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**Post-Keynesian Theory of Money,
Credit and Finance**

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Post-Keynesian Theory of Money, Credit and Finance

1. Introduction*

The purpose of this paper is two-fold: first, to attempt to identify the main elements of what constitutes post-Keynesian monetary theory. Second, to put forward a model which, although relying on the UK monetary framework, is general enough so far as its theoretical basis is concerned, to encapsulate most of the constituent elements of post-Keynesian theory of money, credit and finance. In doing so we recognise that the choice of model to be used depends very much on the problem at hand. Post-Keynesian analysis adopts the thesis that no general model can resolve all economic problems for all times and all situations (see, for example, Davidson, 1982, p.8). Particular attention is, therefore, paid to monetary institutions as they operate and evolve in the UK, in an attempt to highlight the emphasis put by post-Keynesians on this aspect. For it is, after all the case that "Money can only be studied in an historical and institutional context." (Davidson, 1982, p. 241).¹ It is also important to pay attention to a related aspect of post-Keynesianism, that institutional developments reflect fundamental characteristics of money, since "In a modern capitalist economy the institution of money is inextricably tied to the institution of banking." (Minsky, 1986, p.346). The most important characteristic in this respect is that money is credit-driven.

The post-Keynesian theory of money, credit and finance involves the study of an economic system with three essential characteristics. The first is the *existence of uncertainty* in that the future is unknowable and unpredictable and consequently economic agents' expectations can be frustrated easily. The second is the existence of *irreversible time* where production takes time and economic agents enter into commitments well before outcomes can be predicted. Keynes (1923) is very specific on this point: "During the lengthy process of production the business world is incurring outgoings in terms of money — paying out in money for wages and other expenses of production — in the expectation of recouping this outlay by disposing of the product for money at a later date." (p. 33). The third, which is very much related to the second characteristic, is that economic agents commit themselves to contracts which are denominated in money, so that money and contracts are "intimately and inevitably related" (Davidson, 1978, p. 148). This is apropos since money "comes into existence along with debts, which are contracts for deferred payment, and Price-lists, which are offers of contracts for sale or purchase." (Keynes, 1930, p. 13)². In this sense, the importance of money is that it is a link between the past and the present and also between the present and the future (Keynes, 1936, p.294). Post-Keynesian analysis is thus crucially concerned with historical time which is sharply distinguished from logical time. The essence of recognising the importance of historical time in an economic system is that "its past is given and cannot be changed, and that its future is uncertain and cannot be known." (Moore,

1979a, p.121). It is precisely the uncertainty inherent in historical time which is both the necessary and the sufficient conditions for the existence of money.

In such a dynamic system money can be introduced in three ways. The first is due to the production process and to the fact that this process takes *time* to unfold itself. In this *dynamic monetary production economy*, credit is generated to facilitate production and other activities, such as purchase of durables, which require access to resources. Thus, 'credit granting' institutions, especially the banking ones, are of paramount importance, and, therefore, the way they operate must be carefully analysed. It is, nonetheless, recognised that whilst productive credit is the normal case, there exists the anomaly of banks misallocating credit (for speculation etc. due to uncertainty) in which case the possibility arises of non-productive credit. This, along with the inability of firms to repay loans when banks unsuccessfully indulge in risky ventures form the basis of financial crises. And, also, it epitomises *one* of the essential aspects of Minsky's (1982) 'financial instability' hypothesis. This hypothesis is utilised in Dow and Earl (1982, chs. 11-12) to provide a comprehensive discussion of *five* financial failures in an attempt to show how financial crises are produced by the workings of a free financial system and, indeed, how intervention by the monetary authorities can mitigate them.

The second way post-Keynesian analysis accounts for the possibility of money being introduced into the system is via their fiscal and open market operations initiated by the monetary authorities. In this sense money is treated as an asset of economic agents alternative to other financial assets and as such it is part of portfolio theory (Davidson, 1978, pp. 226-7; Lavoie, 1984, p. 788). It is, nonetheless, recognised that there is a fundamental asymmetry here. Monetary authorities are generally able to increase the money supply at their initiative except in conditions of severe and extreme slump when economic agents would not wish to hold any extra money injected into the system. By contrast, this may very well be the occasion when monetary authorities may really wish to increase the money supply. They are not, however, able to reduce the money supply at their initiative, except in periods of slump when economic agents would be favourably disposed towards destroying money. Again by contrast, monetary authorities in this instance may really not want to initiate such reduction.

The third way is due to overseas flows which can be responsible for the creation or destruction of money in an open economy. In general terms a balance of payments surplus enhances money creation and a deficit destroys it. Capital movements are also expected to have similar effects. Dow (1986/87) argues that the degree of openness of an economy and the distinction between fixed and flexible exchange rates are important considerations in terms of the demand and supply of finance and money. But not all foreign transactions have a definite impact on money. The crucial criterion here is whether the government acquires or supplies native currency in the process. When the government supplies native

currency there is money creation whilst there is money destruction when the government acquires it. Thus, transactions involving overseas lending to the public sector and transactions involving bank lending to the public sector in foreign currencies, do not have an impact on domestic money.

It ought to be particularly emphasised at this juncture, that the last two ways of analysing how money might enter the economic system do not have a direct effect on the creation of money. Once it is recognised that money is credit-driven and endogenously determined, any money creation emanating from fiscal or debt management operations initiated by the authorities and/or from favourable balance of payments, can be compensated by an equivalent reduction in commercial bank credit brought about by the actions of private economic agents. It clearly follows that government may not be able to create or destroy money directly (see, however, Chick, 1986). What they can do, instead, is to redistribute money amongst different groups of economic agents. This can happen when governments in their attempts to increase/reduce money, set in motion destruction/creation of bank credit by group(s) of economic agents. To the extent that the latter group(s) are different from those initially receiving/destroying money following the government initiatives, redistribution of money between these groups takes place.

The emphasis in post-Keynesian monetary theory is on credit rather than on money in enabling spending units to bridge any gap between their desired level of discretionary spending and the current rate of cash flow. Money is viewed as essentially endogenous in a credit money economy responding to changes in the behaviour of private economic units rather than, mainly, to the behaviour of the monetary authorities. Money, in this view, is an output of the system with its endogenous behaviour governed by the borrowing needs of firms, households and the government and the portfolio behaviour of financial institutions and of the personal sector. This particular approach is very much within the Kaleckian spirit of analysis which views money as being primarily determined by the banking system in response to the demand for loans; in other words money is both demand-determined and credit-driven (Kalecki, 1971, ch.3)³.

2. Money: Residue or Cause?

In the quantity theory of money approach causation runs from money to nominal income. One can write

$$MV = PY \quad (I)$$

where M is money, V is the velocity of circulation and PY is nominal income (with P being the price level and Y real income). The assumptions of stable V (in Friedman's analysis; in the Fisherian and Cambridge approaches V is, of course, constant) and given Y, enable the proponents of this analysis to argue that there is a definable and recognisable quantity, M, exogenously determined, the movements of which have a direct and powerful influence upon the movements of P. Thus, the

causation is from MV to PY. The exogeneity of M is achieved through the following model and assumptions made therein:

$$(i) M = CP + D$$

where CP is currency in the hands of the public, and D is total deposits; (i), therefore, defines the money supply.

$$(ii) B = CP + TR$$

where B is what is called monetary base (or high-powered money) which is equal to CP plus total bank reserves (TR).

$$(iii) CP = c M$$

this is an assumption suggesting that the ratio of CP to M is constant (and equal to c).

$$(iv) TR = RR + EXR$$

which simply defines total bank reserves as the sum of required reserves (RR) and excess reserves (EXR).

Furthermore,

$$(v) RR = sD$$

where s is simply the legally imposed 'reserve ratio'. Also,

$$(vi) EXR = eD$$

which suggests that the ratio of excess reserves to deposits is constant and equal to e.

We next utilize (vi), (v) and (iv) which, along with (iii), may be substituted in (ii) solve for D and then proceed to substitute appropriately into (i) to give us:

$$M = m. B \quad (II)$$

where $m = 1/c + (1-c)(s+e)$, which is usually termed as the 'money multiplier'. Furthermore, it is assumed that the ratios $c = CP/M$ and $e = EXR/D$ are sufficiently constant and that the monetary authorities are in a position to control B and s. The proposition then follows that the money supply is under the grip of the authorities since they directly control B via TR. The causation, therefore, runs from the monetary base to money supply.

In the 'grand neo-classical synthesis' the argument is pretty much the same. It runs in parallel lines with the argument just put forward with one exception. The ratios CP/M and ER/D are assumed to be stable functions of the level of economic activity (proxied by national income, Y), market interest rates (R) and the discount rate (r). The ratio CP/M is assumed to be related to Y and R. As the level of economic activity expands, economic agents are assumed to demand more deposits since the number of transactions requiring payment by sight deposits than currency, increases. As Y contracts the opposite is expected to happen. Similarly for

interest rates: fluctuations in them cause economic agents to move in/out of interest-bearing deposits and out/in of currency and non-interest-bearing deposits. It is, thus, hypothesised that both dc/dY and dc/dR are negative. The assumptions concerning ER/D are that both market interest rates and the discount rate can have an influence upon it. As market interest rates rise it is more profitable for the commercial banks to utilize some of their excess reserves to expand their loans and securities; and reduce them when interest rates fall. As the discount rate increases the spread between returns and the cost on funds borrowed from the Central Bank is reduced thus squeezing profit margins on loans and securities. The excess reserve ratio is increased as a result. A fall in the r has the opposite effect. The hypotheses here are that de/dR is negative whilst de/dr is positive.

The 'grand neo-classical synthesis' argument implies that (II) above may be written as:

$$M = B/c(Y,R) + [1-c(Y,R)] [s + e(R,r)] \quad (III)$$

with dM/dY , dM/dR and dM/dB being positive and dM/dr as well as dM/ds being negative. A further assumption is that the actions of the authorities as they affect B and s normally dominate the behaviour of economic agents in terms of $c(Y,R)$ and $e(R,r)$. Money supply is, therefore, still exogenous and the causation still runs from the monetary base to money supply⁴.

This particular causation is reversed in post-Keynesian analysis. It is argued that monetary authorities have consistently refused to apply severe pressures on the liquidity of the banking system. In other words, monetary authorities have been accommodating in terms of providing the reserves required by the banking system at a panel rate, i.e. discount rate, if necessary; the banks are then able to pass the cost of borrowing over to their customers. Central Banks simply cannot refuse to provide 'discount window' facilities for they cannot afford to jeopardize the solvency of the banking system. For a solvency crisis can easily precipitate a liquidity crisis, given that "even a rumour of insolvency can lead to a run, and, if not checked, the liquidity crisis could spread even more quickly than the solvent crisis that caused it." (Guttentag and Herring, 1983, p.4). The Central Bank's main function of lender of last resort must be preserved religiously and continuously so that the liquidity of financial institutions and markets should be guaranteed utterly. Kaldor (1982) put it very succinctly when he argued that the Central Bank "cannot refuse the discounting of 'eligible bills' rendered to it by the discount houses. If it did, the Bank would fail in its function as 'lender of last resort' to the banking system which is essential to ensure that the clearing banks do not become insolvent as a result of a lack of liquidity. Precisely because the monetary authorities cannot afford the disastrous consequences of a collapse of the banking system, which the banks in turn cannot allow themselves to get into a position of being 'fully stretched', the 'money supply' in a credit-money economy is endogenous," (p.47). After all,

one rationale for the creation of central banks is to provide an elastic currency supply. Financial assets must possess liquidity which can only be ensured if central banks are prepared to perform the role of lender of last resort. For only in this way can financial assets ultimately be exchanged quickly, easily and cheaply into cash thus ensuring the liquidity just referred to. The commercial banking system is the pillar in the liquidity-creating process. Monetary authorities have an obligation to create and maintain orderly conditions in financial markets in general and in commercial banking in particular.

Monetary authorities must, therefore, accommodate for the reserve needs of the financial markets. Wojnilower (1980) offers an excellent example in support of this proposition. When chronicling the 'credit crunches' story that occurred in the USA in the sixties and seventies, he argues persuasively that when the monetary authorities attempted to squeeze the credit markets, they found themselves in a position of having to 'back off' from fear of provoking a scramble of liquidity. Another example in support of the above proposition is the operation of the UK discount market which covers the entire Treasury bill tender. There is a lot of evidence to suggest that discount houses would not bid for the entire tender "without the assurance that the necessary cash would be made available." (Artis and Lewis, 1981, p. 65). Not a totally unrelated observation here is the existence of substantial 'unused overdraft facilities' and 'open credit lines' — despite Keynes' (1930) reservations concerning the extent that these facilities were actually used and the extent that they were readily available. These facilities, which are not included in monetary aggregates, are reported as having exceeded bank demand deposits in the USA in 1980 (Wijnilower, 1980, p. 289), whilst in 1981 they exceeded the M1 definition of money supply (Moore, 1983, p. 543). In the UK, commercial banks rely heavily on previously negotiated overdraft limits. In both the UK and the USA "total bank debt in existence at any time characteristically lies between one-half to two-thirds of the total amount of outstanding lines of credit and overdraft facilities which have been formally committed." (Moore, 1985, p. 25). It should be emphasised at this juncture that the utilisation of such credit facilities is at the discretion of the banks' borrowers, not the banks themselves. Also of interest is the possibility of foreign banks being able to obtain 'last resort' facilities from head office (although the exchange rate constraint ought to be acknowledged here). Most importantly, though, liability management (see below) ensures that even in periods when the monetary authorities wish to initiate credit stringency, commercial banks can still find the required funds in the wholesale financial markets. Commercial banks are able to do this "..... by building up a reputation in the market through lending funds whenever possible so as to be able to borrow funds more easily when the need arises; by developing credit lines with other banks; by diversifying the sources of credit so as not to rely excessively on one credit supplier; and by seeking new sources of funds to appropriate maturities." So much so that "..... corporate bank customers expect a steady supply of funds even during periods of restrictive monetary policy." (Podolski, 1986,

p. 161). It follows, therefore, that financial innovations have enabled banks to become increasingly immune from Central Bank control and consequently less dependent upon it as the lender of last resort, in that "it is now easier for financial institutions to equate the demand for funds with the supply by operating in the wholesale money markets." (Podolski, 1986, p. 162). Furthermore, when pressures on liquidity are imposed by the monetary authorities, economic agents could and would 'improvise' and 'innovate' on what they use as means of exchange very quickly and efficiently. For example, there might be a switch from banking activities towards non-banking financial activities. Credits between companies could very well be further developed, given that there is already in the UK a flourishing 'inter-company' market (Revell, 1973). Large firms would begin to act as banking institutions. Monetary authorities are, of course, fully aware of these possibilities and as a result they apply flexibility and pursue accommodating monetary policies; for if they did not, they would probably lose whatever control is left to them on financial operations. It clearly follows that in post-Keynesian analysis equation (II) ought to be re-written as:

$$B = (1/m) \cdot M \quad (II)'$$

where the causation is from M to B, not the other way round.⁵

Not only is (II)' more appropriate than (II) for post-Keynesian analysis but (I) too ought to be re-couched. Whilst the proponents of (I) argue that the causation runs from MV to PY, post-Keynesians argue very persuasively that the causation is completely the other way round; and to quote Joan Robinson (1970) "If the quantity equation had been read in the usual way, with the dependent variable on the left and the independent variable on the right, though rather vague, it would not have been silly" (p. 504). To demonstrate let PY rise from one year (or quarter, etc.) to the next. Then, "..... either activity has increased (employment and output are higher this year than last) or the general price level has risen because of a rise in costs in money terms; then if the quantity of money has not increased, the velocity of circulation must have risen" (op. cit., p. 504).

The underlying theory here is that money is the result of credit flows in a dynamic monetized production economy (Eichner and Kregel, 1975). When entrepreneurs expand their production they must increase their wage bills as well as their other outlays. Production takes time; until, therefore, the output is sold and consequently cash flows unfolded, entrepreneurs will require more loans to bridge this gap. Commercial banks will satisfy this demand for loans which brings about an increase in deposits with the banks. Variations in the supply of money are therefore caused by fluctuations in prices and quantities of production instead of the reverse. It can thus be argued that "a marked rise in the level of activity is likely to be preceded by an increase in the supply of money (if M is widely defined) or in the velocity of circulation (if M is narrowly defined) because a rise in the wage bill and in borrowing for working capital is likely to precede an increase in the value of output appearing in the statistics. Or

that a fall in activity sharp enough to cause losses deprives the banks of credit-worthy borrowers and brings a contraction in their position." (Robinson, 1970, p.510). In all these, the leading role is essentially played by entrepreneurs and their 'animal spirits.' Entrepreneurs must predict the pattern of the forthcoming effective demand and infer from this the cash outlays they will be required to make in order to pay for the factors of production to be employed by them, and the outlays required so that they can finance their investment. Once this is done their loan requirements from the banks can be ascertained and their demand for money formulated. The Central Bank sets the rate of interest and commercial banks their rates. At this level and structure of interest rates they stand ready to provide whatever monetary units the entrepreneurs' demand for money entails. So an increase in money demand leads to an increase in the existing money stock without necessitating a change in interest rates. In the UK and other countries institutional changes have taken place designed specifically to impose greater constraints on the commercial banks. However, these changes have been ineffectual and have been abolished largely (Gowland, 1984; Podolski, 1986; Wijnilower, 1980). As a result of this experience "interest rates are virtually the sole remaining monetary instrument for achieving monetary control....." (Artis and Lewis, 1981, p.9). This particular proposition is well integrated in the analysis below where the discount rate is supposed to be under the firm control of the monetary authorities (see, also, Chick, 1986).

3. A Formal Post-Keynesian Model of Money, Credit and Finance

The post-Keynesian ideas expounded so far can be formally put together in what follows in this section. In doing so we draw on the UK monetary institutional scene.

We begin with the money supply identity which is set as in (i) above written in a slightly different form:

$$\Delta M = \Delta TD + \Delta SD + \Delta GDC \quad (1)$$

where changes in the money supply (ΔM) are equivalent to the sum of changes in time deposits (ΔTD), changes in sight deposits (ΔSD) and changes in deposits of the public sector including currency (ΔGDC).

The item ΔGDC is only a small fraction of the total money supply so we treat it as exogenous for convenience and endogenise the other two elements in (1).

In the UK commercial banks are invariably regarded as obligopolists both in terms of their loans and deposits (Moore and Threadgold, 1980, 1985). They can be thought of as firms with two inputs (their liabilities: retail and wholesale deposits) and two outputs (their assets: retail and wholesale loans). Their behaviour with respect to retail loan and deposit rates is that they set both of these rates in line with the Minimum Lending Rate (or discount rate) and money-market rates, and allow demand conditions to

determine the quantity of retail loans and deposits (both of which are not marketable). Any resulting surplus or deficit of funds is met through wholesale deposits and loans which are broadly similar marketable securities such as certificates of deposits (CDs), bankers' acceptances and commercial bills. The wholesale market is thus the source of any surplus or deficit of funds. In the process, fluctuations in the wholesale rates can ensue which are, in turn, reflected in deposit and borrowing rates. It, thus, follows that commercial banks in the UK are, in fact, price-setters and quantity-takers in terms of their behaviour with respect to retail deposits and loans and price-takers and quantity-setters in the wholesale market (Wills, 1982).

One important implication of this institutional framework is that UK commercial banks have been able to balance their books by issuing wholesale deposits (these are interest-bearing deposits which comprise of large fixed-term deposits in general and certificates of deposits in particular; certificates of deposits are marketable wholesale deposits held by the non-bank public for a fixed period, three to six months). Whilst in the past imbalances between changes in deposits and loans were financed by changes in marketable securities, local authority debt and gilt-edged bonds (Radcliffe, 1959), the development of the wholesale deposit market since the late 1960s has meant that banks have been able to place large quantities of these liabilities at their own initiative. In other words "Banks no longer adjusted their assets passively to an (exogenously determined) flow of deposits; instead it became a central, treasury function to adjust their wholesale liabilities, via operations in CDs, in the inter-bank market, and, when allowed by exchange controls, in the global euro-currency market, in order to provide any necessary funds to finance their loan book." (Goodhart, 1986, p.85). The adoption of liability management⁶ has implied for the 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 over the period "the major driving force in the expansion of the banking system" (Goodhart, 1984, p.263).

This 'liability-side' management aspect means that the aggregate bank balance-sheet identity can be solved for ΔTD . In effect we assume here that wholesale deposits are entirely time deposits which may not be an unrealistic assumption to adopt (for a similar treatment see NIESR, 1981, p.122).⁷ This, then, allows us to write (2) as:

$$\Delta TD = \Delta BLP + \Delta BLG + \Delta BLOS - \Delta SD - \Delta OBD \quad (2)$$

where ΔTD is equal to the sum of changes in bank lending to the public (ΔBLP), changes in bank lending to the government (ΔBLG), changes in bank lending to the overseas sector ($\Delta BLOS$), the negative of ΔSD and the negative of ΔOBD which stands for changes in other bank deposits (including changes in net non-deposit liabilities).

The other endogenous element in (1) is ΔSD . We postulate that its behaviour 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. ΔSD is also related to changes in interest rates (ΔR) which is hypothesised to account for possible portfolio effects; ΔR 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 would therefore formally write:

$$\Delta SD = \Delta SD(\Delta Y, \Delta R, EP/FP) \quad (3)$$

+ - +

with the signs under variables indicating the signs of partial derivatives.

We may now turn our attention to equation (2) where the variables $\Delta BLOS$ and ΔOBD are treated as exogenous. With ΔSD having just been considered, we may concentrate on ΔBLP and ΔBLG . We begin with the first.

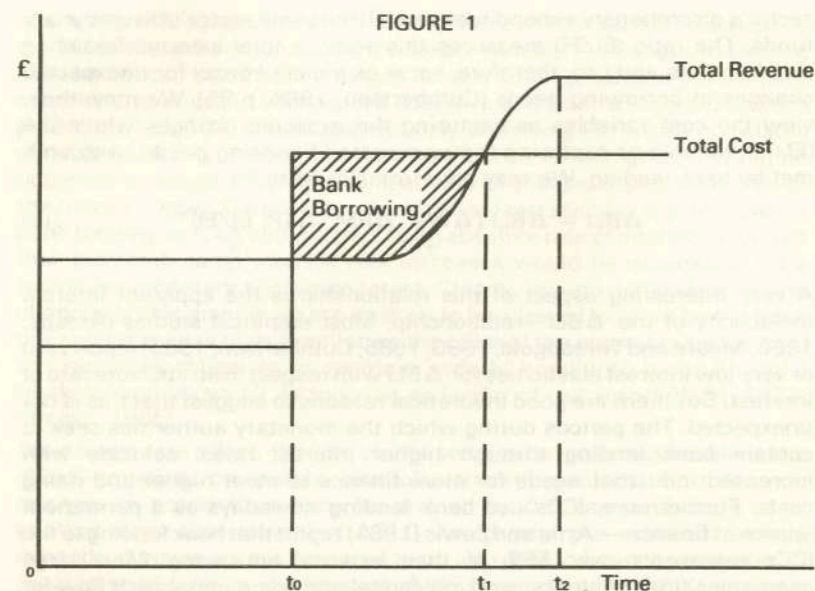
We disaggregate ΔBLP as shown in (4):

$$\Delta BLP = \Delta BLI + \Delta BLC + \Delta BLF \quad (4)$$

where ΔBLI stands for changes in bank lending to industry, ΔBLC for changes in bank lending to consumers and ΔBLF for changes in bank lending to other (than commercial banks) financial institutions — which is treated as exogenous.

Changes in bank lending to industry are hypothesised to be determined by the needs of the industrial sector for working capital finance (Moore and Threadgold, 1980). These needs are determined by the expected level of transactions which can be proxied by two alternative sets of variables: changes in costs and changes in the expected level of demand for the output of the firm (Kalecki, 1971, ch. 3; Sawyer, 1985, ch. 5; Davidson and Waintraub, 1973). Given the mark-up over historic, actual or normal, unit costs hypothesis of price determination (Coutts et al, 1978; Sawyer, 1983) increases in costs will raise the working capital finance needs of firms, until the larger receipts from sales are forthcoming as a result of higher mark-up prices. The amount of extra working capital required, will depend on the length of time before output prices are raised in response to higher costs and on the time it takes for receipts to materialise. This process is depicted in figure 1 (see Moore, 1983, p. 546): at time t_0 there is a cost increase (for example, trade unions secure a wage increase). Total revenues increase gradually as prices are raised due to the mark-up as it has just been analysed. Until point t_1 is reached additional working capital finance is required which is satisfied through bank borrowing. Clearly, point t_2 depends crucially on the production/sales time interval.

Similarly, changes in expected demand for the firm's output will influence its working capital finance needs. This is so because bank lending can be



thought of as facilitating the firm's transactions in view of gaps between expenditures incurred to finance a higher volume of output and revenues received (figure 1 is applicable here too). Bank lending can, thus, be viewed as performing a 'transactions balance' role here, very similar to Keynes' finance motive (Davidson, 1978) especially when the latter is interpreted as a demand for a *flow of credit* by the industrial sector (and not as a demand for a stock of assets) in its pursuit of profit in the capital accumulation process (Rousseas, 1986, pp. 44-45). We should, therefore, expect a higher demand for bank loans, the higher the expected level of the output of the firm.

Regardless of whether one utilises cost or transaction elements, the point must be emphasised that in this approach historical time is taken seriously along with the observation that production takes time⁸. Whether, now, cost variables or transactions variables are superior it is, really, an empirical question. The evidence here is not very helpful for both variables have been shown to perform satisfactorily at the empirical level (Arestis, 1986, Moore and Threadgold, 1980, 1985; Cuthbertson, 1985). In this study we choose to utilize cost variables. Three such variables have been shown⁹ to be particularly relevant: wage costs in the form of wage bills (WB), costs of raw materials (RM) and tax payments (TP).

The variables we have considered so far are related to expected changes in borrowing needs of the ICCs. Unexpected changes in their borrowing are hypothesised to be captured by the (EI/FI) variable — where EI is this

sector's discretionary expenditure and (FI) the same sector's discretionary funds. The ratio (EI/FI) measures this sector's total external financing requirements and can, therefore, serve as a useful proxy for unexpected changes in borrowing needs (Cuthbertson, 1985, p.95). We may, thus, view the cost variables as capturing the *expected* changes whilst the (EI/FI) variable as capturing the *unexpected* financing needs, with both met by bank lending. We may now formally write:¹⁰

$$\Delta \text{BLI} = \Delta \text{BLI} (\Delta \text{WB}, \Delta \text{RM}, \Delta \text{TP}, \text{EI/FI}) \quad (5)$$

+ + + +

A very interesting aspect of this relationship is the apparent interest inelasticity of the ΔBLI —relationship. Most empirical studies (Arestis, 1986; Moore and Threadgold, 1980, 1985; Cuthbertson, 1985) report zero or very low interest elasticities for ΔBLI with respect to an absolute rate of interest. But there are good theoretical reasons to suggest that this is not unexpected. The periods during which the monetary authorities seek to contain bank lending through higher interest rates, coincide with increased industrial needs for more finance to meet higher and rising costs. Furthermore, ICCs use bank lending nowadays as a permanent source of finance — Artis and Lewis (1981) report that bank lending to the ICCs represents over 55% of their external borrowing. Most large companies finance stocks, working capital and some initial cash flow for capital projects from bank borrowing. The financing of such expenditure is relatively inflexible unless a change in demand conditions is anticipated. Companies would tend to lose non-price competitiveness, for instance, were they to economise on stocks as interest rates rose. Neither is switching to other financial sources, or raising prices, possible in the short-run. The balance between increased bank borrowing and a run-down in liquid assets is not a simple function of the level of interest rates. It is, if anything, responsive only to the spread between lending and borrowing rates. For corporate borrowers, however, the spread is at times so low that the sourcing of funds between these categories may be a matter of indifference. An interesting example here is the period since 1979. During this period interest rates have been high and there has been a considerable squeeze on liquidity. The response of many companies has not been to cut down net expenditure and/or sell some of their assets but, instead, to increase bank borrowing (Gowland, 1984, p.186). There is, after all, the argument that what matters in terms of the demand for credit by ICCs is the availability of credit, not its price (Wojnilower, 1980) — this is reminiscent of the *availability doctrine*, so much discussed in the 1950's.

The way we have postulated the determination of ΔBLI casts considerable doubt on the ability of the UK monetary authorities to control not just bank lending to ICCs via interest rate changes, but also a money supply target. Bank lending to ICCs is by far the largest component of bank lending to the private sector (two thirds of the movement in bank lending is accounted for by bank lending to ICCs; see, for example, Kaldor, 1980, para. 95, p. 17) with the latter being both a large and a volatile component

of sterling M3, a measure of the money stock which has been adopted by the UK monetary authorities as the target variable — changes in sterling M3 can be split into PSBR, changes in bank lending, sales of government securities, changes in non-deposit liabilities and external flows. Goodhart (1984, pp.123–124) shows that not only is sterling M3 highly correlated with bank lending to the public but also that this is the highest correlation observed amongst the major components of this particular definition of the money supply. Given, then, the interest inelasticity of the demand for bank lending by ICCs with respect to an absolute rate of interest, it follows that extremely large interest rate increases would be required to hit a restrictive monetary aggregate target. Clearly, though, large interest rate changes of this magnitude are unlikely to be allowed to occur by the Bank of England in view of its function as the pillar of the monetary system and its associated obligation to maintain 'orderly' conditions in the financial markets, and above all its function as lender of last resort (Wills, 1982; Minsky, 1985).

An interest rate effect, though, would seem to be more reasonable in the ΔBLC -equation on purely 'portfolio theory' grounds. Furthermore, changes in economic activity (as proxied by ΔY) can be thought of as another major determinant of ΔBLC . As, for example, economic activity expands, consumers are prepared to go into debt to finance purchases of durable goods. As in the case of ΔBLI similarly with ΔBLC the ratio (EP/FP) is assumed to influence it positively. In other words:

$$\Delta \text{BLC} = \Delta \text{BLC} (\Delta R, \Delta Y, \text{EP/FP}) \quad (6)$$

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The appearance of the variable EI/FI and (EP/FP) in both ΔBLI and ΔBLC respectively has an important implication worth commenting upon. Since these two ratios proxy the external borrowing requirements of the private sector, any successful attempt by the authorities to squeeze this sector's cash/flow will increase its borrowing requirement and thus bank lending. There would thus be a growth in the money stock as a result of an endogenous response of the private sector to what was intended to be a severe monetary squeeze. Two conclusions follow from this observation: firstly, it casts considerable doubt on the wisdom of being concerned with money supply aggregates; secondly, and more importantly, it provides further support to the post-Keynesian argument that attention ought to be paid to credit and its availability rather than to futile monetary aggregates. We consider next the ΔBLG variable which is determined through the government budget constraint identity. This is written as:

$$\Delta \text{BLG} = \text{PSBR} - \Delta \text{BC} + \Delta \text{EF} \quad (7)$$

reflecting institutional arrangements in the UK. The banking sector in the UK provides the residual to private finance (ΔBC which stands for sales of public debt to the non-bank public including currency) and overseas finance (ΔEF which stands for changes in external flows) of the public sector borrowing requirement (PSBR). The BEQB (1982) is very clear on this particular point, "Normally, that part of the Government's borrowing

requirement which is not financed by the sale of debt outside the banking system is met by the sale of debt — in particular Treasury bills — to the banking system, which thus acts as the residual source of borrowing for the Government.” (p. 87). A very important consideration here concerns the magnitude of ‘bank lending to the government’ item. It can be plausibly argued that the higher it is, the greater the possibility of severe constraints being imposed upon the economic policy makers. This proposition is directly related to the thesis that “In reality the City’s relationship with the state is based on its economic power, and it is principally through economic levers that it acts upon the state.” (Fine and Harris, 1985, p. 73). For in this case, the ‘City’ can dictate policies to suit their interests which may not necessarily coincide with those of the economic policy makers. Indeed, “.....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). These being essentially deflationary policies so much favoured by the City, higher interest rates and exchange rates associated with ‘money supply targets’ and tight monetary policies. Recent and not so recent experience in the UK can be used to demonstrate the point vividly. The return to the Gold Standard in 1925 at an overvalued pound, which prompted the very well known argument that the Chancellor (Churchill) put the interest of the City above that of the British industry; the Wilson government’s reluctance to devalue the pound in the mid-1960’s; the introduction of monetary targets by Chancellor Healey in the mid-1970’s which are still with us; the high interest rates and exchange rates achieved and maintained by the Thatcher administration in the 1980’s; and the abolition of foreign exchange and capital controls at the beginning of the Thatcher administration. These and no doubt many others, are examples which can be cited to support this contention. These examples highlight also similar problems and constraints emanating from the considerable magnitude of the item ‘overseas finance’. For it is the case that the role of international financiers and multi-national companies is central in this context. With their ability to control “literally immeasurable sums of international money, which they could switch into and out of sterling and into and out of British bills and bonds” (Coakley and Harries, 1983, p. 206), they impose a serious constraint to governmental economic policies. Within this perspective, the argument that the City has become allied to international capital (see, for example, Longstreth, 1979) can provide the theoretical background to the proposition that the City assumes different economic objectives from those of the national government and to the conflict that would arise conceivably between them and, thus, to the possibility of the City being able to impose its wishes upon the economic policy makers. Although PSBR and ΔCB are treated as exogenous for the purposes of this study, some commentary on the sales of public debt is in order. The demand for debt depends not just on the current rate of interest but on it in

relation to the expected changes in interest rates. The impact on the demand for bonds of a change in interest rates cannot be predicted accurately since expectations can and do vary; they can be *extrapolative* or *regressive*. Extrapolative expectations prevail when investors expect a given change to continue in the same direction while regressive expectations 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 terms of hitting their targets.

The other item in equation (7) is the ΔEF variable. It is equal to the sum of current balance (CB) and capital movements (ΔKM), minus changes in overseas lending to the public sector (ΔOLG) and changes in bank lending to the public sector in foreign currencies ($\Delta BLGF$). We can, thus, write:

$$\Delta EF = CB + \Delta KM - (\Delta OLG + \Delta BLGF) \quad (8)$$

With CB, ΔOLG and $\Delta BLGF$ being treated as exogenous, we attempt to elaborate on the determinants of ΔKM as shown in (9):

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

The ratio of interest rates, domestic (R) to foreign (R_f), is included on the assumption that capital flows are sensitive to returns available internationally (Branson and Hill, 1971). These returns, however, are not captured simply by interest rates, but perhaps more importantly, by expected exchange rate movements. Thus, the inclusion of the exchange rate (ER). The latter is assumed to be sensitive to the level of domestic interest rates in relation to foreign rates, to the current balance and capital movements. We have, therefore, the relationship:

$$ER = ER (R/R_f, CB, \Delta KM) \quad (10)$$

Finally, we consider interest rates. We assume that interest rates can be controlled by the monetary authorities. The rate under their control is the discount rate (r) changes of which influence directly changes in the market interest rates (ΔR)¹¹ via a markup. We, thus, follow here Kalecki’s (1971, ch. 5) theory of markup pricing to interest rates. In this way market interest rates are seen as the ‘prices’ of financial ‘goods’ with the markup being imposed by the individual banks on the banking industry and determined by their degree of monopoly or their profit margin. The markup is based on unit variable banking costs which can be proxied by the discount rate administered by the Central Bank. This particular analysis follows directly

from our earlier discussion of the oligopolistic lending and borrowing behaviour of the commercial banking sector. Rousseas (1986) offers a very similar analysis which allows him to conclude that "..... what all this adds up to is that the notion of a market-clearing equilibrium 'interest' rate — whether in the old 'productivity-thrift' theory, or the 'bastard' Keynesian IS-LM approach, or a market-determined short-run rate — is a theoretical fiction used to provide determinate theoretical solutions within arcane models bearing no relation to the real world. In the universe of economics, interest rates are not the equilibrating force of textbooks. They are essentially a markup over competitive prime costs in a broadly conceived financial sector that is bound to exhibit an even greater concentration of economic power, especially in the banking industry....." (p. 60). Furthermore, it is assumed that open market operations can have an influence on market interest rates, so a second variable influencing ΔR is ΔBC . In the case of open economies such as the UK, 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 (11):

$$\Delta R = \Delta R (\Delta r, \Delta BC, \Delta EF) \quad (11)$$

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4. The 'Generality' Characteristic of the Model:

The model which has just been developed contains certain important elements which are 'general' enough to be acceptable to all post-Keynesians. In this sense, this model can be said to encompass a 'consensus' of views in post-Keynesian thinking on money, credit and finance. There are four aspects to this 'consensus'.

The first aspect refers to the view that money is credit-driven and demand determined. Loans constitute the majority of money. The determinants of loans as identified above become, therefore, of paramount importance as 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. "The act of money creation is also an act of expenditure and (therefore) of income creation..... That is all there is to it. Apart from decisions to spend out of income at a certain rate, there is no separate or additional process requiring equilibration between the 'supply' and 'demand' for money." (Godley and Cripps, 1983, pp.82-83). In this view, credit money is a requirement of the economic system. It is not a parasite of the system. It ought to be particularly emphasised at this juncture that this analysis is not just applicable to the UK financial framework. Although the financial institutions of other countries may be different, they do exhibit, nonetheless, the same basic properties identified in this paper as being responsible for the endogeneity of the money stock. In other European countries firms are indebted permanently to banks and rely on them for the provision of borrowed financial resources (Lavoie, 1985, p. 68). Even

the North American financial system does fall *now* very much within this mould of institutional framework and analysis (Wojnilower, 1980, p. 289).

The second aspect of the 'consensus' is that commercial banks can never be constrained in terms of their reserves. Once commercial banks have created credit money, they can get the reserves required from the Central Bank; most banks are permanently indebted to the Central Bank. When the commercial banking sector is in need of more reserves, they can increase their borrowings with the Central Bank at the discount rate set by the latter. Commercial banks decide upon the amount of loans they are ready to grant and worry later about their liquidity position. It is impossible for the Central Bank not to provide the required reserves, at a penalty (this being a higher discount rate). 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, given that the demand for credit is not sensitive to changes in interest rates (except, of course, when these changes are so large to disrupt all financial markets). Thus, the money supply is endogenous at the rate of interest fixed by the monetary authorities. Post-Keynesians agree that the Central Bank cannot directly control the stock of money which is determined by previously made decisions on credit and loans. It, therefore, does not make much sense to control an aggregate which is a consequence rather than a cause. The endogeneity 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 diminish their liabilities so that the 'excess' is extinguished as a result of the repayment of bank debts. This argument explains the post-Keynesian contention that government deficits and favourable 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. A very good example here is the 1981 civil service strike in the UK when "The massive distortions in the monthly flow of cash between the public and private sectors were quite largely offset by opposite fluctuations in bank borrowing by the private sector, primarily by companies....." (Goodhart, 1984, p.264). A further implication here is that since the supply of finance can never become a constraint, the emphasis on the 'finance motive' (Davidson, 1978) "..... has been greatly exaggerated; that it is much ado about very little." (Rousseas, 1986, p. 44).

The third element of the 'consensus' relates to the recent financial innovations, especially the 'liability-management' aspect. It is generally agreed that these innovations have affected the endogeneity of the money supply in two ways: first, 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. Thus, the process of financial innovations has made it increasingly more difficult for the monetary authorities to monitor developments in financial and money markets (Goodhart, 1986; Podolski, 1986). Secondly, the expansion of bank lending has been the predominant force to banking developments, an aspect of considerable importance given that bank lending constitutes the

driving force of the money stock.

The fourth leg of the 'consensus' refers to interest rate control. Post-Keynesians believe that whilst the money supply is not under the firm fulcrum of the monetary authorities, interest rates can be controlled by the Central Bank. This can be done through discount rate adjustments or through the rate of intervention on the open market by the Central Bank. Rates of interest as they are determined abroad, the exchange rate of its foreign currency reserves or any such external variables, are viewed to be important factors which the Central Bank takes into consideration when it decides to adjust its discount rate to affect market interest rates.

5. Summary and Conclusions

Money is viewed as the outcome of credit creation; it is a residual and as such it cannot be the *cause* of changes in any economic magnitudes (Lavoie, 1984; Moore, 1979a, 1979b). It has also been shown that bank lending to the private sector is crucially demand determined with the monetary authorities having little means of influencing it. But perhaps more importantly, this paper has provided theoretical backing to the Kaleckian view that money is primarily credit money, created by the banking system in response to the demand for loans (Kalecki, 1971). The money supply increases or decreases as the result of increases or decreases in commercial bank lending. We, thus, see money as essentially "command over resources and hence at the root of class division. We see it as capital-money, the possession of which or the access to which is the preliminary condition for starting a private production initiative." (De Vroey, 1984, p.387).

Another important implication of this paper is that it can be viewed as a further attempt to help clarify the contention, repeatedly made by Joan Robinson (1962, for example), that one of the important aims of the post-Keynesian paradigm is to complete the unfinished *General Theory*. The issue at stake in this paper is the endogeneity of money which Keynes (1936) left untouched or seemed to be completely blind on its importance (Goodhart, 1983) by assuming money to be completely exogenous, fully controlled by the monetary authority¹². In this respect it may not be too pejorative to suggest that the 'post-Keynesian' portmanteau ought to be changed to read more appropriately, 'the post-Kaleckian paradigm'.

FOOTNOTES

- * I am grateful to Ron Ayres, Alfred Eichner, Ciaran Driver, George Hadjimatheou, Yiannis Kitromilides, and Bob Morgan for their helpful comments and suggestions. I am responsible for any remaining errors and omissions.
1. See, also, Moore (1986) who argues that "Monetary theory can never — or at any rate should never — be independent of the state of development of financial institutions". (p.443).
 2. For an extensive discussion of all these points see Davidson (1978); this study draws upon and extends the analysis of Keynes (1930, 1936).
 3. When Kaleckian monetary theory is viewed in this way, the importance of the tension referred to in Eichner's *Foreword* to Arestis and Skouras (1985, p. xii), between the followers of Kalecki and those of Keynes is somewhat reduced.
 4. For a recent reiteration of this view see Modigliani's 'Comments and Discussion' in Wojnilower (1980, p.334).
 5. Lavoie (1986) has argued recently that in the Marxian tradition the order of causation of the quantity theory is also denied. 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." (p.157). One should also refer to Myrdal (1939) who also denied the causation of the quantity theory and argued against the exogeneity of money.
 6. Liability management has taken place not just in the UK but in other industrialised nations as well. In the USA, for example, it was in early 1962 when negotiable certificates of deposit appeared in the financial markets and in the 'credit crunch' of 1966 when their use was legitimised (Minsky, 1986, p.351). Furthermore, following the 'credit crunch' of August/September 1966 and, at any rate, by 1969 "Eurodollar borrowings, only an emergency resort in 1966, substituted admirably for the CD market." (Wojnilower, 1980, p.291). These developments are reviewed and analysed succinctly by Moore (1986); see also Rousseas (1986). In fact, Goodhart (1986) suggests that commercial banks in the UK began in the early 1970s applying liability management ".....using techniques newly copied from the USA." (p.81).
 7. In any case it is impossible to distinguish purely retail banks and purely wholesale banks. This is so, since all British 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).
 8. Clearly, in the neoclassical production function approach inputs and outputs are related contemporaneously.
 9. Moore and Threadgold (1980, 1985), as well as Moore (1983), have produced the relevant evidence. In addition to the variables mentioned in the text (see equation 5), other variables were utilized including interest rate variables and a stockbuilding variable. The equations, however, that included these extra variables did not perform as satisfactorily as those without them.
 10. The possibility of the demand for bank lending by ICCs exceeding the 'available' supply, leading to commercial banks changing base rates or the degree of credit-rationing has been discussed in the literature. Lavoie (1984, p.782), for example, discusses the case of commercial banks refusing to lend to the more risky customers who are judged as imprudent in terms of their borrowing behaviour. The ensuing brake on lending expansion implies that

there may very well arise a case of conflict of interests between commercial banks and ICCs (see Gedeon, 1985/86 for more details on this point). We note, however, that under liability management there may not be 'available' supply of credit which can be surpassed by its demand.

11. We have utilised two interest rates in this study, r and R . This is only for convenience and both these rates can be thought of as representing deposit and lending rates too.
12. Moore (1984) has shown, however, that whilst Keynes in the *General Theory* treated the supply of money as exogenous, in his earlier writings especially in the *Treatise* (Keynes, 1930), he did in fact recognise the endogenous nature of the money supply process. The underlying mechanism propounded was via the demand for bank credit to finance working capital requirements. This proposition is particularly conspicuous in a chapter which did not survive publication.

REFERENCES

- Arestis, P., (1986), "The Credit Segment of a UK Post-Keynesian Model", *Mimeo*, (Thames Polytechnic).
- Arestis, P. and Skouras, T., (1985), *Post-Keynesian Economic Theory: A Challenge to Neo-Classical Economics*, (Wheatsheaf Books: Brighton).
- Artis, M.J. and Lewis, M.K., (1981), *Monetary Control in the United Kingdom*, (Philip Allan: Oxford).
- Bank of England Quarterly Bulletin, (BEQB), (1982), "The Role of the Bank of England in the Money Market", (March).
- Branson, W.H. and Hill, D. Jr., (1971), "Capital Movements in the OECD Area: An Econometric Analysis", *OECD Economic Outlook*, (December).
- Chick, V., (1986), "The Evolution of the Banking System and the Theory of Saving, Investment and Interest", *Economies of Sociétés*, (Cahiers de l'ISMEA, Série Monnaie et Production, No. 3).
- Coutts, K., Godley, W. and Nordhaus, W., (1978), *Industrial Pricing in the United Kingdom*, (Cambridge University Press: Cambridge).
- Cuthbertson, K., (1985), "Sterling Bank Lending to UK Industrial and Commercial Companies", *Oxford Bulletin of Economics and Statistics*, (May).
- Coakley, J. and Harris, L., (1983), *The City of Capital: London's Role as a Financial Centre*, (Basil Blackwell: Oxford).
- Crouch, C., (1979), *State and Economy in Contemporary Capitalism*, (Groom Helm: London).
- Davidson, P., (1978), *Money and the Real World*, 2nd edition, (Macmillan: London).
- Davidson, P., (1982), *International Money and the Real World*, (Macmillan: London).
- Davidson, P. and Weintraub, S., (1973), "Money as Cause and Effect", *Economic Journal*, (March).
- De Vroey, M., (1984), "Inflation: A Non-Monetarist Monetary Interpretation", *Cambridge Journal of Economics*, (No. 8).
- Dow, S.C., (1986/87), "Post Keynesian Monetary Theory for an Open Economy", *Journal of Post Keynesian Economics*, (Winter).
- Dow, S.C. and Earl, P.E., (1982), *Money Matters: A Keynesian Approach to Monetary Economics*, (Martin Robertson: Oxford).
- Eichner, A.S., (1979), *A Guide to Post-Keynesian Economics*, (Macmillan: London).
- Eichner, A.S. and Kregal, J.A., (1975), "An Essay on Post-Keynesian Theory: A New Paradigm in Economics", *Journal of Economic Literature*, (December).
- Fine, B. and Harris, L., (1985), *The Peculiarities of the British Economy*, (Lawrence and Wishart: London).
- Gedeon, S.J., (1985/86), "The Post Keynesian Theory of Money: A Summary and an Eastern Example", *Journal of Post Keynesian Economics*, (Winter).

- Godley, W. and Cripps, F., (1983), *Macroeconomics*, (Fontana: Oxford).
- Goodhart, C.A.E., (1983), "Comment" on A.H. Meltzer's "On Keynes and Monetarism" in D. Worswick and J. Trevithick (eds), *Keynes and the Modern World*, (Cambridge University Press: Cambridge).
- Goodhart, C.A.E., (1984), *Monetary Theory and Practice: The UK Experience*, (Macmillan: London).
- Goodhart, C.A.E., (1986), "Financial Innovation and Monetary Control", *Oxford Review of Economic Policy*, (Winter).
- Gowland, D., (1984), *Controlling the Money Supply*, 2nd edition, (Croom Helm: London).
- Guttentag, J. and Herring, R., (1983), *The Lender-of-Last-Resort Function in an International Context*, (Essays in International Finance, No. 151: Princeton University Press).
- Jarsulic, M., (1985), *Money and Macro Policy*, (Kluwer-Nijhoff Publishing: Boston).
- Kaldor, N., (1980), *Memoranda on Monetary Policy*, (Treasury and Civil Service Committee, HC720-II, July).
- Kaldor, N., (1982), *The Scourge of Monetarism*, (Oxford University Press: Oxford).
- Kalecki, M., (1971), *Selected Essays on the Dynamics of the Capitalist Economy*, (Cambridge University Press: Cambridge).
- Keynes, J.M., (1923), *A Tract on Monetary Reform*, (Macmillan: London).
- Keynes, J.M., (1930), *A Treatise on Money*, (Macmillan: London).
- Keynes, J.M., (1936), *The General Theory of Employment, Interest and Money*, (Macmillan: London).
- Lavoie, D., (1986), "Marx, the Quantity Theory, and the Theory of Value", *History of Political Economy*, (Spring).
- Lavoie, M., (1984), "The Endogenous Flow of Credit and the Post Keynesian Theory of Money", *Journal of Economic Issues*, (September).
- Lavoie, M., (1985), "Credit and Money: The Dynamic Circuit, Overdraft Economics, and Post-Keynesian Economics", in M. Jarsulic (1985).
- Longstreth, F., (1979), "The City, Industry and the State", in C. Crouch (1979).
- Minsky, H.P., (1982), *Can 'It' Happen Again? Essays on Instability and Finance*, (M.E. Sharpe: Armonk, NY).
- Minsky, H.P., (1985), "Money and the Lender of Last Resort", *Challenge*, (March/April).
- Minsky, H.P., (1986), "The Evolution of Financial Institutions and the Performance of the Economy", *Journal of Economic Issues*, (June).
- Moore, B.J., (1979a), "Monetary Factors" in A.S. Eichner (1979).
- Moore, B.J., (1979b), "The Endogenous Money Stock", *Journal of Post Keynesian Economics*, (Fall).
- Moore, B.J., (1983), "Unpacking the Post Keynesian Black Box: Bank Lending and the Money Supply", *Journal of Post Keynesian Economics*, (Summer).
- Moore, B.J., (1984), "Keynes and the Endogeneity of the Money Stock", *Mimeo*, (Wesleyan University and City of London Polytechnic).
- Moore, B.J., (1985), "Wages, Bank Lending and the Endogeneity of Credit Money" in M. Jarsulic (1985).
- Moore, B.J., (1986), "How Credit Drives the Money Supply: The Significance of Institutional Developments", *Journal of Economic Issues*, (June).
- Moore, B.J., and Threadgold, A.R., (1980), "Bank Lending and the Money Supply", *Bank of England*, Discussion Paper No. 10, (July).
- Moore, B.J., and Threadgold, A.R., (1985), "Corporate Bank Borrowing in the UK, 1965-1981", *Economica*, (February).
- Myrdal, G., (1939), *Monetary Equilibrium*, (William Hodge & Co. Ltd: London).
- National Institute of Economic and Social Research (NIESR), (1981), "Monetary and

Fiscal Policy in the National Institute Model" in M.J. Artis and M.H. Miller (eds), *Essays in Fiscal and Monetary Policy*, (Oxford University Press: Oxford).

Podolski, T.M., (1986), *Financial Innovations and the Money Supply*, (Basil Blackwell: Oxford).

Radcliffe, Lord (Chairman), (1959), *Committee on the Working of the Monetary System: Report Cmnd.* (HMSO: London).

Revell, J., (1973), *The British Financial System*, (Macmillan: London).

Robinson, J., (1962), *Essays in the Theory of Economic Growth*, (Macmillan: London).

Robinson, J., (1970), "Quantity Theories Old and New: A Comment", *Journal of Money, Credit and Banking*, (November).

Rousseas, S., (1986), *Post-Keynesian Monetary Economics*, (Macmillan: London).

Sawyer, M.C., (1983), *Business Pricing and Inflation*, (Macmillan: London).

Sawyer, M.C., (1985), *The Economics of Michal Kalecki*, (Macmillan: London).

Wills, H.R., (1982), "The Simple Economics of Bank Regulation", *Economica*, (August).

Wojnilower, A.M., (1980), "The Central Role of Credit Crunches in Recent Financial History", *Bookings Papers on Economic Activity*, (No. 2).

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