MONEY CREATION: THE SOURCES

AP Faure[1]

ABSTRACT

The endogenous-exogenous money debate is a futile one. Exogenous money creation, based on the money multiplier, is not a money creation process. Rather, it is a monetary policy model, but in it money is still created endogenously: bank loans (and foreign asset accumulation by banks) concurrently create new bank deposits (money). This simple fact is obscured by the powerful thesis of Friedmanian Monetarism, and the sharp antithesis of the Post-Keynesian School, as, therefore, is the simple balance sheet analysis of money creation (which disappeared from the literature). This article argues the above, and resurrects the straightforward balance sheet monetary analysis, as the only way to present the sources of money creation. It elucidates the balance sheet sources, as well as the underlying actual sources: the demand for loans (and their satisfaction), and bank decisions regarding foreign asset accumulation. It also covers money destruction.

JEL classification: A22, E42, E51, E52, G21

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

INTRODUCTION

Why is this issue worth addressing? It is because there has been much debate on it over many decades and, critically, much of the debate has sharply diverted attention from the obvious to seemingly robust academic research. The seemingly robust academic research, largely confined to the US, has led to misleading economic thought and education on monetary matters for many decades.

The statement that the debate has been largely confined to the US is founded on the advent of Friedmanian Monetarism, which emphasises money creation based on the money multiplier. This so-called *exogenous money creation model* contrasts with reality, as we will show, and led to counter-attacks by Post-Keynesians (also largely US-based) who valiantly attempted to “set the record straight” by offering the obvious *endogenous money creation model*. Part of the non-US world looked on in wonder at the futile fuss, and the new terminology.[2]

Unfortunately, the exogenous money model pervaded the learning material used by the world, and still does, despite rumblings (finally!) of rejection, resulting in perverse

[1] Foord Chair in Investments: Rhodes University, South Africa.

[2] The author has knowledge of the situation in this regard in the UK, South Africa and elsewhere, as expounded in Faure, 2012b.

knowledge on matters monetary. Evidence of this emanates from personal experience, amongst which are:

1. Conducting an online course on money creation (the obvious endogenous money model) on behalf of the United Nations Institute for Training and Research (UNITAR) (Faure, 2012a). The attending students are from diverse countries, and from discussions on the discussion forum page it is clear that the exogenous model, without exception, pervades knowledge. By the end of the 5-week course, the students, without exception, are convinced of the reality of the endogenous model, and the fact that the exogenous model is a neat theoretical one.
2. Teaching at masters degree level for eleven years (prior to this the author was involved in central banking, private sector banking and stockbroking). When the students arrive in my class with an Honours degree, it is a challenge to change their thinking. The last sentence in 1 above also applies here.
3. The author was involved in banking / financial market consulting activities in Africa, and time and again came across multinational agencies' implementation of monetary programmes in various African countries based on the money multiplier. The consultants were US-based.

While the (reality-based) endogenous money model is gaining ground, the detail of the process of money creation is largely absent. This article sets out to rectify this. It also registers opposition to research based on the various measures of the money *stock* (there is no such thing as a money *supply*), and tentatively offers an alternative approach: the other side of the balance sheet.

At the risk of frustrating some academics, but with the interests of students in mind (this is why we are in academia), the reflections are presented here in pedagogic form. The following are the sections:

- The literature.
- Only two models of monetary policy.
- A monetary analysis.
- Private sector demand for bank loans.
- Export receipts purchased by local bank.
- Government issues bonds.
- Increased demand for bank notes.
- Money destruction.
- Bank deposits and the reserve requirement.
- Monetary analysis, given various measures of the money stock.
- A parting thought.
- References.

THE LITERATURE

Before Friedmanian Monetarism (Friedman and Schwartz, 1963, 1982) confused the issue, money creation was straightforward: using the now-outmoded terminology, it

was, and always has been, endogenous (that is, "forming within"[3]) money creation, as opposed to Friedmanian exogenous (that is, "outside produced"[3]) money.

The literature on the topic is vast, and space constraints prevent us from presenting a detailed literature review. It also seems unnecessary to hark back to the genesis of money creation; however, as Friedmanian Monetarism went off the track of a straightforward line, perhaps a brief reminder will be useful (Faure, 2011). Money creation began when the goldsmith-bankers of the 17th century discovered that they could make loans by issuing new deposit receipts (later called bank notes) backed by gold previously deposited. As bank notes are nothing but bank deposits, money creation today is the same: when a bank makes a new loan (marketable or non-marketable), it creates a new deposit in the system[4] (except that it is backed by nothing); this is new money [as we know broad money = bank notes and coins (N&C) + bank deposits (BD) held by the non-bank private sector (PS[5])].

As one example of deposit-money creation by extending new bank loans in the literature, we present the view of Prof Ludwig von Mises (von Mises, 1946):

> "Every serious discussion of the problem of credit expansion must start from the distinction between two classes of credit: commodity credit and circulation credit ... Circulation credit is credit granted out of funds especially created for this purpose by the banks. In order to grant a loan, the bank prints banknotes or credits the debtor on a deposit account. It is creation of credit out of nothing."

Prof Von Mises regarded commodity credit as existing lending / borrowing, whereas circulation credit is the concurrent creation of new bank loans and new deposits (or new bank notes, which are also new deposits[6]). When a bank makes a new loan to a company or individual (PS) it simply credits the borrower's deposit account: the money stock (M) (= bank deposits, BD) changes (Δ) and the bank balance sheet source of the change (BSSoC) is the new bank loan to the PS:

$$\Delta M = \Delta BD = \Delta BL.$$

The actual source is of course the demand for the loan by an economic unit for an economic purpose. The causation path is clear:

$$\text{Demand for bank loans from PS} \rightarrow \text{concurrent } \Delta BL / \Delta M.$$

Note that the deposit created is a current account deposit initially, that is M1. Thereafter the portfolio decisions of the new holders of the deposit/s may alter its term to maturity, and thereby its slot in the money aggregates. We will say more on this matter later.

[3] Chambers Twentieth Century Dictionary.
[4] If the new deposits lands up with another bank, it (assuming no other transactions) flows back to the originating banks in the form of an interbank loan.
[5] Also excluding the foreign sector.
[6] A bank note represents a deposit with the issuer, usually the central bank.

In Monetarist School lore, the reserve requirement (RR; also denotes required reserves) takes centre stage. The RR ratio (*r*) is the statutorily-set proportion of bank deposits that banks are required to hold with the central bank as deposits. Thus, given this fixed ratio, a money multiplier (*m*) can be determined: the reciprocal of *r*. Assuming that *r* = 10% of deposits, *m* = 10:

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

Thus, if the banks have reserves (aka *high-powered money*, the *cash base* and the *monetary base* if we exclude N&C[7]) of LCC[8] 400 billion, then M3[9] can be a maximum of 10 times this quantity, that is, LCC 4 000 billion. This is indicated in Boxes 1 - 2. 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 excess reserves (ER).

BOX 1: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
Foreign assets (FA)	100		
Loans to government (LG)	900		
Loans to private sector (LPS)	2 000	Deposits: Private sector (M3)	4 000
Central bank money (CBM):		Loans from central bank	
Notes & coins (N&C)	600	(borrowed reserves: BR)	0
Reserves (total reserves: TR)	400		
(ER = 0)			
(RR = 400)			
Total	**4 000**	**Total**	**4 000**

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

With the creation of ER, which is brought about open market operations (OMO purchases of, say, LCC 10 million bonds) the banking system can make loans and create new deposits up to 10 x ER = LCC 100 million, because at this level ER has shifted to RR, as indicated in Boxes 3 – 4 (bond purchase, assumed from the banks) and Boxes 5 – 6 (bank loan and deposit creation).

[7] Which we do for the sake of elucidation; N&C are a small proportion of the M3 money stock.
[8] The currency ("corona") code of a fictitious country: Local Country.
[9] This is the widest definition of money used here. The definition of money is discussed again later.

BOX 3: BANKS (LCC MILLIONS)			
Assets		**Liabilities**	
Bonds Reserves (TR) (RR = 0) (ER = +10)	-10 +10		
Total	**0**	**Total**	**0**

BOX 4: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
Bonds	+10	Bank deposits (TR) (RR = 0) (ER = +10)	+10
Total	**+10**	**Total**	**+10**

BOX 5: BANKS (LCC MILLIONS)			
Assets		**Liabilities**	
LPS Reserves (TR) (RR =+10) (ER = -10)	+100 0	Deposits of PS	+100
Total	**+100**	**Total**	**+100**

BOX 6: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
		Bank deposits (TR) (RR = +10) (ER = -10)	0
Total	**0**	**Total**	**+10**

The banking system can expand no further. This is what is known as the "fixed money rule", that is, the central bank has total control over money creation. It was given the label *exogenous money creation*.

Because further explanation requires much space (and because it is covered in some detail in Faure, 2012b) we will end by stating our belief that the above exposition on the essence of Friedmanian Monetarism has *nothing to do with money creation*. Instead, it is a *style / model of monetary policy*, one in which money creation can be controlled exactly. In this model of monetary policy, money is still created endogenously, that is, by the banking system, and it is dependent of the existence of a demand for bank loans.

This indicates that the Post-Keynesian School (PKS) has erred in its harsh criticism of the Friedmanian Monetarist School (FMS). The FMS proposed a strict monetary rule, and influenced policymakers in many countries, but its influence was short-lived - because of its harsh interest rate consequences (see Faure, 2012b). Instead, the PKS should have criticised the *model*, and its endurance in learning material, and

not the process of money creation in it. Money can only be created in one fashion: by new bank loans (marketable and non-marketable) [and bank foreign asset (FA) accumulation, although this is usually small], as we will detail a little later.

In conclusion, and in the tradition of a complete literature review, we refer the reader to the literature pertaining to the PKS, and its subcategories: accommodationism, structuralism, and liquidity preference, especially those by Moore (1983a, 1983b, 1988a, 1988b), Palley (1987/88, 1996, 1998). The detail is covered in Faure (2012b), and a good summary is presented by Haghighat (2011).

ONLY TWO MODELS OF MONETARY POLICY

To make it clear: there are two models of monetary policy:

- *Money multiplier-focused monetary policy*. This can also be described as the FMS model and as a "firm required reserves model".
- *Interest rate-focused monetary policy*. It can also be described as a "firm borrowed reserves model".

There is a third model, the *interbank rate model*, but it is a variation of the *interest rate-focused monetary policy model*. As this article is about the sources of money creation, we will not discuss the detail of monetary policy here. The gist of the FMS model has been covered, and we have stated our view that it is a pleasing theoretical model, no longer in vogue in the US (where it was flirted with in the past) as indicated by Carpenter and Demiralp (2010) of the US Federal Reserve Bank and Koc University, Turkey, respectively. They argue:

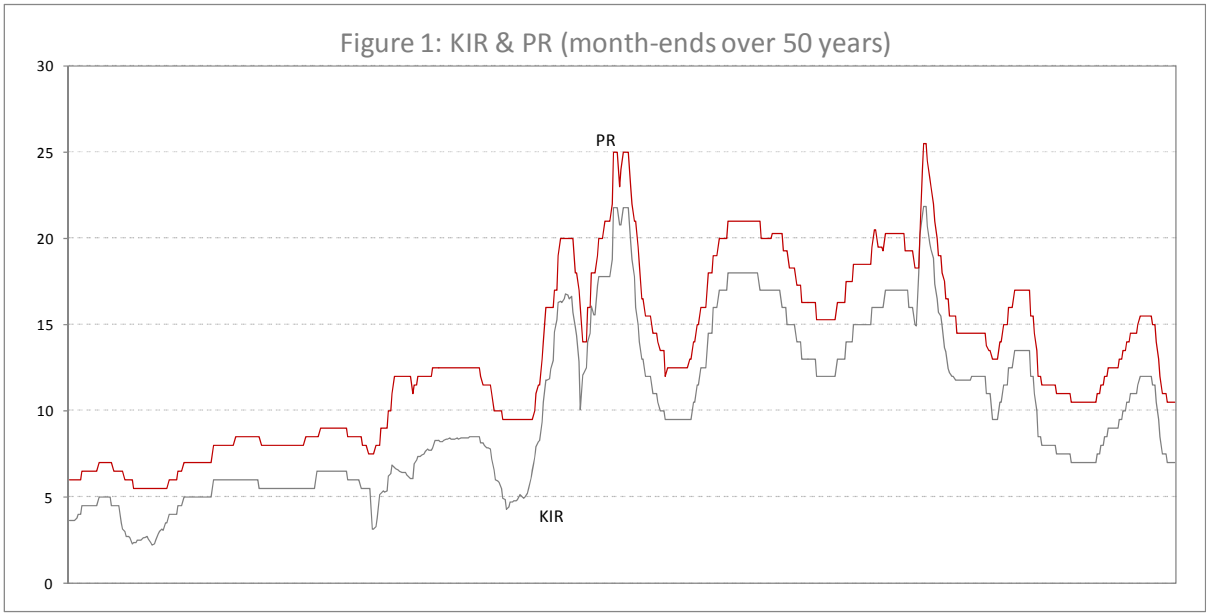
> "... that the institutional structure in the United States and empirical evidence based on data since 1990 both strongly suggest that the transmission mechanism does not work through the standard money multiplier model from reserves to money and bank loans. In the absence of a multiplier, open market 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."

It is common cause that in a monetary system where bank liabilities (deposits) are the principal means of payment, and banks are able to create them by making loans (depending on demand), there can be no market-determined interest 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 key (or policy) interest rate (KIR), which is made effective by the creation of a permanent liquidity shortage (that is, the existence of a permanent borrowed reserves - BR - condition). The KIR has a direct impact in the bank-to-bank interbank rate, which in turn impacts on wholesale call deposit rates, and in turn on all deposit rates. As banks maintain a more or less fixed "bank margin", the KIR influences the prime lending rate (PR) of the banks (and marketable asset rates), as shown in Figure 1[10]. The level of bank lending rates (PR) influences the demand for bank loans and money creation.

This is the essence of the *interest rate-focused monetary policy model*. 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. This model recognises that the only process of money creation is bank loan extension (and FA accumulation), and we now move on to the detail of the process of money creation.



A MONETARY ANALYSIS

Prior to the dawn of the Friedmanian Monetarism, there was one generally accepted approach to money creation, called the *balance sheet model* (BSM) by some (although there were different approaches within this model, which we will not belabour here). The BSM was similar[11] to the *interest rate-focused monetary policy model* which is the focus here.

With the advent, and appeal, of the *money multiplier-focused monetary policy model* (the FMS model) the literature on the BSM disappeared from the literature. As we have shown, many countries did not embrace this model, and within the US, the PKS appeared in opposition, mainly in the 1980s. Thus, there was tension between the

[10] South Africa: monthly data; period is over 50 years; correlation coefficient is 0.99.

[11] There were some crackpot interpretations of the money creation process, such as money creation begins with a bank receiving a new deposit (BD), placing the RR with the central bank, lending out BD x (1 – *r)*, which arrives back in the system as a deposit ... and so on. This is nonsense because the "new" deposit comes from somewhere and no bank can create central bank money. This is part of the material for a separate article (soon to be published).

adherents of the two models in the US. Some countries outside the US were also influenced by Monetarism, as indicated by Das (2010):

> "... there were two approaches to money supply determination in India: balance sheet or structural approach and money multiplier approach; the former focused on individual items in the balance sheet of the consolidated monetary sector in order to explain changes in money supply and the latter focused on the relationship between money stock and reserve money; the money multiplier approach emerged strongly as a critic to the balance sheet approach; between January 1976 and January 1978 there was a hot and rich debate between two groups of researchers, one group led by Gupta who believed in the money multiplier theory, the other group of [Reserve Bank of India] economists, who were not accepting this theory; the debate gave rise to a number of research papers."

Countries such as the UK and South Africa were not influenced by Monetarism, and continued happily with the BSM. Thus, this author is not breaking new ground; he is merely resurrecting the BSM, and pleading for the return to sanity in economics students' learning material.

BOX 7: BANKS (LCC BILLIONS)

Assets		Liabilities	
Foreign assets (FA)	300		
Loans to government (LG)[12]	900		
Loans to private sector (LPS)[13]	2 000		
Central bank money (CBM):		Deposits: Private sector	4 000
Notes & coins (N&C)	600	Loans from central bank (BR)	200
Reserves (TR)	400		
(ER = 0)			
(RR = 400)			
Total	**4 200**	**Total**	**4 200**

BOX 8: CENTRAL BANK (LCC BILLIONS)

Assets		Liabilities	
		Notes & coins (N&C)	1 200
		Deposits:	
Foreign assets (FA)	1 600	Government sector	800
Loans to government (LG)[14]	1 000	Banks (TR)	400
Loans to banks (BR)	200	(ER = 0)	
		(RR = 400)	
		Loans: Foreign sector	400
Total	**2 800**	**Total**	**2 800**

[12] Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities).
[13] Marketable (for example: commercial paper and corporate bonds) and non-marketable (for example: mortgage and overdraft loans to households and companies).
[14] 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).

What is the BSM? It is simply the approach followed by many countries' central banks. South Africa is one example (South African Reserve Bank, 2012). We elucidate with an example.

In Boxes 7 - 8 we present simplified balance sheets[15] of the private banking sector and the central bank. The banks' collective balance sheet, asset side, is made up of foreign assets (FA, aka *foreign reserves*), loans to the government (LG), loans to the private sector (LPS) (which is 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). 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).

As seen in Box 7, the deposit liabilities of the banks are 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, which is the case. They are borrowing LCC 200 billion from the central bank (BR, as part of the monetary policy stance of making the KIR effective).

The assets of the central bank are: foreign assets (FA), loans to government (LG), and loans to banks (BR). 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 the real world 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 9.

BOX 9: CONSOLIDATED BALANCE SHEET OF MBIs (LCC BILLIONS)

Assets		Liabilities	
		A. Notes & coin	600
D. Foreign assets (FA)	1 900	B. Deposits:	
E. Loans to government (LG)	1 900	1. Government	800
F. Loans to private sector (LPS)	2 000	2. Private sector	4 000
		C. Loans: foreign sector	400
Total	**5 800**	**Total**	**5 800**

Central banks compile this *monetary analysis* (MA) on a monthly basis. What does it mean? It means that the central bank is able to extract the money stock number, as well as the balance sheet counterparts, and to do an analysis of changes from date to date. Using the letters indicated in Box 9, this is executed as follows:

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

$$M3 = A + B2$$

[15] Excluding capital and reserves and other assets and liabilities.

= N&C + BD
= LCC 600 billion + LCC 4 000 billion
= LCC 4 600 billion.

Counterparts: 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):

M3	= A + B2	= 4 600 (600 + 4 000)
	= (D – C)	= 1 500 (1 900 – 400)
	+ (E – B1)	= 1 100 (1 900 – 800)
	+ F	= 2 000
	TOTAL	= 4 600

Thus, the counterparts of the M3 money stock on a particular date are:

Net foreign assets (NFA)	(D – C)
Net loans to government (NLG)	(E – B1)
Loans to private sector (LPS)	(F).

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 (∆) in M3 can be calculated as follows:

∆M3 = ∆NFA + ∆NLG + ∆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:

∆M3 = ∆NFA + ∆DLE.

What is the significance of this analysis[16]? It tells us that there are two BSSoC in M3: one foreign and one domestic, and the actual sources of change (ASoC) are real events or decisions. It also tells us about the paths of causation:

In the case of DLE:
ASoC (demand for bank loans) → (bank decisions to grant) → BSCoC (∆DLE) → ∆M3.

In the case of NFA:

[16] 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.

ASoC (bank decisions to buy or sell) → BSCoC (ΔNFA[17]) → ΔM3.

As we indicated earlier, the latter two steps happen concurrently. The following sections elucidate these processes of money creation in more detail.

PRIVATE SECTOR DEMAND FOR BANK LOANS

The first example is that of Company B wishing to purchase goods from Company A (as inputs in its production), and requires a loan from Bank A for this purpose. The bank evaluates the proposal and agrees to an overdraft facility of LCC 100 million.

Company B does an electronic funds transfer (EFT) via internet banking and sends the proof of payment to Company A, which delivers the goods. Company A also banks with Bank A. The EFT enters the electronic payments system (EPS) and Bank A receives a debit and a credit on its account at the central bank (all interbank clearing takes place over banks' accounts at the central bank), the equivalents of which are reflected in Bank A's balance sheet.

The changes to all balances sheets are as indicated in Balance Sheets 10 - 12 (amount = LCC 100 million).

BALANCE SHEET 10: COMPANY A (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at Bank A	-100 +100		
Total	0	Total	0

BALANCE SHEET 11: COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods	+100	Loan from Bank A	+100
Total	+100	Total	+100

BALANCE SHEET 12: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Loan to Company A	+100	Deposits of Company A	+100
Total	+100	Total	+100

BOX 13: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets (FA) E. Loans to government (LG) F. Loans to private sector (LPS)	 +100	A. Notes & coin B. Deposits: 1. Government 2. Private sector (PS) C. Loans: foreign sector	 +100
Total	**+100**	**Total**	**+100**

[17] NFA is a minor BSSoC.

Seen in the balance sheet of the MBS (Balance Sheet 13) these transactions should be clearer. On this day (of the balance sheet construction) M3 increased by LCC 100 million and there was one BSSoC in M3: LPS increased by LCC 100 million. The ASoC was the demand for loans which was satisfied by the bank.

EXPORT RECEIPTS PURCHASED BY LOCAL BANK

Second example: a Local Country exporter, LC Exporter (= member of the PS), exports goods to the value of LCC 100 million to US Importer; the exchange rate is USD / LCC 10.0 (see Balance Sheets 14 - 16).

BALANCE SHEET 14: LC EXPORTER (PS) (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at US Bank	-100 +100		
Total	0	Total	0

BALANCE SHEET 15: US IMPORTER (USD MILLIONS)			
Assets		Liabilities	
Goods US Bank deposits	+10 -10		
Total	0	Total	0

BALANCE SHEET 16: US BANK (USD MILLIONS)			
Assets		Liabilities	
		Deposits of US Importer Deposits of LC Exporter	-10 +10
Total	0	Total	0

There was no change in the money stock [ie there was no change to the local bank's (LC Bank) balance sheet]. LC Exporter now sells the LCC 100 million foreign exchange earnings (USD 10 million) into the local foreign exchange market, and LC Bank decides to buy the USD because it expects the LCC to depreciate against the USD (see Balance Sheets 17 - 19).

BALANCE SHEET 17: LC EXPORTER (PS) (LCC MILLIONS)			
Assets		Liabilities	
Deposits at US Bank Deposits at LC Bank	-100 +100		
Total	0	Total	0

BALANCE SHEET 18: LC BANK (LCC MILLIONS)			
Assets		Liabilities	
Deposits at US Bank	+100	Deposits of LC Exporter	+100
Total	+100	Total	+100

BALANCE SHEET 19: US BANK (USD MILLIONS)			
Assets		Liabilities	
		Deposits of LC Exporter Deposits of LC Bank	-10 +10
Total	0	Total	0

It will be clear that the balance sheet of LC Bank (the local bank) changed: LC Bank bought a foreign deposit of USD 10 million (= forex) and paid LC Exporter by crediting his account. This amounts to an increase in the local deposits of the PS = an increase in M3. In terms of the balance sheet of the MBIs we have changes as indicated in Balance Sheet 20: M3 increased by LCC 100 million and the BSSoC is an increase in NFA (the increased foreign deposit). The ASoC is the transaction, a portfolio decision (the purchase of forex) made by LC Bank.

BOX 20: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets (FA) E. Loans to government (LG) F. Loans to private sector (LPS)	+100	A. Notes & coin B. Deposits: 1. Government 2. Private sector (PS) C. Loans: foreign sector	 +100
Total	**+100**	**Total**	**+100**

Had LC Exporter sold the forex into the forex market, the market would have cleared at a better exchange rate, say USD / LCC 9.995, than when the forex was withheld by LC Bank from the commercial supply / demand forces in the forex market.

GOVERNMENT ISSUES BONDS

Another example: the government issues LCC 1 000 million bonds and they are purchased by a number of the retirement funds (= members of the PS). The government spends the receipts of the bond issue to purchase goods from Company A (see Balance Sheets 21 - 24).

BALANCE SHEET 21: GOVERNMENT (LCC MILLIONS)			
Assets		Liabilities	
Goods	+1 000	Bonds	+1 000
Total	+1 000	Total	+1 000

BALANCE SHEET 22: RETIREMENT FUNDS (PS) (LCC MILLIONS)			
Assets		Liabilities	
Bonds Deposits at banks	+1 000 -1 000		
Total	0	Total	0

BALANCE SHEET 23: COMPANY A (PS) (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at banks	-1 000 +1 000		
Total	0	Total	0

BALANCE SHEET 24: BANKS (LCC MILLIONS)			
Assets		Liabilities	
	0	Deposits of retirement funds (PS) Deposits of Company A	-1 000 +1 000
Total	0	Total	0

It will be evident that M3 has not changed: the PS deposits at the banks remain unchanged. However, if the bonds are purchased by the banks, new money is created (see Balance Sheets 25 – 28).

BALANCE SHEET 25: GOVERNMENT (LCC MILLIONS)			
Assets		Liabilities	
Goods	+1 000	Bonds	+1 000
Total	+1 000	Total	+1 000

BALANCE SHEET 26: COMPANY A (PS) (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at banks	-1 000 +1 000		
Total	0	Total	0

BALANCE SHEET 27: BANKS (LCC MILLIONS)			
Assets		Liabilities	
Bonds (LG)	0	Deposits of Company A	+1 000
Total	0	Total	0

BOX 28: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets (FA) E. Loans to government (LG) F. Loans to private sector (LPS)	 +100	A. Notes & coin B. Deposits: 1. Government 2. Private sector (PS) C. Loans: foreign sector	 +100
Total	**+100**	**Total**	**+100**

As seen in Box 28, M3 increased by LCC 100 million and the BSSoC is ΔLG (ΔDLE) of the same amount. The ASoC is the issue of bonds, which is a demand for loans, which was satisfied by the banking sector. As we saw, when satisfied by the non-bank PS, M3 is not created.

INCREASED DEMAND FOR BANK NOTES

What happens to the money stock when the public (members of the PS) pop off to the banks' ATMs and withdraw LCC 100 million in bank notes with their debit cards (= a direct debit to their current accounts)? (See Balance Sheets 29 – 31.)

The answer: no change in M3. The N&C holdings of the PS increased by LCC 100 million and their deposits decreased by the same amount. Thus, the money stock did not change; only the composition did. Recall that Item A in the MBI balance sheet = the central bank's N&C liability less the N&C held by banks. The former was unchanged and the latter decreased by LCC 100 million.

BALANCE SHEET 29: BANKS (LCC MILLIONS)			
Assets		Liabilities	
N&C	-100	Deposits of private sector	-100
Total	-100	Total	-100

BALANCE SHEET 30: PUBLIC (PS) (LCC MILLIONS)			
Assets		Liabilities	
N&C Deposits at banks	+100 -100		
Total	0	Total	0

BOX 31: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets (FA) E. Loans to government (LG) F. Loans to private sector (LPS)		A. Notes & coin (held by PS) B. Deposits: 1. Government 2. Private sector (PS) C. Loans: foreign sector	-100 +100
Total	**0**	**Total**	**0**

MONEY DESTRUCTION

This analysis will not be complete without a note on money destruction. We know that when banks provide new loans (to the government sector or the PS), or buy forex, money is created. The overriding source of money creation is bank loans in a balance sheet sense, and the demand for loans that is satisfied by the banks, in a real life sense. Obviously, the money stock can also fall, but this is rare in all countries.

Take the example of Mrs A. She took a loan of LCC 50 000 from Bank A in the past. In order to repay the loan, she would accumulate a balance of LCC 50 000 on her bank account over time, and repay the bank on the due date of the loan. Balance Sheets 32 - 33 show this transaction. The position of the MBIs will be the same as that of Bank A (see Balance Sheet 34).

BALANCE SHEET 32: MRS A (NBPS) (LCC)			
Assets		Liabilities	
Deposit at bank	-50 000	Bank loan	-50 000
Total	-50 000	Total	-50 000

BALANCE SHEET 33: BANK A (LCC)			
Assets		Liabilities	
Loans to private sector (LPS)	-50 000	Deposits of private sector (M3)	-50 000
Total	-50 000	Total	-50 000

BOX 34: CONSOLIDATED BALANCE SHEET OF MBIs (LCC)			
Assets		**Liabilities**	
D. Foreign assets (FA) E. Loans to government (LG) F. Loans to private sector (LPS)	-50 000	A. Notes & coin (held by PS) B. Deposits: 1. Government 2. Private sector (PS) C. Loans: foreign sector	-50 000
Total	**-50 000**	**Total**	**-50 000**

BANK DEPOSITS AND THE RESERVE REQUIREMENT

As we have seen, by consolidating the balance sheets of the banks and the CB, all interbank claims were netted out. This obscures a most critical aspect of the money market and monetary policy: the effect of changes in bank deposits on the banks' required reserves (RR). We introduce it here as a conclusion.

You will recall from the first example above that when Company A sells goods to Company B and Company B acquires a loan facility from Bank A and utilises it for the purchase, a new bank deposit (new money) is created. What we did not show is the effect on the RR. We now need to add the balance sheet of the CB (see Balance Sheets 35 – 38) (the amount of the bank loan = LCC 100 million; the RR ratio = 10% of deposits).

BALANCE SHEET 35: COMPANY A (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at Bank A	-100 +100		
Total	0	Total	0

BALANCE SHEET 36: COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods	+100	Loan from Bank A	+100
Total	+100	Total	+100

BALANCE SHEET 37: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Loan to Company A Reserves with CB (TR) (ER = 0) (RR = +10)	+100 +10	Deposits of Company A Loan from CB (BR) @ KIR	+100 +10
Total	+110	Total	+110

BALANCE SHEET 38: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
Loans to banks (BR) @ KIR	+10	Bank reserves (TR) (ER = 0) (RR +10)	+10
Total	+10	Total	+10

In this example, the RR increase by LCC 10 million (increased deposit of LCC 100 million x 0.10). Because Bank A cannot create central bank money, the central bank will make a loan to the bank (BR). The TR of the banks increases by LCC 10 million (as a result of RR = +LCC 10 million). This is a critical part of the *interest rate-focused monetary policy model* (= similar to the BSM). The loan is automatic (called *accommodationist policy* by the PKS) and is provided at the KIR.

As this article is about the sources of money creation and not monetary policy *per se*, we conclude this discussion by saying that the change in RR is just one of many factors that impact on bank liquidity, and that bank liquidity management by the central bank (in order to make the KIR effective) is an essential ingredient in the *interest rate-focused monetary policy model.*

MONETARY ANALYSIS, GIVEN VARIOUS MEASURES OF THE MONEY STOCK

For the sake of simplicity, the monetary analysis we presented above used the wide definition of money, M3. However, there are various measures of money ranging from M0 (the monetary base, which is a derived quantity as we have shown, so it will be ignored) to M3 (all deposits of the private sector). There are other measures, up to M5 but, as this is a focused article of sources of money creation, we will not complicate the analysis. Assuming:

M1 = current account + call money deposits,
M2 = M1 + medium-term (MT) deposits, and
M3 = M2 + long-term (LT) deposits (D),

the monetary analysis can be amended to accommodate their analysis. For example, if one wants to "explain", in balance sheet terms, changes in M1, the monetary analysis will present as follows:

$$\Delta M1 = \Delta NFA + \Delta DLE - \Delta(MTD + LTD).$$

What does this mean? Little, in our view. When we have an increase in either NFA or DLE, M1 money is created. Thereafter, portfolio decisions of the recipients of the M1 money dictate the term of the deposit, that is, where it slots in terms of maturity: M1,

M2 or M3. These decisions are based on myriad factors, including expectations of interest rates in the future. It does not change the contribution of NFA or DLE.

A PARTING THOUGHT

In analyses, particularly money-output growth analyses, given the "stability" of NFA + DLE compared with the various money aggregates, should NFA + DLE not be the dominant determinant. It is obvious that underlying the demand for bank loans (reflected in DLE; NFA is usually insignificant) is economic activity. There are slippages in DLE, but they are relatively minor: bank disintermediation, which includes bank securitisation activities. This is material for further research, specifically DLE-nominal output growth.

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