical with the short-term expectations--as if the short-term expectations are perfect foresight forecasts of price and costs conditions when output is brought to market. Kregel (1976, p. 213) has pinpointed evidence from Keynes' correspondence surrounding reactions to The General Theory that documents Keynes' willingness to treat short-term expectations as fully realized. Leijonhufvud (1983, pp. 184-5) has made just such an argument about Keynes' handling of short-term expectations, adding with an ironic twist:

Keynes' own treatment of short-term expectations should give pause to anyone tempted to attack the [New Classical Economics] on the grounds that it assumes too much foresight on the part of agents. . . .

. . . this is "perfect foresight" such as the rational expectations people have not allowed themselves to indulge in! Keynes, I think, should have appreciated the considerable weakening of this assumption achieved through the use of a stochastic equilibrium concept.

Similarly, Hicks (p. 242) in 1936 viewed Keynes' short-term expectations as the tame element in Keynes' attempt to push anticipations to the center of economic theory. In contrast, ". . . long-term expectations . . . are wayward things." For Leijonhufvud (1983, p. 185), nearly a half-century later "[l]ong-term expectations are another story; they are 'ill-behaved'." They cannot be perfect foresight forecasts. Nor can they be rational expectations forecasts because they cannot be explained



from any discernible model of the economy. Concludes Leijonhufvud (1983, p. 186), ". . . Keynes' short-term expectations were (excessively) well-behaved but his long-term expectations ill-behaved in that they shifted for reasons not incorporated in the model."

Long-term expectations are, of necessity, woven from whole cloth because they are the products of uncertain knowledge. The information that would be most useful or directly relevant to the formulation of long-term expectations is that information about which entrepreneurs are "very uncertain" (Keynes, 1936, p. 148). Keynes (1936, p. 48, n. 1) warned his readers that, "By 'very uncertain' I do not mean the same thing as 'very improbable'." He then referred his audience to Chapter 6 of his Treatise on Probability entitled "The Weight of Arguments." It is the position of A Treatise that plays a subtle and organic role in Keynes' handling of long-term expectations and uncertainty in The General Theory.

## THE NATURE OF RATIONAL BELIEF AND UNCERTAINTY

The late Alan Coddington (1982, p. 480) said not to make too much of the fact that Keynes wrote A Treatise on Probability, which was "a distinguished contribution to the theory of probability." We agree, subject to the qualification that we should not make too little of it either. Coddington was especially nervous that Keynes' subversive views on knowledge and knowing--especially in Shacklean hands (also see Loasby, 1976)--would lead to analytical paralysis. We will argue instead that there is (1) an important conceptual link between A Treatise on Probability and The General Theory, (2) Keynes' strong views about the uncompromising nature of uncertainty--its irreducibility in an objective fashion to risk--need not lead to analytical paralysis within his theoretical framework, and (3) that a place can be found for rational expectations within Keynes' analysis of how human beings cope with true uncertainty.

The 1921 publication, A Treatise on Probability, begins with an epistemological concern--how do we know? It advances an ordinal probability theory where orderings are possible between propositions as more or less or equiprobable, but quantifiable differences between their likelihood are not deemed generally feasible. In a sense, Keynes transferred the indifference curve apparatus to human forecasts. Because of the nature of his development of an ordinal probability theory as a counter to the frequentist or statistical approach--the latter based, implicitly at least, on sampling principles--Keynes eschewed the concept

of an "event." He replaced it instead with the concept more attuned to his own love for the art of persuasion, the "proposition."

Keynes argued that there were two primary sources of knowledge: (1) direct, and (2) indirect via argument. The latter source was the concern of his Treatise. Keynes (1973, p. 3) wanted to admit "doubtful arguments" into the realm of discourse of the Logicians because "doubtful arguments" are a part of the real decisions human beings make in day-to-day life:

The course which the history of thought has led logic to follow has encouraged the view that doubtful arguments are not within its scope. But in the actual exercise of reason we do not wait on certainty, or deem it irrational to depend on a doubtful argument. If logic investigates the general principles of valid thought, the study of arguments, to which it is rational to attach some weight, is as much a part of it as the study of those which are demonstrative.

Keynes then considered propositions which individuals might entertain. These propositions fell into one of two categories. Either they were certain, or they were probable. Whether the proposition fell into one category or the other was conditioned purely by the state of knowledge; moreover, there were degrees of "probableness."

In assessing a proposition, Keynes contended there was a subjective and an objective component. The subjective component involved the selection of the "premises of our argument," but the objective component involved "the purely logical relations between the propositions which embody our direct knowledge and the propositions about which we seek indirect knowledge" (Keynes, 1973, p. 4). Keynes, at this juncture, seemed to treat the rules of logic themselves as fixed and invariant--not

a matter of controversy or choice. Therefore, once the judgment was made about which premises were relevant to the construction of an argument about a proposition about which one lacks direct knowledge, the conclusion followed by a correct application of these principles of sound reasoning. It was at this juncture that Ramsey (see Keynes, 1963, pp. 243-44; and Braithwaite, 1975, p. 241) interjected his now famous complaint that the relationship between propositions itself was not a matter of "formal logic" but of "human logic" instead--a point which Keynes subsequently conceded. But in a sense, the concession merely strengthened Keynes' position because it brought the subjective component into both ends of the acquisition of indirect knowledge via argument.

The selection of propositions gave the individual a set of premises from which to work. Application of some set of rules of logic would lead to the derivation of a conclusion. The premises were what the individual treated as his or her knowledge. Given a particular set of logical rules--whether "formal" or "human"--Keynes could suggest that the particular state of knowledge justified a "rational belief" of degree  $\alpha$  in the conclusion. The conclusion for Keynes took the form of a proposition. The value that  $\alpha$  could take could lie between zero and one, but it need not take on continuous values between zero and one--not in Keynes' ordinal context. Moreover, the estimate of  $\alpha$  itself need not be held with complete confidence. It would depend upon the "weight" assigned to the argument which produced the conclusion--which was contingent on the knowledge embodied in the premises.

"Rational belief" meant for Keynes the possession of probabilistic

knowledge obtained indirectly through argument. Rationality of belief, of course, was not equivalent to truth. Arationality or nonrationality of belief was not equivalent to falsehood either. Arational or nonrational belief could be certain or merely probable while the same was true of rational belief. The difference between the two major types of belief was the process by which they were attained. Rational belief must have been grounded in knowledge, however partial. The complete absence of knowledge meant no basis for rational belief (Keynes, 1973, p. 11). Rational belief was the subject matter of A Treatise on Probability.

It is at this stage that it is fruitful to turn to Chapter 6 of A Treatise--the chapter that Keynes refers to in The General Theory. Keynes pointed out in this chapter of A Treatise that as the relevant evidence at the disposal of an individual increases, the magnitude of the probability of an argument in support of a particular proposition may rise or fall. But something else must go up--the confidence the individual feels in the estimate of the probability of the argument. Keynes (1973, p. 59) wrote that the weight of the argument must have gone up.

Keynes (1973, p. 59) indicated that the measurement of the weight of an argument was problematic, just as measurement of probability was problematic. Only in a very restricted class of cases could one compare the weights of two different arguments.

Keynes also (1973, p. 59) endeavored to give precision to the notion of relevant and irrelevant evidence, his definition reinforcing the subjectivist nature of rational belief. Irrelevant evidence left the

weight unchanged--if all parts of the evidence were considered--to avoid the problem of the offsetting effects of partially favorable and unfavorable evidence which led to no net change in the weight.

Weight and probability thus became separate properties of an argument. Weight captured the confidence held by an individual in an argument. Probability captured the estimated likelihood of a proposition generated by an argument.

In an attempt to summarize briefly: Whether beliefs were rational or nonrational depended upon the manner in which they were formed. Nonrational beliefs were those conclusions reached without direct or indirect knowledge. They could be held with certainty or only as more or less probable. Rational beliefs were those conclusions reached based upon knowledge via argument. Arguments possessed weights based upon evidence.

Therefore, when Keynes referred to entrepreneurs being "very uncertain" about the evidence that is relevant to the formulation of long-term expectation, he meant that the pertinent facts are few and far between. If they endeavor to form rational beliefs in the sense of A Treatise, they must assign a low weight to their arguments. They cannot place much confidence in their forecasts.

In making decisions about investment, the businessmen may have little or no relevant evidence upon which to base their forecasts of the lifetime returns of a capital-asset. Keeping in mind Keynes' (1936, p. 149) unique perspective on probability, consider the observation in The General Theory:

The outstanding fact is the extreme precariousness of the basis of knowledge upon which our estimates of prospective yield have to be made. Our knowledge of the factors which govern the yield of an investment some years hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the good will of a patent medicine, an Atlantic liner, a building in the City of London amounts to little and sometimes to nothing; or even five years hence. . . .

Compare the preceding with Keynes' (1937, pp. 213-4) subsequent distillation of the argument of The General Theory a year after the book's publication:

By "uncertain" knowledge, let me explain, I do not mean merely to distinguish from what is known for certain and what is only probable. The game of roulette is not subject, in this sense, to uncertainty, nor is the prospect of a victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know.

Calculation of prospective yield is, in this sense, impossible.

Rational belief based upon arguments with extremely low weights tips over into the region of nonrational beliefs. In fact, Keynes (1936, p. 150) even alluded to the arationality of those who undertake enterprise:

Business men play a mixed game of skill and chance, the average results of which to the players are not known by those who take a hand. If human nature felt no satisfaction (profit apart) in constructing a factory, a railway, a mine or a firm, there might not be much investment merely as a result of cold calculation.

And furthermore, Keynes (1936) added in two colorful passages:

. . . individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy

man puts aside the expectation of death (p. 162).

. . . human decisions affecting the future, whether personal or political, or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist; and that it is our innate urge to activity which makes the wheels go round, our ratio-real selves choosing between the alternative as best we are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance (pp. 162-3).

After all, with respect to long-term expectations there is virtually no basis for calculation of profit or loss. Such calculations are "pretty, polite techniques, made for a well-panelled Board Room. . ." (Keynes, 1937, p. 215).



## RATIONAL EXPECTATIONS AS A SPECIAL CASE OF KEYNES' EXPECTATIONS

Keynes (1936, p. 155) did not view participants in an entrepreneurial (or a money) economy as paralyzed by "the dark forces of time and ignorance which envelope our future." Individuals compelled to construct long-term expectations find that a convention will do when facts are non-existent (Keynes, 1936, p. 152). Specifically, in The General Theory Keynes (1936, p. 152) indicated that these conventions include a tendency to assume that tomorrow will be like today and to place special faith in the correctness of existing market valuations. In the 1937 essay, Keynes (p. 214) adds greater emphasis to the further possibility of reliance upon the judgment of others who presumably possess superior information. Perhaps a particular group of economics is viewed by the businessmen as possessing greater expertise. The key is, in Keynes' view, whether or not the convention of the moment can be relied upon to remain intact.

Keep in mind that Keynes' (1936, p. 51) entrepreneurs who make durable goods must form their "short-term expectations . . . based on the current long-term expectations of the inventory; and it is of the nature of long-term expectations that they cannot be checked at short intervals in the light of realised results." However, if the conventional basis for the formation of long-term expectations is maintained, then the durable goods producers can make their short-term forecasts with great confidence and accuracy.

Calculation of prospective yield is very hard--too hard--

excruciatingly hard. Those who seek to do so are eccentrics and oddballs--". . . often so much in the minority that their behaviour does not govern the market" (Keynes, 1936, p. 150). The normal or reasonable response is to adopt the conventional basis for valuation. There is no alternative that is, typically, more workable, and adoption of the conventional basis lends a certain stability to economic affairs as long as the convention is upheld.

However, this conventional basis for establishing long-term expectations is not liable to be maintained indefinitely. In fact, Keynes identified five major weak points that lead to its recurrent breakdown:

- (1) There is a separation of ownership and management under the modern regime of joint stock companies that leads to a loss of real knowledge about the performance of specific enterprises.
- (2) Undue weight is given to day-to-day fluctuations in the profits of businesses "which are obviously of an ephemeral and nonsignificant character. . ." (Keynes, 1936, p. 154).
- (3) Mass psychology is liable to sudden changes of opinion due to factors not intimately related or not even pertinent to prospective yield.
- (4) Expert professionals do not attempt to calculate prospective yield, nor do they abide by the conventional valuation. Instead, they engage in speculation--"forecasting of the psychology of the market" (Keynes, 1936, p. 158)--by attempting to anticipate "changes in the conventional basis of valuation a

short time ahead of the general public" (Keynes, 1936, p. 154).

- (5) Finally, the state of confidence of the lending institutions, crucial to the financing of investments, may move somewhat independently from the state of confidence of the "speculator or speculative investor" (Keynes, 1936, p. 158).

The state of long-term expectation at a particular moment is determined by the conventions that prevail at that moment. This means that Kregel's strategy of treating long-term expectation as given in a comparative statics context is eminently legitimate--given by the convention, that is. In a dynamic analysis of Keynes' system--or in Kregel's language in a framework of "shifting equilibrium"--one need be concerned about changes in the convention and how such changes dictate changes in the state of long-term expectation. There is no need for the analytical paralysis that Coddington feared, once the importance of conventions is acknowledged in Keynes' theory.

Keynes was not particularly proprietary about the convention used. It did not matter to him if entrepreneurs behaved as though their forecasts were certainty-equivalents when, in fact, they could not be. After all, that might be the convention of the moment. Albert Hart (1942, 1950), a fairly sympathetic critic of Keynes, especially was exercised by Keynes' willingness to permit entrepreneurs such foibles as "compounding probabilities" despite the accompanying loss of information and "flexibility" (see also Jones and Ostroy, 1984). But when belief is essentially nonrational in character, Keynes largely was indifferent to which "pretty polite technique" the entrepreneur used to justify their

decisions in the "well-panelled Board Room" (or perhaps at the stockholder's meeting).

An exception for Keynes was a condition where the conventional basis for valuation becomes dominated by the activities of the speculator. Then, Keynes' (1936, p. 156) marvelously apt "beauty contest" problem covers the terrain of capital formation. For if the convention becomes anticipating the revisions in conventions, if most are concerned with gauging what "average opinion expects the average opinion to be," then, "[w]e have reached the third degree. . ." (Keynes, 1936, p. 156), and Keynes suspected that ". . . there are some . . . who practise the fourth, fifth and higher degrees."<sup>7</sup> It is at this stage that Keynes (1936, p. 159) warned of the vagaries of a stock exchange under the sway of speculators:

Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes a bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.

The adoption of a convention typically makes coping with uncertainty tractable. The danger, of course, is that the convention is a mere convention. The source of stability becomes a source of instability when it changes, as it is likely to do. This is particularly true in the case of a major change in the monetary or fiscal regime--a point we discuss in greater depth below.

Tobin (1980, p. 27) has claimed:

An important and intractable uncertainty is the unpredictability of the future expectations of other agents. About these expectations it seems virtually impossible to form rational expectations.

Quite the contrary, to the extent that the convention is not dominated by psychology, these are the expectations that are easiest to calculate in a Keynes world. It is the actual prospective yield of an investment that lies beyond the pale of rational belief or rational expectations. Prospective yield has few systematic determinants that are detectable to those who make business decisions.

Suppose the businessmen believe that participants on securities markets possess better evidence than they themselves possess. They may take the value of existing enterprises to be given by whatever the stock exchange says they are worth. They could compare that price with the current supply price (or replacement cost) of the enterprise to decide whether or not to engage in additional investment (see Keynes, 1936, p. 151). Thus, Tobin's (1980)  $q$  is also a potential convention that could be adopted by Keynes' entrepreneurs. It is a particularly intriguing convention, since the speculators may determine the stock market's valuation. Therefore, no part of the process of investment need be grounded in calculation of the real prospective yield.

Or the businessmen might behave as though they can model the determinants of prospective yield, or they might adopt the model offered to them by an economist or a group of economists. They--or the economists--could check to make sure that the model did not generate prior forecasts that have serially correlated errors. If businessmen make their forecasts on the basis of such an approach, they would be pursuing a rational expectations modelling strategy for construction of their long-term expectations. They also would be forming nonrational

beliefs because the exercise would not be rooted in relevant knowledge, of which they cannot have much if any.

Would Keynes be disturbed? Of course not, for this simply would mean the entrepreneurs had adopted that particular convention for that moment. Tobin's  $q$  or rational expectations would merely be the fashion for a certain set of entrepreneurs at a certain time. Tobin's  $q$  or rational expectations could provide a justification for some entrepreneurs' nonrational beliefs. Furthermore, depending upon how each entrepreneur treated the formation of other producers' expectations, speculation need not become the principle underlying the investment decision.

In a world where there are many conventions or where a particular convention can justify more than one expectation, heterogeneity of beliefs will prevail. Such heterogeneity is essential for exchange to take place.<sup>8</sup> The configuration of prevailing conventions is an important element of Keynes' story since it influences the variability in beliefs across individuals.

If rational expectation is merely one way to form long-term expectations, then it is merely one of many conventions--all of dubious longevity and persistence in a Keynes world. Thus, the incorporation of rational expectations into The General Theory yields a special case--a special case dictated by the particular rule of thumb of the moment used by entrepreneurs to calculate their long-term expectations. The General Theory is, as Keynes intended, quite "general." It can accommodate any process of expectations formation one cares to entertain as a convention.

To the extent that rational expectations is the convention of the moment, it may be the game of Snap--but one could just as well play Old Maid or Musical Chairs.

## POLICY NEUTRALITY AND EFFECTIVE DEMAND

As we suggested above, the rational expectations hypothesis as an approach to modelling the formation of expectations need not lead to the macroeconomic policy neutrality conclusions associated with the New Classical School. Rational expectations can be imbedded within any model an individual chooses as a machine for producing his or her expectations. The use of a model with a Lucas supply function--a practice endorsed more by others than by Lucas himself (see note 1 above)--will generate the now notorious policy neutrality results associated with the work of Sargent and Wallace.

But in similar fashion, one can hold to the policy neutrality conclusion without having gone through a complex algebraic proof in the context of a Sargent and Wallace model with rational expectations. One might simply be convinced by their case. It may then become the convention for many entrepreneurs to believe that governmental stabilization policy will accomplish nothing. In the context of the Keynes model, if that is the prevailing belief, then, indeed, government demand management efforts will be sterile and de facto the economy will be at full employment in Keynes' sense.

In an earlier paper (Darity and Horn, 1983), we demonstrated that Keynes' definition of full employment involved the absence of involuntary unemployment. Involuntary unemployment was said to exist if no more employment was forthcoming with respect to an increase in aggregate effective demand. Full employment is the level of employment where the



elasticity of employment with respect to a change in aggregate effective demand is zero.

It is convenient to display our analysis under the condition where there has been a widespread adoption of the beliefs of the New Classical School utilizing Keynes' core analytical device--the aggregate demand price and supply price framework of Chapter 3 of The General Theory.<sup>9</sup> Keynes (1936, p. 24) defined ". . . the aggregate supply price of the output of a given amount of employment [as] the expectation of proceeds which will just make it worth the while of the entrepreneurs to give that employment." Aggregate supply price, therefore, is the nominal stream of revenues that would cover costs and provide a minimum acceptable level of profits at each level of employment. This minimum acceptable level of profit might be thought of as associated with Veblen's (p. 88) "ordinary rate of profit." Aggregate demand price, in contrast, is the amount of proceeds the entrepreneurs actually expect to receive from the output of each level of employment (Keynes, 1936, pp. 24-5). Following Keynes (1936, pp. 24-5), label the schedule that relates aggregate supply price to the employment of  $N$  men a  $Z$  schedule, and the schedule that relates aggregate demand price to the employment of  $N$  men a  $D$  schedule. Note that both schedules are psychological magnitudes--in the minds of entrepreneurs.

Where the schedules intersect, the entrepreneurs in the aggregate are maximizing prospective profits. The point of intersection is the point of effective demand which determines the equilibrium level of employment--the level they wish to offer to workers (see Figure 1).

Whether or not it is a full employment level depends upon whether or not an expansion in aggregate demand causes the D and Z schedules to shift in a fashion that moves the point of effective demand rightward.

If, as in Keynes' day, the "Treasury View" was abroad and if it had substantial adherents in the business community, conventional belief would have it that additional government spending would be entirely offset by a decline in private expenditure. Crowding out would be expected to be complete. A credible announcement of the government's spending plans would have no effect on the position of the aggregate demand price or D schedule in the minds of the entrepreneurs. They would anticipate no change in the proceeds forthcoming at each level of employment. To the extent that there was no effect on their perceptions of the conditions influencing the aggregate supply price schedule, the point of effective demand and employment would remain the same. Short-term expectations may be frustrated, but businessmen would have no reason to change investment strategies. However, no test was genuinely conducted for the existence of Keynes' involuntary unemployment because aggregate effective demand did not change. It does not change because of the entrepreneurs' adoption of a convention--the Treasury View--that leads them to believe it cannot change.

What about the situation when the entrepreneurs adopt the policy neutrality conclusions of the New Classical School? Here, the aggregate demand price schedule actually could shift upward due to the injection of additional expenditure by the government or expansionary monetary policy. But if entrepreneurs believe in the policy neutrality conclusion, they

also will expect their costs to rise in such a way that aggregate supply price schedule will shift upward as well to preserve the same point of the effective demand (see the intersection of the D' and Z' schedules in Figure 1). In nominal terms, aggregate effective demand went up, but there were no real effects. In this instance, by Keynes' definition the economy was at full employment because an increase in aggregate effective demand could not increase the employment level.

Both cases are observationally equivalent in terms of the real performance of the economy. The employment level remains at  $N^*$ . But they are theoretically different, for the Treasury View leaves the unobservable aggregate demand and supply price schedules in the same position while the New Classical Economics mandates that they both shift upward to preserve the same point of effective demand.

For these policies to become effective in raising employment, the conventional basis for forming expectations must give way--perhaps altered by persuasive argument. A new convention needs to be held by a sufficient number of entrepreneurs that leads them to believe that such policies will improve their profit position. Suppose the unemployed do increase their consumption expenditures if they receive the money to do so via government transfers. Entrepreneurs still must believe that the observed rise in consumption will have a sustained positive effect on profitability to alter their employment decision.<sup>10</sup> The entrepreneurs' confidence in the effectiveness of a policy determines the effectiveness of a policy.

Now the task of The General Theory also can be seen in a clearer

light. The General Theory was intended, according to Keynes' (1936, pp. v-vi) own statement in the preface to the volume, as an exercise in persuasion targeted at his fellow economists. Wrote Keynes (1936, p. vi), "At this stage of the argument the general public, though welcome at the debate, are only eavesdroppers. . . ." Keynes had to persuade the economists either because they had the ears of the businessmen and were propounding the Treasury View, or because they had lost the ears of the businessmen who had withdrawn from investment altogether in the absence of any convention to rely upon. The General Theory can be viewed as an attempt to propagate an alternative vision among economists that would inaugurate a new convention among producers--a convention that would respond favorably to fiscal and monetary stimuli.

From the standpoint of Keynes' alternative vision, full employment and the "true" inflation barrier can be viewed as having a purely expectational foundation rather than a technological or natural resource endowment foundation. Full employment as a maximum maximorum is not a stable position as long as the convention governing the state of long-term expectation is not stable. Beliefs in the Treasury View or the conclusions of New Classical Economics could give way to a new convention that is either pessimistic or optimistic about the effects of a policy intervention in the entrepreneur's eyes. In times of major regime changes, conventions are liable to be in flux, and enterprise is likely to dwindle (Keynes, 1936, p. 162):

. . . not only [are] slumps and depressions . . . exaggerated in degree, but economic prosperity is excessively dependent on a political and social atmosphere which is congenial to the average

business man. If the fear of a Labour Government or a New Deal depresses enterprise, this need not be the result either of reasonable calculation or of a plot with political intent; --it is the mere consequence of upsetting the delicate balance of spontaneous optimism. In estimating the prospects of investment, we must have regard, therefore, to the nerves and hysteria and even the digestions and reactions to the weather of those upon whose spontaneous activity it largely depends.

The deeper message is this: Successful policy intervention is an economic environment that preserves an important role for private enterprise is a constant struggle for the hearts and minds of the businessmen. This seems to be one lesson the current President of the United States appears to understand.

## ENDNOTES

1. Lucas (1981, p. 5, emphasis in original) himself has acknowledged that if the labor supply function was modified to include interest rates, the Lucas supply function and the neutrality of money no longer would apply:

In any formulation intertemporal substitution involves current hours supplied responding to something with the dimensions of a real interest rate or real rate of return. An expected price inflation affects behavior in our model because it lowers the real return on labor supplied today for purposes of consuming tomorrow. If today's labor is transformed into tomorrow's consumption via the holding of interest-bearing bonds and if the expected inflation induces a one-for-one increase in the nominal interest rate on these bonds, then the real rate of return relevant for the current-hour's decision will not be affected by inflationary expectations in any way. Rapping and I simply evaded this difficulty by acknowledging it as a possibility but noting that interest rates do not seem to adjust in this way, for reasons we did not explore. This was the right decision, I think, since there was no hope of resolving this difficulty at the partial-equilibrium level at which we were working. Yet the question keeps coming up in other context and is still largely unresolved. Indeed, when any macroeconomist employs a Lucas (really, of course, Lucas-Rapping) supply function, he too is evading this issue (as well as the responsibility for doing so!).

2. See, for example, Milton Friedman's (1974) well-known clarification on the theoretical framework underlying his monetary theory.

3. Meltzer's (1982, pp. 5-8) recent explication on risk and uncertainty is representative of this tendency.

4. Knight (1971, pp. 338-9) suggested that organizational innovations can cope with fundamental uncertainty--large-scale operations, use of insurance, and scientific research--a position Keynes never would have accepted.

5. Meltzer (1982, pp. 8-14) advances the possibility that an objective probability distribution exists but its parameters keep changing. For instance, the mean of the distribution could be nonstationary. If it keeps changing in ways that cannot be foreseen, it would be impossible to form certainty-equivalent expectations. Agents still may pretend that they have formed certainty-equivalent expectations.

6. The two sector approach to the General Theory is valuable. Part of the failure of the two sector approach to gain widespread adoption may have been an adverse reaction to Hicks' (1936) peculiar justification based on short- versus long-term expectations. The two-sector approach is useful for various other reasons, including the dependence of total employment on differences in each sector's employment elasticity. See MacKay and Waud (1975), Floyd and Hynes (1978), and Chakrabarti (1979).

7. For a recent formalization of the difficulties the "beauty contest" problem poses in the context of a world where all market participants seek to form rational expectations, see Roman Frydman (1982).

8. With respect to his doctrine of liquidity-preference, Keynes (1936, p. 198) observed:

If the change in the news affects the judgment and the requirements of everyone in precisely the same way, the rate of interest (as indicated by the prices of bonds and debts) will be adjusted forthwith to the new situation without any market transactions being necessary.

Thus, in the simplest case, where everyone is similar and

similarly placed, a change in circumstances or expectations will not be capable of causing any displacement of money whatever; --it will simply change the rate of interest in whatever degree is necessary to offset the desire of each individual, felt at the previous rate, to change his holding of cash in response to the new circumstances, or expectations; and, since everyone will change his ideas as to the rate which would induce him to alter his holdings of cash in the same degree, no transaction will result.

Tobin (1958, pp. 66-70) coupled Keynes' emphasis on differences in opinion being a prerequisite for market transactions to come about with a claim that Keynes attributed complete confidence to each investor in his or her variously held expectations. This led Tobin to argue that Keynes' liquidity preference theory resulted in the empirically inaccurate implication that individuals would hold portfolios that were specialized completely. How Tobin arrived at the view that Keynes attributed no doubts about their forecasts of interest rates to investors is not clear. To the extent that their portfolio decisions require formation of long-term expectations, their confidence is inherently fragile. It is dependent in part to the stability and mix of prevailing conventions. To the extent that their portfolio decisions are matters of short-term expectations, confidence is contingent on the (subjective) weight they are willing to assign to the argument that is the basis for their beliefs. That weight need not be the maximum feasible. Therefore, their portfolios are liable to be diversified rather than specialized under the terms of Keynes' theory.

9. Here, we follow James Millar's (1972) relatively literal interpretation of Keynes' aggregate demand and supply price apparatus.

10. For example, suppose entrepreneurs possess rational



expectations and make a pessimistic forecast about the consequences of expansionary government fiscal policy. Suppose further that the level of consumption expenditures proves to be considerably higher than their forecasts. Then, they will have to decide whether the departure is due to purely stochastic variation or due to their possession of an incorrect model. If they take the former position, they will continue to maintain the same, less than full employment, scale of production.

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## CONCLUSIONS

The Hilferding/Laughlin story hinted at in the first essay has yet to be written. The implications of the second essay are far from clear, and the paper is essentially silent on many of the fundamental issues. Then, there is the matter of Veblen. Regarding the third essay, as it stands it tries to do too many things and perhaps attributes a greater impact to rational expectations than is justified.

The only conclusion to be drawn is that there is much to be done.