3 Interbank market & monetary policy

3.1 Learning outcomes

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

- Define the interbank market.
- Describe the role of the bank / central bank interbank market in the implementation of monetary policy.
- Describe the role of the central bank in interbank clearing.
- Examine the role played by the bank / bank interbank market in the facilitation of liquidity management by banks.
- Examine the role played by the bank / bank interbank market in the context of monetary policy transmission.

3.2 Introduction

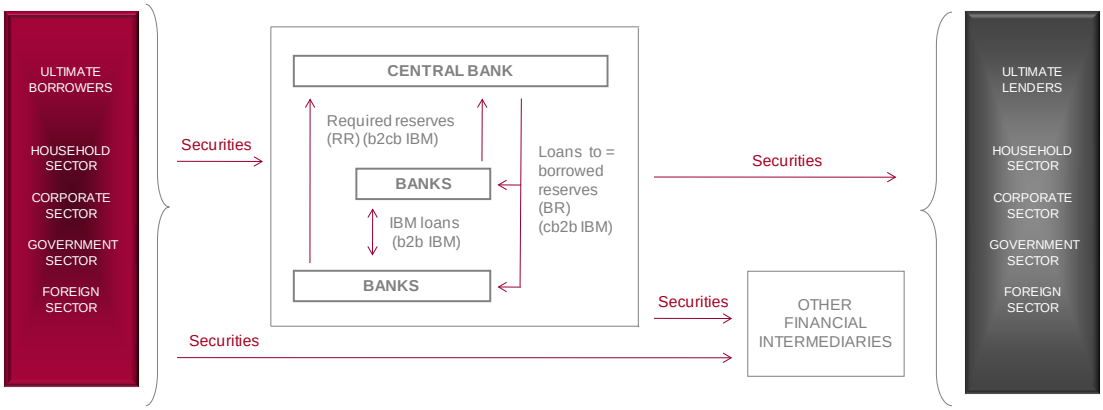

Figure 1: interbank markets

The money market encompasses:

- The primary markets that bring together the supply of retail and wholesale short-term funds and the demand for wholesale and retail short-term funds.
- The secondary market in which existing short-term MD instruments are traded.
- The creation of new money (deposits) and the financial assets that lead to this (loans in the form of NMD securities and MD securities).
- The bank / central bank interbank market (cb2b IBM and the b2cb IBM) where interest rates have their genesis (i.e. where monetary policy is implemented).
- The bank / bank interbank market (b2b IBM) where the KIR has its secondary impact, i.e. on the interbank rate.
- The money market derivative markets (= an addendum).

Here we focus on the interbank market (see Figure 1). As the name indicates, the interbank market is the market for bank loans to, or deposits with, other banks. “Banks” means the central bank and the private sector banks. For the sake of simplicity, here we call the central bank as is and the private sector banks “banks”.

The interbank market is entirely a *primary* market[25]; it is made up of three sub-markets:

- The bank to central bank interbank market (b2cb IBM), which is an administratively-driven market, and covers the flow of cash reserves (R) (deposits with the central bank are termed cash reserves or just reserves) that banks are required to hold with the central bank in terms of the statutory reserve requirement (RR).
- The central bank to bank interbank market (cb2b IBM) which encompasses the lending of reserves by the central bank to the banks, the outstanding amount of which at a point in time is called the *money market shortage* (MMS) or the liquidity shortage (LS) or *borrowed reserves* (BR); central bank loans are provided at the KIR.
- The bank to bank interbank market (b2b IBM), which is the market in which banks lend funds to one another. As this takes place over the banks' settlement accounts with the central bank it can be called *cash reserves* market or the *cash reserve funds* market or just the *reserve funds* market. The rate that is discovered in this market is the *interbank rate*. In the US this market is called the *Fed Funds* market and the rate the *Fed Funds* rate.

In the interbank markets *no new funds are created*; existing funds are merely shifted around the banking system. We discuss this significant market under the headings:

- Bank to central bank interbank market (required reserves).
- Bank to bank interbank market at the final interbank clearing (reserve funds market).
- Bank to central bank interbank market (liquidity shortage).
- Other bank / bank interbank markets.

3.3 Bank to central bank interbank market (required reserves) (b2cb IBM)

All banks are statutorily required (usually in terms of the statute governing the central bank) to maintain an amount of funds with the central bank based on the size of their deposits or liabilities (deposits make up the large majority of *liabilities). This is called the cash reserve requirement or just the reserve requirement* (RR; we also use RR for *required reserves*) and the funds held at the central bank are usually termed *cash reserves* or just *reserves*. The RR differs from country to country and ranges from 0% to 25%[26].

The *required* reserves of banks are held in *reserve accounts*[27] with the central bank and are increased or decreased on a monthly basis as the banks' deposits (liabilities) rise or fall, or the reserve requirement ratio (r) is increased or decreased (which occurs infrequently in most countries). As we will see below, in most countries, banks also have settlement or current accounts with the central bank, over which interbank settlement takes place. On these accounts banks may hold excess reserves (ER) although this is rare (in most countries). In some countries banks have just one account on which RR and ER are held. In this discussion we assume the banks have just one central bank account on which they keep their *total reserves* (TR), therefore TR = RR + ER.

It is important to note that, usually, no interest is payable on these balances (we assume this in this text).

BALANCE SHEET 1: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
E. Foreign assets	1 500	A. Notes and coins	1 000
		B. Deposits	
		1. Government	900
F. Domestic assets	1 000	2. Banks (TR)	500
		RR (500)	
G. Loans to banks @ KIR	400	ER (0)	
		C. Foreign loans	200
		D. Central bank securities	300
Total	**2 900**	**Total**	**2 900**

An example will assist comprehension. We present simplified balance sheets[28] of the central bank and the private sector banks with notional numbers, and assume that the *r* is equal to 10% of deposits (see Balance Sheets 1–2). It will be seen that the banks' RR are exactly equal to 10% of deposits (LCC[29]500 million = 0.1 × LCC 5 000 million) which is close[30] to reality because no interest is paid on these deposits. This means that the banks do not hold excess reserves with the central bank.

BALANCE SHEET 2: PRIVATE SECTOR BANKS (LCC MILLIONS)			
Assets		**Equity and liabilities**	
C. Bank notes and coins	100		
D. Reserves with CB (TR)	500		
RR (500)		A. Deposits	5 000
ER (0)		B. Loans from CB @ KIR	400
E. Loans (NMD + MD)	4 800		
Total	**5 400**	**Total**	**5 400**

3.4 Bank to bank interbank market at the final interbank clearing (reserve funds market) (b2b IBM)

3.4.1 Introduction

The reserve funds market is a particularly significant market because it is in this market that the earliest point of the yield curve is determined, i.e. short-term rates. As noted, the US equivalent of the cash reserve funds market is the *Federal Funds market* one often hears about in terms of US monetary policy. In order to understand this market, it is necessary elucidate the interbank clearing process at the close of business on a day.

3.4.2 Central bank in function as "bank of central clearance and settlement of claims"

As noted above, in addition to their reserve accounts, the clearing (mainly commercial) banks in many countries maintain *settlement accounts* (also known as *current* and *free balance accounts*) with the central bank. The banks generally do not maintain balances on these accounts (except in error) because the central bank does not pay interest on such balances). These settlement accounts are at the very centre of the financial system. As above, we assume just one account on which RR is held and over which the interbank settlement takes place.

It will be apparent that some sort of system must be in place to cater for the clearing and settlement of claims that banks have on one another each day at the close of business. This has been one of the functions carried out by central banks from their inception, and it is closely allied with its monetary policy function.

The need for central clearing and settlement facilities arises from the fact that a cheque drawn on (or EFT[31]) made from) a particular bank will most likely be deposited by the recipient with (or EFT funds transferred to) a different bank. Until many years ago cheques held by the various clearing banks against one another were physically exchanged, i.e. *cleared*, in a physical place, i.e. a *clearing house*, where representatives of each of these banks gathered at specific times each day (usually twice). The central bank served as the *clearing house* in centres in which it had branch offices.

The modern systems that cater for this process are twofold:

- An electronic system that sets (or nets) off the claims that banks have on one another (for the clearing of the smaller cheques and EFTs).
- An electronic system that operates on a real time gross settlement (RTGS) basis for large amounts.

We refer in this text to the clearing / settlement system as IBCH[32].

At the centre of the clearing / settlement process is the central bank. It provides for the *central clearance and settlement of claims*. This simply means that at the end of the final interbank clearing, the clearing banks end up with a *net cash reserve position* on their accounts with the central bank. These *positions* may be negative or positive, i.e. they reflect the *amounts owed to the central bank or by the central bank*. This bewildering situation will become clearer as this discussion progresses.

A negative (deficit) clearing amount will reduce the TR balance and put the bank in contravention of the statutory cash reserve requirement.[33] A positive clearing amount will increase that bank's TR to an amount in excess of that required (RR), i.e. it will have ER. ER balances are of course allowed but this does not make good business sense – because, as noted, reserve balances with the central bank earn no interest.

3.4.3 Bank to bank interbank market after interbank clearing and settlement

The final reserve funds market operation is set in motion immediately after the clearing / settlement process is completed, i.e. when the banks are advised as to the balances on their accounts at the central bank. As noted, the clearing amounts are positive or negative, making TR > RR = ER + or TR < RR. The latter is not permitted.

The banks with TR < RR (negative clearing amounts) will endeavour to borrow reserves from the other banks that have a TR > RR = ER+ balances on their central bank account. The reason for this is that the only other alternative is to borrow the reserves required to make up the shortfall from the central bank at the KIR, i.e. the central bank's accommodation rate, *which is the highest call (or short-term) rate in the market*.

A bank which has ER at the end of the clearing process, which is indebted to the central bank, will repay the central bank by the amount of its ER. On the other hand, a bank with ER, which is not indebted to the central bank, will endeavour to lend these reserves to the deficit bank/s. As noted, the motivation for this is the *opportunity cost*, i.e. interest is not paid by the central bank on excess balances.

The reserve funds market is a telephone-based market. The dealers in the treasury departments of the banks simply telephone one another and play the "cat and mouse" game of not sounding too desperate or keen (depending on whether they are surplus or short in terms of reserves), all in an effort to secure the best rates, i.e. the lowest in the case of a borrower, and the highest in the case of a lender.

3.4.4 Example of bank to bank interbank transaction

It may be useful at this stage to provide a simple example of the interbank market between private sector banks after the final IBCH clearing, and how this impacts on the banks' reserves at the central bank.

Mr A banks with Bank A and Mr B banks with Bank B. Mr A buys goods to the value of R100 million from Mr B by presenting him with a cheque for this amount, which is of course drawn on Bank A. Mr B deposits the cheque with Bank B. The cheque is put through the IBCH system. At the close of business the two banks' treasurers are confronted with electronic information on the changes in their accounts with the central bank, as indicated in Balance Sheet 3.

BALANCE SHEET 3: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		Bank reserves	
		Bank A	-100
		Bank B	+100
Total	0	Total	0

The banks' balance sheets of course changed as indicated in Balance Sheets 4–5.

BALANCE SHEET 4: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB	-100	Deposits (Mr A)	-100
Total	**-100**	**Total**	**-100**

BALANCE SHEET 5: BANK B (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB	+100	Deposits (Mr B)	+100
Total	**+100**	**Total**	**+100**

Bank A is in contravention of the cash reserve requirement to the tune of LCC 100 million (read the negative balance as having reduced its TR which is now less than RR, while Bank B has surplus reserves (ER) of this amount (assuming it is not indebted to the central bank) on which it will not earn interest. The interbank market now swings into operation, and the outcome of the cat and mouse game is that Bank B will lend the reserves to Bank A. Balance Sheets 6–7 indicate the balance sheets changes (including the original transaction).

BALANCE SHEET 6: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB (TR) Reserves at CB (TR)	-100 +100	Deposits (Mr A) Loan (from Bank B)	-100 +100
Total	**0**	**Total**	**0**

BALANCE SHEET 7: BANK B (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB (TR) Reserves at CB (TR) Loan (to Bank A)	+100 -100 +100	Deposits (Mr B)	+100
Total	**+100**	**Total**	**+100**

This is given effect with an instruction by Bank B to the central bank to debit its account by LCC 100 million and to credit Bank A's account by LCC 100 million. This may be depicted as in Balance Sheet 8 (including the original transactions):

BALANCE SHEET 8: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		Bank reserves Bank A Bank B Bank A Bank B	 -100 +100 +100 -100
Total	0	Total	0

Mr A's and Mr B's balance sheets changed as indicated in Balance Sheets 9–10.

BALANCE SHEET 9: MR A (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods Deposits (Bank A)	+100 -100		
Total	0	Total	0

BALANCE SHEET 10: MR B (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods Deposits (Bank B)	-100 +100		
Total	0	Total	0

In the example above the central bank's balance sheet did not change on a net basis. This is because the central bank did not do any other deals / transactions that day (assumed).

3.4.5 Interbank rate

The final rate established by the interaction of the surplus and deficit banks is the interbank rate. This rate is related to the previous day's interbank rate, the call rate established during the day's business and, ultimately, the central bank's lending rate, i.e. the KIR. This is the newly established interbank rate.

Of these factors, the major factor in determination of the interbank rate is the KIR, and this is because reserves are available to the banks at this rate. Thus, deficit banks will endeavour to borrow funds at below this rate and surplus banks will demand a rate as high as possible but below the KIR. It should thus be evident that the interbank rate cannot be higher than the KIR (because the supply of reserves by central bank takes place at this rate).

Thus, the KIR represents a ceiling rate in the interbank market, as substantiated by Figure 2. It shows the call money, interbank and KIR time series rates for a particular country for a period of seven years, and it is evident that KIR represents a ceiling rate for the very short term money rates.

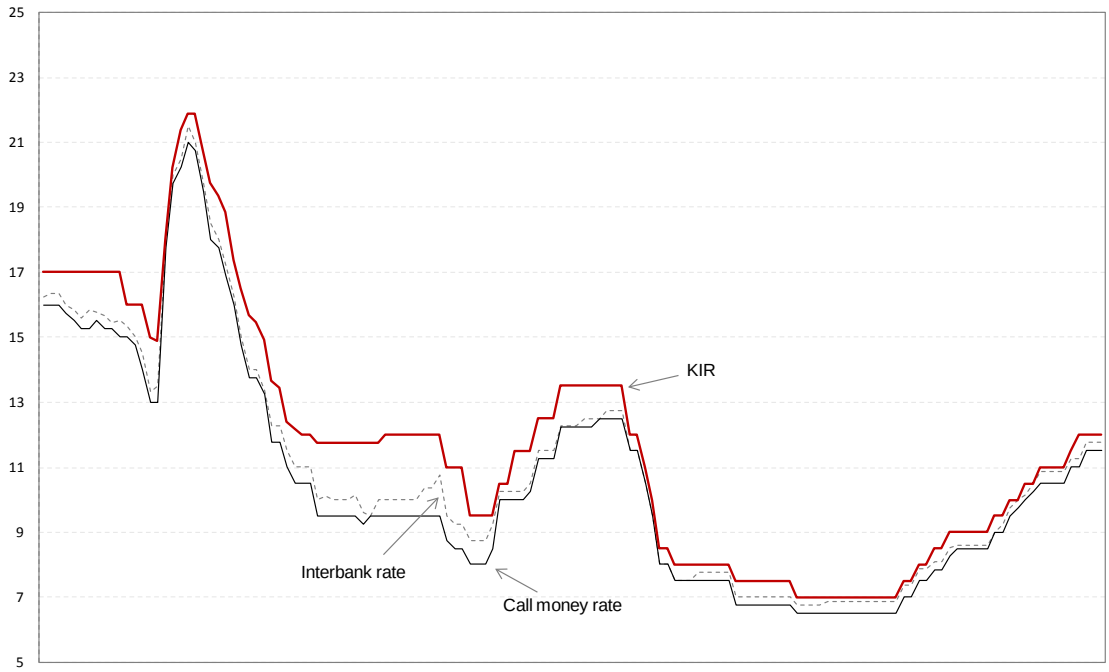

Figure 2: call money rate, interbank rate & KIR

3.5 Central bank to bank interbank market (liquidity shortage) (cb2b IBM)

3.5.1 Introduction

At the end of the reserve fund placing process (the b2b IBM), the net result is that the banks, in aggregate, would be in surplus or in deficit in terms of their collective reserve requirement. This sets in motion the cb2b IBM, which means that the central bank:

- (in the case of a deficit) lends to the banks (borrowed reserves – BR) in order that they comply with the reserve requirement, or
- (in the case of a surplus) repays the banks because they have funds in excess of the reserve requirement [i.e. their indebtedness (BR) to the central bank reduces].

One of the tenets of monetary policy in most monetary systems of the world is that the banks are permanently indebted to the central bank. As we have seen, the outstanding amount of indebtedness is called the money market shortage (MMS) or the liquidity shortage (LS). The purpose of having an LS is to *make KIR effective*, which is very heart of monetary policy.

Central bank accommodation to the banks in most countries is granted in the form of repurchase agreements (repos)[34] conducted with the central bank for a period at the repo rate (which we call the KIR). This simply means that the banks sell certain eligible securities (usually treasury bills and government bonds) to the central bank for a day or a few days under an agreement to repurchase them when they are able to. (It is more complicated that this but we ignore the details here for the sake of didactic elucidation.)

This "complicated" borrowing / lending system of some central banks disguises a simple loan to the bank/s for a short period of a day or a few days at the KIR. Although it amounts to the sale of an asset by the bank to the central bank for a short period (a reduction in an asset) we present it as an increase in a liability (loan) with the repo securities representing the collateral.

Since the banking system is always indebted to the central bank (i.e. always in a BR situation = LS), a surplus reserves situation at the end of the interbank clearing process will lead to a reduction in the amount of BR (i.e. a fall in the LS). On the other hand, a deficit position will lead to an increase in the overall amount of BR (i.e. an increase in the LS). This marks the end of the interbank market process for the day.

It is to be noted that if the LS falls or increases, the "cause" can be found in the balance sheet of the central bank. The means that the LS changes only when the central bank undertakes a transaction, or if a transaction by the private bank or non-bank sector takes place that affects the balance sheet of the central bank (this is an interesting subject that will be touched upon later).

As noted, in most countries the banks are permanently indebted to the central bank, i.e. there is a permanent outstanding amount of indebtedness to the central bank (BR or LS). It will be evident that the LS can also be presented on a net basis with an opposite sign (taking into account any ER the banks may have on their accounts) as net *excess* reserves (NER). In terms of the balance sheet of the central bank presented above this would be equal to the ER of the banks (which is usually = zero) less the amount of BR (the LS); therefore NER = ER – BR. This is a useful measure of money market liquidity. An increase in NER will be seen as an improving liquidity situation (because it results from a decline in the LS), and a decline in NER will be seen as a deteriorating liquidity situation (increase in the LS).[35] We will return to this analysis a little later.

3.5.2 Example of central bank to bank interbank transaction

An example is required in order to integrate this knowledge. However, before we get to it, it may be important to repeat part of the above in different words:

Many millions of bank transactions are done in a single day, including by the central bank. At the conclusion of the b2b IBM interaction, there is a *net outcome* in terms of reserves (on the accounts of the banks). The banks will be short *or* be in surplus *on the day*. This is where the cb2b IBM comes into play and it works as follows:

As mentioned before, the banking system in most countries (in normal times) is *always* in a BR (LS) situation, i.e. the banks are indebted to the central bank at *all* times. This is a central element of monetary policy. Another way of putting this is that a proportion of the banks' *required reserves* are *always* borrowed. Thus, in the case where the banks are in surplus on their accounts at the end of the day's b2b IBM interaction (i.e. have ER), they will utilise these ER to reduce their indebtedness to the central bank (BR). In this case the LS (i.e. the *balance* or *outstanding amount* from the previous day) will fall by the amount of the net surplus.

On the other hand, when the banks (some of them) are in deficit after the b2b IBM, they have no option by to increase their indebtedness to the central bank. This is because *there is no other source of reserves.* The central bank *always* supplies the reserves; *it has no option but to do so*. The LS will increase from the previous day by the amount of the collective deficits of the deficit banks.

It is central to this discussion to understand that *no bank is able to create its own reserves.* This is perhaps best explained by assuming that Bank A is in deficit after the interbank clearing. It draws a cheque upon itself (called a *cashier's cheque*) and presents it to the central bank to credit its account. The central bank does so, but now it has a *claim on the bank* in question. Thus, the central bank will debit Bank A's account. *Nothing has been achieved*. Conclusion: no bank can create *central bank money*.

It is appropriate at this stage to take the example shown above a little further along the road of reality. Assume that the LS on day 1 is LCC 10 223 million (split as follows: Bank A: LCC 2 112 million; Bank B: LCC 3 556 million; other banks: LCC 4 555 million). Mr A draws a cheque for LCC 100 million on Bank A on day 2 and presents it to Mr B in exchange for the goods. Mr B deposits the cheque with Bank B. The latter bank would put the cheque through the IBCH system. Assume that this is the only transaction that takes place on the day. At the close of banking business, the treasury officials of the banks are presented with electronic statements from the IBCH in respect of day 2; they find the following:

- Bank A: deficit on its central bank account of LCC 100 million
- Bank B: credit on its central bank account of LCC 100 million
- Other banks: no change on their central bank accounts.

The bank / bank interbank market fires up, *but only Bank A will be frantically trying to find surplus funds*. And *Bank A will not find the funds*. This is because Bank B already is borrowing from the central bank at KIR. Because the KIR is the *highest rate* in the market, Bank B will repay the central bank LCC 100 million. Bank A will have no option but to borrow LCC 100 million from the central bank. The LS, i.e. the outstanding amount of accommodation to the banking sector on day 2 has not changed (see Balance Sheets 11–13).

BALANCE SHEET 11: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
		Deposits (Mr A) Loans from CB	-100 +100
Total	**0**	**Total**	**0**

BALANCE SHEET 12: BANK B (LCC MILLIONS)			
Assets		**Equity and liabilities**	
		Deposits (Mr B) Loans from CB	+100 -100
Total	**0**	**Total**	**0**

BALANCE SHEET 13: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans to Bank A Loans to Bank B	+100 -100		
Total	**0**	**Total**	**0**

Overall, the LS has not changed; there has been a shift in central bank accommodation between Bank A and Bank B.

From this it can be gauged that something else must occur in order for the LS to change from day to day. As noted earlier, central to the understanding of the LS is the fact that the *reserve position of the banks only changes when some other transaction has taken place that is reflected in the central bank's balance sheet.* An example is required.

Assume that the LS is as above on day 1 (LCC 10 223 million). The only transaction that takes place on day 2 is the central bank sells LCC 100 million treasury bills from its portfolio to Bank A. Bank A settles the transaction by doing an EFT for LCC 100 million in favour of the central bank. At the end of the business day the bank treasurers will find the following on their electronic IBCH statements:

- Bank A: debit on its central bank account of LCC 100 million
- Other banks: no change on their central bank accounts.

The b2b IBM is set in motion and Bank A is not able to find any bank with surplus reserves. Bank A has no option but to increase its indebtedness to the central bank. The LS increases to LCC 10 323 million, i.e. it increased by LCC 100 million. There are two steps to this process:

Step 1:

BALANCE SHEET 14: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB (TR) RR (-100) ER (0) Treasury bills	-100 +100		
Total	**0**	**Total**	**0**

BALANCE SHEET 15: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Treasury bills	-100	Bank reserves (TR) RR (-100) ER (0)	-100
Total	**-100**	**Total**	**-100**

Bank A had no ER to start off with and is now in contravention of the reserve requirement. It has no option but to borrow LCC 100 million from the central bank:

Step 2:

BALANCE SHEET 16: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB (TR) RR (+100) ER (+0)	+100	Loans from CB	+100
Total	**+100**	**Total**	**+100**

BALANCE SHEET 17: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans to Bank A	+100	Bank reserves (TR) RR (+100) ER (0)	+100
Total	**+100**	**Total**	**+100**

Net outcome:

BALANCE SHEET 18: BANK A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Reserves at CB (TR) RR (0) ER (0) Treasury bills	 +100	Loans from CB	+100
Total	**0**	**Total**	**0**

BALANCE SHEET 19: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Treasury bills Loans to Bank A	-100 +100	Bank reserves (TR) RR (0) ER (0)	
Total	**0**	**Total**	**0**

The central bank has loaned LCC 100 million to Bank A, i.e. there was a flow from the central bank to Bank A, which led to an increase in the LS from LCC 10 223 million to LCC 10 323 million. This is the *central bank to bank interbank market* (cb2b IBM).

In conclusion, the following should be evident:

- If, in the above transaction, the central bank was an ordinary bank it would have simply lent the LCC 100 million to Bank A in the b2b IBM at the market-determined interbank rate.
- The central bank interposes itself in the monetary system and causes a sort of "blockage", which it "unblocks" in a different way: by "recycling" the funds (reserves) at an administratively determined rate, the KIR.
- Bank A had no option but to accept the recycled funds at the KIR.
- This may be seen in another way: the increased LS (a result of the new central bank loan) arises because the central bank is the only bank in the system that does not do *normal* interbank transactions. It does not maintain bank accounts with the other banks into which it deposits the LCC 100 million it received. It *lends* the relevant amount to the bank in the form it decides upon (overnight, repo system or other), and at its administratively determined rate (KIR).
- Any transaction effected by the central bank will impact on the LS. For example, the purchase of a security will reduce the LS; the issue of more bank notes will increase the LS; the sale of the central bank's own securities will increase the LS.
- The central bank has total control over the LS and the KIR and therefore on the b2b interbank rate.

3.5.3 Significance of the KIR

It will be useful to again highlight the significance of the KIR. The KIR is an administratively-determined rate set by the central bank and it largely "determines" the b2b interbank rate. But it only does so when the banks are indebted to the central bank, i.e. are in a BR situation. In most countries this is a permanent condition (however, it is not the case in extraordinary economic situations when the central bank wishes to "force" interest rates down, as happened in the past recession).

When the banks are chronically short of reserves, the KIR impacts directly on the b2b interbank rate, which in turn has a major effect on bank call money rates (the rates for wholesale one-day money) because banks aggressively compete for this money in order *not to borrow from the central bank* at the KIR (the highest rate for very short-term money) (see Figure 2). The call rate has a major influence on other deposit rates. Therefore, the KIR impacts on all the deposit rates of banks. As profit-maximisers, the banks endeavour to maintain a steady "margin" (i.e. the interest rate differential between the cost of money and their lending rates, the most significant of which is the prime rate[36]); therefore, a change in the KIR is reflected in bank lending rates in the same direction and to the same extent. Figure 3[37] provides strong evidence of this relationship (correlation coefficient = 0.99).

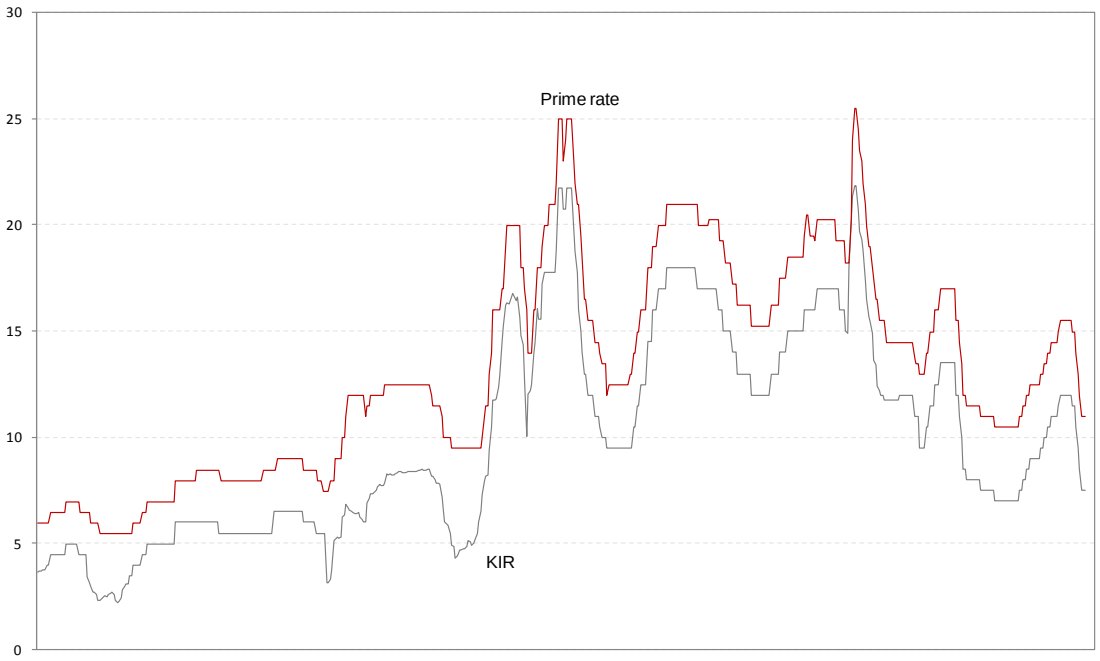

Figure 3: KIR & prime rate (month-ends over 50 years)

The significance of this relationship should be clear:

- The level of the banks' prime lending rate has a major influence on the public's demand for bank loans.
- Satisfied demand for credit is the counterpart of new money creation (see Figure 4 – for a particular country for a period of about 50 years).

It is to be expected therefore Interest rates therefore have a major impact on domestic demand (GDE – see Figure 5 – for a particular country for a period of over 50 years).

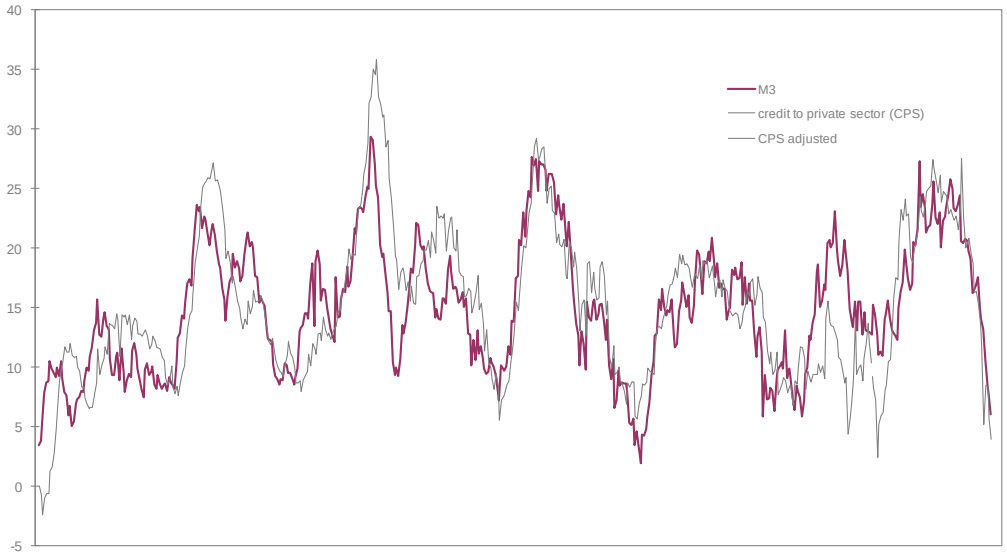

Figure 4: M3 & bank credit (yoy %)

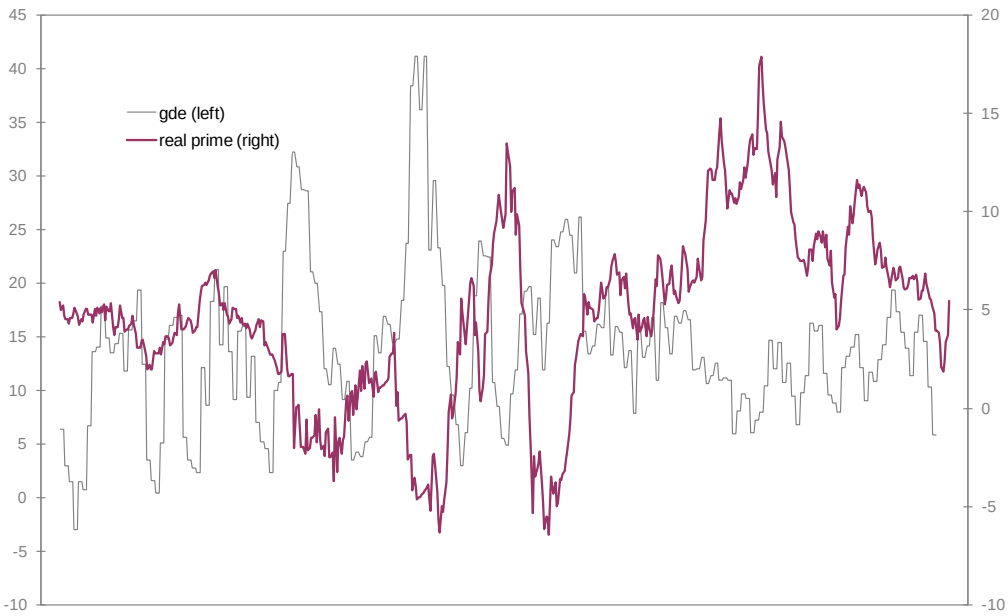

Figure 5: current GDE (yoy %) & real prime (adv 12 months)

It is therefore also expected that there will be a close inverse relationship between interest rates (in real terms) and inflation (see Figure 6 – for a particular country for a period of over 60 years).

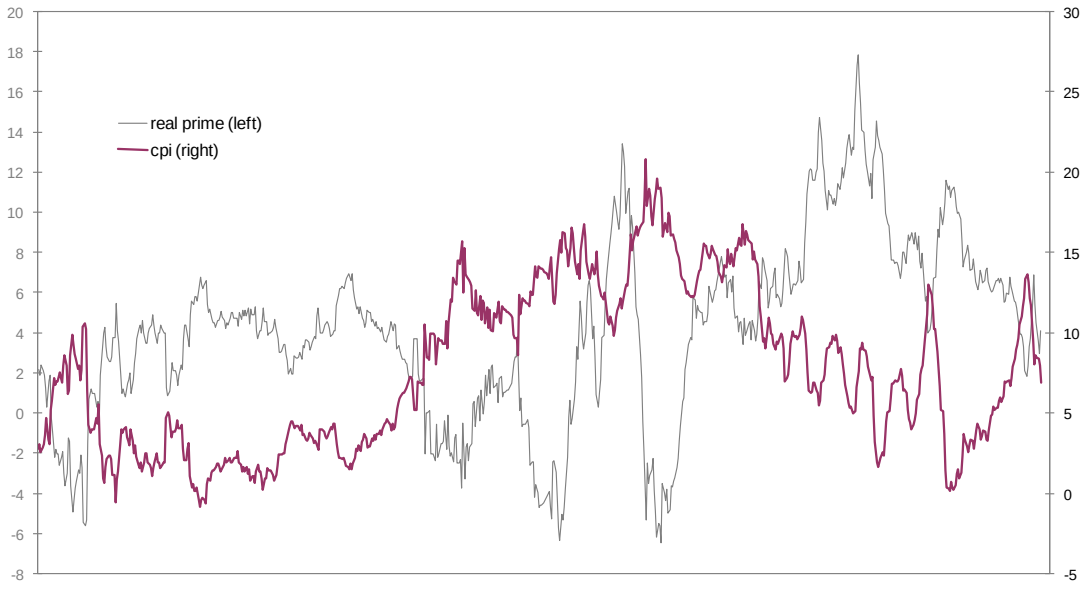

Figure 6: real prime and CPI inflation (yoy %)

The importance of the LS lies therein that the KIR is *made effective*, i.e. strongly influences the interbank rate and other rates. It is the starting point of the monetary policy transmission mechanism (MPTM), our view of which is portrayed in Figure 7.[38]

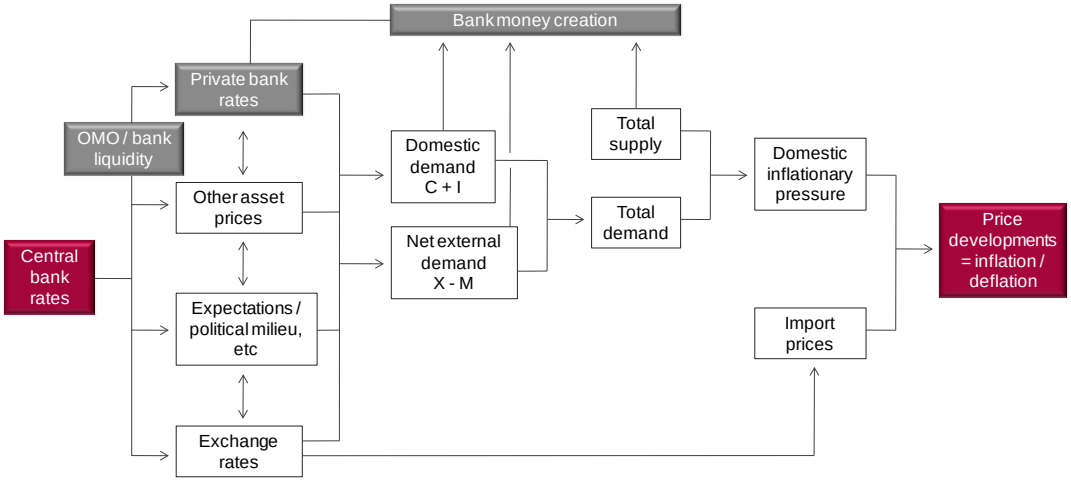

Figure 7: MPTM

3.6 The money market identity / analysis

In the previous section we stated that the importance of the LS lies therein that the KIR is *made effective*. The KIR is made effective only when the banks are indebted to the central bank. How is this brought about? The answer is that the central bank has absolute control over its balance sheet and is therefore able to create a LS of any magnitude it wishes. This is a subject that deserves much space, which we do not have here. Instead we present a summary of an analysis which indicates the various factors that impact on bank liquidity. Most of them are under the control of the central bank, and where they are not, the central bank has the tools to counteract their influence.

A good measure of bank liquidity is the net excess reserves (NER) of the banking sector. This is made up of the ER of the banks (which are usually zero), less the borrowed reserves (BR / LS). To illustrate we present Balance Sheet 20.

BALANCE SHEET 20: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
E. Foreign assets	1 500	A. Notes and coins	1 000
		B. Deposits	
		1. Government	900
F. Domestic assets (government)	1 000	2. Bank reserves (TR)	500
		a. RR (500)	
		b. ER (0)	
G. Loans to banks @ KIR	400	C. Foreign loans	200
		D. Central bank securities	300
Total	**2 900**	**Total**	**2 900**

It will be evident that we can create a balance sheet identity from the accompanying balance sheet. NER is made up of items B2b – G:

$$NER = B2b - G$$

Becuase balance sheets balance, NER is equal to items:

$$E + F - A - B1 - B2a - C - D.$$

If we now pair the items that are related we get:

$$NER\ (B2b - G) = (E - C) + (F - B1) - A - B2a - D.$$

Using the numbers in Balance Sheet 20 we have:

NER (0 – 400) = (1 500 – 200) + (1 000 – 900) – 1 000 – 500 – 300
NER (– 400) = 1 300 + 100 – 1 000 – 500 – 300
NER (– 400) = – 400.

In words:

NER (B2b – G) = Net foreign assets (E – C)
+ Net claims on government (F – B1)
– Notes and coins in circulation (A)
– Required reserves (B2a)
– Central bank securities (D).

It will also be apparent that a change in NER (ΔNER) from a date to another date must be equal to the changes in the other items, as follows:

ΔNER = Δ(B2b – G) = Δ(E – C)
+ Δ(F – B1)
– ΔA
– ΔB2a
– ΔD.

This analysis tells us that if the central bank buys LCC 100 million foreign assets from the banks, NER will increase by LCC 100 million. If the central bank issues LCC 100 million bank notes NER will decline by this amount. If the central bank sells LCC 100 million treasury bills (claims on government) NER will decline by this amount, and so on. Thus, the central bank has absolute control over NER, and in real life the central operate in the open market daily in order to influence NER.

3.7 Bank to bank interbank market revisited

3.7.1 Introduction

We have discussed the b2b IBM at the final interbank clearing in much detail, as well as its link with monetary policy. There are three other facets to this market:

- Bank loans to other banks intra-day.
- Bank group deposits.
- Negotiable certificates of deposit.

3.7.2 Bank loans to other banks intra-day

The smaller banks endeavour to close off their cash reserve positions before the final interbank clearing takes place. They do so with the large banks (who lend to them against collateral) at interbank lending rates which reflect the large banks' acute awareness of the KIR level.

3.7.3 Bank group deposits

Banks within the same group make loans to one another. The existence of this phenomenon results from a certain bank of a banking group having a comparative advantage in the deposit market, and the rationalisation of functions within bank groups. For example, a large commercial bank in a group is able to attract deposits at a lower rate than a smaller fellow subsidiary. Banking groups may also designate one bank in a group to do the sourcing of deposits of the other banks in the group in addition to its own sourcing.

3.7.4 Negotiable certificates of deposit

Negotiable certificates of deposit (NCDs) are fixed deposits of banks that are transferable from on party to another by simple delivery and payment. The holding by a bank of a NCD of another bank represents an interbank loan.

3.8 Summary

The focus of this module was the interbank markets:

- The central bank to bank interbank market (cb2b IBM).
- The bank to central bank interbank market (b2cb IBM).
- The bank to bank interbank market (b2b IBM).

The former interbank markets are "administration-driven" markets. The b2cb IBM represents the cash reserve requirement (cash flows from the banks to the central bank), and this is determined by decree (statute). No interest is paid on these balances.

The cb2b IBM represents the loans of the central bank to the banks, a permanent feature in most money markets. These loans are made at the KIR, which is administratively determined by the Monetary Policy Committee (MPC) of the central bank. The permanent liquidity shortage made good by the central bank at the KIR is central to monetary policy.

The b2b IBM is a free market where the deficit banks negotiate for the excess reserves of surplus banks, and the rate established is the interbank rate. This rate is heavily influenced by the KIR as the banks compete for funds in order to avoid borrowing from the central bank.

The monetary policy transmission mechanism (MPTM) runs from the KIR to the interbank rate and then through various channels to price developments (inflation). The interbank markets represent the start of the MPTM.

3.9 Bibliography

Faure, AP, 2007. **The money market**. Cape Town: Quoin Institute (Pty) Limited.