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Central Banking and Post-Keynesian Economics

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ABSTRACT  The Post-Keynesian theory of endogenous money has given much attention to the role of the central bank in the money creation process. Circuit theory has neglected this role, in so far as it has focused on the relationship between banks and firms within a monetary production economy. The aim of this paper is therefore twofold. First, it intends to fill this gap in circuit theory, by providing a role for the central bank in settlement of interbank debts. Secondly, it aims at reinforcing the Post-Keynesian analysis of central bank money by considering both the money-purveying and the credit-purveying roles of the settlement institution in the interbank market. The result of this analysis is a more comprehensive theory of endogenous money, where the lender-of-last-resort facilities of a central bank are viewed as an endogenous phenomenon involving both a money creation and a credit operation between the central bank and the domestic banking system. In such a framework, monetary policy consists of setting the base rate of interest at a level that enables banks to limit their bilateral debt position in the interbank market, so as not to disrupt the workings of the payment system by either an illiquidity or an insolvency crisis.

1. Introduction

Post-Keynesians have always considered the role of the central bank as crucial in developing a theory of endogenous money. Indeed, the structuralist/horizontalist debate in the early 1990s focused largely on the appropriate role of the central bank. However, this role is usually limited to one of two functions: either the central bank sets the rate of interest at the short-term end of the spectrum, or it acts as a lender of last resort pumping needed reserves into the banking system to prevent its collapse.

For their part, the so-called monetary circuitists have only sparingly discussed the role and functions of the central bank. Except for those who have close affiliations with the Post-Keynesian school (Graziani, 1990; Lavoie, 1992; Rochon, 1999; Parguez, 2001), central banks are virtually absent from circuitists’ analyses of
the money creation process. In the latter framework, the debt relation between firms and commercial banks explains the endogenous nature of money. But how realistic is such an approach if central banks are absent from the analysis of a monetary theory of production?

At first glance, there seems to be a great divide between Post-Keynesians and circuitists. While both approaches strongly agree on the endogenous nature of money, they have altogether different explanations of it. One way of reconciling the two approaches is to refer to Lavoie’s (1985) two poles of endogeneity. According to Lavoie, money is endogenous because of a two-step relationship between firms and banks (the monetary circuit emphasis) on the one hand, and between banks and the central bank (the Post-Keynesian emphasis) on the other.

We believe that by combining elements of both approaches we can build a robust and comprehensive theory of endogenous money that rests on the tripartite relationship at the core of monetary circuit analysis, namely, the relation between the payer, the payee and the banking system. The purpose of this paper is therefore to take the theory of the monetary circuit, well-developed as it is, and join to it a theory of modern central banking, which draws heavily on Post-Keynesian analysis. Our analysis, as it is well rooted in current central banking practices, remains true to the tradition of realism, and provides a robust and comprehensive theory of central banking, consistent with both the Post-Keynesian and monetary circuit theories.

The paper deals with two types of money, each corresponding to a different function: while bank money is the unit in which most transactions between firms and households take place, central bank money is the exclusive means of final payment for interbank activities. Indeed, the same hierarchy used to explain the flow of money in the sphere of production also applies to interbank activities and payment finality: debt of any order involves a hierarchy of agents (see Wray, 1990; Bell, 2001). Similarly, the inclusion of the central bank reinforces the notion of the alternating movements of the creation (flux) and destruction (reflux) of debt (money). Yet, while much in the argument may not be new to Post-Keynesians, who have for many years now discussed the lender-of-last-resort role of the central bank, two points need to be underlined here. First, we wish to go beyond the role of lender of last resort of the central bank, which arises during crises, and emphasise instead the daily interventions of the central bank, a point that has been largely ignored by Post-Keynesians. Indeed, the textbook treatment of the lender of last resort falls short of the institutional features described in the paper, especially with respect to payment finality and interbank settlements. Secondly, we integrate Post-Keynesian and circuit theories in a novel way that is intended to provide a comprehensive analytical approach to credit, money, banking and central banking.

There are two overall conclusions of this paper. First, both bank money and central bank money are endogenous, created on demand given the actions of the non-bank public and the banking system respectively (see also Rochon & Rossi, 2004b). Secondly, Post-Keynesian theory and the theory of the monetary circuit are compatible and complement each other. As Deleplace & Nell (1996, p. 23) write in this regard, ‘the two approaches have a great deal in common.’

The paper is structured as follows. Section 2 gives a brief account of the Post-Keynesian approach to modern central banking. Section 3 elaborates on the
monetary circuit view, and puts forward a model that explicitly deals with a multi-bank system in which the central bank intervenes as a settlement institution. Section 4 expands on this analysis and considers the two related functions of a central bank in the interbank market, namely, its money-purveying and credit-purveying roles. Section 5 concludes.¹

2. The Post-Keynesian Theory of Central Banking

In a monetary economy, firms need credit in order to continue and expand production. Firms borrow both short-term credit to pay out wages and long-term credit to cover the cost of capital goods (Seccareccia, 1996). There is thus an important link between bank credit and economic growth (and fluctuations). To be sure, even in a stationary state firms require credit to maintain production at current levels (Parguez & Seccareccia, 2000). This is because, as firms generate revenues from selling their produced goods, they must reimburse banks for past credit. To begin a new round of production, firms must secure new credit or, at the very least, the bank must agree to roll over existing debt: banks can always turn down a new request for credit or refuse to roll-over or extend an existing credit. Hence, in a monetary production economy, the demand for credit can never be nil (Rochon, 1999).

In fact, banks are not financial intermediaries; rather, their role is to lend to creditworthy borrowers to enable the production process to begin (see Moore, 1988; Lavoie, 1992; Wolfson, 1996; Rochon, 1999). In the process of supplying credit, banks create money. It is in this sense that money is credit-driven as well as demand-determined (Moore, 1988). Banks do not need prior deposits or reserves to expand their assets. Rather, loans create the necessary deposits, which create reserves. To put it differently, banks’ assets cause banks’ liabilities. This means that the causality between reserves, deposits and loans is reversed with respect to conventional thinking.

The historical roots of endogenous money after Keynes can be traced back to Joan Robinson, who, in The Accumulation of Capital (1956), advocated a framework not unlike that of modern Post-Keynesians and proponents of the monetary circuit approach. Inspired by Kahn, Keynes and Rosa Luxemburg (see Rochon, 2005), Robinson placed commercial banks and bank credit at the heart of her views on production and capital accumulation, although Kaldor (1970, 1982) is more closely associated with the endogenous-money approach. Today, endogenous money and the exogeneity of the interest rate are central components of Post-Keynesian monetary theory.

The endogenous nature of bank money is closely associated with the role of the central bank. Indeed, the now familiar debate between horizontalists and structuralists boiled down to the precise role of the central bank in accommodating the reserve needs of banks (see Palley, 1991; Pollin, 1991; Moore, 2001). Neither

¹Note that this paper is not about the theory of the monetary circuit per se. For such an analysis, see Rossi (1998), Rochon (1999) and Parguez & Seccareccia (2000). Rather, in this paper we go beyond the descriptive analysis of the monetary circuit and expand it to cover central banking issues.
approach questioned the endogenous nature of money, but argued about the degree to which the money supply was endogenous given the accommodative stance of the central bank (see Lavoie, 1996, Rochon, 1999, and Rochon & Rossi, 2004b, for assessments of this debate).

The central bank obviously has important functions. It not only sets the rate of interest, but it also intervenes on markets on a regular basis. Post-Keynesians have traditionally emphasised its role as a lender of last resort. Their analysis, however, is usually limited to a banking system in which there is a consolidated or an aggregated banking sector, where all transactions between firms and workers, for instance, occur within a single-bank system. No attempt is made to analyse multi-branch systems or a system in which there are separate banks. In this way, the relation between the banking system and the central bank is kept simple, and the analysis can focus entirely on the issue of the reserve needs of the banking system and the lender-of-last-resort role of the central bank.

In this paper, we wish to go beyond the simple role of lender of last resort of the central bank. The reserve-purveying role of the central bank can be divided into two separate functions: the defensive function and the accommodative function (see Eichner, 1987), although both can be referred jointly as the neutralisation role of the central bank (see Clinton & Fettig, 1989). Both functions are part of the Post-Keynesian theory of central banking, although the defensive function has only recently been rediscovered (see Lavoie, 2005; Rochon & Rossi, 2005). These functions, although amounting essentially to the same action (both concern the endogenous supply of high-powered money, that is, reserves or, in modern parlance, settlement balances for interbank debts), arise from very different circumstances. While the defensive function results from the daily activities of the banking system, the accommodative function is activated when banks are in urgent need of reserves.

The accommodative function is the traditional role for a central bank discussed in Post-Keynesian theory. It was indeed at the core of the horizontalists/structuralist debate. In this role, the central bank agrees to supply reserves to the banking system on demand, usually as a result of increased economic activity. As the demand for bank credit increases and banks respond by increasing the supply to creditworthy borrowers, deposits are created against which banks must hold reserves with the central bank.\(^2\) Considering the banking system as a whole, the additional reserves can only be obtained by borrowing from the central bank. As the banks’ demand for reserves increases, the central bank supplies them by purchasing government securities on the open market. From this analysis, we can draw two conclusions: first, failure by the central bank to accommodate the reserve needs of the banking system might jeopardise the liquidity of the system. Secondly, contrary to neoclassical theory, the supply of high-powered money is endogenous (see Lavoie, 1992; Rochon, 1999; Rochon & Rossi, 2004b; Rossi, 2005).

The defensive function of the central bank, on the other hand, arises as a result of monetary flows into and out of the banking system, which stem from

\(^2\) Of course, in some countries this is no longer the case, as reserve requirements have been completely eliminated, such as in Australia, Canada and the United Kingdom.
the day-to-day transactions and portfolio decisions of non-bank agents. Post-Keynesians have very much downplayed this function, though it features prominently in Eichner (1987). The central bank acts defensively in the sense that it aims to offset all daily flows by leaving the total amount of bank reserves unchanged: a decrease in bank reserves through monetary and financial operations will lead the central bank to increase reserves. Eichner argued that this is generally achieved through open-market operations. (See the next section, however, for analytical elaboration of the central bank’s defensive function in a more contemporary setting, where the transfer of government deposits as well as repos and reverse repos are the main policy tools; implementing monetary policy through the buying and selling of securities on the open market has greatly diminished in recent years.3)

Consider the following stylised example: after receiving their money wages, households deposit the sum in their bank account but begin to spend immediately. As bank deposits expand and contract with the normal course of payments and consumption, the need for bank reserves fluctuates also. For instance, Eichner argued that if households decide to reduce the amount of currency they hold, the central bank must sell securities to keep the total amount of reserves unchanged. This central bank intervention is the result of changes in money, and may be associated with a static economy. As Eichner (1987, p. 847) argued, this defensive role is a ‘component of the Fed’s open market operations [consisting] of buying and selling government securities, so that, on net balance, it offsets these flows in or out of the monetary–financial system’.

From the perspective of the defensive role, according to Eichner, any increase in central bank liabilities implies a purchase of government bonds in an open-market operation. And any fall in liabilities will need to be offset by a sale of securities. Similarly, any changes in central bank assets will need to be neutralised by the sale or purchase of securities: an increase in central bank assets will need to be offset by the sale of securities. In either case, these operations adjust the overall reserves to the needs of the banking system on a daily basis. The central bank is therefore omnipresent in the daily operations of the banking system, not just a lender of last resort in times of crisis. This goes beyond Post-Keynesian theory, which has traditionally emphasised the lender-of-last-resort role. Hence, both the accommodative and the defensive roles need to be at the centre of Post-Keynesian and monetary circuit theories of modern central banking.

Now, from a theoretical perspective, it is irrelevant whether the central bank supplies all of the demanded reserves. In fact, horizontalists and structuralists recognise that the central bank might not supply all reserves. Horizontalists have traditionally argued that the less than accommodative position of the central bank would lead to a rise in the rate of interest, whereas structuralists

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3In a repo (that is, a repurchase agreement), the central bank purchases securities from designated counterparties, usually private banks, with an agreement to sell them back to them at a predetermined price the next business day or shortly thereafter. In a reverse repo, the central bank sells securities to designated counterparties, usually private banks, with an agreement to buy them back at a predetermined price the next business day or shortly thereafter.
have argued that this would lead to a fall in the supply of bank credit.\footnote{See Fontana (2003) for a time-framework synthesis between the horizontalist and structuralist views.} In a sense, they are both correct, although it is important to note the different mechanisms involved. Horizontalists acknowledge that credit may fall after an increase in the rate of interest, but this fall in credit is the result of a decrease in the creditworthiness of bank borrowers once the interest rate has risen. Once borrowers are rendered less creditworthy by the higher interest rate, banks will most likely reduce their supply of credit. This may occur in two ways. First, Post-Keynesians have argued that the rate of interest is foremost a distributive variable (see Lavoie, 1992). Hence, the rise in the interest rate will affect income distribution among agents, which in turn will affect effective demand and the sale of commodities. This may jeopardise the ability of firms to reimburse banks. Secondly, the rise in the interest rate may affect the cash flow of firms. For instance, if firms have outstanding short-term debt, or if they have floating-rate debt, then a rise in the interest rate could lead to a rise in their interest payments, thereby lowering the cash flow of firms and weakening the borrowers’ financial position. A rise in the interest rate may also lower asset prices, which may further weaken the creditworthiness of borrowers by lowering the value of their collateral. This is what New Keynesians have called the balance-sheet channel of the transmission mechanisms of monetary policy (see Borio et al., 1994). The same conclusion is reached from a Post-Keynesian perspective, but with different reasoning.

From a practical perspective, however, the actions of the central bank may result in either a deficient or a surplus reserve position (we can assume, of course, that the central bank might inject more reserves into the banking system). In an instance of non-accommodation, reserves will fall short of the level required for settlement purposes at the interbank level, and banks will have to obtain these settlement balances one way or another. Banks can always borrow reserves from the central bank through the discount window (at a higher interest rate), or they may try to raise the needed reserves through other banks in the federal funds market. When the central bank injects more reserves, by contrast, banks can use them either in lending to deficit banks or in reimbursing the central bank for their pre-existing debt with the latter (Lavoie, 1992; see also Rochon & Rossi, 2004b).

Now, the non-accommodation of banks’ demand for reserves (or settlement balances, in modern parlance) gives rise to an increase in the money market rate of interest, not to a decrease in the quantity of loans that banks can supply (Kaldor, 1982), a point that was at the heart of the earlier debate between horizontalists and structuralists (indeed, the horizontal credit supply curve shifts upwards corresponding to the new rate of interest). As a result, a decision by the central bank not to accommodate the banks’ demand for reserves would translate into a lack of settlement balances in the interbank market, and would thus place upward pressure on the short-term rate of interest. In fact, a number of central banks do not follow this operating procedure any more to affect the money market rate of interest and bring it into line with their targeted level: in Canada...
and to some extent in the United States, for instance, the central bank can steer short-term market interest rates simply by announcing changes in the target rate, or corridor, so as to act upon the overnight rate of interest indirectly. Switzerland is another case in point, as the Swiss National Bank has been determining since 2000 the corridor for the three-month LIBOR within which it targets the median value, and acts upon it through the repo interest rate.

The above analysis shows how the central bank intervenes in markets on a regular, daily basis. Eichner’s discussion of the defensive role is an important addition to the literature, although Post-Keynesians have so far largely ignored it. Our analysis in the next section draws on this role. While the accommodative role is an important aspect of central banking, modern practices have increasingly emphasised the importance of the defensive role, which is the daily operation of central banking in guaranteeing financial stability to the economy. This requires us now to move beyond the traditional horizontalists/structuralists debate, which in many ways has been made moot by modern central banking (see Fontana & Palacio-Vera, 2003; Lavoie, 2005).

3. A Circuitist Model of Central Banking

The theory of the monetary circuit has traditionally focused on the relationship between banks, firms and households, abstracting from the central bank and its monetary policy functions. It has devoted much attention to the production–consumption process within modern capitalist economies, and emphasised the nature and role of money as well as credit in an entrepreneurial system where investment and finance play a prominent role (see, for example, Parguez & Seccareccia, 2000; Graziani, 2003). As a result, little attention has been paid to the roles of the central bank in modern banking practices. While most textbooks use balance sheet analysis to explain central bank operations, this is often limited to an aggregated bank system, a limitation that we avoid in this paper by considering a multi-bank system explicitly. Moreover, what we offer here is an attempt at generalising the Post-Keynesian and circuit theories, by showing how balance sheet analysis makes the conclusions more evident.

Indeed, we think that time has come to develop a theory of the monetary circuit within the endogenous money paradigm. In this section, we propose a simple theoretical model with a central bank and two commercial banks, which operate within the same payment system and have therefore the same monetary unit at their disposal. For expository ease we consider a closed economy.

To begin, let us recall that in any national economy modern payment systems involve a great number of banks dealing with the payment orders of non-bank agents. Often, a transaction involves two agents and two banks as well. Because of the involvement of two banks, the notion of payment finality has been a crucial issue for central banks in the last decade or so, on theoretical as well as practical grounds. In practice, ‘banks do not accept bank money in interbank transactions, but ultimately require their claims to be settled in central bank money’ (Deutsche Bundesbank, 1994, p. 46). As Kahn & Roberds (2002, p. 11) note, ‘[p]ayment finality is critical to the process of decentralized exchange.’
Payment finality is a general concept that applies to factor, goods and financial markets as well: the banking system needs to manage all monetary flows with a central bank at its helm (see Keynes, 1930, p. 23; Graziani, 2003, p. 63). In an environment of multiple banks, however, at the end of the day a particular bank may be indebted to another bank within the system as a result of the great number of incoming and outgoing payments initiated by and addressed to the non-bank sector. The inflows and outflows implied by monetary transactions therefore require that the banking system be complemented by a so-called settlement institution that provides lender-of-last-resort facilities in order for the bilateral debt–credit relationships born in the interbank market to be finally settled.

To explain the working of a final payment, consider a central bank dealing with two banks, B1 and B2. Both banks are involved with each other through the monetary flows between their non-bank clients. At the end of the day, when a single transaction worth $x has taken place, between a payer and a payee as distinct clients of the two banks involved, the balance sheet situation of both banks is as shown in Table 1, where entries record the change in the accounting position for the relevant agents as a result of an electronic funds transfer between Banks B1 and B2, which client I (the payer) initiates, and before the central bank’s intervention.

As shown in Table 1, a sum of $x is transferred within the books of Bank B1 from the account of client I, the payer, to the account of Bank B2, which is the bank in which the payee holds his own account. For its part, Bank B2 records the incoming payment from B1 and credits this amount to client II’s account. Bank B1 is indebted to Bank B2 for an amount of $x as a result of the payment having occurred between client I (i.e. the payer) and client II (the payee), and which has been generated by the payment order that the payer (a client of Bank B1) has addressed to Bank B1 in favour of the payee (a client of another bank, B2). The payee has no further claims on the payer. At this stage, however, the conclusion is different for the two banks involved: the fact that Bank B1 owes a deposit to Bank B2 amounts to saying that the former is indebted to the latter for $x.

Now, while the settlement of a debt obligation between the payer and the payee is done in bank money, the settlement of debt obligations between banks is carried out in central bank money. As pointed out above, there is a hierarchy of monies within any country. In Graziani’s (1990, p. 18) words, ‘[t]he role of the Central Bank is in fact of acting as a third party between single banks so far

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5 Bank B2 could also be considered as the set of banks facing Bank B1; this would change nothing in our analysis.
as their reciprocal payments are concerned. There is no need here to expand on the actual motives requiring central bank money for the final settlement of interbank debt–credit relations. Note, however, that these motives are based on the control of settlement as well as systemic risks that would exist and spread if the relevant payments were not settled using central bank money (see, for example, De Bandt & Hartmann, 2000, for analytical elaboration). In short, the requirement of using central bank money to settle interbank debt brings financial stability to modern payment systems, and guarantees internal convertibility between commercial and central bank monies (see Rossi, 2005).

What is more relevant to the argument in this paper is that very few circuit authors (and, generally speaking, very few Post-Keynesians) have yet considered central bank money explicitly as the means of final payment on the money market, as economists generally call the interbank market. Lavoie (2003) is an exception: both he and Rochon (2003) have sought to extend the Post-Keynesian argument of a single-bank system to a multi-bank system.

In view of the lack of development of this idea in the Post-Keynesian literature, let us elaborate. Consider Table 1 once again. As banks require final payments in central bank money for the daily settlement of interbank positions, we have to explain analytically what happens when the central bank intervenes to ensure that Bank B1 finally pays Bank B2 for an amount corresponding to the recorded transactions over the period considered. To this end, the above mentioned hierarchy-of-money principle must be applied at the interbank level. Clearly, as the non-bank public has to use bank money ultimately to pay for its transactions (cash is irrelevant here), banks have to appeal to central bank money to make sure that their bilateral debt–credit relationships are finally settled (Figure 1).

As far as interbank settlements are concerned, the central bank is therefore required to create the number of money units needed to ensure that Bank B2 has no further claims against Bank B1. To this end, the central bank substitutes its own acknowledgment of debt for the IOU created by Bank B1 with respect to Bank B2, as shown in Table 1. The result of this central bank operation is depicted in Table 2, where the new entries record the changes in the accounting positions for the agents considered (all previous entries are shown in italics as memory record). Bank B1 is now indebted to the central bank, for an amount of central bank money equal to $x, and Bank B2 is entitled to an equivalent deposit at the central bank (that is, its reserves increase). So far, the emission of central bank money, that is, a third party’s debt, settles the payment between Banks B1 and B2. The creditor bank (B2) has no further claims on the debtor bank (B1).

**Figure 1.** The two-tier domestic banking system and the related markets
The circular flow of central bank money may then be represented as in Figure 2. A sum of central bank money (for instance, $x$) is created on Bank B1’s demand (hence the endogenous nature of central bank money), which uses it to settle its debt to Bank B2. As an accounting mark of payment finality, Bank B2 acquires an equivalent deposit at the central bank.

### Table 2. Central bank money as the means of interbank settlements

<table>
<thead>
<tr>
<th>Bank B1</th>
<th>Liabilities</th>
<th>Bank B2</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client I</td>
<td>− $x$</td>
<td>Bank B1</td>
<td>+ $x$</td>
</tr>
<tr>
<td>Bank B2</td>
<td>+ $x$</td>
<td>Client II</td>
<td>+ $x$</td>
</tr>
<tr>
<td>Bank B2</td>
<td>− $x$</td>
<td>Bank B1</td>
<td>− $x$</td>
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<td>Central bank</td>
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</table>

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### 4. Central Bank Money and Credit: A Circuitist View

The model presented in Section 3 allows us to carry the analysis of endogenous money a step further. In particular, the Post-Keynesian and circuitist analyses of central bank money can be integrated and developed by considering the money-purveying and credit-purveying roles of the settlement institution in the interbank market.

From a circuitist point of view, the final payment of interbank debt elicits, in fact, two distinct circuits of central bank money. Circuit 1 concerns the payment on the money market, where a debt relation occurred between Banks B1 and B2,
and has been settled through the central bank. Circuit 2 concerns, by contrast, the payment in central bank money of a transaction on the financial market, which the former circuit induces. To be sure, whilst circuit 1 allows Bank B1 to settle its debt relation to Bank B2, it gives rise to an equivalent debt relation between Bank B1 and the central bank, which takes the place of Bank B2 in its credit relation to Bank B1. If so, then Bank B1 has to find in the financial market the funds to settle its debt to the central bank, which owes an identical amount to Bank B2. Clearly, the financial market intervenes here as a necessity, and not as a hypothesis, in order for Bank B1 finally to pay its debt to the central bank, which can thereby settle its own debt to Bank B2. As the first circuit induces the second circuit, let us analyse them together. Indeed, one cannot exist without the other, in order for Bank B1 to settle its debt, initially to Bank B2, eventually to the central bank (Figure 3).

The money-purveying role of the central bank in the interbank market explains circuit 1, the money market circuit. Banks need to have recourse to the central bank in order for interbank payments to be finally settled. The central bank is their settlement agent (see Section 3), in the sense that it issues the means of final payment. By contrast, the object of this final payment is not provided by the money-purveying function of the central bank: it is the credit-purveying role of it that provides this object. Now, the fact that Bank B1 needs to ask for a credit in order for it finally to pay Bank B2 gives rise to circuit 2, the financial market circuit, through which Bank B1 is able to obtain the funds it needs in exchange for an amount of securities. To this end, Bank B1 disposes of securities in the interbank market, which it transfers to Bank B2 (there are no other banks in our stylised example) to pay the latter and reimburse the central bank: Bank B2 in fact spends the central bank deposit it owned as a result of the first circuit, to purchase the securities sold by Bank B1, which thus obtains this central bank deposit, with which it can reimburse its debt to the settlement agent. The second circuit amounts therefore to a purchase of financial assets by Bank B2, which, in so doing, disposes of the central bank deposit to which it is entitled as a result of the first circuit. On the whole, being led to spend on the financial market the amount of central bank money that it receives on the money market, Bank B2 contributes to ensure the orderly working of the payment system—although, generally speaking, banks are not necessarily aware of this effect of their financial operations and are actually moved by a profit-seeking rationale (to wit, they substitute interest-bearing financial assets for non-interest-bearing central bank deposits).

The end result of these financial transactions shows that the money-purveying and the credit-purveying roles of the central bank must be kept separate analytically. When the settlement agent creates a sum of central bank money for the final payment between two banks to be made, it does not necessarily enter into a credit operation with any of these banks. It is only when one of the banks does not find in the interbank market the funds it needs to clear its deficit position towards the banking system as a whole, that the central bank intervenes by granting it a credit (say, through a repurchase agreement), in order to reduce settlement

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6This occurs because Bank B1 has no reserves (settlement balances) prior to the transaction.
and systemic risks and hence not to jeopardise the working of the whole payment system, the *conditio sine qua non* for production and exchange.

In sum, the central bank provides payment services, which are a twofold endogenous phenomenon involving both a money-base creation and a credit operation between the central bank and the domestic banking system. These payment services therefore involve an emission of central bank money according to the above mentioned hierarchy-of-money principle ensuring payment finality, and they also imply a fully collateralised credit operation. In other words, the central bank creates the monetary form in which all final payments between banks take place, acting in this respect according to the principle that ‘loans make deposits,’ which Post-Keynesians and monetary circuit writers have so clearly underlined with respect to commercial banks (see Fontana & Venturino, 2002; Rochon, 2003). The central bank, however, also carries out a financial intermediation, because it grants a loan to Bank B1 on the ground of the deposit formed in central bank money in the account of Bank B2 (see Table 2).

To avoid any possible misunderstandings, let us point out that this causal link between central bank deposits and loans is not a restatement of the old loanable funds theory, according to which loans depend on pre-existent deposits. In our analysis, this causal link results from the fact that no bank can spend a central bank deposit at the very instant when this deposit is formed, that is to say, when it is entered on the central bank’s ledger. So, if Bank B2 does not spend this deposit for purchasing those financial assets sold by Bank B1, the central bank can do so in its place (for instance with a repo). In this case, Bank B2 might subsequently decide to spend its deposit in a reverse repo, which might eventually convey to Bank B2 the very financial assets sold by Bank B1 (but with the central bank’s guarantee that these are eligible assets in a monetary policy sense).

Hence the central bank’s financial intermediation between Bank B1 and Bank B2 can be interpreted as a bilateral or multilateral transaction on securities (Figure 4). If Bank B2 buys those assets from Bank B1 directly, as in panel (a), the transaction is bilateral because it implies a seller (B1) and a purchaser (B2).
of the traded assets. But if the central bank purchases the financial assets from Bank B1, as in panel (b)—say, in the repo market—then the transaction is multilateral in so far as a reverse repo between the central bank and Bank B2 brings to the latter different financial assets. In this case, in fact, the central bank’s explicit intervention in the financial system provides an institutional guarantee that banks use eligible assets for the smooth functioning of the settlement system. (Notice that in Figure 4 the circuit of central bank money is implicit in both panel (a) and (b), because it is not germane to the point at stake here. In both cases, it exists in the form illustrated in Figure 2.)

The above analysis brings to light the defensive role of central banking. While the lender-of-last-resort role is still an important component of central banking, the defensive role emphasises the central bank’s daily intervention in financial markets that prevents system instability. In other words, provided the defensive role is carried out effectively, thereby preventing systemic risks, the lender-of-last-resort role does not arise as often as the old literature has it. In fact, it is not a coincidence that interbank settlement systems have been implemented and structurally reformed in recent years, as a result of the increasing number of financial and banking crises that occurred in several countries around the world (see Rochon & Rossi, 2006).

5. Conclusion

This paper aims to fill a void and build a bridge between Post-Keynesian and monetary circuit theory. While the latter theory neglects discussion of central banks, the former does not really deal with circular flow analysis. Indeed, the introduction of a theory of money and credit that relies on circular flow analysis while incorporating a precise role for the central bank, in particular by introducing clearing-house mechanisms to deal with interbank reserve accounting, can greatly improve both theories (see Lavoie, 2004, ch. III). Our paper provides a first stage towards showing that a circular flow analysis can much improve our understanding
of modern central banking, so as to design better monetary policies for financial stability and macroeconomic stabilisation.

The central bank is not merely a lender of last resort acting only in times of crisis. Rather, its necessary involvement is at the heart of the stability of the financial system on a daily basis. In this framework, monetary policy consists of setting the base rate of interest at a level that enables banks to limit their bilateral debt position in the interbank market, so as not to disrupt the workings of the domestic payment system by either an illiquidity crisis or an insolvency crisis that may have systemic and disruptive effects. It is in fact a duty of any central bank to guarantee the smooth functioning of the payment system. This paper shows that the management of settlement risks is based on a system where the entire money base is credit-driven and demand-determined, and where the base rate of interest is the operating target in order for the central bank to fulfil its monetary policy role.

The analysis provided in this paper also leads us to revisit the exogenous nature of the rate of interest, which is a fundamental element of Post-Keynesian and monetary circuit theories. In particular, we believe that the above discussion renders moot much of the Post-Keynesian controversy with respect to the horizontalist/structuralist debate, which consisted of two distinct phases. In the first wave of the debate, proponents on each side debated whether and to what extent the central bank accommodated the reserve demands of banks. It is in this sense that the horizontalist position was referred to as the accommodationist stance. In the second wave of that debate, horizontalists recognised that the central bank may not fully accommodate banks’ demand, but argued that failure to do so would translate not into a decrease in lending, but rather into a rise in the rate of interest (Lavoie, 1996; Rochon, 1999). As Rochon (1999) chronicles, this has always been the horizontalist argument, as Kaldor (1970) advocated it: structuralists have largely misinterpreted the horizontalist position. Hence, Lavoie (1996) elaborated on the horizontalist view and, consistent with Kaldor, paved the way to a new Post-Keynesian consensus.

Central banks today target the short-term rate of interest and will intervene to maintain this rate at the targeted level. The central bank will quickly neutralise any pressures on interest rates arising from deficit or surplus banks, or from their needs for settlement balances. The Bank of Canada, for instance, uses a variety of monetary policy instruments, such as moving government deposits between its accounts at commercial banks and its account at the central bank (see Rochon & Rossi, 2004a), a practice now observed in many countries. If further action is required, the central bank will use repos and reverse repos to eliminate pressures in the interbank market.

In a nutshell, the central bank intervenes on a daily basis in monetary and financial markets to make sure that all debt obligations within the banking system are finally settled. This routine intervention is analogous to Eichner’s defensive role discussed above. In a similar way, the central bank consistently adjusts the quantity of central bank money in the interbank settlement system, systematically injecting and destroying central bank money according to the needs of the domestic banking system.
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