# MICHAEL K C JACKSON MONETARY EFFECTS ON INVESTMENT FROM RICARDO TO KEYNES

## 1.1 Introduction

Many ideas and alternative approaches in the sphere of monetary theory have their antecedents in the theoretical contributions and controversies which arose in the history of economic thought. Writers such as David Hume and Adam Smith in the 1700s included as part of their discourse early expressions of the quantity theory of money, in which the general price level was related to the quantity of money in circulation. The writings of David Ricardo in the early 1800s are however generally recognised as a milestone in the comprehensive examination of economic issues using an analytical framework (Blaug 1996:132-133). This chapter provides an examination of the economic ideas of leading contributors to economic thinking, from Ricardo in the early 1800s to Keynes in the first half of the twentieth century, in respect of their portrayal of the relationship between money and investment. Ricardo is recognised for use of the long period as an analytical device in which capital adjusts through investment between uses in such a way as to equalise the rate of profit between alternative allocations (Barber 1967:87-89). But the Classical<sup>1</sup> conception of money was that of a facilitating fluid behind which real magnitudes were determined (Dennis 1981:42-48). Is there evidence that Ricardo portrayed monetary variables as having at least some influence on investment? When and through which economic writers did this connection emerge? These questions are examined through viewing the writings of prominent economic thinkers over the course of the nineteenth century, in particular Ricardo, Thornton, John Stuart Mill, Marx, Marshall, Bohm-Bawerk and Wicksell, relating to monetary influences on investment. This is of course not an exhaustive list of economic writers making significant contributions concerning monetary issues over this period. It serves though to capture the key perceptions and innovations concerning monetary influences on real economic magnitudes over

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The term Classical is typically used to refer to economic writers and views from approximately the mid eighteenth to mid nineteenth century, even though there were

this period, to examine the emergence of thinking concerning monetary influences on investment. It provides a historical foil of the development of monetary thinking from which the innovative ideas of Keynes (1930, 1936) concerning the relationship of monetary variables and investment can be examined. The chapter explores the conceptual shift pursued by Keynes, relative to previous thinking, in which monetary variables are regarded as closely bound with investment, consumption spending, employment and other real economic variables.

A crucial distinction in examining monetary theories for the purposes of this thesis is the distinction between Real Analysis and Monetary Analysis as put forward by Schumpeter (1954). A monetary theory in the tradition of Real Analysis may incorporate various monetary variables, but in equilibrium the magnitudes in the economy are precisely as they would be if only real economy magnitudes were involved. There is an underlying assumption that all essential features of an economy can be captured through the interaction of real magnitudes: "Money enters the picture only in the modest role of a technical device that has been adopted in order to facilitate transactions." (Schumpeter 1954:277). Under the Monetary Analysis tradition, on the other hand, monetary variables are inextricably involved in determining real economic magnitudes. Monetary variables lead to real outcomes which differ from the magnitudes which would arise if only real magnitudes were determinants. Monetary phenomena are reflected as persistent forces which combine with real forces in determining long-period equilibrium positions; they are not confined to transitory effects<sup>2</sup>. The importance of the distinction in examining the relationship between monetary variables and investment (a real magnitude in this context) lies in that it requires a theory with the characteristics of Monetary Analysis to allow the possibility of such a relationship on a persistent and significant basis

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many differences in views and approaches surrounding those perceptions which were held to a degree in common.

Blaug (1996:22-23) provides a less comprehensive portrayal, though in the same vein: "By 'monetary analysis', we mean any analysis that introduced the element of money at the outset of the argument and denies that the essential features of economic life can be represented by a barter model."

within its theoretical structure. Adoption of a theory in the Real Analysis tradition excludes the possibility of such a relationship *ab initio* in view of its underlying assumptions.

Three strands of particular importance to monetary theory which were introduced and examined by economic writers in the eighteenth and first half of the nineteenth centuries, relate to: the quantity theory relationship between money in circulation and the general price level as well as real economic magnitudes, the question of whether there is an automatic tendency of an economy to remain at or return to an aggregate supply-aggregate demand equilibrium level as captured by Say's Law, and the economic effects of noncommodity money arising through the bank system, as expressed in the Currency School versus Banking School alternative viewpoints and debates. These three strands served as foundation stones on which increasingly advanced economic analyses were developed through the remainder of the nineteenth century and most of the twentieth. They remain as underlying theoretical departure points in alternative schools of thought and approaches to monetary theory to the present. Their origins in Classical economics are highlighted below, especially since they are frequently used, both in this thesis and in writings on monetary theory in general, to identify the theoretical foundations of alternative approaches and arguments concerning the economics of money.

## 1.2 Ricardo and the early Classicals

Examination of Ricardo's analysis of economic issues suffers the dangers arising from his work having been so extensively re-cast and re-formulated. It is an accolade to Ricardo that his analytical method came to form the core of much of economic teaching for a period of almost seven decades after his death in 1823. But it is an indication of a great economic conception with many flaws and inconsistencies that subsequent economists have felt the need to re-examine the analyses in more clearly formulated and corrected terms, with mathematical expression that Ricardo himself did not use. Blaug (1996:140) for instance suggests that Ricardo operated with three models at different times :

"(1) a Pasinetti-type, constant wage model; (2) a disequilibrium variable-wage model; and (3) a genuine dynamic equilibrium growth model." It is tempting to rely on one or other of the subsequent formulations of Ricardo's analytical ideas, but these inevitably carry the danger that the writer has placed greater depth, or even slight differences in concepts, than was actually present in the writings of Ricardo. At the same time, the original writings of Ricardo are widely regarded as some of the most difficult to contend with and interpret. Under these circumstances, it is desirable to cast back to Ricardo's own writing on key points to corroborate that he did in fact hold and put forward the view attributed to him.

Although not considering the relationship between monetary variables and investment explicitly, Ricardo (1821) in his *Principles* does reveal views on the relationship indirectly through his coverage of Currency and Banks (Chapter 27) and of the relationship between capital accumulation and interest rates (mainly Chapter 21 of the *Principles*). In accordance with the Classical tradition of which he formed part, Ricardo was broadly an adherent to the main tenets of the quantity theory of money, as expressed by Hume and taken forward by Smith in the eighteenth century (Blaug 1996:128). This is shown for instance in his description of the expected effects of an increase in note and coin currency by the Bank of England, "The demand for money is regulated entirely by its value, and its value by its quantity." (1821:173). From this departure point however he undertakes a more comprehensive account of the effects of monetary changes on production activities.

A major theme of Ricardo's *Principles* (1821) is the isolation of the profit element of production activities from rent, through the device of marginal productivity of the lowest-yielding land brought into use, which provides zero rent. On such land, all revenue not allocated to workers (labour) constitutes profit and indicates the equilibrium rate of profit in the economy, to which other industries and forms of production will tend through a gradual process of capital redeployment. Although Ricardo doesn't spell out how it is that the profit rate in agriculture determines the rate for the entire economy, subsequent writers infer

that it results from agriculture being the only sector in which capital inputs and output (e.g. corn) can be measured in the same physical units, together with agricultural outputs serving widely as inputs to other sectors. Adjustment therefore occurs though a shuffling of agricultural prices together with reallocation of capital investment (Barber 1967:79-81). But Ricardo posits a close and inexorable relationship between the profit rate and interest rate. He regards the equilibrium profit rate as being an inherent characteristic of the economy to which the interest rate charged by banks must approximate, since "If they charge less than the market rate of interest, there is no amount of money which they might not lend, – if they charge more than that rate, none but spendthrifts and prodigals would be found to borrow of them." (1821:352). This is an early echo of the 'natural' rate propounded by Wicksell (1898a, 1898b) and contrasts sharply with the interest rate view put forward by Keynes (1936) in which the interest rate is determined separately from the profit rate.

Ricardo (1821) does put forward the view that changes in the quantity of money will have a temporary effect on interest rates. The transmission mechanism he describes operates through the prices of commodities. With a reduced quantity of money, the prices which a manufacturer faces are reduced. The manufacturer withholds finished goods to some degree due to reluctance to accept the lower price for them, and expectation that prices will revert to the previous levels. This leads to an accumulation of finished goods, and lower sales by the manufacturer. In order to meet ongoing payments, the manufacturer seeks to borrow funds, and because this is occurring widely, the rate of interest at which the credit is advanced is increased. Ricardo maintains that the effect is only temporary, because either the expectation of the manufacturer is confirmed and prices of his goods revert to the previous higher levels, or the lower price and demand is sustained, he accepts the new state of affairs, sales proceed but prices fall in general, the credit obtained is repaid, and the interest rate returns to its previous level. In a similar manner, an increase in the quantity of money would have a temporary effect of lower interest rates, but would have the eventual effect of a generalised increase in prices in accordance with the quantity theory (Ricardo 1821:282).

This implies that monetary policy on the part of a central bank would have no role to play via the interest rate as an instrument variable, other than possibly for a short duration, and this is the view that Ricardo (1821) adopts. His focus is on the quantity of money issued by the central bank and banking system and the danger of the parties concerned lapsing into over-issue. Ricardo was writing at a time when full commodity convertibility (using gold and silver) had been in place for a long historical period (in the case of the Bank of England, since its establishment in 1694) but had been suspended in 1797 following heavy demands placed on the Bank of England for conversion of bank notes to gold coins (in conjunction with liquidity pressures on London and country banks) in public reaction to a possible invasion by France. It was also a period which spanned the occurrence and conclusion of the Napoleonic wars, during which the British government had undertaken extensive borrowing through bonds (stocks in Ricardo's terms) to fund the war effort. The extent to which paper money should be backed by gold or silver, and the danger of excessive note issues linked to government financing, were matters of considerable concern. (Blaug 1996:127-129; Galbraith 1975:43-48). The Bank of England had assumed the role of primary bank in England, but was not subject to a legal control structure as is the case for a modern central bank. The monetary system and appropriate action by the Bank of England were extensively examined in the "Committee of Secrecy" set up by parliament directly after the suspension of cash (gold coin) payments by the Bank of England in 1797, and subsequently in the "Bullion Committee" of 1810. (Havek 1962:52-55).

An active debate of the time was that between adherents to the subsequently termed Banking and Currency views concerning the effects of additional note issues by banks. The Banking School maintained that additional note issues which were in excess of the needs of trade would simply be paid back into the banking system, referred to as the Law of Reflux, with negligible consequence to the economy. Associated with this, a distinction was frequently made between notes or bills issued in respect of business transactions (e.g. import by a merchant), termed 'real bills', and those issued purely as promises to repay

money borrowed, termed 'fictitious bills'. Some argued that it was only notes and bills of the 'fictitious' category that could be excessive and have consequences for the general price level. Adherents to the Currency School view maintained that excessive note issues, whether associated with trade or not, would increase the quantity of money in circulation and thereby the general price level, i.e. there would be inflationary consequences. (Makinen 1977:54-55).

Although not labelling the alternative lines of thinking in these terms, Ricardo is clearly in the Currency School camp. He expresses concern that banks may not maintain adequate control of the issue of notes in circulation, and advocates closer government or societal control over this process to ensure restraint. He maintains that, "neither a State nor a Bank ever had the unrestricted power of issuing paper money, without abusing that power." (1821:344). For this reason, he advocates that the issuers of paper money carry the obligation to pay their notes in gold coin or bullion, i.e. a fully gold-convertible currency. He advocates that the issuer of notes be a separate entity from government itself, because of the greater risk that government would misuse this role, but that the issuing entity be managed by commissioners who are responsible only to parliament It was partly attributable to the exhortations of Ricardo that (1821:350). convertibility of Bank of England notes to gold was re-introduced in 1821, and that more stringent controls were eventually placed on the Bank of England through the Bank Charter Act of 1844.

Ricardo's notion of capital investment was so strongly tied to his analytical framework for determining value and distribution between economic classes (workers, projectors<sup>3</sup> and rentiers) that monetary variables scarcely entered the arena as a possible influencing factor. The profit rate, and consequently the closely associated market rate of interest, were functions of structural

<sup>3</sup> 'Projectors' would be close in meaning to 'entrepreneurs' in modern usage. They would be owners of capital serving as initiators, decision makers and risk takers in business endeavours. As Blaug (1996:80) recognises, Classical economists generally regarded rent as confined to payment to rentiers (landlords) for the use of land.

relationships in the economy, through the generation of value using direct labour together with indirect labour embodied as capital. Once these structural relationships had determined the rate of profit through his marginal productivity analysis, the banking system would inevitably provide the financing required for capital formation at the structurally determined market rate of interest. He focussed on a long-period equilibrium determination of the rate of profit, and viewed any short-period deviation from these relationships as no more than a transitory episode on the path to the long-period levels. Although he cites cases where interest rates had been set by law for extended periods at levels which must inevitably have been at variance with the profit rate, he maintains that such interest rates simply have the effect of either full utilisation of the source of funding if the interest rate is below the market rate, or the substitution of other sources of funding if above the market rate: "The rate of interest, though ultimately and permanently governed by the rate of profit, is however subject to temporary variations from other causes." (1821:282).

A noteworthy contributor to the debate on monetary effects in the early 1800s was Henry Thornton, a banker and contemporary of Ricardo. He was likewise an adherent to the Currency view, but provided a full and well-expressed account of the operation of credit through the activities of banks and business proprietors at that time (Thornton 1802). He recognised a direct effect of excessive note issue on prices, but also put forward an indirect transmission mechanism through the differential between profit rates attainable by business proprietors (merchants and manufacturers) and the interest rate payable on borrowing obtained from banks. The excessive note issue would lead to lower interest being charged by banks, which would result in greater expenditure by business proprietors on working and fixed capital in view of the greater profit attainable. Through the excessive note issue being re-circulated repeatedly, the additional expenditure would be far greater than the original magnitude of excess notes issued. The excess notes would have an immediate though transitory effect of increasing the pace of business activity (including investment in working and fixed capital), but an eventual effect of a return to the original pace of activity, at a higher price level, once the general price level had risen to

be commensurate with the extent of notes and coins in circulation (Thornton 1802:236-243, 251-255).

Thornton was regarded as a leading thinker in issues of money and finance, and presented his analysis and views to both the 1797 parliamentary committee and 1810 Bullion Committee. He advocated control by the Bank of England over the extent of note issue, but that this needed to be set by judgement at a level which was neither excessive nor unduly restrictive. He regarded the 'rapidity' or velocity of money usage as subject to considerable variation, so that the appropriate level of note issue could not be determined with any precision. He proposed that the Bank of England "allow of some special, though temporary, encrease in the event of any extraordinary alarm or difficulty, as the best means of preventing a great demand at home for guineas . . . " (1802:259). The indirect mechanism through increased business activity posited by him was accepted by Ricardo and taken forward by John Stuart Mill, Marshall and Wicksell with some variation (Makinen 1977:59). As Hayek (1962:56) points out, he also supplemented his emphasis on interest rates relative to the rate of mercantile profits with the effect of rising prices on interest rates, in speeches subsequent to his book publication and formal evidence submissions, which was an early recognition of a nominal/real interest rate distinction. Although having only a transitory effect in his exposition, the indirect mechanism put forward by Thornton does foreshadow the possibility of a more substantive non-neutrality of money.

Also prominent in the early part of the nineteenth century, though in France, was the formulator of Say's Law, Jean Baptiste Say. Ricardo, Malthus and other British economists of the time were acquainted with his work and its implications. In identity form, Say's Law depicts an economy in which the very fact of the production of one commodity serves as the demand for other commodities, so that no general over-production or glut is possible, but money is omitted from consideration, other than in its medium of exchange function. Commodities essentially are produced and used to acquire other commodities. Ricardo (1821:290-291) characterises it as "Productions are always bought by

productions, or by services; money is only the means by which the exchange is effected." Money may be included in an equality formulation of the law, but the end result is still that the economy tends to a state in which demand occurs on balance commensurately with the value of goods produced, with deviations from this being temporary and self-correcting. The law was absorbed into the thinking of Classical economists such as Ricardo and J S Mill and allowed little possibility of a role for money in determining real economic magnitudes in equilibrium.<sup>4</sup> It was for this reason that later economists needed to re-examine the nature of Say's Law in considering the effects of monetary variables on the economy.

# **1.3 J S Mill and Marx : the mid Nineteenth century**

John Stuart Mill's Principles of Political Economy of 1848 draws openly and fully on the analytical framework of Ricardo in its primary coverage. Mill does however offer new approaches on various subjects as well as reformulations, and these do include issues pertaining to money. Contrary to Ricardo, Mill lends some support to the real bills doctrine and the Law of Reflux as being "far nearer to being the expression of the whole truth than any form whatever of the currency theory" (Mill 1848: Book III, 653). However, in his more detailed analysis, he accommodates both a Banking School and Currency School approach by distinguishing a guiescent and speculative state of the economy. In the quiescent state, referring to a situation where markets are close to equilibrium and not overheated, the Law of Reflux would be operative and would prevent an over-issue of notes. However, in the speculative state, corresponding to high relative economic activity, note issue could expand excessively without being automatically curbed by reflux, even if banks are cautious enough to follow a 'real bills' doctrine. The note issue could feed an inflationary spiral, with higher prices leading to still further note issues, in accordance with the quantity theory and Currency School view (Mill 1848: Book

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Sowell (1972) provides a full account of the development of thinking concerning Say's Law from the time of its initial formulation, and confirms the widespread agreement among Classical economists of its implications for aggregate production: "The proposition that there was no secular limit to the expansion of aggregate output was

III, 652-654). As with the earlier Classicals, in respect of production, Mill was "steadfast in his defense" of Say's Law (Sowell:1972:160).

J S Mill was acquainted with the work of Thomas Tooke, whose major book, *History of Prices*, was first published in 1838 (Makinen 1977:64-65). Tooke had undertaken statistical analyses of interest rates and prices which showed that changes in the general level of commodity prices and interest rates were positively correlated. This meant that increasing interest rates were accompanied by increasing general price levels, decreasing interest rates by decreasing price levels. Tooke's explanation of this was that interest rates rates constitute an input cost for production, so that increasing interest rates raise production costs which in turn are passed on in the form of higher prices. Tooke also maintained from his statistical analysis that rises in the price level generally preceded rises in the quantity of money in circulation rather than vice versa. These two findings were strong ammunition against the Currency School view, and it appears that Mill sought to incorporate their consequence in the monetary theory that he expressed.

Adoption of a Banking School viewpoint, even if only partially, opens up the possibility of a link between money and investment in Mill. The Banking School recognised a broad range of financial instruments as constituting 'money' for analytical purposes in addition to bank notes and gold. Short-term forms of credit such as trade bills, self-liquidating commercial paper and notes based on goods in process were considered close substitutes for narrowly defined money, since they were negotiable instruments which could be used to effect payment, even though they bore a discount or implicit interest rate. These were the very instruments that could be used directly or indirectly as a vehicle to finance investment expenditure. Thus both the extent of availability of these instruments and the effective interest rate at which they could serve to raise funds could be sources of a causal mechanism between money and investment. Mill did not however pursue this line of inquiry.

one on which there was complete agreement between the Say-Ricardo school and the Sismondi-Malthus general glut school." (1972:13).

The economic thinking of Marx as expressed in Capital (Volume 1, 1976)<sup>5</sup> was notable in the development of an analytical framework in which money could be inherently bound into determining real economic outcomes. In this respect, there was common ground between Marx and the subsequent work of Keynes, as recognised by Rogers (1989:167-169). Marx focused on the capitalistic mode of production, for which different assumptions were necessary compared with those of an agrarian or 'co-operative' economy. Torr (1988) draws out the importance of the distinction between the two modes of production. The occurrence in Marx' analysis of capitalist motivation to deploy workers in order to generate surplus value and thereby continuously accumulate capital leads to a causal chain which certainly breaks Say's Law<sup>6</sup> but also brings in money as a substantive factor. This at least introduces the possibility of a causal connection between money and real economic activity. Marx (1976:247-269) describes the sequence through which capitalistic motivation is pursued which can be summarised with the following symbolic representation:

## $\mathsf{M} \to \mathsf{C} \, \dots \, \mathsf{P} \, \dots \, \mathsf{C}' \to \mathsf{M}' \to \mathsf{M}''$

Money (M) flows from the banking system to the industrial capitalist by way of interest-bearing loans; the capitalist deploys labour with capital equipment (C is combined circulating and fixed capital) to generate potential surplus value (P) in excess of the value of physical capital and materials acquired; profits are realised when the produce including potential surplus value is exchanged for money (sold); the capitalist pays interest and borrowing back to the banking system and is left with a monetary surplus (profit, M") for use in further rounds of capital acquisition and profit generation. Marx therefore introduces money at the ground floor of the capitalist analysis. But the connection between money and investment was not an issue on which Marx focused directly. He was concerned with structural economic relationships, including capital formation and accumulation, of a long-period, societal rather than transitory nature. His

<sup>&</sup>lt;sup>5</sup> First published in German in 1867: the reference is to an English translation published in 1976.

<sup>&</sup>lt;sup>6</sup> Marx directly challenged Say's Law and "rejected the necessary equality of supply and demand ..." (Sowell 1972:181-182).

concern was with the entire capitalist structure and its replacement, rather than monetary effects and monetary policy considerations.

It is noteworthy that the Bank of England had commenced practising monetary management at the time when Marx was writing. The Bank Charter Act of 1844 provided a legal framework in which the Bank's discount rate could be used as an instrument of credit regulation. The Bank did also engage in a form of open market operations through borrowing against Consols (Blaug 1996:272). It was therefore eminently possible that Marx could have explored the possible effects of the new monetary approaches on capital accumulation. He however regarded the interest rate as a purely monetary phenomenon, with very little connection to rates of profit. He rejected the notion of a 'natural' rate of interest and did not accept the argument of Thornton and Ricardo that there is in principle a long-period rate of interest which tends to equality with the longperiod yield on real capital. He did maintain that the interest rate, along with profit rates on physical capital, would have a secular tendency to decline, but this was as much through the continued concentration of saving in the hands of an expanding banking sector as through falling capital yields as a result of relentless capital accumulation. His views were broadly in line with the Banking School, with the Law of Reflux operating, and monetary usage being determined by the requirements of commerce. He was explicitly opposed to the quantity theory, possibly regarding it as contrary to his labour theory of value (Blaug 1996:271-272). But with this combination, he viewed the monetary sector as providers of funds in his analysis of capitalistic production, rather than regarding money as a significant issue for examination from a theoretical viewpoint for his purposes. Marx' conception of the workings of a capitalist economy could possibly be placed in the category of Monetary Analysis rather than Real Analysis in terms of Schumpeter's distinction (1954), but this would be somewhat tenuous since he did not consider monetary effects in depth.

#### **1.4** The Neoclassicals of the late Nineteenth century

The neoclassical economists in the last decades of the nineteenth century could once again best be categorised in the Real Analysis rather than Monetary Analysis tradition. These years saw the rapid advancement of the marginalist approach, applied to utility on the part of consumers and to revenue, costs, capital productivity and the like on the part of the firm. Walras was one of the discoverers and initiators of the principle of diminishing marginal utility and its implications, though he is most closely associated with the system of equations depicting an economy in general equilibrium which has come to be associated with his name. As taken up in Chapter 3, such a system of equations, even when one of the variables is allocated as a numeraire to represent money, provides no essential role for money, and therefore lies in the Real Analysis tradition (e.g. Rogers 1989:45-67; Clower 1999:399-413).

The marginalist approach enabled extensive and more rigorous analyses to be undertaken compared to those of the Classical economists, but most of the advances related to microeconomic questions rather than monetary and other macroeconomic issues. Marshall himself, a major contributor over this period in formulating and expressing economic theory arising from the marginalist approach, recognised that it had little to offer on broader macroeconomic issues, which had yet to be adequately addressed: "The Mecca of the economist lies not in comparative statics, nor even in dynamic analysis, but rather in 'economic biology'" (Marshall 1920:xii). Marshall was using the latter term to refer to the study of the economic system as an organism, analogous to a living entity, evolving in historical time. He regards the marginalist approach as providing building blocks towards the 'Mecca'. Although the interest rate enters into his analyses at various points, it is as a cost of funds borrowed, or similar, which forms part of the marginal analysis of a representative firm, rather than as a policy variable with economy-wide influence, and money as a macroeconomic aggregate likewise receives scant attention.

At a methodological level, Marshall introduced some notions which serve as important pointers in examining subsequent theories. One was his widelyadopted differentiation of market period, short-run and long-run, with the last allowing for full adjustment of capital deployed. But perhaps more crucial to subsequent monetary theory was his establishment of the partial equilibrium

approach to economic reasoning, which serves to examine the interaction of a limited group of variables, while all other variables are left unchanged (ceteris paribus). This was the method of analysis favoured by Keynes, and others in a similar mode of thinking to Keynes, as against a general equilibrium approach to economic thinking as favoured by Walras and his analytical successors. The differentiation is important to the development of economic theory in the Monetary Analysis tradition, as noted by Rogers (1989:183-200), in view of the difficulty in finding a role for money in a general equilibrium framework.

It was perhaps Bohm-Bawerk in this period prior to the work of Wicksell who came closest to putting forward a theory of money and its relationship to the real economy. In Capital and Interest he disputed the abstinence view of interest and put forward three reasons for the existence of interest: (1) differences in circumstances and needs of people between the present and future, (2) underestimation of the future, including that arising from limited and uncertain duration of life, (3) technical superiority of present over future goods in the sense that present goods could be invested for longer than future goods and therefore lead to a greater resulting product (Blaug 1996:482-486). Bohm-Bawerk was seeking to formulate a 'roundaboutness' theory of capital and relate this to a time preference view of the interest rate. He expressed capital as a derived factor of production which required the deployment of the primary factors of production, land and labour, over time for its creation. The time preferences of the society combined with the productivity of factors of production would thereby determine an optimum level of capital, or degree of 'roundaboutness', in long-period equilibrium. Bohm-Bawerk equates the degree of roundaboutness with the average period of production in the economy, from first utilisation of labour and raw materials to completion of consumption goods. He (Bohm-Bawerk 1888:381-394) subsequently put forward a theory of determination of the rate of interest which differentiates the characteristics of capitalists and workers, with the interest rate determined by the marginal productivity of lengthening the average period of production. The interest rate becomes the factor which balances the consumption-over-time preferences of the workers with the accumulation-over-time preferences of the capitalists.

Although Bohm-Bawerk does not bring monetary aggregates into the analysis, nor treat the interest rate as a monetary policy variable, he does at least put forward a theory in which there is a clear relationship between the interest rate and the accumulation of capital, and hence investment: "The rate of interest ... is limited and determined by the productiveness of the last extension of process economically permissible ..." (Bohm-Bawerk 1888:393). In his analysis, the interest rate has moved significantly from being considered as the equilibrating factor between the supply and demand of loanable funds towards being a factor in the capital accumulation process.

#### 1.5 The Innovation of Wicksell

A much greater stride occurred in linking money to investment in the work of Wicksell concerning monetary theory (e.g. Wicksell 1898a, 1898b, 1901). Wicksell sought to extend the quantity theory of money to an economy which has moved beyond commodity money to the widespread use of bank credit and loans. His most noteworthy innovation was the distinction between a natural rate of interest and the money rate. The natural rate is the marginal productivity or yield on real (physical) capital, as against financial capital or capital value-inexchange: "if capital was lent in kind, there would undoubtedly develop, through the supply and demand for the available capital a certain rate of interest on the lending market, which would be the natural rate of interest in the strictest sense." (Wicksell 1898b:84). Wicksell contemplates an equilibrium situation in the economy in which movements between alternative uses of capital have led to a uniform yield on capital. The gist of Wicksell's argument is that an adjustment process occurs through the medium of money whereby the market rate of interest adjusts towards the natural rate. "If the actual rate of interest on money corresponds with this figure, the intervention of money will cause no change in the economic equilibrium; ..." (Wicksell 1898b:84). If the market rate is below the natural rate, prices will rise continuously, and conversely if the market rate exceeds the natural rate, they will fall continuously. "A low rate of interest must lead to rising prices, a high rate of interest to falling prices." (Wicksell 1898b:78). Furthermore, the falling prices "cannot cease at this first stage, but must constantly be repeated as long as the low rate of interest

continues." (Wicksell 1898b:79). The rising prices reduce the level of money balances and this leads to an increase in the market interest rate. Correspondingly, falling prices lead through increased money balances to a decreased market interest rate, which has the effect of moving the market rate toward the natural rate. Wicksell (1898b:83) maintains that "what is lent *is* money and nothing else; ...". However, as Rogers (1989:27) points out, Wicksell's analysis still lies in the tradition of Real Analysis, since the natural rate is determined by real rather than monetary forces and it is the market interest rate which adjusts to this. Wicksell envisages the natural rate being constantly subject to change as technology, labour supply and wage levels alter. The banking sector would not be able to observe the natural rate directly, so that the market rate could diverge from the natural rate "for a long period" (Wicksell 1898b:84), though being gradually brought back into line with it through the abovementioned adjustment process.

Wicksell's derivation of the natural rate can be criticised on the basis that he treats physical capital as homogeneous, as being convertible from one form of use to another, leading to deployment of capital at uniform marginal productivity in equilibrium. Clearly physical capital is not malleable in this manner. Walras had treated capital as purely physical in form, which implies that a rent or yield must be determined for each item or homogeneous group of physical capital. Walras' system of equations enabled each instance of physical capital to be treated separately in principle. However, no common yield on capital can be expressed since capital items or groups cannot be combined in a single measure. It was this malleability issue which was at the core of the subsequent capital debate or Cambridge controversies of the 1950s and 1960s, in which Cambridge England maintained that use of capital as if it could be treated as homogeneous with an identifiable value magnitude, in the determination of an interest rate or yield, was tantamount to circular reasoning, since an interest rate or yield was necessary to determine the value magnitude of capital (Harcourt 1976:26-42). Wicksell sought to address this issue through arguing that all physical capital, however different, could be resolved into saved-up labour and saved-up land.

Wicksell (1901) portrays the natural rate as the difference between the marginal productivities (combined) of saved-up labour and land, and those of current labour and land. This would apply to a single business enterprise, but Wicksell (1901:155) extends the analysis to successive aggregation of the marginal productivities to arrive at an exchange value for capital in the economy, i.e. a value magnitude. Through this means he seeks a universal value magnitude of capital, to render a single interest rate or yield possible across alternative usages of capital, as well as to equalise the yield on saved-up labour with that of saved-up land. However, his transition from individual instances of physical capital to an aggregate of capital in value terms for the economy does not avoid the charge of circular reasoning, and can be criticised as being tantamount to an imposed model closure condition, i.e. an arbitrary condition to attain model Later attempts by neoclassical economists to solution (Rogers 1989:32). aggregate heterogeneous capital instances to form an overall capital value magnitude likewise entail conditions which imbue all goods in the economy with equivalent characteristics. Rogers (1989:43) maintains that this amounts to assuming a single-commodity economy. Wicksell's natural rate can therefore be criticised as only strictly speaking being definable in a one-commodity economy.

It is noteworthy that Wicksell did not seek to depart from a quantity theory view of money<sup>7</sup>. Although he recognised that money to a large extent occurred in the form of credit money, his posited transmission mechanism between the natural rate and market rate of interest operates through a real-balance effect. It is changes in real economic activity resulting from differences between natural and market rate that lead to changes in the quantity of money which in turn cause the market rate to adjust. Wicksell therefore did not break from the quantity theory tradition of the Classicals and neoclassicals, nor did he put forward a theory in which monetary magnitudes are clearly able to affect real economic activity, which could be placed in the Monetary Analysis category of

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Referring to the theory as expressed by Ricardo, Wicksell (1898b:68) indicates, "I for my part am convinced that this theory is fundamentally sound and correct ...".

Schumpeter. He did however put forward a concept in which the market interest rate could differ from the natural rate outside long-period equilibrium, and this served as the embryo on which Keynes in particular developed his theoretical framework in which money and monetary magnitudes can have substantive and enduring effects on the real economy. Keynes was strongly influenced by the work of Wicksell, and explicitly propounded his own theories on the workings of the interest rate in contrasted reference to those of Wicksell. In his *Treatise* (1930:186), he recognises that: "In substance and intention Wicksell's theory is closely akin ... to the theory of this Treatise ..., though he was not successful, in my opinion, in linking up his theory of Bank-rate to the Quantity Equation."

## **1.6** Keynes of the Treatise

Keynes in A Treatise on Money (1930) developed a comprehensive theory of the transmission mechanism between the interest rate and economic magnitudes through price level effects and the behaviour of grouped economic actors. He refers to bank rate in order to use a single reference to short-term interest rates, but regards bank rate and short-term rates to inevitably move closely together through market forces in respect of short-term monetary instruments. From the outset, even before exploring the transmission mechanism, he explicitly recognises bank rate as an important policy variable under the control of the central bank, e.g. as "a means of regulating the *quantity* of bank money. This is the basis on which the practical method of bank rate as the characteristic instrument of the bank of England was developed in the middle of the nineteenth century." (1930:187). He proceeds to describe three ways in which bank rate policy could be considered to affect the economy. This places a foundation pillar for a theory in which monetary policy actions can have significant effects on real economic magnitudes.

Although Keynes (1930:15-22, 185-200) traces the first recognition of bank rate as a policy variable to the mid-nineteenth century, to the period in which vigorous debates on monetary effects gave rise to the Bank Charter Act of 1844, he recognises that virtually no previous writers had given a clear account of the

effects of bank rate on the economy. For a period of 76 years from 1746, the rate in England remained at 5%; from 1822 to 1839 there were small fluctuations between 4 and 5%; and in 1839 the rate was increased to 51/2, then 6%. Over this historical period it is therefore perhaps not surprising that the possibility of bank rate as a policy variable did not arise in economic discourse. As indicated above in considering early Classicals, a primary concern was issue of notes by the Bank of England and the independent 'country' banks which were not under its control, and the role of gold or silver convertibility, as well as preserving the country's gold reserves. But even in the decades following the Bank Charter Act, the interest rate charged by the central bank was viewed as little more than one possible means to influence the supply of bank money in circulation. Keynes traces the continuation of this strand of thinking through to the publications of Marshall in the late nineteenth century and Pigou in the early twentieth. To the extent that they and other writers make any reference to interest rate effects on real economic magnitudes, it is through the actions of speculators or traders. It is only Wicksell, in Keynes' view, who breaks decisively from this mode of thought prior to his own analysis. Keynes recognises two other strands of thinking: that of 'practical bankers' in which bank rate serves as a means of protecting the country's gold reserves by influencing the volume of lending to foreign countries, and that in which bank rate in some way influences the rate of investment. The former he confirms as being used at various times from the 1840s. The latter he maintains had not been clearly expounded in a theoretical framework, other than by Wicksell, and it is this strand that he sought to develop further.

It is apparent that Keynes' Fundamental Equations of the *Treatise* have as a backdrop in his mind the quantity theory in its various forms (1930:146-150). Keynes seeks to delve behind the quantity theory to analyse monetary transmission channels in greater depth by examining effects on conceptual aggregates in the economy. He separates out the production of consumption and investment goods as a key distinction which can be interrelated to saving and investment. He uses price as a primary decision variable, reminiscent of the quantity theory and the microeconomic tradition in which he was steeped.

The first Fundamental Equation (1930:133-136) relates the price of consumption goods (P) to expenditure aggregates in the economy. Where E is earnings of the factors of production, O is total output, I' is the cost of production of investment goods, R is the volume of consumption goods purchased, C is net investment, and S is saving: O = R+C, and P.R represents spending on consumption goods. Because P.R = E - S = E. (R+C)/O - S = R.E/O + E.C/O - S, the first equation can be expressed as:

$$P = \frac{E}{O} + \frac{I'-S}{R}$$
 E1.6.1

This is purely an identity, but provides a basis for price effects to be explored in terms of shifts in saving, investment and consumption expenditure.

Keynes (1930) derives his second Fundamental Equation as an identity which shows the price level for the economy as a whole, which he designates  $\Pi$ , combining consumption as well as new capital goods. He assumes initially that the price level of investment goods is given as P', so that investment value I (as contrasted to investment cost I') is equal to P'.C. Combining consumption and investment goods, the overall price level can then be expressed as:

$$\Pi = \frac{P.R + P'.C}{O} = \frac{E - S + I}{O} = \frac{E}{O} + \frac{I - S}{O} = E1.6.2$$

which can also be written as:

$$\Pi = \frac{W}{e} + \frac{I-S}{O}$$
E1.6.3

where W is the rate of earnings per unit of human effort and e is the coefficient of efficiency which expresses output per unit of human effort (1930:136-137). The latter formulation provides a basis for considering wage rates and productivity as contributors to the overall price level.

Although neither of the Fundamental Equations contains an interest rate variable, they can nevertheless be used to explore the effects of interest rate changes, and Keynes pursues this analysis in the *Treatise*. The initial effect is through the price level of capital goods. Entrepreneurs have expectations of the future trajectory of revenues that will be generated by acquiring and utilising a new capital good. The expected levels of these revenues will be only indirectly

affected by a change in interest rate. However, the expected net present value of the revenue stream will be directly and materially affected by a change in interest rate. A relatively small interest rate change leads to a significant change in the present value since the discounting occurs over a number of future years. Through this means, an increased interest rate has the consequence of reducing the demand price of capital goods (P'), and the volume of capital goods acquired, so that fewer capital goods are produced, and the value of investment (I) declines. At the same time, an increased interest rate leads to a higher saving level in the economy. This occurs at the expense of consumption, so that the price level of consumption goods also declines, in accordance with the first Fundamental Equation. "By the scale and the terms on which it is prepared to grant loans, the banking system is in a position ... to determine – broadly speaking – the rate of investment by the business world." (Keynes 1930:153).

Keynes (1930:154-155, 196-199) relates this process to a natural interest rate which he characterises in a similar manner to that of Wicksell. The natural rate is that which would prevail in equilibrium if all saving and investment were to take place in physical goods rather than through a monetary system. It is the rate at which saving is maintained in balance with the value of investment. But as soon as the market rate of interest departs from the natural rate, the above described causal sequence occurs in terms of the Fundamental Equations, leading to reducing prices of both capital and consumption goods for as long as the market rate exceeds the natural rate, and increasing prices for so long as it is below the natural rate. "According, therefore, as the banking system is allowing the rate of investment to exceed or fall behind the rate of saving, the price-level ... will rise or fall." (Keynes 1930:158). In this respect, his fundamental equations are a more comprehensive depiction and expansion of the essential concept put forward by Wicksell.

Keynes (1930:206-209) warns of the danger of policy makers not recognising the protracted effect of an interest rate change. Although an interest rate increase has the effect of a reduction in capital and consumption goods prices,

which could be perceived by monetary authorities as a beneficial effect, there may be incipient negative consequences still to unfold. If I', the cost of investment goods, is unchanged, the profit margins of firms is eroded, and their continued existence may be threatened. To the extent that entrepreneurs reduce employment to avoid losses, an ongoing situation may prevail in which the "monetary equilibrium will continue to require the indefinite prolongation of chronic unemployment" (1930:208). This presages the analysis put forward by Keynes in the *General Theory*.

Keynes (1930:209-212) maintains that, if the market interest rate change is sustained, the natural rate itself will be affected. This arises from the changed revenue stream expectations of entrepreneurs. For instance, an increased market rate, after having its effect through the Fundamental Equations described above, leaves profit margins at reduced levels, which entrepreneurs will expect to continue in the case of new investments to be undertaken. The natural rate is thereby decreased when the market rate has been increased. driving the gap between the two wider. Attainment of a new equilibrium in the economy is prolonged, unless the natural rate happens to move to equality with the market rate as a result of factors outside this analysis. The reduced prices and profits experienced by entrepreneurs lead inevitably to their offering a lower volume of employment and decreased earnings levels. These reductions eventually enable profits to be restored at the lower activity and price level. Expectations of profits on new investment hence increase, and thereby the natural rate likewise increases. Whether this adjustment process is able eventually to bring the natural and market rate into alignment at a lower economic activity level depends on the degree of divergence between the two when the market rate change is instituted. It could lead to a continual price and activity deflation spiral, as propounded by Wicksell, until such time as the market rate is re-adjusted to alignment with the natural rate. There could also be an adjustment process through international flows resulting from a relative change of the domestic interest rate. Keynes (1930:213-216, 326-363) examines the latter possibility and maintains that this is not likely to occur without central bank intervention to bring about a new equilibrium.

Keynes (1930:213-216) assumes that the central bank adheres to an international gold or similar objective standard, and regards the external equilibrium problem faced by the central bank as being to maintain B = L, where B is the foreign balance (current account balance in typical modern terms) and L is the net value of foreign lending. B greater than L will lead to increasing gold reserves, less than L to a diminution. Changes in bank rate operate both directly on B and L, but also indirectly through saving and investment in the domestic economy. Keynes characterises the direct effect as rapid in the case of L, where an increased bank rate relative to other countries renders foreign lending less attractive and reduces L. He characterises the effect on B as more gradual, occurring through a reduction in domestic investment consequent on a higher interest rate, with investment falling below saving having the effect of decreasing prices, reduced profits and earnings, which then increase B as a result of production costs domestically falling relative to those abroad. Through this means, provided the changed bank rate is held sufficiently long for the effects on B to take their course, a new equilibrium can be reached in which B = L, but at which saving and investment are once again in equilibrium. It is a combination of the bank rate and the price level (of consumption goods in Keynes' exposition) which enable both external equilibrium and equilibrium of saving and investment to be reached simultaneously.

However, it is the adjustment of bank rate that has enabled external equilibrium to be achieved, rather than non-equilibrium on the foreign balance serving as a mechanism to move the domestic economy towards equilibrium.<sup>8</sup> Curiously, Keynes gives an example (1930:216) in which an automatic international gold system operates, gold holdings increase when B is greater than L, bank rate finds its level through free competition between borrowers for the money available based on the increased gold holding, prices and earnings adjust

<sup>&</sup>lt;sup>8</sup> Keynes maintains that the domestic economic situation can be enhanced if the central bank is able to influence the exchange rate as well as interest rates: "If the Central Bank is free to vary both the rate of foreign exchange and its market-rate of interest, ... there is much less risk of the loss of wealth and output due to the prevalence of unemployment." (1930:362).

through competitive forces, and hence the flow of gold leads to establishment of a new equilibrium both external and in saving to investment. This is more in line with a monetary theory of the balance of payments and deviates from Keynes' treatment in most of the *Treatise* of bank rate as a policy variable determined by the central bank.

The most crucial aspect of Keynes' Fundamental Equations and his analysis of the *Treatise* for the purpose of this study is that it introduced a theory in which investment is integrally connected with monetary variables. If one adopts the Fundamental Equations as a theoretical framework, it is no longer possible to consider money as a veil behind which the real forces of the economy play out, as portrayed by J S Mill and other Classical economists, which 'like many other kinds of machinery only exerts a distinctive and independent influence of its own when it gets out of order.' (Rogers 1989:281). The veil is pierced, the monetary dichotomy evaporates, and a monetary theory in which real and monetary forces are inextricably linked becomes a logical necessity. It was at this point that Keynes was embarking on a new assumption set which, when followed through with further analyses, led to the establishment of new foundations for macroeconomic theory. Although Keynes still sought to bind his theory of money in the Treatise to the quantity theory and to the market/natural rate distinction of Wicksell, the linkage appears as a wish to give due recognition to the theories of antecedents, and to incorporate prevailing economic thinking, rather than as a logical adjunct of his own theory. In the General Theory, Keynes overturned these linkages.

# **1.7** Keynes of the General Theory

Keynes' *General Theory* systematically assembled concepts, measures and mechanisms to analyse the major aggregates of an economy as a whole, in which monetary factors are bound into the analysis throughout. At the core of the connection between monetary variables and real magnitudes is the Marginal Efficiency of Capital (mec) concept he introduced, and its interaction with the interest rate. The mec represents the <u>expected</u> yield of capital assets which entrepreneurs could deploy, expressed as a discounted stream of future net

revenues relative to the acquisition price of the asset. Aggregated from higher to lower yielding assets, this gives rise to a downward sloping schedule with yield shown vertically and capital value horizontally. The interest rate (simplifying from the spectrum of interest rates in an actual economy) establishes the value of new capital which it will be worth the while of entrepreneurs to acquire and bring into production, since the yield expected exceeds the interest rate to be paid. Important to note is that the mec is a schedule based on entrepreneurial expectations, and all the factors on which such expectations may be based, and can therefore shift without any changes of the significant variables in the actual economy (Keynes 1936:143-145): "The schedule of the marginal efficiency of capital is of fundamental importance because it is mainly through this factor ... that the expectation of the future influences the present." (1936:145). The mec could possibly be better termed the Marginal Efficiency of Investment, since it is concerned with the production and deployment of new or additional capital. It provides the link between interest rates and investment behaviour on the part of entrepreneurs in Keynes' analysis.

Keynes (1936:74-85) adopted changed definitions of saving and investment in the General Theory, whereby saving and investment are always and necessarily equal, which differed from that of the *Treatise* where the difference between the two was part of the mechanism of the Fundamental Equations. The Treatise uses a definition of income based on the 'normal profit' of entrepreneurs, rather than their actually realised profit. This implies that profits above the normal profit level have their counterpart in investment being in excess of saving, so that entrepreneurs are expanding output. Similarly, profit levels below normal correspond to investment being below saving and contracting output. As Keynes (apologetically) recognises in the General Theory, the changes in definition can generate confusion, but were necessary to convey the arguments of the General Theory accurately (Keynes 1936:78). The two definitions can be connected by adopting the differentiation between actual and expected magnitudes (the *Treatise* did not distinguish the two clearly) so that the expectation of an "excess of investment over saving, given the former volume of

employment and output, will induce entrepreneurs to increase the volume of employment and output" (1936:78). In developing the definitions of saving and investment in the *General Theory*, Keynes takes saving to be the residual of income after consumption, and combines business income with household income, so that it stems from his treatment of these aggregates that saving and investment are necessarily equal. In his approach to these definitions, Keynes takes a broad sweep aggregation of the essential income and production variables in the economy, without a monetary system or flows being taken into account in the definitions. It is conceivable that a monetary system could be a source of dislocation between saving and investment, even with definitions of the two closely aligned to those of the *General Theory*. This matter is taken up in subsequent chapters in connection with the mechanism through which saving is reconciled to investment.

Keynes (1936:175-185) characterises the classical<sup>9</sup> theory of the rate of interest as viewing the interest rate as the price or equilibrating mechanism between the willingness to save and the demand for investment. Saving and investment represent respectively the supply of and demand for investible resources. He points out that this cannot possibly be correct, since any interest rate change will affect the level of investment, which in turn affects income and thereby the level of saving. The classical theory is therefore indeterminate, due to its not taking account of the effects on saving through income. A separate causal mechanism is required for the interest rate, which then renders investment, income and saving determinate. Keynes' liquidity preference theory provides this mechanism. It is a major conceptual departure from the classical view in that the interest rate becomes the reward for not hoarding (rather than not spending), i.e. for sacrificing full cash liquidity for financial assets (e.g. debt, bonds) which provide a yield but which carry elements of uncertainty as to the value at which they can be realised and of waiting before the value can be

<sup>9</sup> Keynes uses the term 'classical' to refer sweepingly to earlier Classical theories (in the sense used in sections 1.1 to 1.3 above) as well as theories prior to his own which would more usually be referred to as 'neoclassical'. It is used here (as in Keynes' *General Theory*) without the initial capital to distinguish the two senses.

utilised. Keynes visualises the interest rate as being the 'price' which brings into equilibrium "the desire to hold wealth in the form of cash with the available quantity of cash" (1936:167). Because the speculative motive for holding money (as against transactions and precautionary motives) is strongly influenced by the interest rate, the essential nature of the monetary effect on the economy is through the liquidity preference of economic actors being brought to equality with the quantity of money through interest rate adjustment.

In Chapter 13 of the General Theory, Keynes assumes without discussion that the quantity of money is given and the interest rate adjusts to equate the quantity of money which the public wish to hold to this, through the liquidity preference function. This seems to suggest an exogenous money supply, set by the monetary authorities or resulting from structural parameters of the economy. The monetary influence on the economy would therefore occur through an (exogenous) change to the money supply, which would in turn change the interest rate through the liquidity preference function, and the interest rate would in turn have effects on the economy through investment in terms of the mec schedule. This has caused much controversy amongst followers of Keynes, since he assumes in the *Treatise* and in certain discussion papers subsequent to the General Theory that the money supply is endogenous, i.e. that it adjusts to money demand conditions for a given interest rate. It is possible to argue, as Moore (1988a:195-199) has done, that Keynes' treatment of the money supply as exogenous in the General Theory was by way of explanatory convenience, or possibly a careless lapse in his manner of exposition. In any event, the fact that it is the interest rate which is crucial in the transmission mechanism from monetary to real economic magnitudes, perhaps makes it less central as to whether the interest rate is determined directly by exogenous means, or whether it attains a level as a result of the quantity of money being determined exogenously. Also, Keynes refers to the interest rate in Chapter 15 of the General Theory as a "highly conventional phenomenon" (1936:203) so that any interest rate accepted with conviction is likely to be durable, and to the case where "the monetary authority would have lost effective control over the interest

rate" (1936:207) so he clearly regarded the interest rate as exogenously determined in parts of the *General Theory*.

In Chapter 17 of the General Theory, Keynes seeks to show why the interest rate on money is particularly or uniquely significant in its widespread effect in an economy. He points out that all commodities (e.g. wheat, silver) have an ownrate of (own) interest, being the relative difference in the quantity of the commodity at a future time (say three months hence) which could be exchanged for a quantity of the same commodity in the present. Own rates can also be But Keynes maintains that the expressed in terms of money rates. characteristics of money are such as to ensure that it has a higher own-rate of interest than any other commodity (with possible rare exceptions). This arises from the very low (near zero) elasticity of production and substitution of money, together with its high liquidity premium and low carrying cost. His argument is that, as increased production of commodities having a higher yield than that of money decreases their yield, money inevitably comes to have the highest yield (interest rate) and therefore "rules the roost". Various writers have criticised the arguments of Chapter 17 as being arcane or unconvincing (e.g. Lerner 1952; Turvey 1965)<sup>10</sup>. It is perhaps unnecessary to justify the role of the money rate of interest by comparison to own-rates of other commodities, when it is clear that money has been adopted as a medium sui generis by virtue of the very fact that it is the money of the economy. Lerner (1952:382) for instance asserts as part of his argument that "The essential superiority of a monetary economy over a barter economy is the saving of mental effort made possible by money." Another commodity (e.g. wheat) would be most unlikely to provide the pervasive interest rate in the economy, even if its own-rate of interest was greater than that of money, because it is not the medium traversing the financial system and cannot therefore influence entrepreneurial decisions throughout the economy. The analysis is also criticised on the grounds that Keynes appears to be seeking to develop a theory of the interest rate on alternative commodities, one of which would be money, on an equivalent basis to the mec put forward for

expenditure on capital. Yet he elsewhere in the *General Theory* strongly emphasises that the interest rate and the mec have entirely separate origins. An analysis of returns or yields on commodities, however formulated, would therefore seem to be inappropriate for the examination of interest rate determination.

The analysis of Chapter 17 does however provide a framework for considering the transmission of the money interest rate through all assets on a widespread basis in the economy. It is a framework in which acquisition and production of capital assets is adjusted in accordance with their expected yields, so that the level of investment which eventuates is in accordance with the money interest rate, and brings the expected yield on alternative forms of capital towards the money interest rate in long-run equilibrium. This monetary equilibrium point may not be at full-employment level of the economy, nor may there be any forces which will move it closer to full employment. The macroeconomic equilibrium in which involuntary employment persists, which lies at the heart of the General Theory, is thereby shown to be closely bound with the monetary system of the economy and interest rate in particular through monetary equilibrium and the principle (and point) of effective demand. Keynes regards the characteristics of money as so essentially bound to attainment of equilibrium below the level of full employment that he maintains that "in the absence of money ... [and] of any other commodity with the assumed characteristics of money, the rates of interest would only reach equilibrium when there is full employment." (1936:235).

Keynes recognises in the *General Theory* that the development of the notion of a 'natural' rate of interest as undertaken in the *Treatise* and corresponding to the concept introduced by Wicksell, was no longer valid in terms of the monetary equilibrium of the *General Theory*. Instead, there would need to be a different natural rate for each level of employment. At the currently existing level of employment, the 'natural' rate would be simply that which would

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Van Eeghen (1999:240-250) provides a full range of critical arguments of Keynes' *General Theory* Chapter 17. Barens and Caspari (1997:298) maintain that "in Chapter

preserve the status quo. The interest rate which would be of greater significance is that which would correspond to full employment in the economy. Keynes suggested the term 'neutral' or 'optimum' rate to distinguish it from the natural rate (1936:243). But in the monetary theory of the *General Theory*, there would be no economic forces, short or long run, drawing the market rate towards this optimum rate. Monetary equilibrium could be sustained indefinitely at a level below full employment.

With the interest rate being a key factor in macroeconomic equilibrium remaining below full employment in Keynes' General Theory analysis, the question arises of whether monetary policy could be used to move the economy towards full employment equilibrium. It is clear that this possibility did occur to Keynes at the time of writing the General Theory, though he did not regard monetary policy as having a sufficiently strong influence on the economy to achieve such an outcome, "it seems unlikely that the influence of banking policy will be sufficient by itself to determine an optimum rate of investment." (1936:378). He then embarks on advocating a "somewhat comprehensive socialisation of investment" which he considers the only means likely to achieve full employment equilibrium or a state close to it. This emphasis on measures which are in the realms of fiscal policy stems from his recognition that there are a number of interrelated determinants of investment, of which the interest rate is only one. Furthermore, he regards the interest rate as depending "partly on the state of liquidity-preference (i.e. on the liquidity function) and partly on the quantity of money measured in terms of wage units" (1936:246). Since he regards the quantity of money as the primary monetary policy variable in the General Theory, and the interest rate indirectly determined, the monetary authorities would not in any event be able to institute an interest rate of their choosing with any degree of precision. But further than this, the investment function is so influenced by the psychological expectation of future yields from capital assets on the part of entrepreneurs that even if a 'correct' interest rate were able to be determined and instituted, this would be unlikely to have sufficient bearing on the investment function to bring the economy to full

<sup>17</sup> Keynes gave an invalid answer to the wrong question ...".

employment equilibrium. Keynes did not explore the full scope of possible effects on the economy through the monetary system, which could be influenced by monetary policy measures, and these are examined more fully in subsequent chapters of this thesis.

#### 1.8 Concluding remarks

It is apparent that Classical economists such as Ricardo and J S Mill did not contemplate the possibility of monetary effects on investment, other than in the broad context of money affecting economic activity in general, as portrayed in the issues and arguments of the Currency School and Banking School viewpoints. They generally held a loanable funds view of interest, in which the interest rate serves as an equilibrating variable between funds made available for investment (i.e. saving) and investment activity. Marx concentrated on the broad forces of capital accumulation and labour utilisation, with little consideration of money in its own right. Marshall's contribution to economics, though massive, was focussed towards the marginalist analysis of microeconomics. The Walrasian general equilibrium equation system provided little scope for monetary effects. It was only towards the end of the nineteenth century that modes of thinking were pursued from which linkages between money and investment could be examined. Although several writers began to address monetary aspects of capital accumulation at that time, the work of Bohm-Bawerk was shown to have useful insights for such a task. It was however Wicksell, with his conceptualisation of natural and market rate interaction, that made a significant advance in this aspect of monetary theory. It was this conceptualisation that lay at the heart of Keynes' examination of the link between monetary variables and investment using the Fundamental Equations in the Treatise. The Treatise provided a well-formulated theoretical framework for examining monetary effects on the economy, including investment. In the General Theory, Keynes provided a more comprehensive framework in which monetary and real variables are interrelated, and in which the monetary system is an essential element in demonstrating the possibility of the economy remaining at below full employment level on a sustained basis. In doing so, he found it necessary to abandon Wicksell's conceptual framework,

and formulate a new approach, even though he had been strongly influenced by Wicksell's analysis.

Given that Classical economists were steeped in the dichotomy between monetary forces and the real economy, accepted the quantity theory with little question, and had few reservations towards the precepts of Say's Law, it has been important to examine when in economic thought a new strand emerged which allowed the possibility of a connection between monetary and real forces. It is apparent that this strand began to emerge with Wicksell, though even in his case, examination of the causal direction between natural and market rate shows his approach to be more correctly classified in the Real Analysis rather than Monetary Analysis tradition (Rogers 1989:27). It is only with the work of Keynes in the *Treatise* that a decisive break is made into a conceptual structure in which monetary and real economic forces are integrally bound, which can be classified in the tradition of Monetary rather than Real Analysis.<sup>11</sup> This structure was taken forward and revised in the General Theory with major implications for economic theory. In order to examine the possible relationship between monetary policy and investment in an economy, the theoretical underpinnings used need to allow in principle for the existence of such a relationship. The initiation of such a theoretical framework in economics can be largely attributed to the ideas of Keynes put forward in the Treatise, General Theory and related discussion articles, though bearing the influence of prior economic writers from the time of Ricardo and Thornton.

<sup>11</sup> Rogers (1989:164) regards Keynes' *Treatise* analysis as being still best classified as Real Analysis, and that the break into Monetary Analysis came with the *General Theory*, but this is contestable.