MONEY CREATION: DEATH OF THE MONEY MULTIPLIER

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ABSTRACT

It persists in part of the literature that there are two monetary policy models: the monetary base-focused model (aka the money multiplier model / strict money-rule model) and the interest rate-focused model. The former only exists in theory because its implementation (for brief periods in a few countries) had severe consequences in terms of interest rate volatility (a major input in business decision-making). The interest rate-focused model relies on interest rates, which are under the control of the central bank, being the restraining factor in the demand for bank loans which, when satisfied by the banks, leads to simultaneous deposit (money) creation. It is still alleged by some that the two models differ in terms of how money is created. This is not so, as money creation is the outcome of net new bank lending in both (only endogenous money creation exists). The difference between the two models is that the one is applied while the other is not. It is time to say goodbye to the money multiplier.

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With a few exceptions, undergraduate textbooks persist in presenting the money multiplier as the kernel of monetary theory and policy. In a nutshell, the money multiplier is the reciprocal of the reserve requirement (RR[2]) ratio (*r*), and *r* is the statutorily-set proportion of deposits banks are required to hold with the central bank as deposits.

Bank deposits (BD) held by the private sector (households and companies) are money, the definition of which is “anything” that is “generally accepted as a means of payments.” Today, in most countries the vast majority of payments are made by electronic funds transfers (EFTs), when someone’s deposit account is debited (reduced) and someone else’s is credited (added-to). Similarly, a payment by cheque will result in the cheque writer’s deposit account being debited, and the cheque receiver’s account being credited.

The other component of the money stock is the quantity of notes and coins (N&C) issued by the central bank (in most cases) held by the domestic non-bank private sector (NBPS). Thus, the broadly-defined money stock (M3) is made up as follows:

M3 = BD + N&C (held by the NBPS).

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[2] RR also denotes “required reserves” in this text.

To concretise this, we present simplified balance sheets (excluding capital and reserves and other assets and liabilities) of the private banking sector and the central bank (see Balance Sheets 1 - 2). The banks' collective balance sheet, asset side, is made up of foreign assets (generally known as *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 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. We also assume the banks are not borrowing from the central bank (BR = 0; this assumption is relaxed later).

Balance Sheet 1 shows that the deposit liabilities of the banks is LCC[3] 5 000 billion. Assuming an *r* of 10% of deposits, the banks are required (RR) to hold LCC 500 billion on deposit with the central bank. This is the case, and there are no ER.

BALANCE SHEET 1: BANKS (LCCBILLIONS)			
Assets		**Liabilities**	
Foreign assets (FA)	900		
Loans to government (LG)[4]	1 000		
Loans to private sector (LPS)[5]	2 000		
Central bank money (CBM):		Deposits: Private sector	5 000
Notes & coins (N&C)	600	Loans from central bank (BR)	0
Reserves (TR)	500		
(ER = 0)			
(RR = 500)			
Total	**5 000**	**Total**	**5 000**

BALANCE SHEET: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
		Notes & coins (N&C)	2 000
		Deposits:	
Foreign assets (FA)	1 800	Government sector	1 000
Loans to government (LG)[6]	2 100	Banks (TR)	500
Loans to banks (BR)	0	(ER = 0)	
		(RR = 500)	
		Loans: Foreign sector	400
Total	**3 900**	**Total**	**3 900**

[3] The currency ("corona") code of a fictitious country, Local Country.
[4] Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities).
[5] Marketable (corporate bills and bonds) and non-marketable (for example: mortgage and overdraft loans to household sector and companies).
[6] Marketable (Treasury bills and bonds) and non-marketable (for example: loans to local authorities), but usually marketable only, for purposes of open market operations (OMO).

The assets of the central bank are: foreign assets, loans to government, and loans to banks (borrowed reserves, BR, assumed to be zero), 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 reserves (TR = RR).

What is the amount of the M3 money stock? It is BD + N&C (held by the NBPS):

M3 = BD + (N&C of central bank – N&C held by the banks)
= LCC 5 000 billion + (LCC 2 000 billion – LCC 600 billion)
= LCC 6 400 billion.

What is the money multiplier? As may be seen, the banks comply 100% with the RR: 10% of deposits. Clearly, there is a strict relationship between bank deposits and the RR amount, and because the central bank has a monopoly on CBM, it is able to control the amount of deposit creation. Thus, a money multiplier (*m*) is in place and is:

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

Thus, if the banks have reserves of LCC 500 billion, then M3 can be a maximum of 10 times this quantity, that is, LCC 5 000 billion. With M3 at this level the banks are "fully lent", that is, they are not able to make new loans, which create new deposits, unless the central bank steps in and creates ER.

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 open market 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 Balance Sheets 3 - 4.

BALANCE SHEET 3: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to government (bonds = LG) Reserves (TR) (ER = +10) (RR = 0)	-10 +10		
Total	**0**	**Total**	**0**

BALANCE SHEET 4: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to government (bonds = LG)	+10	Deposits: Banks (TR) (ER = +10) (RR = 0)	+10
Total	**+10**	**Total**	**+10**

The banks have ER of LCC 10 billion. It should be clear that, because *m* = 10, the banks are able to make new loans, which creates new deposits, up to the point where the ER are absorbed 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?).

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. However, new borrowing is dependent on the demand for bank loans, and this is a function of the banks' lending rate (prime rate – PR – is the benchmark rate), and many other factors. This is a significant principle.

Another significant principle innate in the above is the obvious one: a central bank cannot control a quantity (reserves and therefore bank loan / money growth) and the pricing of bank loans simultaneously. In the above example it is hoping for a quantity effect, but interest rates are unfettered.

On the assumption that a demand for bank loans exists at the lower level of PR, the balance sheet changes will be as indicated in Balance Sheets 5 - 6. It will be seen that there is a change in the dividing line between RR and ER, leaving TR unchanged.

BALANCE SHEET 5: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to private sector Reserves (TR) (ER = -10) (RR = +10)	+100 0	Deposits: Private sector (M3)	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 6: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
		Deposits: Banks (TR) (ER = -10) (RR = +10)	0
Total	**0**	**Total**	**0**

The net changes in the balance sheets are indicated in Balance Sheets 7 - 8. 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. Net new lending is not possible in this model (assuming an unrealistic policy). Higher interest rates of course change the internal rate of return (IRR) of new projects, choking off some.

BALANCE SHEET 7: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to government (LG = bonds) Loans to private sector (LPS Reserves (TR) (ER = 0) (RR = +10)	-10 +100 +10	Deposits: Private sector (M3)	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 8: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to government (LG = bonds)	+10	Deposits: Banks (TR) (ER = 0) (RR = +10)	+10
Total	**+10**	**Total**	**+10**

Note that in the above we have ignored the fact that N&C held by the banks are eligible as reserves, that is, that the *monetary base* (MB = TR) is comprised of reserves with the central bank, excluding N&C. This was done in the interests of keeping the argument simple (and in fact exists in practice[7]).

The above exposition reflects the Monetarist view: the money "supply" is seen as a multiple of the MB, and that the MB is determined by the central bank. The MB is the driving quantity and not a derived quantity. As seen above, such a monetary model can exist, and it certainly did exist in the past, but only for brief periods. It was abandoned because a quantity and its price cannot be controlled at the same time. Under the Monetarist model, where quantities are controlled, interest rates are extremely volatile, with severe consequences for business decision-making. Businesses thrive under conditions of relative certainty in the prices of their inputs.

In a monetary system where bank liabilities are the principal means of payments / medium of exchange, that is, a system where banks are able to create them (depending on demand), there can be no market-determined price / rate. In such a system (as in a confined ecological system) an arbiter is required, and history has created the central bank to perform this function. The central bank's 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). Thus, the Monetarist approach is deeply flawed, and has become a theoretical model.

The Post-Keynesians offered the antithesis of Monetarism: that bank lending creates deposits. However, they were perhaps unfair in their criticism. Monetarism in the form of the strict money rule (control the monetary base and money creation is controlled), does not mean that money is created in any other way but by bank lending (in the main; for a detailed discussion see Faure, 2012a). It is a monetary policy model, not a method of money creation. Money can only be created by new net bank lending (for a detailed explanation, see Faure, 2012b).

[7] In South Africa, for example, N&C do not rank as reserves.

Thus, there are two monetary policy models:

- Monetary base-focused monetary policy.
- Interest rate-focused monetary policy.

The former, as discussed, is a theoretical model. The vast majority of countries adopted the latter approach many decades ago. In a nutshell it amounts to control of the banks' prime lending rate (PR) (and other lending rates which are usually benchmarked on PR) which is achieved by the creation (in normal, non-QE-policy times) of a liquidity shortage (LSh) (= borrowed reserves - BR) in order to make the central bank's policy or key interest rate (KIR effective).

An effective KIR affords the central bank control over PR and, therefore, the demand for bank loans (as discretion is exercised it is not an exact science). The reserves required by banks, as they make loans and create deposits, are accommodated by the central bank, as part of its control over the LSh (BR). (It should be evident that the RR is only one of many factors which influence bank liquidity.) An example of central bank accommodation (in the form of on-demand loans - BR - from the central bank, which is the case in the practice) is presented in Balance Sheets 9 – 10 (banks make loans of LCC 1 000 billion, which creates LCC 1 000 billion of new deposits; the RR ratio is 10% of deposits):

BALANCE SHEET 9: BANKS (LCC BILLIONS)			
Assets		Liabilities	
LPS (or LG assuming funds spent) Reserves at CB (TR) (ER = 0) (RR = +100)	+1 000 +100	Deposits of the PS (money) Loans from CB (BR) @ KIR	+1 000 +100
Total	+1 100	Total	+1 100

BALANCE SHEET 10: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
Loans to banks (BR) @ KIR	+100	Bank reserves (TR) (ER = 0) (RR = +100)	+100
Total	**+100**	**Total**	**+100**

As said earlier, the main instrument of monetary policy, control over interest rates, is founded on the fact that the general public regards certain bank liabilities, N&C and BD, as the means of payments (money). It is the only functional tool a central bank has to control money creation, which is the outcome of new bank loans. The other main tool, open market operations, supports the interest rate tool.

It will be evident that the opposite of an LSh is a liquidity surplus (LSu), a condition created under a QE policy. Under an LSu condition the KIR becomes irrelevant, and interest rates fall to the lowest level possible. This is elucidated in Faure, 2013.

The money multiplier is a pleasant academic model. As said above, in a monetary system where bank liabilities are the principal means of payments, that is, a system where 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 the continued existence of many banks, being keen competitors, will be compromised, as happened in the age of the goldsmith-bankers. 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 (the existence of BR).

There is no other way for the system to be "controlled". The monetary base (reserves) is the outcome of bank lending / deposit creation, not the driver. It is time to say goodbye to the money multiplier. And, it is time the undergraduate textbooks caught up with reality. They have misled undergraduate (which persists in many cases to graduate and post-graduate) students for too long on this critical economic issue.

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