

The Post-Keynesian and Institutional Theory of Money and Credit

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and
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Author's Note: In June 1986 Alfred Eichner was visiting Europe. Inevitably he stayed in London for a few days during which we had endless discussions on post-Keynesian and institutionalist economics, on their similarities and possible differences. We both felt that the area of money and credit is a very good example of the post-Keynesian and institutionalist positions being so similar that it would be very difficult to distinguish one from the other. We decided to write an article to draw the main thrust of such theory which we should appropriately label "The Post-Keynesian and Institutional Theory of Money and Credit," and that we should try to publish it in the Journal of Economic Issues. We were both writing at the time in the same area and we decided to compare notes once our respective pieces were near completion. This we began doing last summer, but we never quite managed to finalize matters. Alfred's untimely death on 10th February, 1988 devastated us all and impeded that initiative. I suggested to Marc Tool that I would be prepared to finalize and submit this article on behalf of both of us. I am extremely grateful to Marc for agreeing to consider this paper for the Journal of Economic Issues and for making invaluable suggestions. It is for me a memorial to Alfred, a great friend and colleague.

—Philip Arestis

The purpose of this article is two-fold: first, to identify the main elements of what constitutes post-Keynesian and institutionalist monetary theory and, second, to put forward a model general enough to

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encapsulate most, if not all, of the constituent elements of the post-Keynesian and institutionalist theory of money and credit. One further novel aspect of this article is that we account for the possibility of the *openness* of economic systems. This is an aspect that has been ignored by the literature on both post-Keynesian and institutionalist economics.

The emphasis in post-Keynesian and institutionalist monetary theory is on the proposition that “Monetary economics cannot help being institutional economics” [Minsky 1982, p. 280] and that “Capitalism is a monetary economy” [Dilland 1987, p. 1641]. In this view money capital is an institution that is inseparable from the other institutions that comprise economic systems. Money is not merely a medium of exchange. It is tightly linked to the behavior of the enterprise sector and the economy as a whole. Therefore, the basic theme in this approach is inevitably, “The Monetary Theory of Production” [Keynes 1973; Veblen 1964]. It is in fact this Veblenian/Keynesian premise that constitutes the core of what we have labelled in this study “the post-Keynesian and institutionalist theory of money and credit.”

In this monetary theory of production, it is not surprising to find that credit rather than money is the mechanism that enables spending units to bridge any gap between their desired level of spending and the current rate of cash inflow. Money is viewed as essentially endogenous in a credit-based economy, responding to changes in the behavior of economic entities, rather than being subject to the control of the monetary authorities. Money, in this view, is an output of the system, with the endogenous response by the financial sector governed by the borrowing needs of firms, households, and the government. Once it is recognized that money is credit-driven and therefore endogenously determined, any money creation emanating from fiscal or debt management operations initiated by the authorities or from a favorable balance of payments, can be neutralized through an equivalent reduction in commercial bank credit brought about by the actions of private economic agents.¹ It clearly follows that government may not be able to create money directly (see, however, Chick [1986]). What it can do, instead, is redistribute money among different groups of economic agents. This can happen when governments, in their attempt to increase/reduce the stock of money, set in motion the process whereby bank credit is created/destroyed by groups of economic agents. To the extent that the latter groups are different from those initially receiving/destroying money following the government’s initiatives, redistribution of money between those groups takes place.

The endogenous nature of money and credit is further elaborated

upon in the next section with the constituent elements of the model under discussion being brought together in the section that follows. It is precisely here that the *openness* of economic systems is emphasized and its implications for the post-Keynesian and institutionalist theory of money and credit are compared with the neoclassical view. A final section summarizes the argument.

The Endogenous Nature of Money and Credit

The necessary starting point in analyzing the role of money and credit is recognition of the fact that an advanced industrial economy is perforce a monetarized production system, and that such a system presumes the existence of credit-based, as distinct from commodity or even fiat, money.² A credit-based system of money has two distinguishing features. One is the means by which payment is made in any business transaction—normally by check or bank draft—and the second is the means by which the amount of funds in circulation is increased.³

A system of payments based on checks makes it possible, through the process by which banks make loans, to vary the amount of funds in circulation in response to changes in the level of real economic activity. Indeed, this advantage helps to explain why a system of credit-based money is likely to evolve coincidentally with the process of industrialization itself. The financial problem inherent in any market-regulated system of production is that goods cannot be produced until the necessary labor and material inputs have first been obtained, and those inputs cannot be purchased except out of the proceeds from the sale of the output produced by them. This creates the need, on the part of business firms, for working capital. While this need can be satisfied, at least initially during the early stages of industrialization, out of the profits from trade, it is likely to be only a matter of time until a group of specialized firms known as banks emerge to supply other firms with working capital on a regular basis.

Under a credit-based system of money, the amount of funds in circulation depends on the amount of loans made by banks and thus on the demand for credit. While any type of bank loan will have the effect of increasing the amount of funds in circulation, whether the loan is to a business firm or, as increasingly is the case, whether it goes instead to a member of some household, the key to the process is the working capital that banks routinely provide to going concerns. Whenever business firms experience an increase in orders and must then act to expand output, they can be expected to seek bank loans to finance the purchase

of the labor and material inputs they need. With a contract in hand for the delivery of goods sometime in the future, a business firm will, under ordinary circumstances, have no trouble obtaining a loan from any one of the banks with which it maintains an account.⁴ The bank on its part, in making the loan, will simply credit the firm's account with the face amount on the note that has been signed, less a certain discount. In this way, the firm will gain a bank balance it did not previously have—and against which it can then write checks in payment for any labor services or material inputs. Meanwhile, both the bank's assets (under the heading of loans) and its liabilities (under the heading of deposits) will increase by the amount of the loan. The discounts on the loans the bank has made (which, when compared to the actual amount of funds obtained by the borrowers, constitute the rate of interest on those loans) will, at the same time, enable the bank to cover its costs and perhaps even earn a profit.

Any loan by a bank, since the loan simultaneously increases the deposits against which checks can be written, will necessarily increase the amount of funds in circulation. The process also works in reverse. As loans are paid off without being renewed or offset by loans to other parties, the total amount of funds held as deposits by banks will decline. The amount of funds that can be used in payment for goods and services thus depends on the amount of bank loans. Indeed, this is why the term "credit-based system of money" applies.

Nonetheless, some form of fiat, if not commodity, money is likely to be retained as an essential component of the credit-based system. This is because, in order to induce a bank's customers to deposit their funds with it, the bank must be able to repay them in something other than a check drawn on the bank's own account. In other words, the bank needs some type of currency to serve as a reserve, and this can only take the form of commodity or fiat money. In the earlier stages of their evolution, banks would have had little choice but to hold a certain amount of gold or silver so as to be able to satisfy the demand of depositors for repayment. However, more recently, with the establishment of stable governments prepared to use their considerable taxing power to support a national currency, commodity money has generally been replaced by fiat money as the form in which banks hold at least part of their reserves.

We should clarify at this point the role played by bank reserves. In the orthodox view, the amount of bank reserves is believed to be exogenously controlled by the monetary authorities, giving rise to the following well-known formula: $M = m.B$, where M is the money stock, m is the money multiplier and B is the monetary base—that is, the amount

of bank reserves plus the amount of currency held by the non-bank public. The direction of causation is assumed to run from B to M , with the latter further assumed to influence the level of economic activity, as measured by Gross Domestic Product or some similar aggregate figure.

In the post-Keynesian and institutionalist analysis, the direction of causation is reversed. It is assumed that, in an economic system that is expanding over time, whether in real or just in nominal terms, the monetary authorities cannot prevent bank reserves from growing apace, except within relatively narrow limits, without endangering the liquidity of the banking system [Guttentag and Herring 1983]. This explains why the monetary authorities have consistently followed an accommodating policy, providing banks with the reserves they need to meet the credit needs of their customers, despite the criticisms of the monetarists and other economists that such a policy is the source of inflation. For the monetary authorities to act in any other manner would, in fact, be contrary to the purpose for which central banks have been established in every advanced industrial country. That purpose is to act as “lender of last resort” and preserve the liquidity of the banking system [Kaldor 1982]. Alan Greenspan, Chairman of the Federal Reserve System, was very categorical on this point when he argued that “The Federal Reserve, consistent with its responsibilities as the nation’s central bank, affirmed today (Tuesday) its readiness to serve as a source of liquidity to support the economic and financial system” [Keegan 1987].

The monetary authorities must therefore accommodate the reserve needs of the financial markets in general and of the banks in particular. Their failure to do so will, in the short run, give rise to one or more of the following effects: (a) a financial crisis, (b) a cyclical downturn, or (c) a rise in the level of interest rates. The last, and least undesirable, of these three possible consequences of a non-accommodating policy by the central bank is the one likely to be felt most immediately. A reduction in the banking system’s excess reserves will lead, in Great Britain, to a rise in the bank rate and, in the United States, to a rise in the Federal funds (if not also the rediscount) rate. Since the rise in interest rates is unlikely, by itself, to reduce the demand for loans sufficiently to lower significantly the rate at which the amount of funds in circulation is growing, the monetary authorities are likely to put pressure on the banks more directly to cut back on their lending activities, thereby forcing the banks to cut off loans to entire classes of borrowers or to ration credit in other ways. It is this cutting off of credit, even more so than the rise in interest rates, that is likely to lead to a cyclical downturn in the level of economic activity. The cyclical downturn, by reducing busi-

ness and other cash flow, will create an ever-greater demand for credit; and if the monetary authorities, in an effort to continue limiting the growth of the “money supply,” refuse to provide the necessary bank reserves, a financial crisis—with the loss of liquidity by the banking system and widespread insolvency—is likely to ensue [Minsky 1982].

In the longer run, the effect of a non-accommodating policy is likely to be a series of financial innovations that further diminish the monetary authorities’ control over the banking system. The emergence in recent decades of certificates of deposit (CDs), negotiable CDs, money market accounts, repurchase agreements and a number of other financial innovations, must be seen in this context. They are simply the longer-term response of the banking system to attempts by Central Banks to implement non-accommodating policies. It is, in fact, the case that financial innovations enable banks to become increasingly immune from Central Bank control and consequently less dependent upon it as the lender of last resort.

These propositions are fully supported by monetary history and experience as well as by the institutional set-up. The examples are numerous. To begin with, the institutional changes that have taken place in various countries, designed specifically to enable monetary authorities to impose greater constraints on the commercial banks have been ineffective and largely abolished [Gowland 1984; Podolski 1986. Wojnilower 1980]. The story of “credit crunches” in the United States in the 1960s and 1970s is also very relevant. When the monetary authorities attempted to squeeze credit markets, they found themselves in a position where they had to “back off” for fear of provoking a scramble of liquidity [Wojnilower 1980]. Furthermore “liability management” ensures that in periods when the monetary authorities initiate credit stringency, commercial banks can find the required funds in the wholesale financial markets. So much so that bank customers expect a steady supply of funds even during periods of restrictive monetary policy. The existence of substantial “unused overdraft facilities” and “open credit lines” supports this proposition. These credit facilities, which are not included in monetary aggregates and the utilization of which is at the discretion of the banks’ borrowers (not the banks themselves), are reported as having exceeded bank demand deposits in the United States in 1980 [Wojnilower 1980, p. 289] and the narrow definition (M_1) of money supply in 1981 [Moore 1983, p. 543]. In the United Kingdom, commercial banks rely heavily upon previously negotiated overdraft limits. The total bank debt in the United Kingdom and the United States is between one-half and two-thirds of the formally committed total amount of outstanding lines of credit and overdraft facilities [Moore 1985, p. 25]. Note, however, Keynes’s reservations concerning

the extent to which these facilities were actually used and the extent to which they were readily available [Keynes 1930]. A related interesting development is the flourishing “inter-company” market in the United Kingdom, which could potentially expand further [Revell 1973].

It clearly follows that monetary authorities pursue accommodating monetary policies, for otherwise they would lose total control over financial markets. In post-Keynesian and institutionalist analysis, therefore, the causality of the orthodox theory referred to above⁵ should be reversed to read $B = (1/m)M$ where the causation is from M to B and not the other way around.⁶ When entrepreneurs expand production, and until the output is sold, there is a gap in working capital needs that is bridged by bank loans. Commercial banks will satisfy this demand for loans, which brings about an increase in bank deposits. Thus, variations in the supply of money are caused by fluctuations in the level of economic activity instead of the reverse. In all these, entrepreneurs and their “animal spirits” play the leading role [Robinson 1970]. They must predict the pattern of forthcoming effective demand and infer from this their working capital as well as investment needs, so that their loan requirements from the banks can be ascertained. The Central Bank sets the discount rate and commercial banks, their rates. At this level and structure of interest rates, commercial banks are ready to satisfy entrepreneurs’ loan requirements. These propositions are at the heart of the post-Keynesian and institutionalist analysis, which we move on now to elaborate, formalize and extend to cover other important aspects, especially the *openness* question referred to above.

A Formal Post-Keynesian and Institutionalist Model of Money and Credit⁷

We begin this section with the definition of the central variable of our analysis—“changes in bank lending to the public” (ΔBLP):

$$\Delta BLP = \Delta BLI + \Delta BLC + \Delta BLF \quad (1)$$

where ΔBLI stands for “changes in bank lending to industry,” ΔBLC stands for “changes in bank lending to consumers” and ΔBLF stands for “changes in bank lending to other financial institutions” and is treated as an exogenous variable.

The analysis conducted above clearly demonstrates that ΔBLI can be determined as follows:

$$\Delta BLI = \Delta BLI (\Delta GDP, EI/FI, X_0) \quad (2)$$

+ + -

with the signs under variables indicating the signs of partial derivatives. ΔGDP is “changes in gross domestic product” and (EI/FI) is the ratio of industry’s discretionary expenditure (EI) over industry’s discretionary funds (FI). In general terms, discretionary expenditure is that type of expenditure that has certain characteristics: that of postponeability and that of external financing (at least partly). Thus, investment expenditure and consumer durable expenditure are the two items that constitute discretionary expenditure. Discretionary funds are the cash inflows of sectors, defined as the difference between income received and non-discretionary expenditure. Now the ratio (EI/FI) is assumed to measure industry’s total external financing requirements and can be thought of as a useful proxy for *unexpected* changes in borrowing needs. We may, thus, view ΔGEP as capturing the *expected* changes and (EI/FI) the *unexpected* changes in industry’s financing needs. X_0 stands for any “credit policy” instruments designed to redistribute or even ration credit.

We can also write:

$$\Delta BLC + \Delta BLC (\Delta YDP, EP/FP, X_I) \quad (3)$$

+ + -

where ΔYDP is “changes in disposable income of the personal sector” and (EP/FP) is the ratio of the personal sector’s discretionary expenditure to discretionary funds. The explanation for the appearance of this variable in (3) is analogous to the explanation of (EI/FI) in (2). The appearance of the variables (EI/FI) and (EP/FP) in both ΔBLI and ΔBLC respectively has an implication worth commenting upon. These two ratios proxy the external borrowing requirements of the private sector. Thus, any successful attempt by the authorities to restrict actual cash flows as part of a conscious policy to implement monetary targeting, say, will inevitably result in increasing the borrowing requirements of the sectors and thus bank lending. Consequently, there would be a growth in monetary aggregates in response to the endogenous behavior of the private sector, when in fact severe monetary squeeze was intended. There are two implications that follow from this analysis: first, it becomes extremely unwise for monetary policymakers to be concerned with monetary aggregates. Second, it provides further theoretical support to the post-Keynesian and institutionalist argument that attention ought to be directed to credit and its availability rather than to futile monetary targets. In (3) there is also X_I , which is defined in precisely the same way as X_0 . Both X_0 and X_I are meant to capture what D. Lavoie has suggested to be analogous to shift variables that have

nothing to do with the slopes of the two relationships [Lavoie 1984]. They can be thought of as the credit policy instruments that can be designed “to control the quality of the credits being granted and to make sure that they are ‘productive’” [Lavoie 1984, p. 782].

Next, we write the aggregate bank balance sheet as:

$$\Delta SD + \Delta TD = \Delta BLP + \Delta BLG + \Delta BLOS - \Delta OBD$$

where ΔSD is “changes in sight deposits,” ΔTD is “changes in time deposits,” ΔBLP is as defined above, ΔBLG is “changes in bank lending to the government,” $\Delta BLOS$ is “changes in bank lending to the overseas sector” and ΔOBD is “changes in other bank deposits” (including changes in net non-deposit liabilities).

We postulate that the behavior of ΔSD depends on changes in the level of income (ΔY), reflecting the flow of funds into the banking sector as a result of changes in the level of economic activity. Changes in interest rates (ΔR) are also hypothesized to influence ΔSD to account for possible portfolio effects; ΔR , then, proxies the relative attractiveness of alternative financial assets available to depositors. The ratio (EP/FP) is included in the menu of the explanatory variables to register the need for sight deposits as discretionary expenditures of the personal sector (EP) deviate from the discretionary funds of the same sector (FP). In other words, the ratio (EP/FP) reflects the creation of deposits in response to the demand for them. We could, therefore, write:

$$\Delta SD = \Delta SD (\Delta Y, \Delta R, EP/FP) \quad (4)$$

+ - +

Turning now to the variable ΔTD we propose to argue that the “liability-side management” aspect clearly implies that the aggregate bank balance-sheet identity should be solved in terms of this variable alone. We thus have:

$$\Delta TD = \Delta BLP + \Delta BLG + \Delta BLOS - \Delta SD - \Delta OBD \quad (5)$$

This particular proposition needs some further explanation. As is well known, “liability-side” management has taken place in the industrialized nations following the U.S. example of the early 1960s. It was in fact in 1962 when in the United States negotiable certificates of deposit appeared in the financial markets and it was during the “credit crunch” of 1966 that their use was legitimized [Minsky 1986, p. 351]. Commercial banks in the United Kingdom, for example, began apply-

ing “liability-side management” in the early 1970s, using techniques that had been applied in the United States [Goodhart 1986, p. 81]. One important implication of this institutional banking practice is that commercial banks have been able to balance their books by issuing wholesale deposits (these are interest-bearing deposits comprised of large fixed-term deposits in general and certificates of deposit in particular; certificates of deposit are marketable wholesale deposits held by the non-bank public for a fixed period, three to six months). While in the past imbalances between changes in deposits and loans were financed by changes in marketable securities (especially government securities), the development of the wholesale deposit market since the early 1960s has meant that banks have been able to place large quantities of these liabilities in the marketplace at their own initiative. The adoption of liability management has implied for the commercial banks, first, a significantly easier accommodation to changes in the demand for loans than previously and, secondly, that the growth of bank lending has become the major driving force in the expansion of the operations of commercial banks. These institutional changes are of paramount importance in our analysis and reinforce very strongly the proposition that for post-Keynesian and institutionalist monetary theory, it is changes in the flow of wholesale deposits that adjust to provide the necessary funds for commercial banks to be able to finance their loan operations. Consequently, we are fully justified in propounding equation (5), where we assume that wholesale deposits are entirely time deposits which, we believe, is not an unrealistic assumption to adopt. For it is impossible to distinguish purely retail banks and purely wholesale banks given that modern commercial banks are multiproduct firms. It is also true to say that “the division between retail and wholesale has been broken down by what is termed ‘intermediate’ business, as some companies move between the two markets in response to credit needs” [Artis and Lewis 1981, p. 90].

In equation (5), $\Delta BLOS$ and ΔOBD are treated as exogenous variables. We are thus left with ΔBLG to consider. It is reasonable to argue that ΔBLG is determined through the government-budget-constraint identity. This relies on the assumption that the banking sector in the industrialized world provides the residual to private and overseas finance of the public sector borrowing requirement. If we allow ΔBC (private finance) to stand for sales of public debt to the non-bank public (including currency), ΔEF (overseas finance) to stand for changes in external flows, and $PSBR$ to stand for Public Sector Borrowing Requirement, (broadly the difference between government expenditure and tax

revenues), then, formally speaking, we may portray the above statement as:

$$\Delta BLG = PSBR - \Delta BC + \Delta EF \quad (6)$$

A very important consideration at this juncture concerns the magnitude of the ΔBLG -variable. It can be plausibly argued that the higher it is, the greater the possibility of severe constraints being imposed upon the economic policymakers. This proposition is directly related to the thesis that in reality the relationship between the financial community and the state is based on the former's economic power, and through this power the financial community acts upon the state. This relationship finds expression in the proposition that the financial community can, and does, dictate policies to suit their interests, which may not necessarily coincide with those of the economic policymakers. In order to highlight this proposition, we provide as an example the experience in the United Kingdom where "the City has exercised a dominant position in the determination of economic policy, which is to say that its perceived interests have generally, although not exclusively, been the guiding thread for economic policy. . . . The City has, in other words, largely set the parameters of economic policy and its interests have generally predominated" [Longstreth 1979, pp. 160–161]. Of equal importance here is the role of international financiers and multinational companies. With their ability to control enormous amounts of international money, which they could switch into and out of national currencies, government bills and bonds et cetera, they impose a serious constraint to governmental economic policies. Within this perspective, the argument that domestic financial capital has become allied to international financial capital can provide the theoretical background to the proposition that domestic financial capital can assume different economic objectives from those of the national government. It also provides the theoretical background to the conflict that conceivably could arise between domestic financial capital and the national government, and to the possibility of the domestic financial community being able to impose its wishes upon the economic policymakers.

Two of the three variables on the right-hand side of (6) are treated as exogenous, $PSBR$ and ΔBC . In a full macroeconomic model, $PSBR$ should be an endogenous variable determined essentially by the level and pace of economic activity. Here, we could simply hypothesize that it is determined in another part of the "complete" model, so that for the monetary sector it can be taken as exogenous for simplicity—the

overall analysis and results do not change at all. The ΔBC variable, however, deserves some further commentary. The demand for government debt is expected to be determined essentially by the *current* rate of interest relative to the *expected* changes in interest rates. The impact of a change in interest rates on the demand for bonds cannot be predicted accurately since expectations can be either extrapolative or regressive. Extrapolative expectations prevail when investors expect a given change to continue in the same direction, while regressive expectations prevail when investors expect a given change to reverse itself. Investors with extrapolative expectations will sell bonds, while those with regressive expectations will buy bonds following an increase in interest rates. Clearly, then, in an atmosphere like this the monetary authorities cannot establish with confidence what the required price change should be to bring about the desirable change in the demand for government bonds for, say, monetary control purposes. The greater the instability of interest rates in response to open market operations designed to establish a target rate for money supply, the greater the uncertainty surrounding the actions of the monetary authorities and, therefore, the higher the probability that the authorities will be unsuccessful in hitting their targets. It is for these reasons that we choose to treat ΔBC as exogenous, notwithstanding the possibility of some interest rate elasticity prevailing in the case of this variable. We are, thus, left with the variable ΔEF , which is treated as endogenous.

ΔEF is equal to the sum of current balance (CB) and capital movements, minus the *exogenous* changes in overseas lending to the public sector (ΔOLG) and the *exogenous* changes in bank lending to the public sector in foreign currencies ($\Delta BLGF$), so that:

$$\Delta EF = CB + \Delta KM - (\Delta OLG + \Delta BLGF) \quad (7)$$

Furthermore, we postulate that:

$$\Delta KM = \Delta KM(R/R_f, ER) \quad (8)$$

+ +

where R/R_f is the ratio of domestic interest rates to foreign interest rates (R_f) and ER is the exchange rate. The ratio of interest rates is included to capture the possibility of capital flows being sensitive to returns available internationally. These returns, however, are not expected to be accounted for simply by interest rates, but also by *expected* exchange rate movements. Thus, the inclusion of the exchange rate variable along with the (R/R_f) ratio in this particular equation. (ER),

in its turn, is hypothesized to be determined by the ratio of interest rates and the current balance:

$$ER = ER(R/R_f, CB) \quad (9)$$

Needless to say, the last three equations are, in fact, of paramount importance in that they help open up the model to external influences, thus enabling us to deal with the international dimension.

There is one implication emanating from (9) that is worth exploring at this juncture. So long as it is recognized that money supply is credit-driven and demand-determined, the exchange rate regime is of absolutely no consequence in the determination of money and credit. The importance of this implication can only be fully appreciated when the analysis pursued in this article is contrasted to the orthodox approach. The latter replaces equation (9) by the following equation, which determines the exchange rate by combining the monetary approach to the balance of payments with the Purchasing Power Parity (*PPP*) theory and the quantity theory of money:

$$ER = ER(M/M_f, R/R_f, \dots)$$

where *ER* is related to the ratio of domestic money supply (*M*) to foreign or world money supply (*M_f*) and the ratio of domestic to foreign interest rates (there are, of course, other variables as well but we ignore them for simplicity; they would not affect the argument in any way whatsoever). First of all note that the sign of (*R/R_f*) is opposite to what one might expect and, indeed, opposite to what the sign is in (9). This is so far the orthodox approach since an increase in the rate of interest (*R*) will raise the demand for money, which will necessitate an increase in prices to clear the market. The latter, via the *PPP*, leads to a depreciation of the currency. Be that as it may, what is particularly interesting here is that under a flexible exchange rate system, *ER* changes to clear the money market and *M* is treated as exogenous. Under a fixed exchange rate system, it is *ER* that is exogenously determined and *M* is then endogenous. For the argument of this article it makes no difference what exchange rate regime is in operation: money in our view is credit-driven and demand-determined regardless of which type of exchange rate prevails.

Finally, we consider interest rates. We take the view that interest rates can be controlled by the monetary authority. The rate under the

authority's control is the discount rate (r), changes of which influence directly changes in the market interest rates (ΔR) via a markup. We, thus, follow M. Kalecki's theory of markup pricing to interest rates [Kalecki 1971, chap. 5]. In this way market interest rates are seen as the "price" of financial "goods" with the markup being imposed by the individual banks on the banking industry and determined by their degree of monopoly or profit margin. The markup is based on unit variable banking costs that can be proxied by the discount rate as administered by the Central Bank. It really is the case that this type of analysis clearly demonstrates that the notion of a market equilibrium interest rate is simply a theoretical construct bearing no resemblance at all to the real world. The corollary of all this is that short-term interest rates are a set of politically administered, rather than market-determined, prices. This particular proposition has been given a lot of support recently by none other than the Governor of the Bank of England when he argued that "There is a popular perception that the monetary authorities dictate the general level of interest rates, and it is of course true that we are able to exert a very considerable influence on it" [Leigh-Pemberton 1987, p. 11]. When the rate of interest is viewed in this way, it becomes a distributional variable that determines the distribution of income between fixed-interest debt holders and the rest of the personal sector. Furthermore, the argument that the rate of interest is a politically determined distributional variable rather than a market-determined price implies more than just a rejection of the Marshallian demand and supply framework for determining the rate of interest and other monetary variables. It also implies that the rate of interest cannot be used to measure social time preference—that is, the value to society of goods that become available at different points in time and therefore the social time discount factor. It is, in fact, the secular output growth rate rather than any interest rate that is the more appropriate social time discount factor under these circumstances.

It is also assumed that open market operations can have an influence on market interest rates, so a second variable influencing ΔR is ΔABC . In the case of open economies such as the United Kingdom, changes in external flows can also have an impact on ΔR reflecting foreign demand for domestic government securities. All these assumptions are encapsulated in equation (10):

$$\Delta R = \Delta R (\Delta r, \Delta BC, \Delta EF) \quad (10)$$

+ + -

We may conclude this section by providing the money stock identity:

$$\Delta M = \Delta SD + \Delta TD + \Delta GDC \quad (11)$$

where ΔGDC stands for changes in government deposits plus currency in the hands of the non-bank public. It is important to cite (11) in order to make the point that ΔM can only be determined after the right-hand side elements have been explained. Money is, thus, a passive variable, it is a residue [Lavoie 1984]. The active variable, we argue, is “bank lending” as demonstrated above. Clearly, then, money is both credit-driven and demand-determined. The implication for monetary policy of this analysis is, of course, that it has to be replaced by credit and interest rate policy. For it is the case that the endogeneity of the supply of money does not mean “that accommodation to the ‘needs of trade’ takes place smoothly or equitably or that it is without cost in terms of distortions in the flow of credit. The problem of controlling the paths it takes by controlling the flow of credit through the economy remains” [Rousseas 1985, pp. 59–60]. For example, if bank lending to consumers is channelled through to imports and consequently creates a chronic deficit in the balance of payments, credit policy would be required to alleviate this problem. Minsky’s speculative “bubbles” are another relevant example in this context [Minsky 1982].

Summary and Conclusions

The monetary theory found in the standard orthodox macroeconomics textbooks differs radically from the preceding argument in that it assumes—implicitly if not explicitly—a system of either commodity or fiat money so that a stock, or supply, of money can be said to exist independently of the demand for credit. The failure to take into account the role played by credit-based money as the successor to systems based entirely on either commodity or fiat money is, by itself, sufficient reason to reject that body of theory.

The post-Keynesian and institutionalist approach to monetary theory on the other hand, entails certain characteristics that distinguish it sharply from the orthodox paradigm. The following *five* characteristics are probably the most impregnable.

The first characteristic refers to the argument that money is credit-driven and demand-determined. Loans constitute the majority of money. The determinants of loans should, therefore, be the ultimate determinants of the money stock. Thus, money does not arise as a result of intervention by monetary authorities; money is created as a by-product of the loans provided by the banking system. It clearly is the case, then, that credit money is not a parasite of the system: it is, indeed, a requirement of the economic system.

Secondly, commercial banks can never be constrained in their reserves. Most commercial banks are permanently indebted to their central bank. Once commercial banks have created credit money, they can get the reserves required from the central bank at the discount rate set by it. The increased cost of borrowing for the banks is passed over to their customers who are not expected to reduce their demand for bank loans since the latter is insensitive to changes in interest rates. The endogenous character of the money supply implies that there can never be "an excess supply of money." The recipients of such an "excess" would use it to repay bank debts. This argument explains convincingly, we hope, the post-Keynesian and institutionalist contention that government deficits and a favorable balance of payments have no direct effects on the creation of money, for any money thus created is completely compensated by an equivalent reduction in credit money.

The third characteristic relates to financial innovations that affect the endogeneity of the money supply in two ways: first, the expansion of bank lending has been the predominant force to commercial banking developments; second, and perhaps more importantly, banks are now more able to accommodate changes in the demand for loans with less frequent use of the central bank penal facilities for reserves.

The fourth characteristic is that, while the money supply is *not* under the control of the monetary authorities, interest rates are very much under the firm fulcrum of the central bank. This is so since the central bank, through discount rate adjustments or through the rate of intervention on the open market, can control what one might call "market interest rates." Rates of interest as they are determined abroad, the exchange rate of its foreign currency reserves or any such external variables, are thought to be important dimensions that central banks consider seriously when they adjust their discount rates to affect "market interest rates."

The fifth characteristic is that once it is recognized that money is credit-driven and demand-determined, the prevailing exchange rate is of no consequence at all. This is in sharp contrast to the orthodox view that under a flexible exchange rate system the money supply is fully controlled by the monetary authorities, but this control is somehow lost under a flexible exchange rate system.

Finally, there are two aspects of this article worth commenting upon: first, it is hoped that this study will be viewed as supporting the argument surveyed by B. J. Moore and given impetus more recently by G. P. Foster that the endogenous character of the money supply is a requirement for Keynes's theory of income and employment [Moore 1984; Foster 1986]. And that further neglect of it could very well spark

new attacks on *The General Theory*. We concur with Foster that this “minor” but important requirement can only be taken on board from a post-Keynesian and institutional perspective. A proper monetary theory of production will thus be provided. Second, it might not be too pejorative to suggest that another important contribution of this article is that it has taken on board the criticism repeatedly made that the endogeneity argument has not been developed and sufficiently refined to be susceptible to mathematical modelling. We hope that this article has set the pace for future further elaboration of a “mathematical modelling” approach to the endogeneity argument. But whether this is the right way forward is a completely separate issue.

Notes

1. M. Kalecki argued along similar lines [Kalecki 1971, Chap. 3]. Once, therefore, monetary theory is viewed in the way portrayed in the text, the importance of the tension referred to in Eichner’s *Foreward* to P. Arestis and T. Skouras, between the followers of Kalecki and those of Keynes, is somewhat reduced [Arestis and Skouras 1985, p. xii].
2. We are, therefore, at Victoria Chick’s *fifth* stage in the evolution of the Banking System [Chick 1986].
3. It is, of course, possible to hold funds in the form of some national currency rather than depositing the funds in a bank. This, however, is typical only for those engaged in small, retail transactions, including those active in what is termed the “underground economy.” For virtually all other business firms, and indeed even for most households, payment is normally made by check.
4. On the role of contracts in defining the unit of payment, see P. Davidson [1978].
5. D. Lavoie has argued recently that in the Marxist tradition the order of causation of the orthodox theory is also reversed. He quotes Marx to make the point: “This much is clear, that prices are not high or low because much or little money circulates, but that much or little money circulates because prices are high or low” [Lavoie 1986, p. 157]. G. Myrdal too, denied the causation of the orthodox theory and argued against the exogeneity of money [Myrdal 1939].
6. There is a lot of empirical evidence to support this contention. For example, Arestis and G. Hadjimatheou provide convincing evidence for the United Kingdom [Arestis and Hadjimatheou]. In the case of the United States, B. J. Moore and S. Stuttman and A. Myatt have supplied considerable corroborating empirical results [Moore and Stuttman 1984; Myatt 1986].
7. The model proposed in this section is based on Arestis [1987; 1987–1988]. However, it extends the latter especially with respect to the *external sector* aspects of the model. It should be emphasized that the theoretical model propounded in this study has been subjected to empirical investigation

where it is reported that the model performs satisfactorily upon the usual econometric diagnostics [Arestis 1987–1988].

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