

The Demand for Endogenous Money: a Lesson in Institutional Change

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1. Introduction

When Davidson and Weintraub (1973) first drew attention to the endogenous nature of the money creation process they were responding to a quantity theory analysis of inflation which was popular at the time. But although their paper was a landmark in the cogency with which it put the case (and in putting it forward in a leading 'mainstream' journal), it was not the first to argue that a country's money stock might be elastic with respect to the needs of trade. Traces of this view can be found in debates over the cause of inflation in Tudor and Stuart England and in the 'banking' and 'bullionist' controversies of the nineteenth century. Neither was it the last of course. In later years Chick (1986), Dow (1993), Howells (1995), Kaldor (1982, 1985), Lavoie (1984), Niggle (1991), Pollin (1991), Wray (1990) and others have all supported and refined this fundamental proposition. The greatest campaigner, however, has been Basil Moore whose 1985 book took the argument (and the evidence) to unprecedented levels of detail. So secure have the fundamentals of the argument become, that the literature in recent years has been entirely preoccupied with refinements.

Furthermore, as central banks have placed a growing premium on the 'transparency' of their operations, it has become clear beyond the slightest doubt that central bankers regard the money supply as endogenously determined and that they accept their own role in making it so. Charles Goodhart, whose work has for years combined the analytical insights of economics with a keen appreciation of the *practice* of central banking has done as much as anyone to encourage a realistic approach to money supply analysis and has largely succeeded in the UK at least, by frequently denouncing the 'misinstruction' inherent in the base-multiplier model (Goodhart, 1984, p.188). Just ten years later he observed that 'Almost all those who have worked in a [central bank] believe that this view is totally mistaken; in particular, it ignores the implications of several of the crucial institutional features of a modern commercial banking system....' (Goodhart, 1994, p.1424). Just what those institutional features are (and how far they penetrate to the core of the modern banking system) he showed more recently in describing the arrangements that lay behind the US Fed's adoption of the language of monetary base control in 1979-82 (Goodhart, 2002, pp.16-17).

And there is nothing peculiar about the Fed. For the Bank of England we have the statement from the Bank's Deputy Governor (now Governor) with responsibility for monetary policy. 'In the United Kingdom, money is endogenous - the Bank supplies base money on demand at its prevailing interest rate, and broad money is created by the banking system' (King, 1994 p.264). And Borio's (1997) survey of central bank operating procedures in industrial countries shows that they are all essentially similar: the central banks set a short-term 'official' rate of interest which forms the basis for the structure of commercial rates. At that rate, the central bank supplies whatever volume of reserves is required by their banks to meet the demands of their clients.

So Basil, Paul Davidson and the other campaigners were right. The money supply in modern banking systems is endogenous. The central bank sets its official dealing rate. Banks add a mark-up and endeavour to meet all the credit worthy demand for loans that is forthcoming at that rate. At the going rate of interest, the strength of this demand depends upon factors elsewhere in the economy and the supply of new loans creates a corresponding flow of new deposits. In the rest of this paper I wish to return to one of the debates which I described earlier as 'refining' the endogeneity theory. This concerns the demand for endogenous money or, more formally, the mechanism whereby the *ex ante*

flow of loan-created deposits is matched, *ex post*, with an aggregate willingness to hold them. For five years, from 1994, Basil and I differed profoundly over this question. In addition to what we published in the journals, there is at least one substantial file of emails and faxes testifying to the care with which Basil read my criticisms and to the detail in which he (always patiently and courteously) responded. So far as theory is concerned, I still see no reason to change my original view but I do think that the last few years have seen dramatic changes in institutions, certainly in the UK, that should bring our positions closer together. This is a timely reminder of Sir John Hicks's adage that 'Monetary theory...cannot avoid a relation to reality...It belongs to monetary history in a way that economic theory does not always belong to economic history.' (Hicks, 1967 p.153).

In the next section I outline 'the problem', giving credit, I hope, to all those before me who have felt there is something lacking in the simple 'loans create deposits' principle. In section 3, I outline the recent changes which I think bear upon our problem and offer some concluding remarks in section 4.

2. Loans create deposits

It is an obvious criticism to make of base-multiplier models of money supply determination that they are fundamentally 'uneconomic'. The multiplier is based upon two key ratios – the public's cash ratio and the banks' reserve ratio – which are treated as fixed (in the simplest versions) or subject to very slow and predictable change (in more advanced versions). Both ratios, however, are the outcome of complex portfolio decisions which one might have expected mainstream economics, with its rational, maximising calculus, to be able to recognise as subject to changes in relative interest rates, risk, regulations, technology etc. Cuthbertson (1985) is an exception.¹ Furthermore, the models completely ignore all questions of the demand for money (or the demand for its credit counterparts for that matter). An open market purchase (for example) of government bonds increases the base and the money supply increases by the amount of the purchase times the value of the multiplier, with no thought given to the fact that the additional money must be held by someone. So no portfolio preferences here either.

It has been my view for a number of years that Basil's exposition of the endogeneity argument makes the same mistake, albeit starting from the opposite – credit counterparts – end. It provides a detailed and (I am happy to accept)² accurate account of how banks determine the amount of lending which they wish to do, in response to the demand for credit which they face. But it contains no account of how the flow of loan-induced deposits is bound to be matched by a corresponding increase in the demand for those deposits, an increase, in other words in the demand for money. Let me say at once that Basil's account of endogeneity is not the only one to overlook this problem (and I was not the first to point it out). We return to this in a moment. But let us be clear first that there *is* a potential problem.

The problem begins with the fact that the demand for bank loans emanates from one set of agents with their own motives (for them it is an income-expenditure decision) while the demand for money emanates from another set with different motives (for them it is a portfolio decision). Granted, the two groups partially overlap but they are not identical. So long as this distinction exists, then there must be a question of how the flow of new deposits, created by a subset of agents with income-expenditure deficits, is to be matched with the population's desire to arrange their wealth in such a way that they are willing to hold the additional money. And hold it they must (a) in order to satisfy the banks' balance sheet identity in which loans equal deposits and (b) because money is defined exclusively as deposits *held* by the non-bank private sector – in Dennis Robertson's memorable phrase, 'All money which is anywhere, must be somewhere' (Robertson, 1963, p.350).

So far as Basil's work was concerned, the first person to raise question of what had become of the demand for money was Charles Goodhart (1989). The paper, in the *Journal of Post Keynesian Economics*, was titled 'Has Moore Become too Horizontal' which, given the central argument, was perhaps less appropriate than the one that Basil adopted for his 1991 reply – 'Has the

demand for money been mislaid?'. The issue that was debated in these two papers (and in Goodhart's (1991) rejoinder) was whether or not it made sense to talk of a demand for money, independent of the money supply where credit money was concerned. If there was no sense in visualising an independent demand function for money, then there was no sense in the idea of a disequilibrium. In Basil's words 'One cannot have a supply of credit money independent of the demand for credit money, any more than one can have a supply of haircuts independent of the demand for them' (1991, p.126). His argument was that, like haircuts, credit money was produced 'to contract' and thus supplied by banks only in response to a demand for it. But this argument, as I pointed out subsequently (Howells, p.91) contained two distinct errors. The first was that it confused 'money' and 'credit'. What banks were responding to was a demand for *credit*. 'Money' was in the nature of a joint good, a by-product almost of the supply of loans. It is true that banks will only supply credit (like haircuts) if they are confronted by a demand for credit but this tells us nothing about the demand for *money*. Secondly, even though it is true that credit is supplied 'to contract' so that without a demand it would not be created, even this does not deny the existence of an independent demand schedule. There *is* an independent demand schedule for haircuts (i.e. a schedule stating consumers preferences at various prices). It just so happens that goods and services produced to contract are only ever produced where the supply and demand schedules intersect so that disequilibrium prices and quantities are unobservable.

The possibility that the endogenous production of deposits could differ (*ex ante*) from the demand for them had been raised in 1986 by Victoria Chick. In what she describes as 'stage 2 banking' it becomes possible for investment to precede saving because firms can borrow from banks whose loans create the new deposits with which to finance the new investment. Chick's immediate concern is how exactly to *describe* the extra deposits as a form of saving. But the reference to the demand for them is obvious.

...though the deposits are willingly held there is no actual decision to save. The deposits represent a passive (and grateful) acceptance of means of payment by workers and traders. Some of it will doubtless be used for consumption, some of it saved... [However] while individuals quite happily accepted claims on deposits – acceptability after all is the hallmark of the means of payment – the point on which I wish to insist is that no one actually asks those who subsequently have larger deposits whether the expansion of bank balance sheets was alright with them. (Chick, 1992 p.200)

This 1986 paper precedes Basil's *Horizontalists and Verticalists* by two years (though Chick acknowledges helpful comments from Basil, so he presumably knew of it before the publication of his book). Chick's target in 1986 was the 1981 paper by Kaldor and Trevithick. This had also ruled out any problem in connection with the demand for endogenous money, though not on the theoretical ground that an independent money demand curve made no logical sense that Basil was to adopt. The Kaldor and Trevithick argument was that there would be an *automatic* application of excess receipts of money to the repayment of overdrafts. Thus, the individual actions of borrowers taking out new loans (or extending existing ones) could threaten an 'excess' creation of deposits *ex ante*, but the moment 'excess' deposits were recognised they would be devoted by their holders to repaying existing debt. Thus limiting the deposit-creating process – *ex post* – to only those deposits which people were willing to hold.

Note that 'automatically' is the keyword. It is a reasonable assumption that those with overdrafts who have receipts in excess of payments will use the excess to reduce their debt and this will ('automatically') reduce the quantity of new deposits that are actually created. The problem is - not everyone has an overdraft. Chick again:

Kaldor and Trevithick (1981) argue that a credit-based money supply can never be larger than people want to hold because an excess supply will result in repayment. However, the money might not fall into the hands of those with overdrafts in the first instance. The money may be spent and push up prices, after which the money may be willingly held. (Chick, 1992, pp.204-5. See also Cottrell, 1986).

And it is not sufficient to argue that some people somewhere (eg virtually all firms) do have overdrafts. Once it is accepted that the first round recipients of 'new' money may not wish to hold it, then the problems begin. Some *process* must be triggered by agents as they seek to adjust. And we can see from the last line of the Chick quotation the magnitude of the potential disaster that this adjustment process threatens for the pioneers of endogenous money. The main purpose in building such an overwhelming case for the endogeneity of money was to destroy the revival of the quantity theory and its crude explanation of inflation. But after all that effort, here was an argument that the money supply might be fully endogenous and *still* cause inflation.

Maybe it was because the stakes were so high that Basil's book and later exchanges with Goodhart (and with me) focused on the alternative strategy of denying the logical independence of a money demand schedule in a world of endogenous money.

In the 1991 reply to Goodhart Basil based his rejection of a money demand schedule on the idea that the world is consequently changing and that 'equilibrium' is illusory. 'In the real world there is *no* unique "general equilibrium position" toward which the economy is tending.' (Moore, 1991 p.128). Moore's argument is that since there *is* money, there must be uncertainty; if there is uncertainty, then there is no general equilibrium; if there is no general equilibrium '*...there is no meaning to the notion of an "ultimate equilibrium" stock of money demanded*' (Moore, 1991 p.130, emphasis in the original). This seems to be confusing necessary and sufficient conditions. In order to have an equilibrium position it is true that one requires independent supply and demand schedules. But does it follow that the existence of these schedules means that we must be at equilibrium? Surely not. The whole idea of *disequilibrium* is built upon the existence of independent supply and demand schedules but agents constrained in their behaviour from arriving at the point of intersection. They still have *preferences*.

This is one of two points which Goodhart makes in his 1991 rejoinder. We may all be sceptical about 'general equilibrium' but this need not entail the extreme position of rejecting all idea that people have preferences to which they will seek to give expression. In trying to make the point that Goodhart would always accept whatever quantity of money was offered to him (and therefore that the demand for money was a redundant concept) Moore's contention had been that Goodhart would hardly refuse a gift from his aunt and since he would not refuse it then he must have a demand for it.

Moore is, of course, absolutely correct that I will *accept* \$10,000 but I do not necessarily want to *hold* that sum as a money balance indefinitely. Given the *existing* pattern of expectations, prices, my wealth (now happily increased by \$10,000), I do have an underlying *partial* equilibrium demand for money balances that does differ from the amount with which I have just been supplied, and that difference will cause me to rearrange my whole portfolio....(Goodhart, 1991 pp.134-5. Original emphases).

This little exchange reveals another problem in Basil's approach. This is the question of what we mean by the 'demand for money'. Look again at the quotation from Goodhart. His argument is that rejecting equilibrium does not mean rejecting preferences. If rejecting the idea of preferences is rather extreme, equating acceptance with demand is surely a step too far. Let us consider the case of a small trader who finds as the week goes on that business is better than he originally expected at the beginning of the week. Does he start to refuse deposits for payment, on Thursday say, because money balances threaten to become larger than planned? Surely not. Acceptability is simply the hallmark of money (see the Chick quotation above). If the payments were not accepted we would not be discussing money at all. Acceptance proves nothing either way. It is at the end of the week that the 'demand for money'

becomes relevant. It is the demand for money which determines whether the unplanned additions to deposits continue to be held or whether, unless other variables change, decisions are made to switch out of money and into other assets until the unplanned level of money balances reaches its original planned proportion of the portfolio.

However, if one persists with the idea that ‘acceptance’ is proof of ‘demand’ then one has to recognise that universal and unquestioning acceptance means in effect that people have a perfectly elastic demand and a perfectly elastic demand for any good is something of a novelty. To make such behaviour plausible, Moore describes the action of sellers who passively accumulate the ‘new’ deposits created by lending, as ‘convenience lending’. The idea is that all the deposits are held (for reasons we shall see in a moment) as a matter of ‘convenience’ because no special inducement is required to get people to accept them in exchange. Acquiring them involves no sacrifice. No consumption is deferred and no liquidity is surrendered. The new deposits act like a windfall. The ‘lending’ refers to the status of deposits as loans to the bank.

But it is difficult to see how the fact that people receive ‘windfalls’ entails no *subsequent* effect on behaviour. The fact that something is acquired in greater quantity than was planned is surely likely to induce a reaction, regardless of whether or not effort was exerted in its acquisition. It still seems implausible that the unsolicited deposits will not at some point be exchanged for some other form of wealth. Indeed, we do not expect lottery winners to reject their prize because it would raise their money balances to unplanned levels, but no one expects the winners to hold their increased wealth, unchanged, as bank deposits. Indeed, Moore himself concedes, and this is significant in the light of what is to follow, that *individuals* may hold these deposits only for so long as it takes them to decide on future consumption and investment patterns but then crucially he says ‘For the economy as a whole...such [convenience] lending is long term’ (Moore, 1988b p.298). By this, of course, Moore means that *individuals* may decide periodically to sweep their growing deposits into higher earning non-bank liabilities but this only shuffles the ownership of the deposits, it does not change the quantity. (As we accepted in the last paragraph, the newly-created deposits *are* held). Only actions which cause *repayment* of loans cause a reduction in deposits.

There are echoes of Kaldor and Trevithick in the last sentence, but what goes before is more significant. Firstly, we can all agree that people making payments to each other by trading money balances has no effect on the aggregate stock of deposits unless some loans are repaid or net payments are made to the public sector. Think of Chick again: ‘The money may be spent and push up prices, after which the money may be willingly held.’ Or, in a more Keynesian spirit, we might imagine the deposits being exchanged for financial assets with only small effects on prices and yields which *then* may have some effect upon real expenditure which in turn may increase real output if resources are underutilized. But one thing is for sure, *something* will happen. Agents will not individually build up money balances willy-nilly and the moment they act on a preference somewhere a price and a quantity will change. However uncomfortable it may be to admit it, the fact that money is endogenously determined does not exempt it from causing all sorts of mischief.

3. Recent developments

In many expositions of endogenous money, the demand for loans (given the level of interest rates etc..) is said to be determined by the ‘state of trade’ i.e. by movements in nominal income. If this is true, then we might think it unlikely that loans could create deposits at a rate which varied very much from the path of the demand for those deposits since this too would follow nominal GDP. But this supposes either (a) that the demand for loans is dominated by movements in nominal income, i.e. that people borrow only to finance production or (b) that if the demand for loans is driven by other variables, then these are closely linked to nominal income.

But neither may be correct. Let us start with the latter. Nominal income, as we all know, refers to the current value of output. The measure of nominal income excludes transactions at intermediate stages of production, in secondhand goods and thus in existing assets, real and financial. For years it has been the practice in macro textbooks to gloss over any possible difficulty in moving from nominal

income, PY , to *total* transactions, PT , on the grounds that we are usually interested in rates of change rather than absolute magnitudes and these move together. But figures from the UK's Association for Payments Clearing Systems (APACS) show that any such relationship has broken down in recent years. In the 1970s, total transactions (PT) were about 20 times the level of nominal income (PY). During the 1980s, the multiple increased rapidly to 50 by 1989. In 1990 and '91 it fell back to 40 and has continued around that level until the present.

Turning our attention now to the demand for bank loans, with Khaled Hussein's help (Howells and Hussein, 1999) I was able to show that PT performed better than PY as an explanatory variable. In the light of our earlier discussion therefore, we have a situation where the demand for loans is creating *ex ante* deposits at a rate which considerably exceeds the requirements of trade and conjures up the prospect of substantial adjustment being required to bring the supply into line with demand *ex post*. Given our earlier discussion this could have involved some combination of higher inflation, higher asset prices, lower real interest rates and higher real output. We could possibly make a case for the higher asset prices but lower real interest rates have not been forthcoming precisely because of the *fall* in inflation. It is not obvious, on a casual look at the evidence, that a major disparity has occurred between the *ex ante* and *ex post* growth in deposits. How can this be the case?

Firstly, it might be worth considering whether the rise in the PT/PY ratio has any relevance to the demand for money. The possibility that the demand for money has been driven in recent years by something other than GDP has some credibility. For example, Anderson (1993) showed that the boom in mortgage refinancing in the USA 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 (it is worth bearing in mind that some of the rise in UK PT is the result of the increasingly speculative nature of housing transactions). More recently, Palley (1995) and Pollin and Schaberg (1998) have 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, two major categories of spending included in *total* transactions but excluded from conventional measures of GDP. Again with Khaled Hussein (Howells and Hussein, 1997) I showed that the APACS series itself gave better results than either GDP or wealth in an otherwise standard money demand equation.

The conclusion we must draw, therefore, is that although there has been a rapid creation of deposits by a demand for loans which contains a large element of borrowing for non-productive purposes, this has not necessarily generated a great *ex ante* surge in 'unwanted' deposits partly because the demand for deposits may itself have increased rapidly for similar reasons. What we inevitably observe is a sharp fall in the income velocity of M4 through the 1980s as PT surged ahead of PY , and a more stable figure since the mid-1990s.

But the tendency for the demand for money to be subject to influences similar to those governing the demand for loans, may not be the only reason that *ex ante* deposit creation may have followed demand quite closely. To see why, we need to return to Kaldor, Trevithick, Chick and Cottrell and to recall that the debate there was over the ability of *all* agents to adjust their money holdings by repaying existing debt. If this is the case, then its relevance to the present debate is that it effectively prevents 'excess' deposits coming into existence in the first place. In the past, the manifest weakness with the argument was that borrowers from banks were only a subset of holders of money ('not everyone has an overdraft') and thus the remaining subset were left with the reconciliation problem. It is worth noting that the Kaldor-Trevithick mechanism is quite demanding. It requires not only that virtually everyone who holds money is simultaneously in debt to a bank but also that the nature of the debt must be such that its size can be adjusted easily. Remember, for the mechanism to work, holders of 'excess' deposits must reduce their bank debt 'automatically'. This means *loan repayment must be the first choice* in the face of excess liquidity. In the UK this limits the relevant type of bank loan to the overdraft where borrowers are free to vary their borrowing on demand and at their own discretion, subject to an upper borrowing limit. It is no use pointing out that 60 per cent of UK households have a mortgage on their house. Paying off small slices of a

mortgage loan with ‘petty cash’ involves punitive transaction costs. In many cases the early repayment of the whole mortgage involves an early-repayment penalty.³ Similarly, personal loans are for a fixed amount for a fixed period and interest must be paid on that amount regardless of whether or not an agents liquidity position requires the whole of the loan to be outstanding at a particular time. None of these (major lines of credit) will fit the argument. It *has* to be an overdraft and the problem for the Kaldor-Trevithick argument is that overdrafts are limited by banks to firms and wealthy individuals, some of whom even then may decide not to take up the facility.

In the last twenty years, however, we have seen the rapid expansion of personal credit in the UK, based upon the widespread use of credit cards (and to a small extent through the use of ‘charge’ cards which allow credit for the short periods between scheduled repayments). Indeed, anecdotes abound of people (even children) receiving unsolicited offers of credit through the mail. Notice that the cards we are discussing here are issued by banks (though which bank may not be immediately obvious from looking at the card itself).⁴ This is important because it means that outstanding credit on these cards involves a loan from a bank. Furthermore, although most card companies impose the requirement of a fixed minimum monthly payment, this is usually a very small fraction of the total outstanding. Consequently, there is very considerable discretion about the size of the repayment and the outstanding stock of credit: this can be increased and decreased with no cost (other than the interest paid of course). The similarities with the overdraft arrangement are obvious.

Table 1 shows the increase in the number of these cards in absolute terms and in relation to the adult population. ‘Adult’ here is defined as anyone aged 16 or over.

Table 1: Credit/charge cards in the UK, 1992-2002

<i>Year</i>	<i>Credit card (000s)</i>	<i>Charge card (000s)</i>	<i>As % of adult population</i>	
1992	26,277	2,353	38	
1994	26,151	2,305	38	
1996	31,336	2,803	42	
1998	38,299	3,270	50	
2000	47,080	3,772	57	
2002	58,794	4,311	64	
Source: APACS, <i>Yearbook of Payment Statistics, 2003</i> , tables 6.1, 8.8				

Table 1 shows the growth in the number of cards in issue in the UK. It also shows the percentage of the adult population with one or more of these cards. The latest figures are for 2002, but looking at the trend we can be confident that more than two-thirds of adults now have access to this flexible source of credit, compared with about one third just over ten years ago.

Table 2: Borrowing on credit card in relation to total borrowing and liquidity of persons.

<i>Date</i>	<i>Total sterling bank lending to individuals £m (1)</i>	<i>Individuals holdings of M4, £m (2)</i>	<i>Unsecured sterling bank lending to individuals (consumer credit) £m (3)</i>	<i>(3) as % of (1) (4)</i>	<i>Individuals sterling borrowing on credit card, £m (5)</i>	<i>(5) as % of (1) (6)</i>	<i>(5) as % of (3) (7)</i>	<i>(5) as % of (2) (8)</i>
1993	410,940	344,670	53,301	13.0	10,030	2.4	18.8	2.9
1995	448,552	378,890	68,202	15.2	13,011	2.9	19.1	3.4
1997	519,424	420,690	88,081	17.0	16,612	3.2	18.9	3.9
1999	609,897	476,590	116,155	19.0	23,241	3.8	20.0	4.9
2001	732,764	547,782	141,718	19.3	28,731	3.9	20.3	5.2
2003	944,653	645,390	170,546	18.0	35,828	3.8	21.0	5.6

Source, www.bankofengland.co.uk Series nos. (1)VZQB; (2)VQSM; (3)VZRD; (4)VZQH

Table 2 puts the magnitude of this form of credit into context. Remember that the point at issue is the ability of credit card borrowing to provide individuals with an easy and effective way of adjusting their total indebtedness to banks, bearing in mind fluctuations in their liquidity position. Column 5 shows the total amount of credit card borrowing, a figure which has more than tripled over ten years. As a percentage of their total borrowing from banks, individuals' credit card borrowing has increased from about 2.4 per cent to 3.8 per cent (col. 6). Total borrowing is dominated by lending secured on property by means of a mortgage. Even so, it is notable that *unsecured* lending has been increasing steadily as a fraction of the total, from 13 to 18 per cent in the last ten years or so (col.4). From column 7, we can see that some of this increase in unsecured lending is accounted for by the growing role of credit cards. As a fraction of total unsecured borrowing the credit card contribution increases from 18.8 to 21 per cent. Finally, if we are going to argue that the increasing use of credit card debt provides a cheap and convenient method of adjustment to liquidity shocks, we should perhaps look at the magnitude of credit card borrowing in the light of holdings of money. The final column shows that individuals' credit card debt has almost doubled in relation to their holdings of broad money in the last ten years. 5.6 per cent may not look a particularly large figure, but that rather depends upon the magnitude of *ex ante* divergences in deposit creation and demand, and that by definition, we cannot measure. We should also bear in mind, that column 2 shows holdings of *total* M4. This includes notes and coin and time deposits. Sight deposits, where unplanned fluctuations in liquidity would appear, are less than half of total M4. As a fraction of sight deposits, credit card borrowing is about 12 per cent.

4. Conclusion

Basil Moore has done more than most economists to persuade a reluctant profession, especially in the United States, that the money supply is endogenously determined. This is now widely accepted and the debate has moved on to a number of subsidiary issues. One (but only one) of these, is how the flow of deposits, newly-created by the demand for bank credit, is brought into line with the demand for money. This is an issue to which many people have contributed over the years. In the end, the truth is probably some combination of all the mechanisms that have been suggested – the use of money as a buffer stock, switches between money and financial assets, repayments of overdrafts, even (whisper it quietly) some real balance effects. But as always, the institutional framework is critical. Money is endogenous, fundamentally because money today is 'credit money'.

It wasn't always so. In the last few years, we have seen a shift in the pattern of bank lending to individuals in the UK. Unsecured lending has increased as a fraction of the total and within that there has been a doubling of the role played by credit cards. One consequence is that the argument that the repayment of bank loans via the overdraft facility would 'automatically' prevent the emergence of excess deposits, is now a good deal more plausible now than it was when it was first floated, provided that we take credit cards and overdrafts together.

Endnotes

1. Bain and Howells (2003, pp.61-4) show that, at the very least, these portfolio decisions must result in the size of the multiplier varying positively with rate of interest on non-money assets with the result that the money supply curve (drawn in interest – money stock space) must have a positive slope.

2. I am aware that others do not. Both the arguments over structural/accommodative endogeneity and the slope of the money supply curve reflect differing views of the lending process.

3. As an example of how rapidly institutional changes can modify arguments, this sentence was true when the first draft of this paper was prepared. But starting in 2004 some UK banks began to offer 'smart' mortgages which were linked to checking accounts from which the surplus above a specified level could be automatically devoted to reducing the mortgage. As yet (2005) these remain highly unusual arrangements. However, as the editor has pointed out, such arrangements are quite common in the USA, and no doubt in other countries too. Both cases reinforce the broader argument of this section, namely, that when it comes to understanding how money works, institutional arrangements are crucial – not least because they change continuously.

4. The position with credit granted by stores, which may also take the form of discretionary borrowing involving a card is more complex. It depends upon how the store is financing the credit. If it is borrowing from a bank on overdraft terms then the amount of customer credit outstanding will be reflected directly in the size of this bank loan to the store and being a bank loan variations in its size must be matched by variations in deposits. In this situation, the store is effectively acting as an agent for the bank. But the credit may instead be financed by the store borrowing in the money markets. In granting credit to a customer it is then only lending someone else's money.

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