4 Money creation: sources & fallacies

4.1 Learning outcomes

After studying this text the learner should / should be able to:

1. Describe the balance sheets of the banks and the central bank, and the measurement of money from these.
2. Elucidate the money identity and the sources of money creation.
3. Discuss the fallacies surrounding money creation.

4.2 Introduction

We have discussed the financial system and the money market, which is at the very centre of the financial system. The banking sector is at the very centre of the money market. The banking sector is essentially constituted of the private sector banks and the central bank. These are the institutions which need to be analysed in order to measure money and the sources of money creation.

Money is bank notes and coins (issued by the central bank) and bank deposits held by the NBPS. Money creation is the outcome of new bank loans to the private and government sectors, as well as the activities in the foreign exchange market – in terms of buying and/or selling activities which end with bank / central bank balance sheet changes.

There are many fallacies surrounding money creation, including the genesis being the receipt by a bank of a new deposit (the error is not identifying where it comes from), and money creation being tied strictly to the reserve requirement (RR) (some countries do not have a RR). This section is arranged as follows:

- Measuring money.
- Money identity: sources of money creation.
- Money creation: the fallacies.

4.3 Measuring money

You know that the stock of money is made up of bank notes and coins and bank deposits in possession of the NBPS. We have two questions in this regard: how do central banks calculate the money stock and what term of bank deposit qualifies as money?

As regards the latter, central banks across the world have various definitions of money, and they range from M1 to M5. They all include bank notes and coins held by the NBPS; where they differ is in the cut-off point of the term to maturity (ttm) of NBPS deposits, and the higher numbers add in other near-money assets. For the sake of simplicity we will use one of the measures: M3. It includes notes and coins (N&C) in the hands of the NBPS and all NBPS deposits with banks, and we justify this on the basis that the vast majority of deposits with banks are short-term in nature.

How does one calculate the NBPS's holdings of N&C? Take a look at the balance sheets of the central bank (called CB from now on) and the banks shown in Balance Sheets 1–2. You will see that the bank notes and coins held by the NBPS can be derived from the two balance sheets:

Total in issue (in the CB's balance sheet = item A)
Less: N&C held by the banks (item C in the banks' collective balance sheet).

Therefore the stock of N&C held by the NBPS:

N&C of NBPS = LCC 1 000 billion – LCC 100 billion
= LCC 900 billion.

BALANCE SHEET 1: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
D. Foreign assets	1 000	A. Notes and coins	1 000
E. Loans to government	1 100	B. Deposits	
		1. Government	900
		2. Banks' reserve accounts (TR)	500
F. Loans to banks (borrowed reserves – BR) at the KIR	400	C. Foreign loans	100
Total	**2 500**	**Total**	**2 500**

BALANCE SHEET 2: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
C. Notes and coins	100	A. Deposits of NBPS	5 000
D. Reserves with CB (TR)	500		
F. Loans to government	1 000	B. Loans from CB (BR)	400
G. Loans to NBPS	3 800		
Total	**5 400**	**Total**	**5 400**

You will also note that the banks have two types of liabilities (see Balance Sheet 2). Item A (BD of the NBPS) is money. Thus, M3 is made up of (see Figure 1):

M3 = N&C + BD of the domestic NBPS
= LCC 1 000 billion – LCC 100 billion + LCC 5 000 billion
= LCC 5 900 billion.

Central banks calculate M3, as well as its counterparts (elucidated later), from the *consolidated balance sheet* of the banks and the CB. In most countries there are also other "monetary institutions" (such as rural banks, building societies, mutual banks, land banks and so on) ; they are also consolidated with the central bank's and the banks' balance sheets. The consolidated balance sheet appears as in Balance Sheet 3: called the consolidated balance sheet of the *monetary banking sector* (MBS).

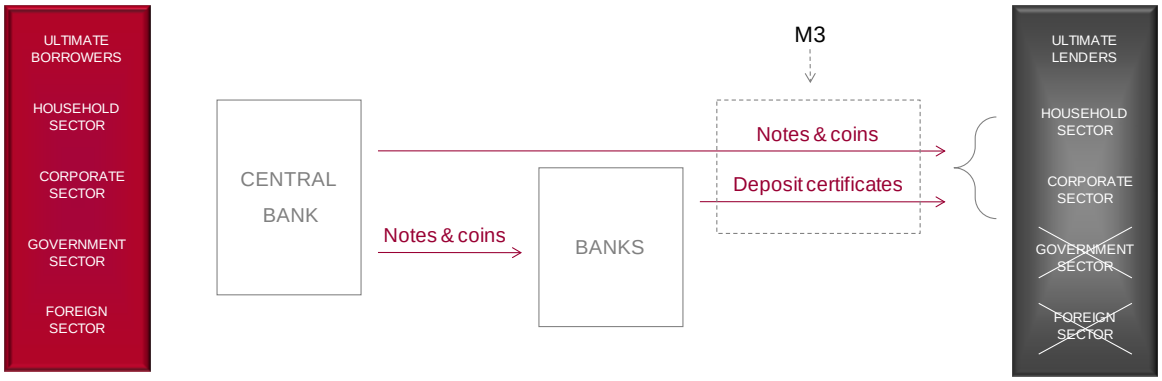

Figure 1: what is money?

BALANCE SHEET 3: MBS (LCC BILLIONS)			
Assets		**Liabilities**	
D. Foreign assets	1 000	A. Notes and coins of NBPS	900
E. Loans to government	2 100	B. Deposits 1. Government 2. NBPS	900 5 000
F. Loans to NBPS	3 800	C. Foreign loans	100
Total	**6 900**	**Total**	**6 900**

How is a consolidated balance sheet arrived at? It nets out all the interbank claims. For ease of understanding the relevant items have been highlighted in Balance Sheets 4–5. Note that:

- CB loans to banks (LCC 400 billion) in Balance Sheet 4 are netted off against CB loans (LCC 400 billion) in Balance Sheet 5.
- Bank reserves (LCC 500 billion, found in both balance sheets) are netted off.
- N&C: LCC 1 000 billion less LCC 100 billion = LCC 900 billion (see item A in the consolidated balance sheet.

BALANCE SHEET 4: CENTRAL BANK (LCC BILLIONS)			
Assets		**Liabilities**	
D. Foreign assets	1 000	A. Notes and coins	1 000
E. Loans to government	1 100	B. Deposits	
		1. Government	900
		2. Banks' reserve accounts (TR)	500
F. Loans to banks (borrowed reserves – BR) at the KIR	400	C. Foreign loans	100
Total	**2 500**	**Total**	**2 500**

BALANCE SHEET 5: BANKS (LCC BILLIONS)			
Assets		**Liabilities**	
C. Notes and coins	100	A. Deposits of NBPS	5 000
D. Reserves with CB (TR)	500		
F. Loans to government	1 000	B. Loans from CB (BR)	400
G. Loans to NBPS	3 800		
Total	**5 400**	**Total**	**5 400**

From the consolidated balance sheet of the MBS (Balance Sheet 3), the money stock is easily identified (they have been highlighted): item A and item B2:

$$\begin{aligned} M3 &= A + B2 \\ &= \text{LCC } 900 \text{ billion} + \text{LCC } 5\,000 \text{ billion} \\ &= \text{LCC } 5\,900 \text{ billion.} \end{aligned}$$

Of the two components of money we know that N&C is the minor party; in most countries the proportion of N&C in M3 is as low as 2%. We also know that central banks (as the sole issuers of notes and coins (in most cases) do not use N&C to create new money; they merely react to the demand for N&C, for which deposits are used as payment).

We also know that new money is created by bank lending (domestic and foreign). These sources of money creation are also found in the consolidated balance sheet (balance Sheet 3). Thus, we have the tools for an analysis of money creation. Note that what we are about to show is done by all central banks the world over on a monthly basis.

4.4 Money identity: sources of money creation

4.4.1 Introduction

We replicate the consolidated balance sheet here for ease of reference (see Balance Sheet 6).

BALANCE SHEET 6: MBS (LCC BILLIONS)			
Assets		**Liabilities**	
D. Foreign assets	1 000	A. Notes and coins of NBPS	900
E. Loans to government	2 100	B. Deposits 1. Government 2. NBPS	900 5 000
F. Loans to NBPS	3 800	C. Foreign loans	100
Total	**6 900**	**Total**	**6 900**

It is evident that, because the balance sheet balances, items A + B2 must be equal to all the asset items minus the remaining liability items. Therefore:

$$M3 = A + B2 = (D + E + F) - (B1 + C).$$

It will also be evident that we should combine the related asset and liability items, and they are:

- Foreign assets and foreign loans (D – C).
- Loans to government and government deposits (E – B1).

Therefore,

$$M3 = A + B2 = (D - C) + (E - B1) + F.$$

In terms of the numbers in Balance Sheet 6 we have:

$$\begin{aligned} M3 &= A + B2 &&= (D - C) + (E - B1) + F \\ M3 &= 900 + 5\,000 &&= (1\,000 - 100) + (2\,100 - 900) + 3\,800 \\ &= 5\,900 &&= 900 + 1\,200 + 3\,800 \\ & &&= 5\,900. \end{aligned}$$

In words:

Money stock (M3) = its "counterparts" = Net foreign assets
+ net loans to government
+ loans to the NBPS.

This is the *money identity*: the "counterparts" of the money stock (the amount of money in circulation) are net foreign assets (NFA), net loans to government (NLG) and loans to the NBPS (LNBPS).

It will be evident that any change in the money stock must be equal to and therefore is "explained" by changes in NFA, NLG and LNBPS (the sources):

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

This is the money identity: it provides an analysis of the balance sheet sources of changes (BSSoC) in M3. The actual sources are the transactions that underlie the BSSoC, and they are:

- Net foreign assets (NFA):
  - Bank and CB dealings in the foreign exchange market. If these institutions do nothing in the forex market, the market clears at a particular exchange rate. If they do, they alter the demand / supply equation of the forex market and create / destroy money, and the market will clear at a different exchange rate.
- Net loans to government (NLG):
  - Bank and CB purchases or sales of government securities.
  - The movement of NBPS deposits at banks to government (which we assume banks at the CB only), for example when taxes are paid; and the movement of government deposits to the NBPS, when government spends locally.

- Loans to the NBPS (LNBPS):
  - The demand for loans by the NBPS which is satisfied by the banks.

In most countries the latter is the overriding source of money creation, whereas in developing countries the first two mentioned play the overriding role. The accompanying chart shows the year-on-year growth rates for M3 and LNBPS over a 40-year period for a particular country. It is quite evident that the overriding BSSoC in M3 was changes in LNBPS.

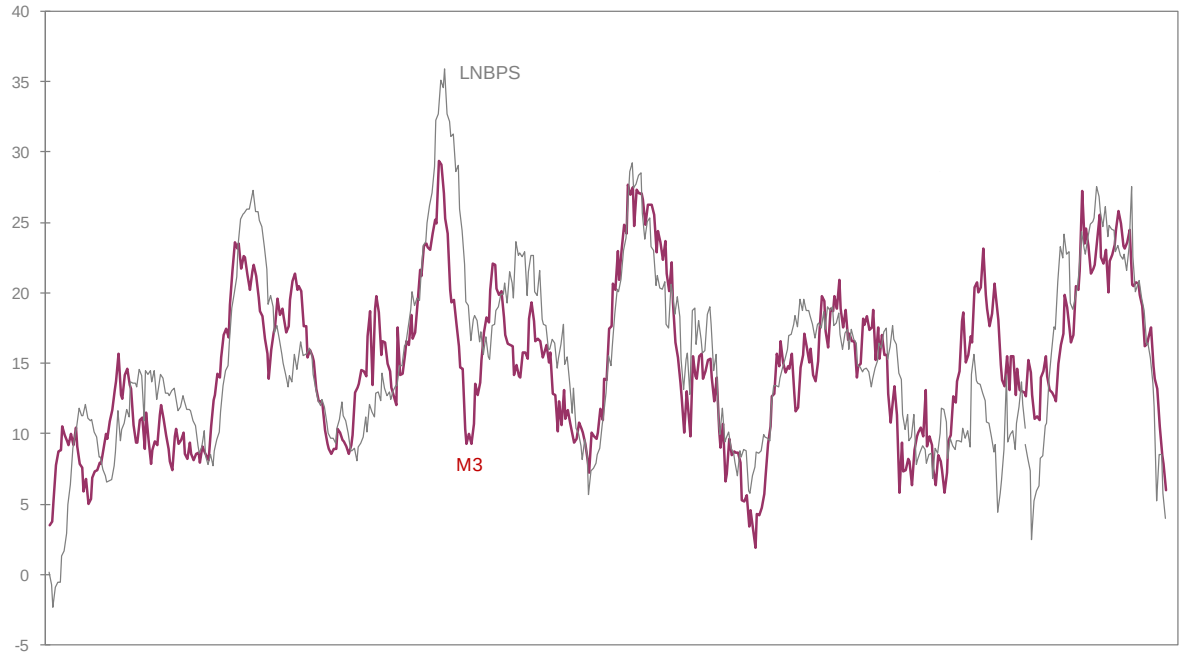

Figure 2: M3 & LNBPS (yoy %)

4.4.2 Example: loan from bank

It will be useful to provide a few examples of the sources of changes in M3. It is to be noted that here we do not indicate the effect of changes in bank deposits on the banks' reserve requirements. This is because we do not wish to divert attention from the principles of money creation. The effect of deposit changes on the reserve requirement is introduced at a later stage.

You will recall 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, the relevant balance sheets changes are as indicated in Balance Sheets 7–9 (amount = LCC 100 million).

BALANCE SHEET 7: COMPANY A (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at Bank A	-100 +100		
Total	0	Total	0

BALANCE SHEET 8: COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods	+100	Loan from Bank A	+100
Total	+100	Total	+100

BALANCE SHEET 9: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Loan to Company A	+100	Deposits of Company A	+100
Total	+100	Total	+100

Seen in the balance sheet of the MBS (see Balance Sheet 10) 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: LNBPS increased by LCC 100 million. The real source was the demand for loans which was satisfied by the bank.

BALANCE SHEET 10: MBS (LCC MILLIONS)			
Assets		Liabilities	
D. Foreign assets E. Loans to government F. Loans to NBPS	 +100	A. Notes and coins of NBPS B. Deposits 1. Government 2. NBPS C. Foreign loans	 +100
Total	+100	Total	+100

4.4.3 Example: exports

Another example: a Local Country exporter, LC Exporter (= member of NBPS), exports goods to the value of LCC 100 million to US Importer; the exchange rate is USD / LCC 10.0 (see Balance Sheets 11–13).

BALANCE SHEET 11: LC EXPORTER (NBPS) (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at US Bank	-100 +100		
Total	0	Total	0

BALANCE SHEET 12: US IMPORTER (USD MILLIONS)			
Assets		Liabilities	
Goods US Bank deposits	+10 -10		
Total	0	Total	0

BALANCE SHEET 13: 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 (i.e. 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) to LC Bank (see Balance Sheets 14–16).

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

BALANCE SHEET 15: LC BANK (LCC MILLIONS)			
Assets		Liabilities	
Deposits at US Bank	+100	Deposits of LC Exporter	+100
Total	+100	Total	+100

BALANCE SHEET 16: 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 (i.e. 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 NBPS = an increase in M3. In terms of the balance sheet of the MBS we have changes as indicated in Balance Sheet 17. M3 increased by LCC 100 million and the BSSoC is an increase in NFA (the increased foreign deposit). The real cause is the transaction, a portfolio decision – the purchase of forex – by LC Bank.

BALANCE SHEET 17: MBS (LCC MILLIONS)			
Assets		Liabilities	
D. Foreign assets	+100	A. Notes and coins of NBPS	
E. Loans to government		B. Deposits 1. Government	+100
F. Loans to NBPS		2. NBPS	
		C. Foreign loans	
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 9.99, than when the forex was withheld by LC Bank from the commercial supply / demand forces in the forex market.

4.4.4 Example: government issues bonds

Another example will be useful: the government issues LCC 1 000 million bonds and they are purchased by a number of the retirement funds (= members of the NBPS) (see Balance Sheets 18–21).

BALANCE SHEET 18: GOVERNMENT (LCC MILLIONS)			
Assets		**Liabilities**	
Deposits at CB	+1 000	Bonds	+1 000
Total	**+1 000**	**Total**	**+1 000**

BALANCE SHEET 19: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
Loans to banks @ KIR	+1 000	Government deposits	+1 000
Total	**+1 000**	**Total**	**+1 000**

BALANCE SHEET 20: RETIREMENT FUNDS (NBPS) (LCC MILLIONS)			
Assets		**Liabilities**	
Bonds Deposits at banks	+1 000 -1 000		
Total	**0**	**Total**	**0**

BALANCE SHEET 21: BANKS (LCC MILLIONS)			
Assets		**Liabilities**	
	0	Deposits of NBPS Loans from CB @ KIR	-1 000 +1 000
Total	**0**	**Total**	**0**

This action of government drains liquidity from the banks and they have no option but to borrow from the CB (discussed later). When the balance sheets of the banks and the CB are consolidated (see Balance Sheet 22) it will be seen that M3 has fallen by LCC 100 million and the BSSoC is a decline in NLG (a result of the increase in government deposits). The real cause is the issue of bonds. When government spends the money, which is the purpose of the debt issue, the situation will be restored (M3 will increase again).

It is important to understand that if the banks had purchased the bonds, M3 would have increased, as indicated in Balance Sheets 23–24.

BALANCE SHEET 22: MBS (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets E. Loans to government F. Loans to NBPS		A. Notes and coins of NBPS B. Deposits 1. Government 2. NBPS C. Foreign loans	 +1 000 -1 000
Total	**0**	**Total**	**0**

BALANCE SHEET 23: BANKS (LCC MILLIONS)			
Assets		**Liabilities**	
Bonds	+1 000	Deposits of NBPS	+1 000
Total	**+1 000**	**Total**	**+1 000**

BALANCE SHEET 24: MBS (LCC MILLIONS)			
Assets		**Liabilities**	
D. Foreign assets E. Loans to government (bonds) F. Loans to NBPS	 +1 000	A. Notes and coins of NBPS B. Deposits 1. Government 2. NBPS C. Foreign loans	 +1 000
Total	**0**	**Total**	**0**

4.4.5 Example: bank notes

A final example: the public (members of the NBPS) 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 25–26).

Balance Sheet 27 shows for the position of the MBS, which is the same as for the banks. You will recall that M3 = N&C + BD. The N&C holdings of the NBPS 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 MBS balance sheet = the CB'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 25: BANKS (LCC MILLIONS)			
Assets		Liabilities	
N&C	-100	Deposits of NBPS	-100
Total	-100	Total	-100

BALANCE SHEET 26: NBPS (LCC MILLIONS)			
Assets		Liabilities	
N&C Deposits at banks	+100 -100		
Total	0	Total	0

BALANCE SHEET 27: MBS (LCC MILLIONS)			
Assets		Liabilities	
D. Foreign assets		A. Notes and coins of NBPS	+100
E. Loans to government		B. Deposits 1. Government 2. NBPS	 -100
F. Loans to NBPS		C. Foreign loans	
Total	0	Total	0

4.4.6 Money destruction

When banks provide new loans (to the government sector or the NBPS), 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, as seen in Figure 2. In this particular country, and it applies to most countries, not in any month did the growth rate in M3 decrease.

However, it would be amiss if a fall in the money stock was not discussed. 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 28–29 show this transaction.

BALANCE SHEET 28: MRS A (NBPS) (LCC)			
Assets		**Liabilities**	
Deposit at bank	-50 000	Bank loan	-50 000
Total	**-50 000**	**Total**	**-50 000**

BALANCE SHEET 29: BANK A (LCC)			
Assets		**Liabilities**	
Bank loans (NBPS)	-50 000	Deposits of NBPS (M3)	-50 000
Total	**-50 000**	**Total**	**-50 000**

The position of the MBS will be the same as that of Bank A (see Balance Sheet 30).

BALANCE SHEET 30: MBS (LCC)			
Assets		**Liabilities**	
D. Foreign assets		A. Notes and coins of NBPS	
E. Loans to government		B. Deposits 1. Government	-50 000
F. Loans to NBPS	-50 000	2. NBPS	
		C. Foreign loans	
Total	**-50 000**	**Total**	**-50 000**

4.4.7 Bank deposits and the reserve requirement

As we have seen, by consolidating the balance sheets of the banks and the CB, all the cb2b IBM and the b2cb IBM claims were netted out. This obscures an 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.

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 31–34) (the amount of the bank loan = LCC 100 million; the RR ratio = 10% of deposits).

BALANCE SHEET 31: COMPANY A (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at Bank A	-100 +100		
Total	0	Total	0

BALANCE SHEET 32: COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods	+100	Loan from Bank A	+100
Total	+100	Total	+100

BALANCE SHEET 33: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Loan to Company A Reserves with CB (TR) (RR +10)	+100 +10	Deposits of Company A Loan from CB @ KIR	+100 +10
Total	+110	Total	+110

In this example the required reserves increase by LCC 10 million (increased deposit of LCC 100 million × 0.10). Because Bank A cannot create CB money, the CB will make to loan to the bank (BR). The TR of the banks increases by LCC 10 million (as a result of RR = +LCC 10 million).

BALANCE SHEET 34: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
Loans to banks (BR) @ KIR	+10	Bank reserves (TR) (RR +10)	+10
Total	+10	Total	+10

As will be seen later, the change in RR is just one of many factors that impact on bank liquidity, and that bank liquidity management is an essential ingredient in monetary policy.

4.5 Money creation: fallacies

4.5.1 Introduction

Before we begin, another reminder of the reserve requirement (RR) ratio (*r*), and the amount of reserves calculated (R or TR), is required. Most countries have an *r*[124]. This is a statutory requirement in terms of which banks are required to hold on deposit with the CB an amount of funds (required reserves – RR). The RR is a proportion of the amount of deposits the banks have (we assume 10%). Thus if the banks have LCC 100 billion in deposits they are obliged to have LCC 10 billion on deposit with the CB.

A number of critical notes are required here:

- Although rare, there are some countries that do not have a RR.
- In some countries the banks have two accounts:
  - Required reserves accounts in which the RR are held.
  - Settlement account (SA) (over which interbank settlements take place).
- In other countries the banks have just one account: a "settlement" or "reserves" account in which the RR and ER are held and over which interbank settlement takes place. We assume one account called "reserve account".
- Central banks do not pay interest on the banks' RR or ER; this is usually the case, but there are exceptions.[125]
- Because of the latter, the banks have no reason to hold excess reserves (ER) with the CB.
- In many countries N&C rank as RR; therefore if the RR is LCC 100 million and the banks have N&C in portfolio (teller tills, ATMs, etc) to the extent of LCC 30 million, only LCC 70 million is required to be held in the reserve accounts.
- In some countries N&C do not rank as reserves.
- Banks' N&C and their reserve balances (where applicable) are referred to as central bank money (CBM).
- No bank can create CBM; only the CB can do so – by buying assets from the banks (under repo) or making loans to the banks (against collateral of eligible assets = government securities usually).
- Many CBs accommodate the banking system by means of repos (buying assets for a period); as these repos amount to loans, we refer to all CB accommodation as loans.
- When the CB makes a loan to a bank (= provides borrowed reserves – BR) it does so at an "administratively" determined rate (by the MPC): the KIR.

4.5.2 A bank receives a deposit…

We begin with the *most misguided* pedagogy on money creation. In a nutshell it says that money creation begins with a bank receiving a deposit. It is postulated that if a bank receives a deposit of LCC 100 million, it is obliged to place LCC 10 million (reminder: r = 10%) with the CB (RR). Once this is executed it can lend out LCC 90 million (see Balance Sheets 35–36).

BALANCE SHEET 35: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
Reserves with CB (TR) (RR +10)	+10	Deposits	+100
Loans	+90		
Total	**+100**	**Total**	**+100**

BALANCE SHEET 36: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
		Bank reserves (TR) (RR +10)	+10
Total	**0**	**Total**	**+10**

When the loan of LCC 90 million is made, this amount ends up as a deposit with the bank (we assume there is one bank[126]). The bank places 10% (= LCC 9 million) with the CB and lends out the rest (= LCC 81 million) (see Balance Sheets 37–38 = a continuance of Balance Sheets 35–36).

BALANCE SHEET 37: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Reserves with CB (TR) (RR +10 & +9)	+19		
		Deposits	+100
Loans	+90	Deposits	+90
Loans	+81		
Total	+190	Total	+190

BALANCE SHEET 38: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
		Bank reserves (TR) (RR +10 & +9)	+19
Total	0	Total	+19

This process continues until the full original deposit amount of LCC 100 million is "used up", i.e. is equal to the RR amount, which may be expressed as:

$$\begin{aligned}\text{Total deposit creation} &= \text{new deposit} \times (1 / r)\\ &= \text{LCC 100 million} \times (1 / r)\\ &= \text{LCC 100 million} \times (1 / 0.10)\\ &= \text{LCC 100 million} \times 10\\ &= \text{LCC 1 000 million.}\end{aligned}$$

In other words, the money creation process continues until a total of LCC 1 000 deposits have been created (including the original deposit), and this was possible because the original deposit of LCC 100 million could be used as RR = compliance with the reserve requirement. Balance Sheets 39–40 illustrate this.

BALANCE SHEET 39: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Reserves with CB (TR) (RR +100)	+100		
		Deposits	+1 000
Loans	+900		
Total	+1 000	Total	+1 000

BALANCE SHEET 40: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
		Bank reserves (TR) (RR +100)	+100
Total	0	Total	+100

This is the so-called *money multiplier*, and it is expressed as the reciprocal of *r*:

New deposit creation = 1 / *r*
= 1 / 0.10
= 10.

Thus, for every LCC 10 in new bank deposits, the total money stock increase is LCC 100.

This is *unadulterated nonsense* and it is so for the following reasons:

- Where does the original deposit come from? One cannot just suck a deposit out of the air. Some balance sheet would have changed in the direction of deposits +LCC 100 million, but what other balance sheet item change compensates for this?
- As we have shown, no bank can create CBM, i.e. it is not possible for a bank to place any amount with the CB, without the CB buying an asset / reducing a liability.
- Note that, because of the flawed starting point in the "explanation", the balance sheet of the CB *does not balance*. So "something" is incorrect, and it is that the CB did not buy an asset or reduce a liability in order to create reserves (CBM) for the bank.

It is quite evident that the deposit originated from a new bank loan, as we expounded above. A final note to this section: it was assumed that there is only one bank; introducing more banks does not alter the principle.

4.5.3 Deposit of notes and coins

A condition under which the above is plausible is if the original deposit was made in N&C. Let us explore this. If HNW Mrs A deposits LCC 100 million in N&C (which she had in a large tin box under her bed) at the bank her balance sheet will change as indicated in Balance Sheet 41.

BALANCE SHEET 41: MRS A (LCC MILLIONS)			
Assets		**Liabilities**	
N&C Deposit at bank	-100 +100		
Total	**0**	**Total**	**0**

The bank's balance sheet in Balance Sheet 42 shows Mrs A's deposit and an asset in the form of N&C. The bank now has a deposit on which it is paying interest and an asset that does not earn interest.

BALANCE SHEET 42: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
N&C	+100	Deposit of Mrs A	+100
Total	**+100**	**Total**	**+100**

Because the N&C are surplus to their requirements (in tills and ATMs) and are liabilities of the CB, the bank will deposit them immediately with the CB; the results are shown in (continuous) Balance Sheets 43–44 (note that they balance).

BALANCE SHEET 43: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
N&C (from Mrs A) N&C (deposited at CB) Reserves at CB (TR) (RR = +10) (ER = +90)	+100 -100 +100	Deposit of Mrs A	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 44: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
		N&C Bank reserves (TR) (RR = +10) ER = +90)	-100 +100
Total	**0**	**Total**	**0**

Because bank deposits increased by LCC 100 million, RR is +LCC 10 million. The balance of LCC 90 million is reserves that are in excess of that required, i.e. the bank now has LCC 90 million in *excess reserves* (ER). As in the case of holding LCC 100 million in non-interest-bearing N&C, the bank now also has an asset (ER) that also bears no interest (RR does not either but it is not a "free" asset). If this situation was sanctioned by the CB (assuming there were no BR before this transaction), interest rates would fall sharply and the bank will feverishly make loans in order to *create a balance sheet that will produce an income*.

How can it do this? It can only be done by making loans, which *creates* bank deposits (= money); and this can take place *up to the point where all the ER are absorbed in RR*. This level is reached when total bank deposits created are equal to:

Maximum deposit increase = ER / *r*
= LCC 100 million / 0.10
= LCC 1 000 million.

The start (the deposit of N&C) and final outcomes are shown in Balance Sheets 45–48.

BALANCE SHEET 45: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
N&C N&C Reserves at CB (TR) (RR +100) Loans to NBPS	+100 -100 +100 +900	 Deposit of Mrs A Deposits of rest of NBPS	 +100 +900
Total	**+1 000**	**Total**	**+1 000**

BALANCE SHEET 46: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
		N&C Bank reserves (TR) (RR +100)	-100 +100
Total	**0**	**Total**	**0**

BALANCE SHEET 47: MRS A (LCC MILLIONS)			
Assets		**Liabilities**	
N&C Deposits at bank	-100 +100		
Total	**0**	**Total**	**0**

BALANCE SHEET 48: REST OF NBPS (LCC MILLIONS)			
Assets		**Liabilities**	
Deposits at bank	+900	Loans from bank	+900
Total	**+900**	**Total**	**+900**

The above is just a pleasant and neat exercise, and it is presented in the interests of completeness and as an introduction to what follows. As we saw earlier, N&C make up a small part of money, and while the above example is possible, it is misleading to present it as the model of money creation. However, it did demonstrate a critical point: that the banks can only "get rid of" ER in the manner shown. Just as they cannot create CBM, they cannot "get rid of" it, except in the manner shown, which is changing the dividing line between ER and RR (by lending and creating deposits). We will touch upon this later again.

4.5.4 Government spending

It is sometimes expounded that government spending (when government uses the CB as its banker) leads to money creation. Let us assume that government spends LCC 100 million on goods bought from the NBPS (see Balance Sheets 49–52).

After government spends, the banks have ER of +LCC 90 million. They can now lend up to the point where ER are fully transmuted / absorbed into RR. The end point is the same as in the N&C example above: M3 can increase up to a total of:

ER / *r* = LCC 100 million / 0.10 = LCC 1 000 million.

BALANCE SHEET 49: GOVERNMENT (LCC MILLIONS)			
Assets		**Liabilities**	
Deposits at CB Goods	-100 +100		
Total	**0**	**Total**	**0**

BALANCE SHEET 50: CENTRAL BANK (LCC MILLIONS)			
Assets		**Liabilities**	
		Government deposits Bank reserves (TR) (RR = +10) (ER = +90)	-100 +100
Total	**0**	**Total**	**0**

BALANCE SHEET 51: NBPS (LCC MILLIONS)			
Assets		**Liabilities**	
Goods Deposit at bank	-100 +100		
Total	**0**	**Total**	**0**

BALANCE SHEET 52: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
Reserves at CB (TR) (RR = +10) (ER = +90)	+100	Deposits of NBPS	+100
Total	**+100**	**Total**	**+100**

As in the above N&C example, this exposition is misleading, and it is so because the original transaction is omitted from the story. It is a critical part of the story. *The original transaction is that government either receives revenue from taxes or borrows the money*. We will explore the latter case: government borrows LCC 100 million by the issue of bonds (bought by the banks) and spends this on goods bought from the NBPS (see Balance Sheets 53–56).

BALANCE SHEET 53: GOVERNMENT (LCC MILLIONS)			
Assets		Liabilities	
Deposits at CB Deposits at CB Goods	+100 -100 +100	Bonds	+100
Total	+100	Total	+100

BALANCE SHEET 54: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
		Government deposits Government deposits	+100 -100
Total	0	Total	0

BALANCE SHEET 55: NBPS (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposit at bank	-100 +100		
Total	0	Total	0

BALANCE SHEET 56: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Bonds	+100	Deposits of NBPS	+100
Total	+100	Total	+100

Note the difference from the previous example where the original transaction was omitted: M3 (deposits of NBPS) increased by LCC 100 million and the BSSoC is bank loans (buying new bonds = new loans extended). The previous example gives a starkly different picture: the creation of ER.

In fact the correct story is that the banks are actually *short of reserves* – because bank deposits have increased (that carry a 10% RR). We omitted this issue in the interests of simplicity. We now correct it in Balance Sheets 57–58.

BALANCE SHEET 57: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
Loans to bank @ KIR	+10	Government deposits Government deposits Bank reserves (TR) (RR = +10)	+100 -100 +10
Total	+10	Total	+10

BALANCE SHEET 58: BANK A (LCC MILLIONS)			
Assets		Liabilities	
Bonds Reserves at CB (TR) (RR = +10)	+100 +10	Deposits of NBPS Loans from CB @ KIR	+100 +10
Total	+110	Total	+110

As we have said before, the banks are not able to create CBM; only the CB itself can do this. The bank is therefore obliged to take a loan from the CB at the KIR.

4.5.5 Bank lending by a small commercial bank

It is sometimes alleged that money creation is not possible when the lending bank is a small commercial bank. The bank, it is held, must first find the money before it can lend it out to a borrower. It is a real life issue, and this the way an individual bank will "think" and operate. However, money creation by the *banking system* still takes place in this case.

The small commercial bank (Bank A) will enter the money market and attract a new deposit [equal to the loan (say, LCC 100 million) it is to provide to Company A] from an institution (assume Retirement Fund Z) by offering an attractive deposit rate. Company A's purpose of borrowing is to purchase goods from Company B. Company B banks with Bank B. Retirement Fund Z banks with Bank Z but is happy to move a deposit if the rate is attractive, as in this example. For the sake of pedagogy we will ignore the RR. Keep in mind that Retirement Fund Z is a member of the NBPS.

Bank A obtains a LCC 100 million deposit from Retirement Fund Z, and Bank Z loses the deposit. Bank A credits Company A's current account[127] with LCC 100 million which is spent immediately by making an EFT in favour of Company B at Bank B. Company B despatches LCC 100 million goods to Company A. The changes to the balance sheets are shown in Balance Sheets 59 – 65. (Retirement Fund Z = RFZ.)

BALANCE SHEET 59: BANK A (LCC MILLIONS)			
Assets		**Liabilities**	
Loans (Company A)	+100	Deposits of NBPS (RFZ)	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 60: RETIREMENT FUND Z (LCC MILLIONS)			
Assets		**Liabilities**	
Deposits at Bank Z Deposits at Bank A	-100 +100		
Total	**0**	**Total**	**0**

BALANCE SHEET 61: COMPANY A (LCC MILLIONS)			
Assets		**Liabilities**	
Goods	+100	Loans (Bank A)	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 62: COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits at Bank B	-100 +100		
Total	0	Total	0

BALANCE SHEET 63: BANK B (LCC MILLIONS)			
	Assets		Liabilities
Reserves at CB	+100	Deposits of NBPS (Co B)	+100
Total	+100	Total	+100

BALANCE SHEET 64: BANK Z (LCC MILLIONS)			
Assets		Liabilities	
Reserves at CB	-100	Deposits of NBPS (RFZ)	-100
Total	-100	Total	-100

BALANCE SHEET 65: CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
		Bank reserves Bank Z Bank B	 -100 +100
Total	0	Total	0

The two banks will find one another in the *b2b IBM* and Bank B will provide an interbank loan to Bank Z at the interbank rate established between them. As you are now familiar with the interbank market I do not need to spell out the entries to you. The critical question is what happened to the amount of money in circulation? A consolidation of the three banks' balance sheets[128] will reveal (see Balance Sheet 66) that M has increased by LCC 100 million and the BSSoC is an increase in bank loans by the same amount. You will know that the real cause is the satisfied demand for loans.

BALANCE SHEET 66: CONSOLIDATED BANKING SECTOR (LCC MILLIONS)			
Assets		Liabilities	
Loans extended (Co A)	+100	Deposits of NBPS (Co B)	+100
Total	+100	Total	+100

What is the lesson? It is a significant one and is that while individual banks "think" they need to get a deposit before they lend, this is not strictly required because the amount loaned has a counterpart in the form of a new deposit which most likely ends up with another bank (in the case of a small bank lending). In the case of a large bank extending a large loan, it is quite likely that the new deposit (= new money) could end up with itself. If not, it will get to balance its books by an interbank loan from the bank that received the new deposit. It will be evident that in the above we assume that these were the only transactions that took place on that particular business day.

4.5.6 Banks are "fully lent"

In conclusion, a refutation is required of the fallacy that banks at times have no more money to lend because they are "fully lent". From the above you will have gauged that this is not so[129]. A perusal of the balance sheet of any bank will indicate that banks are fully lent at all times; their assets (= mainly loans + CBM) are fully matched by their liabilities (mainly deposits + CB loans) and equity. This is the proof. Note that this is usually the case. In exceptional times, as in the time of so-called quantitative easing (QE I and QE II are examples), the banks have ER, but this is engineered by the CB.

You also know that banks are able to create money by simply making loans, i.e. they expand their balance sheets whenever a borrower asks for a loan, provided the project is sound or the individual can service the new debt. This is the business of banking, and banks compete with one another to get this business.

So, money is always available – to be created. Governments want banks to manufacture more money because this underlies new economic growth and increases employment. The trick is to manage creation responsibly, which is the turf of the CB.

4.6 Bibliography

De Kock, MH, 1946. **Central banking**. London: Staples Press.

Faure, AP, 1977. A money market analysis, **South African Reserve Bank Quarterly Bulletin**. September. Pretoria: South African Reserve Bank.

Faure, AP, 2008. **Monetary policy: bank liquidity management**. Cape Town: Quoin Institute.

Faure, AP, 2008. **Monetary policy: money, its statistical causes and its real drivers.** Cape Town: Quoin Institute.

Faure, AP, 2008. **Monetary policy: transmission**. Cape Town: Quoin Institute.

Van Staden, B, 1963. **A monetary analysis for South Africa**. Pretoria: South African Reserve Bank Quarterly Bulletin, March.

Van Staden, B, 1966. **A new monetary analysis for South Africa.** Pretoria: South African Reserve Bank Quarterly Bulletin, March.