To the memory of Tess and Tom Docherty

Money and Employment

A Study of the Theoretical Implications of Endogenous Money

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1. Introduction: money and employment

1.1 INTRODUCTION

The study of money and finance is one of the most difficult areas of economic analysis, and as a result it continues to be an area of controversy and debate. This is largely because of the unique role which money plays in the economic system. Money is not demanded for its intrinsic ability to satisfy wants or needs in the same way as are other commodities, but because of its systemic role in facilitating exchange. This role allows it to perform three classic functions of acting as a medium of exchange, a unit of account and a store of value (Harris 1985, 8; McCallum 1989, 16–18; Mishkin 2004, 44–48), and the behaviour and effects of money demand are argued by some to depend on which of these three functions dominates in motivating the desire to use money.

The *supply* of money is also characterised by some unique features. Governments can determine what kinds of instrument serve as money in the narrowest sense and can operate in financial markets to affect the amount of this instrument that is made available to the economic system. Given this ability, the principles that determine how much money is made available to the system become paramount and these can vary from time to time and place to place, and will be driven by current thinking about what money does in an economic system and the effects it can have. In addition, markets can generate substitutes for narrowly defined legal tender and this complicates any effort by public authorities to fix the supply of money at a particular level whatever principles drive their actions.

The potential to arrive at different conclusions about the impact of money and the circumstances surrounding its use and availability is, therefore, not surprising. According to conventional neoclassical theory, for example, while money represents a technical improvement over barter to the operation of an exchange economy, it plays no long term role in defining the fundamental features of the economic system. Consumption, production, employment, income distribution and interest rates, all *real* variables, are determined independently of money's influence, according to this view. Its only role is to affect *nominal* magnitudes including money prices and, through its impact on

the rate of price inflation, interest rates. A corollary of this real–nominal dichotomy, or money neutrality, is an automatic tendency for the economic system to gravitate to full employment, sometimes referred to as Say's law. Real interest rates are central to the operation of this law since the presence of unemployed resources will cause adjustments to interest rates, generating additional demand for goods and services until the excess supply of productive resources is eliminated and full employment is reached. The resulting equilibrium level of interest, the *natural rate*, signals that all is well in the economic system and that markets have done their job of allocating and directing resources to their most efficient uses and of reconciling demand and supply at a macroeconomic level.

A fundamental feature underlying this neoclassical orthodoxy is that the quantity of money is given *exogenously* by the operation of the banking system and financial markets, and by central bank imposed controls. If for some reason this quantity is allowed to grow too rapidly, inflation of money prices results, and this inflation represents an important exception to the idea of money neutrality. Inflation of nominal prices, it is argued, imposes a range of costs on an economic system including increased levels of uncertainty, and these lead to reduced investment spending and lower rates of economic growth.[1] Policies to prevent excessive monetary expansion have at times, therefore, been an important implication of neoclassical monetary theory.

An alternative view to neoclassical theory is the Post Keynesian idea that money plays an *essential* role in defining key dimensions of real economic activity. This is sometimes argued to result from a stronger emphasis on money's store of value function in driving money demand. More generally according to this view, if money is essential both to the exchange of every other commodity in the system and to the process by which all of these other commodities are produced, then it *must* play an essential role in defining key economic variables. A groundbreaking attempt to provide an explanation of macroeconomic phenomena along these lines was J.M. Keynes' *The General Theory of Employment, Interest and Money.* In this work, Keynes sought to explain the existence of persistently unemployed resources essentially as the result of monetary conditions. The heart of his explanation was the *principle of effective demand*, according to which production and employment are determined by the level of aggregate demand rather than the other way around. Since the level of demand is affected by forces which are independent of the supply of productive resources, demand may persistently be below that required to fully employ those resources. Such a view clearly runs contrary to the neoclassical principle of Say's law described above, and given the role played by the rate of interest in Say's law, it is not surprising that an important feature of Keynes' argument in *The General Theory* was a

dismantling of the neoclassical (or *loanable funds*) theory of interest by which the natural rate and full employment were established.

This dismantling of the loanable funds theory was essentially a by-product of Keynes' formulation of the consumption function. Consumption and saving, for Keynes, both became functions of the level of income and certain psychological laws rather than of the rate of interest (as in the neoclassical theory). Were interest rates to fall in the presence of inequality between saving and investment (as in the loanable funds theory), no equilibrating change in saving or the supply of loanable funds would be generated, and hence the rate of interest would be indeterminate by this route. But while dismantling the loanable funds theory enabled Keynes to provide a new explanation for unemployment, it also left the rate of interest unexplained in his framework, forcing him to offer an alternative determination of this variable. His famous *liquidity preference theory of interest* was developed precisely to fill this gap but it was constructed in such a way as to enhance Keynes' monetary explanation of unemployment. The liquidity preference theory combined investor preferences with the available stock of money to determine interest rates at a particular level, but this level could be too high to generate sufficient effective demand to warrant full employment of the entire labour force. Money is *non-neutral* in this theory because it helps to determine interest rates alongside investor preferences. It thus has real consequences in Keynes' theory contrasting strongly with the neoclassical approach to macroeconomics.

Keynes' message has, however, been interpreted by neoclassical theorists as operating in very particular short run, depression-type circumstances, and has been assimilated into the overall body of neoclassical thought as a special case. The determination of long run economic variables thus continues to be characterised in this neoclassical-Keynesian synthesis by money neutrality and a tendency towards full employment. But a considerable amount of work has been done by Post Keynesian theorists to develop a version of Keynes' theory in which unemployment and money non-neutrality characterise the everyday operation of capitalist economic systems rather than simply special cases. To a significant degree, the monetary dimensions of this approach have developed against the background of developments in neoclassical theory itself and their application to particular problems of economic policy. The emergence of *monetarism* has been especially important in this respect.

The development of Post Keynesian monetary theory may be very loosely divided into three broad phases. The first phase was made up of a series of largely independent contributions from a range of authors including Minsky (1957), Gurley and Shaw (1960), Cramp (1962, 1970, 1971), Tobin (1963, 1970) and Davidson and Weintraub (1973). In this phase attention focused on

the role of banks in the money determination process and the idea of an endogenous money supply emerged in this context. Attention thus shifted from features of money *demand*, which had been emphasised by Keynes in attempting to describe the impact of money on the economy, to conditions surrounding money *supply*. Rather than assuming that the money supply was fixed and given as both Keynes and neoclassical theorists had done, it was argued that money could be created by the banking system as dictated by the needs of the economy.

In the second phase, Post Keynesian theorists focused a considerable amount of their attention on monetarism, and extended and developed the ideas of the first phase. This second phase included contributions from Kaldor (1970, 1985, 1986), Davidson (1988, 1991), Dow (1988), Dow and Saville (1988), Moore (1988a), and Rousseas (1992). Its implicit objective was to demonstrate that inflation could be generated by forces other than growth in the quantity of money and should be dealt with by policies apart from the tightening of monetary conditions which imposed serious negative effects on production and employment. But the theoretical framework within which this demonstration was offered also articulated the idea of money non-neutrality and provided an explanation of unemployment as the result of particular monetary conditions. Thus a strong element of this literature was its attempt to interpret Keynes' *General Theory* in non-neoclassical terms.

The 1990s witnessed a third phase of contributions which was more reflective than the previous two and which began to systematically categorise the structure of Post Keynesian monetary theory. Wray (1990), Pollin (1991), Cottrell (1994a), Smithin (1994), Hewitson (1995) and Rochon (1999a) all present surveys of work from the earlier phases, identifying similarities and differences evidenced by the constituent contributions of these phases. All of these surveys report a large degree of consensus among contributions of the earlier phases on a continued commitment to the idea of money supply endogeneity. Rochon (1999b, 64–77) identifies a series of additional issues on which there was also substantial agreement: exogeneity of the base rate of interest; rejection of the idea of a natural rate of interest; a central role for banks and the credit process in making the money supply endogenous; causality running from loans to deposits to reserves being the reverse of the neoclassical conception of banking and money supply determination; an upward sloping dynamic supply curve; attention to the real features of economic systems and an attempt to build them into theoretical models; and an emphasis on uncertainty. The early contributions of this survey literature generated a series of responses and debates which have further developed and clarified the structure of Post Keynesian monetary thought although some important differences persist.

Two names from the second phase of development have become associated with a particular version of endogeneity used almost universally as a reference point in defining other positions within Post Keynesian monetary theory. These are the names of Nicholas Kaldor and Basil Moore. Their extreme version of endogeneity is rejected by many Post Keynesian theorists on grounds which involve some of the most important analytical issues in macroeconomics and for this reason alone their work deserves ongoing consideration. However, other theorists continue to support the Kaldor–Moore version of endogeneity, making the analytical issues to which it draws attention controversial as well as important. As well, mistakes and omissions regarding the Kaldor–Moore school persist with sufficient frequency that ongoing analysis of their contribution has the potential to bear further analytical fruit for Post Keynesian monetary theory.

The aim of this book is, therefore, to provide a detailed consideration of the Kaldor–Moore version of endogeneity. The book examines the Kaldor–Moore approach from a fresh perspective and thoroughly reviews Kaldor's contribution in particular. It also examines the relationship between Kaldor's contribution and a range of other monetary positions including that of Keynes, neoclassical theory and some dimensions of often-cited classical monetary thought. Such an exercise is designed both to clarify the dimensions of the Kaldor–Moore theory of endogeneity and to identify its theoretical implications.

The remainder of this chapter sets some groundwork for the enquiry to follow. Section 1.2 explores possible meanings of the terms *exogenous* and *endogenous* since this distinction lies at the heart of the issues raised in the book. Section 1.3 outlines the standard neoclassical model of exogenous money supply determination to act as the orthodox reference point against which theories of endogenous money will be compared. The final section considers some of the issues raised in the survey literature in slightly greater detail to sharpen the analytical direction that our enquiry will take.

1.2 THE SEMANTICS OF EXOGENEITY AND ENDOGENEITY

A number of studies, including Dow (1988), Davidson (1991), Pollin (1991), Desai (1992), Wray (1992) and Cottrell (1994a) have considered definitions of the terms exogeneity and endogeneity, arguing that debate over monetary endogeneity (especially between Keynesians and monetarists) has been confused partly because the two sides have sometimes used inconsistent definitions.

Dow (1988), for example, argues that the exogenous–endogenous distinction revolves around two criteria. The first relates to *causality* and the second to *control*. Using the first criterion, a variable is exogenous if it causes other variables. Dow points out that the issue of causality only makes sense within the context of a formal model. Thus, given any particular model, exogenous variables are those given from outside the model but which exert a determinative influence on variables determined within the model and which may, therefore, be regarded as endogenous.

The second criterion, that of controllability, raises the question of whether forces or institutions outside of the model might be identified that could determine the value of variables within the model. At this point Dow links the issue of exogeneity to methodological questions. The methodology of standard neoclassical models, according to Dow, uses a unifying set of axioms to determine all endogenous variables. These are the axioms of individual rationality. Exogenous variables are, therefore, those variables which are neither determined, nor susceptible of being determined, by the axioms of individual rationality. Variables which can be argued to be determined institutionally become prime candidates for classification as exogenous within this kind of framework because institutions are not subject to the dictates of rationality at the level of the individual. The theory of public choice does, however, embody an attempt to apply the axioms of individual rationality even at the institutional level. Notwithstanding the theory of public choice and given the influence that central banks, as public institutions, appear to exert over the markets in which monetary instruments such as bank deposits are created, Dow (1988, 22) argues that it is logical to classify the money supply as exogenous according to neoclassical methodology.

Dow's methodological challenge to this approach is to suggest that the content of a theory may have both formal and non-formal components. A theory may contain a formal model of equations in which it makes sense to identify some variables as exogenous and some as endogenous, but it may also have a set of propositions which cannot easily or effectively be formalised mathematically, yet which describe important forces at work on the variables of the system. Thus, variables which are exogenous to the formal component of the theory may nevertheless be endogenous to the theory taken as a whole. The money supply, for example, may be best modelled as exogenous in the formal model but this does not mean that it is exogenous to the overall model nor controllable by the central bank. Dow (1988, 23) argues that the non-formal part of a monetary theory may, for example, involve historical–institutional propositions about the response of the financial system to central bank actions aimed at exerting control over the financial system. This response may well undermine ultimate control of the system by the

central bank, so that it would be quite sensible to regard the money supply as endogenous in such a theory even if it is exogenous to the theory's system of formal equations. She cites both Kaldor (1970) and Moore (1979) as theorists who offer theories of monetary processes which attempt something along these lines in contrast to standard macroeconomic models (Dow 1988, 21, 27).[2]

Davidson (1991) also offers two criteria for identifying whether the money supply is exogenous or endogenous in a particular theory: its interest-elasticity and its independence from other variables. According to the first criterion, the money supply is exogenous if its interest-elasticity is zero (M_1^S in panel (a) of Figure 1.1). In this case it can be drawn as a vertical function

(a) Interest sensitivity of M^S (b) Dependence of M^S
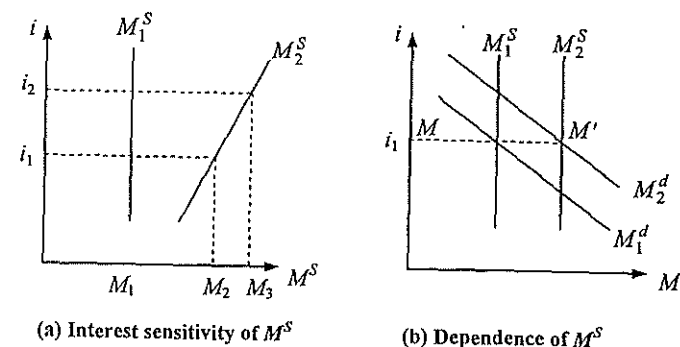
Figure 1.1   Davidson's treatment of exogeneity–endogeneity

of interest rates as it often is in the textbooks. According to this approach, any degree of positive interest-elasticity, no matter how small, renders the money supply endogenous. Davidson (1991, 249) thus points out that Moore's horizontalist theory of the money supply (considered in Chapter 7 of this book) should not be taken as defining the essential nature of monetary endogeneity but as the limiting *extreme case* of endogeneity.

Davidson's second criterion is that the money supply is exogenous in a particular model if it does not respond to the value of other variables in the model. Thus if the money supply is interest-insensitive, and therefore exogenous according to the first criterion, but responds to changes in demand for money despite this interest-insensitivity, it can still be regarded as endogenous. This is illustrated in panel (b) of Figure 1.1. As the demand for money function shifts to the right for whatever reason, the money supply function also shifts to the right. Thus while the vertical curves M_1^S and M_2^S indicate interest-insensitivity and therefore suggest money supply exogeneity,

the horizontal line MM' indicates the locus of money market equilibria which trace the *actual* levels of the money supply, and suggest money supply endogeneity. Such a situation could arise via interest rate targeting or accommodation by the central bank for example.

Like Dow (1988), Desai (1992) identifies causality and controllability as the core issues in the debate over the definition of money supply endogeneity. He suggests that the values of prices, interest rates and output all depend on an exogenous money supply in conventional macroeconomic theory (Desai 1992, 762). This has implications for policy in as much as the supply of money, being an exogenous variable, is also controllable by some public authority. Desai points out, however, that it is possible to have an exogenous variable that is not controllable, like sunspot activity in a model of weather patterns. He also points out that the concept of exogeneity only makes sense in the context of a particular model, and participants in the monetary endogeneity debate have all too often failed to properly specify the model they have in mind when advancing their arguments, a point which is well taken. His central distinction is between two types of exogeneity: *weak* exogeneity and *strong* exogeneity. The first involves a variable which is not determined directly by any of the variables in the model but is subject to what might be called feedback effects from other variables. The second precludes any such feedback effects. For Desai (1992, 764) weak exogeneity is a necessary but not sufficient condition for the money supply to determine prices, interest rates and output as advocated by standard models.

Cottrell (1994a, 597) identifies three types of monetary endogeneity. The first arises from the portfolio decisions of banks and individuals. A change in interest rates may lead to economising portfolio behaviour and cause changes in the money supply within the familiar money base multiplier approach discussed in the following section of this chapter. This he calls *portfolio endogeneity*. The second arises from deliberate accommodation by the central bank to meet the needs of the economy. This he calls *political endogeneity* since central banks will usually provide this accommodation for political reasons. These two types correspond to Pollin's (1991) frequently-cited classification of endogenous money theories into structuralist and accommodationist. Cottrell's third type is labelled *structural endogeneity*. This type of endogeneity may have similarities with the other types of endogeneity identified by Cottrell but whereas those other types are inherently volitional, structural endogeneity requires a money supply response of some kind. This necessity emerges from the very structure of the economic system and Cottrell argues that it is this type of endogeneity which is found in the works of Kaldor and Moore.[3]

Wray (1992, 298ff) follows some aspects of Davidson's approach outlined above. He identifies three senses in which the terms exogeneity and endogeneity may be used. *Control* exogeneity refers to whether the variable is determined outside the model or not. This appears to correspond to the first of the categories suggested by each of the treatments discussed above. *Theoretical* exogeneity refers to whether any of the variables determined within a model can exert a secondary influence on the variable in question, for example by some kind of reaction function. *Statistical* endogeneity refers to independence in the error terms of unobserved explanatory variables in a model. This definition attempts to account for a correlation which may operate through variables omitted from the model specification.

There is a certain degree of overlap between these treatments of the exogeneity–endogeneity dichotomy. Most of the approaches identify causality and controllability as the central criteria for distinguishing an endogenous money supply from an exogenous one. Desai's concept of weak exogeneity appears to coincide with Davidson's concept of variables which are interest-insensitive but not independent from other variables. Such variables also appear consistent with Dow's identification of variables exogenous to a formal model but influenced by factors which are not easily modelled such as historical–institutional factors. While Wray associates control with explanation within the formal model (something which Dow would appear to challenge), he also distinguishes between determination directly by the model and feedback or reaction effects which are more indirect. There also appears to be quite a close connection between Wray's theoretical endogeneity and Desai's weak exogeneity.

Most of these writers reject the idea that the money supply is exogenous in the strongest sense of the term within their particular taxonomy. Instead they argue for a money supply that is *non-controllable, weakly exogenous, theoretically endogenous* or *dependent* as the case may be. In the terminology employed by Rousseas (1992, 96), the money supply is *effectively endogenous*. That is, for whatever reason, the money supply responds to the value of other variables in the economic system. This position clearly stands in contrast to the conventional view mentioned earlier in this chapter. The strength of this taxonomic literature is its identification of control as an important concept in ascertaining whether the money supply is endogenous or exogenous, a concept which is clearly a feature of the conventional view of money supply processes considered in more detail in the following section.

1.3 THE STANDARD MODEL OF EXOGENOUS MONEY SUPPLY DETERMINATION

Many of the arguments designed to demonstrate that the money supply is exogenous and under the control of the central bank revolve around the more limited proposition that the monetary base is exogenous and controllable. Money supply exogeneity then follows given a money base model of money supply determination which can be found in any macroeconomics textbook (see Newlyn and Bootle 1978, 19–25; McCallum 1989, 55–71; Mishkin 2004, 357–391). At the heart of money base models is the connection between base money (the most liquid category of asset in the financial system) and the money supply more broadly defined (to include assets readily convertible into base money, such as bank deposits).

This connection is illustrated in the money supply multiplier relationship of equation (1.1) below:

$$M = m \cdot H \qquad (1.1)$$

where the three terms in this equation are given as follows:

$$M = C + D \qquad (1.2)$$

$$H = C + R \qquad (1.3)$$

$$m = \frac{(C/D) + 1}{(C/D) + (R/D)} \qquad (1.4)$$

C being the amount of currency held by the non-bank public, D the amount of deposits which are liabilities of the banking system and R the amount of the banks' deposits at the central bank.

Equation (1.1) can be derived in one of two ways. Firstly it may be derived from a simple algebraic manipulation of identities (1.2) and (1.3). Alternatively, it may be obtained by taking the sum of an infinite geometric series which logically follows from a description of the flows of deposits and lending in the banking system. Goodhart (1984, 182–183) derives equation (1.1) by the first method. Newlyn and Bootle (1978, 19–23) on the other hand obtain equations (1.1) and (1.4) via the second method.

This second method identifies the key aspects of agents' financial behaviour in terms of portfolio ratios. The relevant agents are members of the public and the banks. Members of the public hold a balance between cash and deposits represented by the ratio between these two variables. The banks similarly hold a proportion of funds deposited with them in the form of

reserves deposited at the central bank. The ratio of these reserve deposits to the public's holding of bank deposits determines the degree to which banks are able to meet any demand that might exist for loans.

Newlyn and Bootle prefer this behavioural approach to the money base model because the ratios which it uses may be influenced by variables such as the relative yields on alternative financial assets to bank deposits and prudential requirements imposed upon banks by the monetary authority. A stronger economic rationale thus underpins this approach to money supply modelling as compared with the alternative *coefficients of expansion* approach despite the fact that the coefficients of this approach indicate 'the relationship which must necessarily exist between primary [base] money and secondary money [which includes bank deposits]' (Newlyn and Bootle 1978, 22). Hence while Newlyn and Bootle prefer the behavioural formulation over the coefficients of expansion formulation, there is no suggested contradiction between the two.[4]

Given this explanation of the money multiplier approach, Newlyn and Bootle indicate its strength as follows: the 'multiplier approach to the credit structure has the merit of reflecting the dependence of the whole inverted pyramid of credit on primary money' (Newlyn and Bootle 1978, 28; see also Rist 1966, 210). The importance they attach to primary money leads them to the conclusion that the money supply is in fact under the control of the monetary authority. The cash base of the system, together with its behavioural ratios, set the limits within which the money supply is determined. Control of this base (and these ratios) limits the ability of the banks to lend and therefore to create additional deposits. The monetary authority is able to set one of the ratios which determine the multiplier and to determine the size of the money base itself. As a result it has a strong degree of control over the crucial parameters of the system and therefore over the money supply itself.

An important counterexample to the case for central bank control which Newlyn and Bootle consider is the possibility of a situation in which the banking system has over-extended itself by granting more loans than the parameters of the system can support. In such a situation individual banks can attempt to obtain additional funds to support this over-lending by increasing the rate of interest paid on deposits. If this policy is successful such funds must come from one of three sources: other banks or financial institutions; a reduction in the cash ratio of the non-bank public; or an injection from the central bank under some form of lender of last resort facility. For the banking system as a whole the first source is obviously not available. Newlyn and Bootle admit the second as a real possibility so that the parameters of the system are capable to some degree of adjusting to cope with a lending over-extension. The third, however, is a matter of pure discretion on the part of the

central bank which may be unwilling to make such injections if its inclination is toward monetary control. Despite the availability of additional funds via the second channel, however, Newlyn and Bootle argue that the money supply will remain under central bank control:

> Even if such interest payments as the banks could afford [in order to attract additional reserves to support a lending over-extension] were effective, however, their gain in cash could be offset by the action of the monetary authorities in contracting the total supply of cash. (Newlyn and Bootle 1978, 24)

The most effective way in which the central bank or monetary authority could contract the amount of cash or base money is via the sale of government securities on the open market. The condition for the effectiveness of such operations is the standard one of the existence of a sufficiently deep market in which trading may take place.

There are occasions, however, when the central bank's ability to influence the cash base of the system by dealing in government paper will undermine its ultimate control of that base by opening up the third channel by which banks can obtain additional funds. Again Newlyn and Bootle explicitly consider this possibility: it 'involves consideration of central banks' function as the *lender of last resort* to the financial system and to the government' (Newlyn and Bootle 1978, 25). In other words, it is possible that funds may be flowing *out of* the banking system via open market operations but may at the same time be flowing *into* the system via the lender of last resort facility. This is, as we shall see, an argument used by some advocates of endogeneity but Newlyn and Bootle dismiss it as having any ultimate undermining influence on the monetary authority's ability to control the cash base and, through it, the money supply. The basis of their dismissal revolves around the proposition that 'the central bank can determine the rate of interest at which this support is given' (Newlyn and Bootle 1978, 26). They also indicate that this bank rate is usually kept above the marginal rate of interest at which banks can normally lend.

This argument is an interesting one. Banks will not make use of the support facility of the central bank to expand their lending because the interest rate attached to the facility will make it prohibitively expensive. The curious thing is that some endogeneity theorists include precisely the same proposition as a central part of their own arguments aimed at arriving at exactly the opposite conclusion. This point will be discussed at some length later in the book. For the moment it should be noted that Newlyn and Bootle provide one of the most intelligent and comprehensive explanations of the standard case for monetary exogeneity that may be found in the literature, and the reference point their work defines will be used throughout the rest of the book.

1.4   CENTRAL ISSUES AND PLAN OF THE BOOK

As argued in Section 1.1, a substantial degree of consensus exists among Post Keynesian monetary theorists against the model of exogenous money supply determination outlined in Section 1.3. A number of points of disagreement, however, continue to exist. Hewitson (1995, 291) identifies interest rate determination as the most divisive of these issues. As suggested by Rochon (1999a) Post Keynesians universally reject the neoclassical concept of the natural rate of interest and all accept some degree of central bank control over short term interest rates at least, but the precise degree of this central bank control and how far along the term structure it extends is a matter of the most fundamental disagreement. Hewitson (1995, 291–298) identifies two Post Keynesian interest rate schools: the mark-up school which sees interest rates as set essentially exogenously by the central bank; and the liquidity preference school which retains Keynes' (1936) theory of interest as a fundamental element in non-neutrality theory.

Hewitson's dichotomisation largely corresponds to Pollin's (1991) categorisation of endogenous money theories into *accommodationist* and *structuralist* approaches (compare Rochon 1999a; Moore 2001). The work of Kaldor (1970, 1983, 1985, 1986) and Moore (1979, 1988a, 1988b) represent the accommodationist approach with its stress on the creation of deposit-money via the bank credit process, and reserve accommodation of bank lending by the central bank at an exogenously determined interest rate. The structuralist approach associated with Minsky (1982, 1986), Rousseas (1992), Dow and Dow (1989) and Wray (1990) argues negatively that central banks need not, and do not, always accommodate bank credit growth as automatically as the Kaldor school suggests, and so positively replaces the principle of accommodation with an emphasis on bank liability management in rendering the money supply endogenous (Pollin 1991, 375).[5] The main consequence of this replacement is that money supply endogeneity is obtained at increasing interest rates. Thus not only do Post Keynesians disagree about the determination of interest rates, they also disagree about the slope of the money supply function. The Kaldor–Moore position suggests that the money supply function should be horizontal whereas the structuralist position argues for an increasing money supply function with interest rates rising as the volume of money expands.

The significance of these two related issues lies in the possibility that the process of interest rate determination associated with an upward sloping money supply function allows a theoretical system otherwise designed to reflect money non-neutrality to become victim to long run money neutrality. Cottrell (1994a, 593) describes this possibility in terms of a phenomenon

which may be called the *Keynes effect*. According to this effect, price deflation in the face of unemployment reduces the demand for money and hence interest rates, and thereby stimulates demand until the unemployment is eliminated. It is a phenomenon perfectly capable of operating in a theoretical system composed of the principle of effective demand and the liquidity preference theory of interest and it essentially undermines *The General Theory*'s purpose of providing a monetary explanation for unemployment equilibrium. The question that emerges is whether *The General Theory* contains any additional features that are capable of insulating its superstructure from the operation of the Keynes effect or whether, in the absence of such protection, some other feature can be designed to deliver this protection. If such a feature can be designed, what implications would it have for the existing apparatus of *The General Theory*?

Cottrell (1994a, 591) identifies three possible mechanisms which could theoretically prevent the operation of the Keynes effect in the context of *The General Theory*, only one of which could be defined as monetary. At the heart of this monetary mechanism is the failure of interest rates to fall in the face of unemployed resources, so that the spending necessary to generate increased output is not forthcoming. Cottrell (1994a, 593–596) considers four arguments which could prevent the reduction in interest rates required by the Keynes effect. These are: Rogers' (1989) conventional theory of interest; Keynes' own theory offered in chapter 17 of *The General Theory* associated with the essential properties of money and interest; an additional set of arguments offered by Keynes in chapter 19 of *The General Theory*; and the radical monetary endogeneity of Kaldor and Moore. Cottrell rejects Rogers' argument and Keynes' chapter 17 argument for reasons that will be examined in Chapter 4 of this book. The argument with the greatest promise, he suggests, is that of chapter 19 of *The General Theory* although there appears to be some doubt about this in the final analysis.

Cottrell also rejects the argument based on Kaldor's and Moore's monetary endogeneity for several reasons. Firstly, monetary endogeneity can be shown, according to Cottrell, to be neither necessary nor sufficient to generate unemployment equilibrium. It is unnecessary in explaining long run unemployment since Keynes ultimately provides a successful alternative explanation of unemployment in *The General Theory* assuming an exogenous money supply. It is insufficient because Wicksell (1898) provides a neoclassical theory of full employment equilibrium assuming that the money supply is endogenous (Cottrell 1994a, 600; see also Pivetti 1991, 98; 2001, 108). Given this argument, Cottrell suggests that it would be unwise to accept the radical theory of endogeneity because of the collateral damage it would inflict on other aspects of the framework in *The General Theory*. Interest

rates, for example, are determined exogenously by the central bank in radical endogeneity with no role for liquidity preference. Since liquidity preference is a central feature of originality in *The General Theory*, its deposition would do serious damage to Keynesian economics. This position appears to be shared by Wray (1990, 1992), Dow and Dow (1989) and Maclachlan (1993) among others. A second problem with accepting radical endogeneity is that it becomes impossible to speak intelligently of the money supply as a variable independent of the demand for money within its framework and this does not square with reality according to Cottrell. Curiously, Cottrell sees radical endogeneity as inconsistent with Keynes' argument in chapter 17 of *The General Theory* which he suggests is worth preserving (although he also argues that chapter 17 unsuccessfully deals with the Keynes effect). Cottrell's final reason for rejecting radical endogeneity is that it is inconsistent with Keynes' post *General Theory* discussion of the finance motive for demanding money, where investment can be constrained by a lack of finance if not by a lack of saving. He views this analysis as implying that investment can be quantity-constrained due to a lack of finance, but if the money supply always accommodates demand in the Kaldor–Moore sense then investment will never be constrained in this way. This argument receives close attention in Chapter 8 of this book.

Cottrell's position is shared by a significant number of Post Keynesian theorists. Thus while some form of moderate endogeneity is accepted by these theorists, the radical or extreme endogeneity of Kaldor and Moore is generally rejected. But the central theme of this book is that the thrust of this analysis is mistaken and that Kaldor and Moore provide a vital theoretical contribution to Post Keynesian monetary theory by grafting endogenous money onto the framework of *The General Theory* in such a way that it is not only compatible with the superstructure of *The General Theory* but so that it insulates that superstructure from the workings of the Keynes effect in a manner that no other suggested mechanism has been able to do. The Kaldor–Moore version of endogeneity thus solves one of the fundamental problems of Keynesian economics. The implications of this theoretical construction for elements of *The General Theory* such as liquidity preference theory will indeed be critical and must be considered carefully but it is shown that these implications do not provide a justification for rejecting Kaldor's and Moore's version of endogeneity.

It will not be argued, however, that the works of Kaldor and Moore are of equal value. Kaldor provides a theoretically superior analysis of endogenous money to Moore's, the latter involving a number of important analytical errors. However, it will be shown that despite these errors, Moore strengthens the overall theory of endogeneity by providing a strong institutional analysis

of the banking system which includes the behaviour of the commercial banks, the central bank and the wholesale money markets. It is also argued that Kaldor's contribution to monetary economics which spans the years 1939 to 1986 forms an integrated whole which explicitly dovetails with the framework of *The General Theory*.

The book proceeds with a careful examination of the issues identified by Cottrell (1994a), Hewitson (1995) and Pollin (1991). Chapter 2 provides a consideration of the central themes of money in classical economics. This analysis is of value for two reasons. Firstly, frequent parallels are drawn between the work of Kaldor and the Banking School of the classical period. Ascertaining the nature of this connection is one objective of this treatment. But secondly and more importantly, exploring this connection will identify key theoretical issues which will be helpful in interpreting the significance of Kaldor's contribution in the modern context. Chapter 3 considers the neoclassical model of endogeneity espoused by Wicksell (1898) and its connection with the traditional quantity theory of money. It is shown that, contrary to the position of Cottrell and Pivetti, Wicksell does *not* provide an effective full employment theory of output which incorporates an endogenous money supply and that in fact endogenous money is antithetical to the model advanced by Wicksell. Monetary endogeneity thus has the potential to be a much more powerful analytical device than Cottrell and Pivetti are prepared to admit. Chapter 4 compares the neoclassical model of full employment outlined in Chapter 3 with Keynes' model of unemployment advocated in *The General Theory*, and examines the monetary reasons identified by Keynes in chapters 17 and 19 to prevent his system from falling victim to the Keynes effect. It is argued that Keynes does *not* provide effective insulation of his theoretical framework from the Keynes effect either in chapter 17 or chapter 19, and that protection must be sought elsewhere.

Chapters 2 to 4 thus provide a detailed background of theoretical issues against which the Kaldor–Moore thesis of endogenous money can be and should be considered. This consideration is undertaken in Chapters 5 to 8. In Chapters 5 and 6 Kaldor's contribution is examined. Chapter 5 looks at Kaldor's interaction with monetarism which some commentators refer to as his mature theory of endogeneity. Chapter 6 demonstrates a logical continuity between Kaldor's earlier writings on interest rate determination and his later treatment of monetarism and endogeneity. Chapter 7 considers Moore's contribution. This revolves around two elements: a theory of bank behaviour and a theory of wholesale interest rate determination, both of which develop and extend Kaldor's work. It will be shown, however, that while these are important contributions that are worth building into a large-scale theory of output and employment incorporating endogenous money, Moore makes a

series of theoretical mistakes and interpretations which contradict Kaldor's superior theoretical formulation. For this reason Kaldor must be seen as by far the senior partner in the *accommodationist* school. Chapter 8 examines some of the key criticisms of the Kaldor–Moore theory. While the issues considered are analytically important, all of them are shown to be more than adequately dealt with by the Kaldor–Moore hypothesis.

Moore's work in particular raises issues about the role of the banking sector in a revised Keynesian model of the macroeconomy characterised by money non-neutrality. A variety of approaches to modelling the banking system are therefore considered in Chapter 9 before a model is developed for use in the following chapter. Chapter 10 incorporates the banking model developed in Chapter 9 and formalises the treatment of the Kaldor–Moore theory from Chapters 5 to 7 to construct a revised non-neoclassical Keynesian model of a closed macroeconomic system. The features of this model are also explored. Finally Chapter 11 draws some conclusions about the questions raised by Cottrell (1994a) and some suggestions are made for the development and extension of the Kaldor–Moore model.

NOTES

1. See Smithin (1994, 151–170) for an excellent discussion of the costs of inflation.
2. Other theorists cited by Dow in this context include Tobin (1970), Davidson and Weintraub (1973), Godley and Cripps (1983).
3. Although in an earlier paper Cottrell (1986, 4) also cites Cramp (1970, 1971) as possessing such a concept of endogeneity.
4. Newlyn and Bootle (1978, 28) refer for support on this point to the 1975 edition of Goodhart's *Money, Information and Uncertainty* but no page number is provided. This assessment is interesting because it will be argued later that the coefficients of expansion approach is not as wrong as some endogeneity theorists suggest. This approach sets out a simple framework within which the money supply process may be described, so that as Newlyn and Bootle argue, a certain relationship between base money and broader money must always hold given the coefficients. The problem arises when no theory of the determination of the coefficients or the money base is offered and the framework becomes a de facto theory. It is important to note that Newlyn and Bootle share this concern about the framework.
5. Rochon (1999a, 1) cites Pollin's categorisation but in another place expresses the categorisation slightly differently in terms of a *revolutionary* theory and a *portfolio* theory of endogeneity (Rochon 1999b, 2). The first of these is built around satisfaction of Keynes' finance motive by the revolving fund which the existence of banks facilitates. Rochon's *circuitist* approach is designed to fit within this category. The second looks very much like Pollin's *structuralist* school in which Rochon locates Kaldor and which for Rochon is simply a modification of orthodox neoclassical theory focusing on variability in the velocity of circulation. Dalziel (1996, 120) also identifies two schools of endogeneity: the circuitist school and the Post Keynesian school of Kaldor and Moore.