

# Complexity, Endogenous Money and Macroeconomic Theory

Essays in Honour of Basil J. Moore

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## 9. Endogenous money, central banks and the banking system: Basil Moore and the supply of credit

Louis-Philippe Rochon<sup>1</sup>

Credit is the pavement along which production travels; and bankers if they knew their duties, would provide the transport facilities to just the extent that is required in order that the productive powers of the community can be employed to their full capacity.

Keynes, *Treatise*, II, 220

### INTRODUCTION

Basil Moore is a central figure in post-Keynesian economics. His numerous contributions to monetary policy and theory have had over the years an enormous impact on an entire generation of post-Keynesians. It is therefore a true privilege, to say the very least, to contribute a chapter to Basil's *Festschrift*, and a pleasure to honor the man, the scholar and a friend whose views I not only respect, but which very much influenced the core of my thinking. Indeed, it is in part because of Basil's work that I am an unrepented horizontalist.

It was in the early 1980s, when I was a student at the University of Ottawa, that I was first introduced to Basil's ideas. I was a junior majoring in economics. Due to a lack of interesting courses, I signed up for an obscure course called *Introduction to Post-Keynesian Economics* taught by an equally obscure professor (at least for me, at the time) named Marc Lavoie. I had no idea of what I was getting myself into. Obviously the course had a profound impact on me, and two decades later, I remain a devoted horizontalist and a student of realism. Today, a number of post-Keynesians are devoted to the 'Moorian' or Kaldorian view of central bank policy (which we may also call the Eichnerian view).

The purpose of this chapter is to honor Basil, and to add to his body of research by offering a way of tying up some loose ends. The chapter begins with a quick review of the structuralist/horizontalist debates of the early

1990s. It looks at two very specific criticisms directed at Basil's views on endogenous money, namely that commercial banks and the central bank are both 'passive' players in the money creation process. I argue that this was never Basil's position.

The next section develops a more detailed theory of the supply of bank credit, based on Basil's insights. Although he rarely discussed the supply of credit, the theory developed here is wholly consistent with his views, and fills an important void in the horizontalist theory of bank lending. This approach rests on two core characteristics of Post Keynesian economics: uncertainty and endogenous money.

Indeed, it has been said that in horizontalism, commercial banks lend to all who demand credit. As I will argue here, this is not the case: there is ample room within the horizontalist view of endogenous money to recognize a 'fringe of unsatisfied customers' and the possible lack of accommodation from central banks (Lavoie, 1996). Once this is accomplished, it becomes clear that we should, in fact, all be horizontalists now!

### THE STRUCTURALIST/HORIZONTALIST DEBATE REVISITED

Endogenous money is a central component of post-Keynesian theory. It is the foundation upon which the theories of effective demand, distribution and growth are built. Indeed, if credit is needed to finance production and investment, then there cannot be wages, effective demand or growth without bank credit. This is the essence of Keynes's 'monetary theory of production'.

Moore's seminal book, *Horizontalists and Verticalists*, published in 1988 – what King (2002, p. 175) calls the 'definitive . . . defence of horizontalism' – continued down the path well established in the post-Keynesian tradition by such luminaries as Alfred Eichner, Nicholas Kaldor, and Joan Robinson. It explored and presented clear ideas pertaining to the functioning of the banking system and in particular the central bank. The book quickly led to an important debate, with challenges from well-known structuralists like Palley (1991), Pollin (1991) and Wray (1992a, p. 297). For structuralists, horizontalism is an extreme version of endogenous money, and is a special case (Wray, 1992c, p. 172).

The debates focused immediately on two important arguments. The specific role of the central bank was front and center, but so was the ability of banks to lend to potential borrowers. Hence, structuralists directly criticized Moore, claiming that his approach to endogenous money was an extreme position.

For instance, Cottrell (1994, p. 599) argues that 'on the Kaldor-Moore view . . . the banks are mere ciphers in this process, passively accommodating whatever demands they happen to experience'. Minsky (1996, p. 77) refers to them as 'simpletons'. Rousseeau (1992, p. 79) calls the horizontalist approach 'political, not economic'. Cottrell (1988, 1994) calls it 'radical endogeneity', while Wray (1992b, p. 1160) refers to it as an 'extreme' post-Keynesian theory of money.

At the heart of the matter is a particular interpretation of horizontalism, according to which banks grant credit to anyone who demands it; banks simply do not refuse credit. Dow and Dow (1989, p. 164, n. 12), for instance, claim that 'it surely cannot be suggested that credit is fully accommodating to the extent that no potential borrower is ever refused credit'. Wray (1992c, p. 172) interprets the horizontalist position in the same light:

private banks passively supply credit money at any short-term interest rate established by the central bank's discount and open market policies. They are able to meet any level of credit demand since they can always obtain reserves from the central bank at the discount rate. . . . There is no room in [Moore's] model for liquidity preference, for entrepreneurial financial institutions, for market power, or for credit rationing and quantity restraints.

Yet, as I have carefully shown elsewhere (see Rochon, 1999, ch. 5) in trying to 'set the record straight', these accusations were groundless: Moore never claimed that banks passively supplied all loans demanded, nor for that matter did he claim that central banks passively accommodated the reserve needs of banks (on which, see below). On the contrary, Moore defended the notions that both the central bank and commercial banks are active in their lending activities and not 'passive' players in the money creation process. Banks do refuse credit to many borrowers, and central banks may not fully accommodate. But these acknowledgements never put into question his horizontalist belief in the exogeneity of the rate of interest, endogenous money or indeed the horizontal money supply curve. What Moore made amply clear is that banks will accept all those borrowers who meet the creditworthy criteria established by the banks themselves.

For instance, Moore (1996, p. 90) argues that 'provided borrowers have sufficient asset and/or income collateral, they will be granted formal lines of credit up to some predetermined amount', thereby specifically acknowledging that some borrowers will be refused credit if they do not meet the collateral requirements of the banks.

And neither is this an argument developed late in his writings. In fact, it runs through his work. In Moore (1994, p. 123, original emphasis), we find:

This is not to deny that many small borrowers are effectively credit-constrained. New businesses and poor households in particular do not possess the income, assets, and credit record criteria that banks require in order to make profitable and financially sound loans (the banks' three C's: credit, collateral and character).

The argument is repeated in Moore (1995, p. 264, original emphasis):

In an overdraft system, bank accommodation of increased demand for funds by credit-worthy borrowers is in no sense extreme. It is instead, completely normal, so long as borrowers remain within their allocated credit limits.

If these references to Moore were unique, then perhaps the structuralist criticism could be well taken. However, this is not the case, since Moore made the same argument as early as 1988, in *Horizontalists and Verticalists*. Here, Moore (1988) explicitly argues that:

commercial bank loan officers must assure that loan requests meet the bank's income and asset collateral requirements. They must in general satisfy themselves as to the credit-worthiness of the project and the character of the borrower. It is precisely for these reasons that banks develop client relationships with their borrowers.

It is still unclear why debate centered on the alleged passivity of commercial banks since Moore's position was clear throughout his career. Moreover, what this shows is that Moore recognized early on the compatibility of the horizontalist position with Keynes's 'fringe of unsatisfied customers'. This has been confirmed by Lavoie (1993, p. 10) who writes that 'to argue that the money supply is horizontal is not to argue that there are no constraints on credit'. Lavoie (1996, p. 284) later writes clearly that 'the claim, quite legitimate, that banks have some restrictions on their lending does not call into question the validity of horizontalism. . . . Banks often choose not to lend.' Rochon (1999, p. 170) reiterates this point, arguing that 'horizontalists acknowledge and accept the notion that banks often *do* restrict credit. Banks do not meet all the demand for loans. Despite this, the slope of the money supply curve is unaffected.'

As for the role of the central bank, the debate was surely more intense, and certainly dominated the debates, leading Pollin (1991) to coin the expression 'accommodationist' to describe horizontalists. The debate centered not only on whether the central bank meets all the demand for bank reserves, but also on the implications of such policy actions. Structuralists argued that a lack of accommodation would automatically hinder the ability of banks to lend.

But this debate was again a misinterpretation of Moore's position, and that of horizontalists in general. It was always recognized, although perhaps not in as forthright a manner, that central banks do not always meet the demand for bank reserves. But the overall argument here was that central banks need to protect against the possibility of a banking crisis. This is why Moore (1979, p. 126) 'rank[s] the supportive responsibilities of central banks above their control duties'. This is certainly an argument with which all post-Keynesians agree.

Moreover, if horizontalists agree that central banks may not always accommodate all the reserve needs, this remains nonetheless rare, and is done only when the central bank wants to change the rate of interest. Indeed, a lack of accommodation would result in an increase in the rate of interest. Hence, the actions of the central bank affect the price, not the quantity of loans. It is for these reasons that Moore (1985, p. 12) argued repeatedly that central banks are 'impotent in their ability to restrict the rate of growth of the money stock' (Moore, 1985, p. 12).

But the lack of accommodation would also jeopardize the stability of financial markets. This is certainly a theme that runs through post-Keynesian theory. But this implies that non-accommodation cannot be done repeatedly. Hence, to guarantee the stability of markets and to prevent systemic risk, the central bank necessarily accommodates. Hence, rather than being an extreme position, it is a general rule. Even Wray (1999, p. 109), with his more recent conversion to the horizontalist cause, accepts the horizontalist doctrine, despite his earlier rejection of it.

This implies therefore that the supply of reserves is endogenous to economic activity. According to Eichner (1987, p. 850):

The change in the Fed's holdings of government securities and thus its open market operations, instead of being strictly a policy variable, is for the most part endogenously determined by the need to maintain the liquidity of the banking system. Indeed, this is why it is an error to assume, as macroeconomic theory normally does, that the monetary base, or high-powered money . . . is an exogenously determined policy variable.

Eichner (1987, p. 847) identifies two types of reserve endogeneity behavior: defensive and accommodating behaviors. The accommodative behavior of the central bank is the traditional post-Keynesian role attributed to central banks. In this context, the central bank agrees to supply additional reserves incurred as a result of increases in commercial bank loans or credit, which create deposits and reserves. As a result, commercial banks are in need of reserves. Typically, they will turn to the central bank and borrow these reserves, which the central bank accommodates.

The post-Keynesian emphasis was necessarily on the reserve needs following an increase in bank *credit*. This was because of the overall emphasis on endogenous money, and the specific link between credit, the creation of bank deposits and endogenous money. Post-Keynesians also usually assume a single-bank system.

Yet, post-Keynesians largely ignored an important aspect of central bank operations, which has not gone unnoticed by some, including Moore, who unfortunately never developed this aspect of his theory.

Apart from changes in the supply of credit altering the liquidity position of banks, there are a multitude of daily operations that do the same thing. This is especially true in a multi-bank system where transactions take place between two agents each with accounts at different banks. Hence, a simple transaction between two agents implies the creation of interbank debts, which are settled on the accounts of the central bank. Each transaction modifies the liquidity position of each bank, leading to surplus and deficit banks. These transactions then place pressure on the rate of interest and the system as a whole. The central bank is therefore needed to offset and neutralize these flows of money. This is what Eichner (1987, p. 847) calls the defensive role of the central bank, which he defines as the 'component of the Fed's open market operations [consisting] of buying or selling government securities so that, on net balance, it offsets these flows into or out of the monetary-financial system'. Eichner gives an excellent account of this view, which has now been developed by others, including Lavoie (2006) and Rochon and Rossi (2004a, 2004b). This suggests that central banks are active not only in meeting the reserve needs of banks whenever a credit is created, but also in meeting the day-to-day needs of the banking system so as to both neutralize any unwanted pressures on interest rates and prevent systemic risk.

But Moore (1989, p. 26, emphasis added) made the exact same argument, which has never been recognized by other post-Keynesians (although see Rochon, 1999, ch. 5):

Once it is recognised that loans are made at borrower initiative, and that loans create deposits, it logically follows that the money supply, bank reserves, and the high-powered base all vary endogenously in response to changes in the demand for money and credit.

Moore therefore recognizes the dual role of the central bank, both in terms of its accommodative role (the commercial banks' demand for reserves as a result of changes in the demand for *credit*), and its defensive role (resulting from changes in the demand for *money*).<sup>2</sup> I believe that had the defensive role – and thus the need of the central bank to intervene on a

continuous basis – been highlighted, the horizontalist position would have been strengthened considerably. I would argue that it is the defensive role that is perhaps the most relevant role, as discussed at length by Eichner (1987), especially given the declining importance of reserves in recent years.

Like Eichner, Moore recognizes that the defensive role is by far the more important role. It is to say that the 'lender-of-last-resort' role of the central bank is not just of the fireman's type that rushes in to extinguish a crisis. Rather, it is ongoing. According to Moore (1988, p. 59):

By far the bulk of the central bank's open-market operations involve continuously injecting into or withdrawing funds from the wholesale market defensively, in response to changes in net inflows and outflows of funds, as to maintain the depth of liquidity of these financial markets.

This suggests that Moore recognizes both short-run (changes in the composition of the money supply resulting from daily transactions) and long-run roles (resulting from changes or growth in the demand for credit) for the central bank. Indeed, the short-run role of the central bank is not only to set the rate of interest, but also to assure the smooth operation of the financial system on a daily basis and to prevent systemic risk from spreading. In the latter instance, the central bank accommodates the increasing demand for reserves to sustain the additional lending activities of banks. In the former, however, there are fluctuations in the commercial banks' need for reserves arising from the payments mechanism. The central bank responds to these needs in order to hit its interest rate target.

## UNCERTAINTY AND THE BANKING SYSTEM

Having established that horizontalists and Moore in particular have clearly emphasized that banks do not always lend to all those who demand credit – that, indeed, many borrowers are credit constrained – how can we then develop a theory of credit supply from the post-Keynesian/horizontalist perspective? The challenge for horizontalists is to develop a theory of bank credit supply (and hence a theory of the transmission mechanism) that is consistent with some fundamental post-Keynesian arguments, namely endogenous money, the importance of aggregate demand and the existence of uncertainty.

As stated above, Moore did give some indications as to how to do all this, but his analysis remains largely undeveloped. The purpose of this section, therefore, is to suggest a possible extension of Moore's analysis, one that is consistent with the horizontalist perspective and post-Keynesian theory overall. In so doing, I will borrow some key insights from New Keynesians,

but will incorporate them within a model of aggregate demand where banks always have the ability to lend, although they may choose not to do so. In this respect, it draws from Lavoie (1992, 1996), Moore (1988) and Wolfson (1996).

As the post-Keynesian theory of money emphasizes, banks create money in response to the demand for credit from the general public, generally but not exclusively from firms who wish to finance production. It is in this sense that the theory of output is simultaneously a theory of credit and money. Money creation results in the recording of borrowers' debts on the asset side of banks' balance sheets and deposits on the liability side. It is in this sense that loans create deposits. Obviously, banks cannot lend if there are no borrowers willing to enter into debt (Robinson, 1952, p. 29). The creation of money is thus proof of the existence of debt.

Banks therefore play a central role in economic activity (see Rochon, 1999 for how banks are important for an analysis of the multiplier). There is direct link between bank lending and output. A fall in the supply of credit can translate itself into an important drop in output. Hence, it is important to better understand the mechanisms behind the decisions of banks to grant credit. Yet, contrary to more orthodox or neoclassical theories, credit constraints in the post-Keynesian sense are not defined as a fall in the available supply of credit, as in the case of, for example, New Keynesianism, where a credit crunch is explained by a 'significant leftward shift in the supply curve for bank loans' (Bernanke and Lown, 1991, p. 207). By advocating a supply-determined theory of credit, their emphasis is naturally on credit *rationing*: there is a fixed amount of credit, determined by the liabilities of the banks, that must be rationed between those who demand credit.

For post-Keynesians, however, this is not the case. Emphasis is not on credit rationing, but rather on credit *constraints*: credit is not rationed in the sense of being in limited supply, but rather constrained by the limited number of creditworthy borrowers. Hence, any theory of credit supply must focus on the creditworthiness of borrowers, rather than the availability of credit. This is an important first difference. Yet, the behavior of commercial banks must also be taken into consideration. Indeed, banks set the norms and standards of creditworthiness. In this sense, a post-Keynesian theory of bank lending must focus simultaneously on the creditworthiness of borrowers, that is the 'financial profile' of borrowers (their income, assets, and credit history), as well as the behavior of banks, who are responsible for defining and redefining the conventions used to establish the creditworthiness of would-be borrowers.

The problem now resides in how we translate this into a viable post-Keynesian theory of bank lending. To begin, we must acknowledge that banks have considerable discretionary powers to accept or deny a loan.

Loans are not automatic. The primary consideration of any bank in making lending decisions is whether the client is able to reimburse its loan in a timely fashion. Banks therefore face considerable uncertainty regarding the ability of firms to reimburse their existing and future debt. This necessarily implies that to be considered creditworthy, borrowers must prove their ability to reimburse their debt, either by providing sufficient collateral, or by showing they are capable of generating sufficient income in the future to reimburse their debt with interest. Banks must therefore take all of this into consideration: in other words, they must make sure that borrowers are creditworthy now and will remain creditworthy in the future. As Lavoie (1996, p. 284) writes, 'because of uncertainty and the complexities of decision making, bank lending depends on whether or not the potential borrower fulfils various norms and customs'.

Of course, all this can be found in Keynes's *Treatise on Money* (1971a, p. 212), in a now famous passage:

There is apt to be an unsatisfied fringe of borrowers, the size of which can be expanded or contracted, so that banks can influence the volume of investment by expanding or contracting the volume of their loans, without there being necessarily any change in the level of the bank-rate, in the demand-schedule of borrowers, or in the volume of lending otherwise than through the banks. This phenomenon is capable, when it exists, of having great practical importance.

Let us then see how uncertainty affects the supply of bank credit. In this respect, banks will typically face two different sources of uncertainty, which can be labeled, respectively, microuncertainty and macrouncertainty. Microuncertainty will be defined as arising from the 'probability' (perhaps a poor choice of words) that a *particular* bank borrower will default, arising from insufficient sales receipts or the inability to generate sufficient profits to reimburse bank debt regardless of the business cycle. Macrouncertainty, on the other hand, is defined as ignorance regarding the future level of effective demand and the business cycle, and the unknown level of real interest rates set by the central bank. Macrouncertainty affects all firms. This analysis is similar to Keynes's lenders' risk, described in the *General Theory*. Recall that Keynes claimed that lender's risk resulted from 'either moral hazard, i.e., the voluntary default or other means of escape, possibly lawful, from the fulfillment of the obligation, or to the possible insufficiency of the margin of security, i.e., involuntary default due to the disappointment of expectation' (1973, p. 144). Here, there is no 'voluntary default'. Both micro and macrouncertainty affects the 'involuntary default' of the borrower, but in different ways.

Microuncertainty is present irrespective of the level of effective demand and hence of where we are in the business cycle. For instance, even if

effective demand is strong and the economy is growing, inevitably some firms may still be unable to meet their contractual agreements with banks and will default, resulting from mismanagement or poor sales. This may be called a bad loan. In this sense, responsibility must be shared with the bank for failure to properly evaluate borrowers due to asymmetric information, which may arise for a number of reasons. Banks may not have all the relevant information about a firm, the competence of its managerial team or other pertinent issues. Whether this information is asymmetric or simply unknown to both parties is not the issue. From the bank's point of view, it may not be able to properly assess the potential of a firm to generate profits in the future. *Ex post* of course, it is always easy to identify the bad loans: *ex ante*, the bank must place a 'bet' despite its best efforts to evaluate the borrower.

Macrouncertainty will affect all firms equally. A general downturn in the cycle will pose a risk to all firms. This is the concept of uncertainty post-Keynesians often discuss: we 'simply do not know' the future course of the cycle and how it will affect firms. While post-Keynesians have emphasized uncertainty and incorporated it within their theories of investment and consumption, little has been done to incorporate it within a theory of banking (see Wolfson, 1996). Banks, just like firms and households, are unaware of the future, and how it will subsequently impact on overall firms. This is in fact a 'bet' on the future of the business cycle, or more accurately, on the future course of short-term real rates and their effect on effective demand. Indeed, for post-Keynesians (see Lavoie, 1992), interest rates are a distributive variable. Any increase in the rate of interest will favor rentiers and may therefore have a negative impact on effective demand.

Of course, an increase in the rate of interest may also have a micro-uncertainty effect. A rise in the rate may translate into higher costs of servicing loans, and affect the individual borrower's cash flow. Weak firms may not be able to survive this increase in the rate of interest. In Minskian terminology, borrowers may go first from hedge, to speculative and finally to Ponzi situations.

I believe that the New Keynesian 'financial accelerator' principle or the balance sheet channel is indicative of the microuncertainty environment of firms. As rates rise, some firms may face cash flow problems.

Of course, Moore (1988, p. 48) recognized all this. What I discuss here as the effects of microuncertainty and macrouncertainty, Moore refers to as 'credit risk' and 'interest rate risk' respectively, where, in the latter case, 'earnings may be dramatically reduced by a rise in short-term borrowing costs'.

As a result of the presence of two uncertainties, banks therefore place two bets. Banks must, in the first instance, place a bet on the borrower, and



then place a second bet on their expectations of the business cycle. Both bets are related in a sense. If the economy slows down, revenues and profits fall, and firms may default. However, firms may default irrespective of the health of the economy. Lavoie (1992, p. 106) emphasizes these two sources of uncertainty facing banks, and writes that 'the uncertainty about the future, as well as the lack of relevant knowledge about the competence of the managerial team and about the profitability of the project, forces bankers to rely on the performance record of the past, that is the profits generated in the past by the firm'.

As Lavoie mentions in the above quote, faced with uncertainty, bankers will rely on a set of conventions to guide their lending activities, such as, for instance, the assumption that the very near future looks very much like the current state of effective demand. Moreover, the existing relationship between a bank and a borrower is an important convention as well. Maintaining a close relationship with the bank enables the borrower to keep the bank informed of his/her activities and to help build confidence in the borrower's ability to manage his/her debt and meet contractual obligations. Moore (1988, p. 24) emphasized this important point, as did Keynes before him (1971b, p. 365). It is therefore beneficial for borrowers to maintain good relations with the lender in order to prevent the possibility of being credit constrained.

It becomes clear, therefore, that in a proper theory of banking behavior, both borrowers and banks are under the influence of uncertainty (Wolfson, 1996, p. 450). Hence, the unknown future must affect all agents alike. A theory of banks should therefore include the role of uncertainty. But how best to represent uncertainty in banks' credit supply decision-making process? In particular, how do banks deal with uncertainty, and how do they turn their expectations of the future into banking policy?

Banks have at their disposal essentially two tools to deal with uncertainty: the rate of interest which they charge on bank loans, and credit-worthiness ratings. We will deal with each of these issues in turn. I will argue that each of these tools is related to different uncertainties, that is, micro and macrouncertainties respectively.

## UNCERTAINTY AND THE SUPPLY OF CREDIT: A HORIZONTALIST PERSPECTIVE

Banks do not meet all demand for credit, but rather meet all creditworthy demand for credit (Moore, 1988). To do so, banks establish minimum lending criteria that all potential borrowers must meet. These criteria depend on such factors as the client's collateral, business plan, payment

history, expertise and knowledge of management, various measures of liquidity, and so forth. They constitute the minimum that banks require to meet their assurances that borrowers will be able to reimburse their debt. If these minimum criteria are met, banks are satisfied that given the general level of effective demand, borrowers are able to raise sufficient revenues in the future to reimburse their existing debt. As Wolfson (1996, p. 455) argues, 'Bankers accommodate all *creditworthy* demands for credit, and ration those demands not deemed creditworthy' – which the author calls the 'effective' demand for credit. Lavoie (1996) has called this demand, 'solvent demand', although perhaps a better term would simply be to call this the 'creditworthy demand'.

But these minimum standards are not exogenous to the unknown future. It is certainly reasonable to assume that if banks believe that the future will be worse than originally expected, that is if banks become pessimistic as to the future levels of effective demand, they may require borrowers to provide better proof of their ability to meet their debt obligations.

Lavoie (1984, p. 791) made this argument over two decades ago:

when bankers begin losing some of their high 'animal spirits' though they are aware of the fact that their new behavior will harm the economy, they prefer to restrain the creation of credit-money. They know that those banks that are the least affected by the recession are those banks that show the most moderation. For this reason, it is quite possible for the banking system to start reducing its credit lines just when firms need extended loans.

Therefore, in light of pessimism about the future, banks will raise their minimum creditworthiness criteria (lending standards), eliminating a number of potential borrowers in the process and thereby leading to credit constraints. Yet, banks will still extend credit to all those who meet their new, albeit stricter, guidelines. In the face of greater uncertainty, banks will require their borrowers to be more creditworthy. To ensure that their new credit demand is honored (or rolled over), borrowers must ensure that they meet these new, stricter guidelines. It is here that maintaining good lender/borrower relations is important. As Moore (1988, p. 24) explains:

Commercial bank loan officers must ensure that loan requests meet the bank's income and asset collateral requirements. They must in general satisfy themselves as to the credit-worthiness of the project and the character of the borrower. It is precisely for these reasons that banks develop client relationships with their borrowers.

Through the cycle, then, creditworthiness criteria will vary. For instance, at the beginning of a cycle when animal spirits are high, creditworthiness criteria will be lower and banks will seek out potential borrowers. Banks

generally relax their lending practices. As the economy grows, banks may fear an eventual downturn, and may become more pessimistic about the future, and raise the minimum required criteria. They may also fear that as the economy heats up, the central bank may raise the rate of interest to discourage economic expansion. We would therefore expect banks to tighten credit conditions at the height of the business cycle, and to relax them at its trough.

A credit crunch, in a post-Keynesian world, is therefore explained not by a decrease in central bank reserves and a corresponding leftward shift in the supply of bank credit. This implies a scarcity of available funds, and hence the need to ration supply in light of greater demand. For post-Keynesians, credit is constrained not because demand is greater than supply, but because banks become very pessimistic and they *choose* not to lend to certain borrowers. Of course, it *may* be possible to assume that even after becoming pessimistic, banks may not cut back on credit supply. It *may* be (although it is highly unlikely) that all existing and new borrowers meet the banks' stricter lending conditions. What is important to note is that for post-Keynesians, there is no such thing as a leftward shift in the supply of credit. Credit is not scarce in the neoclassical sense. Banks will still lend to any borrower that meets their new criteria.

It is in this sense that Wolfson (1996, p. 459) claims that 'Tighter standards imply a direct form of credit rationing'. This constitutes a non-price based theory of credit constraints.

In a similar vein, Setterfield (2004) develops a shifting equilibrium model of effective demand in which turning points in the business cycle can result from 'accommodationism with endogenous credit rationing'. In this model, commercial banks face notional demands for loans from firms and change the proportion of this notional loan demand that they render effective (by actually supplying loans) in response to changes in their 'animal spirits' over the business cycle. This model is broadly consistent with the discussion presented above.

Hence, banks' optimism and pessimism over the future course of the economy, that is, their macrouncertainty or what Keynes calls the 'macrofinancial environment', will determine the minimum lending standards that all firms must meet. In more pessimistic times, firms will therefore need to raise their own collateral in order to qualify for a new loan or the renewal of an old loan. This position is contrary to Crotty (1996, p. 352) who argues that fundamental uncertainty and 'credit rationing' are unrelated.

Once firms have met banks' minimum creditworthiness criteria, banks must then 'bet' on the individual borrower by determining the precise creditworthiness of the borrower himself. Provided the borrower's

creditworthiness is greater than the minimum creditworthiness criteria then he is guaranteed a loan. The rate of interest charged on the loan, however, will depend on the robustness of the borrower's creditworthiness. This is in line with Kalecki's principle of increasing risk. Interest rates may change depending on the type of loan demanded (for instance, a new loan *versus* a renewal; working capital *versus* fixed capital). This concept was well articulated by Lavoie (1996, p. 285) who argues that

the higher the debt to equity ratio, the more risky the borrower, and hence the less likely the borrower will remain credit-worthy. What we have here is a cross-section at a moment in time. If there are two otherwise identical firms, A and B, with different leverage ratios, one is expected to be charged a higher rate of interest than the other.

In other words, higher debt/equity ratios translate into weaker or less robust firms, and hence higher rates of interest on loans (call this a risk premium). Hence we can say that the minimum creditworthiness criteria are the banks' 'macrobet' and way of dealing with macrouncertainty, whereas Kalecki's principle of increasing risk and the rate of interest charged on individual loans are the banks' 'microbet' on individual firms and their way of dealing with microuncertainty.

One can find in the post-Keynesian literature some bits and pieces of the views presented above, although these are few and far between and not well developed. For instance, Dow (1996, p. 499) writes:

The 'moods' of the financial institutions may become pessimistic, or display reduced confidence in prediction. Then borrowers who had previously been acceptable may find the value of their collateral and projections of future income streams reduced accordingly to the assessment by financial institutions. The borrowers themselves may perceive no change in their own assessment of their credit-worthiness.

Here, Dow speaks of several points: the role of banks in credit supply, their importance in terms of evaluating firms' creditworthiness, but also of the possibility of 'asymmetric expectations', a concept central to Wolfson's (1996) approach as well. Howells (1995, p. 90) argues that 'banks set their collateral standards and their lending rates . . . and then meet all loan requests that are forthcoming'.

This is in effect a long-standing horizontalist position, as Lavoie (1996) points out. Kaldor (1981, p. 15) held these same views:

When trade prospects are good or when the money value of borrowers' assets (collateral) rises as a result of a rise of prices, the demand for bank credit rises but by the same token the credit-worthiness of potential borrowers also



improves, so that the demand for and the supply of credit move simultaneously in the same directions.

The argument presented here is that while remaining consistent with horizontalism, the supply of bank credit will vary according to the banks' own degree of optimism and pessimism about the future prospects of the economy or, in other words, with the expected future ability of firms to generate sufficient proceeds and profits to reimburse working capital and investment expenditures respectively. While credit-led and demand-determined, economic activity is limited by the willingness of banks to supply credit. And while microuncertainty can affect an individual firm's ability to raise proceeds, it is perhaps the macrouncertainty that banks fear most.

## CONCLUSION

Basil Moore has had a long and distinguished career. His views on money, influenced greatly by Kaldor, are today the cornerstone of post-Keynesian monetary theory. Though at times misunderstood and misinterpreted by his critics, his views remain as true today as they were some two decades ago.

Despite his work on endogenous money, Basil nonetheless only paid lip service to the supply of credit, as did many post-Keynesians, in fact. The emphasis on endogenous money and its demand-determined nature led many to ignore the supply side. This created further confusion when critics began to argue that Moorian economics was equivalent to passive banks. Of course, this was not the case. Basil did talk of supply, but unfortunately did not develop his views sufficiently.

The purpose of this contribution has been to fill in this gap, relying on the works of other horizontalists, such as Lavoie and Wolfson, to argue that credit constraints are compatible with a horizontalist approach to endogenous money, thereby disproving the claim that horizontalism is an 'extreme post-Keynesian approach'. It makes the case that it is possible to develop a model of 'credit rationing without credit scarcity'. The main point that emerges is that in a post-Keynesian theory of credit rationing, emphasis must be placed on credit *constraints* rather than on any literal scarcity of funds.

## NOTES

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2. In his new book (Moore, 2006), this defensive behaviour is fully articulated.

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## 10. The demand for endogenous money: a lesson in institutional change

Peter Howells

### 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 1988 book (1988a) 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