What Endogenous Money Really Means: A Series of Questions and Answers

by

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What Endogenous Money Really Means

The concept of endogenous money has now been put to the forefront by Post-Keynesian and Cambridgian authors for close to ten years [Moore 1979; Kaldor 1982]. Despite the fact that the concept has received support from banking specialists and from experts of most central banks, the theory of endogenous money has been given little attention by members of the academic community. Furthermore, it seems to have been somewhat misinterpreted, even by those who at first hand would appear to be sympathetic to the concept.

I shall therefore attempt to pinpoint the crucial elements of the theory of endogenous money, mainly those that seem to have led to misconceptions. It will turn out that several, if not most criticisms of the concept of endogenous money are due to these basic misconceptions. Finally, I shall draw some of the consequences of the theory of endogenous money.

I The Basic Significance of Endogenous Money

In economics, one must abstract from reality since one cannot map all the complexities of the real world. The theory of endogenous money is an attempt to approximate reality, and to do so better than standard theory. The basic idea of the theory of endogenous money is very simple: central banks do not and cannot directly control the stock of money; they can only control a price, the general level of short-term interest rates. It is in this sense that the stock of money is said to be demand-determined, or that the supply of money is said to be endogenous. The significance of all this is that the market for money does not exist, since there is no supply of money as such. This point should be quite obvious when one attempts to define a supply of demand deposits by the banks. What is a supply function for deposits?

This heterodox view of the functioning of the financial system stems from a different approach to economics in general.

In neoclassical economics, most of the emphasis is on static analysis, where portfolio effects, i.e., substitution rather than income effects, are predominant. A change in interest rates can thus uniquely by associated with a change in the stock of money. A change in one of the two necessarily entails a change in the other. Post-keynesian economics on the other hand is about growth, with increases in income the rule rather than the exception. Within this framework, portfolio effects take the back-seat, replaced by general income effects. Changes in the stock of money do not usually reflect substitution effects. They result predominantly from changes in output or in income. Since economists must simplify to describe reality, it is under those most recurrent conditions that the money creating process must be analyzed.

The neoclassical theory of money is founded on the fallacious idea that credit is being impersonally extented through the market, with some liaison between its price and its risk. The impersonal money market makes sure that the scarce financial resources are efficiently distributed to the most profitable projects. But this approach is wrong. Entrepreneurs must always face individual bankers or financiers when they wish to start a project. They must get initial financement [Graziani 1984, p. 9-10]. They just cannot simply unload bonds or shares that will be bought by some undifferentiated public. Whatever the price they are ready to pay, credit will not be extented to some entrepreneurs: their collateral is too low or the expected profitability, as seen by the bankers, is not substantial enough.

Whenever firms decide to increase their expenditure level, they must have access to some additional credit from some financial institution. The counterpart of those supplementary advances from banks are the temporary extra money balances held by these firms. When payments in wages or interests are made to households, these extra money balances are transfered to the households who may then decide to consume or save their extra income. In the first case, the money goes back to the firm who may then be able to pay back its debt to the bank. The money

created will then be extinguished. In the second case, the saved income may be used to buy some financial asset. This will also allow the firm to extinguish its initial debt.[1] But households may also decide to keep part of their extra income in the form of cash or demand deposits. The temporary money balances obtained through advances by the firms will then be partly transformed in permanent money holdings. The sum, through all periods, of all these residuals will be measured by the statistics of the stock of money as conventionally defined.

In this context, the change in the stock of money is basically determined by the change in the level of income, which itself had been rendered possible by the increase in bank advances and in temporary money balances. When households desire to increase their money balances, presumably for transaction purposes, they are already provided for by the banking system through the provision of advances to the firms. There is no supply of money as such. Cash and deposits have automatically been made available when credit has been advanced to the firms. From this goes the saying that "credits make deposits".

Under those circumstances, banks must now get access to cash or to reserves to fulfill their official reserve requirements on deposits. Since these requirements always depend on past (although sometimes called contemporary) deposits, central banks have no choice but to provide these reserves. What they can decide is at what price and how they will provide them. When there is accomodation, reserves will be coming forward from the purchases by the central bank of treasury bills on the open-market. Otherwise banks will have to borrow reserves from the central bank, either directly or indirectly, through brokers, as in Canada. Clearly in both of these circumstances, the central bank is at liberty, within some bracket, to fix the interest rate of its choice.

Still, if this source of reserves appears too unreliable, commercial banks may have to start engaging in interest rate wars and compete between themselves for these reserve funds. By increasing interest rates on demand deposits, banks may induce

households to provide them with cash in exchange for demand deposits. A relatively higher interest rate for term deposits, which have lower reserve requirements, or for other kinds of assets provided by the banking system, which may have no reserve requirement, might induce households to change the composition of their liquid portfolio. In any event, price competition between banks will only be reserve-efficient if: (i) the cash/deposits ratio falls; (ii) the average reserve coefficient falls; (iii) foreign capital, not immediately sterilized, is attracted by the increased interest rates; (iv) the fear of high interest rates forces the central bank to intervene on the open-market.

Eventually, if interest rates are sufficiently stepped up, the demand for money will fall, both as a result of portfolio decisions linked to the higher opportunity cost of holding money balances and as a consequence of falling advances linked to falling national expenditure. Banking innovations, induced by the high opportunity gain in finding ways to save on money-balances, may also decrease the demand for money.

The fact that central banks cannot quantity-constrain the supply of money may be graphically represented by an horizontal supply of money function. This however is only a representation, which appears more appropritate than the standard vertical supply curve. The horizontal supply curve of money does not mean that monetary authorities do not have the power to increase interest rates or to curb the nominal rate of growth of money or income.[2]

II. The Criticisms of the Theory of Endogenous Money

In this section, I shall summarize the major questions or criticisms which have been addressed at the proponents of the theory of endogenous money. As noted in the introduction, most of these criticisms are in my view misconceived. But the fact that they have been brought forward shows that "endogeneists" (myself included) have perhaps not always made themselves clear. Raising

and answering these questions may allow a better understanding of what endogenous money really means.

1. Money is sometimes endogenous, sometimes exogenous. This is a standard argument, usually made by those who favour an eclectic view. Victoria Chick [1977, ch. 5], among others, has claimed that money was sometimes exogenous, when monetary authorities were pursuing dynamic policy operations, while at other times, when the central bank was passive and accomodating, the money supply was endogenous. Under my definition of endogenous money, what Chick is in fact saying is that under some circumstances the central bank is providing all the required liquidity at a stable rate of interest. When the objective is not interest stabilization, the central bank lets interest rates fluctuate, perhaps in an attempt to control the stock of money. This is easily recognized by the proponents of endogenous money. They will admit that the central bank has the ability to set or support any short-term rate of interest. What the monetary authorities cannot do is directly set the money supply. They can only fix a price and see how the demand adjusts to it.

2. If money is endogenous, how can it become a scourge? This is the question put by R.L. Harrington in his review of Kaldor: "Were it true that control of the money supply must in all circumstances be either impossible or ineffective, then one would have to ask just why monetarism should be the curse [Kaldor] claims it is" [1983, p. 67]. The truth of the matter is that although monetary authorities cannot control the money supply, or that for all purposes the stock of money is a quite irrelevant aggregate, the attempt by the central bank to control it may have substantial repercussions on the economy through its impact on interest rates. In a previous page, Harrington reports that central banks may slow down "the growth of credit and hence of money" with sufficiently high interest rates. This is precisely part of the theory of endogenous money. Their proponents are

misinterpreted as implying that the actions of the central bank can have no effect on the economy.

3. The theory of endogenous money is asymetrical. This argument was put to me by Shirley Gedeon [1985]. This question concerns the relationship between borrowers and commercial banks rather than the one between banks and the central bank. It is presumed that in good times banks will be willing to extend any credit, making the credit supply curve horizontal, while in bad times credit will be restrainted. What can be answered is that in bad times, credit is still demand-determined. Eligible borrowers, however, may be fewer, as a result of the impact of general economic conditions on collaterals and the like. Banks are still ready to extend credit to any customer, at the going rate of interest, provided he or she fulfills all the necessary requirements. In my opinion, credit is still supplied on demand, although some firms are being denied a loan even if they would be ready to pay a higher interest rate. Credit-money is endogenous although these firms may feel that they credit-rationed. But this situation may just as well be present in good times.

4. The central bank can control some important elements of the monetary base: therefore the money supply is exogenous. This is a point made by Walter Salant [1985, p. 1179]. Of course, as we all know, the monetary authorities have the ability to control the amount of non-borrowed reserves and they could also control the quantity of currency (cash) available. Nobody has suggested, however, that central banks should refuse to provide the currency required by the public. The fact that some elements of an aggregate can be controlled does not mean that the overall aggregate can be controlled. This would particularly be the case if uncontrolled elements make compensating moves in the face of fluctuations of controlled elements, as it must surely be the case with respect to borrowed and non-borrowed reserves. In fact, this is precisely what happened with the FED in 1979-1980, when about 3 billion dollars of reserves were taken out from the banks through

open-market operations, whereas the equivalent amount was borrowed at the discount window [Thomas 1981, p. 139]. That monetary authorities can control a substantial portion of the monetary base certainly does not mean that the money supply should be considered exogenous.

5. The expected level of non-borrowed reserves makes the money supply ~~endo~~exogenous. This point was made to me by a colleague, Tom Rymes. He argues that although the central bank cannot fix the level of reserves and hence cannot constrain contemporary loans or money stock, they send signals (speeches, announced target growth rates, etc.) to the commercial banks about future levels of non-borrowed reserves that should be expected to be available in the system in the near future. Banks should then restrain their loans or credit lines accordingly. In that sense, if banks are behaving properly, the money supply could be said to be quantity constrained. This is related, it seems, to the proposals for reverse lag requirements, where current reserves determine future legitimate deposits [Laurent 1979; 1984]. The problem is that banks that consent to new loans are not necessarily those that are subjected to reserve requirements since their new customers may have deposited the proceeds of the loan as some other bank. Laurent [1979, p. 303] claims to have designed a scheme that solves this problem. For all practical purposes, it appears that he is in fact suggesting ceilings on loans, based on the amount of reserves made available to banks on the previous week. Individual banks would compete to get hold of some of these reserves and obtain the right to extend new loans. This scheme is quite ingenious since it is putting forward a general ceiling on loans on the overall banking system, without having to impose individual ceilings on every single bank. There is no doubt that direct controls on loans are the only means to surely and substantially affect credit or monetary aggregates. Reverse lag accounting comes very close to that. Still, it cannot compensate for the possibility of borrowed reserves. The question then

becomes: is a financial system without last-resort borrowing from the central bank feasible?

6. Even if money is endogenous, there can still be excess money balances. This view has been presented by Coghlan [1978]. He accepts what he calls the "new" view of "those economists more closely involved in the operation of open markets" [1978, p. 12]. He then presents a small model which summarizes these views.

(1) $D = R + A$

(2) $M = C + D$

(3) $C = bD$

(4) $R = rD$

(5) $D = A/(1 - r)$

(6) $M = [(1 + b)/(1 - r)] A$

where D are deposits; R the reserves of banks; A the advances to the public; M the money stock; C the cash held by the public; and b, a behavioral parameter, and r a structural one. Equation (5) is a combination of equations (1) and (4), while equation (6) combines equations (2), (3) and (5). For Coghlan, M in equation (6) represents the supply of money and he then asks: if advances (A) are exogenous, what can stop the money so supplied to exceed the demand for money? What Coghlan does not realize is that advances and the money demanded are not independant. We must go back to our explanation of the money-creating process of section I. It may be that initially advances are exogenous. When firms obtain their loans, they have no intention of keeping money-balances. But when these deposits are transfered into the hands of households, as firms remunerate their workers or their owners, they will be used for consumption or saving purposes. As households get rid of undesired deposits, advances will be paid back, so that they will decrease pari passu with the decreased stock of money held by households. In a continuous time frame where circuits of production overlap, with growing nominal income, none of these reductions will be observed. Coghlan's analysis based on the standard multiplier analysis is very partial. It

ignores the overall flow of funds accounts [Llewellyn 1982, p. 43].

7. Monetarists also discuss of money supply endogeneity: the concept is not the monopoly of Post-Keynesian authors. This is a frequent source of confusion as contradictors will understand endogeneity in its monetarist sense. What is then meant, by Laidler [1982], for instance, is that countries with fixed foreign exchange rates which are experiencing a balance of payment surplus must suffer from an increase in their monetary base, ceteris paribus. Those countries will thus experience an increase in their supply of money. Monetarists say that money is endogenous because they claim that the monetary base is being expanded without the monetary authorities controlling it. This is not what Post-Keynesians mean by money supply endogeneity, although some Post-Keynesians seem to accept this view [Dow 1986-87, p. 248]. In the monetarist case, money is still supply-determined, independently of the decisions of the central bank, but with the demand for money adjusting to its supply. The Post-Keynesian view, on the other side, emphasizes that the stock of money is demand-determined, either directly through the demand for deposit or cash balances, or indirectly through the demand for loans.

8. Endogenous money is a recent phenomenon. This is also a position held by Chick [1986]. Exogeneity and causality would depend on the stage of development of the banking system. In long past financial systems, causality ran from saving to investment, from deposits to loans; the bank deposit multiplier, based on excess reserves, took over, later followed by the pure credit economy of endogenous money. We would now be in stage five, characterized by the liability management of banks. Again this is obviously an eclectic view, since it offers some comfort to all participants of academic life. Unfortunately it is wrong, as it has been shown in great detail by historians G. Heinsohn and O. Steiger [1983]. Loans without previous savings existed in the Antiquity. The reading of great monetary economists, such as

Wicksell and Keynes (of the Treatise), and even Schumpeter, show that credit lines, overdrafts and the like were standard practices in between the two World Wars. Surely these authors cannot be considered as science fiction ghost writers, describing financial systems of the future. As to liability management, it will be shown that it is part of the hypothesis of endogenous money. It does not contradict it.

9. The velocity of money is often unstable, therefore money is not endogenous. This criticism has been made by Shirley Gedeon [1985] and Stephen Rousseas [1986, p. 95]. These authors, like Chick, interpret endogeneity as meaning that the central bank always accomodates at a given interest rate, displacing the vertical supply curve of money until it intersects the new demand curve at the initial rate of interest. As I have emphasized in the previous pages, this is not what most Post-Keynesians mean by endogeneity of the money supply. From this erroneous interpretation, it is then quite easy for Gedeon and Rousseas to show that Post-Keynesians are unreasonable in their assumptions and that they cannot explain unstable money velocity or the appearance of liability management. Rousseas for instance will argue that the supply curve of money is neither vertical nor horizontal. It is an upward sloping curve (with respect to the rate of interest), since monetary authorities will partially accomodate in fear of rising interest rates. This approach, however, still lends credence to the belief that increases in income necessarily imply higher interest rates.

10. Money is not always created for productive purposes: loans are also made for speculative reasons. This is the main critique of neo-marxists who agree with the general approach of endogenous money but who dislike some of its implications (see Lavoie [1985]). With regards to loans to households, they may be considered as means to increase the propensity to consume, since they diminish net savings. The same can be said about loans to firms for financial reasons since they allow firms to take-over

other firms and buy back shares from previous owners, the later benefiting from increased realized income through realized capital gains. Problems (stagflation) arise when this increased consumption cannot be handled by the industrial system because banks turn down requests for funds to be used for productive purposes. Some authors [Dow 1986, p. 101-2] seem to imply that credit in the industrial sphere is restricted as a consequence of the excessive expansion of the financial sphere, since credit cannot be limitless or otherwise confidence in the banking system would falter.

I would again refute this quantity-constrained approach. In my view, there is a transfer of funds towards the speculative financial sphere because interest rates are too high and are conducive to valuation ratios à la Kaldor which are below unity. As a consequence, most operations of real accumulation of capital will not appear profitable to both borrowers and bankers, while on the other hand take-overs or financial acquisitions will guarantee immediate and substantial gains. The industrial system is not crowded out by the financial sphere. There are just no profits to be made in the industrial sphere, and as a consequence no advances are being made to that sector. This is in fact why monetary policy is (indeed) potent. It discourages enterprise and production. Monetary authorities will be quite pleased as they will observe a slowdown of the money supply growth, a consequence of the slowdown in productive activity.

11. The consequences of endogenous money seem non-existent or appear to be unknown. This is the main critique of Salant [1985, p. 1179]. Besides its impact on monetarism, he just does not see what are the consequences of accepting the endogenous money hypothesis for economic theory. This is a substantial point and in the next section I shall attempt to pick up Salant's challenge.

The lesson to be drawn from all those different criticisms is that the term endogenous money is far too ambiguous to be used consistently, a point which of course had already been made

elsewhere [Dow 1984]. To be clearly understood, it appears that Post-Keynesians should systematically refer to the following "stylised" facts when dealing with the money creating process:

(a) demand for loans by firms is the basic causal factor in the generation of money aggregates;

(b) the central bank cannot quantity-control monetary aggregates, it can only control interest rates;

(c) the stock of money is thus demand-determined, given the interest rate that the central bank wishes to set.

III. The Consequences of the Theory of Endogenous Money

1. For the standard Monetarist models. Orthodox economists have themselves provided us of an analysis of the consequences of the theory of endogenous money supply. Looking first at a closed economy, Thomas Sargent [1979, 92-95] has presented a simple classical model, with standard characteristics, such as real wage equal to marginal physical product of labour, a consumption function depending on real wealth effects (including money) and the interest rate, an investment function à la Tobin (coefficient q). Sargent analyzes a particular version of it, which he associates to the "real bills" doctrine, where the monetary authorities are assumed to peg the interest rate while the money supply is permitted to fluctuate to accomodate the demand for money at that rate. This is as close as the theory of endogenous money can be represented within the classical model. Sargent shows that, assuming away the wealth effect, the model cannot determine the absolute level of prices and money stock. The model becomes indeterminate. If wealth effects are taken into account, and if non-negative inflation expectations accompany or increase autonomous expenditures, the model is then unstable.

Colin Rogers [1986] has made similar remarks about an analysis previously proposed by S.C. Tsiang for an open economy. Rogers recalls that when Tsiang assumes a monetary policy where interest rates, rather than the rate of growth of the money supply, are targeted, the standard classical model with flexible

exchange rates becomes unstable. This is true without taking into consideration the possibilities of wage-price spirals or speculation. Rogers points out that the unstable case analysed by Tisang precisely corresponds to the money supply process described by Post-Keynesians. Whereas for Sargent and Tisang, the peculiar cases they describe correspond to a particular sort of monetary policy, where central banks have abandoned the quantity-control of the stock of money, for Post-Keynesian these cases do not depend on the monetary policy pursued. They are an adequate description of reality. If the rest of these classical models are pertinent, it would follow that flexible exchange rates lead to instability, while prices would not be determined by the level of the money stock.

The consequences are quite important for the monetarist theory of inflation, in fact for all neoclassical theories of inflation. If the price level cannot be causaly attributed to the level of the money stock, inflation cannot be related to the excessive rate of growth of the money supply. Inflation must be determined by some other elements, such as the wage rate or conflicts between income distribution and growth objectives. In fact, when discussing informally with Bank of Canada officials, it becomes clear that they do not believe that the rates of growth of monetary aggregates have any direct effect on inflation rates. They claim, however, that they do not know any other method besides monetary austerity and high interest rates to quiescent inflation rates and inflation expectations.

It may be argued however that excessive credit may be conducive to inflation. According to Arie Arnon [1984, p. 324], this was precisely the attitude of Thomas Tooke. Although he always argued that currency (the money supply) adjusted automatically to its demand, the mature Tooke thought that advances "to persons undeserving of credit" could lead to inflation. It follows that excessive credit does not necessarily arise out of insufficiently high rates of interest. In a world of uncertainty, where future returns are not known, animal spirits rather than

rational computations about future profits and interest costs are the mainspring of bank borrowing and lending.

2. For the savings/investment nexus. As was explained in very simply terms by Luigi Pasinetti [1974, p. 44-9], the IS-LM model of the neoclassical synthesis broke what Keynes probably intented to be a chain of one-way causation between interest rates and income. With the introduction of the theory of endogenous money, the unidirectional causality imagined by Keynes, but somewhat rendered confused by Harrod's arguments [Keynes 1973, p. 526 ff.], is restored. Since money is endogenous, there is no necessary link between the level of income and the rate of interest, besides the indirect one due to the potential inverse relationship between investment and the interest rate. Interest rates help determine the investment level, which affects the income level; but the income level does not feedback on the level of the rate of interest. In synthesis parlance, the LM curve is flat, while the IS curve is uncertain. If the LM curve is horizontal, and the IS one vertical, there is not much left of the neoclassical synthesis.

There is no doubt that Keynes's reluctance to get away from the framework that had been set by F.A. Hayek to support the "crowding out" thesis of the "Treasury View", where the stock of money was fixed, and to beat him on his own terrain, was not a good strategic move, at least when considering what happened to Keynes's main ideas fifty years later [Keynes 1936, p. 183]. As we all know, Keynes was forced to add in the finance motive to give some explanation of how the economy increased investment without having first increased savings. Once we have a theory of endogenous money, however, it becomes evident that investment, and for that matter any output, cannot be increased without the spender getting access to additional loans. Additional production requires that some agent (usually firms, often the government, sometimes households or the foreign sector) gets into additional debt. Credit is obtaines ex nihilo. This is particularly clear in countries were banks are constantly indebted vis-à-vis the

central bank. Those banks provide loans to their customers and they later need to borrow from the central bank to cover leakages arising out of the desire of households to hold currency rather than deposits (or credit-money). In those overdraft economies, as Hicks [1974, p. 51] calls them, it is quite clear that there are no limits to credit, besides those set by the arbitrary discount rate and effective demand. What we might then say is that a theory of endogenous money is necessary to explain how we might get out of an under-employment position.

This brings us to the question of crowding-out. In the popular literature, crowding-out is the result of a lack of credit availability or of a shortage of savings, due in particular to excess spending by the government.[3] Within the context of a standard (sophisticated or not) IS/LM, there is without a doubt some room for crowding-out discussions. When money is endogenous however, and where it is established that any level of government deficit can be financed without increases in the rate of interest, with savings being a consequence rather than a cause of accumulation, crowding-out can only appear as a peculiar phenomenon, worth mentionning only at or near full employment conditions. Again, it seems to me that crowding-out has been seriously studied in the past because the appraoch taken, far from being truly general, is in fact of the partial equilibrium type. Looking at facts from the more general flow of funds approach obliviates crowding-out.

3. <u>For the determination of interest rates</u>. One of the most obvious consequences of the theory endogenous money is that we are left without any theory of the determination of interest rates. They do not result anymore from a comparison between the demand for and the supply of money (on their equivalent on the bond market). Furthermore, Post-Keynesians would refute the equality of the real rate of interest with the marginal physical product of capital.

What determines the interest rate? Kaldor [1982, p. 24] thought that exchange rate considerations heavily influenced the

rate of interest chosen by the central bank. In Canada, as in Europe, many economists believe that the interest rate set by the central bank is somewhat equal to the equivalent interest rate in the States plus some premium. In the States, however, several economists believe that the interest rate policy pursued by the FED is constrained by the interest rates determined on the international money markets. What then determines world interest rates?

One has to go back to some sort of liquidity preference theory. As pointed out by Pasinetti [1974, p. 47], Keynes's liquidity theory is not a necessary requirement for a proper theory of monetary production. What is important is that the rate of interest be exogenous. This was understood very early on by Hugh Townshend [1937]. Criticizing Hicks for presenting a model which equated the demand for and the supply of credit (or money) through the flexibility of the reate of interest, Townshend reasserted that the rate of interest was an "independant variable in the scheme of economic causation", and that it was conventionally determined. Whereas Hicks's presentation could be considered a fair representation of the General Theory, Townshend's summary is much more relevant to the ideas that Keynes defended in 1937, when he discussed the finance motive. There, the rate of interest is clearly exogenous, and results from a confrontation of the liquidity preference of the public with the liquidity preference of the banks. The rate of interest depends on externally-determined psychological conventions [Lavoie 1986].

More recently some Post-Keynesians have proposed a generalized theory of liquidity preference. The central bank and commercial banks exercise their own liquidity preference in setting short-term rates of interest [Kregel 1984-5]. This is mainly done by the decisions of the central bank, when they set the discount rate or when they fix the main money market rate through their open market operations, but it also depends on the reactions of the banking system, for instance when they decide on the mark-up over the cost of funds that will fix the lending rates offered to

borrowers. That the liquidity preference of banks is an important determinant of short-term interest rates and borrowing availability is reflecterd in the studies of Forman et al. [1985] (and also of Arestis and Driver [1984]) by the role played by the deposits to loans ratio. This ratio shows to what extent banks are being forced to borrow to finance their loans, and to what extent their secondary reserves are being depleted. The fact that only deviations from trend values of this ratio explain interest rates shows that the liquidity preference of banks is indeed based on conventions that change through time.

Short-term interest rates mainly concern the firms and the bankers: they are related to what I called initial financement. On the other hand the liquidity preference of households is related to the acquisition of financial assets that will allow firms to pay off the advances they initially obtained from the banks. The liquidity preference of households is thus related to long-term interest rates [Le Héron 1986]. More specifically, as it has been suggested by Paul Wells [1983], the liquidity preference of households could be a major explanatory factor of the spread between the short-term and the long-term rates of interest. When households are reluctant to use their savings to buy bonds or shares, the price of these may fall.

In actual fact, however, it may be difficult to differentiate between these two forms of liquidity preference. A large part of households' savings is acquired by financial intermediaries, rather than directly invested in bonds or shares. As a consequence, huge liquidities are under the control of financial intermediaries, who, through interlocking directorships are difficult to differentiate from commercial chartered banks. Furthermore, it could easily be argued that the decisions of the central bank are heavily influenced by the opinions and the interests of the major bankers. Once could therefore argue that interest rates are influenced by those that we may call the rentier class, i.e., the managers or the holders of vast liquidities, although they do not wholly determine them.

4. For liability management. This concept suddently seems to have become fashionable, as one cannot read an article about financial matters without stumbling upon it. Since I do not want to break the tradition, I shall give an interpretation of it based on the theory of endogenous money. Contrarily to current opinion [Chick 1986], I do not believe that liability management per se is anything new. In fact, as I have already pointed out, several European banking systems, for instance France's, have structurally been indebted to the central bank. This means that any time the banks of these systems increased their loan portfolio, they were required to augment their borrowings from the central bank. Any adjustment was always done on the liability side, simply because no adjustment from the asset side was possible. In the case of North American banks, the dynamics were quite different since they held large amounts of government bonds that the central banks was disposed to buy back. In some circumstances, the central bank refused to do so, but since this privilege was usually not abused of, commercial banks complied. In the more recent past, however, banks have been subjected to a systematic refusal from the central bank to accomodate, and as a consequence liability management in its more evident and aggressive forms has developped.

Since money is credit-driven in a theory of endogenous money, liability management is a permanent phenomenon. Since banks first consent to loans and then search for funds that will finance them when they will leak out, banks are perpetually doing passive liability managemenht. If all banks are growing at approximately the same rate, leakages will be compensated by deposits coming from rival institutions. Liabilities will thus automatically adjust to the autonomous growth of assets. This is not necessarily the case however. Even in the States, some large banks have systematically been indebted towards smaller institutions, and as a consequence have been forced to enter into active liability management. What makes the present situation so obvious is that liability management has been associated with a whole set of banking innovations designed to avoid the stranglehold of the central bank (from the bank's point of view) and the high

opportunity cost of absurdly high interest rates (from the point of view of their customers). In short, liability management means that "the supply of funds adjusts to the demand for them", although it may be at a high cost [Podolski 1986, p. 160]. We are back at the definition of the theory of endogenous money.

Some authors have claimed that liability management by the banks was conducive to inflation and that the expansion of monetary and credit aggregates was supply-led [Chick 1986, p. 117, 122]. The argument is that, bankers having access to large wholesale deposits, they will be inclined to pursue agressive lending policies and lend beyond all reasonable limits. In my view this argument is wrong for the most part. Its proponents forget that the overall financial system can only get back in the form of liabilities what it has already lent out in the form of its assets. When households decide to save part of their income, they may use banking deposits, non-banking ones, bonds or shares issued by the firms. If households are being induced not to use the latter saving vehicles, it simply means that firms will not be able to pay back some of their initial financement, and that loans that were intended to be of the short-term type will have to be rolled over. In balance-sheets, it will appear that indeed the assets of the financial sector are increasing. But this does not imply that lending activity is supply-driven. Liability management has nothing to do with excessive borrowing or lending. Liability management is subsequent to the decision of granting loans.

5. <u>For other banking innovations</u>. In the Post-Keynesian theory of endogenous money, the economy is immune, from a quantity point of view, from changes in the monetary policy of the central bank; borrowers have guaranteed lines of credit, banks have access to borrowed reserves, higher interest rates on deposits may induce households to forego cash in favour of banking accounts. All of this, however, is mostly relevant to the short-run. In the longer run, banks and their customers may feel unjustifiably constrained

by the actions or regulations of the central bank, and they will try to evade them. This is when banking innovation comes to the fore.

Initially, Post-Keynesian authors dealt more with the concept of banking innovation than with the one of endogenous money. In his memorandum to the Radcliffe Committee, Nicholas Kaldor [1964] emphasized the possibility of an infinite velocity of money. Hyman Minsky [1957] very early pointed out that high interest rates would be conducive to innovations that would denaturate the measure of monetary aggregates. There is no inconsistency between those views and these based on the endogeneity of the money supply. When the central bank shows reluctance in accomodating, which leads to increasing rates of interest, the public will search to means to avoid this increasing opportunity cost, and the financial system will have to innovate to accomodate this search. For the public, this will mean lower requirements for money balances, which in turn will imply lesser requirements for official reserves. Furthermore, the credit multiplier which relates the monetary base to the money supply will become larger and less reliable.

Financial innovation should be considered as an integral part of the theory of endogenous money. If in the short-run the economy can elude monetary controls, it would not be so in the long run since the monetary authorities could indeed have good control on the money supply and the economic activity through a proper knowledge of the demand for money function and by setting the interest rate at its relevant level.[3] What makes the theory of endogenous money pertinent even in the long run is that this demand for money function shifts continuously through time, and that the central bank can know by how much only after the fact.[4] To set target rates of growth of monetary aggregates thus becomes an exercise in futility, as it finally dawned on central bankers [Freedman 1983]. They had to identify an innovation, measure its past shifting incidence, and estimate its future impact, all of this within a small number of observations. Central banks can thus precisely control interest rates or the monetary base in the

long run. But they are impotent with respect to the money stock. When using interest rates as intermediary targets, banking innovation may induce actions by the central bank which will reduce the money supply below its targeted level. When using the monetary base as an intermediate target, the reverse may happen.

T.M. Podolski [1986, ch. 5 and 6] has analyzed the main financial innovations of the American and British financial systems. Financial innovations have two principal effects: they allow the public to economize on money-balances; they allow the financial system to economize on reserve requirements. Most of this is done by escaping to fields that are left unregulated by the monetary authorities. New savings vehicles, with low transaction and realization costs are replacing standard money instruments; those that still hold the latter have moved their deposits out of regulated banks into unregulated financial institutions, quasi-banks or euro-banks, where by definition deposits are not subject to reserve requirements although they constitute means of payments. At the limit, with the proper electronic network and computer facilities, no deposits would be subjected to reserve requirements and currency would become a thing of the past. The theory of endogenous money would then have to be understood for what it really is: a theory of credit creation.

6. For international money markets. As mentioned in the previous paragraph, euro-banks can be seen as one of the manifestations of financial innovations and liability management. Euro-markets developped mainly as a result of oppressive financial regulations. This is generally interpreted to mean limits on the interest rates allowable on deposits. It is easy to show however that some of the constraints on the availability of non-borrowed reserves can be evaded in the medium term by transfering some of the lending activity towards branches operating as euro-banks in euro-markets. The following demonstration, based on Niehans [1984, p. 187], is offered.

Let E be the consolidated deposits at euro-banks. The latter hold a fraction r_e of their deposits as reserves under the form of deposits in resident banks. These deposits are then:

(7) $R_e = r_e E$

Let D be the deposits held by the public in resident banks. With C the cash balances, the money supply of a particular currency is:

(8) $M = C + D + E$

Let us now assume that resident banks must hold a fraction r_d of all of their deposits as reserves. Compulsory reserves are then:

(9) $R_d = r_d (D + R_e)$

The monetary base is:

(10) $B = C + R_d$

From the previous equations, the monetary base can be rewritten under the form of a credit divisor:

(11) $B = [(C/M) + r_d (D/M) + r_d r_e (E/M)] M$

Part of the deposits E in euro-banks are held by foreign agents who have no intention of using them in the home economy. To that extent they are irrelevant. There are however resident agents who borrowed and hold foreign currency, and who are in a position to exchange them for local currency, to be spent in the home economy. In Canada this type of deposits is subjected to a special 3% reserve requirement, while in France they are included in some monetary aggregates. Abstracting from these complications, it can be seen that euro-banks play an identical role to the one of quasi-banks. Deposits in euro-banks, just like those

of quasi-banks require a smaller percentage of reserve requirements. If, following the theory of endogenous money, we assume that banks, and for that matter quasi-banks and euro-banks, first approve of loans and then search for the necessary funds, it follows that quasi-banks and euro-banks have the same credit-creating power as banks have. In fact, looking at it from the point of view of the overall financial system, it may be said that quasi-banks and euro-banks even have a greater creating power. As a consequence, whenever financial agents feel that they are being unjustly being constrained by the central bank, we should observe a shift of activity towards quasi-banks and euro-banks. Deposits will be shifted from regulated banks to unregulated ones. If the lending activity is not also shifted out of the regulated sector, we should observe regulated banks borrowing funds to balance their accounts, i.e., they would be borrowing deposits. This is precisely what has been observed.

I would like to make a last point on international monetary matters. As was indicated in section II, standard monetarist analysis considers that fixed exchanged rates associated with trade surpluses lead to excess reserves and uncontrolled increases in the money supply. If the theory of endogenous money is relevant, these consequences need not arise. This is particularly clear in "overdraft" financial systems where banks would pay back their debt to the central bank rather than make new loans since the theory of endogenous money assumes that, at the given interest rate and with the existing expectations, banks have already awarded all profitable loans. But this is also true of North American financial systems. It is granted that, although the exporter would be likely to take the opportunity to pay back his debt to the bank so that no extra deposit would appear, excess reserves would indeed be created. But this would only be a problem in a static framework. In a dynamic financial system, where credit and monetary aggregates grow through time, the reserves obtained by the banks through foreign exchange operations would simply diminish the amount of total extra reserves which they must obtain to fulfill their requirements on additional loans

and deposits demanded. The increase in the reserves obtained from foreign sources will be compensated by the decrease in reserves obtained from open market operations. This is the compensation thesis, put forward by proponents of the theory of endogenous money at the Banque de France [Berger 1972]. Sterilization is so to speak endogenous. In the balance-sheet of the central bank, credits to the foreign sector will be substituted for credits to the home economy.

An immediate consequence of the compensation approach is that in times of commercial surpluses, interest rates need not be increased by fear of an excess money-supply inflation induced from abroad. This type of adjustment is disequilibrating since it exacerbates the difficulties of countries suffering from commercial deficits. The compensation thesis also shows that there is no relationship between the monetarists' endogeneity of money and the Post-Keynesian theory of endogenous money.

Notes

1. Paul Davidson [1980, p. 283] calls the initial financement the "construction funds finance", while final finance (through households' savings) is "investment funds finance". Neoclassical authors only attach importance to the latter concept. It is often forgotten that consumption goods also require initial financement (often through working capital bank loans) because the final financement is simply done through the returns from consumptions expenditures and do not require any long-term arrangements.
2. There is also the whole question of the endogeneity of credit, which I have discussed elsewhere [Lavoie 1986]. Post-Keynesians would generally suppose that most firms have access to guaranteed credit lines, and that as a consequence, in the event of monetary restrictions, the flow of credit would not be contained, except if there were some forms of direct credit restrictions, or if credit were interest-elastic. The latter is due to the fact that the amount of credit lines is guaranteed but their cost (the interest rate) is not.
3. Alternatively, the same could be done with proper knowledge of the money multiplier and by setting the level of non-borrowed reserves.
4. Thus, in the short run, central banks must supply reserves after the fact, and in the long run they find out what is really happening to the money supply after the fact as well. Only interest rates immediately provide correct information.

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