2 Overview

2.1 Learning objectives

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

- Evaluate the various definitions of the money market.
- Examine the components of the money market.
- Define the time value of money.
- Calculate present values, futures values, effective rates and so on that apply to the money market.
- Elucidate the organisational structure of the money market.
- Appreciate the existence of money market derivative instruments.
- Explain the economic role of the money market.

2.2 Definition

2.2.1 Introduction

We present Figure 1 as a reminder of the financial system and its financial markets. All lending and borrowing takes place via financial markets which are either formalised in exchanges or informal (called OTC). An example of the OTC market is an individual placing money on deposit at a bank, and the market price is the rate that s/he will be earning (which was compared with other banks' rates).

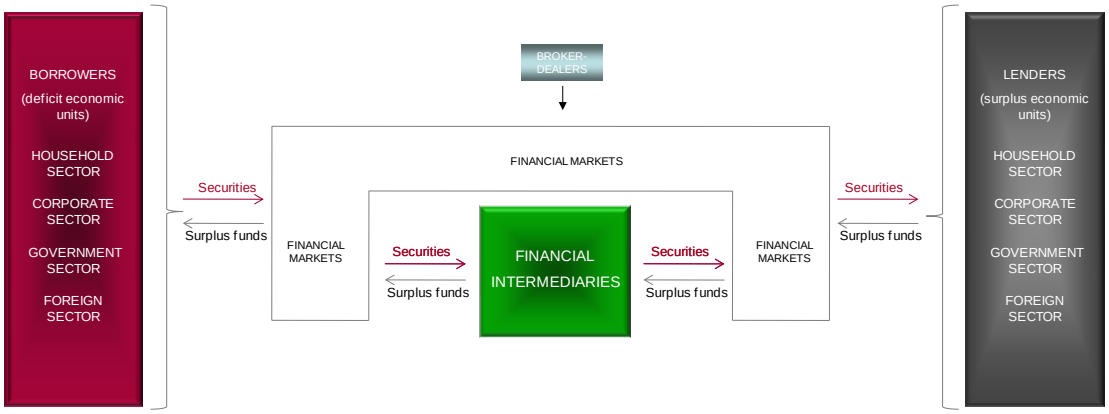


Figure 1: financial markets

The markets of the financial system are depicted in Figure 2. The money market is part of the debt (and deposit) market.

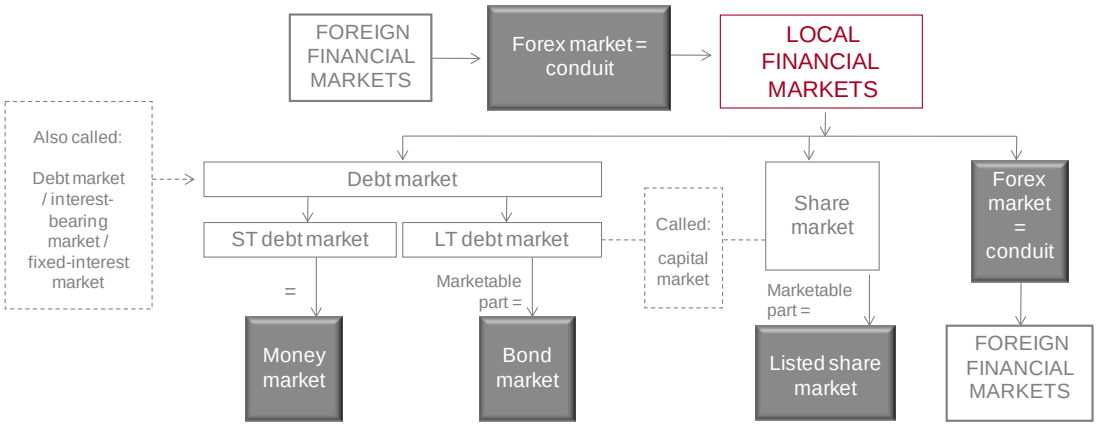


Figure 2: financial markets

The money market is usually defined as the market for *short-term marketable debt instruments*, and *short-term* is an arbitrary one-year period. Following from this is that the bond market is usually defined as the market for marketable debt instruments that have a maturity beyond the one-year term to maturity period.

The bond market definition is not a shabby one, but the money market definition is not sound because the money market is much more than indicated in the above definition. The following presents the various definitions of the money market and ends with the appropriate one (which is a *description* rather that a definition – because it cannot be simply defined). The following are the sections:

- Broad definition.
- Less-broad definition.
- Narrow definition.
- An appropriate definition / description.

2.2.3 Broad definition

Some scholars describe the money market as encompassing:

- All forms of short-term lending and borrowing.
- The exchange of existing short-term debt instruments.

It can therefore also be described as the market for *short-term debt* (marketable and non-marketable). Non-marketable debt only has a primary market whereas marketable debt is issued in the primary market and traded in the secondary market.

Following from this is that the remaining lending and borrowing activity of the financial system should be called the *long-term debt market*. The *bond market* would then be a part of this market and be described as the market for the issue and trading of *marketable* bonds.

2.2.4 Less-broad definition

The less-broad definition is the same as above, but with the retail market excluded. Thus, small deposits with banks, small borrowings from banks, etc can be left out, leaving the money market as encompassing:

- The market that brings together the supply of wholesale short-term funds and the demand for wholesale short-term funds.
- The market in which existing marketable short-term instruments are traded (they are wholesale).

2.2.5 Narrow definition

The narrow definition is: the money market is comprised of the market in the short-term *marketable* securities. There are two types of marketable securities: debt securities issued by ultimate lenders (such as the commercial paper and treasury bills), and deposit securities issued by financial intermediaries (such as negotiable certificates of deposit).

2.2.6 An appropriate definition / description

In our opinion the appropriate definition is the broad one, and this is because the narrower ones ignore important parts of the money market. What are the important parts of the money market?

In our view the important parts are where *price-making / price-discovery* takes place, i.e. where interest rate determination takes place. All interest rates have their genesis in the money market, including longer-term rates.

It is important at this stage to understand the composition of interest rates. In this regard we present a yield curve[4]in decomposed format in Figure 3.

We begin with the 1-day risk-free[5] rate (rfr). Risk-free rates are the rates on government securities (treasury bills and bonds). The 1-day rate rfr is composed of the real rfr and the current rate of inflation. As the term to maturity lengthens, the risk-free rates are made up of:

- The 1-day rfr
- Current inflation (which gives way to expected inflation as term increases)
- Liquidity-sacrifice premium [i.e. compensation for investors giving up liquidity (= command over their money) and their sacrificing consumption now for consumption in the future].

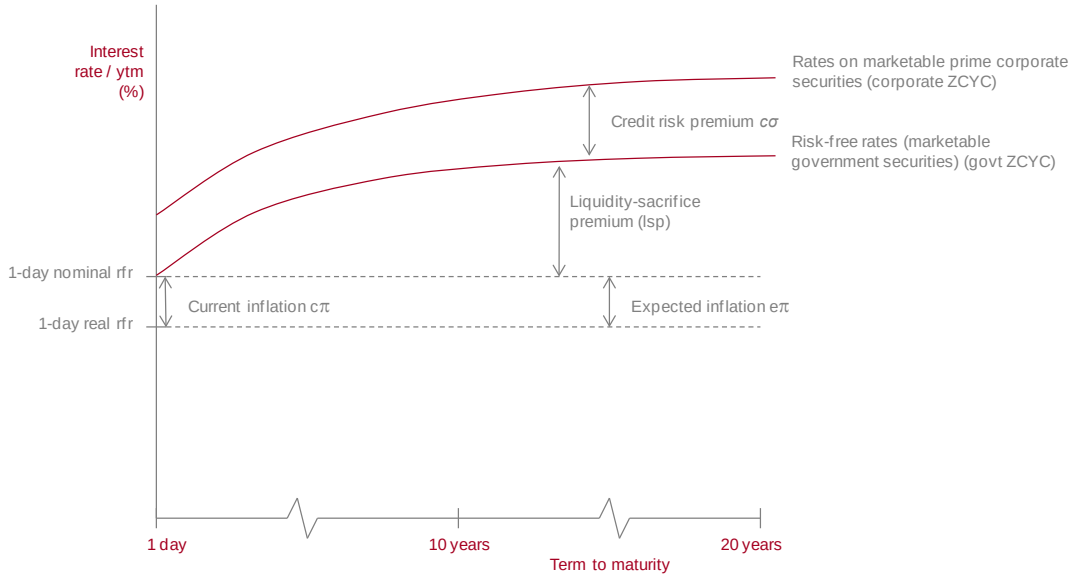


Figure 3: composition of nominal rates (2)

The rates on non-government prime securities (i.e. CP and bonds of large companies) are represented by the highest curve in Figure 3. Thus these rates are composed of the abovementioned three factors plus a credit risk premium.

The shorter interest rates (up to one year) are determined in the money market and the longer rates are determined in the bond market, but the latter have as their starting point the money market rates.

The bottom end of the yield curve (specifically the one-day rate[6]) can be said to be heavily influenced (almost "set" as we shall see later) by the central bank through "manipulating" the *liquidity condition* of the banks. Through open market operations the central bank ensures that the banks at all times are in *liquidity shortage* (LS) condition (called the "money market shortage" – MMS). This means that they are kept (by the central bank) perennially short of liquidity and the central bank supplies the required liquidity (also called *reserves* or *cash reserves*) at the KIR, thus *making the KIR effective*.[7]

The above will be covered in more detail later, but we present here striking evidence of the effectiveness of the KIR in "determining" the prime lending rate of the banks. It is presented in Figure 4 (for a particular country over a period of 50 years): the correlation coefficient is 0.99 (i.e. a change in the KIR is immediately followed by a commensurate change in the prime lending rate of banks).

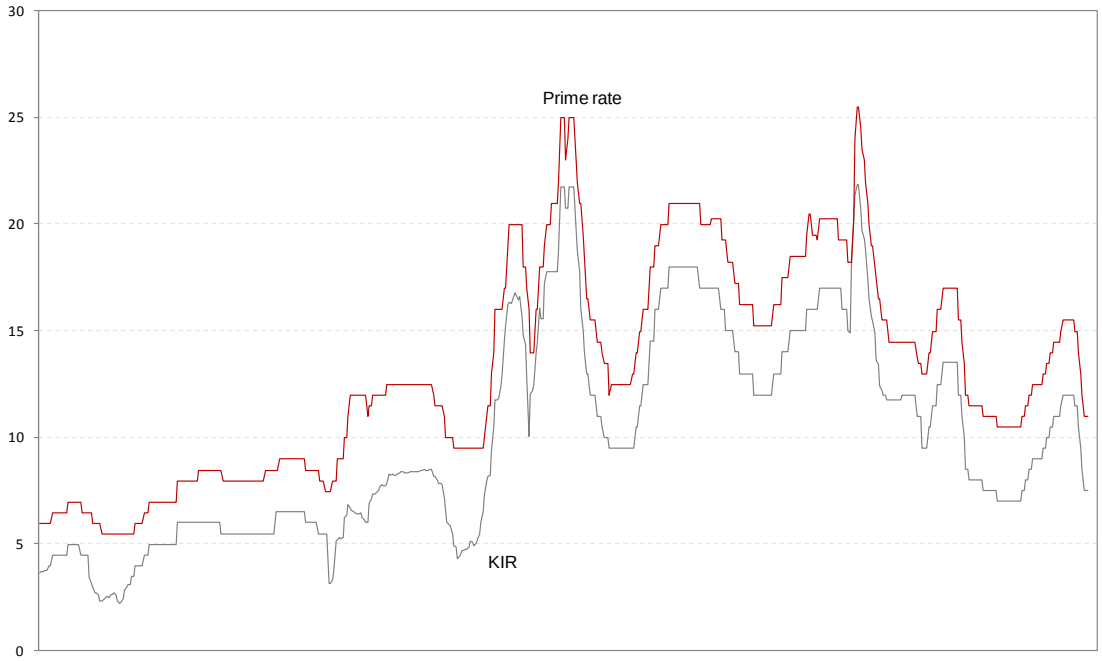


Figure 4: KIR & prime lending rate

We return to Figure 3; this portrayal of the terms structure of interest rates in decomposed form indicates another significant matter: the nominal rate is higher than the real rate. This is a critical condition in monetary policy. If the real rate is negative on a sustained basis the consequence is likely to be increasing and high inflation, which impacts negatively on economic output in the long term. From this it should be evident that the central bank has a key role to play in the money market and the economy as a whole.[8]

Thus, the central bank has virtual "control" over the money market, especially in the very short end. This essential pursuit of the central bank is played out in the interbank market. There are two interbank markets:

- The private sector bank / central bank interbank "market" which is an "administrative" market. The flows are from the banks to the central bank (the cash reserve requirement, the balances of which earn no interest), and from the central bank to the banks (the borrowed reserves) at the KIR. The former can be given the acronym *b2cb IBM* and the latter *cb2b IBM*.
- The private sector bank to private sector bank interbank market (*b2b IBM*), which takes place after the interbank clearing process at the end of the business day (which takes place over the banks' settlement accounts with the central bank[9]). In this b2b IBM the banks place funds with or receive funds from other banks depending on the outcome of the clearing. Surpluses are placed at the *interbank rate*; this rate is closely related to the KIR because banks endeavour to satisfy their liquidity needs in this market before last resort borrowing from the central bank at the KIR.

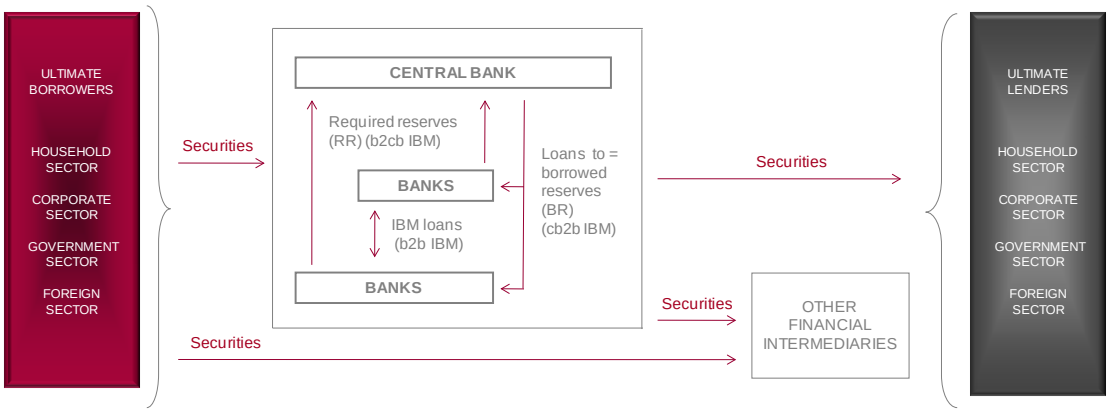
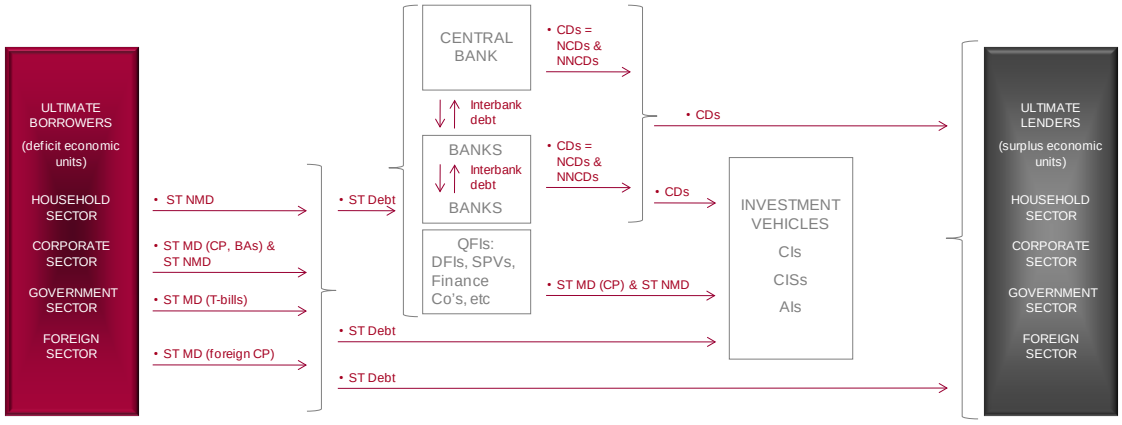


Figure 5: interbank markets

In the b2b IBM no new funds are created; existing funds are merely shifted around. New funds (cash reserves) are created in the cb2b IBM (in the long term). The latter is a function of the ability of banks to create money in the form of deposit money[10]. This they are able to do without constraint[11] and the central bank supports this by the creation of the additional required cash reserves (a function of deposit growth).

It is difficult to portray the interbank market; our attempt is presented in Figure 5.

Thus the money market is comprised of the lending and borrowing of short-term funds, the interbank market (which is a part thereof), and the creation of new money by the banks (supported by the central bank). The money market derivative markets are not part of the market because lending and borrowing does not take place in this market: rather they are an addendum to the mainstream money market. The entire money market may be portrayed as in Figure 6.



MD = marketable debt; NMD = non-marketable debt; CP = commercial paper; BAs= bankers' acceptances; CDs = certificates of deposit (= deposits); NCDs = negotiable certificates of deposit; NNCDs = non-negotiable certificates of deposit;

Figure 6: money market

The lending and borrowing of short-term funds takes place *mainly* via the banking system. The word *mainly* is appropriate because while virtually all short-term lending and borrowing is executed with the banks, funds that flow to the investment vehicles [like retirement funds (CIs[12]) and unit trusts (CISs[13])] are *investment funds* and not short-term *deposits / loans,* short-term debt securities (representing short-term borrowing) are not only held by the banks but by retirement funds, money market unit trusts and others.

However, the majority of short-term lending and borrowing takes place via the banks. Thus, the banks are at the very centre of the money market. For the intermediation benefits they offer (payments system, lower risk as a result of diversification for the lender, etc.) the banks charge a fee in the form of a "margin": the banks charge a higher rate for loans than what they offer for deposits, and this margin they endeavour to maintain.

The bank (see Figure 7) margin is an important element in the money market and in monetary policy (which is played out in this market): the KIR paid by the banks for central bank money "at the margin" (i.e. borrowed reserves) affects what they pay for deposits and, given the margin that they enjoy (and therefore endeavour to maintain), what they charge for loans. A proxy for the bank margin is the differential between the KIR and the banks' prime lending rate (which is always the same for all banks) as depicted in Figure 4. In fact in reality the banks' lending and deposit rates are benchmarked to these rates.

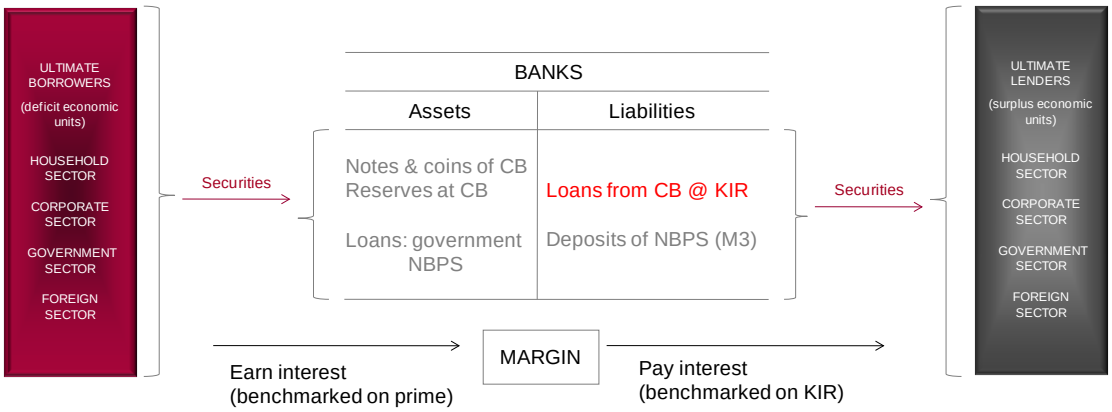


Figure 7: bank margin

It will be apparent that there are retail and wholesale elements to the money market. The wholesale market participants are "price (interest rate) makers" (always with reference to the KIR), whereas the retail market participants are "price takers". (This is the reason that some scholars leave the retail market out of the definition.)

In the *retail* money market on the *lending* side there exist only non-marketable instruments of debt (i.e. only primary markets), and these are *bank deposits*, the instrument of which we refer to as non-negotiable certificates of deposit (NNCDs). On the borrowing side there are also only non-marketable borrowings and these are loans from the banks in their various guises (short-term fixed-period loans, overdrafts and so on). We refer to these securities (issued by the borrowers and held by the banks – as lenders) collectively as non-marketable debt (NMD) securities.

In the *wholesale* money market there are non-marketable debt (NMD) securities and marketable debt (MD) securities and here the banks intermediate to a lesser degree. Here we also remove the household sector (except the high net worth members of the sector). The corporate sector borrows by the issue of NMD "securities"[14] (such as overdrafts) as well as MD securities such as commercial paper (CP) in the case of the larger companies. The various levels of government issue NMD securities and MD securities. The foreign sector is a small issuer of securities at this stage and they are all marketable. The financial intermediaries issue a number of different securities (which is discussed in some detail later).

The term *market* in money market means the conventions that exist for the bringing together of lenders and borrowers of short-term funds and the "discovery" of the rate of interest. This market (as we have seen) is firmly in the domain of influence of the banks and the central bank which uses this market effectively for its monetary policy ends. It is an OTC market.[15]

We conclude that the money market should be defined as encompassing:

- 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 marketable short-term 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 marketable debt securities).
- The cb2b IBM and the b2cb IBM where monetary policy is played out and interest rates have their genesis (i.e. where repo is implemented).
- The b2b IBM where the KIR has its secondary impact, i.e. on the interbank rate.
- The money market derivative markets (= an addendum).

We now examine a little deeper these elements that make up the money market.

2.3 Primary money market: supply of and demand for short-term funds

2.3.1 Introduction

The supply of short-term funds is synonymous with the demand for financial instruments (marketable and non-marketable). Supply is forthcoming from the ultimate lenders and certain financial intermediaries.

The demand for short-term funds is forthcoming from the ultimate borrowers and certain financial intermediaries. Demand is synonymous with the supply of financial securities (marketable and non-marketable).

Of the suppliers of and demanders for short-term funds, the banks play the dominant role. This is a reflection of the banks performing their function of satisfying the financial requirements of ultimate lenders and borrowers in terms of return, risk, size and maturity of financial assets.

In addition to the matching of financial requirements, the banks are able to create money (their liabilities) by additional lending or purchasing new issues of securities (which is also lending). This unique function / ability of the banks makes for the supply of wholesale short-term funding being virtually "unlimited". The only "limits" that exist are bank vetting of the business for which funding is sought, and the borrowing rates applied by the banks which are a reflection of risk.

2.3.2 Supply of short-term funds

The supply of short-term funding is forthcoming from (illustrated in Figure 8[16]):

- All the ultimate lenders.
- All the financial intermediaries.

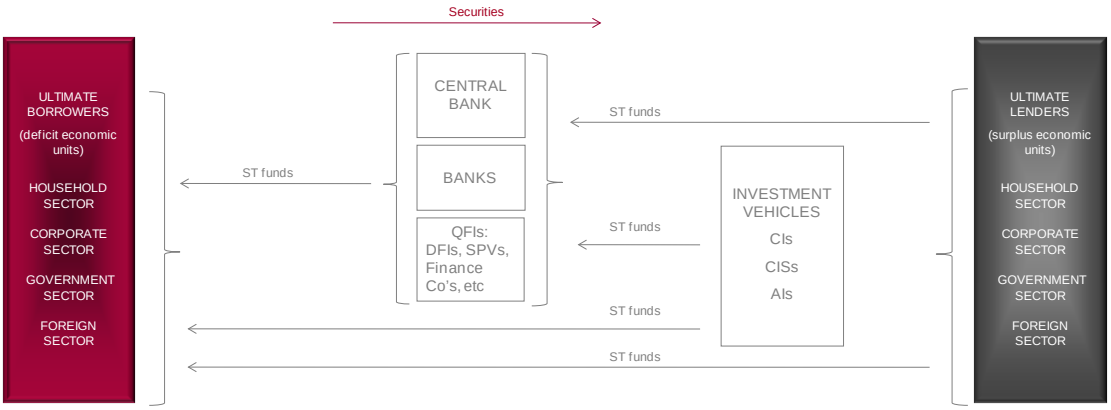


Figure 8: supply of funds in the money market

Keynes' famously described the motives / reasons for holding short-term funds: for transactions, precautionary and speculative reasons. To these we add *investment*, because *speculative* does not cover the *investment* of existing funds. Thus, there is/are one or more of four *reasons* to hold short-term funds:

- Transactions.
- Precautionary.
- Investment.
- Speculative.

Short-term funds are held in deposit securities (NNCDs or NCDs) or short-term debt securities (TBs, CP, short-term bonds, etc.).

Household sector. This sector is a large holder of short-term funds, and they hold them for all four of the reasons. The emphasis is perhaps on the fist-mentioned because the majority of individuals utilise current bank accounts for this reason. To a lesser degree *precaution* is a reason, although the majority rely on bank overdraft facilities in this regard.

Corporate sector. This sector is also a large holder of short-term funds. The motivations are the same as above, with the last one being excluded. The *investment* reason in respect of the corporate sector refers to further business opportunities.

Government sector. The government sector is also a large holder of short-term funds, purely for transactions reasons. Central government collects revenue and issues securities to cover the deficit and does not spend the funds immediately. It also supplies the provincial governments with funds to meet their expenditure; therefore they also at times are holders of short-term funds, but the amounts are small. Local government entities also collect revenue and some issue securities to cover their deficits; therefore at times they are also holders of short-term funds.

Foreign sector. This sector is a small holder of short-term funds and the motivation is usually speculative, i.e. awaiting opportunities for profit in portfolio securities (bonds and shares).

Financial intermediaries. All financial intermediaries are holders of short-term funds (some to a large degree and some to a small degree):

- The *banks* are at the very centre of the money market. They are the largest suppliers of short-term funds. Their reasons are transaction, precaution and speculative, with the emphasis on a toned down version of the latter.
- The *central bank* is usually a relatively small supplier of short-term funds; however, it is a large participant in the interbank market.
- *Contractual intermediaries* (CIs – retirement funds and insurers) hold short- term funds for all three reasons.
- The *collective investment schemes* (CISs – securities unit trusts and exchange traded funds) and the alternative investment funds (private equity funds and hedge funds) hold small amounts of short-term funds (with the exception of the Money Market Securities Unit Trusts (MMSUTs) which focus on the supply of short-term funds).
- The *quasi-financial intermediaries* (QFIs) are also small holders of short-term funds (mainly bank deposits) for transaction and precautionary reasons.

We repeat that the majority of new short-term funds (new bank deposits) are forthcoming from new bank loans; banks are "fully lent" (equity and liabilities = assets), and new funds arise from money creation. This is a significant and essential part of the financial system.

2.3.3 Demand for short-term funds

Demand (see Figure 9) is represented by the issue of securities, which are either marketable (applies only the large borrowers) or non-marketable. As we will see, there are various marketable securities issued (treasury bills, commercial paper and so on). The non-marketable securities issued by the financial intermediaries we call non-negotiable certificates of deposit (NNCDs) (such as savings deposits), and the non-marketable securities issued by the ultimate borrowers we refer to as non-marketable debt (NMD) securities (such as short-term fixed loans, utilised overdraft facilities).

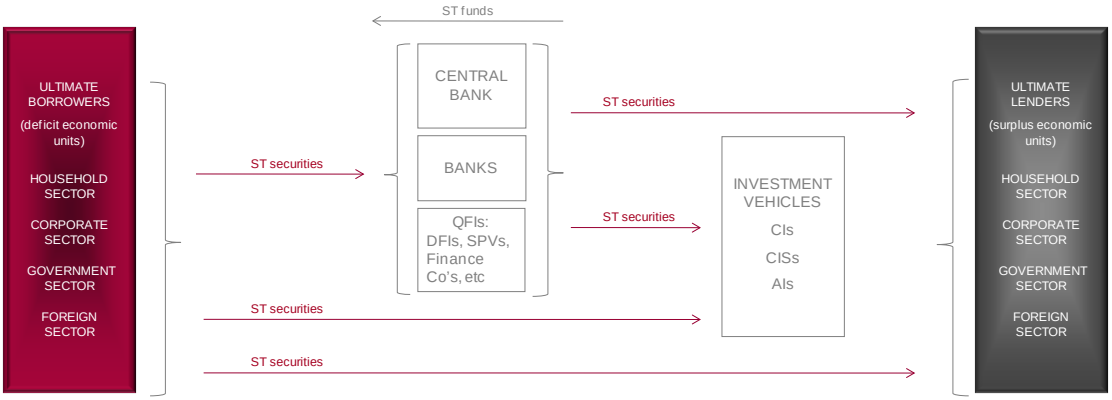


Figure 9: demand for funds in the money market

On the demand side of the money market the banks are the dominant force; in fact this is largely their *raison d'être*.

The other financial intermediaries that borrow in the money market (= demand) are:

- *Central bank*. The central bank borrows in various forms (such as the cash reserves of the banks); of importance for the money market is that many central banks issue their own marketable securities for monetary policy purposes.
- Members of the *QFIs*. Certain of the DFIs borrow by issuing marketable debt. The special purpose vehicles (SPVs – products of securitisations) fund their assets by issuing bonds and short-term debt securities (usually in the form of CP). Certain finance companies also issue securities but they do so mainly in the bond market.
- The members of the group investment vehicles (CIs, CISs and AIs). None of the members of this group (with the exception of some hedge funds) issue short-term securities. They are involved and compete in different investment markets.

As far as the ultimate borrowers are concerned:

- Household sector. This sector is a large borrower of short-term funds, mainly for the purpose of consumption and investment (in the form of housing). They borrow almost exclusively from the banks and issue securities (evidences of debt) to the banks in the form of non-marketable debt (NMD) securities. An example is a debit balance on a current account with a bank (it is much like an IOU). They borrow at rates benchmarked to the banks' prime rate.
- Corporate sector. The members of this sector are also large borrowers of short-term funds. The majority of these debt securities are in the form of short-term fixed loans, overdrafts and so on, at rates linked to prime rate. The larger companies are able to borrow in marketable security form at lower rates (see next section).
- *Government sector*. All levels of government borrow in the money market. Central government borrows a portion of its deficit requirement in the money market in the form of treasury bills (marketable debt). The other levels of government usually borrow in the form of NMD (e.g. bank overdrafts), although the larger entities (such as the large local authorities) are able to borrow by the issue of marketable debt.
- *Foreign sector*. Foreign entities are permitted to issue short-term securities locally in certain countries (termed foreign CP in some countries).

As we said above, the majority of new short-term funds (new bank deposits) are forthcoming from new bank loans.

2.3.4 Wholesale short-term *marketable* securities (demand)

Certain of the large borrowers (ultimate borrowers and financial intermediaries) are able to issue *marketable* short-term securities in the wholesale money market at lower rates than non-marketable securities. The rates are lower because of the lower risk and marketability. These are usually called *money market securities* (although short-term NMD are also money market securities) and they are as follows:

Household sector: not able to issue.

Corporate sector (in most countries):

- Bankers' acceptances (BAs).
- Commercial paper (CP).
- Promissory notes PNs).

Government sector:

- Central government: treasury bills (TBs).
- Provincial governments: in most countries this level of government is not permitted to borrow as they are funded by central government).
- Local authorities: in most countries this level of government is permitted to borrow and most issue NMD.

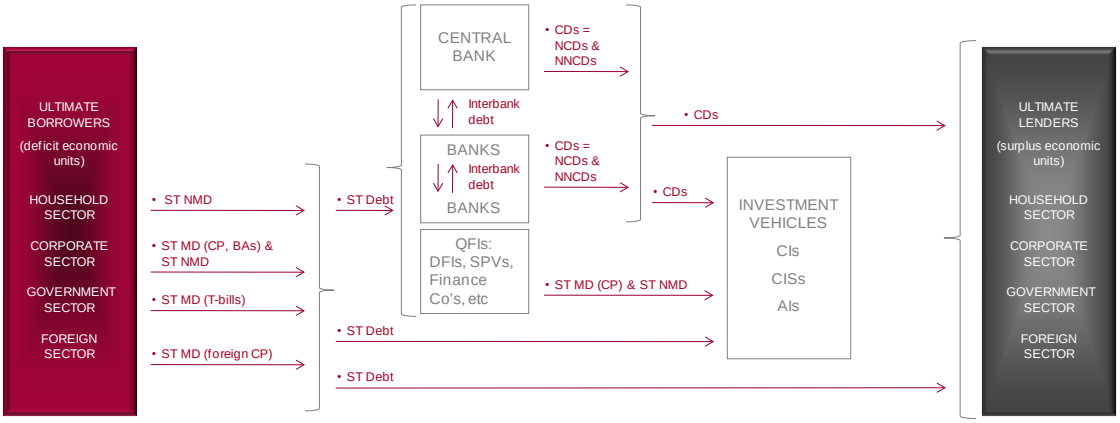
Foreign sector:

- Foreign commercial paper (CP).

Financial intermediaries:

- Private sector banks: negotiable certificates of deposit (NCDs).
- Central bank: central bank (CB) securities (in South Africa: SA Reserve Bank debentures; in Malawi Reserve Bank of Malawi bills; in Botswana Bank of Botswana certificates).
- Quasi-financial intermediaries: some issue CP, securitisation SPVs issue paper (in the form of CP); development entities issue marketable paper under their respective statutes[17].

All the issuers and securities of the money market may be depicted as in Figure 10.



MD = marketable debt; NMD = non-marketable debt; CP = commercial paper; BAs= bankers' acceptances; CDs = certificates of deposit (= deposits); NCDs = negotiable certificates of deposit; NNCDs = non-negotiable certificates of deposit;

Figure 10: money market

2.4 Organisational structure of the money market

Now that we have discussed the primary money market in some detail it is appropriate to examine the organisational structure of the money market, particularly the secondary market (see Figure 11).

Like all marketable securities markets, the spot (cash) money market is comprised of a *primary market* and a *secondary market*. The markets for non-marketable instruments such as NNCDs and bank loans are entirely primary markets. Marketable instruments trade in the secondary market.

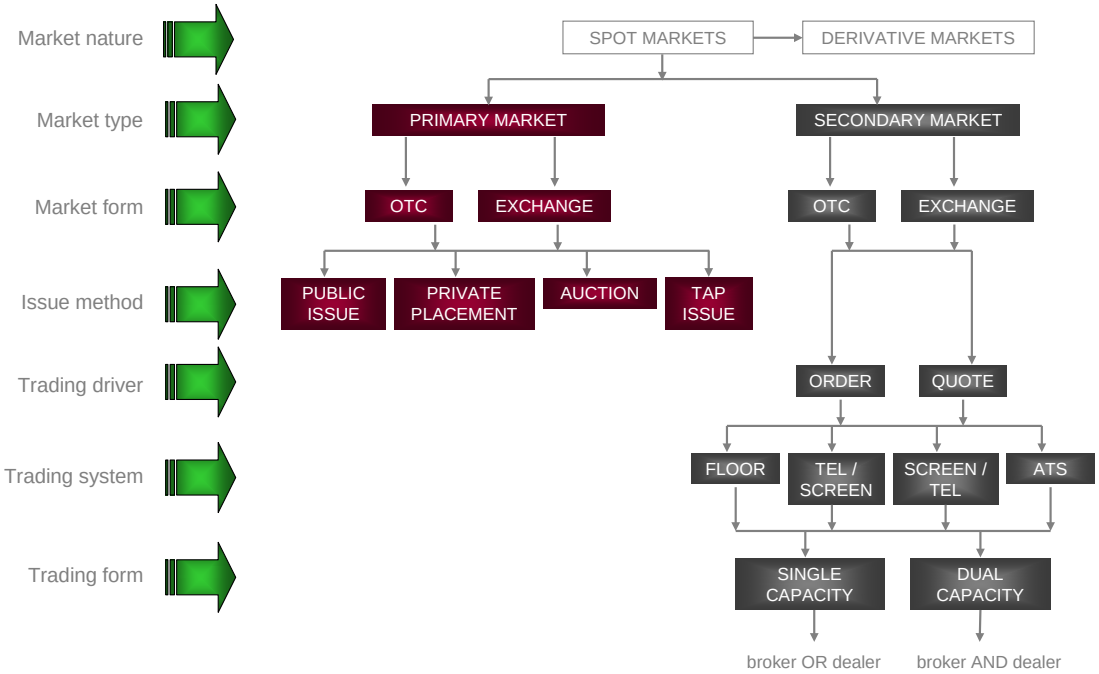


Figure 11: organisational structure of spot financial markets

The spot money market is an over-the-counter (OTC), as opposed to the futures markets which are organised in the form of an exchange. All money markets around the world are OTC markets, and the reason for this is that the money market is firmly in the sphere of activity of the banks, and the banks are the most solidly regulated financial intermediaries.

In the primary money market there are three methods of issue (in most countries):

- Private placement: the best example is NCD issues by banks.
- Tender (auction): examples are treasury bills and central bank securities.
- Tap issue: most CP issues are "tapped" out to investors. Many CP issuers make markets in their own securities by quoting buying and selling rates simultaneously and investors approach them by telephone; they purchase the CP if they are happy with the selling rates. When the issuers sell / issue CP in this fashion they are said to be "tapping" out their paper.

In the secondary money market, the trading drivers are *order and quote*. Money market brokers (see next section) receive *orders* from investors and make firm buying *quotes* to principals (banks and other holders of money market paper). Alternatively, the brokers receive *orders* from the principals and make firm *quotes* to other principals. Banks, however, usually deal on a quote basis (but they also broke on an order basis). Investors approach the banks and they quote firm selling rates to them.

It must be stated here that very few banks or other participants in the money market (if any at all) that quote buy and sell rates simultaneously, as in the case of the bond market where the trading driver is *quote* in the form of firm "two-way prices" or "doubles". The terms mean that firm buying (or bid) and selling (or offer) rates are quoted simultaneously by market makers[18]. A consequence of not having market makers in the money market is that the money market will be illiquid (as it is in many countries).

The trading system in the money market is *telephone-screen* or *screen-telephone*. The former means that certain broker-dealers (usually brokers and banks) "advertise" indication rates on communications systems such as the Reuters Monitor Service. Principals telephone them to ask if they will deal at the advertised rates (given an amount). They either confirm the advertised rates or negotiate.

Screen-telephone trading involves the advertising by broker-dealers of firm prices / rates for specified maximum amounts of securities on a communications system; deals are consummated on the telephone.

The trading form of the money market is both dual capacity and single capacity, depending on the participant. The banks, for example, deal in dual capacity, i.e. deal as principals and brokers, while certain brokers deal only as non-principals (i.e. single capacity). As the market is OTC, there is no exchange that stipulates the trading form, etc.

In conclusion we present a synopsis of the significant role the secondary money plays in the financial system:

- It facilitates price discovery. As we know, the central bank "pinpoints" the bottom end of the yield curve. While longer money market rates are discovered in the secondary market, they reflect the one-day rates.
- It facilitates the operation of the primary market, i.e. the ease with which issuers of money market securities may place these securities. This is so because investors have the comfort that they are able to dispose of securities if and when they so desire.
- It lowers borrowing costs, i.e. lenders are prepared to pay a premium (higher price / lower rate) for marketability.
- It provides the basis or benchmark for determining the rates to be offered on new money market issues.
- It registers changing market conditions rapidly and thus indicates the receptiveness of the market for new primary issues of money market securities.
- It enables rapid adjustments by investors in their portfolios in terms of size, risk, return, liquidity and maturity.
- It enables the central bank to execute its operations in the open market, called open market operations (OMO).

2.5 Money (deposit) creation in the money market

Perhaps the most elegant feature of the financial system is that the demand for short-term funds can be satisfied by the banks through their ability to create money virtually "out of thin air".

In this respect we dispel two longstanding myths:

- Banks have much of money to lend because they have many deposits.
- Money creation starts with a bank or banks receiving deposits.

The banks are fully lent at all times.[19] Their assets (loans-out) are matched by their liabilities (deposits and loans-in) and equity, but the definitive proof is the existence of a perennial liquidity shortage, as reflected in the accommodation provided by the central bank to the banks at the KIR.

Money creation starts with bank lending. The deposit that is supposed to "put the banks in money" actually comes from bank lending, and the increase in bank liabilities and assets are therefore matched. Therefore, unless there are repayments in the banking system, banks are able to create money by accounting entries (assuming the demand exists). This is one of the wonders of the economic world (because there is virtually an unlimited supply of funds) and will be made clear below.

There are two provisos to new money creation:

- The creditworthiness of the individuals (members of the household sector) asking the bank manager for (demanding) credit, and the feasibility of the projects for which money is demanded by the corporate sector, given the prevailing rate of interest (linked to prime rate) at which the funds are available.
- The willingness of the central bank to supply the additional cash reserves that are required as a result of the increase in bank deposits (on which the cash reserve requirement is based). A significant feature of the modern financial system is that cash reserves are available in unlimited quantities from the central bank (provided that banks have the collateral – which is not an issue). It is the price (the KIR) of the cash reserves (central bank loans) supplied and not the quantity that is the cornerstone of monetary policy in most countries.[20]

It will be apparent that the banks are in the business of providing as much credit as is demanded (subject to the first proviso) (after all they do operate in a competitive environment!) and that this is centred on the fact that the public accepts bank deposits as a means of payment (medium of exchange). The proviso here of course is that the money maintains its value, i.e. that its value is not eroded by inflation, which is the primary objective of monetary policy. This means that it is the central bank's responsibility to ensure that the extent of money creation does not exceed the economy's ability to supply the goods and services demanded. This the central bank executes by influencing the banks' lending rates via the influence of the KIR on bank deposit rates.

An example of money creation follows: Company A sells goods of value LCC[21]100 million to Company B. The latter did not have the funds and acquired an overdraft facility from its bank for this amount. The facility was granted by the bank and Company B duly completes a cheque for LCC100 million which is handed to Company A. The latter deposits the cheque at his bank. The bank credits Company A's account, sees the cheque is drawn by Company B and debits Company B's account; this of course is a bank loan to Company B.

COMPANY A (LCC MILLIONS)			
Assets		Liabilities	
Goods Deposits	-100 +100		
Total	0	Total	0

COMPANY B (LCC MILLIONS)			
Assets		Liabilities	
Goods	+100	Loan from bank	+100
Total	+100	Total	+100

PRIVATE SECTOR BANKS (LCC MILLIONS)			
Assets		Liabilities	
Loans (Company B)	+100	Deposits (Company A)	+100
Total	+100	Total	+100

Both sides of the banks' consolidated balance sheet increase by LCC100 million. The money stock (= private sector deposits) has increased by this amount and the statistical cause of change is the amount of bank credit extended. The actual cause or real driver of the increase in both credit and money was the demand for credit. Behind that of course is a business deal. Thus, money creation (= accounting entries) allowed this to take place.

The LCC100 million increase in bank deposits, given an assumed cash reserve requirement of 10% of deposits, means of course that the banks have to hold an additional amount of required cash reserves of LCC10 million. This is supplied by the central bank at the KIR. The balance sheets change as follows:

CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
Loans to banks (LS) @ KIR	+10	Bank cash reserves Reserve accounts Settlement accounts	+10 -
Total	+10	Total	+10

PRIVATE SECTOR BANKS (LCC MILLIONS)			
Assets		Liabilities	
Bank cash reserves Reserve accounts Settlement accounts	+10 -	Loans from central bank	+10
Total	+10	Total	+10

Thus, the supply of funds (credit) in the money market is virtually unlimited and a supply of credit executed brings about the creation of money (deposit – representing demand for short term funds). It does not work the other way round: banks do not need a new deposit to provide credit.[22]

The above may be a little bewildering to learners at this stage. It will become clearer later.

It will be evident from the above brief discussion on money creation that the implementation of monetary policy starts in the interbank market, to which we now turn.

2.6 Interbank deposit / loan market

As we saw earlier, there are two interbank markets:

- Bank / central bank interbank market (cb2b IBM and b2cb IBM) (which can also be called the cash reserve funds market).
- Bank-to-bank interbank market (b2b IBM) (in the US called the Fedfunds market).

As we have seen, the bank / central bank interbank market is a two-way market: the banks' cash reserve requirement (a ratio of their deposits required by statute), on which interest is not paid (b2cb IBM), and central bank loans to the banking sector at the administratively-determined KIR (cb2b IBM). Thus, this particular interbank market is not a market in which prices are determined by supply and demand; rather they are determined by decree (0%[23] in the b2cb IBM and KIR in the cb2b IBM)

This is the starting point of monetary policy and its central theme of interest rate influence / determination. The central bank in many countries (including South Africa) follows the policy of creating a liquidity shortage and accommodating this shortage by supplying loans (in the form of repurchase agreements – repos) at the KIR to cover the shortfall. The KIR is determined by the monetary policy committee (MPC) of the central bank based on a multitude of factors.

Lending to the banks at the KIR is the starting point of the monetary policy transmission mechanism (MPTM). The central bank ensures that the banks are at all times indebted to it in order to make KIR effective. The KIR represents the cost of money at the margin and exerts a powerful influence in the first instance on the other interbank market, the b2b IBM and from here on to the other money market rates and on to the longer rates, asset prices, the exchange rate, and so on until, ultimately, to price developments.

We present a notional central bank balance sheet below. Banks have two accounts with the central bank: reserve accounts (in which the cash reserve requirement funds are held) and settlement accounts (also called current accounts). The latter are used for interbank clearing (and are usually kept at zero by the banks[24]).

During the day the customers of banks and the banks themselves undertake many transactions leading to some banks owing money other banks. This process is settled electronically over the bank's settlement accounts. The surplus banks lend to the deficit banks at the interbank rate. This is where the central bank intervenes – in the interbank market. It also deals in the markets and brings about a permanent (= every day) liquidity shortage and it supplies the funds (called cash reserves) to the banks in order for them to settle. This means that the banks owe the central bank, as represented by item H in the balance sheet (this is the cb2b IBM). The funds are supplied at the KIR.

CENTRAL BANK (LCC MILLIONS)			
Assets		Liabilities	
		A. Notes and coin	1 000
F. Foreign assets	1 000	B. Deposits	
		1. Government	900
G. Domestic assets	1 000	2. Banks (= cash reserves)	
		a. Reserve accounts	500
H. Loans to banks @ KIR	400	b. Settlement accounts	0
		C. Foreign loans	200
I. Other assets	500	D. Central bank securities	200
		E. Other liabilities	100
Total	2 900	Total	2 900

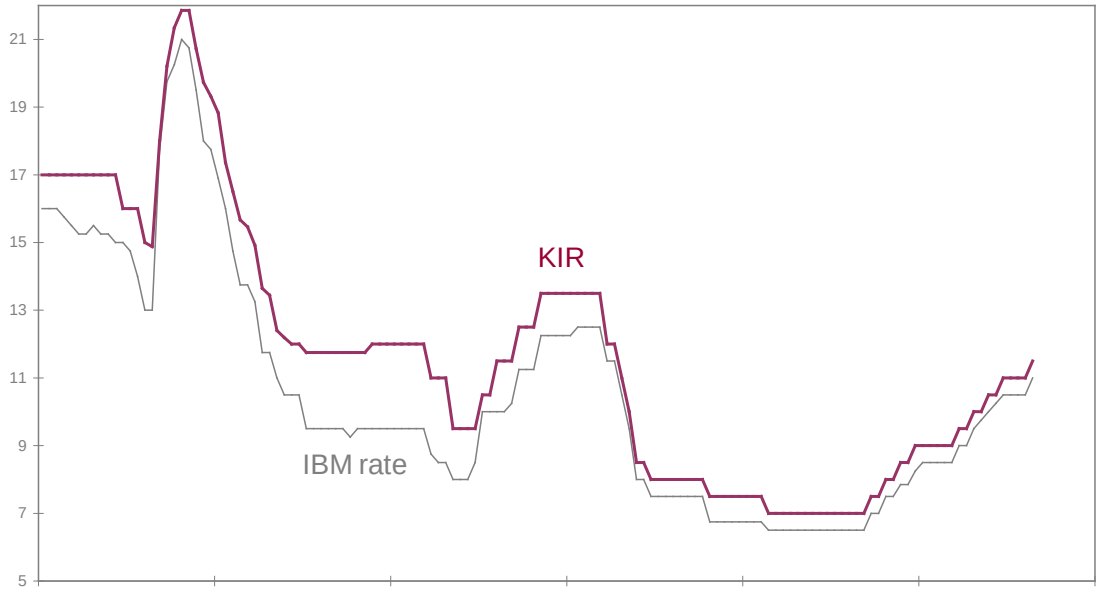


Figure 12: IBM rate & KIR

Because in the settlement process in the interbank market the banks endeavour not to borrow from the central bank, the b2b IBM is the first market affected by the KIR. The interbank rate established in the b2b IBM remains close to, but below, the highest rate in the 1-day "market": the KIR. The relationship between the interbank rate and the KIR is portrayed in Figure 12 (this is for a particular country for a period of six years; note that without exception the interbank rate is below the KIR).

The bank / bank interbank market has another leg: 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.

2.7 Money market interest rates

Money market rates are determined (with reference to the KIR) in the two major markets of the money market (marketable and non-marketable):

- The wholesale short-term bank deposit market.
- The wholesale short-term debt market.

It should be apparent that there are competing forces in these two markets that make for fine pricing (indicating an efficient market):

- Ultimate lenders and non-bank financial intermediaries (investment vehicles and certain QFIs) that have wholesale short-term funds have a choice:
  - to deposit with banks [non-marketable (NNCDs) or marketable (NCDs)]
  - to buy the money market securities of the ultimate borrowers.

- Ultimate borrowers and non-bank financial intermediaries (certain QFIs) that have wholesale short-term funding requirements have a choice:
  - to borrow from the banks (issue NMD securities)
  - to issue marketable money market securities.
- Banks themselves have the desire to capture as much business as possible (at rates that reflect risk, etc); their business is financial *intermediation* which means that they want to remain *intermediated*; therefore they are inclined to price their products (deposits and loans) finely in order to discourage disintermediation (depositors buying securities with their bank deposits).

These competing forces, and competition between banks, make for competitive pricing in the money market. Although this is the case, as we saw earlier, the starting point for interest rates is the KIR made effective in the in the bank / central bank interbank market. The KIR impacts on the b2b IBM rate, and on call money and other money market rates.

The benchmark rate of interest in the wholesale short-term debt market is the prime lending rate of the banks. This is the rate at which the banks are willing to lend to prime customers. It is a high profile rate in that it is published by all banks. All other lending rates are benchmarked against the prime rate, for example the mortgage rate and the rates for non-prime customers (e.g. prime + 2%).

The ultimate aim of monetary policy is that the KIR should have a strong influence on bank lending rate (via the bank margin) (and therefore on the demand for credit). The prime lending rate of the banks and its relationship with the KIR is shown again in Figure 13 (for a particular country for a period of sixty years). It is quite apparent that the banks' prime rate takes its cue from the KIR, and that monetary policy is effective.

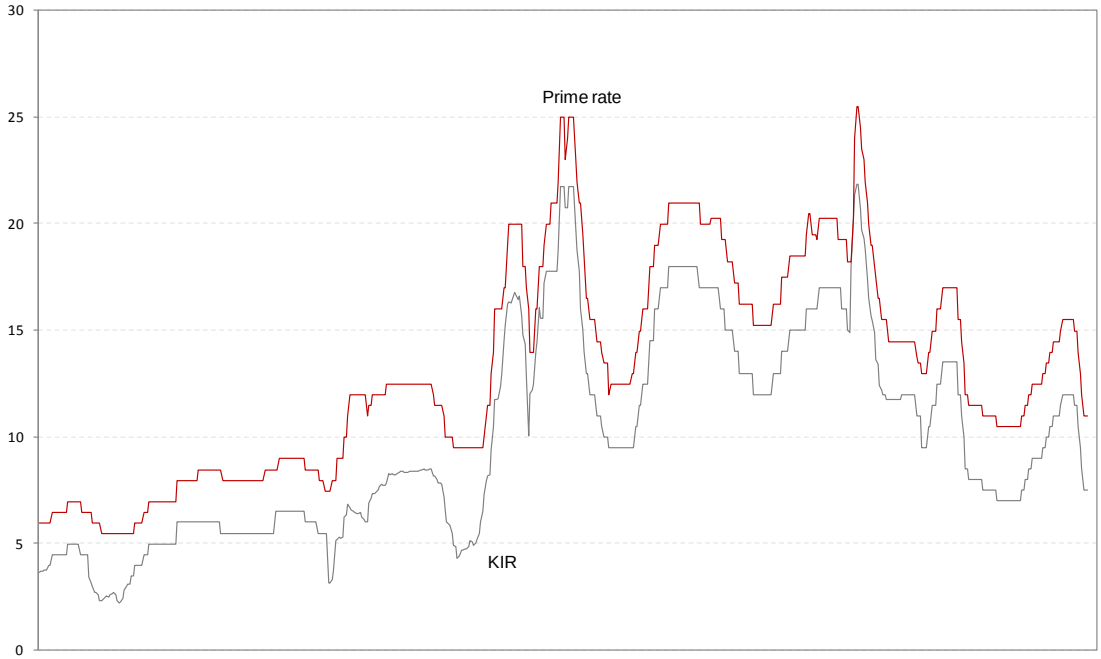


Figure 13: KIR & prime lending rate

This all important interbank market is accorded a separate module, which should make the above synopsis of the interbank market clearer.

2.8 Money market derivative markets

Although derivative instruments do not represent lending and borrowing (they are used for hedging, a substitute for market exposure, and speculation) we mention them here for the sake of completeness.

The money market derivative instruments are derived from (or take their value from) the spot (cash) market money market instruments (marketable and non-marketable), and they provide the means for transferring risk (hedging) or for speculation. They are:

- Forwards:
  - Forward interest rate contracts.
  - Repurchase agreements.
  - Forward rate agreements (FRAs).
- Futures:
  - Short-term interest rate futures.
- Options:
  - Options on interest rate futures.
  - Options on money market instruments.
  - Interest rate caps and floors.
- Swaps:
  - Interest rate swaps.

2.9 International aspects of the money market

2.9.1 Introduction

Money markets are not confined within the borders of countries. International money market dealers (i.e. the banks) seek out the best return around the world and international trade is financed in the money market.

This brief section discusses the international aspects of the money market, under the following sections:

- Foreign exchange market.
- Bankers' acceptances in foreign trade.
- Eurocurrency markets.
- Foreign investment in the South African money market.

2.9.2 Foreign exchange market

It is well known that the foreign exchange market is one of the most active of all financial markets. Each wholesale foreign exchange transaction has a money market leg because a foreign exchange transaction is effected in a bank deposit in the first instance, which then leads to an investment in a security or the purchase of commodities, property and so on.

2.9.3 Bankers' acceptances in foreign trade

International trade increases each year, and this trade is financed in the money markets of the world. The instruments used for trade are the faithful overdraft facility and the bank acceptance, and in the past also the trade bill. As noted before, the overdraft facility is a most convenient facility because funds are available on demand and the debt can be repaid as funds are received.

Internationally (although the market is dwindling), bankers' acceptances are used in foreign trade. The main reason for this is, for example, that exporters often are not informed as to the creditworthiness of the importer of their goods. Other good reasons for the use of acceptances are that the country exported to may be experiencing political turmoil which could affect repayment.

The use of acceptances essentially shields exporters from potential hazards. They shift part of the risk of trade on to the bank. Certain banks are professionals in the assessment of risk and are ready to take on this type of risk for a fee.

2.9.4 Eurocurrency market

The Eurocurrency market developed as a result of regulation on interest rates in the US and concerns in the past about the holding US deposits by non-US citizens. The Eurocurrency market is thus a market in financial instruments issued in Europe (originally, but now also in other countries) that are denominated in US dollars (again originally, because this practice has extended also to other currencies).

The major instruments of the Eurocurrency market are:

- Eurodollar certificates of deposit or "CD" (or NCD). These are NCDs issued in dollars by non-US banks and by the branches of US banks in other countries, mainly in Europe. Other currencies are also used in this market.
- Euronotes, i.e. medium-term debt instruments. The notes are the debt obligations of companies, and they are denominated in many different currencies.
- Eurocommercial paper, i.e. short-term debt instruments issued by companies. These instruments are also denominated in many different currencies.

2.10 Economics of the money market

2.10.1 Introduction

The economic functions of the money market were implicit in the foregoing. Here we make them explicit, in the following sections:

- Provision of short-term funds.
- Outlet for short-term funds.
- Genesis of interest rates.
- Secondary money market.
- Open market operations.

2.10.2 Provision of short-term funds

The most obvious, but significant, function of the money market is the provision of short-term funds to borrowers when required by them – mainly for bridging finance purposes. The funds are forthcoming from the ultimate lenders either directly to the borrowers, but more usually via the financial intermediaries, particularly the banks. (This is an ex post view.)

The large corporates are able to borrow at lower rates in the money market securities market (CP, BAs, PNs) than the rates offered by the banking sector (for bank loans).

Government borrows at the lowest rates in the money market, because it issues risk-free securities (TBs).

The money creation function of banks makes for the supply of funds to be virtually unconstrained. This of course depends on the creditworthiness of individuals (who apply for credit), the viability of the projects of companies (who apply for credit), and the level of lending interest rates.

2.10.3 Outlet for short-term funds

Corporates, banks and the institutions hold money market investments for numerous purposes, but the main purposes usually are:

- As a temporary haven for funds earmarked for other investment classes.
- Institutions: to meet investment outflows (e.g. unit trusts).
- Banks: to meet deposit outflows.
- Banks: to meet the statutory liquidity (liquid asset) requirement (which applies in most countries)
- Banks: to allow for central bank borrowing (accommodation). The securities that are eligible for use as "repo securities" (i.e. to use for accessing central bank accommodation) in most countries are treasury bills, government bonds, central bank securities and securities that are government guaranteed.

2.10.4 Genesis of interest rates

As we have seen, interest rates have their genesis in the money market. Rates start with the KIR (cb2b IBM) and the b2b IMB and spread out from here to other rates, including longer rates.

2.10.5 Secondary money market

An active secondary market in money market securities is imperative for a number of reasons, particularly price discovery, reduction in borrowing costs, and the portfolio opportunities created. (This was covered in detail earlier.)

2.10.6 Open market operations

The money market plays an important role in monetary policy in that it enables the central bank to perform its functions with ease. The central bank is able to operate in the interbank market (to implement KIR) and the primary and secondary money markets in order to influence the liquidity of the banking sector.

The importance of the primary market lies therein that the central bank is able to issue its own securities and in so doing reduce bank liquidity. Central banks that do not have this facility are able to issue treasury bills for this purpose (assuming that the proceeds are sterilised).

The importance of the secondary market lies therein that the central bank is able to operate in the market in existing securities, i.e. sell from portfolio or buy for portfolio (OMO), in order to influence bank liquidity.

2.11 Summary

Demand in the money market is forthcoming from the ultimate borrowers and the financial intermediaries (other than the investment vehicles; they demand "investment funds"), and supply is forthcoming from the ultimate lenders and all the financial intermediaries. The banks have a unique role in that they are able to create money (deposits = demand) by making new loans (= supply), a case of supply creating its own demand.

The secondary money market is of the OTC variety and the issues methods are private placement, auction and "tap". Broker-dealers generally operate a screen-telephone trading system and the trading driver is order and quote.

There are two interbank markets: the bank / central bank interbank market (made up of the b2cb IBM and the cb2b IBM) and the b2b IBM. Monetary policy is played out in these markets and the very short-term interest rates have their genesis here.

The money market has derivative markets and some of the derivatives are unique to this market (repos, caps and floors, and FRAs).

The money market has an international dimension, and plays a significant role on the financial system and the economy.

2.12 Bibliography

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