
The Source of Endogenous Money

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Abstract

In the post-Keynesian approach to money, endogeneity has its origin in the demand for loans which in turn arises from firms' requirements for working capital whenever the cost and/or volume of planned output increases. Banks meet all creditworthy demand for loans and the central bank supplies the necessary reserves. Thus, bank lending (and the supply of new deposits) depends critically upon the 'state of trade'.

However a number of institutional changes have recently taken place in the UK which call this sequence into question. Household demand has taken over from corporate demand as the major component in the aggregate demand for bank credit. Furthermore, we know that total transactions (including those on assets, intermediate and secondhand goods) have grown much more rapidly than GDP during the 1980s. If credit is required for all types of transactions, we might therefore expect the demand for loans to depend more directly on total transactions than on those related to output alone.

This paper documents those institutional changes and considers some of the implications.

1. Introduction

The endogeneity of credit and money is central to the Post Keynesian view of the macroeconomy. Until now, the source of the endogeneity has always been identified as the costs and the volume of production. The

behaviour of nominal output determines the demand for credit. The central bank sets the rediscount rate and commercial banks meet the whole of the creditworthy demand for loans at the rediscount rate plus a risk-related mark-up. The new loans create new deposits. The importance of nominal output as the origin of the demand for loans is often summarised by saying that loan demand is created by the 'state of trade'. We may take the following as typical.

The single most important demand for credit is from business firms. Companies borrow funds short-term from banks primarily to meet their needs for increased working capital. This need arises because companies must pay their factors of production, in particular labor, *before* they receive the sales receipts from the goods and services produced, which take time to manufacture and sell. (Moore, 1988, p.373)

Similar statements can be found in Davidson and Weintraub, 1973; Davidson, 1988; Le Bourva, 1992.

However, this has not been the case in the UK for some years now. One of the most dramatic changes in the financial environment during the 1980s was the government-encouraged competition between banks and building societies which saw a dramatic increase with which the personal sector could obtain credit, resulting in much larger household holdings of both bank advances and broad money compared with the position

in the mid-1970s.

Another startling development in the UK has been the divergence of total nominal spending ('*PT*') from GDP ('*PY*'). At first sight, this has no obvious connection with the explosion of personal sector credit. However, the suggestion that the demand for credit (and money) might follow *PT* rather than *PY* is hardly implausible. We already know that proxies for non-GDP transactions can be used to improve money demand estimations. This seems hardly surprising in retrospect since money is required for all types of transactions, not just the subset represented by GDP, and the growing importance of 'speculative' transactions in advanced economies is widely recognised in other contexts.² If money is demanded for such purposes, why not credit too? This brings us to the verge of an intriguing chain of reasoning. *If* we are right in our supposition that the demand for credit in the UK has been increasingly driven by households, and *if* this credit is used to finance expenditures some of which do not appear in GDP and *if* we then add the central endogeneity theorem that loans create deposits, then we have an explanation for the marked fall in income velocity ('*GDP/M*') which has also been a feature of the recent monetary landscape in the UK.

In the next section we look briefly at these recent developments. In section 3 we examine the institutional changes behind these trends and such empirical evidence as we have that the events may be interconnected. In section 4 we consider the implications of these developments for post Keynesian monetary theory. Section 5 summarises and concludes.

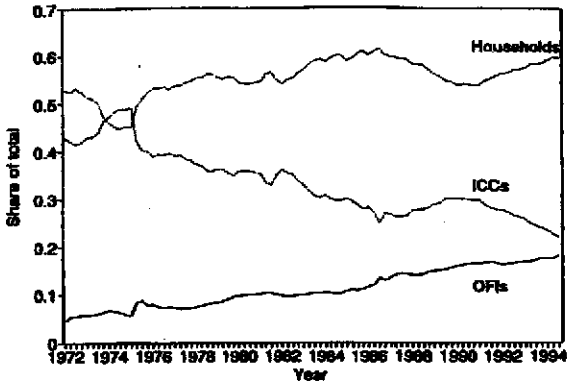
2. Recent monetary trends in the UK

Post Keynesian economics is not alone in its tendency to see firms as the primary source of credit demand. Most existing studies of credit

demand in the UK (and they are surprisingly few when contrasted with demand for *money* studies) focus upon the demand for credit by industrial and commercial corporations (ICCs) (see, for example, Cuthbertson (1985), Cuthbertson and Foster (1982), Moore and Threadgold (1980), Moore and Threadgold (1985)). It may be that this emphasis upon the corporate sector was justified in earlier times by the dominant quantitative role played by corporations within the aggregate demand for loans but, as a proportion of total outstanding bank loans,³ bank lending to ICCs has steadily diminished since 1975. Figure 1 shows the proportions of total bank loans held respectively by households, ICCs and other, non-bank, financial institutions (OFIs). The increase in the household share reflects the rapid growth of consumer credit and mortgage commitments from the late 1970s while the increasing share going to non-bank financial institutions reflects the comparatively rapid growth of the financial sector over the same period. Notice, since we return to it later, that the increase in both these shares can be linked to increasing asset transactions which are not included in the definition of GDP: households borrow to fund increasingly speculative transactions in secondhand houses and OFIs borrow to fund their rapidly growing business of circulating paper claims on existing real assets.

The second remarkable trend of recent years has been the divergence of *total* transactions (*PT*) from GDP (*PY*). This has been hinted at in a number of empirical studies of the demand for money where estimations have been improved by including variables which proxy for non-GDP transactions. We return to these in the next section. In the UK we are fortunate that the Association of Payments Clearing Systems (APACS) keeps a central record of both the value and volume of transactions carried out

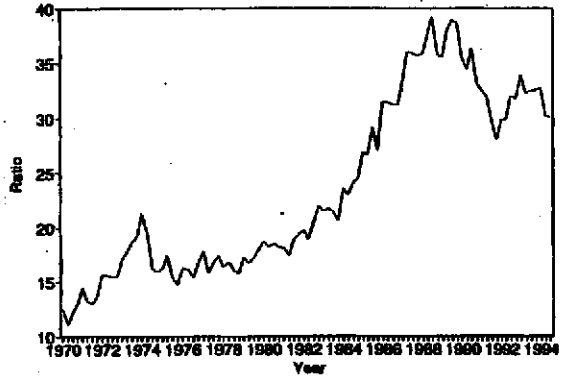
Fig.1: Shares of total outstanding bank and building society credit, 1972-94



by the several payment clearing companies in the UK. It is thus a relatively simple task to aggregate payments made by check, payments made by automatic/electronic means and payments made through 'CHAPS', a special, same-day clearing system designed to handle very large transactions. The aggregate figures do not, of course, include transactions in cash, nor in fact do they include transactions between customers at the same branch of a bank (intra-branch transactions). If we take this transactions aggregate to proxy *PT* and compare it to GDP or *PY*, it appears that the ratio *PT:PY* was reasonably stable (at around 17) from 1975 to 1980 but increased dramatically to nearly 40 by 1991, dipping and rising after that. It might be argued that some of this increase is the result of a switch from cash to bank transfers in the payment of salaries. Undoubtedly, this is true but cash salary payments, even in 1970, were a very small proportion of total transactions and we know (also from APACS sources) that the switch has been slow and steady: it is not a characteristic of the 1980s. Furthermore, if we disaggregate the data from the component clearing companies, we can see first of all that the aggregate is dominated by transactions via CHAPS, a facility used mainly by financial institutions, and for real estate transactions,

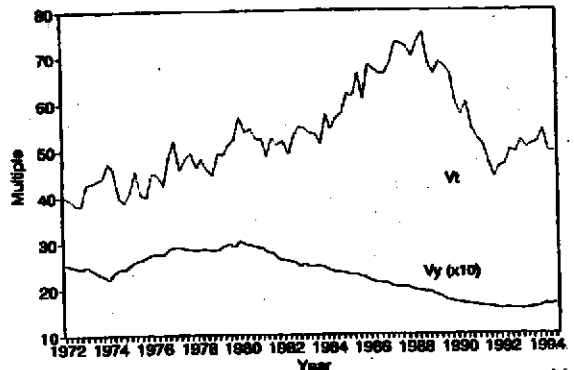
and secondly that the CHAPS sub-aggregate rises more rapidly than the other components.⁴ The APACS data may not give us a completely accurate statement of movements in *PT* but it certainly indicates a major divergence from *PY* from the late 1970s. Figure 2 shows the detail.

Fig.2: Total transactions / GDP 1970-1994



Finally, but probably the most widely-known development of the period, is the marked fall in income velocity. After a sharp dip and recovery in the 1970s, we observe a very sharp decline in the 1980s with only a slight recovery since. It is interesting to compare this income velocity, '*PY/M*', with what we might call transactions velocity, '*PT/M*', by dividing our APACS total transactions series by the broad money stock. Both measures of velocity appear in figure 3.

Fig.3: Income and transactions velocities 1972-94



3. Institutional imperatives

It is worth noting that all of the trends to which we have drawn attention above, are trends which develop a momentum during the 1980s. In the UK the early 1980s in particular were a period of great enthusiasm for deregulation of all kinds and it seems too much of a coincidence that this dramatic change in the monetary landscape should begin at the same time. The area of deregulation which had its biggest impact on households in the 1980s was the desegregation of financial markets and institutions. In particular, the UK government responded to long-standing criticisms of the regulations which limited direct competition between commercial banks and building societies.

The relevant deregulation was contained in two pieces of legislation, the Finance Act of 1983 and the Building Societies Act of 1986. The resulting competition triggered a number of developments with the potential to affect both the demand for money and the demand for credit. Take firstly the interest-rate consequences of encouraging bank and building society competition. Allowing building societies to engage in unsecured lending after 1986 allowed them to issue cheque guarantee cards and instantly turned their interest-bearing sight deposits into checkable accounts. This obliged banks to pay interest on their sight deposits which had the effect of increasing the proportion of interest-bearing broad money and thus raised money's (weighted average) own rate relative to rates on alternative assets and relative to rates on borrowing. Relative interest rates, in other words, experienced a major upheaval. The opportunity cost of holding money could no longer be represented by a simple, absolute, interest rate on some other asset, but must be a spread term, $i_b - i_m$ for example where i_b indicates the rate on 'bonds' and i_m is money's own rate, the weighted average of

deposit rates. Moreover, as the payment of interest on time deposits became more common, variations in the spread occurred around a falling mean value as money's own rate rose. Other things being equal, therefore, we would expect this secular decline in the opportunity cost of holding money to increase the demand for money.⁵ But we can bring loan demand into the picture as well. We might, for example, argue along with Goodhart (1995, p.45) that this spread represents the *real* cost of intermediation. As it shrinks, there is an increase in the quantity of intermediary products demanded, i.e. an increase in the desire for *both* deposits *and* loans.⁶

But competition was not confined to deposit rates. Collateral requirements changed dramatically as well. For home loans, where the competition was fiercest, a commonly used test of credit-worthiness has always been the loan/value ratio. This increased from 0.72 to 0.90 over the period 1980-89. Although this ratio measures the change in the ease of getting credit in just one very specific context it is consistent with what we know, but cannot quantify, about consumer credit in general, namely, that it became much easier to obtain, in stores, for example, acting as agents for banks, or through unsolicited mail shots. It is not unreasonable to suppose that as credit becomes cheaper and easier to obtain, households are willing to increase their gearing and since the corresponding deposits must be held by someone it is hardly surprising that income velocity falls.

Whether or not the divergence between PT and PY can also be fitted into the picture requires more formal analysis. We have known for years that there is no necessary reason why they should move together. Fisher (1926), for example, in his discussion of the equation of exchange, had PT on the right hand side but deliberately distinguished

PT_1 (= all transactions related to national income) and PT_2 (= all financial transactions), precisely because he thought they might behave differently.

Keynes (1930), went further in distinguishing three groups of transactions. Firstly, there were ‘...transactions rising out of the division of productive functions’. These came nearest to income transactions but included intermediate transactions as well as spending on final output. Secondly there were speculative transactions in goods and commodities and thirdly there were financial transactions. The first group, he thought, were likely to be ‘a fairly stable function of the money value of current output’, but transactions in the second and third groups:

...need not be, and are not, governed by the volume of current output. The pace at which a circle of financiers, speculators and investors hand round to one another particular pieces of wealth, or title to such, which they are neither producing nor consuming but merely exchanging, bears no definite relation to the rate of current production. *The volume of such transactions is subject to very wide and incalculable fluctuations.* (1930, p.47, emphasis added).

It may thus seem plausible that PT can diverge from PY , and it might seem plausible to argue that if PT increases relative to PY , for example, then the demand for credit and money would follow PT . There is no reason, after all, why people should need to borrow in order to buy newly produced goods and services but not to buy existing houses or secondhand autos or financial assets. The question of whether the increasing indebtedness of households (and the simultaneous increase in their money

holdings) owes anything to PT , however, can only be resolved by formal tests.

Given that all central banks now exercise such monetary restraint as they can by using interest rates to influence the flow of new loans, it is curious that demand for credit studies are vastly outnumbered by investigations of the demand for money. Correspondingly, such evidence as we have that non-GDP transactions affect household liquidity and gearing tend to come from studies of money demand. For example, Anderson (1993) showed that the boom in mortgage refinancing in the USA had led to an increase in the volume and volatility of financial transactions relative to GDP transactions, and that this had measurable effects upon the demand for M1 deposits. More recently, Palley (1995) has demonstrated that money demand estimates in the USA can be improved by recognising a role for total transactions where the behaviour of the latter is proxied by measures which refer to some part of the property market and to financial activity. An explicit test of the PT series depicted above was carried out by Howells and Hussein (1997) by estimating three models of money demand. One used income as a scale variable, one used income and wealth and one used PT . Using the dynamic OLS cointegration technique it was shown that the total transactions measure outperforms both alternatives.

As regards the demand for credit rather than money, Howells and Biefang-Frisancho Mariscal (1992) found the rate of growth of household demand for bank loans is well explained by equations containing a PT variable, modified by the exclusion of same-day clearings since these are not largely relevant to households. As regards the long-run, a paper by Howells and Hussein (1999) estimates and compares the properties of two

models of the demand for aggregate bank (and building society) lending in the UK. One model uses real GDP as the equivalent of the scale variable, the other uses a measure of real total transactions. The estimations are done using the recently developed technique of unrestricted dynamic ECM. Both models find a long-run relationship between the stock of outstanding loans and both real GDP and real total transactions and both scale variables are significant and right signed in models of (flow) demand for new loans. However, the model incorporating total transactions is superior in its out-of-sample forecasting and other properties.

Clearly there is scope for much further work, particularly of formal testing. Nonetheless, this mixture of theorising from the observed facts reinforced by some empirical work of both tangential and direct relevance suggests a hypothesis that is worth taking seriously for the time being at least. Credit became cheaper and easier to obtain in the UK during the 1980s. Household indebtedness to banks increased so as to exceed that of firms. Unlike firms, whose demand for credit is strongly influenced by the conditions of production, 'the state of trade', household credit demand seems also to be influenced by a range of non-output-related factors. Accepting this as a reasonable hypothesis, the next question is what significance does it have for our understanding of the endogeneity of money?

4. Endogenous money - a reappraisal

The core of the endogeneity thesis is that the money supply is determined by the demand for credit. The central bank sets the lender-of-last-resort rate. Banks respond to the demand for loans, not to a demand for deposits. In doing so, they impose a conventional, risk-related mark-up on the last-resort rate and meet all credit-worthy demands

for loans at those rates. The money supply is credit driven. All of this is familiar, and none of it is changed by the fact that households rather than firms become the chief demanders of credit.⁷

Establishing that the money supply is credit driven and that the role of the central bank is confined to setting the level of short-term rates, plainly has some dramatic effect upon how we envisage the quantity of money interacting with other variables. At the very least, we have to accept that the quantity of money is the outcome of variables determining the demand for credit and not the (independent) outcome of some administrative decision on the part of the monetary authorities. Taking a view on the endogeneity of money involves taking a view on what causes money. Money is caused by other variables in the economic system, immediately by the interaction of the portfolio preferences of banks and non-bank agents. None of this is changed by shifting the focus to households.

But taking the view that money is endogenous is often held to mean that we accept much more. In particular, it is commonly held that since the money is endogenously determined, money itself cannot cause anything interesting. It *facilitates* the expansion of output, along the lines of Keynes's finance motive. Indeed it is hard to see how investment could precede saving if firms were not able to borrow from banks. But provided that what is borrowed just matches firms' incremental costs of production then either it is being created in just sufficient quantity to permit extra output (prices given) or it is being created in just sufficient quantity to sustain current output in the face of rising costs *being generated elsewhere*. In either case, money is not an independent causal force. Since this further, or extended, view of endogenous money is

apparently embedded in the behaviour of firms, it is this view that might be affected when we shift our attention to households.

Firstly, 'the circuit' becomes more complicated. In some accounts of the money supply process which focus upon the role of firms (eg Lavoie, 1984; Le Bourva, 1992), stress is placed upon the use of loans merely to cope with the fact that production and sale takes time. A firm with constant costs of production can meet these through earnings from current sales but a decision to increase output, for example, requires an addition to working capital. But eventually, the additional sales will bring in the funds to repay this additional loan. But if households as well as firms are sources of credit demand and if household demand stems from a variety of different motives rather than the single one of production, then any circuit described by credit flows must be a good deal more complicated. This would not necessarily matter except that for some writers the firm-based circuit has been used to argue for an equivalence between a demand-determined supply of credit and a demand-determined supply of money. The significance of this is that *if* the quantity of money is demand-determined then it follows that it can never be in excess supply.

Without limiting our attention to the behaviour of firms, this equivalence is hard to maintain. Remember that we have drawn a clear distinction between loans and deposits. We recognize this every time we say that banks respond to a demand for loans, not to a demand for deposits and every time we say that loans cause deposits. To say that *A* causes *B* makes little sense if *A* and *B* are the same objects. Given that loans and deposits are different things, it is easy to see that the desire for each grows out of different motives (portfolio considerations in the latter, income-

expenditure discrepancies in the former) and indeed that different groups are involved (most people hold money, not everyone is in debt to banks). Now, while it is of course true that *ex post* or in equilibrium, loans must equal deposits, it would be a surprising coincidence if the community's desire, *ex ante*, to hold additional deposits in the next few days just happened to match the additional credit required by a subset of population in the same period. Exactly what variables may be involved in the transition from *ex ante* to *ex post* has been extensively discussed elsewhere (Cottrell, 1985, 1988; Howells, 1995; Moore, 1997; Howells, 1997) and this is not the place to revise the possibilities, but only to look briefly at one. This is the argument, which seems to surface firstly in Kaldor and Trevithick (1981) that agents can never find themselves with excess money balances because they are continually using money receipts (deposits) to adjust their overdraft positions.

Unlike commodity money, credit money comes into existence as a result of borrowing from the banks ... and is extinguished as a result of the repayment of bank debt (which happens *automatically* under a system where an excess of receipts over outlays is directly applied to a reduction of outstanding overdrafts). Hence in a credit money economy, unlike with commodity money, the outstanding 'money stock' can never be in excess of the amount which people wish to hold. (Kaldor and Trevithick, 1981, p.7. Emphasis added).

Provided that the borrowing from banks is undertaken by firms to make payments to firms, all of whom we might reasonably

assume to have overdrafts, then this is a reasonable description of events. But once that borrowing is used to pay agents without overdrafts, then they have a portfolio decision to make, which, whatever it is, can hardly leave other variables unchanged.

In order to see just how complicated the picture becomes once we leave the world in which credit is demanded solely to finance incremental production, let us take a sequence which will be all too familiar to observers of the UK economy in the 1980s. We have seen that a policy of financial deregulation designed deliberately to foster competition between lenders caused collateral standards and other non-pecuniary costs to fall.⁸ Households increased their floating rate indebtedness, in particular in order to make purchases of (largely secondhand) houses which were seen as a good investment in addition to being a source of accommodation services. This led to the practice of 'equity extraction' whereby borrowers took out larger loans than they 'needed' and used the balance to fund consumption. This suggests that the sharp increase in credit overall financed spending of radically different kinds and, more importantly, in radically different directions. Firstly, of course, the larger part was used for its main purpose which was to fund property transactions in which households trade overwhelmingly secondhand real assets with each other. We might describe this as 'households buying from households'. However, some, we have just seen, was used to buy goods and services of all kinds, a process which we might summarise as 'households buying from firms'. Finally, some of the credit, at least before the crash of 1987, was used to buy existing and newly issued financial assets ('households buy from households and lend to firms').

In each case, as the result of the personal sector credit boom, sellers accumulate money

balances which exceed what they had planned. Does it follow that they are instantly and harmlessly extinguished? Plainly, the Bank of England had its doubts given its expressions of concern at both the inflationary and personal gearing implications (Bank, 1989). Consider each case in turn. In the first case, the housing market, 'households buy from households'. Here, sellers, who traditionally expect to negotiate a final price something below the initial asking price, will find that the initial asking price will be more nearly met. Assume that they in turn are selling in order to buy elsewhere, using credit for the purpose. Some ('case 1') will be happy to borrow less as a result of their unexpected sales proceeds and 'excess' deposits will be extinguished. Others ('case 2'), however, will maintain their borrowing plans, using their good fortune to fund a more expensive property purchase or to extract equity from their existing home and this may then be spent on goods or services or other assets. And of course, there will be some fortunate households who are not funding their next home purchase with credit. For them ('case 3'), the unexpected proceeds from their sale enables them to spend more in unlimited ways. The only situation in all of this, where the increased lending can have no significant effect, arises with case 1, where some public spirited family, buying its next home with credit, uses its unexpected sales proceeds to take out a smaller mortgage *and do nothing else*.

Secondly, consider the sequence when 'households buy from firms' using loans strictly intended for house purchase. Firms experience an increase in demand to which they may respond by raising prices and/or output. But respond they must. Households cannot pass their deposits to firms without some response. Initially, firms run down stocks in the face of unanticipated demand.

(Moore is of course correct that deposits are always accepted in exchange, however unexpected the quantity may be). Firms may *subsequently* use their unexpected cash flow to reduce their bank loans, but more likely production will increase to replace inventories or if that is impossible attempts to do so will cause costs to rise. In either event, household-credit-induced-money is raising the level of demand and causing changes in P or Y .

Thirdly, consider the sequence when households buy financial assets. Prices rise and yields fall. Note that these are market-determined yields and not administered ones.⁹ Some of the funds will be used to purchase newly issued securities and firms *may* take the opportunity to substitute longer-term debt for bank loans. Some of the funds will buy existing securities from holders who decide to sell only as prices rise. They in turn will spend their receipts howsoever they choose - debt repayment, other financial assets, a world cruise. All the transactions will pass via brokers and dealing firms *may* take the opportunity to repay some of their bank loans. The point, of course, is that some of the 'excess' deposits may find their way to the repayment of loans at a second stage. But by then, again, it is too late. Once we accept that not everyone has a bank loan, getting the deposits to the point where they are extinguished requires that they be spent. And the act of spending cannot leave things unchanged.

Whatever the outcome, 'the circuit' is more complicated, and it is not so obvious that a demand for credit, now driven by all sorts of considerations, including the desire to trade secondhand assets for speculative purposes, must inevitably produce an increase in credit and money just equal to what is required to validate pre-existing changes in the 'state of

trade'.

5. *Summary*

The money supply is endogenous (a) because the central bank has little option but to set the lender-of-last-resort rate and then accommodate whatever quantity of reserves are necessary to validate the resulting demand for credit *and* (b) the demand for credit itself originates within the economy. It is the result and not the cause of other economic variables. The variables in question have generally been those giving rise to changes in the volume and costs of production and thus endogeneity has been closely linked to the behaviour of firms.

However, if our methodology pays any attention to institutional realities, this perception has to be modified if it is to apply to the UK where a number of, probably related, differences have emerged during the last twenty-five years. In the UK, most bank credit now goes to households; households hold much higher levels of debt and much larger quantities of the corresponding deposits (relative to income) than they did twenty-five years ago; total spending has apparently increased dramatically relative to GDP. It is just not realistic, in these circumstances, to link endogeneity solely to the 'state of trade'. The question for post Keynesian and for institutionalist economists is whether this changes our understanding of endogenous money in any *fundamental* way. Clearly, it need not change our perception of the money supply as the outcome of decisions to borrow, in response to which the central bank can do little but set the rediscount rate. The trickier question is whether the resulting money, created in response to often speculative rather than productive decisions, remains the passive variable which we have always thought. If it does not, if, in other words it is possible for speculative credit demands to have a causal

impact on real variables or upon the general price level, then post-Keynesians need urgently to turn their attention to the question of monetary/credit control. The accepted picture at the moment is that the central bank, faced with an undesirably rapid credit expansion, can only raise its official dealing rate. But none of the empirical studies referred to in section 2 finds a significant interest elasticity in the UK demand for credit function. (Neither do the Howells and Hussein, 1998, tests). Unfashionable as the suggestion may be, effective credit control may require more drastic measures. In a rather neglected paper, written ten years ago, Jon Shields (1988) proposed limiting the supply of household credit by attention to loan/value income value/ratios. Given what we know about the behaviour of these ratios in a deregulated financial system, this seems a sensible place to start.

Endnotes

1. University of East London. This paper contains a further development of ideas which were first floated in Arestis (1996). The results of testing empirically the relationship between bank lending and non-GDP spending can be read in Howells and Hussein (1999).
2. See for example D J Newberry, 'Futures Markets, Hedging and Speculation' in Newman *et al* (1992) and the references cited therein.
3. Since we are interested here in credit demand as the source of changes in the broad money aggregate M4, we use the term 'bank' to refer to banks and building societies. Likewise, we refer later to the M4 private sector (M4PS) which is the non-bank, non-building society, private sector.
4. The twin themes of this paper are that *PT* has risen relative to *PY* largely because of an increase in spending on assets relative to output, and that household borrowing now dominates borrowing by firms. This is what the data most conspicuously suggests. However, as the quotation from Keynes (1930) shows, *PT* will increase relative to *PY* if there is an increase in intermediate transactions relative to final output. The recent fashion amongst large firms and public utilities for 'contracting out' specialist functions would have this effect. (I am grateful to the editor for pointing this out).
5. There is a certain irony in the fact that the (Thatcher) administration committed itself to monetary targets but then had to abandon them in 1985 when its simultaneous policy of deregulation led to such unstable velocity.
6. Alternatively, we could take the Sprengle and Miller (1980) argument that as the return on deposits increases relative to the rate on loans, it makes more sense to meet unforeseen expenditures by taking out new loans than by running down existing liquid assets.
7. The mark-ups are likely to be larger for households as against prime corporate customers. The additional risk may have implications for asset holdings elsewhere in banks' balance sheets, and also for profits. But these are not relevant issues here.
8. The details of this episode are set out in Arestis and Howells (1992).
9. This is not to say that they are completely divorced from the central banks' official (i.e. administered) short-term rate. It is difficult to see how, for example, yields on assets of longer term and greater and variable risk could lie *below* the rediscount

rate for any substantial period. It is merely saying that neither risk premia nor term premia are fixed by rigid mark-ups.

References

Anderson R G (1993) 'The Effect of Mortgage Refinancing on Money Demand and the Monetary Aggregates', *Federal Reserve Bank of St Louis Review*, 75 (4), 49-63.

Arestis P and Howells P G A (1992) 'Institutional Developments and the Effectiveness of Monetary Policy', *Journal of Economic Issues*, 26 (1), 135-57.

Bank of England Quarterly Bulletin (1989), 'Personal Credit Problems', May.

Le Bourva J (1992) 'Money Creation and Credit Multipliers', *Review of Political Economy*, 4 (4), 447-66.

Cottrell A (1985) 'The Endogeneity of Money and Money-Income Causality', *Scottish Journal of Political Economy*, 33 (1), 2-27.

Cottrell A (1988) 'The Endogeneity of Money: A Reply', *Scottish Journal of Political Economy*, 35 (3), 2-27.

Cuthbertson K (1985), 'Bank Lending to UK Industrial and Commercial Companies', *Oxford Bulletin of Economics and Statistics*, 42 (2), 91-118.

Cuthbertson K and Foster N (1982), 'Bank Lending to Industrial and Commercial Companies in Three Models of the UK Economy', *National Institute of Economic Review*, 102, 63-77.

Davidson P (1988) 'Endogenous Money, the Production Process and Inflation Analysis', *Economie Appliquée*, 41 (1), 151-69.

Davidson P and Weintraub S (1973) 'Money as

Cause and Effect', *Economic Journal*, 1117-1132.

Fisher I (1926) *The Purchasing Power of Money*, 2e, New York: Augustus Kelly.

Goodhart C A E (1989) 'Has Moore Become too Horizontal?', *Journal of Post Keynesian Economics*, 12 (1), 29-34.

Goodhart C A E (1995), *Central Bank Independence and the Financial System* London: Macmillan.

Howells P G A (1995) 'The Demand for Endogenous Money', *Journal of Post Keynesian Economics*, 18 (1), 89-106.

Howells P G A (1997) 'The Demand for Endogenous Money: A Rejoinder', *Journal of Post Keynesian Economics*, 19 (3), 429-435.

Howells P G A and Biefang-Frisancho Mariscal I (1992), 'An Explanation for the Recent Behaviour of Income and Transactions Velocities in the United Kingdom', *Journal of Post Keynesian Economics*, 14 (3), 367-388.

Howells P G A and Hussein K A (1997), 'The Demand for Money in the UK: Total Transactions as the Scale Variable', *Economics Letters*, 55 (3), 371-77.

Howells P G A and Hussein K A (1999), 'The Demand for Bank Loans in the UK: The Role of "Transactions"', *Journal of Post Keynesian Economics*, 21 (3).

Kaldor N and Trevithick J A (1981), 'A Keynesian Perspective on Money', *Lloyds Bank Review*, 139, 1-19.

Keynes J M (1930) *A Treatise on Money*, London: Macmillan.

Lavoie M (1984) 'The Endogenous Flow of Credit and the Post Keynesian Theory of Money', *Journal of Economic Issues*, 18 (3), 771-797.

Le Bourva J (1992) 'Money Creation and Credit Multipliers', *Review of Political Economy*, 4 (4), 447-466.

Moore B J (1997) 'Reconciliation of the Supply and Demand for Money', *Journal of Post Keynesian Economics*, 19 (3), 423-8.

Moore B J (1988) 'The Endogenous Money Supply', *Journal of Post Keynesian Economics*, 10 (3), 372-85.

Moore B J and Threadgold A R (1980), 'Bank Lending and the Money Supply', Bank of England Discussion Paper No. 10.

Moore B J and Threadgold A R (1985), 'Corporate Bank Borrowing in the UK, 1965-81', *Economica*, 52, 65-78.

Newberry D J (1992), 'Futures Markets, Hedging and Speculation' in P Newman, J Eatwell, M Milgate, *The New Palgrave Dictionary of Money and Finance*, London: Macmillan.

Palley T I (1991), 'The Endogenous Money Supply: Consensus and Disagreement', *Journal of Post Keynesian Economics*, 13 (3), 397-403.

Palley T I (1995), 'The demand for money and non-GDP transactions', *Economics Letters*, 48, 145-54.

Shields J (1988), 'Controlling Household Credit', *National Institute Economic Review*, (125) August.

Sprenkle C and Miller M H (1980) 'The precautionary demand for broad and narrow money', *Economica*, 47 (4), 407-21.