

# MONEY CREATION: REFLECTIONS OF AN EX-CENTRAL BANKER ON EXOGENOUS / ENDOGENOUS MONEY

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## ABSTRACT

Exogenous money creation does not exist, but did under a past specie-money system. Central bank control of bank reserves and therefore control of bank deposit (money) creation via the money multiplier can exist, but this has nothing to do with the *process* of money creation. Rather, it is a style or model of monetary management, a style no longer in fashion because of its severe interest rate consequences. New bank deposits (money), also under a reserves-multiplier model, can only be created endogenously - beginning with the existence of a demand for bank loans which, when satisfied by the banks, leads to the simultaneous creation of bank deposits.

It is heartening that the “home” of the Monetarist School model of money creation (based on the multiplier), the US, is showing distinct signs of recognition of the source of money creation being as described here. Bank reserve quantity changes are an outcome of deposit quantity changes (money creation) and not the driver thereof. Reserve requirement changes are just one of many sources of changes in bank liquidity, which are happily accommodated by the central bank at the policy/key interest rate, to make it effective.

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*Keywords:* money, endogenous money, exogenous money, central banking, banking, interest rates, monetary policy

## INTRODUCTION

As a new entrant to academia, and with the privilege of central banking<sup>2</sup> and private sector banking<sup>3</sup> experience, I have an urge to present a number of reflections on money creation. Specifically, I wish address the exogenous / endogenous money debate and related issues such as the role of the monetary base, central bank accommodation policy, the balance sheet and actual sources of money growth (or decline), and the direct link between money growth and economic growth.

Why are these issues worth addressing? It is because there has been much debate, some of it sharp [for example, Moore’s (1983) dismissal of *Monetary trends in the United States and the United Kingdom ...* (Friedman and Schwartz, 1982) with “... the book must be regarded as a noble failure”], there are possibly some

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<sup>2</sup> Specifically in compiling the monetary statistics and later implementing central bank key interest rate (KIR) and bank liquidity / accommodation policy.

<sup>3</sup> Experiencing the receiving end of policy as a dealer on the funding desk.

misinterpretations of fundamental issues, and because consensus eludes the debate. Most of all, I wish to contribute to settlement of the debate, as it has significant implications for monetary policy.

At the risk of frustrating some academics, but with the interests of students in mind (is this not why we are in academia?), the reflections are presented in pedagogic form.

One simple assumption is made, to enable the reader to focus on the pertinent issues at stake: that bank notes and coins (N&C) are issued by the central bank and that they do not rank as reserves for the banks. This case is not without precedent<sup>4</sup>, and makes the analysis a little easier without detracting from the principles.

A literature review is not presented upfront. Instead, the literature is covered as the various issues are presented and discussed. This article has the following sections:

- The banking system and money.
- A monetary analysis.
- A touch of history.
- The reserve requirement and money multiplier.
- A bank liquidity analysis.
- Accommodationism.
- Endogenous money creation.
- Interbank markets and central bank accommodation.
- Interest rate-focused monetary policy.
- Money multiplier-focused monetary policy.
- Interest rate consequences of a money multiplier-focused monetary policy.
- Quantitative easing.
- Accommodationism and structuralism revisited.
- The “exogenous money” puzzle.
- Recent research from the home of the Monetarist School.
- Further questions.
- References.

## **THE BANKING SYSTEM AND MONEY**

As an introduction to the following sections it is necessary to briefly describe the banking system. Figure 1 presents the context: the financial system, comprised of the four sectors of borrowers and lenders and the groups of financial intermediaries. The ultimate borrowers issue debt securities (marketable such as Treasury bills and bonds; and non-marketable, such as ordinary bank loans<sup>5</sup>) and share (aka equity or stock) securities. Financial intermediaries buy these and issue their own to finance them.

The banks and the central bank buy debt securities in the main and, to finance them, issue deposit securities [marketable, called negotiable certificates of deposit (NCDs),

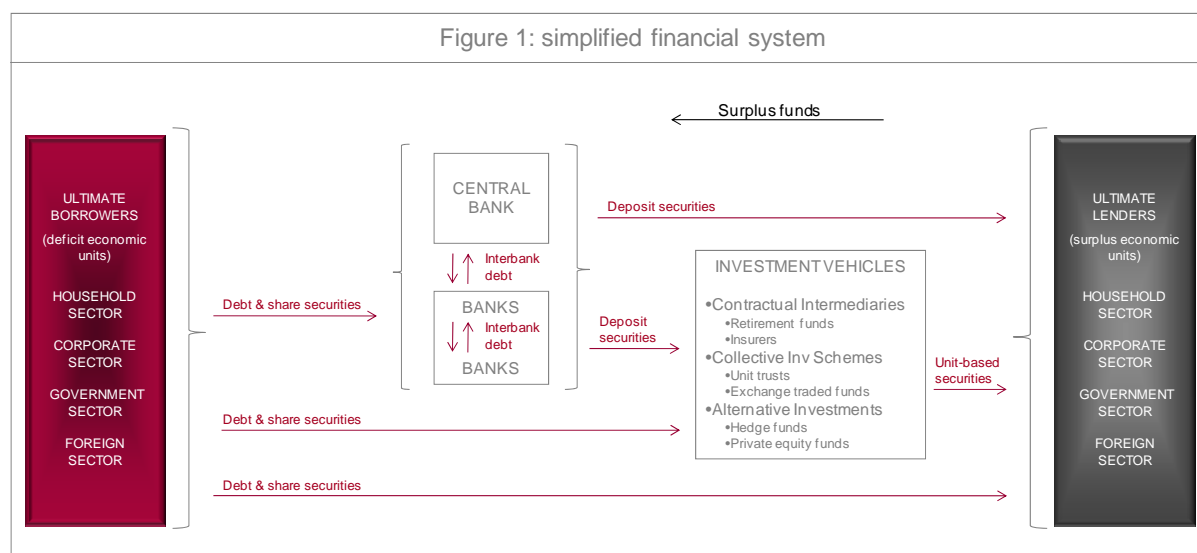
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<sup>4</sup> South African Reserve Bank.

<sup>5</sup> A bank loan is a debt (liability) of the recipient, an IOU from the borrower to the bank (an asset for the bank).

and non-marketable, called non-negotiable certificates of deposit (NNCDs)]. The investment vehicles buy debt, share and deposit securities and, to finance them, issue unit-based securities, such as unit trusts and participation interests, which are largely non-marketable (except to the issuer in some cases).

The ultimate lenders buy the debt and share securities of the ultimate borrowers, as well as the deposit securities issued by the banks and the unit-based securities of the investment vehicles.



The banking system is comprised of the central banks and the private sector banks. Note that we said above that financial intermediaries buy securities and issue their own to finance them. This is not strictly correct. The banks are unique in this respect because they are able also to *create new debt and deposit securities simultaneously*, which is the subject of this paper. This rests on the fact that deposit liabilities of banks are “generally accepted as the medium of exchange / means of payments”. This is the definition of money.

<b>BOX 1: BANKS (LCC<sup>6</sup> BILLIONS)</b>			
Assets		Liabilities	
Foreign assets (FA)	100		
Loans to government (LG) <sup>7</sup>	900		
Loans to private sector (LPS) <sup>8</sup>	2 000		
Central bank money (CBM):		<b>Deposits: Private sector</b>	<b>4 000</b>
<b>Notes &amp; coins (N&amp;C)</b>	<b>600</b>	Loans from central bank (BR)	0
Reserves (TR)	400		
(ER = 0)			
(RR = 400)			
<b>Total</b>	<b>4 000</b>	<b>Total</b>	<b>4 000</b>

<sup>6</sup> The currency (“corona”) code of a fictitious country: Local Country.

<sup>7</sup> Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities).

<sup>8</sup> Marketable (for example: commercial paper and corporate bonds) and non-marketable (for example: mortgage and overdraft loans to households and companies).

<b>BOX 2: CENTRAL BANK (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Foreign assets (FA)	1 800	<b>Notes &amp; coins (N&amp;C)</b>	<b>1 000</b>
Loans to government (LG) <sup>9</sup>	1 000	Deposits:	
Loans to banks (BR)	0	Government sector	1 000
		Banks (TR)	400
		(ER = 0)	
		(RR = 400)	
		Loans: Foreign sector	400
<b>Total</b>	<b>2 800</b>	<b>Total</b>	<b>2 800</b>

In Box 1 and Box 2 we present simplified balance sheets<sup>10</sup> of the private banking sector and the central bank. The banks' collective balance sheet, asset side, is made up of foreign assets (aka *foreign reserves*), loans to the government and the private sectors (which are the largest part), and central bank money (CBM) which is made up of bank holdings of N&C and bank reserves (called total reserves, TR). The latter is significant: it is made up of excess reserves (ER) and required reserves (RR), which reflects the statutory RR ratio ( $r$ ) applied to the private sector deposits of the banks (liability side of the balance sheet).

The ER amount is assumed to be zero, which fits with reality (in normal circumstances, when quantitative easing is not an appropriate policy). Banks do not wish to hold ER as no interest is paid on TR (in most countries), but they have no choice in the matter. The central bank has absolute control over CBM and BR (as we will see). We also assume the banks are not borrowing from the central bank (BR = 0, an assumption which is relaxed later).

Box 1 shows that the deposit liabilities of the banks is LCC 4 000 billion. Assuming  $r = 10\%$  of deposits, the banks are required (RR) to hold LCC 400 billion on deposit with the central bank. As shown, this is the case, and there is no ER.

The assets of the central bank are: foreign assets, loans to government, and loans to banks (BR, assumed to be zero); its liabilities are: N&C (the total amount issued), government deposits (we assume government only banks with it), loans from the foreign sector and the banking sector's reserves (TR = RR, because ER = 0).

How is the money stock calculated? In reality central banks, as the compilers of monetary statistics, consolidate the balance sheets of the banks with their own, in the process netting out interbank claims: N&C, TR and BR, ending with a consolidated balance sheet of the monetary banking institutions (MBIs), as indicated in Box 3.

What is the amount of the money stock? Assuming we are focused on the money "supply" measure M3 (total private sector deposits), it is the sum of bank deposits (BD) and N&C (held by the private sector):

<sup>9</sup> Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities), but usually marketable paper only, for purposes of open market operations (OMO).

<sup>10</sup> Excluding capital and reserves and other assets and liabilities.

$$\begin{aligned}
M3 &= BD + N\&C \\
&= \text{LCC } 4\,000 \text{ billion} + \text{LCC } 400 \text{ billion} \\
&= \text{LCC } 4\,400 \text{ billion.}
\end{aligned}$$

<b>BOX 3: CONSOLIDATED BALANCE SHEET OF MBIs (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
D. Foreign assets (FA)	1 900	A. Notes & coin	400
E. Loans to government (LG)	1 900	B. Deposits:	
F. Loans to private sector (LPS)	2 000	1. Government	1 000
		2. Private sector	4 000
		C. Loans: foreign sector	400
<b>Total</b>	<b>5 800</b>	<b>Total</b>	<b>5 800</b>

## A MONETARY ANALYSIS

Central banks compile a *monetary analysis* (MA) on a monthly basis from the consolidated balance sheet of the MBIs. Using the letters indicated in Box 3, this is executed as follows:

$$M3 = A + B2.$$

Because the balance sheet balances, M3 must be equal to:

$$= D + E + F - (B1 + C).$$

If the related balance sheet items (D and C; E and B1) are netted, we get (LCC billion):

$$\begin{aligned}
M3 &= A + B2 &= \underline{4\,400} &(4\,000 + 400) \\
&= (D - C) &= 900 &(1\,900 - 1\,000) \\
&+ (E - B1) &= 1\,500 &(1\,900 - 400) \\
&+ F &= \underline{2\,000} \\
\text{TOTAL} &= \underline{4\,400}
\end{aligned}$$

What does this tell us? It tells us that the “counterparts” of the M3 money stock are:

$$\begin{aligned}
\text{Net foreign assets (NFA)} & &(D - C) \\
\text{Net loans to government (NLG)} & &(E - B1) \\
\text{Loans to private sector (LPS)} & &(F).
\end{aligned}$$

It also tells us that from a date to a date (in practice month-end to month-end) the balance sheet sources of change (BSSoC) of changes ( $\Delta$ ) in M3 can be calculated as follows:

$$\Delta M3 = \Delta NFA + \Delta NLG + \Delta LPS.$$

We can go further: NLG and LPS represent loans (marketable and non-marketable) to the private and government sectors (netted in the latter case). We can sum them and call it *domestic loan extension* (DLE). Thus:

$$\Delta M3 = \Delta NFA + \Delta DLE.$$

What is the significance of this analysis<sup>11</sup>? It tells us that there are two BSSoC in M3: one foreign and one domestic, and the actual sources of change (ASoC) are real [ $\Delta(C + I)$ ] or financial (speculation or forex-reserves motivation) events. When banks or the central bank buy/sell foreign exchange (forex), new deposits (money) are created/destroyed. In essence they are “intervening” in the forex market and there is a quantity and a price outcome. However, there is no doubt about the path of causation:

$$\text{ASoC (bank decision to buy/sell)} \rightarrow \text{BSCoC } (\Delta NFA^{12}) \rightarrow \Delta M3.$$

In the case of DLE, the MA tells us little about the path of causation.<sup>13</sup> What is the path? The answer rests on the reality that bank deposits (note: we are ignoring N&C for a moment<sup>14</sup>) is the medium of exchange, that is, money. They are bank liabilities, and banks are able to create them by making new loans. This is referred to as “endogenous” (that is, “forming within”<sup>15</sup>) money creation. There is no other way. As we will discuss later, under a Monetarism School model, it is the same. The path of causation is:

$$\text{ASoC (decisions}^{16} \text{ to borrow)} \rightarrow \Delta DLE \rightarrow \Delta M3.$$

It is significant to point out that  $\Delta DLE \rightarrow \Delta M3$  is a *simultaneous* monetary event. It is also important to state that bank decisions to purchase *new* marketable loans (treasury bills, bonds, commercial paper) also lead to deposit creation. It will be clear that the decision to borrow rests with the borrower.

## A TOUCH OF HISTORY

This is in sharp contrast with “exogenous” (that is, “outside produced”<sup>14</sup>) money creation (Faure, 2011), which was relevant in the days of specie money, such as gold and silver coins. The money stock could only increase by the discovery, extraction and coin production of additional gold and silver.

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<sup>11</sup> A similar analysis is done by all central banks. In the case of South Africa, this analysis has been done from March 1965 to the present. An ex-Governor of the South African Reserve Bank first wrote about this analysis in 1964. A later version is: van Staden (1967). The monetary statistics calculated according to this analysis can be found at [www.resbank.co.za](http://www.resbank.co.za).

<sup>12</sup> NFA is a minor BSSoC.

<sup>13</sup> Some texts in the past (and a few still) tell us that money creation begins with a new bank deposit. This is nonsense: a new bank deposit can only arise from a new bank loan. There is one exception: N&C, but to base a theory on a small part of money is misleading.

<sup>14</sup> N&C is a minor component of M3; in most countries 2-3%. It is ignored in the interests of word-economy, but is re-introduced later again.

<sup>15</sup> Chambers Twentieth Century Dictionary.

<sup>16</sup> By government and/or private sector.

As is well known, in 17<sup>th</sup> century London wealthy merchants came to deposit their precious metal coins with goldsmiths, which had safekeeping facilities. This practice was recorded as early as 1633, but it was not widespread as most of the wealthy deposited their coins for safekeeping with the Mint in the Tower of London. However, when King Charles I appropriated 200 000 pounds worth of coins in 1640, the wealthy "... no longer trusting the government ... resorted to the practice of depositing their money with goldsmiths ..."<sup>17</sup> The goldsmiths' new venture as bankers was born, a significant historical event.

The goldsmith-bankers naturally issued receipts for the coin deposits: "As acknowledgement of the possession of such sums of money, the goldsmiths gave receipts, and at first these documents were special promises ..."<sup>17</sup> Box 4 indicates the change in the balance sheet of a goldsmith-banker after the deposit of 100 one-pound gold coins<sup>18</sup> by Mr A, and Box 5 that of Mr A.

<b>BOX 4: GOLDSMITH-BANKER (GBP)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Gold coins (100 x 1 pound)	+100	Receipts / notes	+100
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

<b>BOX 5: MR A (GBP)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Gold coins (100 x 1 pound)	-100		
Goldsmith-banker receipts / notes	+100		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

It came to pass that the deposit receipt holders found it most convenient to use the receipts as a means of payment (money), and, because they were backed by gold, they were readily accepted as such. This practice became widespread and the receipts of the goldsmith-bankers, which hitherto had been issued in the name of the depositor, were issued to bearer.

The next step in the story is probably the most significant one in the history of money: it was "discovered" by the goldsmith-bankers that, instead of making new loans in gold coins (Box 6) (which they were able to do because gold coin depositors would not all withdraw their coins at the same time), they could simply issue new receipts / notes to the borrower (Mr B), as indicated in Box 7 and Box 8.

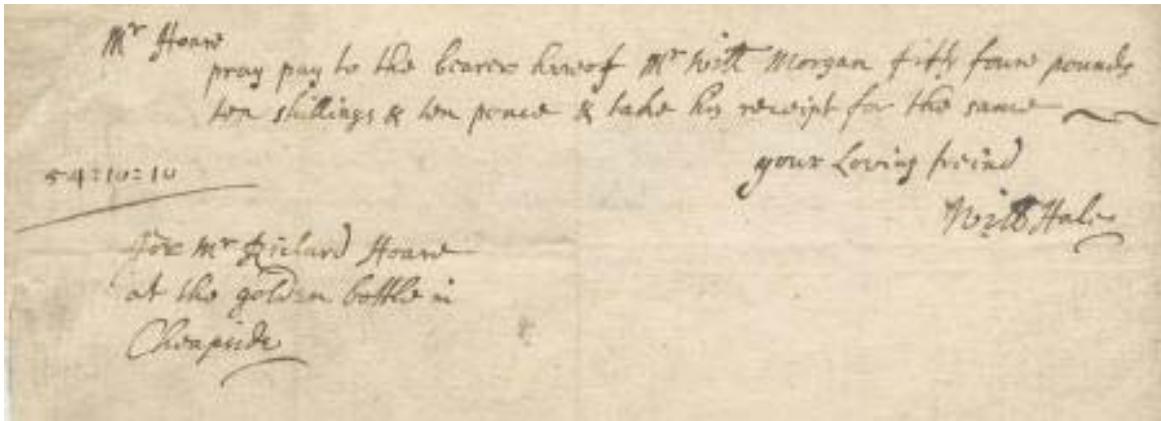
<b>BOX 6: GOLDSMITH-BANKER (GBP)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Gold coins (10 x 1 pound)	-10		
Loan to Mr B	+10		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

<sup>17</sup> Jevons, 1875:201.

<sup>18</sup> In the early days of the goldsmith-bankers there was no one-pound coin. The closest was the guinea (made from gold from the Guinea Coast) which was equal to twenty-one twentieths of one pound. For the sake of simplicity, we assume there was a one-pound coin. (Faure, 2011.)

BOX 7: GOLDSMITH-BANKER (GBP)			
Assets		Liabilities	
Loan to Mr B	+10	Receipts / notes	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

BOX 8: MR B (GBP)			
Assets		Liabilities	
Goldsmith-banker receipts / notes	+10	Loan from Goldsmith-banker	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

BOX 9: EXAMPLE OF AN EARLY CHEQUE: FRONT (1676)

<p>Mr Hoare  pray pay to the bearer hereof Mr Will Morgan fifty four pounds  ten shillings &amp; ten pence &amp; take his receipt for the same  your Loving friend  Will Hale</p> <p>54-10-10</p> <p>For Mr Richard Hoare  at the golden bottle in  Cheapside<sup>19</sup></p>
<p>Source: C Hoare &amp; Co, Fleet Street, London. Reproduced with the kind permission of the Curator of the in-house museum.</p>

Endogenous money creation was born, and persists today. Later the same century, when current deposit accounts (then called “running cashes”) were created (essentially just another form of bank notes), a new loan was made by crediting the borrower’s deposit account (substitute “Deposit” for “Receipts / notes” in Boxes 7 - 8). Payments were made by the newly-created instrument of transfer: the cheque (see Box 9 for a 1676 example). The overdraft facility on the current account

<sup>19</sup> The goldsmith-banker is Mr Richard Hoare, the drawer of the cheque is Mr Will[iam] Hale, and the recipient is Mr Will[iam] Morgan. The “at the golden bottle” notation was the address of the goldsmith-banker in Cheapside, London (before street numbers were introduced in the 18<sup>th</sup> century). This goldsmith-banker exists to this day in the form of private banker C Hoare & Co. It is the only remaining goldsmith-banker owned by the same family. See <http://www.hoaresbank.co.uk>. The museum is well worth a visit.



followed, enabling a borrower to incur the bank debt when the funds were required for payments.

However, there was a brake on the system: the notes of the bankers were convertible into gold coins. This is a significant issue because convertibility gave rise to the need by banks to hold a *reserve of gold coins* so that public demands for the conversion of bank notes into gold were always met. The banks of the earlier centuries knew that not all depositors would arrive at the same time and demand gold for notes. Therefore, they could make loans by the issue of bank notes and credits to current accounts (that is, create money) up to a point – determined by a “comfortable” reserve of gold. Given the natural limit imposed on the supply of gold by the limits of gold ore supply and gold mining technology, there was an intrinsic limit to money creation.

### THE RESERVE REQUIREMENT AND MONEY MULTIPLIER

What is the significance of the convertibility of the notes of the bankers into gold coins? It is that the “comfortable” reserve of gold determined by the bankers was a self-imposed *reserve requirement (RR)*. Once this limit was reached, the banks could not make further loans by issuing new notes or deposits (crediting deposit accounts or providing overdraft facilities leading to new loans and deposits).

Thus, endogenous deposit (or note) money creation, the *outcome* of new loans, ground to a halt when the limit of the “comfortable” reserve of gold was reached. After this point, money creation could only resume when new discoveries of gold were made (or plundering took place), and introduced into the system (*exogenous money*). An example is required, which then leads us to another critical issue: the money multiplier.

Assume the plundering of gold in some country by an English king, which is struck into 100 000 one-pound gold coins. The king spends the specie money on local goods and the coins are deposited by the recipients of the coins, as indicated in Boxes 10 – 12 (note the two steps in Box 11). An introduction of *exogenous money* has taken place.

BOX 10: KING / GOVERNMENT (GBP)			
Assets		Liabilities	
Gold coins (100 000 x 1 pound)	-100 000		
Goods	+100 000		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

BOX 11: PUBLIC (GBP)			
Assets		Liabilities	
Goods (1)	-100 000		
Gold coins (100 000 x 1 pound) (1)	+100 000		
Gold coins (100 000 x 1 pound) (2)	-100 000		
Deposits (2)	+100 000		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

<b>BOX 12: BANKS (GBP)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Gold coins (100 000 x 1 pound)	+100 000	Deposits by public	+100 000
<b>Total</b>	<b>+100 000</b>	<b>Total</b>	<b>+100 000</b>

If we also assume that the minimum RR (10% gold coins against deposits) had been reached, the banks, given the introduction of *exogenous* money (which rank as reserves), are now in a position to create new deposits (money) *endogenously* by making new loans. They obviously cannot do so without a demand for new bank loans. Assuming the demand for new bank loans is strong, the banks are able to make new loans, which create new deposits (money), up to the point where the new reserves [which are excess reserves (ER) to the self-imposed RR of 10% of deposits] become RR. This is reached when loans/deposits have expanded by 10 x the ER: GBP 100 000 x 10 = GBP 1 000 000.

This is the origin of the money multiplier ( $m$ ), which is the reciprocal of the RR ratio, the  $r$ :

$$\begin{aligned}
 m &= 1 / r \\
 &= 1 / 0.1 \\
 &= 10.
 \end{aligned}$$

<b>BOX 13: BANKS (GBP)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loans	+1 000 000	Deposits by public	+1 000 000
Reserves (total reserves: TR)	0		
(RR = +100 000) (ER = -100 000)			
<b>Total</b>	<b>+1 000 000</b>	<b>Total</b>	<b>+1 000 000</b>

As shown in Box 13, loans increased by GBP 1 000 000, which created GBP 1 000 000 of deposits, and there was a shift in reserves from ER to RR, with no change in total reserves. At this point the banking system cannot expand further. Endogenous money creation took place.

As is well known, the self-imposed *reserve requirement*, the “comfortable” reserve of gold determined by the bankers, was replaced in time by the statutory reserve requirement (RR): a proportion ( $r$ ) of bank deposits to be held on deposit with the central bank. Most countries have such a requirement, but some do not (England, Canada, Australia, etc). Instead the banks in these countries have a voluntary RR. This is a significant issue, and the *ultimate proof that it is incorrect to assume that modern money creation is tied to the RR* (discussed further below).

## **A BANK LIQUIDITY ANALYSIS**

Before concretising the endogenous money creation concept (the following section), we need to introduce a *bank liquidity analysis* (BLA), which is compiled by central banks<sup>20</sup>.

When one considers the concepts TR, ER, RR and borrowed reserves (BR), one is firmly in the domain of bank liquidity. Bank liquidity is at the very centre of monetary policy, and monetary policy is the domain of the central bank. We therefore consider the balance sheet of the central bank.

<b>BOX 14: CENTRAL BANK (LCC BILLIONS)</b>			
Assets		Liabilities	
D. Foreign assets (FA)	1 600	A. Notes & coins (N&C)	1 000
E. Loans to government (LG) <sup>21</sup>	1 000	B. Deposits:	
F. Loans to banks (BR)	200	1. Government sector	800
		2. Banks (TR)	600
		a. (ER = 0)	
		b. (RR = 600)	
		C. Loans: Foreign sector	400
<b>Total</b>	<b>2 800</b>	<b>Total</b>	<b>2 800</b>

As shown in Box 14, the assets of the central bank are: foreign assets, loans to government, and loans to banks (that is, borrowed reserves, BR); and its liabilities are: N&C (the total amount issued), government deposits (we assume government only banks with it), loans from the foreign sector and the banking sector's total reserves (TR, which is made up of ER + RR).

The most significant items in terms of bank liquidity are TR (components: ER and RR) and BR. From these items, central banks construct a bank liquidity identity which can be called *net excess reserves* (NER; aka net free reserves in the US):

$$\text{NER} = \text{ER} - \text{BR}.$$

It will be evident that this concept covers the case where banks have excess reserves [ER, such as in quantitative easing (QE) policy situations], as well as when banks are obliged to borrow (BR) from the central bank at the key (or policy) interest rate (KIR), as is the case in normal conditions in many countries such as the UK, the EU countries, Canada, South Africa, Australia, etc.

Because the balance sheet balances we can create another identity as follows:

$$\begin{aligned} \text{NER} &= \text{ER} - \text{BR} \\ &= \text{B2a} - \text{F} = \text{D} + \text{E} + \text{F} - (\text{A} + \text{B1} + \text{B2b} + \text{C}). \end{aligned}$$

If we, as in the case of the monetary analysis, pair the related items, we get:

<sup>20</sup> The author was responsible for this analysis at the South African Reserve Bank for a number of years. It is also known as a *money market analysis*. He wrote up the analysis in the Quarterly Bulletin of the bank: Faure, 1977.

<sup>21</sup> Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities), but usually marketable only, for purposes of implementing open market operations (OMO).

$$\begin{aligned}
\text{NER} &= \text{B2a} - \text{F} \\
&= (\text{D} - \text{C}) && \text{Net foreign assets (NFA)} \\
&+ (\text{E} - \text{B1}) && \text{Net loans to government (NLG)} \\
&- \text{A} && \text{N\&C} \\
&- \text{B2b} && \text{Required reserves (RR)}
\end{aligned}$$

Thus, the counterparts of NER are NFA + NLG – N&C – RR. Using the data in Box 14 we have the following identity (in LCC billion):

NER	= B2a – F	= (0 – 200)	= <u>– 200</u>
= NFA	= + D – C	= + (1 600 – 400)	= + 1 200
+ NLG	= + (E – B1)	= + (1 000 – 800)	= + 200
– N&C	= – A	= – 1 000	= – 1 000
– RR	= – B2b	= – 600	= <u>– 600</u>
TOTAL			= <u>– 200</u>

We also know that any change ( $\Delta$ ) in NER from one date to another will be “explained” as follows:

$$\Delta \text{NER} = \Delta \text{NFA} + \Delta \text{NLG} - \Delta \text{N\&C} - \Delta \text{RR}$$

These are the BSSoC in NER, that is, in bank liquidity. What is the significance of this analysis? The stock NER number tells us that (in this example) the NER of the banks is a negative LCC 200 billion. It is made up of ER (= 0), less the liquidity shortage (LSh) of LCC 200 billion. It can also be seen as LCC 200 billion of TR (LCC 600 billion, which = RR) are borrowed from the central bank (that is, are BR).

When working from one period to another we are able to calculate the changes ( $\Delta$ ) in NER and in the BSSoC. For example (using the numbers in Box 14 as the starting point), if the central bank does an OMO sale of LCC 100 billion bonds, and the banks buy them,  $\Delta \text{NER} = -\text{LCC 100 billion}$  to stock amount of  $-\text{LCC 300 billion}$  (because the LSh increased). The BSSoC =  $\Delta \text{NLG} = -\text{LCC 100 billion}$ . The ASoC is the OMO transaction carried out. A critical issue here is that the central bank has no option but to supply the BR at the KIR.

Another example: if the central bank does an OMO purchase of LCC 300 billion bonds (and the banks sell them), the NER will improve by this amount ( $\Delta \text{NER} = +\text{LCC 300 billion}$ ) to stock NER amount of LCC 100 billion (= a liquidity surplus, LSu) (ER = LCC 100 billion; BR = 0). The BSSoC =  $\Delta \text{NLG} = +\text{LCC 300 billion}$ , and the ASoC is the OMO transaction carried out.

A final example, but a significant one for this discussion: if the deposits of the banks increase by LCC 100 billion, being the outcome of new bank loans of this amount, the banks will be required to hold additional reserves of LCC 10 billion ( $r = 10\%$  of deposits). This amount can only be supplied by the central bank, because no bank other than the central bank can create CBM. Thus, NER will deteriorate by LCC 10 billion ( $\Delta \text{BR} = +\text{LCC 10 billion}$ ; the LSh increased), and the BSSoC is  $\Delta \text{B2b}$  (the RR

amount) by +LCC 10 billion. This is indicated in Box 15 and Box 16. The ASoC is the increase in the money stock by +LCC 100 billion.

<b>BOX 15: BANKS (LCC BILLIONS)</b>			
Assets		Liabilities	
Loans	+100	Deposits by public	+100
Reserves (total reserves: TR) (RR = +10) (ER = 0)	+10	Loans from central bank (BR)	+10
<b>Total</b>	<b>+110</b>	<b>Total</b>	<b>+110</b>

<b>BOX 16: CENTRAL BANK (LCC BILLIONS)</b>			
Assets		Liabilities	
Loans to banks (BR)	+10	Deposits: Banks (TR) (ER = 0) (RR = +10)	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

As said earlier, the BLA is done routinely by many central banks. It is a simple analysis of its own balance sheet.

## ACCOMMODATIONISM

Perhaps the most significant matter in the BLA is differentiation between the BSSoC of  $\Delta$ NER as follows:

Automatic accommodation BSSoC:  $\Delta$ NFA,  $\Delta$ NLG,  $\Delta$ N&C  
 Non-automatic accommodation BSSoC:  $\Delta$ RR.

When deposits shift from one bank to another (see next section for example), the interbank claims are sorted out in the interbank market, which occurs via the banks' accounts at the central bank, with no change in the central bank's balance sheet. However, when the central bank does a sale transaction with the banks [OMO, as (reflected in  $\Delta$ NFA- or  $\Delta$ NLG-), or the issue of new N&C ( $\Delta$ N&C+)], it results in an increase in BR. In these cases, the central bank has no option but to supply the reserves (it is the source of change after all!).

In the case of loan/deposit (money) expansion, and increase in RR occurs, which can be supplied ("accommodated") by the central bank supplying BR. Here we have a difference of opinion regarding the supply of BR:

- The Monetarist School (discussed in detail below) states that the supply of reserves (BR) is not automatic, and it is via this route that money stock growth is controlled.
- The Post-Keynesian School states that the increase in the RR is automatically accommodated by BR supplied by the central bank.

The latter school is divided on the topic into *Accommodationists* (led by Moore et. al: see Moore, 1988b,) and *Structuralists* (led by Palley et. al: see Palley, 1987/88; Palley, 1996). The former believe central bank accommodation is 100% automatic, while the latter believe there are circumstances in which targeting interest rates and the monetary base are appropriate, because "... the real world is complex, and where germane, these complexities need to be captured."

This important issue is taken up again later, after a discussion on endogenous money creation, the only kind that can exist in a non-specie monetary system.

## ENDOGENOUS MONEY CREATION

In order to concretise the earlier discussion on endogenous money creation, I offer an example, which is done within the framework of the MA and the BLA.

First example: Company B requires goods as inputs in its production process and wishes to purchase them from Company L. It does not have the funds and approaches Bank B for a loan. As Company B's balance sheet and the production project are sound Bank B grants an overdraft loan facility of LCC 100 million. Company B makes an electronic funds transfer (EFT, by internet banking) to Company L's current account at Bank L, and Company L delivers the goods to Company B. The balance sheet changes of the companies are shown in Boxes 17 – 18.

<b>BOX 17: COMPANY B (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Goods	+100	Loans from Bank B	+100
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

<b>BOX 18: COMPANY L (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Goods	-100		
Deposits at Bank L	+100		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

As two banks are involved, the settlement of interbank claims must take place. Worldwide this takes place over the accounts that banks are required to have with the central bank. As shown in Box 19, Bank B is short of reserves and Bank L has an excess (ER). Assuming the banks have no BR, Bank L will instruct the central bank to debit its account and credit Bank B's account.

<b>BOX 19: CENTRAL BANK (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
		Deposits: banks (TR) (Bank B = -100) (Bank L = +100)	0
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

After this transaction, the balance sheets of the private sector banks will be as shown in Boxes 20 – 21.

<b>BOX 20: BANK B (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loan (Company B)	+100	Interbank loan from Bank L	+100
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

<b>BOX 21: BANK L (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Interbank loan to Bank B	+100	Deposits (Company L)	+100
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

There is no RR against interbank loans, but there are against public deposits. Thus, Bank L is obliged to deposit an additional LCC 10 million with the central bank. This is to be done once the bank has certified its monthly return of deposits (etc) with the central bank, which usually takes place 3 weeks after the month-end. Thus, if the above transaction took place on 1 July, Bank L will only have to deposit the additional RR on 21 August<sup>22</sup>. This is mentioned as further proof of the divorce of money creation from the RR (elucidated further later).

How does Bank L get the LCC 10 million additional RR? It cannot create CBM, and has no option to take a loan from the central bank on 21 August, as indicated in Boxes 22 – 23.

<b>BOX 22: BANK L (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Reserves (TR) (RR =+10) (ER = 0)	+10	Loan from CB @ KIR	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+110</b>

<b>BOX 23: CENTRAL BANK (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loans to Bank L @ KIR	+10	Bank deposits (TR) (RR = +10) (ER = 0)	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

What has happened to the money stock and to bank liquidity? In the case of money we, as per the MA above, consolidate the balance sheets of the two banks and the central bank, the outcome of which is shown in Box 24 (note the netting out of interbank claims).

<sup>22</sup> This applies in all countries, but the number of days after the month-end differs. It is 21 days in South Africa.

<b>BOX 24: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
D. Foreign assets (FA)	0	A. Notes & coin	0
E. Loans to government (LG)	0	B. Deposits:	
F. Loans to private sector (LPS)	+100	1. Government	0
		2. Private sector	+100
		C. Loans: foreign sector	0
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

$\Delta M3 = +LCC 100$  million and the BSSoC is  $\Delta LPS = +LCC 100$  million. The ASoC is the demand for bank loans by Company B, which was satisfied by Bank B. The path of causation in the money creation process was:

Demand for bank loan  $\rightarrow$  Simultaneous bank loan ( $\Delta DLE$ ) & deposit ( $\Delta M3$ ) creation.

Company B required the loan for production investment purposes. Thus, there is a direct link between the monetary system and the real economy:

Bank loan ( $\Delta DLE$ ) & deposit ( $\Delta M3$ )  $\rightarrow \Delta(C + I) = \Delta GDE$ ;  $\Delta GDE + \Delta(X - M) = \Delta GDP^{23}$ .

New money ( $\Delta M3+$ ) was created endogenously (simultaneously with  $\Delta DLE+$ ). As already said, this is the only way (together with  $\Delta NFA$  and  $\Delta NLG$ ) in which new money can be created. Exogenous money creation does not exist in the modern monetary system. Rather, what is called *exogenous money creation* is a style of monetary policy (more later).

What about the change in bank liquidity? As shown earlier, the BLA involves only the balance sheet of the central bank. Box 25 (in changes) shows the outcome:  $\Delta NER = -LCC 10$  million, a result of  $\Delta BR +LCC 10$ . The BSSoC is  $\Delta RR = +LCC 10$  million, while the ASoC is the increase in bank loans/deposits, which is the outcome of a satisfied demand for a bank loan, which was utilised for economic activity.

<b>BOX 25: CENTRAL BANK (LCC MILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
D. Foreign assets (FA)	0	A. Notes & coins (N&C)	0
E. Loans to government (LG)	0	B. Deposits:	
F. Loans to banks (BR)	+10	1. Government sector	0
		2. Banks (TR)	+10
		a. (ER = 0)	
		b. (RR = +10)	
		C. Loans: Foreign sector	0
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

<sup>23</sup> Consumption (C) + investment (I) (of public and government) = expenditure on gross domestic product (GDE);  $GDE + \text{exports } (X) - \text{imports } M = \text{gross domestic product } (GDP)$ .



## INTERBANK MARKETS AND CENTRAL BANK ACCOMMODATION

The previous section touched upon one part of the interbank market (IBM). There are three parts to the IBM:

- The bank-to-bank IBM (b2b IBM), which is the market in which banks settle interbank claims on one another (as in the example above). In this market a market-determined interbank loan rate (IBMr) is determined – which takes its cue from the KIR.
- The bank-to-central bank interbank rate (b2cb IBM), which is largely<sup>24</sup> a one-way market: the holding of RR with the central bank. In most countries interest is not paid on RR. However, during QE conditions, some central banks do pay interest on RR and ER.
- The central bank-to-bank IBM (cb2b IBM), which is largely<sup>25</sup> a one-way market: the provision of loans to the banks at the KIR.

The latter IBM is of critical importance in those countries that follow an interest rate-focused monetary policy, such as the UK, Canada, Australia, South Africa, etc. This policy approach contrasts with the Monetarist School approach, which essentially is focused on a strict “money rule”, based on the RR and the money multiplier. [Post-Keynesian economists refer to the former as an endogenous money creation approach and to the latter as an exogenous money creation approach.] We return to the latter approach (which we call the money multiplier-focused approach) after the following section which discusses the former approach.

## INTEREST RATE-FOCUSED MONETARY POLICY

In normal (non-QE) conditions much of the developed world’s monetary policy is conducted through an operational variable: interest rates. It begins with the KIR paid on BR, which is a forced condition on the banking system. For example, in South Africa (even during slack economic conditions) the banks have for longer than four decades experienced a permanent BR liquidity condition.

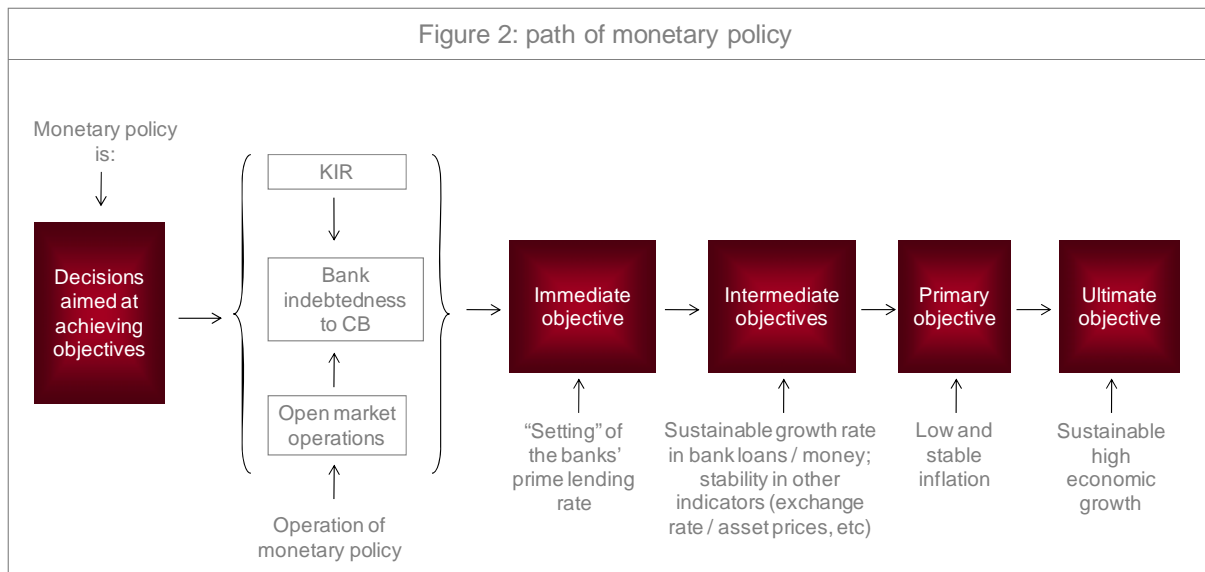
Thus, the banks borrow (BR) from the central bank on permanent basis, which the central bank is able to bring about because it has monopoly-management of its own balance sheet. The outstanding amount of BR presently (2012) is in the region of ZAR 16 billion (NER = -16 billion), which is less than 1% of liabilities. The banks pay the KIR on their BR.

The immediate objective of the central bank (see Figure 2) is to “set” the prime lending rate of the banks (PR, the benchmark rate for LPS – the main BSSoC of money), and so influence the demand for bank loans (an intermediate objective) to a sustainable level. The primary and ultimate objectives are obvious and are not pursued further in this paper.

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<sup>24</sup> At times banks are able to utilise their reserves, but under normal conditions (non-QE conditions) it is a one-way market for the banks collectively as their deposits usually increase and rarely decline.

<sup>25</sup> Banks compete with one another to avoid borrowing from the central bank and are able to reduce their BR.

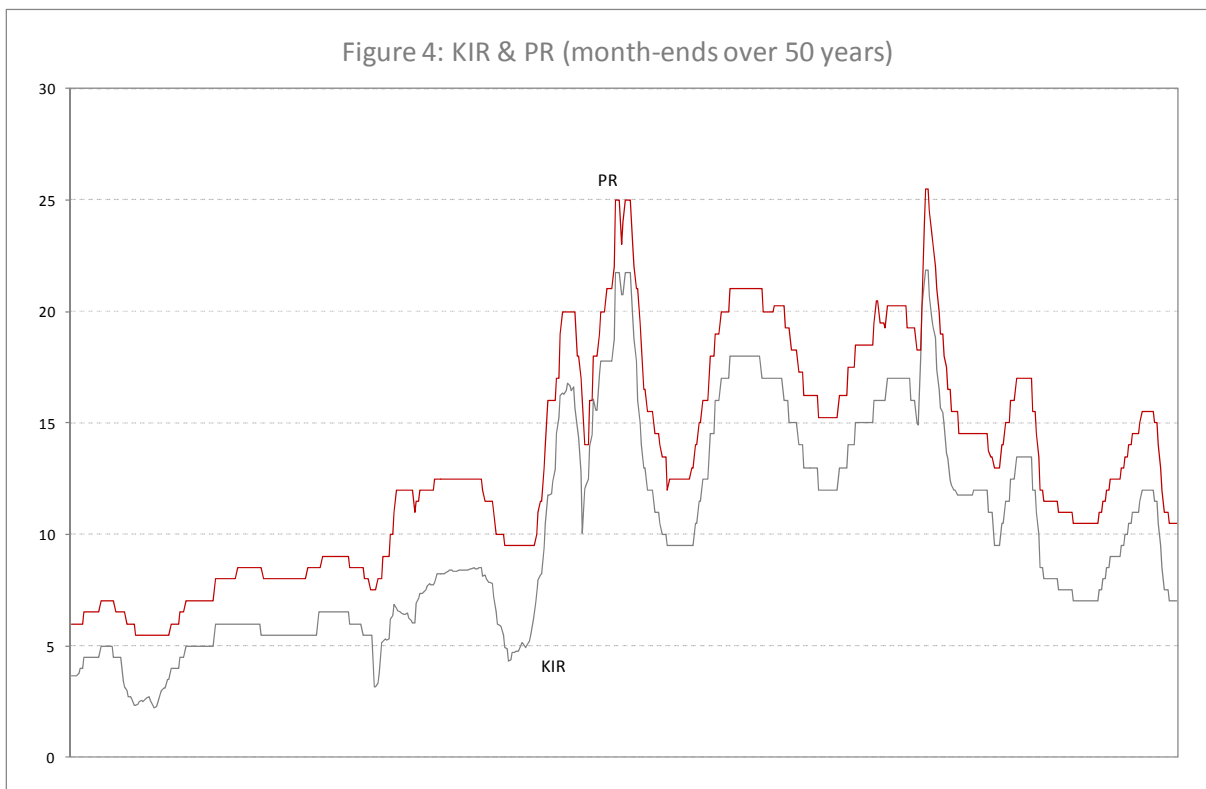
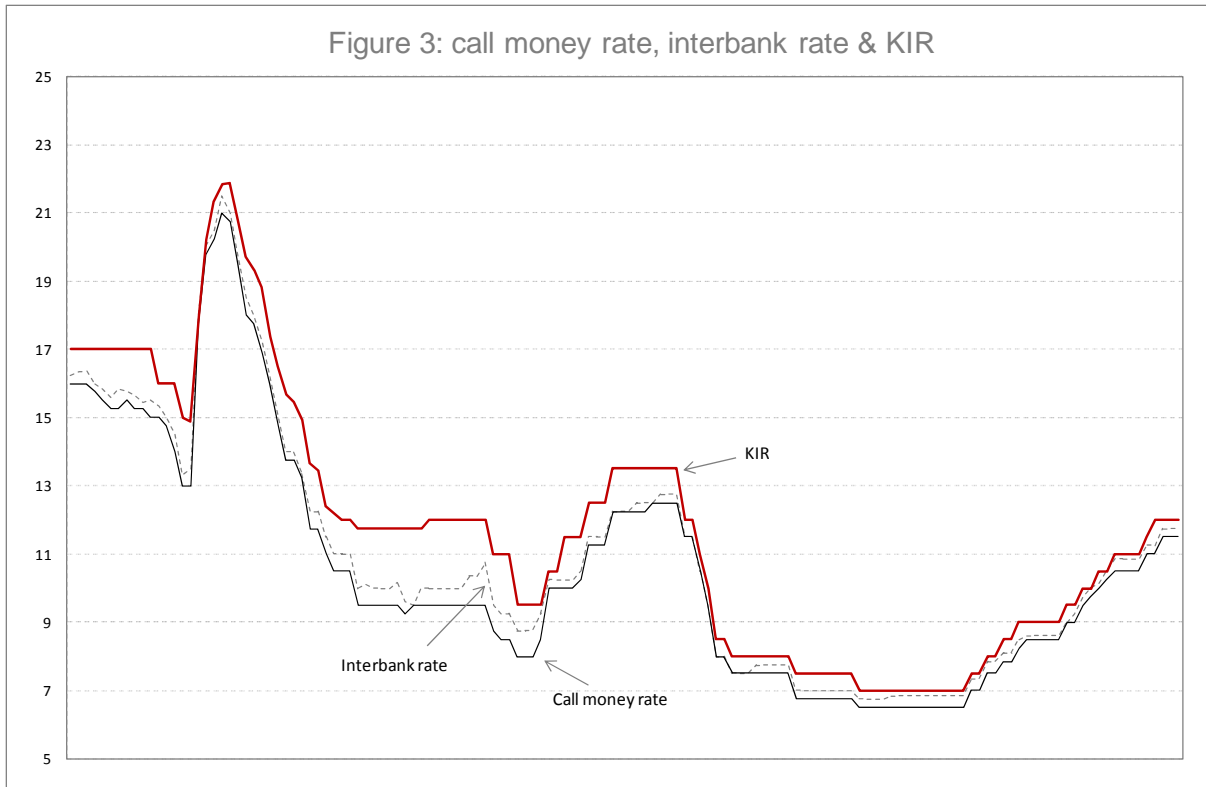


Following is a summary of the KIR's transmission path to the banks' PR, inflation and economic growth. It can be seen as part of the monetary policy transmission mechanism (MPTM).

- The central bank, through open market operations (OMO) creates a liquidity shortage (LSh) and, in most countries in normal circumstances, maintains it permanently. This means it “forces” the banks to borrow from it at all times. The borrowing term is short (usually 1 day to 7 days).
- It levies its KIR on these BR.
- The b2b IBM, the market in which banks settle interbank claims on one another, takes its cue from the KIR. See Figure 3<sup>26</sup>.
- The b2b IBM rate has a major impact on the banks' deposit rates (wholesale call money rates in the first instance and other short-term deposit rates in the second, and so on). See Figure 3.
- As the banks maintain a steady margin, deposit rates impact on bank lending rate (PR). See Figure 4<sup>27</sup>. It is significant that the correlation coefficient between the KIR and PR for the period 1960 to the present = 0.99.
- The level of PR (especially in real terms) influences the private sector's demand for bank loans (LPS in the MA). (Government borrowing tends to be interest rate insensitive.)
- Interest rate changes also have a major impact on asset prices which through the “wealth effect” influence consumption and investment ( $C + I = GDE$ ) behaviour.
- $\Delta DLE$  is the main counterpart of  $\Delta M3$ .
- The growth rate in demand ( $\Delta GDE$ ), financed to a large degree by  $\Delta DLE$  and reflected in  $\Delta M3$ , has a major impact on price developments (inflation).
- The inflation rate is a major input in business decisions.
- Business decisions impact on economic growth and employment.

<sup>26</sup> Monthly data for South Africa for 11 years.

<sup>27</sup> Monthly data for South Africa.



The above is by no means robust economics. It is designed to in a nutshell elucidate the essence of the interest rate-focused monetary policy style.

It is critical to point out that, as the banks' loans/deposits increase under this system, the central bank is at all times willing to accommodate the increased RR at the KIR (which it does in the form of BR). As we have seen, it is policy to ensure that a BR

exists on a permanent basis, and this is maintained at whatever level the central bank desires. Its objective is to make the KIR effective. Thus, in this system the RR *is a quantity that is a consequence of money creation and not a quantity that steers money creation*. It is just one of the many factors that affect bank liquidity (NER/LSH), an issue that central banks deal with every day.

As we saw earlier, the Post-Keynesian School call this *Accommodationist* policy. This is not some academic exercise; it exists in practice in many countries, including those mentioned earlier. Here we provide evidence from two countries: the UK and South Africa. With reference to the UK, Howells (2005:1) writes:

“... while post-Keynesians may have thought they were fighting in heroic isolation, most economists involved with the real world of monetary policy-making in practice took much the same view. The consequence is that we can find empirical investigations of issues relating to the endogeneity in a wide range of locations.”

In the South African case, money endogeneity has never been in question. In 1984, the Commission of Inquiry into the Monetary System and Monetary Policy in South Africa (1984:A15) wrote (*italics are in the original text*):

The ... purpose of these operations ... is not to have some direct and pre-determined effect on the amount of the banks' cash reserves. Instead, it is to compel banking institutions ... to make use of the central bank's accommodation facilities at the discount window *at the interest rates that are charged by the central bank for such accommodation* ... Once the banking system has to make use of discount window accommodation, a change in the central bank's accommodation rates (traditionally Bank rate) normally has a quick and roughly commensurate<sup>28</sup> effect on the market rates ... In other words, the high cost of cash reserves at the discount window – rather than the limited *amount* of cash reserves made available – acts as the prime deterrent to unduly rapid expansion of the banks' balance sheets and the money supply.”

While this clearly spells out the endogenous nature of money creation in South Africa (which is also the UK et.al model), the Commission (1984:A14-15) recognised that a Monetarist School model can exist and did exist in the US:

“Under the ‘American’ system, the central bank uses ... open market operations ... to destroy or create cash reserves ... for the express purpose of exerting some desired quantitative effect on the *amount* of ... reserves. In this approach, the central bank may set itself a *target* for what it believes the amount of the banks' total or non-borrowed cash reserves should be ... in order to bring about some target rate of growth of the money supply.”

We now turn to the Monetarist School model.

## **MONEY MULTIPLIER-FOCUSED MONETARY POLICY**

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<sup>28</sup> As shown in Figure 4, the relationship (correlation coefficient) has been 0.99.

In the money multiplier-focused style of monetary policy (known as Monetarism) the RR takes centre stage. We explained earlier that the money multiplier ( $m$ ) is the reciprocal of the reserve requirement (RR) ratio ( $r$ ), and  $r$  is the statutorily-set proportion of deposits banks are required to hold with the central bank as deposits (assuming  $r = 10\%$  of deposits):

$$m = 1 / r = 1 / 0.1 = 10.$$

Thus, if the banks have reserves (aka *high-powered money*, the *cash base* and the *monetary base* if we exclude N&C) of LCC 400 billion, then M3 can be a maximum of 10 times this quantity, that is, LCC 4 000 billion. This is indicated in Boxes 26 – 27. With M3 at this level the banks are “fully lent”, ie they are not able to make new loans, which create new deposits, unless the central bank steps in and creates ER.

<b>BOX 26: BANKS (LCC BILLIONS)</b>			
Assets		Liabilities	
Foreign assets (FA)	100		
Loans to government (LG)	900		
Loans to private sector (LPS)	2 000		
Central bank money (CBM):		Deposits: Private sector (M3)	4 000
Notes & coins (N&C)	600	Loans from central bank (BR)	0
Reserves (TR)	400		
(ER = 0)			
(RR = 400)			
<b>Total</b>	<b>4 000</b>	<b>Total</b>	<b>4 000</b>

<b>BOX 27: CENTRAL BANK (LCC BILLIONS)</b>			
Assets		Liabilities	
		Notes & coins (N&C)	1 000
Foreign assets (FA)	1 800	Deposits:	
Loans to government (LG)	1 000	Government sector	1 000
Loans to banks (BR)	0	Banks (TR)	400
		(ER = 0)	
		(RR = 400)	
		Loans: Foreign sector	400

Let us now assume that the central bank decides to increase the money “supply” by LCC 100 billion. It knows that  $m = 10$ , and will thus undertake OMO purchases of government bonds (LG in marketable form) to the extent of LCC 10 billion. We assume the banks sell the bonds to the central bank. The balance sheet *changes* are shown in Boxes 28 – 29.

The central bank has created ER of LCC 10 billion. It should be clear that, because  $m = 10$ , the banks are now able to make new loans, which creates new deposits, up to the point where the ER are transmuted into RR. It should also be evident that the banks are not able to lend out the ER created by the central bank, that is, they cannot intervene in the balance sheet of the central bank (what would the other accounting entry be?).

<b>BOX 28: BANKS (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loans to government (LG)	-10		
Reserves (TR) (ER = +10) (RR = 0)	+10		
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

<b>BOX 29: CENTRAL BANK (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loans to government (LG)	+10	Deposits: Banks (TR) (ER = +10) (RR = 0)	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

Neither the central bank nor the banks themselves are able to ensure new lending will take place. The new monetary policy of creating ER translates into the banks, now having a non-earning asset, ER, being encouraged to drop their lending rates to encourage further borrowing. On the assumption that a demand for bank loans exists at the lower level of bank lending rates, the balance sheet changes will be as indicated in Boxes 30 – 31. It will be seen that there is a change in the dividing line between RR and ER, leaving TR unchanged.

<b>BOX 30: BANKS (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
Loans to private sector (assumed)	+100		
Reserves (TR) (ER = -10) (RR = +10)	0	Private sector deposits (M3)	+100
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

<b>BOX 31: CENTRAL BANK (LCC BILLIONS)</b>			
<b>Assets</b>		<b>Liabilities</b>	
		Deposits: Banks (TR) (ER = -10) (RR = +10)	0
<b>Total</b>	<b>0</b>	<b>Total</b>	<b>0</b>

The net changes in the balance sheets are indicated in Boxes 32 – 33. The banking system is now “fully lent”. Any further demand for bank loans will cause an increase in interest rates, encouraging the repayment of previous loans to enable others to borrow. New net lending is not possible in this model. Higher interest rates of course change the internal rate of return (IRR) of new projects, choking off some.

<b>BOX 32: BANKS (LCC BILLIONS)</b>			
Assets		Liabilities	
Loans to government (LG) (bonds)	-10	Deposits: Private sector (M3)	+100
Loans to private sector (assumed)	+100		
Reserves (TR) (ER = 0) (RR = +10)	+10		
<b>Total</b>	<b>+100</b>	<b>Total</b>	<b>+100</b>

<b>BOX 33: CENTRAL BANK (LCC BILLIONS)</b>			
Assets		Liabilities	
Loans to government (LG) (bonds)	+10	Deposits: Banks (TR) (ER = 0) (RR = +10)	+10
<b>Total</b>	<b>+10</b>	<b>Total</b>	<b>+10</b>

It should be evident that in such a system a *strict money creation rule* is in place. The CB is able to “control” the rate of money creation to exactly 10 times the ER created. In practice (in normal times) it would not create ER to a vast extent, but in small increments, more or less consistent with the demand for bank loans.

### **INTEREST RATE CONSEQUENCES OF A MONEY MULTIPLIER-FOCUSED MONETARY POLICY**

A significant economic principle enters the picture here, and it is an obvious one: a central bank cannot control a quantity (reserves and therefore bank loan / money growth) and the pricing of bank loans (the PR) simultaneously. In the above example it is hoping for a quantity-effect, but interest rates are unfettered.

In this regard, the Commission (1984:A15), with reference to the “American” system wrote”

“The determination of the level and structure of interest rates in this system may then be left ... to the free operation of market forces, as was in essence done in the United States for some time before October 1979.”

It is clear from this extract that such a monetary system (money multiplier-focused monetary policy) did exist (or was flirted with) in the US at one stage. In this regard Palley (1998) says:

In practice, we seldom see the monetary authority targeting the base, though there was a period in the late 1970s and early 1980s when the Fed appeared to be verging on this practice. Given initial expectations of economic activity derived from its econometric models and other sources, the Fed targeted the money supply. As price and financial market data emerged, the Fed sought to extract signals from this data about the real economy, and responded by adjusting the quantity of base<sup>29</sup> in a fashion that it thought would get it back to

<sup>29</sup> The monetary base, base money or high powered money.

its money supply target. These adjustments then caused a rise in interest rates. Ultimately, the policy was abandoned because the effect on interest rates was disastrous, and the Fed's belief in the usefulness of targeting monetary aggregates waned.”

Thus, such a system can, and did exist in a fashion, but it is a *style or model of monetary policy*. In theory it can be implemented as follows: in order to not lose control over interest rates (implemented through the KIR as in the interest-rate focused model elucidated above), the central bank would need to ensure that ER is created through OMO purchases in small increments consistent with the demand for bank loans. Thus, in this system, the banks would hover between having almost no ER and being close to a BR condition. This makes the KIR effective. This is a model followed in some countries, notably the US, and in some African countries.<sup>30</sup>

## **QUANTITATIVE EASING**

Quantitative easing (QE) is a policy relevant to the money multiplier model, but it also has an interest rate dimension, which is perhaps another sign of the shift in the US from a money multiplier-focused monetary policy to an interest rate-focused monetary policy.

What is QE? It is bank reserves policy aimed at reducing bank lending rates to the lowest level possible in order to stimulate the demand for bank loans. As noted, there is a direct link between the private sector's demand for bank loans/deposit (money) creation and the real economy. Thus, stimulation of the economy through bank lending/deposit creation is the ultimate objective.

It is executed by the vast purchase (OMO) of securities by the central bank from the public and banking sector (the rates on the deals are attractive in order to ensure the purchases take place) and therefore the creation of vast amounts of ER. The principle rests on the profit-maximisation behaviour of the banks: under QE conditions [that is, having vast amounts of non-interest- or low-interest-bearing assets (ER)], the banks are coerced to pay zero or very low interest rates on deposits and thereby, via the bank margin, ensure that bank lending rates are at the lowest level possible, encouraging an increase in the private sector's demand for bank loans. This is somewhat like “pushing on a string”, but it is perhaps a sound policy in certain conditions.

## **ACCOMMODATIONISM AND STRUCTURALISM REVISITED**

Thusfar this paper has argued that money creation can only come about by bank loans/bank deposit (money) creation and that the monetarist model is a style of monetary policy, the extremes of which are:

- Interest rate-focused monetary policy, and
- Money multiplier-focused monetary policy.

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<sup>30</sup> The author has had some exposure to the advice offered by IMF officials to African countries (for example, Uganda and Malawi), based on the money multiplier model. These officials were US citizens, obviously schooled in the US where this model was prevalent.



The former model is practiced in many parts of the world, and, as we have shown, the latter was flirted with in the past, but is no longer. Palley (1996), in this regard, correctly says (*italics added*):

“... there are two principal differences between accommodationists and structuralists. The first concerns differences in the treatment of the interaction between the policy authority's policy reaction functions and the asset and liability management activities of banks. In particular, the standard accommodationist model is based on the special case of complete accommodation by the monetary authority. The second concerns the feasibility of conducting policy through adjustments of the monetary aggregates. Accommodationists assert that the central bank can only conduct policy by adjusting interest rates, while structuralists maintain that quantity-based procedures are also theoretically possible. From a structuralist standpoint, the frequency with which these alternative reaction functions have been adopted is a matter for the historical record on monetary policy. *It may well be the case that the policy of ‘interest rate’ management is more common, which would make it empirically more relevant, but not theoretically exclusive.*”

This reference is significant: recognition that the money multiplier-focused monetary policy model has to all intents and purposes been relegated to a theoretical model.

## THE “EXOGENOUS MONEY” PUZZLE

In referring to *Monetary trends in the United States and the United Kingdom: their relation to income, prices and interest rates, 1867-1975* (Friedman and Schwartz, 1982) Moore (1983a) states that Friedman and Schwartz:

“... simply claim that monetary change is always and everywhere exogenous. They never address the forces behind the supply function of nominal money. In so doing they ignore the entire literature on monetary policy in the United Kingdom, which is unanimous in the fact that it has always been pursued through Bank Rate policy, and never through cash base control.”

Monetarism is portrayed by Moore (1983b) as the antithesis Post-Keynesian monetary economics (vice versa also applies).

“Most people have a basic misunderstanding of the manner in which the Federal Reserve implements monetary policy. Students of economics across the country are still taught how the Fed increases or decreases bank reserves to regulate the quantity of bank deposits. The money stock (M) is a favorite exogenous variable in countless models. Movements of the chosen monetary aggregate are attributed to a specific policy or action by the Federal Reserve.

“This traditional view of the bank money creation process relies on the bank reserves-multiplier relation ( $M = Bm$ ). The Fed is posited to be able to affect the quantity of bank deposits, and thereby the money stock, by determining

the nominal amount of the reserve base (B) or by changing the reserve multiplier (m).

Moore (1983b) goes on to state that the following statement (Meltzer, 1969) is an example of evidence of empirical application the reserves-multiplier relationship, and therefore of the Monetarist School standpoint: (“On such evidence Monetarists hold that the money stock is properly considered an exogenous variable.”):

“85 percent of the variance of the monthly change in money ... resulted from changes in the monetary base and changes in Treasury deposits at commercial banks in the current and previous month.”

Moore (1983b) furthermore states that:

“... the direction of causality is precisely the reverse of that held by the conventional view. There is now mounting evidence that the traditional characterization of the money supply process, which views changes in an exogenously controlled reserve aggregate as ‘causing’ changes in some money stock aggregate, is fundamentally mistaken. Although there is a reasonably stable relationship between the high-powered base and the money stock, and between the money stock and aggregate money income, the causal relationship implied is exactly the reverse of the traditional view. Both the base and the money stock are in fact endogenous. The evidence suggests that the quantity of bank intermediation is determined primarily by the demand for bank credit.”

Moore (1983b) presents the following statement by Holmes (1969) as proof:

“In the real world banks extend credit, creating deposits in the process, and look for the reserves later.”

As an ex-central banker in a country whose monetary model is based on the UK system, this is conventional wisdom.

An important question now arises: is there such a major difference between the Post-Keynesian School standpoint and the Monetarist School one, as far as the *actual process of money creation* is concerned? We know that the Monetarist model is one in which the fixed relationship between the RR and bank deposits brings about a situation where the growth in bank deposits (money creation) can be controlled by management of the quantity of reserves which is under the control of the central bank. But this says (and the Post-Keynesians say) *nothing about actual money creation*. For example, Moore (1983b) correctly says that:

“... the traditional characterization of the money supply process, which views changes in an exogenously controlled reserve aggregate as ‘causing’ changes in some money stock aggregate, is fundamentally mistaken.”

This explains the Monetarist School model but does not elucidate the *process of money creation* under it, as outlined in the above section *Money multiplier-focused monetary policy*. A reminder: the central bank creates ER by buying financial assets,

and then the banking system (assuming a demand for bank loans exists) creates deposits (money) by extending loans (as per the Post-Keynesian model).

This is the puzzling aspect: while the supply of bank reserves is controlled (exogenously) under the Monetarist model, the actual money creation process is endogenous: bank loans and bank deposits are created simultaneously (if a demand for bank loans exists). The money creation process cannot occur any other way.

The answer lies in how the Monetarist School viewed the process of money creation. Are Friedman and Schwartz not aware of the endogenous process of money creation when they state (Friedman and Schwartz, 1963:58) (italics added):

“The sharp rise in the stock of money from 1868 to 1872 was primarily a consequence of the spread of deposit banking. This both induced the public to hold a larger ratio of deposits to currency and *enabled the banking system to create more dollars of deposits per dollar of vault cash.*”<sup>31</sup>

Similarly, Friedman and Schwartz (1963:221) stated:

“... which meant that the banking system was able to create \$3 of money [deposits] per \$1 created by the monetary authorities.”

Friedman and Schwartz (1963:56) also make reference to 1879 when only six states had reserve requirements against deposits. Surely (it cannot be claimed that) they did not believe that money creation ceases if there is no reserve requirement?

Is the conclusion not that the Post-Keynesian School in its reaction to the Monetarist School is referring to a *monetary policy model* rather than the *process of money creation* under the Monetarist School model? The Monetarist School model can exist, and was flirted with in the past, but no longer does as a result of the serious interest rate consequences of the model. The model thus reverts to a theoretical model, and belongs in this esoteric space in an age when the generally accepted medium of exchange is bank deposits. Is monetary policy empirically not simply as described earlier in the section *Interest rate-focused monetary policy*?

## **RECENT RESEARCH FROM THE HOME OF THE MONETARIST SCHOOL**

As we have shown, the UK and many other countries (including South Africa) have always followed the endogenous money creation model: create and maintain a liquidity shortage to make the KIR effective; it has a direct influence on the b2b IBM rate and therefore deposit rates and, via the bank margin, strongly influences bank lending rates; these rates have a major impact on the demand for new bank loans which, when satisfied by the banks, simultaneously creates new deposits (money); the influence of new deposits on RR is an outcome, not the driver of new deposit creation.

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<sup>31</sup> Note: prior to 1874 banks were required to hold reserves (under the National Banking Act) against their deposits and note issue.

It is heartening that the “home” of the Monetarist School model of money creation, the US, is showing distinct signs of acceptance / recognition of this model. For example, Carpenter and Demiralp (2010) of the Federal Reserve and Koc University, Turkey, respectively, argue:

“... that the institutional structure in the United States and empirical evidence based on data since 1990 both strongly suggest that the transmission mechanism does not work through the standard money multiplier model from reserves to money and bank loans. In the absence of a multiplier, open market operations, which simply change reserve balances, do not directly affect lending behavior at the aggregate level. Put differently, if the quantity of reserves is relevant for the transmission of monetary policy, a different mechanism must be found ... This paper provides institutional and empirical evidence that the money multiplier and the associated narrow bank lending channel are not relevant for analyzing the United States.

In their conclusion, Carpenter and Demiralp (2010) state (it links with the section on QE above):

“Since 2008, the Federal Reserve has supplied an enormous quantity of reserve balances relative to historical levels as a result of a set of nontraditional policy actions. These actions were taken to stabilize short-term funding markets and to provide additional monetary policy stimulus at a time when the federal funds rate was at its effective lower bound. The question arises whether or not this unprecedented rise in reserve balances ought to lead to a sharp rise in money and lending. The results in this paper suggest that the quantity of reserve balances itself is not likely to trigger a rapid increase in lending. To be sure, the low level of interest rates could stimulate demand for loans and lead to increased lending, but the narrow, textbook money multiplier does not appear to be a useful means of assessing the implications of monetary policy for future money growth or bank lending.”

## **FURTHER QUESTIONS**

As this article is a long one, it is time to conclude it. We do so with a number of questions, which require rumination:

### **What happens after loan/deposit creation?**

When a new bank loan is made, the new deposit created is will be a current account balance. Thereafter changes take place, such as a shift of part of the new balance to a 90-day fixed deposit. This of course means that the broad money stock measure, M3, does not change.

However, if an analyst is focused on a narrow measure, say M1, a decline will be recorded after the shift. Similarly, in the case of no new money creation, the maturity of a 360-day deposit, which will be reflected in a call money account, will be recorded as an increase in M1.

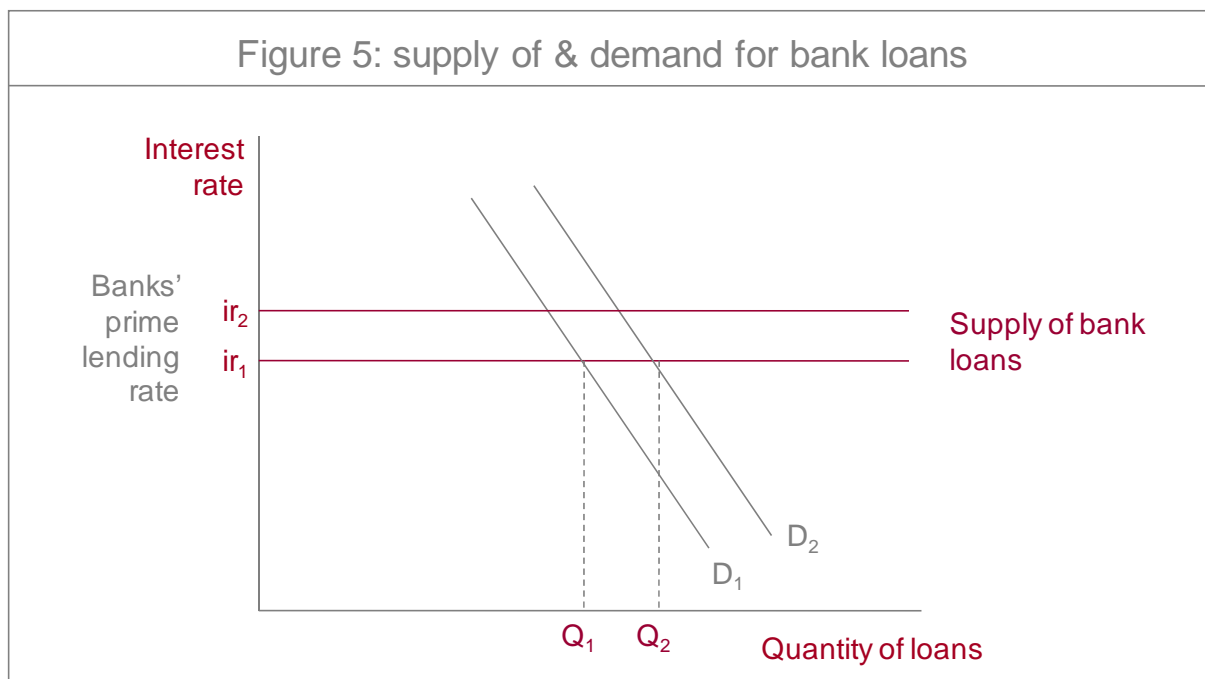
What is the significance of this? It is that the various measures of money can often be misleading. Should the focus of analysis perhaps be on the BSCoC in M3, NFA and DLE, rather than the measures of money? Because loan/deposit creation is simultaneous, new money creation is reflected in the BSCoC, and remains so. AS we pointed out, there is a direct linkage between the demand for new bank loans and *additional* aggregate demand.

However, there is no perfect analysis. There are conditions under which analysis of bank loan/deposit creation falls short: bank dis-intermediation and re-intermediation. Is this not a minor problem compared with bank deposit maturity shifts, as banks are in the intermediation business and wish to remain intermediated? This argument also falls short when one considers the creation by banks of special purpose vehicles (SPVs), for the purpose of shifting of, for example, mortgage advances off-balance sheet. But perhaps the remedy in this case is easy: capture the balance sheets of the SPVs as part of the MA (the banks have the data).

### Is there a demand for money?

Is the stock of money, and maturity shifts hereafter, not the outcome of portfolio decisions, rather than the *demand* (for transactions, speculative ... reasons) for money? Is it also not true to say that if some people want to hold more bonds instead of money when rates are high, that the money stock will not change – because the bond sellers will get bank deposits and the buyers of bonds will lose deposits?

### Is money “supply” a misnomer?



We know that money is BD (plus N&C) held by the non-bank private sector, and we know that new money is created by new bank loans ( $\Delta DLE + \Delta NFA$ ). When money is measured by central banks they consolidate the balance sheets of the MBIs and derive M3 from this (and the BSSoC). Most economists call this magnitude the money *supply*.

Is this a useful term when  $\Delta M3$  is the outcome of new bank loans? Does “supply” not fit better with the supply of loans, which is theoretically unlimited (subject to the demand for loans, which is a function of the level of interest rates as determined by the central bank – specifically bank lending rates), as indicated in Figure 5.

Once new money is created, has the *stock* of money, ie the amount of money in circulation, not increased, rather than the *supply*?

### **Is it time to say goodbye to the money multiplier?**

The Monetarist model is a pleasing theoretical model. In a monetary system where bank liabilities are the principal means of payments, and banks are able to create them by making loans (depending on demand), there can be no market-determined price / rate. If interest rates were unfettered in the interest rate-focused model many banks, being keen competitors, will get into trouble, as happened often in the age of the goldsmith bankers, and as we have seen after the sub-prime banking debacle. The consequences for depositors will be profound. Banks are inherently unstable in such an environment.

In such a system an arbiter is required, and the central bank performs this function. Its primary function is to set the rate of interest on bank loans, because new bank loans are the principal source of new bank deposits (money creation). This is done via its KIR, which is made effective by the creation of a permanent liquidity shortage (that is, the existence of a permanent BR condition).

There is no other way for the system to be managed. The monetary base is the outcome of bank lending / deposit creation, not the driver. Is it not time to say goodbye to the money multiplier?

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