bookboon.com

Banking: An Introduction

Prof. Dr AP Faure

Download free books at
bookboon.com

AP Faure

Banking: An Introduction

Download free eBooks at bookboon.com

Banking: An Introduction
1st edition
© 2013 Quoin Institute (Pty) Limited & bookboon.com
ISBN 978-87-403-0596-8

Download free eBooks at bookboon.com

Contents

1	**Essence of banking**	**7**
1.1	Learning outcomes	7
1.2	Introduction	7
1.3	The financial system	8
1.4	Principles of banking	19
1.5	The balance sheet of a bank	29
1.6	Bibliography	39
2	**Money creation**	**41**
2.1	Learning objectives	41
2.2	Introduction	41
2.3	What is money?	42
2.4	Measures of money	44
2.5	Monetary banking institutions	45
2.6	Money and its role	46
2.7	Uniqueness of banks	47
2.8	The cash reserve requirement	51

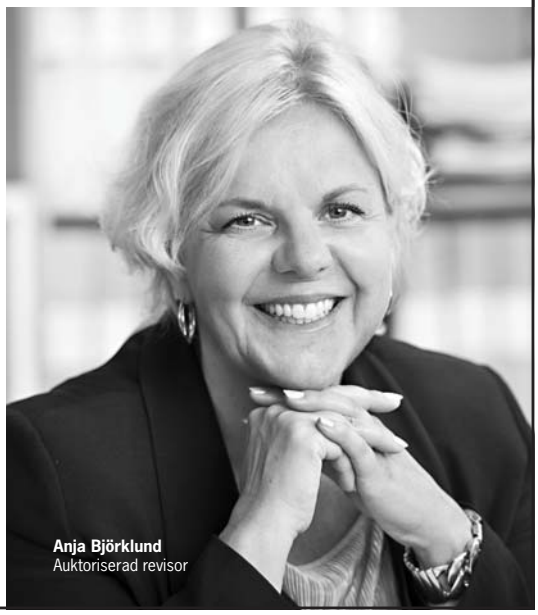
–Vad skiljer er från andra företag?

Kunderna som får dig att växa

”Vad skiljer er från andra revisions- och konsultföretag?” Den frågan får vi ofta. Svaret är enkelt. Vårt kundfokus – dynamiska ägarledda företag. Hos oss arbetar du med spännande entreprenörer vars företag vi hjälper att växa och utvecklas. Det gör ditt arbete varierande, utmanande och lärorikt. Du använder dina teoretiska kunskaper, bygger relationer och får värdefull erfarenhet. Vill du utveckla din egen förmåga? Välkommen till oss på Grant Thornton.

www.grantthornton.se/student
Facebook: Grant Thornton Sverige Karriär

Grant Thornton
An instinct for growth™



Download free eBooks at bookboon.com

Click on the ad to read more

2.9	Money creation does not start with a bank receiving a deposit	52
2.10	Money creation is not dependent on a cash reserve requirement	63
2.11	Is "money supply" a misnomer?	65
2.12	The money identity and the creation of money	66
2.13	Role of the central bank in money creation	68
2.14	How does a central bank maintain a bank liquidity shortage?	69
2.15	Bibliography	71
3	**Risk in banking**	**72**
3.1	Learning outcomes	72
3.2	Introduction	72
3.3	The concept of risk	73
3.4	Interest rate risk	75
3.5	Market risk	84
3.6	Liquidity risk	86
3.7.	Credit risk	93
3.8	Currency risk	99
3.9	Counterparty risk	102
3.10	Operational risk	103
3.11	Bibliography	107

Download free eBooks at bookboon.com

Click on the ad to read more

4	**Bank models & prudential requirements**	**109**
4.1	Learning outcomes	109
4.2	Introduction	109
4.3	Bank models	110
4.4	Rationale, objectives & principles of regulation[38]	120
4.5	Prudential requirements	129
4.6	Bibliography	141
5	**Endnotes**	**143**

Akademikernas a-kassa
För alla akademiker. Hela arbetslivet.

Försäkra din lön för 90 kronor i månaden

@akademikernas på Twitter

facebook.com/akademikernas

aea.se/blimedlem

Download free eBooks at bookboon.com

Click on the ad to read more

1 Essence of banking

1.1 Learning outcomes

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

1. Describe the context of banking: the financial system.
2. Explain the principles of banking.
3. Elucidate the broad functions of banks.
4. Analyse and explain the basic raison d'être for banks.
5. Describe the components of the balance sheets of banks.
6. Elucidate the liability and asset portfolio management "problem" of banks.

1.2 Introduction

Private sector banks play a significant role in the financial system and the real economy. They intermediate between all sectors of the economy and other financial intermediaries and institutions, and some of them provide the payments system, which most of us use every day.

Banks are unique in that their liabilities, bank notes and coins (N&C – central bank) and deposits (BD – private sector banks) are regarded as the *means of payments* / *medium of exchange,* which is the definition of money. So, put simply M3[1] = N&C + BD (held by the domestic non-bank private sector (NBPS). Because of this, banks are able to create additional money when required by individuals, businesses and government (with the assistance of the central bank). This unique feature, plus their balance sheet structure, places banks in a unique position in another way: they are inherently unstable, and therefore require robust regulation and supervision.

Banks are innovative, largely a function of intense competition, and they are therefore at the forefront of new developments, not only in banking but also in the wider financial markets. This makes regulation and supervision complex.

Download free eBooks at bookboon.com

In essence, banks are straightforward institutions: they take existing deposits (and loans to a small degree) and loan these funds, and, at the same time, make new loans and create new deposits (new money). However, while their basic function may be simple, the risks they assume are not, and this makes them complex. This text aims to cover banking in a comprehensible manner, and the following are the sections:

- Essence of banking.
- Money creation.
- Risks in banking.
- Bank models & prudential requirements.

This section serves as introduction to banking and offers the following sections:

- The financial system.
- Principles of banking.
- The balance sheet of a bank.

1.3 The financial system

1.3.1 Introduction

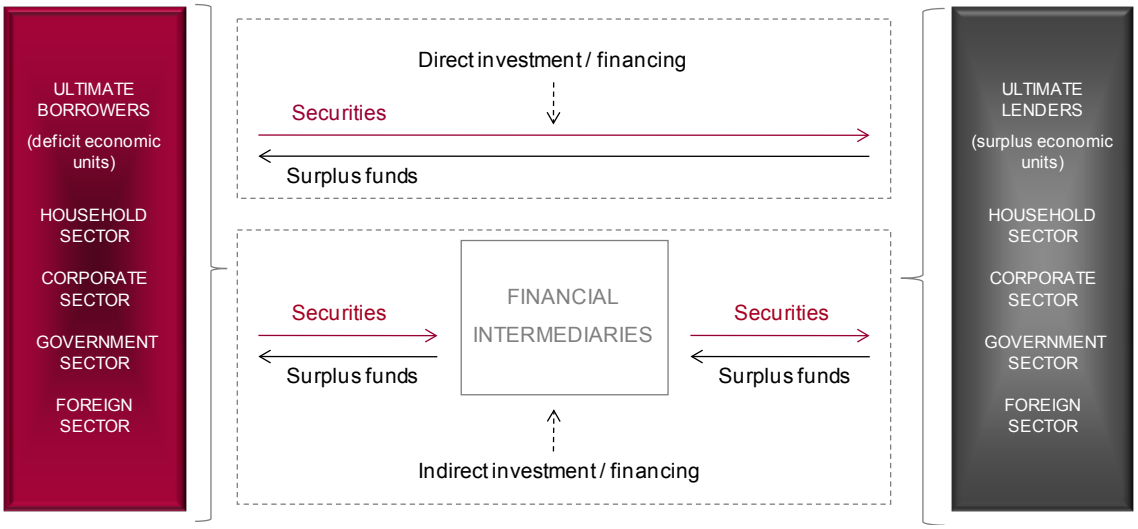


Figure 1: simplified financial system

Download free eBooks at bookboon.com

It may be useful to introduce the subject of private sector banking by briefly describing the financial system, thus contextualising banking. The financial system may be depicted simply as in Figure 1. It is essentially concerned with borrowing and lending and has six parts or elements (not all of which are visible in Figure 1):

- First: *lenders* (surplus economic units) and *borrowers* (deficit economic units), i.e. the non-financial-intermediary economic units that undertake lending and borrowing. They may also be called the *ultimate* lenders and borrowers (to differentiate them from the financial intermediaries who do both). Lenders try and earn the maximum on their surplus money and borrowers try and pay the minimum for money borrowed.
- Second: *financial intermediaries*, which intermediate the lending and borrowing process; they interpose themselves between the ultimate lenders and borrowers and endeavour to maximise profits from the differential between what they pay for liabilities (borrowings) and earn on assets (overwhelmingly loans). In the case of the banks this is called the *bank margin*. Obviously, they endeavour to pay the least on deposits and earn the most on loans. (This is why you must be on your guard when they make you an offer for your money or when they want to lend to you.)
- Third: *financial instruments*, which are created to satisfy the financial requirements of the various participants. These instruments may be marketable (e.g. treasury bills) or non-marketable (e.g. a utilised bank overdraft facility).
- Fourth: the *creation of money* when demanded. As you know banks (collectively) have the unique ability to create their own deposits (= money) because we the public generally accept their deposits as a means of payment.
- Fifth: *financial markets*, i.e. the institutional arrangements and conventions that exist for the issue and trading (dealing) of the financial instruments.
- Sixth: *price discovery*, i.e. the price of shares and the price of debt (the *rate of interest*) are "discovered", i.e. made and determined, in the financial markets. Prices have an allocation of funds function.

We need to present you with a little more information on these six elements.

1.3.2 Lenders and borrowers

The first element is lenders and borrowers. As seen in Figure 1, they can be categorised into the four groups or "sectors" of the economy:

- *Household* sector (= individuals).
- *Corporate* sector (= companies – private and government owned).
- *Government* sector = all levels of government – local, provincial, central).
- *Foreign* sector (= any foreign entity – corporate sector, financial intermediaries such as retirement funds).

Download free eBooks at bookboon.com

The members of these sectors may be either lenders or borrowers or both at the same time. For example, a member of the household sector may have a mortgage bond (= borrower by the issue of a non-marketable debt instrument) and at the same time hold a balance on your accounts at the bank (= a lender; a holder of money).

1.3.3 Financial intermediaries

The second element is financial intermediaries. As seen in Figure 1, lending and borrowing takes place either *directly* between ultimate lenders and borrowers [e.g. when an individual buys a share (also called equity or stock) issued by a company], or *indirectly* via financial intermediaries. Financial intermediaries essentially solve the differences (or conflicts) that exist between ultimate lenders and borrowers in terms of their requirements: size, risk, return, term of loan, etc.

An example: your friend Johnny (a member of household sector) has LCC[2] 10 000 he would like to lend out (= invest) for 30 days at low risk. You (a member of household sector) would like to borrow LCC 20 000 for 365 days to buy a car. You don't mind who you borrow from, because you represent the risk, not the lender. Your and Johnny's requirements don't match at all; direct financing won't work. He places his LCC 10 000 on deposit with a prime bank for 30 days and you borrow LCC 20 000 from the bank for 365 days. You and Johnny are both in high spirits; the bank satisfied your different requirements.

Financial intermediaries exist not only because of the divergence of requirements of lenders and borrowers, but for the specialised services they provide, such as insurance policies (insurance companies), retirement fund products (retirement funds), investment products (securities unit trusts, exchange traded funds), overdraft and deposit facilities (banks), and so on. The banks also provide a payments system, the system we don't see but rely much on. The central bank provides an interbank settlement system (as we will see later).

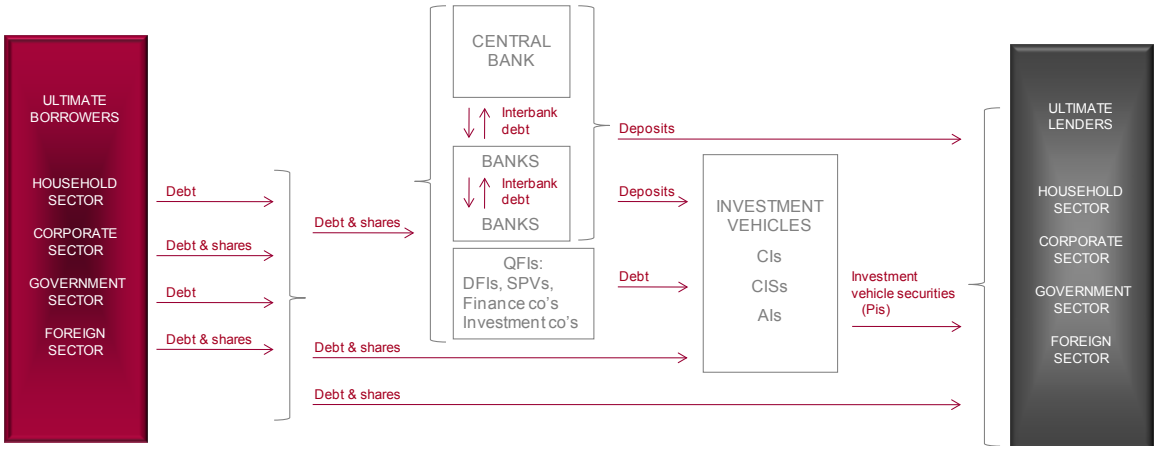


Figure 2: financial intermediaries

Download free eBooks at bookboon.com

The main financial intermediaries that exist in most countries and their relationships with one another are presented in Figure 2. A useful of classification of them is presented in Box 1. Note that the non-deposit intermediaries may also be seen as *investment vehicles*. Their products (= their liabilities), which can be called participation interests (PIs), are designed as investments for the household sector (and in some cases other financial intermediaries).

1.3.4 Financial instruments

The third element is financial instruments. They are also called *securities*; borrowers issue securities. They are therefore *evidences of debt or shares*. They also represent *claims on* the issuers / borrowers.

Ultimate lenders exchange money (deposits) for securities and ultimate borrowers exchange (issue new) securities for money. Financial intermediaries issue their own securities (e.g. deposits) and hold the securities of the ultimate borrowers (e.g. treasury bills). As you know, the banks have a special and unique role in this market for money in that they are able to create money (bank deposits) by making new loans (buying new securities).

Securities offer a return that is fixed (fixed-interest debt) or variable (variable-rate debt and share dividends). The capital amount of shares and debt is paid back after a period (bonds and preference shares) or not ever (perpetual bonds and shares). Securities are also either marketable of non-marketable. This is discussed in more detail in the next section.

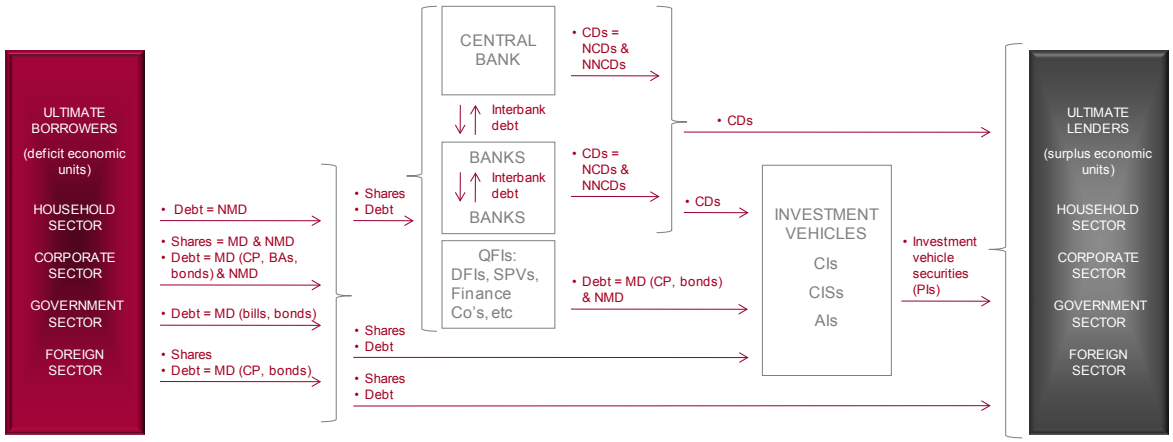
Box 1: financial intermediaries

MAINSTREAM FINANCIAL INTERMEDIARIES
- DEPOSIT INTERMEDIARIES
  - Central bank (CB)
  - Private sector banks
- NON-DEPOSIT INTERMEDIARIES (INVESTMENT VEHICLES)
- **Contractual intermediaries (CIs)**
  - Insurers
  - Retirement funds (pension funds, provident funds, retirement annuities)
- **Collective investment schemes (CISs)**
  - Securities unit trusts (SUTs)
  - Property unit trusts (PUTs)
  - Exchange traded funds (ETFs)
- **Alternative investments (AIs)**
  - Hedge funds (HFs)
  - Private equity funds (PEF's)

QUASI-FINANCIAL INTERMEDIARIES (QFIs)
- Development finance institutions (DFIs)
- Special purpose vehicles (SPVs)
- Finance companies
- Investment trusts / companies
- Micro lenders

Download free eBooks at bookboon.com

The instruments of the financial system are shown in Figure 3 and outlined below.



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; foreign sector issues foreign shares and foreign MD (foreign CP & foreign bonds); PI = participation interest (units)

Figure 3: financial intermediaries & instruments / securities

There are two categories of financial instruments:

- Debt (and deposits).
- Shares.

Click on the ad to read more

The instruments of debt and shares and their issuers are as follows:

The *household sector* issues:

- Non-marketable debt (NMD) securities
  - Examples: overdraft loan from a bank; mortgage loan from a bank.

The *corporate sector* issues:

- Share securities (marketable = listed & non-marketable = non-listed)
  - Ordinary shares (aka common shares).
  - Preference shares (aka preferred shares).

- Debt securities
  - Non-marketable debt (NMD).
  - Marketable debt (MD)
    - Examples: corporate bonds, commercial paper (CP), bankers' acceptances (BAs), promissory notes (PNs).

The *government sector* issues:

- Marketable debt (MD) securities
  - Treasury bills (aka TBs and T-bills).
  - Bonds (aka T-bonds).

The *foreign sector* issues (into the local markets):

- Foreign share securities (inward listings).
- Foreign debt securities (inward listings).

The *deposit financial intermediaries (central and private sector banks)* issue:

- Deposit securities
  - Central bank
    - Non-negotiable certificates of deposit (NNCDs).
    - Notes and coins.
    - Central bank securities[3].

  - Private sector banks
    - Non-negotiable certificates of deposit (NNCDs).
    - Negotiable certificates of deposit (NCDs).
    - Loans (mainly from the central bank).

Download free eBooks at bookboon.com

The *quasi-financial intermediaries* issue:

- Debt securities
  - Non-marketable debt (NMD)
    - Example: utilised overdraft facility.
  - Marketable debt (MD)
    - Examples: bonds, commercial paper (CP)

The above may be summarized as in Table 2.

As we have indicated, it is rare that the individual invests in these financial instruments (the exceptions are bank deposits in the form of NNCDs and shares). Rather, they invest in these ultimate financial instruments via the *investment vehicles*, by buying their PIs.

Download free eBooks at bookboon.com

Click on the ad to read more

	Debt & deposits		Shares		
	Non-marketable debt & deposits	Marketable debt & deposits	Non-marketable	Marketable	
			Non-listed ordinary shares*	Listed ordinary shares	Listed preference shares
ULTIMATE BORROWERS					
Household sector	OD & mortgage loans from banks	-	-	-	-
Corporate sector	OD & mortgage loans from banks	Corp bonds, CP, BAs, PNs	YES	YES	YES
Government sector	OD loans from banks	Govt bonds, TBs	-	-	-
Foreign sector	-	Foreign bonds	-	YES (inward listing)	YES (inward listing)
FINANCIAL INTERMEDIARIES					
Central bank	NNCDs	NCDs**, notes & coins	-	-	-
Private sector banks	NNCDs	NCDs	-	-	-
Quasi-financial intermediaries	OD loans from banks	Corp bonds, CP	-	-	-
Investment vehicles	Participation interests (PIs)	-	-	-	-

OD = overdraft); CP = commercial paper; BAs = bankers' acceptances; PNs = promissory notes; Corp = corporate; NNCDs = non-negotiable certificates of deposit; NCDs = negotiable certificates of deposit.
* Non-listed preference shares do exist but are rare. ** Central bank (CB) securities, which are akin to NCDs.

Table 2: financial instruments / securities

1.3.5 Financial markets

The fourth element of the financial system is financial markets. Financial markets are categorised according to the securities issued by ultimate borrowers and financial intermediaries. It was noted above that financial securities are either marketable or non-marketable. Examples are non-negotiable certificates of deposit (NNCDs) (= an ordinary deposit receipt) and negotiable certificates of deposit (NCDs) issued by the private sector banks.

There are two market types or forms (see Figure 4): primary market and secondary market. All securities are issued in their primary markets and the marketable ones are traded in the secondary markets. In the primary market the *issuer* receives the money paid by the *lender / buyer*. In the secondary market the *seller* receives the money paid by the *buyer*.

Download free eBooks at bookboon.com

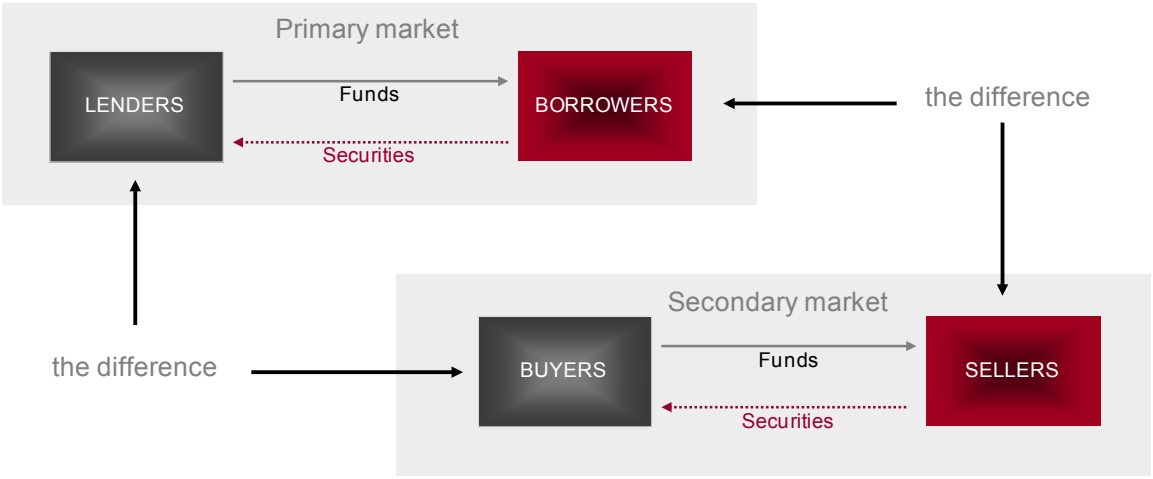


Figure 4: primary & secondary markets

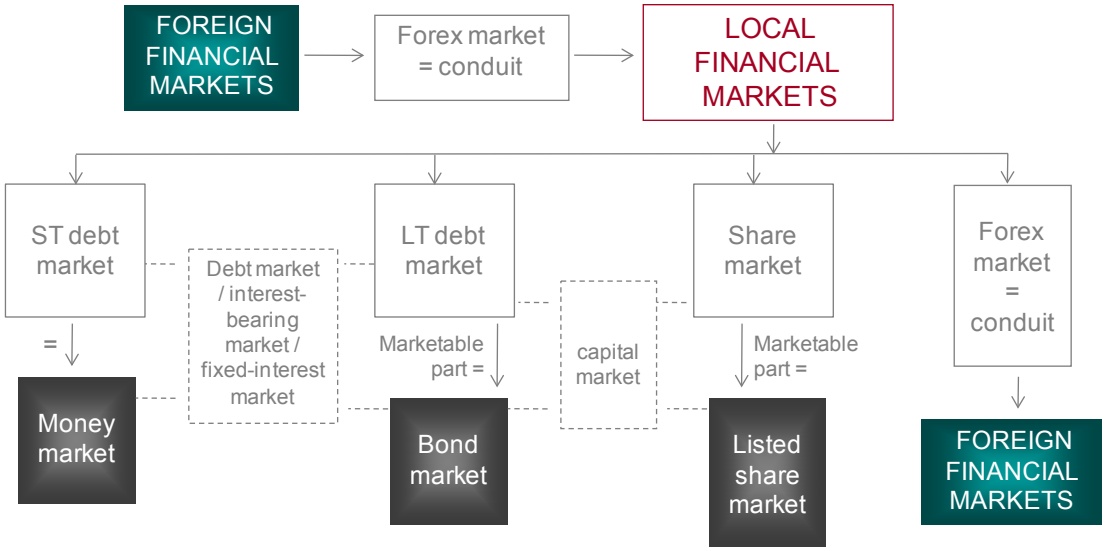


Figure 5: financial markets

There are a number of markets for financial instruments: the market for life policies (a primary market only), the market for PIs (also called units) of securities unit trusts (a primary market and a partial secondary market: the units are saleable to the issuer), the market for PIs in retirement funds (strictly a primary market), the deposit market (primary market for NNCDs and a secondary market for NCDs), the bond market (secondary market), and so on.

The financial markets are depicted in Figure 5. As we will show later, the money market should be defined as the short-term debt market (STDM = marketable and non-marketable debt), while the bond market is the marketable arm of the long-term debt market (LTDM).

Download free eBooks at bookboon.com

The money market (STDM) and the LTDM together make up the debt market (also known as the interest-bearing market and the fixed-interest market). The terms *interest-bearing* and *fixed-interest* oppose the debt market from the share market because the returns on shares are dividends and dividends are not fixed – they depend on the performance of companies. The LTDM and the share market is called the capital market.

The foreign exchange market is not a financial market, because lending and borrowing do not take place in this market. Rather, it is a conduit for foreign investors into local financial markets and for local investors into foreign financial markets.

In addition to these *cash* or *spot* markets [where the settlement of deals takes place a few days after transaction date (T+0)] we have the so-called derivative markets. They are comprised of instruments (forwards, futures, swaps, options and "others" such as weather derivatives) that are *derived* from and get their value from the spot financial markets. Whereas cash markets settle as soon as possible, derivative markets settle at some stage in the future.

Download free eBooks at bookboon.com

Click on the ad to read more

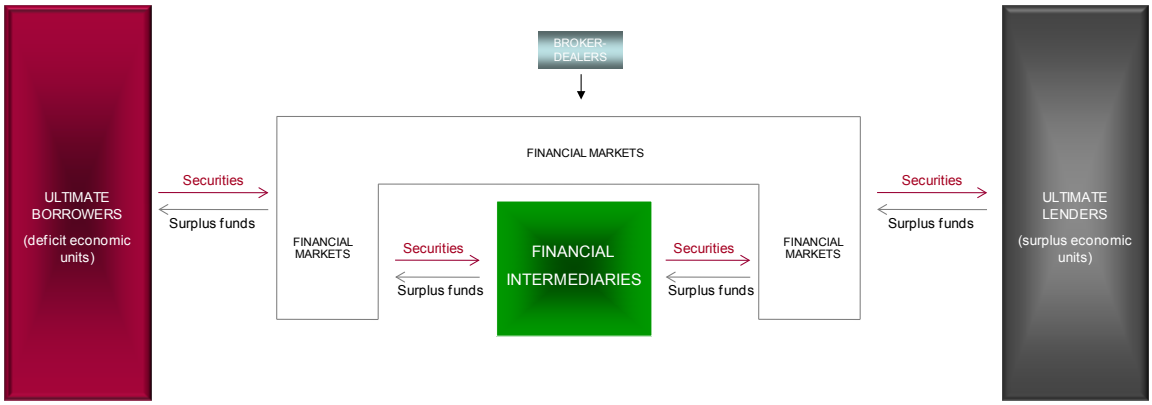


Figure 6: financial markets

Secondary markets are either over-the-counter (OTC), also called "informal markets" (such as the foreign exchange and the money markets) because there is no exchange involved, or exchange-driven (or formal) markets, such as the share (or stock) exchange. The place of the financial markets in the financial system may be depicted as in Figure 6.

The financial markets do not intermediate the financial lending and borrowing process as do financial intermediaries such as banks; they merely facilitate the primary and secondary markets.

1.3.6 Money creation

The fifth element is creation of money. As this is covered in detail later, we will not give it much attention here. Here follows a brief summary: when banks make new loans / provide new credit (= buy NMD, MD and shares), they create NBPS deposits (= money).

The referee in this game is the central bank which *controls* the growth rate in money creation (= new bank deposits resulting from new bank loans) by means that differ from country to country (which are elucidated later). The principal method is the interest rate on banks' loans (= bank assets) via the central bank's KIR interest rate, which influences the cost of bank liabilities (i.e. via the bank margin).

1.3.7 Price discovery

The sixth element is price discovery. Primary and secondary markets are important for a number of reasons, the most important of which is *price discovery*, i.e. the establishment of interest rates for various terms and the prices of shares. Interest rates, as we will see, have an important role to play in the pricing of all assets. The central bank plays a significant role in the establishment of interest rates. These significant issues are addressed later.

Download free eBooks at bookboon.com

1.3.8 Allied participants on the financial system

From the above discussion it will be evident that there are a number of allied participants on the financial system. By this we mean participants other than the *principals* (those who have financial liabilities or assets or both). As we now know, the principals are:

- Lenders.
- Borrowers.
- Financial intermediaries.

The allied participants, who play a major role in terms of facilitating the lending and borrowing process (the primary market) and the secondary markets are the financial exchanges and their members. Also we need to mention the fund managers, who are actively involved in sophisticated financial market research and therefore play a major role price discovery, and the regulators of the financial markets. Thus the allied non-principal participants in the financial markets are:

- Financial exchanges.
- Broker-dealers.
- Fund managers.
- Regulators.

1.4 Principles of banking

1.4.1 Introduction

The previous section presented the banking sector in the context of the financial system. This section goes a little further and covers:

- Fundamental issues in banking.
- Basic raison d'être for banks: information costs and liquidity.
- Broad functions of banks.

1.4.2 Fundamental issues in banking

Banks are unique financial intermediaries.[4] They are the only intermediaries that intermediate between all ultimate lenders and borrowers and all other non-bank financial intermediaries. In this way they perform crucial functions, including providing the means of payments. In fact, they are such significant intermediaries that their very survival (particularly the large banks) is in the interests of the country; there exist social costs to their failure.

Download free eBooks at bookboon.com

For this reason, banks are the most regulated intermediaries. In most countries the central bank regulates and supervises the banks, and they are obliged to have large departments and skilled persons to carry out this function. The banks are innovative and create new products continually, because of the competitive nature of banking, making the task of the supervisor challenging.

The hardware and software systems requirements of banks are sophisticated, not only because of the complex deals they undertake, but to cater for the strict and diverse reporting requirements of banks. This and the high capital resource requirements create substantial barriers to entry.

Banks exist because of the information costs they carry and because of the demand for liquidity by deposit clients. Banks earn their keep by the management of financial risks, and this is what differentiates them from other companies. Essentially, they are risk managers. According to Heffernan[5], the "organisation of risk management within a bank is as important as the development of risk management techniques and instruments to facilitate risk management…. There is no such thing as a generic banking strategy. But banks need to be planning how, in the future, existing competitive advantage is going to be sustained and extended. The outlook for banks is optimistic, provided they can create, maintain, and sustain a competitive advantage in the products and services (old and new) they offer."

Download free eBooks at bookboon.com

Click on the ad to read more

The main threat to banking is the securities markets. Many large, highly rated companies do not require the intermediation of banks to satisfy their borrowing requirements. Cognisant of this threat, many banks have are involved in the creation of marketable debt instruments, and hold many of these in portfolio.

The most unique function of banks is their money creating ability, under the guidance of the central bank, and the central bank uses the profit-maximising behaviour of banks to execute monetary policy. This is where interest rates have their genesis.

In summary:

- Banks are the only intermediaries that intermediate between all ultimate lenders and borrowers and all other financial intermediaries.
- They perform vital functions, including providing the means of payments.
- They are such significant intermediaries that their very survival (particularly the large banks) is in the interests of the country; there exist social costs to their failure.
- Banks are the most regulated and supervised financial intermediaries.
- The banks are innovative and create new products continually, because of the competitive nature of banking, making the task of the regulator / supervisor challenging.
- There exist substantial barriers to entry into banking – systems and capital.
- Banks earn their keep by offering liabilities which suit clients' financial requirements, and holding assets which represent the satisfied financial requirements of ultimate borrowers.
- Because the requirements of lenders / depositors and borrowers are so diverse, banks are exposed to diverse financial and other risks. The management of risk is at the core of banking, and this is what differentiates them from other companies.
- There is no such thing as a generic banking strategy.
- The main threat to banking is the securities markets.
- The most unique function of banks is their money creating ability; by extending new loans they create new deposits (= money). The central bank plays the role of referee in this respect.
- Interest rates have their genesis in the relationship between the private sector banks and the central bank.

Download free eBooks at bookboon.com

1.4.3 Basic raison d'être for banks: information costs and liquidity

1.4.3.1 Introduction

The question needs to be asked: "why cannot borrowers and lenders come together without the intermediation of a profit-maximising company offering this function?" The answer is that they do, but this happens on a limited scale. Examples are:

- A father lending to his son, enabling his son to repay his bond. If we assume the bank home loan rate bond is 12% and the deposit rate is 8%, they will probably do the deal at 10%. Both score on the deal and they cut out the banking sector (called bank *disintermediation*).
- A member of the household sector holding a portfolio of shares (here we regard share finance as "infinite borrowing" where the lender gets a share of the profits).
- A corporate entity holding a treasury bill for LCC 5 million.

It will be recalled that these are examples of *direct financing*. However, we need to look at the likely facts:

- The lenders are probably wealthy.
- In the first example the mortgage bond is probably an "access bond", i.e. a bond where the outstanding amount can be flexible (up to a maximum), i.e. the son can access the bond when the father needs the money. This means that the term to maturity of the bond is flexible. If the term of the bond was 20 years and the outstanding amount was not flexible, the father would probably not have done the deal.
- The father is fully aware of the creditworthiness of his son.
- In the case of the corporate entity and the wealthy member of the household sector, the securities are marketable, meaning that they lenders have access to their funds – by selling the securities in the secondary markets.

What are we saying? We are saying that there are two critical considerations that make banks useful intermediaries:

- *Information costs*. The dad lends money to his son because he has the knowledge that his son will repay the loan. Banks lend funds to borrowers that are not known to the depositors, and they incur costs in gathering in information on the borrowers. Here we have one reason for the existence of banks – *information costs*.
- *Asymmetry in liquidity preference*. Only few dads lend to their sons, because most dads do not have the surplus funds to do so. In general, the many dads, moms, companies, etc find it convenient to get interest from the bank while the money is available, which is probably for only a portion of the month. The banks lend to borrowers for long periods, for example 25 years in the case of government bonds. Here we have the second reason for the existence of banks: *lenders and borrowers have different liquidity preferences*. It is true that securities markets do provide liquidity for the lender; however, these markets are only accessible to high net worth individuals and companies.

Download free eBooks at bookboon.com

Following is a discussion on these two main reasons for the existence of banks.

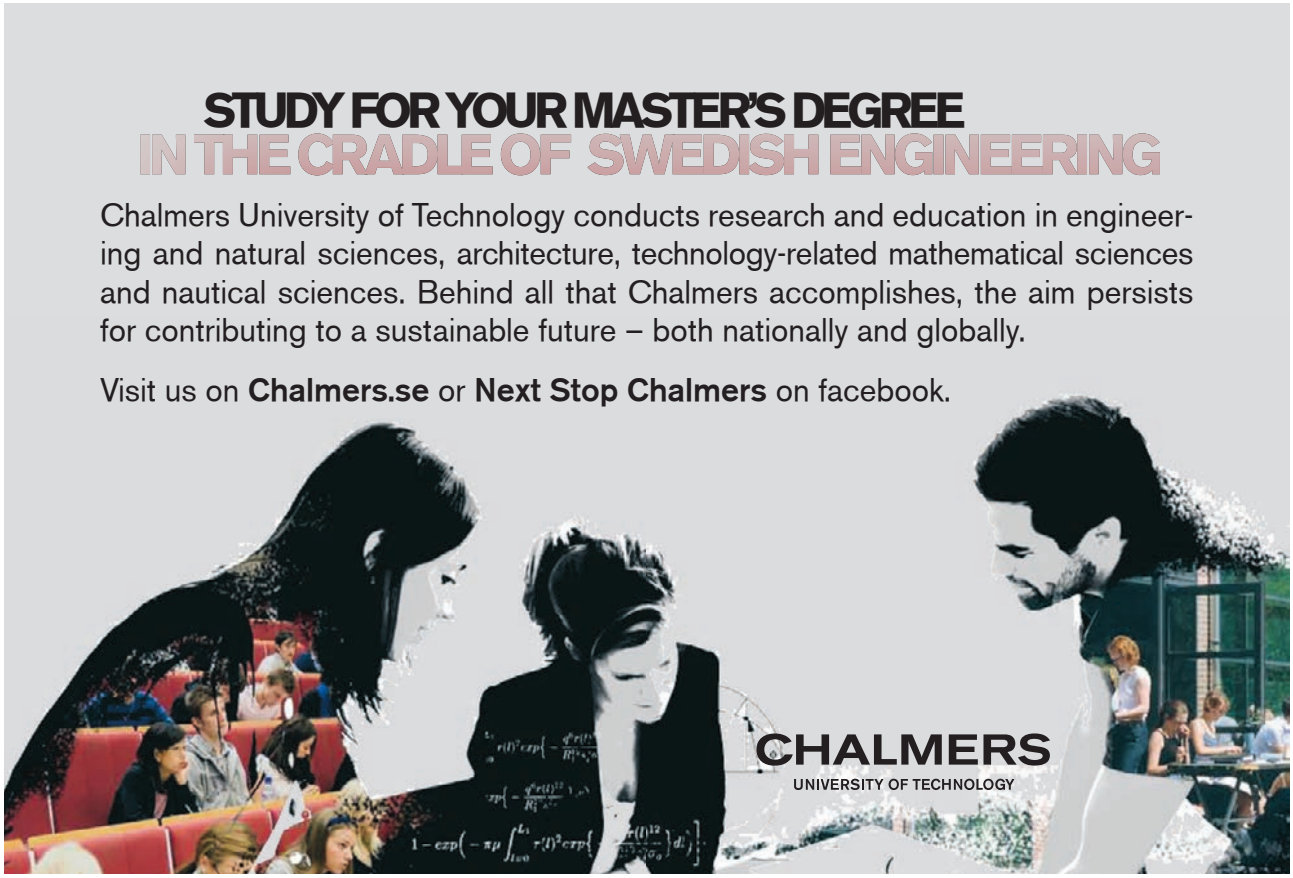
1.4.3.2 Information costs

Four main types of information costs can be identified:

- Search costs.
- Verification costs.
- Monitoring costs.
- Enforcement costs.

Search costs are incurred whenever a transaction between two parties is done. The borrower is not concerned with the quality of the lender, but the lender is concerned with the quality of the borrower. Search costs include negotiation and the gathering of information, which take place during meetings that usually take some time.

Verification costs are incurred because the bank is obliged to verify the information gathered. Banks are concerned with the well-known problem of *asymmetric information* (a gap in knowledge between lender and borrower), which can give rise to the problems of *adverse selection* (poor selection prior to the loan) and *moral hazard* (financially-immoral behaviour by the borrower after the loan is made).



Download free eBooks at bookboon.com

Click on the ad to read more

It is interesting to note that a higher rate charged to compensate for a risky client can be negatively self-fulfilling, i.e. it can make the project for which the money is borrowed unviable. A high rate is of course perfectly acceptable to the borrower who knows s/he is going to default.

Monitoring costs are incurred by the bank because once the money is lent the bank has an incentive to monitor the client (this will be discussed in more detail later under the risks of banks).

Enforcement costs are incurred when borrowers do not adhere to the terms of the contract, i.e. the terms of the loan. When conditions are breached, the bank (the injured party) has to take action, and "action" could mean expensive "legal action".

The individual lender (surplus economic unit) does not have the time or the inclination or the skill to gather information, verify the information, monitor client behaviour or enforce legal contracts, and *delegates* this function to the bank – which is skilled in this area. It may be said that banks have "informational economies of scope"; they focus on this function and consequently the cost per transaction is lower than in the case where an individual lender assesses a few borrowers.

1.4.3.3 Asymmetry in liquidity preference

Lenders and borrowers have different requirements in terms of liquidity, which essentially means *term to maturity* of the loan or deposit. Borrowers usually borrow for projects that have long lives and consequently long-term repayment schedules, whereas lenders usually require deposits that are *liquid*, i.e. deposits that are available immediately or in the short-term. Banks satisfy both parties; they essentially *transmute illiquid assets into liquid liabilities*.

Depositors earn a rate of interest and have liquidity, and they accept a low rate of interest compared with the loan rate for this convenience. The large banks have little risk of losing funds (liquidity risk) because withdrawals of liquid deposits do not deplete the system of funds; these funds remain in the system and flow back to the deficit banks via the interbank market.

The borrowers are prepared to pay a higher rate of interest than that available to the lenders because of the convenience, i.e. availability of the funds for the required period, which would most likely not be the case if the ultimate lender loaned the funds.

Download free eBooks at bookboon.com

1.4.3.4 OTC versus securities markets

It should be evident that banks mainly operate in the informal (over-the-counter – OTC) financial market: taking of deposits from and making loans to individuals and smaller companies in the main. The alternative to the informal market is the formalised market, i.e. the financial (share and bond) exchange/s, where *informational and liquidity problems are overcome* by:

- The borrowers (issuers of securities) being the large creditworthy borrowers (which are usually rated by credit rating agencies).
- The existence of standardised contracts.
- The ability to dispose of investments when the need arises.

1.4.4 Broad functions of banks

1.4.4.1 Introduction

In the previous section we discussed the basic underlying raison d'être of banks: *information costs* and *asymmetry in liquidity preference*. These may also be seen as the main functions of banks. Allied to these functions are a number of other functions, for example payments services (which are closely related with the taking of deposits). The longer list of the functions of banks is as follows:

- Facilitation of flow of funds (this is the obvious one).
- Efficient allocation of funds.
- Assistance in price discovery.
- Money creation.
- Enhanced liquidity.
- Price risk lessened for the ultimate lender.
- Improved diversification.
- Economies of scale.
- Payment system.
- Monetary policy function.

1.4.4.2 Facilitation of flow of funds

In essence, financial intermediaries facilitate the flow of funds from surplus economic units to deficit economic units. Without sound financial intermediaries, much of the savings of the ultimate lenders will not be available to the ultimate borrowers. There are numerous examples in underdeveloped countries where individuals keep their savings in the form of notes and coins as opposed to deposits with unsound banks.

1.4.4.3 Efficient allocation of funds

Banks (not all though) have the expertise to ensure that the flow of funds is allocated in the most efficient manner. As noted, they are aware of the existence of *asymmetric information* and its two by-products, the problems of *adverse selection* and *moral hazard*.[6] Asymmetric information means that the potential borrower has more information than the bank does about his/her business.

Download free eBooks at bookboon.com

As we have seen, the presence of *asymmetric information* leads to *adverse selection* and *moral hazard* problems. *Adverse selection* means that bad risk borrowers are more likely to want loans than good risk borrowers. *Moral hazard* purports that once a loan is granted the borrower may be inclined to take risks with the money that are not disclosed to the bank in the application. These are two of the many real-life risks faced by banks. They are keenly aware of them, and this ensures that available funds are allocated to borrowers that will utilise the funds prudently, which in turn will lead to an increase in economic activity.

1.4.4.4 Assistance in price discovery

Closely allied with efficient allocation of funds is price discovery. The banks are the professionals / experts in the financial system (after all, they also make up a large part of the system), and are therefore keenly involved in price discovery. They are actively involved in the pricing of financial services and securities.

It is notable, however, that the cue for interest rates, especially at the short end of the yield curve, emanates from the central bank. This is elucidated in the separate section on money creation.

1.4.4.5 Money creation

Also closely allied with the efficient allocation of funds is money creation. This function may also be termed the credit of loan function. Not only are existing funds allocated efficiently, but new money is also allocated efficiently by the banking sector. They have the unique ability to create money (their own deposits) by making new loans, i.e. literally by accounting entries. But, this takes place under the guidance of the central bank.

The banks may thus also be seen as the intermediaries that ease the constraint of income on expenditure, thereby enabling the consumer to spend in anticipation of income and the entrepreneur to acquire physical capital. These are of benefit to the overall welfare of the country. Money creation is covered more fully below.

1.4.4.6 Enhanced liquidity

As we discussed earlier, enhanced liquidity is created for the depositor with a bank. If an individual purchases the securities of the ultimate lenders (such as making a loan to a company), liquidity is low or almost zero. Banks are in the business of purchasing less (or non-) marketable primary securities, and offering liquid investments to the ultimate lenders.

1.4.4.7 Price risk lessened for the ultimate lender

Flowing from the above is that banks take on price risk and offer products that have little or zero *price* risk. Banks have a diverse portfolio of non-marketable loans, bonds and share investments that carry price risk (also called market risk), and offer products that have zero price risk, such as fixed deposits.

Download free eBooks at bookboon.com

1.4.4.8 Improved diversification

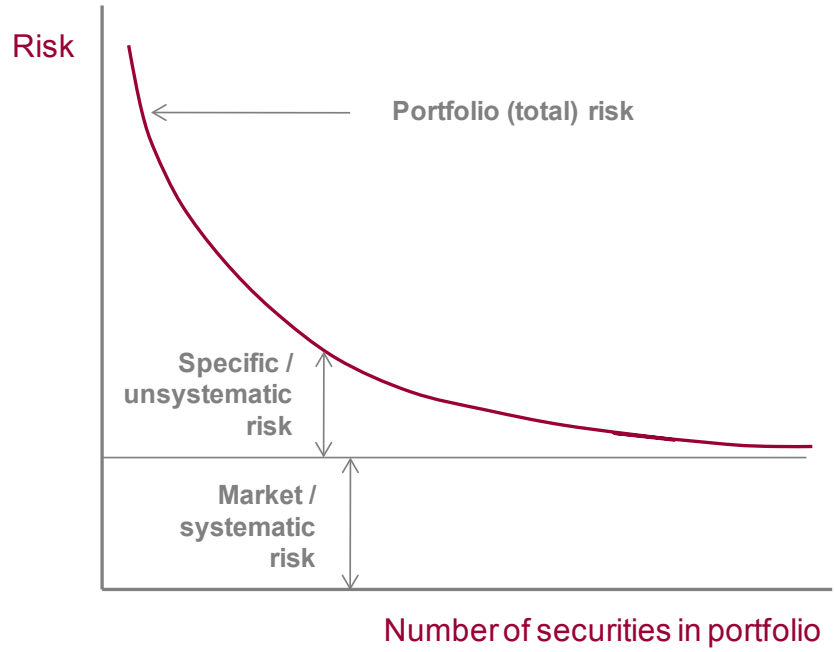


Figure 7: risk & diversification

Download free eBooks at bookboon.com

Click on the ad to read more

One of the central doctrines of portfolio theory (and practice) is that risk (defined as variability of return around the mean return) is reduced as the number of securities in a portfolio is increased, provided that the returns are not perfectly positively correlated. It may be said that part of the investment risk is "diversified away" as one increases the number of securities (assets) in a portfolio.[7] This concept is illustrated as in Figure 7.

With investments, members of the household and (small and medium) corporate sectors can only achieve limited diversification compared to a bank which aggregates small amounts of deposits for investments in the securities (mainly NMD) of the ultimate borrowers. Thus, an investment with a bank is an indirect investment in a wide variety of assets (mainly NMD), achieving diversification and lessening risk. Earlier, we used the example of a father lending to his son. This is highly risky, because there is a fair probability of him receiving zero return and losing 100% of his investment. He lessens risk by lending to a number of individuals and companies via a bank deposit.

1.4.4.9 Economies of scale

This was touched upon earlier; however, there is no harm in elaborating. Because of the sheer scale of banks, a number of economies are achieved. The two main economies that are realised are: *transactions costs and research (search) costs.*

Transactions costs

The largest benefit of financial intermediation is the reduction in transactions costs; in fact some intermediaries have been formed specifically because of transactions costs [e.g. securities unit trusts (SUTs) and exchange traded funds (ETFs). The obvious example is that the (transaction) cost involved in purchasing a small number of shares in a company via a broker-dealer is similar to the cost of purchasing many more shares. More important is payments system costs. The banking system, through the use of sophisticated technology, provides an efficient payments service (cheque clearing and electronic payments) that is relatively inexpensive. Individual participants in the financial system cannot achieve this reduction in transactions costs.

Research (search) costs

An example is the purchase by an ultimate lender of shares and bonds as opposed to holding bank deposits. S/he now has the task of monitoring the performance of each company, which involves economic analysis, industry analysis, ratio analysis, etc. Financial intermediaries have the resources to carry out research, which essentially benefits the holders of its products (deposits).

Download free eBooks at bookboon.com

1.4.4.10 Payments system

The banking sector provides the mechanism for the making of payments for anything that is purchased (goods, services, securities). Certain financial assets serve as a means of payments, and there are instruments of transfer, and purchases / payments are settled efficiently, assuming an efficient payments system (clearing and settlement). The financial assets / instruments of transfer that are accepted as payment include:

- Financial assets (money):
  - Bank notes and coin (issued by the central bank in most cases).
  - Bank deposits.

- Instruments of transfer:
  - Cheques.
  - Credit, debit and smart cards.
  - Electronic funds transfer (EFTs) facilities (such as internet banking facilities).

1.4.4.11 Monetary policy function

The banks are both the instruments of money creation and the mechanism for the implementation of monetary policy. The monetary authorities are able, through various means, to exert a powerful influence on the interest rates of banks, and, in turn, to influence consumption (C) and investment (I) spending. C + I = GDE (gross domestic expenditure), and GDE contributes over 60% to GDP (gross domestic product[8]) (and as high as 80% in some countries). GDP growth is a major input in the other objectives of policy: stable employment, balance of payments equilibrium and low inflation.

1.5 The balance sheet of a bank

1.5.1 Introduction

The balance sheet of a bank is comprised of, on the one side, equity and liabilities, and on the other, assets, and:

Equity and liabilities = assets.

Liabilities are made up of deposits (overwhelmingly) and short-term loans (loans from the central bank, and repurchase agreements). Thus, the essence of banking is straightforward. The banks finance themselves with own capital and reserves (equity), deposits and short-term loans, and they provide loans (NMD and MD). They also provide other services, such as indemnities, guarantees and broking services that are off-balance sheet.

Download free eBooks at bookboon.com

The banks' income derives from interest earnings on their loans (NMD and MD), the fees charged for services, as well as opportunistic profits from financial market dealing. Their costs are comprised of interest payments on deposits and short-term loans, and the costs associated with running the bank.

We repeat a previous illustration which shows the unique position of banks in the financial system: Figure 8. It will be seen that banks also buy shares; however, this is a minuscule part of the business and holdings are usually associated with opportunistic positions / dealing in shares.

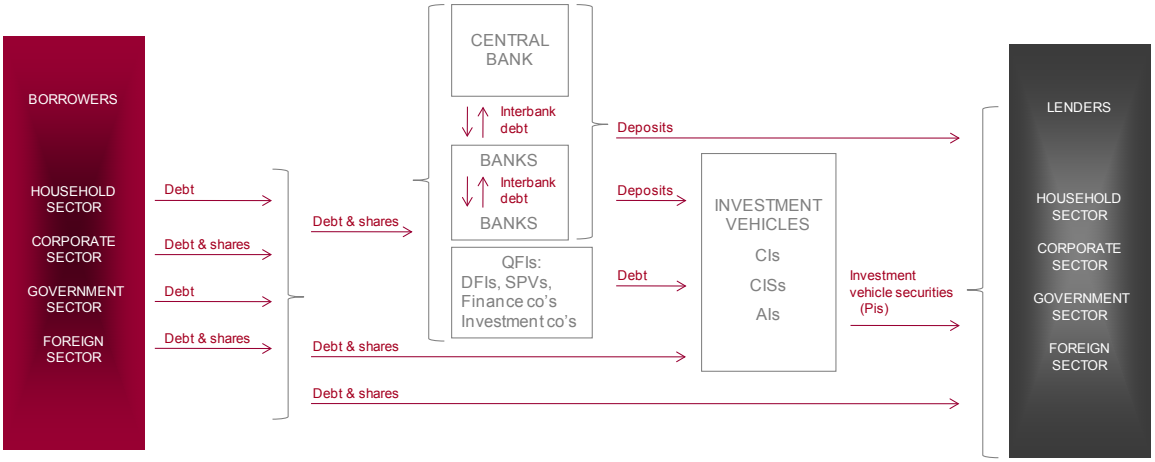


Figure 8: banks in the financial system

The purpose of this section is to provide a brief introduction to the business of banking, with a sub-purpose of attempting to build a framework for this unique industry. The details are then presented in later texts.

The broad carcass of banking may be seen in basic terms as in Figure 9.

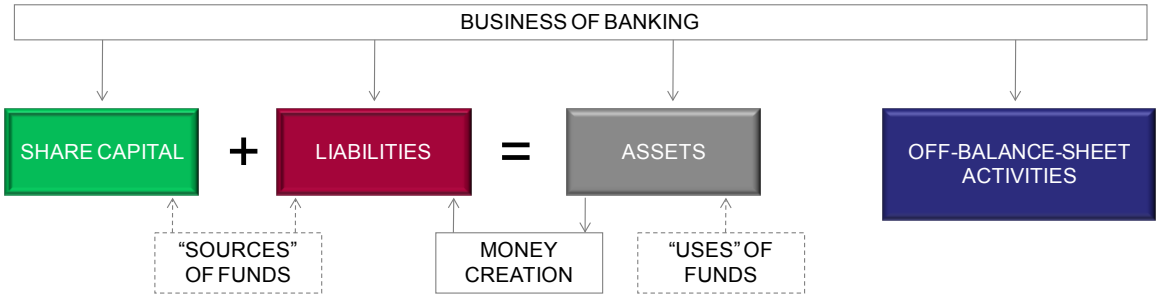


Figure 9: the basic business of banking

Each of these areas of banking is presented in summary form below (keep in mind that the purpose of this section is to create a broad outline the private banking sector).

Download free eBooks at bookboon.com

1.5.2 Share capital (equity)

The share capital and unimpaired reserves (= equity) required to be held by a bank is the principal prudential requirement of banking legislation, and it is ultimately applied to protect the bank's deposit clients as well as the banking system from failure (systemic failure). The other prudential requirements are the cash reserve, liquid asset and large exposure requirements. The capital and reserves of the banks amount to around 8–10% of total capital and liabilities / assets.

1.5.3 Liabilities

1.5.3.1 Introduction

Apart from equity, the other sources of funds of banks are:

- Deposits.
- Loans:
  - Loans from the central bank.
  - Interbank loans.
  - Repurchase agreements (repos).

Download free eBooks at bookboon.com

Click on the ad to read more

1.5.3.2 Deposits

Deposits are the primary source of the funding for a bank; there are two broad categories:

- Non-negotiable certificates of deposit (NNCDs).
- Negotiable certificates of deposit (NCDs).

The proportions of the two categories vary from country to country, but the former is usually the higher one, because most deposits are small. The NNCD category includes many types: call money accounts, cash managed accounts, transmission accounts, cheque accounts, savings accounts, fixed deposit accounts, notice of withdrawal accounts (NOW accounts in the US), and so on.

The term of deposits ranges from a day to a number of years, although the overwhelming term is short.

As indicated in Figure 8, deposits are taken from all the other financial intermediaries, as well as the four sectors of the economy: household, corporate, government and foreign. Deposits are denominated in LCC, and banks also offer foreign currency-denominated accounts to certain depositors.

1.5.3.3 Loans

Loans are short-term in nature and there are three categories: loans from the central bank, interbank loans and repurchase agreements (repos).

Loans from the central bank are related to monetary policy and are provided at the central bank's key interest rate (KIR – called by many names such as base rate, bank rate, repo rate, discount rate).

Interbank loans are loans from banks to banks and are provided at the interbank rate. As we will see later, there are actually three interbank markets, but this one, the bank-to-bank interbank market (b2b IBM), is the only one where a price is discovered (which is closely related to the KIR).

A repurchase agreement (repo) is a legal agreement in terms of which a security, or a parcel of securities, is sold for a portion of the life of the securities. For example, a bank may wish to take a short-term position (for 30 days) in 5-year government bonds (because it expects bond rates to fall in the 30-day period). At the same time the bank may have a wholesale deposit client needing an investment for 30 days at a rate that is higher than the deposit rate for 30 days. The bank buys the bonds outright (with the purpose of selling them outright after 30 days) and would then sell them to the client under repurchase agreement (repo), i.e. under an agreement to repurchase the same securities 30 days after the deal is struck.

Download free eBooks at bookboon.com

It will be evident that if a bank sells a security, it leaves the balance sheet of the bank. In *reality* it does (the security is in fact delivered to the client), but for purposes of the prudential requirements, banks are required to show the security as an asset and the funds advanced to the bank as a loan (received under repurchase agreement).

The repo is the preferred instrument for some central banks in the conduct of monetary policy (for legal reasons). Most central banks (except in exceptional circumstances) bring about a liquidity shortage (LS) and accommodate the banking system by means of outright overnight loans (see above) or by loans via purchasing repos from the banks for specified short-term periods. The rate charged by the central bank for this accommodation is usually called the repo rate (as noted, it is another name for the KIR).

Figure 10 is presented as a summary of the sources of funding of banks.

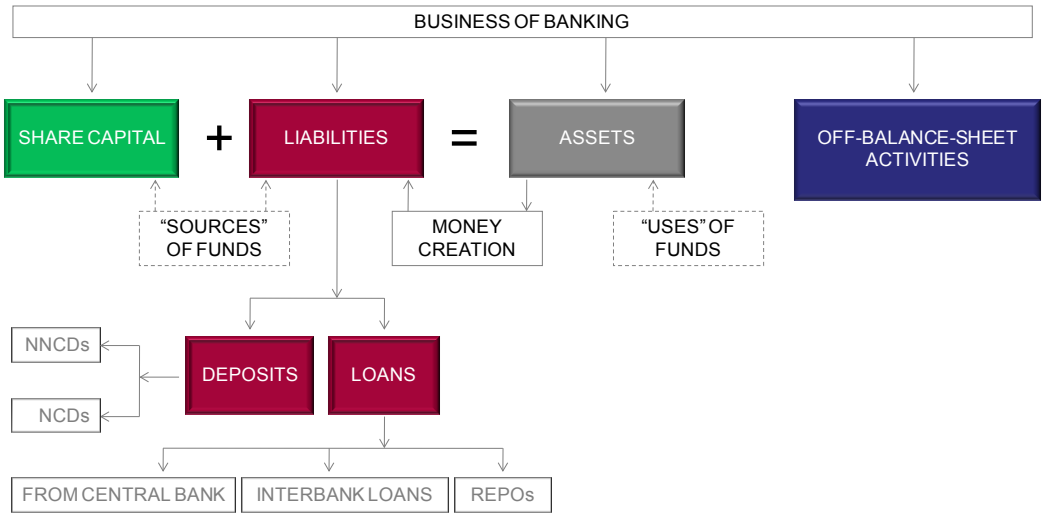


Figure 10: the business of banking: liabilities

1.5.4 Assets

1.5.4.1 Introduction

The assets of banks are categorised into two broad groups, with a few sub-groups as follows (we ignore "other assets"[9]):

- Central bank money:
  - Notes and coins.
  - Deposits (required and excess reserves).
- Loans:
  - Non-marketable debt (NMD):
    - Loans to non-banks.
    - Interbank loans.
  - Marketable debt (MD), i.e. investments.[10]

Download free eBooks at bookboon.com

1.5.4.2 Central bank money

Central bank money is the banks' holding of bank notes and coin (which are the central bank's liabilities), and deposits with the central bank. The latter is comprised of two accounts in some countries (*current* or *settlement account* and *reserve account*) and just one in others (called *settlement* or *reserve* account). The amounts held on this account/s are (1) the statutory required reserves (RR) of the banks, which are determined as a proportion of bank deposits (or liabilities), and (2) excess reserves (which may be held from time to time). Usually, interest is not paid on this account/s, meaning that the banks keep the minimum required reserves in these accounts

Ignoring the RR for a moment, the central bank account/s of the banks are also the *clearing* accounts, i.e. the interbank clearing takes place via these accounts.

Central bank money is only about 2–5% of total assets, and yet these accounts are at the very centre of the banking system and monetary policy. The central bank operates via these accounts to keep the banks short of reserves (usually), and accommodates them at the KIR. The latter is the "foundation" rate in the interest rate structure.

Vill du hålla dig uppdaterad?

pwc

Gå med i PwC Student så får du information om våra lediga tjänster, internships, evenemang och mycket mer – innan alla andra. Ta reda på mer om dina möjligheter via vår webbplats ***www.pwc.se/student***

Download free eBooks at bookboon.com

Click on the ad to read more

1.5.4.3 Loans

Bank loans are also called *advances* and *credit*. This portion of the banks' balance sheets makes up the vast majority of their assets. As we have seen, the following are the categories:

- Non-marketable debt (NMD):
  - Loans to non-banks.
  - Interbank loans.
- Marketable debt (MD), i.e. investments.

The vast majority of bank loans are *NMD*, i.e. small loans, to *non-banks*, and there are many types, for example:

- Instalment sale credit (old name: hire-purchase credit).
- Suspensive sales agreements.
- Leasing finance.
- Credit card debtors.
- Foreign currency loans.
- Mortgage loans.
- Overdraft loans

Of these NMD, the last two are in the majority.

Interbank loans are the counterpart of the interbank loans that appear on the liability side of the balance sheet.

Marketable debt (MD) refers to the holdings of the banks of investments such as treasury bills, bonds, promissory notes, bankers' acceptances and commercial paper. As noted, banks also hold shares (ordinary / common shares and redeemable preference shares), but this is unusual. In most cases, MD makes up a small proportion of assets.

Figure 11 is presented as a summary of the assets ("uses" of funds) of banks (as well as the liabilities). This brings us to one of the unique features of banks: the ability to create new deposits (= money) by making new loans.

Download free eBooks at bookboon.com

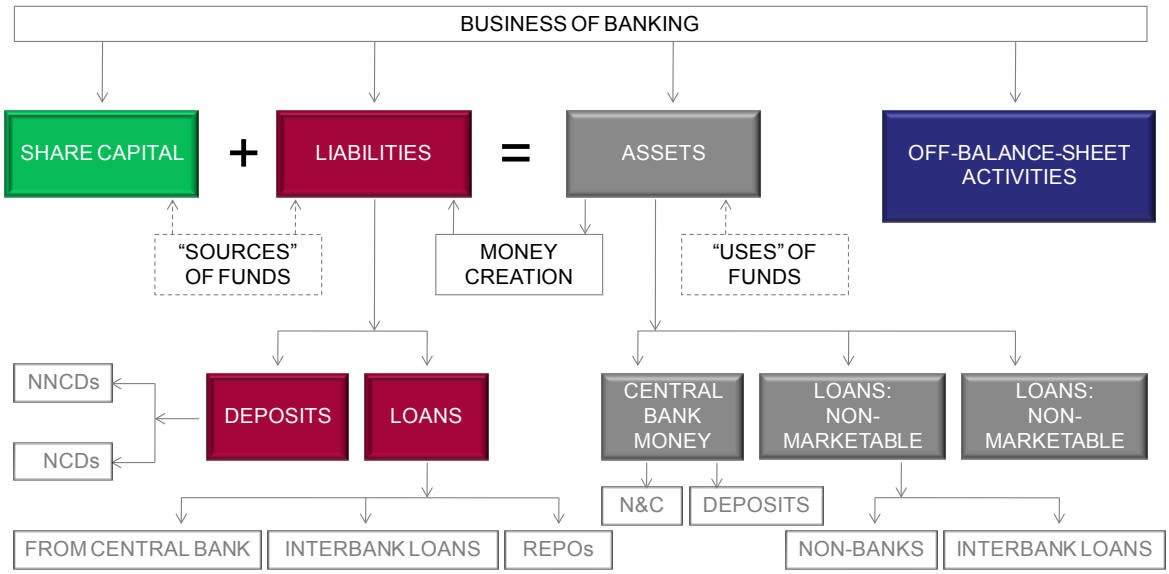


Figure 10: the business of banking: full picture

1.5.5 Liability and asset portfolio management

Asset and liability portfolio management is the essence of banking, and every bank has an active asset and liability committee (ALCO) that meets frequently. In a nutshell, banks endeavour to balance liabilities and assets in such a way that the maximum profit is generated, given an acceptable risk profile.

The ultimate balance of liabilities and assets sought by banks is to have assets that generate the highest floating interest rate possible, and no credit risk, and liabilities that carry the lowest floating rate possible. To the extent that there is a term and rate (fixed versus floating) mismatch, the ideal portfolio construct depends on the interest rate view of the bank. If there is certainty in respect of interest rate movements, then in a falling rate environment (ideally with a positively sloped yield curve) assets should have the longest term possible and liabilities should be as short as possible. Conversely, in a rising rate environment, assets should have a short-term maturity and liabilities a long maturity. But, term mismatches are risky.

The reality is vastly different. Other banks are competing for business, clients of the bank require deposits and investments and accommodation that differ from the bank's ideal portfolio construct, interest rate movements can be volatile and unpredictable (and subject to shocks), and there are many risks that banks face.

Banks are in the business of lending funds. Thus, they have a disposition to grow their asset "books" to the extent dictated by the capital requirement, and to generate profits that can be added to capital resources (retained funds) in order to grow the book even faster. In the past history of banking, locally and internationally, a number of banks have "gone for growth at all costs", and in many cases the cost has been failure. For this reason the focus of the regulatory authorities is on risk management.

Download free eBooks at bookboon.com

It is easy for a bank to grow its asset book, but with this comes risk in many forms. Thus banks have to balance the search for business with strict risk management. This is discussed at some length later.

1.5.6 Money creation

Bank assets and liabilities are not static. They increase mainly as a result of money creation. Thus will be discussed in detail later; here we present a simple example. Keep in mind that broad money, M3, is made up of bank notes and coins (N&C) + bank deposits (BD) (held by the domestic non-bank private sector – NBPS):

$$M3 = N\&C + BD.$$

Of these BD is the largest (+/- 95%). BD increase when banks make new loans = buy NMD and MD.

BALANCE SHEET 1: COMPANY A (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods Bank deposits	-10 +10		
Total	0	Total	0

Download free eBooks at bookboon.com

Click on the ad to read more

BALANCE SHEET 2: COMPANY B (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods	+10	Bank loan (overdraft)	+10
Total	+10	Total	+10

BALANCE SHEET 3: BANK A (LCC MILLIONS)			
Assets		Equity and liabilities	
Loan to Company B	+10	Deposit of Company A	+10
Total	+10	Total	+10

Company A is a producer of goods required by Company B. Company B requires finance of LCC 10 million in order to purchase the goods, and approaches Bank A for a loan. After a credit check, the bank grants Company B an overdraft facility.

Company B draws a cheque for LCC 10 million on its overdraft facility and presents the cheque to Company A and takes delivery of the goods. Company A is thrilled to the back teeth with the sale and deposits the cheque with bank A. The cheque is put through the interbank clearing system, and the balance sheets of the respective parties end up as shown in Balance Sheets 1–3.

It will be evident that the deposit of Company A amounts to an increase in M3 (bank deposits held by the NBPS), and that its source was the increase in the overdraft granted to Company B and utilised by it (the *real source* of course was the *demand for loans* (Δ = change):

$$\Delta M3 = \Delta BD = \Delta \text{bank loans}.$$

Questions immediately arise: can banks really do this in the real world? Surely there must be a brake on the system?

The answer is yes, the banks do this every day; in fact the system is designed to allow this to happen. The *brake on the system*, i.e. the mechanism that prevents the increase in money creation escalating out of hand, is *monetary policy*.

1.5.7 Off-balance sheet activities

1.5.7.1 Introduction

The off-balance sheet activities of banks may be split into two categories as follows:

- Off-balance-sheet activities that carry risk.
- Off-balance-sheet activities and services that carry no or little risk.

Download free eBooks at bookboon.com

1.5.7.2 Off-balance-sheet activities that carry risk

The off-balance sheet activities of banks that carry risk are many and include the following:

- Indemnities.
- Guarantees.
- Irrevocable letters of credit.
- Underwriting.
- Effective net open position in foreign currencies.
- Portfolios managed by others on behalf of the bank.
- Securities / commodities broking.

1.5.7.3 Off-balance-sheet activities that carry no or little risk

The off-balance sheet activities of banks that carry little or no risk are multi-faceted and include:

- Corporate finance (mergers, acquisitions, company listings).
- Debt origination (companies and government).
- Project finance.
- Bookkeeping services.
- Economic advice to corporate and individual clients.
- Advice on importing and exporting.
- General investment advising.
- Trust and estate services.

1.6 Bibliography

ABSA Bank Limited, 1992. **Banks**. In Falkena, HB, et al (editors), *Financial Institutions*. Halfway House: Southern Book Publishers.

Bessis, W, 1999. **Risk management in banking**. New York: John Wiley and sons.

Faure, AP, 2005. **The financial system**. Cape Town: Quoin Institute (Pty) Limited.

Heffernan, S, 2000. **Modern banking in theory and practice**. New York: John Wiley and sons.

Mishkin, FS and Eakins, SG, 2000. **Financial markets and institutions**. Reading, Massachusetts: Addison Wesley Longman, Inc.

Download free eBooks at bookboon.com

Rose, PS, 2000. **Money and capital market**s (international edition). New York: McGraw-Hill Higher Education.

Saunders, A, 2001. **Financial markets and institutions** (international edition). New York: McGraw-Hill Higher Education.

Santomero, AM and Babbel, DF, 2001. **Financial markets, instruments and institutions** (second edition). Boston: McGraw-Hill/Irwin.

Download free eBooks at bookboon.com

Click on the ad to read more

2 Money creation

2.1 Learning objectives

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

1. Comprehend what money is.
2. Outline the financial intermediaries that make up the monetary banking sector.
3. Describe the different measures of money.
4. Evaluate the money identity.
5. Describe the essence of the creation of money.
6. Expound the meaning of bank liquidity.
7. Elucidate the role of the central bank in the money creation process.

2.2 Introduction

One of the great mysteries and elegant features of the financial system in general and of the banking sector in particular, is the creation of new money. The largest component of the money stock, bank deposits, is literally created by accounting entries, and the amount created or the growth rate "allowed" is the territory marked by the central bank whose main function is the implementation of monetary policy. The latter expression means "a policy on money".

Why must there be a "policy on money"? It is because there is a relationship between the growth rate in the money stock and price developments (the rate of inflation). This relationship is not even debated any longer (except by some diehards) and there is much evidence to support the strong relationship, the latest being the rate of inflation (a few quintillion million percent per annum, the highest in the history of the world) in a particular African country that has resulted from the excessive creation of money (in this case government borrowing from the banking sector and the printing of bank notes). The highest denomination bank note in this country was ZWD 100 trillion (this was after 13 zero's had already been lopped off the currency!).

What are the consequences of inflation? The consequences are profound in terms of the destruction of economic growth and employment when inflation is high.

The consequences of even slight excesses in money growth (15–20%) can be severe, such as occurred in the developed world in 2007–2009. The cause (excessive money stock growth) took place for a number of years prior to the consequences being felt, and these consequences were inevitable to many who keep an eye on world money growth.

Download free eBooks at bookboon.com

What is too high money stock growth? It is when money growth (which reflects additional demand for goods and services) exceeds the country's ability to satisfy the additional demand in terms of production capacity (i.e. capacity, being "sticky", cannot keep up with rapidly rising demand). When this happens worldwide, balances of payments become skewed, currencies become volatile and inflation occurs worldwide, as evidenced in the increasing costs of transport and food.

The reaction of the central banks of the world to this situation is to raise interest rates, and it is this that can trigger large-scale defaulting on loans (particularly in the case of sub-prime borrowers). This can lead to large-scale banking solvability issues and government bailouts (as happened in 2007–2009).

What underlies money growth? In the main it is *bank loan growth*, and banks are able to create loans / credit at will to satisfy demand (and money as a consequence), assuming the borrower is creditworthy / the project funded is sound. This rests on the fact that the public generally accepts bank deposits as the main means of payments / medium of exchange.

The issue of creditworthiness / project-soundness is critical: because some banks evidence promiscuity in this regard, the banking system is inherently unstable. It is the job of the central bank to ensure financial system stability and therefore to curb the growth rate in bank loans / credit (and its counterpart money) and this they do via the manipulation of interest rates. These critical issues are the subject of this text, which we cover in the following sections:

- What is money?
- Measures of money.
- Monetary banking institutions.
- Money and its role.
- Uniqueness of banks.
- The cash reserve requirement.
- Money creation does not start with a bank receiving a deposit.
- Money creation is not dependent on a cash reserve requirement.
- There is no such thing as a money "supply".
- The money identity and the creation of money.
- Role of the central bank in money creation.
- How does a central bank maintain a bank liquidity shortage?

2.3 What is money?

What is money? Money is anything that complies with the following criteria:

- Medium of exchange.
- Store of value.
- Unit of account.
- Standard of deferred payment.

Download free eBooks at bookboon.com

The best example of the total erosion of these criteria in a currency is the currency of the country referred to earlier (with the highest inflation rate ever recorded). In 2009 the stage was reached when the particular currency was no longer accepted as a medium of exchange, a store of value, a unit of account or a standard of deferred payment. The mediums of exchange in this country became the USD and the ZAR. Inflation fell to low numbers almost instantaneously

It will be evident that of the four criteria, medium of exchange is paramount, and the other criteria are subordinated to this one. Consequently, we can think of money being anything that is *accepted as a means of payments / medium of exchange*.

So what is the medium of exchange? It made up of two parts:

- Bank notes (usually issued by the central bank) and coins (usually issued by the central bank and in some cases by government) (N&C).
- Bank deposits (BD).

Download free eBooks at bookboon.com

Click on the ad to read more

Bank notes and coins are well known as a medium of exchange; we use them every day to make purchases and to repay debts. However, bank deposits acting as a medium of exchange is often a little confusing. Consider how many payments are made by bank cheques (diminishing fast) and electronic funds transfers (EFTs). When an EFT payment is made (best example = internet banking) the payer's deposit account at the bank is debited (made less by the amount) and the payee's deposit account at the bank is credited (added to). Similarly, a payment by cheque results in the cheque writer's deposit account being debited and the cheque receiver's account being credited (when s/he deposits the cheque of course).

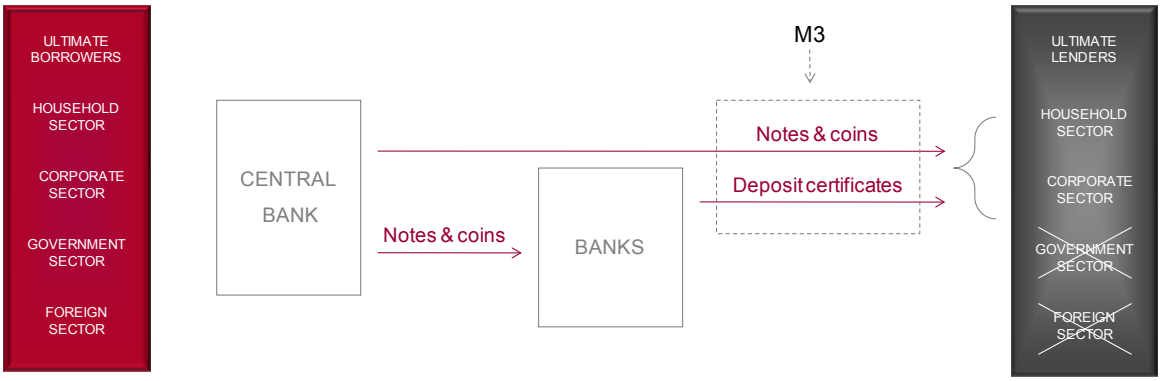


Figure 1: what is money?

Money is not the EFT or the cheque. They are merely instruments that lead to the shifting of a deposit amount from one bank account to another. The deposit is money, as is N&C. Thus the total stock of money (M3 – see below) at a point in time is the total amount of N&C and BD in the possession of individuals and companies:

$$M3 = N\&C + BD.$$

The individuals and companies can be called the "non-bank private sector" (NBPS[11]). This of course excludes money in the possession of banks (= N&C), the foreign sector and government deposits. Figure 1 endeavours to provide an image of "what is money?"

2.4 Measures of money

We know that N&C can be used immediately for payments. We also know that current / cheque account (and some other) deposits can be used as such. We also know that other deposits can be used as money after a short notice period, and so on.

The central banks of the world have developed many definitions of money, ranging from M0 to M4. In the interests of pedagogy (overlook detail and stick with principles) we will use the definition of money M3. This includes N&C all BD of the NBPS. We will not be far off the mark in terms of liquidity because for the most part NBPS bank deposits are short-term.

Download free eBooks at bookboon.com

It is notable that in most developed countries NBPS BD makes up 96–98% of M3 (and N&C the balance of course). In some developing countries this number can be quite low, indicating a low confidence level in respect of banks.

2.5 Monetary banking institutions

Most countries have some or all of the following deposit intermediaries:

- Private sector banks.
- Central bank.
- Land Bank.
- Rural banks.
- Mutual banks.
- Building societies.
- Post Office Bank.

These intermediaries are usually also referred to as the *monetary banking institutions* (MBIs) and they are the intermediaries that make up the *monetary banking sector* (MBS). These intermediaries play a substantial role in the financial system as follows:

- As the custodians of the major part of the money stock of the country (i.e. NBPS deposits).
- As issuers of N&C (in some countries certain private banks issue bank notes).
- As the keepers of government's surplus balances.
- In providing loans to the public sector (usually lower tiers of government).
- In purchasing the debt securities of the central government (= loans which are marketable).
- In providing loans to the household and corporate sectors.
- In the creation of money.

Each central bank on a monthly basis consolidates the statements of liabilities and assets (i.e. the balance sheets) of these intermediaries (in the process netting out interbank claims) in order to arrive at the monetary aggregate number/s and their balance sheet counterparts (BSCs). As we have seen, there are various definitions of money, but the one usually given much attention is:

M3 = N&C (outside the banking sector) + BD (of NBPS with MBIs).

In this text we will refer to the balance sheets of the banks collectively (representing all non-central bank banks) and the central bank.

Download free eBooks at bookboon.com

2.6 Money and its role

This topic leads to impassioned debating and views range from a passive role to a key role. However, we will not contaminate the core issues we are busy with here by engaging in what is often futile debate. We will simply state our view.

The importance of the availability of bank loans / credit (from here on referred to as *loans*) on demand cannot be overemphasised, in a negative and positive sense. In a negative sense, a too high growth rate in the stock of money can be devastating to economic growth because of its influence on inflation. When economic units pay too much attention to inflation (when it is rising at a fast pace) it affects their spending and investment decisions and economic output and employment suffer.

In a positive sense, money creation oils the wheels of industry: the availability of *new* loans / money is essential for economic growth to take place, but the proviso is that it should be monitored and "controlled" so as not to outpace the capacity of the economy to satisfy the increased demand (consumption – C – and investment – I) that underlies the increase in loans / money. (Note that loans make up the majority of the asset side of the MBS and money the liability side.)

Download free eBooks at bookboon.com
Click on the ad to read more

Scholars of Economics will know that C + I (needed to increase production capacity) are the main components of GDE (Gross Domestic Expenditure = domestic demand) and that GDE + exports (X) less imports (M) (X – M = net external demand) = GDP (Gross Domestic Product – expenditure on). They also know that new production capacity creation is a function of increased consumption demand, and that there is often a lag between increased demand and the increased capacity to supply. Thus if consumption demand is allowed to increase too rapidly, inflation will be the result (if not at first, because of imports satisfying the demand, then later when the poor balance of payments numbers prompt a restrictive monetary policy – in the form of higher interest rates).

As a conclusion to this section we repeat the essential element of this discussion: to a large degree new money creation underlies the increased demand (and the monetary numbers of all countries corroborate this). Therefore money does play a significant role in the economy. As we shall see, underlying money creation is the lending rate of banks (prime rate and rates related to this rate), and underlying this is the lending rate of the central bank, which has to be "made effective" to work effectively. We will return to these issues later.

2.7 Uniqueness of banks

The uniqueness of the banks lies therein that they are able to literally create money (NBPS BD) by responding to the demand for loans[12] by borrowers, i.e. the government, household and corporate sectors. Providing new means making *new* loans and buying *new* evidences of debt – debt securities. It is notable that banks respond to the demand for loans without even knowing that they are creating money.

The reaction of many readers to the above and the further elucidation below may be incredulous. How can banks be in such a unique situation? Surely this must mean that banks can create their own assets (= new loans) and liabilities (= new BD = money) to an unlimited extent?

The banks are in this unique situation for a simple reason: because *the public accepts their deposit as money*, i.e. a means of payments / medium of exchange. And this issue has a long history starting with the goldsmiths in London in the 17th century. However, we do not have the space to delve into this interesting history.

The answer to the second question is yes, they can and do so. However, they can only do so as long as there is an increased demand for loans. This is largely a function of the lending interest rate, as we said earlier. However, there exists a major difficulty in this regard and it manifested itself on a grand scale in 2007–2009: this is, as we have said, that the banks are *inherently unstable*. It is the job of the monetary authorities to see that this innate weakness is kept at bay (through bank supervision). As we now know, they failed in this function in a breathtaking fashion before and in this period.

Download free eBooks at bookboon.com

The basic functions of banks and the creation of money may be depicted as in Figure 1. It is correct to say that banks take money on deposit and lend the money to borrowers. And, certainly, the individual banks operate in these terms in their daily activities: they vie for deposits and the making of loans. However, this is an *ex post* situation / declaration. When *new* loans are made *new* deposits are created.

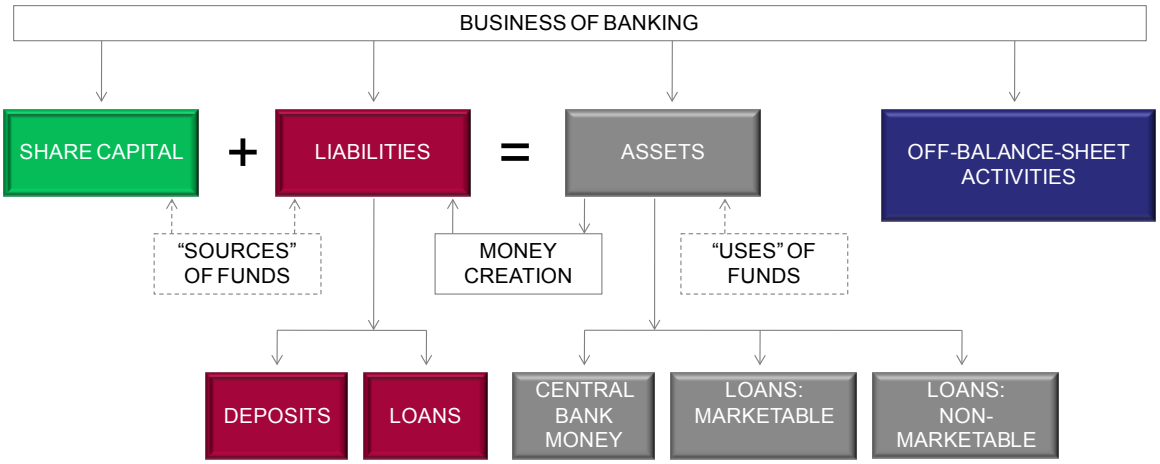


Figure 2: the business of banking

A simple but real life example is required. Company L produces goods required by Company B and the latter approaches the bank (for the moment we assume there is only one bank) to borrow the funds required to purchase the goods (LCC[13] 100 million). The bank (after a viability study) agrees, opens a current account for Company B and provides it with a loan of LCC 100 million by crediting the account with LCC 100 million. The bank has increased its loans by LCC 100 million and has a new deposit of LCC 100 million, while Company B has a new deposit and incurred a liability (loan) of the same amount, as indicated in Boxes 1 and 2.

BOX 1: COMPANY B (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Bank deposits	+100	Loans from bank	+100
Total	**+100**	**Total**	**+100**

BOX 2: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans (Company B)	+100	Deposits (Company B)	+100
Total	**+100**	**Total**	**+100**

Download free eBooks at bookboon.com

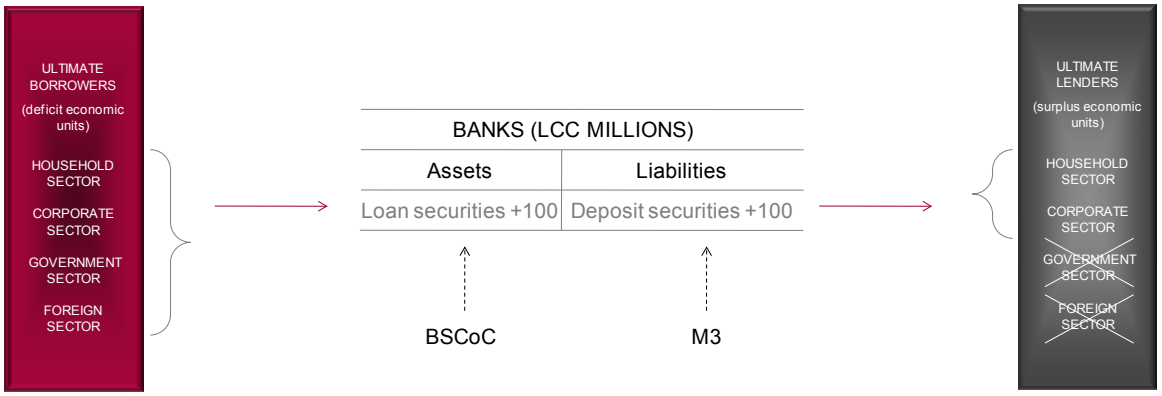


Figure 3: money creation

Note that when we measure the money stock and changes therein we analyse the banks' balance sheets (we will add the central bank later). The money stock in the form of BD (= deposit securities) has increased by LCC 100 million, and the balance sheet counterpart (BSC) or balance sheet cause of change (BSCoC) is an increase in bank loans (= loan securities) (Δ denotes change):

ΔM3		= +LCC 100 million
BSCoC	= Δbank loans	= +LCC 100 million.

Som medarbetare i Riksbyggen vill vi att du ska känna att du är viktig och att du tydligt kan se hur du bidrar till att vi uppnår våra mål. Vi erbjuder dig stimulerande och utvecklande arbetsuppgifter i ett kreativt arbetsklimat.

Inom Riksbyggen kan du som ekonom exempelvis arbeta som
Controller
Kundansvarig ekonom
Redovisningsekonom
Byggekonom
Projektekonom

Vill du utvecklas tillsammans med oss?

Riksbyggen utvecklar, förvaltar och förbättrar rummen som du bor och arbetar i.

Riksbyggen
Rum för hela livet

Download free eBooks at bookboon.com

Click on the ad to read more

This is illustrated in Figure 3. The actual real life cause is the additional demand for loans which was satisfied by the bank. The bank was able to create the new deposit (= M3) by an accounting entry, and rests on the fact that the public regards BD as the means of payment. Of course Company B undertook the loan in order to pay Company L for the goods. When it does so, the balance sheets appear as indicated in Boxes 3–5.

While the above can and does happen, it is more likely that the bank will provide Company B with an overdraft facility of LCC 100 million (= opens a current account with a zero balance and provides Company B with the right to overdraw the account by LCC 100 million. When Company B makes an EFT payment to Company L, its account is debited by LCC 100 million and Company L's account is credited by this amount. When Company L gets confirmation of the transfer it delivers the goods to Company B. The changes in the balance sheets are the same as indicated in the simpler example above (and indicated in Boxes 3–5).

BOX 3: COMPANY L (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Goods Deposits at bank	-100 +100		
Total	**0**	**Total**	**0**

BOX 4: COMPANY B (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Goods	+100	Loans from bank	+100
Total	**+100**	**Total**	**+100**

BOX 5: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans (Company B)	+100	Deposits (Company L)	+100
Total	**+100**	**Total**	**+100**

Note that the all the balance sheets balance.

Download free eBooks at bookboon.com

2.8 The cash reserve requirement

Before the next part of this story can be presented, we need to introduce the cash reserve requirement (RR; it also denotes the amount of required reserves). Most countries have a RR, but some do not, which divorces money creation from it – a tenet of this text which we shall return to. This is a statutory requirement in terms of which banks are required to hold on deposit with the central bank (CB) an amount of funds called cash reserves (R). The amount of RR is a proportion of the amount of deposits the banks have (we assume 10% for the sake of simplicity – we denote this RR percentage as *r*). Thus if the banks have LCC 100 billion in deposits they are obliged to have 10 billion on deposit with the CB.

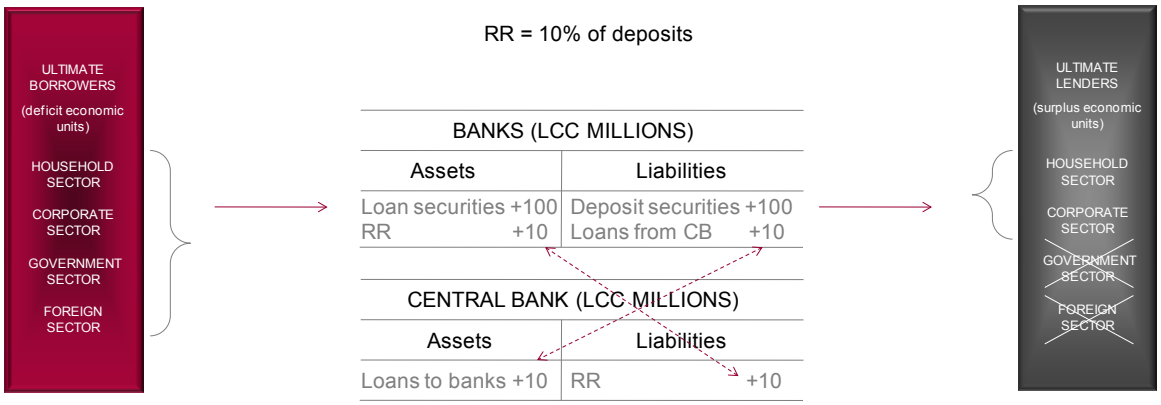


Figure 4: money creation & RR

A number of essential notes are required here:

- As noted, although rare, there are some countries that do not have a RR.
- In some countries the banks have two accounts:
  - Reserve account (RA), in which the RR balances are held.
  - Settlement account (SA), over which interbank settlements take place.
- At times banks have reserves in excess of RR, denoted as ER. RR + ER = the total of reserves (denoted as R).
- In some countries the banks have just one CB account: a SA in which R is held and over which interbank settlement takes place.
- Central banks do not pay interest on banks' R. This is usually the case, but there are exceptions[14].
- Because of the latter, the banks have no reason to hold ER with the CB; i.e. they endeavour to hold the minimum RR.
- In this discussion we assume there is one account: the SA and that interest is not paid on R.
- In many countries N&C rank as RR; therefore if the RR is LCC 100 million and the banks have N&C in portfolio (in ATMs, teller tills, etc) to the extent of LCC 10 million: only LCC 90 million is required to be held on the SA as RR.
- In some countries N&C cannot be used to satisfy the RR. We assume this in the text.
- Banks' N&C and their CB account balances are referred to as CB money (CBM).

Download free eBooks at bookboon.com

- No bank can create CBM; only the CB can do so – by buying an asset from the bank or making a loan to the bank (against collateral of eligible assets = government securities usually).
- When the CB makes a loan to a bank (= provides borrowed R) it does so at an "administratively" determined rate (set by the Monetary Policy Committee – the MPC): this rate is called by many names such as repo rate, base rate, discount rate, bank rate and so on. We will refer to it at the CB's key interest rate (KIR).

The above will become clearer as we progress. For the moment see figure 4: when banks make loans of LCC 100 million and create deposits of LCC 100 million they are obliged to have LCC 10 million in RR with the CB. This can only be supplied by the CB by making loans to the banks, and this is done at the KIR.

2.9 Money creation does not start with a bank receiving a deposit

2.9.1 Introduction

Many text books on money and banking lead the scholar astray with the starting point of money creation being a bank receiving a deposit. They postulate that if a bank receives a deposit of LCC 100 million, it is obliged to place LCC 10 million (r = 10%) with the CB. Once this is executed it can lend out LCC 90 million (see Boxes 6–7).

Download free eBooks at bookboon.com

Click on the ad to read more

BOX 6: BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
RR Loans	+10 +90	Deposits	+100
Total	+100	Total	+100

BOX 7: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		RR	+10
Total	0	Total	+10

When the loan of LCC 90 million is made, this amount ends up as a deposit with the bank (again we assume there is one bank[15]). The bank places 10% (= LCC 9 million) with the CB and lends out the rest (= LCC 81 million) (see Boxes 8–9 = a continuation of Boxes 6–7).

BOX 8: BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
RR RR Loans Loans	+10 +9 +90 +81	 Deposits Deposits	 +100 +90
Total	+190	Total	+190

BOX 9: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		RR RR	+10 +9
Total	0	Total	+19

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

New deposit creation = Original deposit of LCC 100 million / r
= LCC 100 million / 0.10
= LCC 1 000 million.

Download free eBooks at bookboon.com

Thus we have a so-called *money / credit multiplier* and it is expressed as the reciprocal of *r*; therefore:

Money / credit multiplier = 1 / *r*.

In this example the multiplier = 1 / 0.10 = 10. So, for every LCC 10 million increase in the original bank deposit the money stock increases by LCC 100 million. It will be evident that if *r* is 8%: the multiplier = 1 / 0.08 = 12.5, meaning that for every LCC 10 million increase in the original bank deposit the money stock increases by LCC 125 million (assuming a demand for loans exists).

This is misleading, 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. Someone's balance sheet would have changed in the direction of deposits + LCC 100 million, but what other balance sheet item changes compensate for this?
- Note that the CB's balance sheets do not balance
- No bank can create CBM; only the CB can; therefore the transactions shown above cannot happen.

2.9.2 Notes and coins deposited

A condition under which the above is plausible is if the original deposit is made in N&C, assuming that N&C do rank as R. Let us explore this. First of all, N&C are issued by the CB. Thus, if Mr A deposits LCC 100 million N&C (which he had in a tin under his bed) at the bank his balance sheet will change as indicated in Box 10.

BOX 10: MR A (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Bank notes and coins Deposits at bank	-100 +100		
Total	**0**	**Total**	**0**

The bank's balance sheet in Box 11 shows the 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.

BOX 11: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
N&C	+100	Deposits (Mr A)	+100
Total	**+100**	**Total**	**+100**

Download free eBooks at bookboon.com

Because N&C are liabilities of the CB, the bank will deposit them immediately with the CB; the results are shown in (continuous) boxes 12 and 13.

BOX 12: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
N&C (deposited by Mr A) N&C (sold to CB) R – RR – ER	+100 -100 +10 +90	Deposits (Mr A)	+100
Total	**+100**	**Total**	**+100**

BOX 13: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
		N&C R – RR – ER	-100 +10 +90
Total	**0**	**Total**	**0**

Download free eBooks at bookboon.com

Click on the ad to read more

Because bank deposits increased by LCC 100 million, ΔRR = +LCC 10 million. The balance of +LCC 90 million is R that is in excess of RR, i.e. the bank now has LCC 90 million = ER. Like in the case of holding LCC 100 million in non-interest-bearing N&C, it now also has an asset (ER) that also bears no interest. If this bank liquidity state was permitted by the CB, interest rates will fall sharply and the bank will feverishly make loans in order to create a balance sheet that will produce an income.

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

Maximum deposit increase = ER / *r*
= LCC 90 million / 0.10
= LCC 900 million.

The total deposit increase of course = LCC 1 000 million = this LCC 900 million + the original LCC 100 million N&C deposited. It will be evident that the M3 creation of LCC 900 million was based on the *loans* made by the bank and this could take place up to the point where the ER = RR. The outcomes are shown in Boxes 14 and 15 (continuous).

BOX 14: BANK (LCC MILLIONS)

Assets		Equity and liabilities	
N&C	+100		
N&C	-100		
R – RR	+10		
– ER	+90	Deposits	+100
– ER	-90	Deposits	+900
– RR	+90		
Loans	+900		
Total	**+1 000**	**Total**	**+1 000**

BOX 15: CENTRAL BANK (LCC MILLIONS)

Assets		Equity and liabilities	
		N&C	-100
		R – RR	+10
		– ER	+90
		– ER	-90
		– RR	+90
Total	**0**	**Total**	**0**

Download free eBooks at bookboon.com

As these boxes may not be easy to follow, and to properly elucidate this issue, we present the net changes to all the balance sheets in Boxes 16–19.

BOX 16: MR A (LCC MILLIONS)			
Assets		Equity and liabilities	
N&C Deposits at bank	-100 +100		
Total	0	Total	0

BOX 17: REST OF NBPS (LCC MILLIONS)			
Assets		Equity and liabilities	
Deposits at bank	+900	Loans from bank	+900
Total	+900	Total	+900

BOX 18: BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
RR Loans	+100 +900	Deposits	+1 000
Total	+1 000	Total	+1 000

BOX 19: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		N&C RR	-100 +100
Total	0	Total	0

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 M3, and while the above example is possible, it is unrealistic. However, it did demonstrate a critical point: that the banks can only "get rid of" ER in the manner shown. We will touch upon this later again.

2.9.3 Government spends

It is often expounded that government spending (when government uses the CB as its banker) leads to money creation. In this example government spends LCC 100 million on goods bought from the NBPS (see Boxes 20–23).

Download free eBooks at bookboon.com

BOX 20: GOVERNMENT (LCC MILLIONS)			
Assets		Equity and liabilities	
Government deposits Goods	-100 +100		
Total	0	Total	0

BOX 21: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
		Government deposits R – RR – ER	-100 +10 +90
Total	0	Total	0

BOX 22: NBPS (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods Deposits at bank	-100 +100		
Total	0	Total	0

Download free eBooks at bookboon.com
Click on the ad to read more

BOX 23: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
R – RR – ER	+10 +90	Deposits (NBPS)	+100
Total	**+100**	**Total**	**+100**

The banks have ER of LCC 90 million. They can now lend up to the point where ER is fully transmuted / absorbed into RR. The end point is the same as in the N&C example: M3 can increase up to ER / r = LCC 100 million / 0.10 = LCC 1 000 million.

As in the above N&C example, this exposition is nonsense, 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 Boxes 24–27).

BOX 24: GOVERNMENT (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Government deposits Government deposits Goods	+100 -100 +100	Bonds	+100
Total	**+100**	**Total**	**+100**

BOX 25: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
		Government deposits Government deposits	+100 -100
Total	**0**	**Total**	**0**

BOX 26: NBPS (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Goods Deposits at bank	-100 +100		
Total	**0**	**Total**	**0**

Download free eBooks at bookboon.com

BOX 27: BANK (LCC MILLIONS)			
Assets		**Equity and 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 the NBPS) increased by LCC 100 million and the BSCoC 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 RR* – because bank deposits have increased (that carry an *r* of 10%). We omitted this issue in the interests of simplicity. We now correct the issue in Boxes 28–29.

BOX 28: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans to bank @ KIR	+10	Government deposits Government deposits R – RR	+100 -100 +10
Total	**+10**	**Total**	**+10**

BOX 29: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Bonds R – RR	+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 rate.

2.9.3 Money creation starts with a bank loan

In real life the causation path on money creation runs from bank loans (= bank asset) to money (= bank liability). Note the following:

- All money creation takes place this way when N&C do not rank as R (as is the case in some countries).
- The vast majority of money creation takes place this way when N&C do rank as R. The latter is so small that it can be ignored.

Download free eBooks at bookboon.com

The RR is often presented as a crucial factor in money creation. It only comes into play in that as NBPS bank deposits (= money) increase, as a result of *new bank loans or bank purchases of newly issued securities* (= loans in a different form), the amount of RR increases. The banks can get the additional RR only by borrowing from the CB (remember the banks cannot create CBM).

The previous example of the government borrowing and spending is a true life example. Here we provide another (see Boxes 30–33). It is the same as the first one presented earlier but with the CRR and the CB included.

BOX 30: COMPANY L (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods Deposits at bank	-100 +100		
Total	0	Total	0

Download free eBooks at bookboon.com

Click on the ad to read more

BOX 31: COMPANY B (LCC MILLIONS)			
Assets		Equity and liabilities	
Goods	+100	Loans from bank	+100
Total	+100	Total	+100

BOX 32: BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
Loan (Company B) R – RR	+100 +10	Deposits (Company L) Loan from CB @ KIR	+100 +10
Total	+110	Total	+110

BOX 33: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
Loans to bank @ KIR	+10	R – RR	+10
Total	+10	Total	+10

The introduction of the RR here does not indicate that the RR is an important element in money creation. *It is not; in fact it is a quantity that is a consequence of money creation and not a quantity that steers money creation*. It is just one of the many factors that affect bank liquidity, an issue that CBs deal with every day. We will return to this issue, which is part of monetary policy, but in a different form.

Essentially, monetary policy is about the item "CB loans to banks" and the KIR that is applied to these loans. The existence of CB loans to banks, the outstanding amount of which is also called the *money market shortage* (MMS) or the *liquidity shortage* (LS), is what makes the KIR effective and influences the banks' interest rates on both sides of their balance sheets, and through this the demand for loans.

It needs to be swiftly added that in exceptional times (as during the recessionary period of 2008/09), some CBs resort to creating ER for the banks, but buying large amounts of government bonds. This policy "encourages" interest rates down to very low levels and thereby an increased demand for loans (remember underlying an increase in bank loans / money is an increase in C + I = GDE). This vital issue is not discussed in detail here.

Download free eBooks at bookboon.com

2.10 Money creation is not dependent on a cash reserve requirement

The next step in this discussion is to cement the fact that money creation is not dependent on the existence of a RR. Take a country that does not impose a RR on its banks (as noted, they do exist). The banks of this country still create new money (NBPS deposits) by making new loans. Omitting a RR in the previous example produces a balance sheet of the bank as indicated in Box 34.

BOX 34: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Loans (Company B)	+100	Deposits (Company L)	+100
Total	**+100**	**Total**	**+100**

In this example M3 increases by LCC 100 million and the BSCoC is bank loan extension by the same amount. The real cause of the change in M3 is the additional demand for loans that is satisfied by the banking sector. So the starting point is the demand for loans; if satisfied by the banking sector, it leads to an increase in M3. A RR had nothing to do with the creation of money.

However, scholars of money and banking will know that because of the relationship between the RR (where it exists) and bank deposits, a CB can "control" the creation of money quantitatively. This is sometimes called the "strict-money-rule model"[16]. In text books it is known as the "monetary base model". According to this model (assuming that N&C do not rank as R – for the sake of simplicity) the money "supply", i.e. stock (see next section), cannot increase by more than the reciprocal of the R supplied by the CB. An example will be useful: the CB creates LCC 100 million ER by purchasing treasury bills (TBs) from the bank (see Boxes 35–36). An assumption is required here: the bank has no outstanding borrowings from the CB.

BOX 35: CENTRAL BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Treasury bills	+100	SA – ECRs	+100
Total	**+100**	**Total**	**+100**

BOX 36: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
Treasury bills SA – ECRs	-100 +100		
Total	**0**	**Total**	**0**

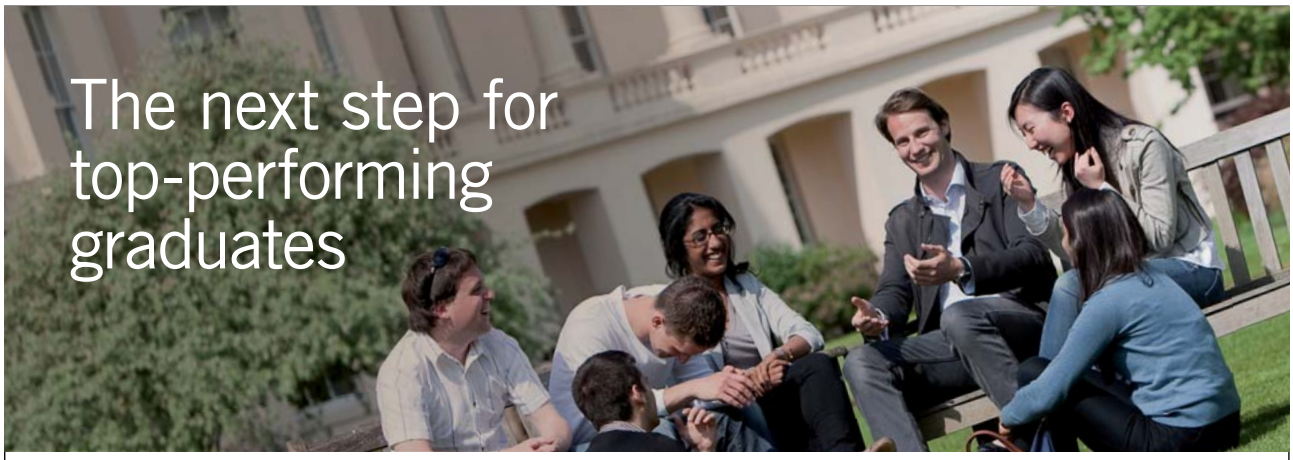
Download free eBooks at bookboon.com

The bank is now able to create new loans and money to the extent of:

$$(1 / r) \times ER = 1 / 0.1 \times LCC\ 100 = LCC\ 1\ 000$$

and the ER of the bank is transmuted into RR (see Boxes 37–38). The banking system cannot create any further loans and its counterpart, money.

BOX 37: CENTRAL BANK (LCC MILLIONS)			
Assets		Equity and liabilities	
TBs	+100	R – ER R – ER R – RR	+100 -100 +100
Total	+100	Total	+100



Masters in Management

Designed for high-achieving graduates across all disciplines, London Business School's Masters in Management provides specific and tangible foundations for a successful career in business.

This 12-month, full-time programme is a business qualification with impact. In 2010, our MiM employment rate was 95% within 3 months of graduation*; the majority of graduates choosing to work in consulting or financial services.

As well as a renowned qualification from a world-class business school, you also gain access to the School's network of more than 34,000 global alumni – a community that offers support and opportunities throughout your career.

For more information visit www.london.edu/mm, email mim@london.edu or give us a call on +44 (0)20 7000 7573.

* Figures taken from London Business School's Masters in Management 2010 employment report

London Business School

Download free eBooks at bookboon.com

Click on the ad to read more

BOX 38: BANK (LCC MILLIONS)			
Assets		**Equity and liabilities**	
TBs R – ER R – ER R – RR Loans	-100 +100 -100 +100 +1 000	Deposits (money)	+1 000
Total	**+1 000**	**Total**	**+1 000**

As the scholars of money and banking will know, essentially this is a theoretical money "supply" (i.e. money stock creation) model. Some central banks flirted with this model in the past but rejected it because its sideshow was extremely volatile interest rates. The focus (in normal times) is to manipulate interest rates in order to influence the additional demand for loans (= money creation) to a level consistent with the economy's production elasticity.

2.11 Is "money supply" a misnomer?

We know that money is NBPS BD (plus N&C) and we know that new money is created by new bank loans. When money is measured by CBs (see below for more detail) they consolidate the balance sheets of the members on the MBS and derive M3 from this (and the BSCs). Many economists call this magnitude the money *supply*.

Is this a useful term when ΔM3 it is the outcome of new bank loans (mainly – see below)? Does "supply" not fit better with the supply of loans, which is theoretically unlimited (subject to the demand for loans, which is a function of the level of interest rates as determined by the CB – specifically bank lending rates), as indicated in Figure 5.

Once new money is created, has the *stock* of money, i.e. the amount of money in circulation, not increased, rather than the *supply*? Is the amount measured hereafter (= held) not the outcome of portfolio decisions, rather than the *demand* (for transactions, speculative…reasons) for money? Is it not true to say that if some people want to hold more bonds instead of money when rates are high, that the money stock will not change – because the bond sellers will get bank deposits and the buyers of bonds will lose deposits?

Download free eBooks at bookboon.com

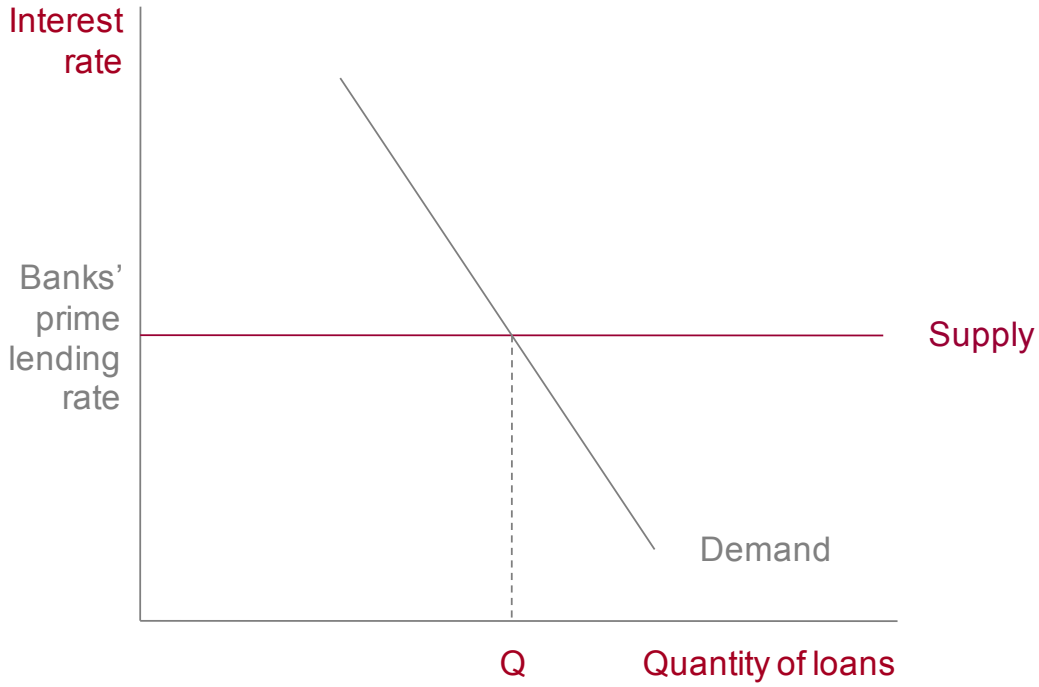


Figure 5: supply & demand for bank loans

2.12 The money identity and the creation of money

BOX 39: CONSOLIDATED BALANCE SHEET OF MBIs (LCC MILLIONS)	
Assets	**Equity and liabilities**
D. Foreign assets E. Claims on government F. Loans to private sector	A. Notes and coins B. Deposits 1. Private sector 2. Government sector C. Foreign loans

Bank loan extension is the main BSCoC of the addition to the money stock. There is another: certain activities in the foreign exchange market. In this section we present the money identity, which shows all the BSCoCs. It is derived from consolidated balance sheet of the MBIs (in a consolidation all interbank claims are netted out). The consolidated balance sheet of the MBIs is shown in simplified form in Box 39.

M3 was defined earlier as N&C in circulation (i.e. outside the banking sector) and all NBPS deposits with the MBIs. These are items A and B1 in the consolidated balance sheet. Clearly, because a balance sheet balances [liabilities (plus equity that we include here in liabilities) are equal to assets], items A and B1 = M3 must be equal to items:

$$(D + E + F) - (B2 + C)$$

Download free eBooks at bookboon.com

It will be evident that certain items are closely related, specifically:

- Item D (foreign assets) and item C (foreign loans).
- Item E (claims on government) and item B2 (government deposits).

If one is trying to "explain" changes in M3 it makes sense to deduct the liability items mentioned from their asset counterparts. Having done this, we now arrive at the *balance sheet identity*.

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

This can be verbalised as:

M3	= D – C	= net foreign assets (NFA)
	+ E – B2	= net claims on government (NCG)
	+ F	= loans to private sector (LPS).

We can make the identity even simpler by grouping NCG and LPS and calling it domestic loan extension (DLE – in the examples we presented earlier "Loans to…" should be seen as DLE). Now:

$$M3 = NFA + DLE.$$

Download free eBooks at bookboon.com

Click on the ad to read more

Thus the BSCoCs in M3 are changes in NFA and changes in DLE:

$$\Delta M3 = \Delta NFA + \Delta DLE$$

As we have said before, the *actual causes* of changes are the dynamics that underlie the changes in NFA and DLE. This analysis requires more elaboration, but a space limit thwarts it.

2.13 Role of the central bank in money creation

The role of the CB in money creation also requires much consideration; again we are limited. As a conclusion to this text we present a brief discussion on the role of the CB in money creation (in this and the next section). We touched upon this earlier and endeavour to cement it here.

In much of the developed world monetary policy is conducted through an operational variable: interest rates. Following is a summary of the KIR's transmission path to the banks' lending rates [prime rate (PR) is the benchmark; all lending rates are related to PR], inflation and economic growth:

- The CB, through open market operations (OMO) creates a liquidity shortage (LS) and, in most countries in normal circumstances, maintains it permanently. This means it "forces" the banks to borrow from it at all times. The borrowing term is short (usually 1 day to 7 days).
- It levies its KIR on these borrowed reserves.
- The bank-to-bank interbank rate (b2b IBM, the market in which banks settle interbank claims on one another) takes its cue from the KIR.
- The b2b IBM rate has a major impact on the banks' deposit rates (wholesale call money rates in the first instance and other short-term deposit rates in the second, and so on).
- As the banks maintain a steady margin, deposit rates impact on bank lending rates.
- Thus the KIR impacts on the banks' PR (in one country the correlation coefficient between the KIR and PR for the period 1960 to the present = 0.99).
- The level of PR (especially in real terms) influences the NBPS's demand for bank loans (governments tend to be interest rate insensitive).
- Interest rate changes also have a major impact on asset prices which through the "wealth effect" influence consumption and investment (C + I = GDE) behaviour.
- ΔDLE is the main counterpart of ΔM3.
- The growth rate in demand (ΔGDE), financed to a large degree by ΔDLE and reflected in ΔM3, has a major impact on price developments (inflation).
- The inflation rate is a major input in business decisions
- Business decisions impact on economic growth and employment.

Download free eBooks at bookboon.com

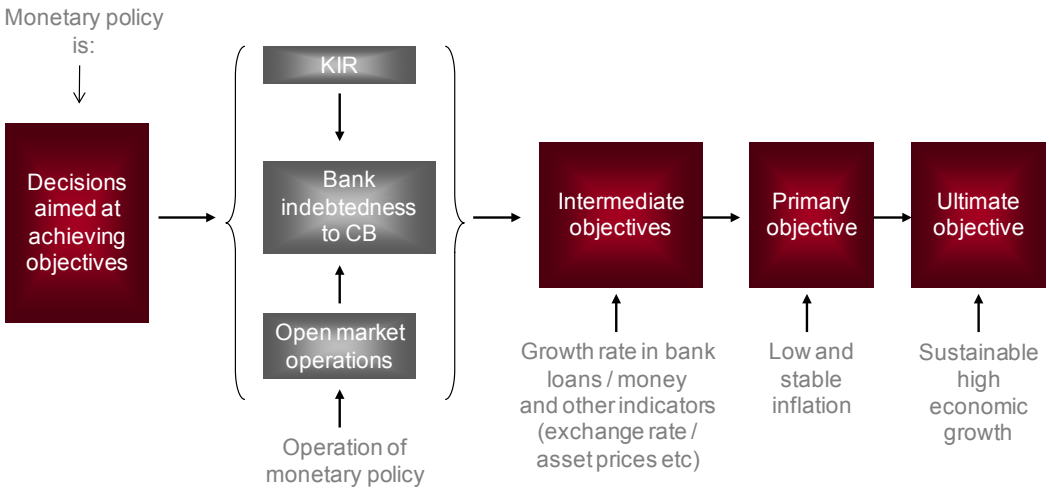


Figure 5: monetary policy

The above is a brief synopsis of monetary policy and of part of the so-called monetary policy transmission mechanism (MPTM). The MPTM may be depicted minimally as in Figure 5.

2.14 How does a central bank maintain a bank liquidity shortage?

In the previous section we stated that "The CB, through open market operations (OMO) creates a LS and maintains it permanently." This is a significant and interesting topic and will be covered here in brief.

Box 40 presents the balance sheet of the central bank in simplified form (we have left out unimportant items such as *other assets*, *other liabilities* and *capital and reserves*). From this balance sheet we can create what can be called a *money market identity* as follows.

On the left of the identity we have the net excess reserves (NER) of the banking sector, an indicator of bank liquidity (as far as CBM is concerned). This is made up of the ER of the banking sector (item B2b)[17] less the extent of loans to the banking sector (at the KIR), i.e. the LS (item G):

$$NER = B2b - G.$$

BOX 40: CENTRAL BANK (LCC MILLIONS)	
Assets	**Equity and liabilities**
E. Foreign assets F. Government securities (claims on govt) G. Loans to banks (MMS)	A. Notes and coins B. Deposits 1. Government 2.Banks (TR) a. RR b. ER C. Foreign loans D. Central bank securities

Download free eBooks at bookboon.com

On the right hand side of the identity we have all the remaining liability and asset items (the BSCs); thus:

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

If we group the related liability and asset items we have:

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

It will also be evident that:

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

Thus, a change in the NER (and the LS which is its main component) of the banking system is *caused* by changes in the BSCs (i.e. the BSCoC):

$\Delta NER =$

$\Delta (E - C)$	= net foreign assets (NFA)
$+ \Delta (F - B1)$	= net claims on government (NCG)
$- \Delta A$	= notes and coins in circulation
$- \Delta B2a$	= RR
$- \Delta D$	= central bank securities (CBS).

The actual causes of change are the transactions that underlie the BSCoC. It will be evident that the instruments of OMO are NFA (usually forex swaps), NCG (purchases / sales of government securities in the main) and CBS (issues) and that RR can also be used (and is at times) to manipulate bank liquidity (NER). For example, the sale of forex to a bank (a forex swap) will decrease NER (increase the LS). The BSCoC is a decrease in NFA. Similarly the sale of TBs to the banks will decrease NER (increase the LS). The BSCoC is a decrease in NCG. Thus, the CB has total control over bank liquidity (assuming efficient markets).

The above illustrates that bank liquidity is firmly under the control of the CB, and that the RR is just one of the many factors that influences bank liquidity. Most countries' monetary policy approach rests on creating and maintaining a liquidity shortage (in normal circumstances) in order to make the KIR effective. Thus, to maintain that money creation revolves around the RR is misleading. In fact, because it takes time for banks to compile their statements of assets and liabilities, they, in most countries, are required to top up their RR up to 7 weeks after deposit increases[18].

This exposition does not ignore the existence of a loan / credit / money multiplier (maximum deposit increase = ER / *r*), i.e. the CB is able to create ER and force the multiplier on banks. However, this implies quantitative restriction and interest rate freedom, the consequence of which is extremely volatile interest rates. Central banks and the business sector do not like this state of affairs. Rather, they like stable interest rates and use them (the PR in particular – via making KIR effective) to manipulate the demand for loans. New bank loans create new bank deposits (money).

It is a fine system, provided new loan / money creation (which to a large degree reflects $\Delta C + I$) is congruent with economic output elasticity.

2.15 Bibliography

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

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

Download free eBooks at bookboon.com

3 Risk in banking

3.1 Learning outcomes

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

- Elucidate the concept of risk.
- Evaluate the various risks with which banks contend.
- Comprehend the import of risk mitigation techniques.

3.2 Introduction

By virtue of borrowing and lending for various periods, at various rates of interest, engaging in many other interest rate-related activities, dealing in foreign exchange, undertaking different investments, dealing in the derivatives markets, etc, banks are exposed to an array of risks like no other institution. The risks faced by banks are usually identified in the statute/s relating to banks in many countries, and are as follows.

- Interest rate risk.
- Market risk.
- Liquidity risk.
- Credit risk.
- Currency risk.
- Counterparty risk.
- Operational risk.

Exposure to these risks makes for the banks being the most regulated and supervised of any financial institution. It will be evident that bank regulators are required to be experienced and astute in the business of banking. It is important that they be aware of innovations and worldwide trends.

In most countries the statute/s relating to banks makes it compulsory that banks have a robust risk management function, and that the board of directors has a risk management committee.

Each of the risks mentioned above is discussed below, but after we introduce a brief discussion on the concept of risk.

Download free eBooks at bookboon.com

3.3 The concept of risk

Most[19] financial intermediaries owe their existence to risk. They offer liabilities that are "convenient" to the holder; one of these conveniences is the taking on risk on behalf of the liability holder. The biggest risk takers are the banks, which someone once described as *risk machines*. This is an apt description, because they are exposed to all the risk-types. But, to go back to basics, what is risk?

The celebrated Prof Harry Markowitz teaches us that risk cannot be divorced from return: the risk of an asset has no meaning except with reference to the portfolio in which the asset is held.[20] Financial intermediaries, like any business, endeavour to maximise profits and shareholder value, and risk is central to this endeavour. Banks make extensive use of leverage (borrowing in the form of deposits and loans) in order to achieve profits. The minimum a bank can earn without risk is the risk-free rate (rfr), i.e. the treasury bill or government bond rate, and higher returns beyond this rate of return are associated with higher risk (called the risk premium), as shown in the Figure 1.

Download free eBooks at bookboon.com
Click on the ad to read more

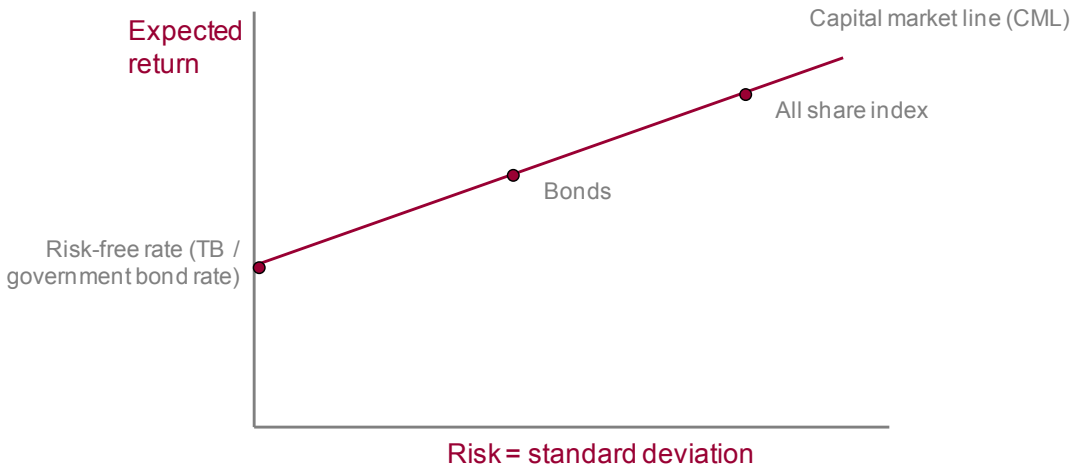


Figure 1: relationship between risk & return

Thus, financial intermediaries demand a higher return as the risk profile increases, and they attempt to maximise return for a given level of risk or minimise risk for a given level of return (the line is called the capital market line – CML).

Risk is usually defined as the uncertainty of future outcomes or the probability of an adverse outcome.[21] It is usually measured as the volatility or standard deviation of returns around the mean return. Profitability is therefore dependent on the management of risk, and it will be obvious that inadequate risk management could threaten the solvency of the financial intermediary. It is important to keep in mind that risk management is core to financial intermediaries, particularly banks, because they "work" with financial liabilities and assets, as opposed to corporate entities, for example, because their core business is usually related to real, not financial, assets. Inadequate risk management by corporate entities can bring about losses, but it is unlikely to endanger their solvency.[22]

It is important to mention at the outset that in modern day financial markets banks are able to hedge virtually every aspect of interest costs and returns. For example, a bank can hedge its margin (with interest rate swaps); it can ensure a return of a bond (with options); it can introduce caps and floors on rates paid and earned, etc. However, what does this mean? The answer is straightforward: the financial intermediary is mitigating risk, and in doing so it is pushing itself down the CML to lower earnings.

What is the conclusion? It is that banks must take on risk in order to be attractive as an investment. The trick is the risk-reward trade-off. It is for this reason that the management rules of banks in respect of risk should be such that the risk-taking process is not constrained to the extent that risk is eliminated. Financial intermediaries cannot be too prudent.

Download free eBooks at bookboon.com

Is there a way to reduce risk without compromising return? The answer is a resounding "yes", and it is embodied in the portfolio theory principle: *diversification and correlation*. The very essence of the Harry Markowitz thesis in respect of portfolio management is that risk is reduced by diversifying the portfolio provided that the assets in the portfolio are not perfectly positively correlated, and that risk is further reduced as correlations move from +1 to -1. Banks are usually well-diversified.

3.4 Interest rate risk

3.4.1 Definition

Interest rate risk is the risk of expected earnings being influenced negatively as a result of changes in the pattern and level of interest rates. As discussed earlier, banks are intermediaries between lenders and borrowers and their liabilities and assets are not matched in terms of tenor (term to maturity) and interest rate type (fixed or floating), because the lenders have different requirements to the borrowers. The *raison d'ĕtre* of banks is to accommodate lenders and borrowers. They are thus exposed to interest rate risk.

Download free eBooks at bookboon.com

Click on the ad to read more

There are three elements to interest rate risk:

- The *bank margin*. Banks endeavour to get *highest* rates they can negotiate on assets (MD and NMD), and the *lowest* rates they can negotiate on liabilities (deposits and loans); the difference between these is the bank margin.
- The interest rates are either *floating* (variable) or *fixed*.
- The term to maturity (tenor) of the *fixed rate* assets and liabilities.

Let us examine the meaning of floating / fixed rates and their significance in banking:

- *Floating* means that the rates are repriced frequently, and the accepted definition of floating is call (one day) to three months. Examples:
  - Liabilities:
    - A call deposit at the call deposit rate – the rate can change daily (it does not but it can).
    - A deposit taken for 12 months at KIR[23]+0.3% – the rate is repriced every 91 days at the then prevailing KIR+0.3%.
  - Assets:
    - An overdraft facility at prime rate (PR) – like the call deposit rate, the rate can change daily, but it does not.
    - Mortgage for 20 years at PR-0.5% – immediately above applies.
- *Fixed* means that the rate is fixed for the term. Examples:
  - Liabilities:
    - A 12-month deposit at 8% pa.
  - Assets:
    - A 24-months loan to Mr A at 12% pa.
    - A 30-year government bond at 9.35% pa.

Download free eBooks at bookboon.com

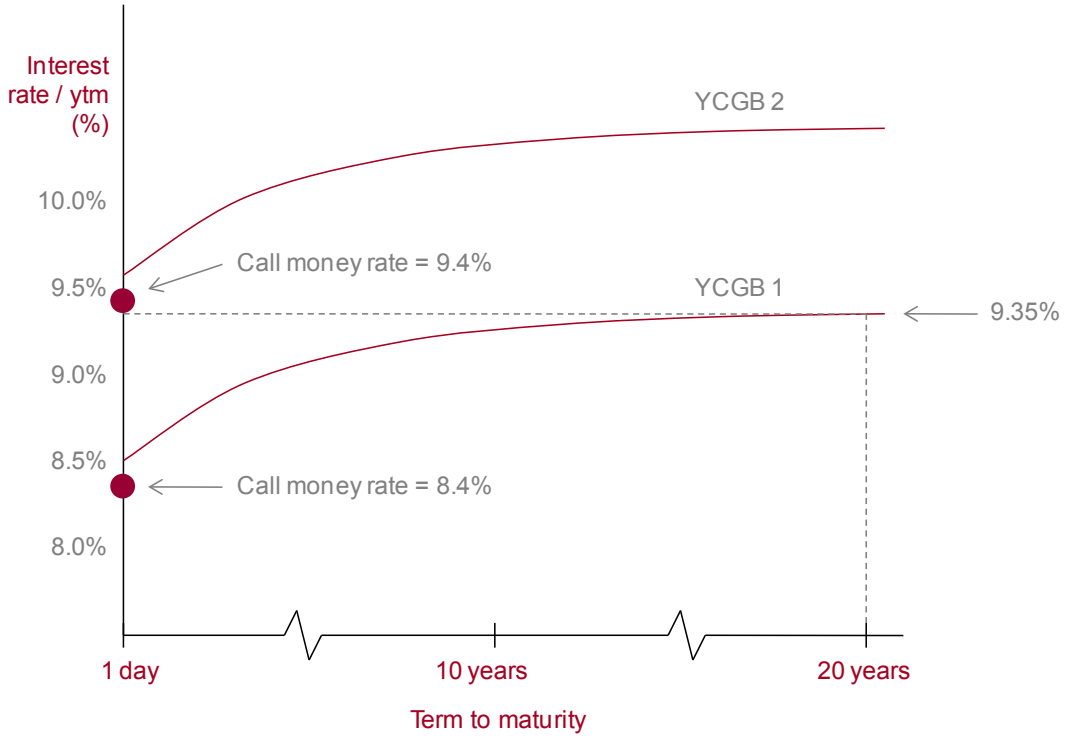


Figure 2: yield curve shift

Allow us to present an example (see Figure 2: YCGB = yield curve[24] for government bonds; YCGB 1 = now and YCGB 2 = one-year later): if a bank buys a 20-year tenor bond now at 9.35% pa, and funds it with call money deposits at a current rate of 8.4% pa, the gross[25] margin is 0.95%, and interest rate risk is high. If after a year, the yield curve has shifted to the YCGB 2 position, the margin has disappeared: the rate on the bond remains at 9.35% for 20 years, and the call money rate rose to 9.4%. (It will be evident that there are also other risks at play here: liquidity risk and market risk.)

Similarly, if a bank provides an overdraft facility at PR now (and it is used) and funds it with a 2-year fixed deposit, it is facing interest rate risk: the margin will be wiped out if interest rates decline sharply in the near future. The funding rate is fixed, while the asset rate is floating.

3.4.2 Ideal and extreme portfolios

Ideally, a bank would like to match liabilities and assets in terms of tenor, and have the rates on both sides being either fixed or floating, or a matched combination (see Figure 3; variable = floating), and thus enjoy a fixed margin without any interest rate risk.

Download free eBooks at bookboon.com

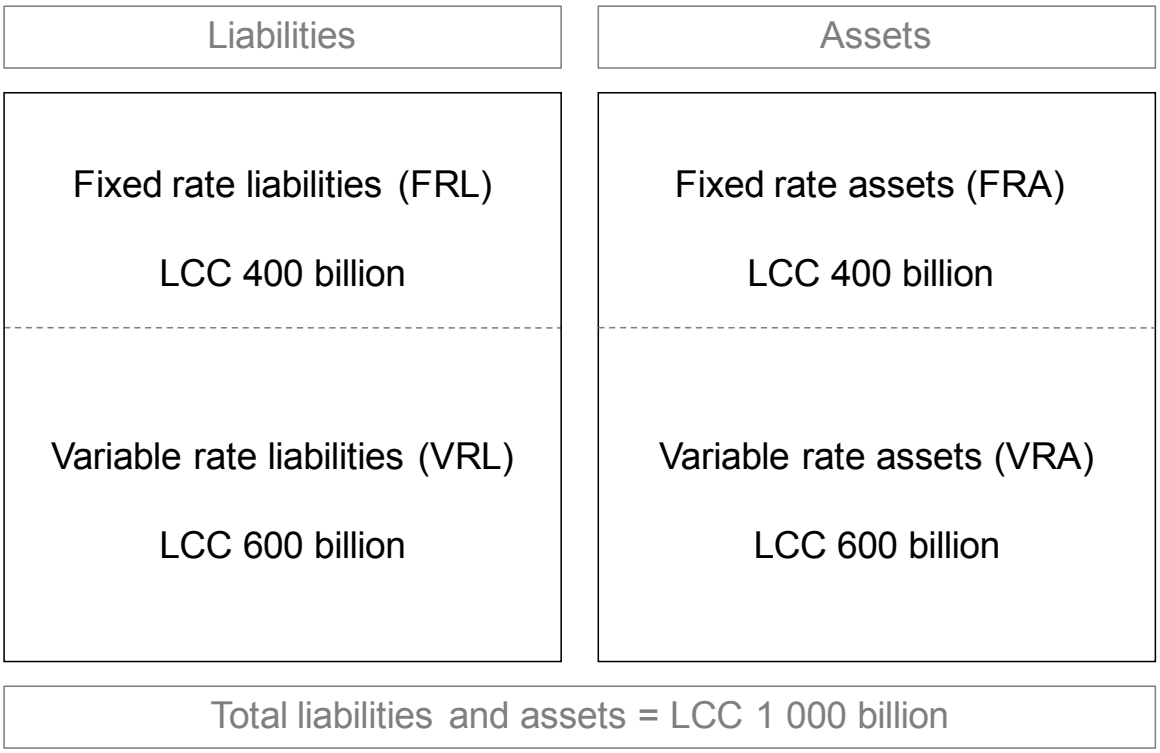


Figure 3: interest rate repricing gap analysis

This seems to be an obvious statement, but in it lurks a problem: *floating* means call to 3 months, and *fixed* means 3 months to 20+ years. Therefore, if a bank funds a 20-year tenor fixed-rate bond with a fixed deposit of 4 months at a fixed rate, it still has interest rate risk. Banks are (usually) acutely aware of this and solve the problem with their risk management techniques outlined below, the most important one being the *time band repricing gap analysis* (which is a more detailed analysis than the one indicated in Figure 3 – see later).

But this is not possible: inevitably some of their liabilities will be of a maturity that is different from the maturity of their assets, and banks are also not able to have the rates on both sides either fixed or floating. Before we discuss this in more detail, we present the extreme cases of interest rate risk.

Download free eBooks at bookboon.com

Liabilities	Assets
Variable rate liabilities (VRL) LCC 1 000 billion	Fixed rate assets (FRA) LCC 1 000 billion
Total liabilities and assets = LCC 1 000 billion	

Figure 4: expectation = rates will fall

Figure 4 presents the extreme case of all liabilities = VRL and all assets = FRA. This portfolio construct represents the view that interest rates are about to fall. As interest rates fall, the asset rates do not change (because they are fixed rates), but the liabilities are re-priced frequently.

Download free eBooks at bookboon.com

Click on the ad to read more

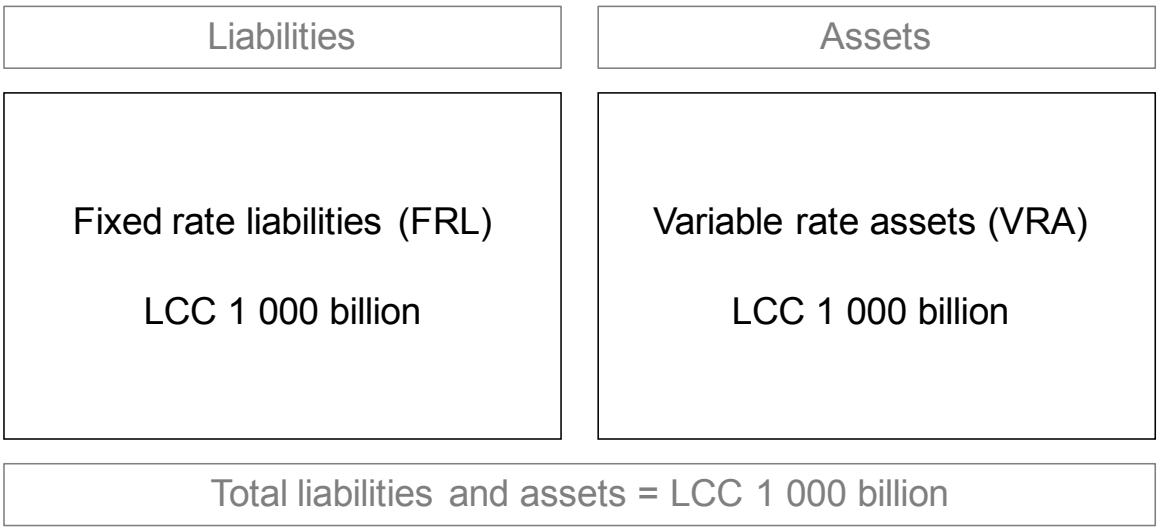


Figure 5: expectation = rates will rise

Figure 5 presents the extreme case of all liabilities = FRL and all assets = VRA. This portfolio construct represents the view that interest rates are about to rise. As interest rates rise, the rates on liabilities do not change, and the rates on assets are re-priced frequently.

If the interest rate expectations in these two examples are correct, the shareholders will be in high spirits (and the bonuses high). However, these portfolio constructs are extremely risky. If interest rates move in the opposite direction to that forecast, the bank/s will be insolvent within a short period, and depositors will lose much of their money.

3.4.3 Reality

As said above, a bank ideally would like to match liabilities and assets in terms of tenor, and have the interest rates on both sides either fixed or floating (or a matched combination), and thus enjoy a fixed margin. The reality is that the liabilities and assets of banks are not matched in terms of maturity and re-pricing frequency (i.e. fixed or floating). Banks have a variety of liabilities and assets in terms of re-pricing frequency.

Download free eBooks at bookboon.com

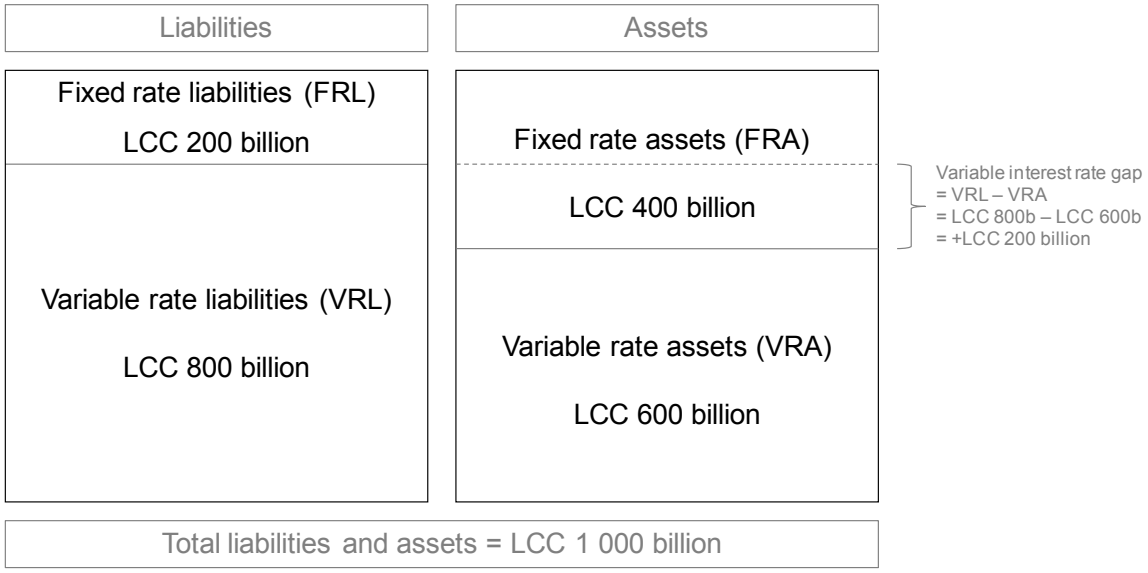


Figure 6: interest rate repricing gap analysis

An example is presented in Figure 6. The interest rate gap (IRG) is:

$$\begin{aligned} \text{IRG} &= \text{VRL} - \text{VRA} \\ &= \text{LCC 800 billion} - \text{LCC 600 billion} \\ &= \text{LCC 200 billion.} \end{aligned}$$

It will be clear that the bank's margin (which can also be called a net interest margin) is at risk. Because VRL > VRA, meaning the bank has more variable rate liabilities (also aptly called *interest-sensitive liabilities*) than variable rate assets (*interest-sensitive assets*), if interest rates in general rise, the bank has to reprice the "gap", i.e. LCC 200 million of liabilities (that does not have a counterpart asset) *at increasing rates*. Obviously, LCC 600 million of the VRL is matched by the LCC 600 million VRA, and the rates on both will move up together. It should also be clear that if rates fall, the bank would achieve financially (the NIM will increase), in that LCC 200 million of unmatched liabilities are repriced at decreasing rates.

In general:

- If banks have excess FRA, they are vulnerable to rising interest rates.
- If banks have excess FRL, they are vulnerable to falling rates.

Download free eBooks at bookboon.com

3.4.4 Management of interest rate risk

3.4.4.1 Introduction

In essence, banks have two options in terms of managing interest rate risk:

- "Physically" change the nature of their liabilities and assets according to their risk appetite, i.e. only do the business that suits the risk profile of the bank.
- Make use of money market and other derivative instruments to change the nature of their liabilities and assets according to their risk appetite.

The first option is not an option because banks are in the business of gathering in clients and retaining their business by doing the business that the clients wish to do. In most countries the banks make use of the second option, i.e. use the derivatives markets to change the profile of their assets and liabilities. The main instruments used are:

- Interest rate swaps.
- Interest rate caps and floors (and collars).
- Forward rate agreements.
- Interest rate forwards.
- Interest rate futures and options on these futures.
- Options on spot market instruments.
- Swaptions (i.e. options on interest rate swaps).
- Repurchase agreements.

The management of interest rate risk cannot take place without the bank being able to measure the risk. There are two main *measures* of interest rate risk:

- Interest rate repricing gap analysis.
- Duration analysis.

3.4.4.2 Interest rate repricing gap analysis

Let us take the example of one bank (the bank and the currency are not disclosed, but it is a true example). This analysis shows that despite the existence of fixed and floating rates, and flexibility of tenor for clients, the bank has managed to keep interest rate risk at a low level. The majority of deposits and assets are in the *call to 3-month* time band, and the mismatch is small. The total mismatch is only 6% of total assets. Note that the bank may have also engineered (with the use of derivatives) a given portfolio to this preferred portfolio, which is in harmony with its interest rate view.

Download free eBooks at bookboon.com

Repricing maturity period	Call – 3 months	4–6 months	7–12 months	Over 12 months	Non-rate sensitive	Total
Total assets	159 275 (= 75%)	5 664	2 476	13 103	32 256	212 774
Total liabilities and shareholders' funds	148 780 (= 70%)	6 563	3 707	7 566	46 158	212 774
Interest rate sensitivity gap	10 495 (= 5%)	(899)	(1 231)	5 537	(13 902)	-
Cumulative interest rate sensitivity gap	10 495	9 596	8 365	13 902 (= 6%)	-	-

Table 1: interest rate repricing gap analysis (LCC millions)

Banks are required to submit to the regulator (usually the central bank) a monthly return setting out information pertaining to interest rate risk. One central bank's[26] return states that its purpose is to determine:

> *"(i) the repricing gap between assets and liabilities before and after the impact of derivative instruments are taken into account; (ii) the expected cumulative impact on net interest income resulting from a two per cent increase in lending rates from existing levels with a correlated change in funding rates, before and after the impact of derivative instruments are taken into account; and (iii) the expected level of selected key interest rates."*

Download free eBooks at bookboon.com

Click on the ad to read more

3.4.4.3 Duration analysis

Duration is a measure of the price elasticity of an asset or liability with respect to a change in interest rates. It is the ratio of the present value of the cash flows, weighted by dates, to the market value. Put differently, it is the weighted average maturity of future discounted flows, using the ratio of the present value of each flow to the present value of all flows for the different dates. A space constraint prevents further detailed discussion here.

3.5 Market risk

Market risk (also called *position* risk, *trading* risk and *price* risk) is the risk of a decline in the *market value* of financial securities (shares, debt and derivatives) that is caused by unexpected changes in *market prices and interest rates*, and changes in credit spreads.[27]

This definition requires elaboration:

- Market risk cannot apply to floating rate debt, which makes up the majority of banks' portfolios, because, as interest rates in general change, so do floating rates.
- Market risk can only apply to marketable securities, and these are shares, debt and derivatives.
- In the case of non-marketable assets and liabilities, as rates change there may be *opportunity costs.* For example, if a bank makes a 2-year fixed-rate loan at 10% pa and rates increase after the deal, the bank has missed an *opportunity*. We hastily add that this deal may be matched with a fixed rate liability, and there is no (interest rate) risk here.
- Marketable shares are straightforward: the market prices on the exchange are the market values.
- Fixed-interest debt is a little different: in most countries debt trades at a rate (yield, ytm, discount, etc.). The price of debt = the market value of debt, is derived from the secondary market trading rate. It should be evident that the relationship between rates and prices / market values of debt is inverse.
- Derivatives: The market risk in futures contracts is approximately the same as the underlying asset of the future. With options the extent of risks depends on whether the bank is the writer (= full market risk) or the buyer (= limited risk). These two risk possibilities apply to the other derivatives.
- Credit spread example: if the credit rating on the bonds of a corporate entity deteriorates, the spread above the benchmark rate (= government bond rate) will increase without the benchmark rate changing.
- It was mentioned above that at times banks may also have positions in commodities such as gold. The market value of such commodities = the market price.

Download free eBooks at bookboon.com

Banks over many years have responded to narrowing margins and competition in many traditional areas of banking by increasing their trading activities, as reflected in the larger dealing rooms of banks, and the increased turnover in the various financial markets. This development has led to some banks holding larger positions in financial securities; this has increased exposure to market risk. The collapse or near-collapse of high profile banks in the US, the UK, Europe, Japan and elsewhere, due to losses on positions (particularly in derivatives) is well known.

The response of banks to these collapses and near-collapses of banks has been to sharpen risk management in this regard. This has entailed the introduction of controls and limits on dealers and the development of models to measure market risk exposure. At the same time, the regulators of the world have also sharpened their pencils and improved the regulation and supervision of banks' exposure to market risk.

Most bank regulators require banks to submit elaborate returns in respect of market risk on a monthly basis. One central bank[28] elaborates on the purpose:

> *"The purpose of this return is to measure the extent of market risk (position risk) to which the reporting bank is exposed in respect of both its trading and banking activities."*

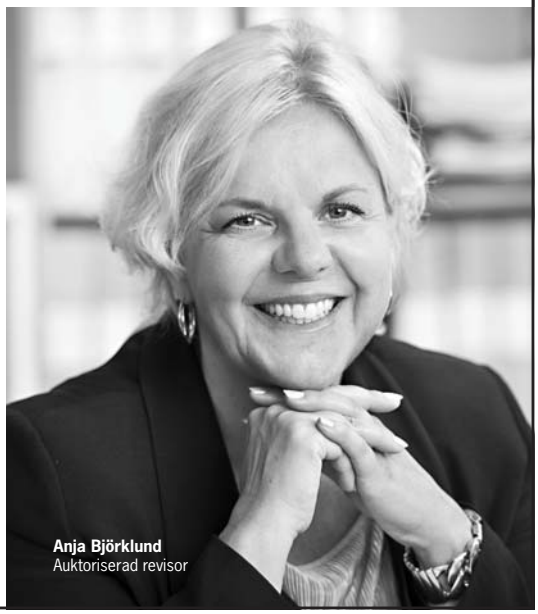
–Vad skiljer er från andra företag?

Kunderna som får dig att växa

"Vad skiljer er från andra revisions- och konsultföretag?" Den frågan får vi ofta. Svaret är enkelt. Vårt kundfokus – dynamiska ägarledda företag. Hos oss arbetar du med spännande entreprenörer vars företag vi hjälper att växa och utvecklas. Det gör ditt arbete varierande, utmanande och lärorikt. Du använder dina teoretiska kunskaper, bygger relationer och får värdefull erfarenhet. Vill du utveckla din egen förmåga? Välkommen till oss på Grant Thornton.

www.grantthornton.se/student
Facebook: Grant Thornton Sverige Karriär

Grant Thornton
An instinct for growth™



Download free eBooks at bookboon.com

Click on the ad to read more

Banks generally use the statistical Value at Risk (VaR) approach to market risk. One bank's[29] approach is described as follows:

"Independent market risk management units, accountable to their ALCO, monitor exposures to market risk from trading operations. The units report the exposures and respective excesses monthly to each ALCO concerned and quarterly to the Board Risk Management Committee…

"The group manages market risk through risk limits. The group uses a range of risk measurement methodologies and tools to establish limits, including VaR, stress testing, loss triggers and traditional risk management measures.

"The group uses the VaR approach to derive quantitative measures, specifically for market risk under normal market conditions. While VaR, calculated on a daily basis, provides an indication of possible losses under normal market conditions, the group simulates extreme market movements using stress tests. The stress testing takes into account illiquidity, breakdowns in correlation and event risks which characterise the markets in which the group trades. Loss triggers are designed to contain daily, monthly and year-to-date losses for individual business units by enforcing management intervention at pre-determined loss levels. Several traditional measures specific to individual business units are used and deal with, for example, permissible instruments, concentration of exposures, gap limits and maximum tenor."

3.6 Liquidity risk

3.6.1 Definition

Liquidity risk for a bank is the risk of not being able to meet obligations in terms of funds demanded by clients. This applies to both sides of the balance sheet of banks, i.e. to withdrawals of deposits and to loans drawn down by borrowing clients in terms of loan commitments made by the banks.

Banks are in the financial intermediation business and essentially transmute mostly short-term, i.e. liquid, deposits, into loans and advances and investments, which are for the most part non-liquid and have a longer tenor. No bank can therefore repay all deposits immediately. Banks rely on the law of large numbers, which holds that only a certain proportion of depositors will demand their funds at the same time, and determines its liquid asset holdings (its securities that are quickly reversible into funds) accordingly.

Download free eBooks at bookboon.com

3.6.2 Balance sheet changes resulting from deposit withdrawals and drawdowns on loan facilities

It will be apparent that when deposits are withdrawn, this creates a need for the bank to acquire deposits from other sources, or to undertake the sale of an asset. Similarly, if loan facilities are drawn down in terms of loan commitments provided to clients, this creates an asset, which can only come about if the bank acquires deposits (or loans) or sells assets to the required amount. These scenarios may be depicted as in Balance Sheets 1–4.

Public withdraws deposits (bank funds with other deposits):

BALANCE SHEET 1: BANKS (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
		Deposits from A Deposits from B	-100 +100
Total	**0**	**Total**	**0**

Public withdraws deposits (bank funds by selling securities):

BALANCE SHEET 2: BANKS (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
Securities	-100	Deposits	-100
Total	**-100**	**Total**	**-100**

Public draws down loan facilities (bank funds with new deposits):

BALANCE SHEET 3: BANKS (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
Loans	+100	Deposits	+100
Total	**+100**	**Total**	**+100**

Public draws down loan facilities (bank funds by selling securities):

BALANCE SHEET 4: BANKS (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
Loans Securities	+100 -100		
Total	**0**	**Total**	**0**

Download free eBooks at bookboon.com

3.6.3 Conditions for creation of liquidity

3.6.3.1 Introduction

It will be apparent that the bank, *only under certain conditions*, can bring about the above balance sheet changes, and these are of crucial importance to the bank and to the banking system in general. The conditions are:

- Firstly, the bank must have an impeccable record, which engenders faith in the bank by the public.
- Secondly, it must have sufficient liquid assets in order to reduce assets to raise funds.
- Thirdly, the secondary financial markets must be such that it is easy to dispose of assets (securities), i.e. the markets must be efficient.

3.6.3.2 Impeccable record

The first condition is clear. A bank of good standing in the market will easily be able to raise deposits or loans in the market. It is notable that a deposit lost or a loan facility drawn down will result in the relevant bank losing funds, *but the funds are not lost to the banking system,* i.e. some other bank/s will gain the funds in the form of a deposit. The recipient bank will most likely lend these funds to the deficit bank in the interbank market (see Balance Sheets 5–6). But, this will only take place if the deficit bank is of good standing.

Download free eBooks at bookboon.com

Click on the ad to read more

Public withdraws deposits from Bank A (Bank A funds by interbank loan):

BALANCE SHEET 5: BANK A (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
		Public deposits Interbank loan (Bank B)	-100 +100
Total	**0**	**Total**	**0**

Public deposits funds with Bank B (bank makes interbank loan to Bank A):

BALANCE SHEET 6: BANK B (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
Interbank loan (Bank A)	+100	Public deposits	+100
Total	**+100**	**Total**	**+100**

3.6.3.3 Volume of and the type of liquid assets

The second condition refers to the volume of and the type of liquid assets. Banks may have a proportion of their liquid assets in the form of interbank loans. In this case the interbank loans are simply drawn down to fund the public deposit lost. The bank that loses the interbank loan will receive the public deposit lost to the first bank (either directly or through the interbank market – we assume the former). This is depicted In Balance Sheets 7–8).

Public withdraws deposits from Bank A (Bank A funds by withdrawing interbank loan with Bank B):

BALANCE SHEET 7: BANK A (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
Interbank loan	-100	Public deposits	-100
Total	**-100**	**Total**	**-100**

Bank B loses interbank loan (Bank B funds by taking in deposit from public):

BALANCE SHEET 8: BANK B (ZAR MILLIONS)			
Assets		**Equity and liabilities**	
		Interbank loan Public deposits	-100 +100
Total	**0**	**Total**	**0**

Download free eBooks at bookboon.com

However, this is not always the case. Not all banks are willing to lend to all other banks. Also, the private banking *system* may lose funds to the central bank (because of its operations in the market). In this case the bank is obliged to sell securities (assets). The only securities that a bank is able to sell are *liquid asset securities,* such as:

- Treasury bills.
- Commercial paper.
- Negotiable certificates of deposit (NCDs).
- Central bank bills.
- Government bonds.

It will be apparent that the bank must have sufficient of these liquid assets to meet the potential demand for funds. These securities may be disposed of in one or more of three ways:

- Sell securities outright in the secondary market.
- Sell securities under repurchase agreement for the period for which funds will most likely be short.
- Acquire accommodation from the central bank (this only applies if the central bank has made the market short of liquidity).

It is important to point out the difference between *de facto* and *de jure* liquid assets. The *de jure* list is the list of securities that may be used by banks:

- To comply with the statutory liquid asset requirement.
- For accommodation from the central bank (overnight loans against collateral or repos).

The list of *de jure* liquid assets in most countries is:

- Treasury bills.
- Central bank bills.
- Government bonds.

The *de facto* list is the above plus NCDs and commercial paper.

One of the prudential requirements (discussed later) of most countries is a *statutory liquid asset requirement* (LAR). The LAR differs from country to country and is usually in the range 5% – 10% of liabilities to the public. Although this seems low, it must be kept in mind that a number of other *de jure* non-liquid securities have sufficiently active secondary markets, in order for them to be sold at short notice. The markets for NCDs and CP are good examples.

Download free eBooks at bookboon.com

3.6.3.4 Active secondary financial markets

A statutory LAR and voluntary liquid asset holdings will be of no use to a bank in terms of the availability of liquidity, unless there is a market in which they may be sold. It is also important that the markets are of sufficient depth and breadth (efficient) so that a large volume sale will not adversely affect security prices.

3.6.4 Measures of a bank's liquidity exposure

As discussed, a bank's liquidity risk is a function of the potential withdrawal of deposits and the potential utilisation of loan demands under commitments granted, and the need to meet these demands from the sale of securities or the taking in of new deposits / loans. Thus, a bank must at all times be in a position to measure its liquidity situation. There are a number of tools that banks utilise in this regard[30]:

- Net liquidity statement.
- Peer group comparisons.
- Liquidity index.
- Financing gap and the financing requirement.
- Liquidity planning.

The details of these measures will not be discussed here.

Download free eBooks at bookboon.com

Click on the ad to read more

Banks are required by regulators submit a return/s on a monthly basis. A central bank[31] expounds on the prupose:

> *"(2) The purpose of the return is to determine: (a) The contractual mismatch between assets and liabilities at the reporting date. (b) The anticipated cash flow requirement from money market sources, as calculated in terms of the ALCO model, for the six months following the reporting month. (c) The extent and anticipated maturity of selected items included in the mismatches reported in terms of…2(a) and 2(b) above."*

3.6.5 Bank liquidity and a "bank run"

A bank run is a banker's nightmare, and it is the ultimate manifestation of liquidity risk. It is not a mythical phenomenon; bank runs have happened in history on many occasions, and not many countries have escaped the experience.

Normally, banks' portfolios are structured to deal with customary withdrawals of deposits and utilisation of loan commitments, and they plan ahead in order to cope with abnormal seasonal disturbances such as the huge demand for bank notes over the holiday seasons (particularly December/January in the southern hemisphere July/August in the northern hemisphere).

Large non-seasonal withdrawals of deposits can occur for a number of reasons:

- A sharp fall in a bank's profits, triggering concerns about the solvency of the bank.
- Loss of faith in the banking system in general.
- Rumours about the solvency of a bank.
- During the Great Depression (1929–1933) a mere queue outside a bank could have started a bank panic, and a run on the bank.

Some commentators add reasons such as marked changes in investor preferences, for example a positive shift in demands for treasury bills, away from bank deposits. We do not see this as a major reason, because the treasury bill will most likely be sourced from the banks themselves. It will be apparent that this amounts simply to bank disintermediation.

At the centre of the bank run are *demand deposits* and *liquid assets*. If the ratio of liquid assets to demand deposits is low, a bank run can be difficult. But the most important condition here is the standing of the bank. As we have said, a bank deposit lost is a bank deposit gained by another bank, and normally it flows back to the deficit bank in the interbank market. This is the norm when banks are of good standing and reputation. If this is not the case, interbank funds are not forthcoming.

This is where the central bank enters the picture.

Download free eBooks at bookboon.com

3.6.6 The central bank and the bank run

As said, in the event of a bank run on a bank with a poor reputation, no other banks will provide the beleaguered bank with interbank loans. The bank will have no option but to approach the central bank for assistance (in its function as the *lender of last resort*).

The central bank will have a dilemma: does it assist the bank with loans in order for the bank to meet the demand for funds or does it allow the bank to fail? Usually, the central bank will base its decision on whether the failure of the bank will lead to a contagion effect, i.e. that the banking system will be in jeopardy (systemic failure, the nightmare of a central banker).

Central banks in most countries have allowed a number of smaller banks to fail, and, in some cases, a larger bank – but only when it does not fear systemic failure. In cases where it does, or when the relevant bank is solvent, but has a short term problem based on an unfounded bad rumour, it will support the bank.

3.6.7 Deposit insurance

Deposit insurance, i.e. insurance in terms of which depositors are protected against the failure of a bank, is an effective method to prevent bank runs. There is no reason for a client to panic and demand his/her funds when a rumour arises about the solvability of a bank.

Deposit insurance is controversial. The prime line of reasoning from the detractors is that deposit insurance is more of a *cause* of bank failures than the *solution*. The logic presented is that deposit insurance may encourage bankers to engage in more risky ventures.

3.7. Credit risk

3.7.1 Definition

Credit risk is also known as *default risk*, and it is the risk-type to which the average bank is principally exposed, as a result of the make-up of its asset portfolio. As seen earlier, banks' loans (NMD and MD) typically comprise the largest proportion of their assets.

Credit risk is the risk that the borrower from a bank will default on the loan and/or the interest payable, i.e. that it will not perform in terms of the conditions under which the loan was granted. This is damaging to the bank, not only because of the actual loss eventually incurred, but also in terms of the time that management and bank counsel expend on attempting to recover the loss or a portion of the loss.

3.7.2 Asymmetric information, adverse selection and moral hazard

Lenders have *asymmetric information*, and this leads to the problem of *adverse selection*, which rears its ugly head before the loan is granted, and to *moral hazard*, which occurs after the loan is granted.

Download free eBooks at bookboon.com

Asymmetric information means that the lender does not have information that is symmetric with that of the borrower, i.e. there is (or could be) a discrepancy between the information provided by the borrowing company (or person) and the actual state of affairs (financial and otherwise) of the company (or person). This means that the lenders are at a major disadvantage in terms of information about the borrower and, coupled with the fact that bad credit risks are more inclined to borrow than are good credit risks, the lenders are more likely to select borrowers with dubious projects (i.e. projects that have an adverse outcome) than borrowers with projects that will succeed.

Moral hazard means that after a loan is granted, there is a high probability that the borrower may engage in activities that do reflect the information gathered by the lender in connection with the borrower and his/her planned projects. There are countless examples where borrowers borrow with good intentions, but when the access to funds becomes a reality, they take on higher risk projects.

As banks are in the business of making loans, they are aware of the hazards, and have (in most cases) become authorities on solving the problems of asymmetrical information and its acolytes, adverse selection and moral hazard. Banks seek to mitigate the high probability of these through the introduction of appropriate credit risk management tools

Download free eBooks at bookboon.com

Click on the ad to read more

3.7.3 Management of credit risk[32]

3.7.3.1 Introduction

Methods used by banks to mitigate credit risk include:

- Avoidance.
- Diversification.
- Compensating balances and monitoring of business transactions
- Screening.
- Monitoring.
- Long-term customer relationships.
- Loan commitments.
- Collateral requirement.
- Credit rationing.
- Specialisation in lending.
- Credit derivatives.

3.7.3.2 Avoidance

The obvious approach to alleviating credit risk is *to avoid it*. This can be achieved by only providing loans to, or buying the bonds of, government, the best credit. Because government securities are credit risk-free, the return enjoyed on such investments is of course the lowest available. Because the return on government securities is the risk-free rate (rfr), all other investments should yield rfr + rp (rp = risk premium). Note that while government bonds may be credit risk-free, they do carry market risk. It is also notable that there are some banks that are permitted to only invest in government securities (discussed later).

3.7.3.3 Diversification

Diversification is the first principle of risk management as applied in portfolio theory. Banks typically do not lend a major proportion of their funds to individual borrowers. Rather, they restrict the amount loaned to a percentage of their capital. They are also diversified across economic sectors and countries. In most countries the bank regulator / supervisor stipulates a strict constraint in terms of loan concentration.

Banks also encourage diversification of borrowing by the borrower. The syndicated loan is an example.

Download free eBooks at bookboon.com

3.7.3.4 Compensating balances and monitoring of business transactions

Often, loans are granted with the commitment by the borrower of maintaining a balance with the bank. This increases the likelihood that the loan will be repaid. The commitment may also take the form of a current account with an undertaking that all transactions by the borrower in the business for which the loan was granted are conducted through the current account. This enables the bank to monitor the business of the borrower.

3.7.3.5 Screening

The obvious tool to mitigate credit risk (i.e. to overcome the adverse selection problem) is the careful screening of potential borrowers. This involves information gathering. Much personal information is gathered in from individuals who wish to borrow, and there are grades of information gathering. In the case of a small sum for the purchase of say a washing machine, the information required is far less than that required for the mortgage loan. In the latter case, the information required would include:

- Work history and record.
- Salary and salary history.
- Other bank accounts.
- Other debt.
- Credit card payment history.
- Statement of liabilities and assets.

In addition to such information the lender may require references, which in many cases are followed up on, and some lenders (particularly the banks) put in place local boards of "directors" comprised of persons well known and connected in their relevant areas in order to provide information on the borrowers of the area. The information gathered enables the lender to statistically calculate a score for each borrower. It should be apparent that in many cases the score is borderline in terms of credit risk, and the lender uses a measure of discretion, rather than send the client off to a competitor.

Information gathering in the case of loans to companies is similar except that much emphasis is placed on past financial statements and a business plan for the future, including of course the purpose for which the loan is required.

3.7.3.6 Monitoring

Monitoring is also an information gathering exercise, but after the event of granting of the loan, and this links with the problem of moral hazard. A client may be suitably screened and ultimately selected as a client, but may engage in nefarious activities once the money is in his/her hands. To reduce the risk of this coming about, many lenders include restrictive covenants (provisions) in their loan contracts, and monitor adherence or not to these on a regular basis.

Download free eBooks at bookboon.com

3.7.3.7 Long-term relationship building

Lenders encourage long-term relationship building between loan officers of the institution and their clients. This practice reduces the cost of information gathering because records already exist and monitoring procedures are already in place. The borrower also has an incentive for encouraging a long-term relationship with the lender, and this is because a good credit record not only reduces the risk for the lender but also the borrowing rate for the borrower.

3.7.3.8 Loan commitments

The credit risk mitigating tool *loan commitment* is related to the former. Many lending intermediaries provide borrowers with a commitment of a loan up to a specified amount that can be utilised at any time. This provides the borrower with flexibility in loan utilisation, and encourages a long-term relationship with the lender, which in turn reduces the information gathering cost. The loan interest rate reflects the long-term relationship.

3.7.3.9 Collateral requirement

Collateral means the ceding of assets (usually property, equipment financed, the debtors book, deposit, policy – at appropriate discounted values) as security for the loan. This is a legal commitment to surrender the underlying assets to the lender in the event of default, which the lender is able to sell in order to recover the amount of the loan.

Download free eBooks at bookboon.com

Click on the ad to read more

Collateral is the most common method of "insurance" against credit risk, and reduces the problems of adverse selection and moral hazard. A dubious borrower will be reluctant to borrow if collateral is required because s/he has much to lose in the event of default.

3.7.3.10 Credit rationing

Credit rationing takes on two forms: *outright rejection* and *providing less credit that sought*. *Outright rejection* refers to loans where the borrower is willing to pay a higher interest rate to compensate the lender for the risk, but the bank rejects the application because the higher interest rate will contribute toward the failure of the project.

Providing credit less that sought is often a tactic of the lender to thwart moral hazard. A loan that is smaller than sought will tend to ensure that the funds are efficiently allocated, whereas a loan of the desired size may bring about a case of moral hazard.

3.7.3.11 Specialisation in lending

Some lenders practise specialisation in lending; this may refer to geographic area of industry. In the former case the lenders rely on personal relationships to ensure prompt and full repayment of interest and principal: for example, Grameen Bank in Bangladesh, relies on peer pressure in the community for repayment (as a matter of interest in the case of Grameen Bank, the repayment rate is 98%, higher than any other financial intermediary.)

Certain other lenders specialise in making loans to specific industries. For example, a bank may specialise in leasing contracts with the medical fraternity. The line of reasoning here is that information costs are reduced because the lending institution is concerned with gathering information about only one industry (and its related industries). The counter-argument is that a downturn in the particular industry (which is inevitable because it occurs to all industries at some stage) may place the bank at risk. This brings one back to the first tool, diversification, which is a major risk mitigation factor.

3.7.3.12 Credit derivatives

The use of credit derivatives consists of the purchase and sale of credit risk (or credit protection) across sectors and countries. Credit derivatives are bi-lateral financial contracts with payoffs attached to a credit related event such as a default, bankruptcy or credit downgrade. Generally, the largest banks are net buyers of credit protection.

3.7.4 Sovereign credit risk

Sovereign risk, also called *country risk*, straddles credit risk and currency risk (see below); it may be defined as the risk that a foreign government may proclaim the suspension of repayment of loans or investments made in that country.

Download free eBooks at bookboon.com

There are a number of examples of such suspensions. In 1982, for example, the governments of Mexico and Brazil announced a moratorium on the debt of foreign investors, i.e. the domestic debt owned by foreign investors. The debt was frozen and repaid over a long period when the foreign exchange was available. Under sanctions, South Africa declared a debt standstill in 1985, and took more than 10 years to repay the debt.

Other countries that have declared debt moratoriums are a number of African countries, Thailand, South Korea, Malaysia, Indonesia, and Russia. Argentina rescheduled its debt in 2001.

3.7.5 Banking statute returns in respect of credit risk

Because credit risk is so pervasive the banking regulator / supervisor requires a number of monthly returns. The main return required usually stares its purpose as follows[33]:

> *"…to determine…(a) the* classification of all direct and indirect extensions of credit, including, but *not limited to, loans and advances, accounts receivable, property acquired by the bank in satisfaction of debt previously contracted, investments, equity participation and credit substitutes, such as general guarantees of indebtedness and standby letters of credit serving as financial guarantees; (b) the* adequacy of overall provisions *to absorb estimated credit losses; (c) asset* quality; *(d) distribution of assets based on* profitability; *(e) distribution of discounts, loans and advances in accordance with the directives contained in, and based on the* ***sectors*** *identified in, the Standard Industrial Classification of all Economic Activities; (f) distribution of discounts, loans and advances in accordance with selected* geographical *sectors."*
>
> Other returns usually require information on:
>
> - Large exposures in relation to capital.
> - Loans not disposed of within a given period.
> - Funding of specific sectors.

3.8 Currency risk

Currency risk is also called *foreign exchange risk* (forex risk). Certain financial intermediaries' asset portfolios are made up of domestic and foreign securities. In the case of the latter the portfolio will usually include foreign bank deposits and securities such as treasury bills of the US and UK (or other) governments. In addition to their foreign portfolios, banks also play a major role in the spot, forward and derivative foreign exchange markets. Internationally, banks also have liabilities in foreign currencies.

Download free eBooks at bookboon.com

Most large banks are exposed to currency risk, which may be defined as the risk of changes in currency values unfavourably affecting the values of assets and liabilities that are denominated in currencies other than the domestic currency. Because certain financial intermediaries, particularly the banks, are highly leveraged, their exposure to currency risk can be devastating on their profitability and to their capital position.

Currency management is the management of the exposure to levels that are acceptable. Exposure can be managed by various means, and the main instruments that are used are derivative instruments:

- Currency swaps.
- Forwards.

The first step in managing currency exposure is to measure it.[34] The net currency (C) exposure in any given currency, A, is calculated according to:

$$\text{Net exposure}_A = (\text{C assets}_A - \text{C liabilities}_A) + (\text{C bought}_A - \text{C sold}_A).$$

Download free eBooks at bookboon.com

Click on the ad to read more

Table 2 will elucidate (home currency = USD):

	GBP	JPY	CHF
Assets (thousands)	10 000	30 000	4 000
Liabilities	15 000	20 000	10 000
C bought	65 000	100 000	50 000
C sold	50 000	125 000	55 000
Net position	+10 000	-15 000	-11 000

Table 2: net currency exposure report

$$\begin{aligned}\text{Net exposure}_{GBP} &= (10\,000 - 15\,000) + (65\,000 - 50\,000)\\ &= (-5\,000) + (15\,000)\\ &= 10\,000\end{aligned}$$

$$\begin{aligned}\text{Net exposure}_{JPY} &= (30\,000 - 20\,000) + (100\,000 - 125\,000)\\ &= (10\,000) + (-25\,000)\\ &= -15\,000\end{aligned}$$

$$\begin{aligned}\text{Net exposure}_{CHF} &= (4\,000 - 10\,000) + (50\,000 - 55\,000)\\ &= (-6\,000) + (-5\,000)\\ &= -11\,000\end{aligned}$$

This means that the US bank is "long" of GBP, and "short" in both JPY and CHF. Thus, if the GBP appreciates (remember home currency = USD), and/or the JPY and the CHF depreciates, the intermediary will make a profit (on this part of the portfolio). However, if they do the opposite, the bank will make a loss (on this part of the portfolio).

With the above currency exposure report the financial intermediary is in the picture and is able to manage the exposure. It may, for example, do currency swaps or forward deals that coincide with the terms of the exposure: sell GBP forward for USD and buy JPY and CHF forward for USD.

While these transactions will cancel out the exposure (approximately depending on terms negotiated, maturities, etc), it should be clear that if the USD generally *appreciates* (i.e. appreciates against the main currencies of the world), the financial intermediary would be hurt by the *depreciating* GBP (remember it is long GBP), but would gain by the extent of the *depreciating* JPY and CHF (remember it is short JPY and CHF). Thus, there is an offsetting effect, meaning that the *net exposure* is not so large. In practice, most banks take on some currency exposure, and manage it according to their views of future currency movements.

Download free eBooks at bookboon.com

Bank regulators[35] require monthly returns in respect of currency exposure. The purpose:

> *"…is to determine…(a) the month-end effective net open foreign-currency position in selected currencies and in all currencies taken together in respect of the reporting bank and its foreign branches and foreign subsidiaries; and (b) the maturity ladder of foreign assets, liabilities and commitments."*

3.9 Counterparty risk

Each party to a deal has a party on the other side of the deal. Thus, each party is the counterparty to the other party, and each party is exposed to the other in that the other party may renege on the deal or be a fraudulent party to the deal (i.e. may not perform in terms of the conditions of the deal). If a party fails to settle a deal the counterparty will do another deal which may not be as favourable (and may result is a loss) as the unsettled deal. This risk is termed counterparty or settlement risk.

There are many different types of deals, each involving a different risk profile. A few examples of hazards with deals follow:

- A seller to a bank may deliver tainted scrip to the bank.
- A buyer from a bank may present a cheque to the broker drawn on an account that is not funded.
- The buyer or seller may decide not to settle because prices may have changed between deal date and settlement date.
- A broker may take an excessive commission or 'turn' (i.e. margin between buying and selling rate or price).

Management of counterparty risk includes:

- As the risk lies with large dealers in the financial markets, banks ensure that transactions are conducted only with known reputable parties and with guaranteed payments.
- Dealing, where applicable, with financial exchanges which are regulated and supervised. The exchanges in turn supervise broker-dealer members.
- Banks have been at the forefront of the formation of a central securities depository (CSD), which brings about scrip dematerialisation / immobilisation. This eliminates the hazard of tainted scrip, and ensures payment against electronic delivery.
- Many countries have a specialised large-transactions payments system (operated by the central bank) that functions on RTGS (real-time gross settlement). This applies to the large deals of the financial markets.

Download free eBooks at bookboon.com

Bank regulators[36] require monthly returns in respect of currency exposure. The purpose is:

> *"…to measure the counterparty risk for all unsettled transactions, including forward rate agreements, interest-rate swaps, derivatives, etc, relating to a bank's banking and trading activities when non-performance by a counterparty could cause a financial loss to the reporting bank."*

3.10 Operational risk

3.10.1 Introduction

Each bank has its unique definition of operational risk. We reviewed a number of them and, founded on some banking experience, present the following elements of operational risk:

- Information technology systems risk.
- Human resources risk.
- Reputation risk.
- Compliance risk.
- Legal and documentation risk.
- External risk.

Download free eBooks at bookboon.com

Click on the ad to read more

3.10.2 Information technology systems risk

Banks rely on information systems technology for the smooth functioning of business. The business of the mainstream banks is complex because they operate through a branch system over a large geographic area, have numerous clients and products on both the liability and asset segments of their balance sheets, and have to cope with complex accounting systems and to comply with stringent regulatory issues requiring myriad multifaceted returns.

Given this, *information technology systems risk* may be defined as a breakdown in the information systems' hardware and/or software that renders the retrieval of information unworkable or difficult or delays the retrieval of information, all of which can cause the cessation or delay of business. This definition can be expanded to include the delays caused by the implementation of new hardware or software or, at a lower level, the incorrect encoding of cheques.

The mitigation of *information technology systems risk* involves many elements ranging from organisational structure, delegation of responsibility, etc., to the use of external information technology to back up information and systems, suitably trained managers, the use of reliable vendors, etc.

The most important mitigation element of information technology systems risk is the *disaster recovery system* (DRS). An effectual DRS, which ensures that business can continue outside of the bank's main building, incorporates a back-up site in another part of the, or another, city, where the essential infrastructure is available. The site will provide the same front, middle and back office systems as exist in the main building, and therefore ensure that operations can be conducted.

3.10.3 Human resources risk

Humans manage the business of banking. Human resources risk (HRR) is the risk of insufficiency and/or inadequacy of human capital resources. *Insufficiency* refers to not having sufficient human capital to run the business, and *inadequacy* refers to misdeeds of staff.

The most imperative feature of HRR is the *principal-agent problem*, and it applies at top management level. The mangers (*agents*) of businesses usually own just a fraction of the business. In most cases, the business is owned by the shareholders (*principals*) who are usually not employed by the business. This separation of control and ownership can lead to *moral hazard*, i.e. the agents may not always act in the best interest of the principals.

Download free eBooks at bookboon.com

The management of human resources risk includes:

- Adequate training.
- Ongoing further education / skills improvement.
- Have in place the overlapping of skills to allow for sickness / maternity leave / annual leave / death (i.e. the uninterrupted availability of the key skills).
- Succession identification and training.
- A motivating reward system.
- A policy of disallowing key personnel being exposed to risk to life together (e.g. not flying on the same flight).
- Introduction of checks and balances in key functions.
- Reconciliation and segregation of duties (e.g. capturing, verifying and authorising).
- A code of ethics that covers: business ethics, gifts and favours, confidentiality, etc.
- Auditors (internal and external) should monitor HR issues / processes.

3.10.4 Reputation risk

Reputation risk (or *reputational risk*) (RR) is the risk of negatively affecting the company's / group's image, which could prejudice its ability to retain and generate business. It will be evident that RR is closely related to HRR.

RR is a risk faced by all companies, but is particularly crucial in the case of banks. Continuation of business depends on reputation, and any damage to reputation can exacerbate liquidity risk. Bank runs have been caused by damage to reputation.

Management of RR amounts to:

- Ensuring that HRR management is sound.
- Having a vigorous internal communications policy. RR issues are usually generated internally (and affect the motivation of staff), and spread externally. Internally a robust whistle-blower-confidentiality policy should be in place.
- Having a vigorous external communications policy. If a negative reputational issue is externalised, predetermined communication channels should be in place so that the damage can be minimised. Predetermined communication channels are also used to maximise the outcome on reputation of good information.

Download free eBooks at bookboon.com

3.10.5 Compliance risk

Compliance risk (CR) is the risk of non-compliance with:

- Statutory requirements of the various levels of government
- Regulatory requirements of regulators, in this case the banking regulator.
- Regulatory requirements of other regulators that may be applicable (because the central bank usually regulates banks only).
- Regulatory requirements of the financial exchange/s.
- Other generally accepted codes, such as the corporate governance codes.

Non-compliance may lead to the withdrawal of licenses to do business, and to the incurring of penalties. This has severe RR fallout.

Management of CR amounts to:

- Having in place a comprehensive compliance-reporting framework.
- Ensuring that CR reporting is part of the internal and external audit processes.
- Ensuring that CR reporting is on the agenda of the Audit Committee of the board of directors.

STUDY FOR YOUR MASTER'S DEGREE
IN THE CRADLE OF SWEDISH ENGINEERING

Chalmers University of Technology conducts research and education in engineering and natural sciences, architecture, technology-related mathematical sciences and nautical sciences. Behind all that Chalmers accomplishes, the aim persists for contributing to a sustainable future – both nationally and globally.

Visit us on **Chalmers.se** or **Next Stop Chalmers** on facebook.

Download free eBooks at bookboon.com

Click on the ad to read more

3.10.6 Legal and documentation risk

Legal and documentation risk is the risk of some unanticipated legal or documental hindrance that renders transactions incomplete or non-binding.

The management of legal and documentation risk involves the consulting of expert legal advisers, consulting with the revenue and other authorities when appropriate, and the avoidance of transactions where there remains doubt about the legality of the transaction.

3.10.7 External risk

External risk is the risk that parties other than the bank itself (and its employees) undertake activities, or fail to deliver essential outsourced services, that harm the bank in a financial or other sense, and natural disasters that affect the services or viability of the business. Examples are:

- A fire at the only chequebook printer in the country which puts it out of business for a long period.
- A devastating fire at the company that has backed-up the electronic files of a bank whose systems have failed.
- A power-delivery blackout for three days.
- An earthquake that substantially damages the premises of the head office.
- Bank robberies.

Managing external risk involves identifying the potential external risks, and managing them accordingly. For example, the possibility of an earthquake is managed by having all the required back-up systems in another city. Robberies are managed by implementing appropriate security measures. A possible electrical blackout for three days is managed by installing back-up generators.

In conclusion, it needs to be mentioned that some scholars include *solvency risk* in the list of risks. It is the risk of the bank being declared insolvent, a profound condition where the capital and reserves of the bank are at or near to zero, or negative, and this is an acute outcome of the reckless management of the bank in terms of risk-taking. In our view it is not a separate risk, but the outcome of mismanagement of one or more of the other risks.

3.11 Bibliography

ABSA Bank Limited, 1992. **Banks**. In Falkena, HB, et al (editors), *Financial institutions*. Halfway House: Southern Book Publishers.

BBC, 2003. *Nick Leeson and the fall of the house of Barings (video)*.

Bessis, W, 1999. **Risk management in banking**. New York: John Wiley and sons.

Heffernan, S, 2000. **Modern banking in theory and practice**. New York: John Wiley and sons.

Download free eBooks at bookboon.com

Grameen Bank [Online]. Available: www.grameenbank.org. [Accessed various dates].

Institute of Bankers in South Africa, 2002. [Online]. Available: www.iob.co.za. [Accessed June 2000].

McInish, TH. 2000. *Capital markets: A Global Perspective*. Blackwell Publishers Inc., Oxford.

Mishkin, FS and Eakins, SG, 2000. **Financial markets and institutions**. Reading, Massachusetts: Addison Wesley Longman, Inc.

Office of the Banking Adjudicator, 2002. [Online]. Available: www.oba.org.za. [Accessed June 2002].

Pilbeam, K. 1998. *Finance and financial markets*. London: Macmillan Press Limited.

Public Investment Commissioners, 2003. Annual Report.

Reilly, FK and Brown, KC. 2003. *Investment analysis and portfolio management*. Mason, Ohio: Thomson South Western.

Rose, PS, 2000. **Money and capital market**s (international edition). New York: McGraw-Hill Higher Education.

Saunders, A, and Cornett, MM, 2001. **Financial markets and institutions** (international edition). New York: McGraw-Hill Higher Education.

Santomero, AM and Babbel, DF, 2001. **Financial markets, instruments and institutions** (second edition). Boston: McGraw-Hill/Irwin.

The Standard Bank of South Africa Limited. The assistance of Mr Glen Jackson, Director, Retail Banking, KwaZulu-Natal, with some of the retail banking terminology, is gratefully acknowledged.

The Standard Bank of South Africa Limited, 2004. [Online]. http://www.standardbank.co.za/. [Accessed various dates].

South African Reserve Bank, 2001. *Annual report of the Bank Supervision Department*.

Statutes of the Republic of South Africa, 1989. *South African Reserve Bank Act, 90*.

Statutes of the Republic of South Africa, 1990. *Banks Act, 94*.

Statutes of the Republic of South Africa, 2000. *Regulations relating to banks*. Issued in terms of the Banks Act 94 of 1990, Government Notice R.1112, Government Gazette No. 21726, 8 November.

World Bank, 2005. **Deposit insurance around the world: a comprehensive database**. World Bank Policy Research Working Paper 3628, Washington D.C.: World Bank. [Online]. Available at: http://econ.worldbank.org, [Accessed December 2005].

Download free eBooks at bookboon.com

4 Bank models & prudential requirements

4.1 Learning outcomes

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

- Elucidate the models of banking.
- Expound on the rationale, objectives and principles of regulation.
- Discuss the particulars of banking prudential requirements.

4.2 Introduction

The previous section covered risk in banking. The prudential requirements (capital, liquid assets, cash reserves, large exposures, etc.) for banks are founded on risk. There are different models or styles of banking, and each has a particular risk profile. Where there is no *de jure* differentiation between banks with different risk profiles, the prudential requirements are the same. Where *de jure* differentiation exists, the prudential requirements differ.

Download free eBooks at bookboon.com
Click on the ad to read more

This section first covers the prudential requirements, but this section is preceded by a discussion on the rationale, objectives and principles of regulation. This in turn is preceded by the banking models. Thus, this section is arranged as follows:

- Bank models.
- Rationale, objectives and principles of regulation.
- Prudential requirements.

4.3 Bank models

4.3.1 Introduction

The purpose of this section is to shed some light on the banking specialisations that exist. It should be kept in mind that few banks specialise in only one area. The banking specialisations are as follows:

- Commercial banks.
- Mutual banks / building societies.
- Merchant and investment banks.
- Trading banks.
- Private banks.
- Islamic banks.
- Development banks.
- Micro-credit banks.
- Co-operative banks.
- Dedicated banks.
- Discount houses.

4.3.2 Commercial banks

Commercial banks are the "norm" banks. The name originates in the group of banks that were members of the clearing house system, i.e. the banks which brought into being the payments system, and organised interbank payments amongst them (via the central bank, which is part of the payments system). They were also the only banks that offered current / cheque account banking. This group endures to this day, although cheque payments are being replaced by EFTs (such as internet banking). It must be added that banks which are not members of the clearing system are also able to offer EFTs.

Download free eBooks at bookboon.com

Commercial banks are also called high street banks. They are the banks that provide all services the public associates with banking, such as ATM withdrawals / deposits, cheque / current and accounts, other deposit accounts, overdraft facilities, mortgage advances, leasing, instalment credit advances, and so on. Examples are HSBC, Barclays, Royal Bank of Scotland, UBS. The products of these banks are confusing to the public. In essence, these banks:

- Take deposits and loans (interbank) = liabilities.
- Make loans (MD and NMD) (and hold shares to a small degree) and hold central bank money (N&C and reserves).
- In the case of MD, they make markets, and hold MD portfolios for this purpose and for opportunistic profits.
- Make markets in, and hold for this purpose and for opportunistic profits, foreign exchange.
- Make markets in, and hold for this purpose and for opportunistic profits, derivative contracts.
- Organise, and make possible, payments (cheques, ETFs).

These are the "norm" banks, in the sense that the banking statute, the main thrust of which is the prudential requirements (capital, liquid assets, reserves, concentration of loans, etc.), are directed at them. As we will see, there are other banks that specialise in certain areas of mainstream banking; the prudential requirements apply equally to them. Then there are specialised banks, and they have dissimilar prudential requirements.

4.3.3 Mutual banks / building societies

Mutual banks / building societies are distinguished from the "norm" banks in that the holders of particular long-term deposits, which are called *shares*, are their ultimate owners. As opposed to ordinary shares that may be listed, mutual banks/ building societies issue the following types of "shares", all of which are interest bearing:

- Indefinite period shares.
- Fixed period shares (usually longer than 5 years).
- Permanent interest-bearing shares.

As mutual banks generally are transmutes of building societies, they, like building societies, tend do little business other than mortgage loans. Apart from mortgage business, and the issuing (selling) of the "shares" referred to above, the mutual banks / building societies also offer savings, medium-term and long-term deposit facilities.

Download free eBooks at bookboon.com

4.3.4 Merchant and investment banks

Merchant banking is the old name for the investment banking genre. The old name is still in use, but only because of entrenched branding. Investment banking is essentially the provision of certain banking and other services (especially services that involve the wholesale financial markets) aimed at the corporate and government sectors. The following services usually are associated with investment banking in the US:

- Advising (on financing needs, funding mechanism, team of institutions, etc.).
- Administration (in connection with issuing securities such as legal documents).
- Underwriting (agreement to take up un-issued securities at a specified price).
- Distribution (placement of securities with investors).

In other countries investment banking is associated with the abovementioned, plus other services that include:

- Securities broking and dealing.
- Commodities broking and dealing.
- Foreign exchange broking and dealing.
- Derivatives broking and dealing.
- Portfolio management.

Download free eBooks at bookboon.com

Click on the ad to read more

Some of these functions are conducted through subsidiaries or are fellow subsidiaries of the bank under the umbrella of a bank holding company. As noted, the main clients of investment banks are the corporate sector and the government sector.

Investments banks are usually subject to the same requirements as the "norm" banks, but in some countries the capital requirement entry level is lower.

4.3.5 Trading banks

There are certain banks that prefer to operate in only a limited part of the business of investment banking, i.e. trading in the financial markets. They tend to operate solely in the following areas:

- Securities broking and trading.
- Commodities broking and trading.
- Derivatives broking and trading.

4.3.6 Private banks

Private banking is a term used for the banks that focus on providing services to high net worth individuals (which private banks refer to as private clients). Examples in the UK are Hoare & Co (the only surviving private banker still owned by the same family), Coutts Bank and Martins Bank (which started business in the 17th century as goldsmith-bankers). Each client of a private bank is assigned a private banker.

The following services are usually associated with private banking:

- A cheque account with generous overdraft facilities.
- Other generous loan facilities such as a mortgage advance at a prime rate.
- Foreign exchange services.
- Onshore portfolio management services.
- Offshore portfolio management services.
- Stock broking.

Most of the business done with a private bank is by telephone conversation (which is recorded to protect both parties), and by electronic banking. Cheque books and forex are generally hand-delivered to the client.

Private banks are normal banks in respect of prudential requirements.

Download free eBooks at bookboon.com

4.3.7 Islamic banks

Islamic banking is predicated on Islamic law (Shariah) principles derived from Scripture and Traditions. Any venture forbidden in the Sacred Law applies to bank transactions. In essence, Islamic law prohibits usury, i.e. the collection and payment of interest (commonly called Lariba – no interest).

Islamic law also prohibits investing in businesses that are considered unlawful or Haraam (businesses that sell alcohol or pork, engage in gambling, or media businesses that engage in pornography or scandal). There are a number of specialised Islamic banks in many countries that service this banking need. Islamic banks, or Islamic banking divisions of ordinary banks, are required to establish a Shariah Board, comprised mainly of Islamic clergy and scholars, to advise them on Shariah principles.

An example: if LCC 10 000 is borrowed from an Islamic bank, the borrower need only pay LCC 10 000 to the bank, plus a service fee, which will be the costs the bank incurred to acquire and lend the cash. No unrelated amount may be imposed on the borrower. Some banks in Muslim countries use the euphemism "service charges" for the interest charged on their loans to circumvent laws prohibiting usury.

Islamic Law permits the trade in assets, and some Islamic banks focus on this area of business. For example, if an individual wants to buy a motor vehicle from a dealer, s/he will inform a bank that provides such a service. The bank will purchase the vehicle from the dealer and sell it to the purchaser who repays for the loan in set monthly instalments until the debt is settled. The instalment includes a predetermined mark-up, which includes a service fee.

Those in agreement with lending on the basis of an explicit mark-up being set state that the mark-up reimburses the bank to an extent commensurate with the risk it undertakes. However, there are many Muslims who contend that this type of lending is contrary to the principles of Islamic law.

Like any bank, an Islamic bank can accept deposits. This money is then invested in permitted ventures such as the purchase of property from which rental income can be derived. The depositor benefits (loses) proportionately from a positive (negative) rate of return on the principal invested; thus it is known as shared risk-and-reward banking. Any amount spent by the bank on the protection and administration of deposits can be retrieved from the depositor through the imposition of service fees.

Islamic banks are normal banks in respect of prudential requirements.

Download free eBooks at bookboon.com

4.3.8 Development banks

Most developing countries have development banks. They are owned by government and are usually brought into being by separate statute. The statute spells out the activities of the bank, the ministry responsible for its oversight, etc. The capital of development banks is voted by Parliament, and when new funds are required the bond market is accessed.

Most development banks are focused on specific areas such as agriculture, local authorities and industry.

4.3.9 Micro-credit banks

Micro-credit banking is the lending by specialist banks of small amounts of funds to small entrepreneurs for the purpose of the purchase of tools (for the production of goods), raw materials (to be beneficiated or used for the production of other goods) or goods for resale. The world's best example of successful micro-credit banking is Grameen Bank of Bangladesh. Grameen Bank[37] describes its *underlying premise* as follows:

Vill du hålla dig uppdaterad?

pwc

Gå med i PwC Student så får du information om våra lediga tjänster, internships, evenemang och mycket mer – innan alla andra. Ta reda på mer om dina möjligheter via vår webbplats ***www.pwc.se/student***

Download free eBooks at bookboon.com

Click on the ad to read more

"The underlying premise of Grameen is that, in order to emerge from poverty and remove themselves from the clutches of usurers and middlemen, landless peasants need access to credit, without which they cannot be expected to launch their own enterprises, however small these may be. In defiance of the traditional rural banking postulate whereby "no collateral (in this case, land) means no credit", the Grameen Bank experiment set out to prove – successfully – that lending to the poor is not an impossible proposition; on the contrary, it gives landless peasants the opportunity to purchase their own tools, equipment, or other necessary means of production and embark on income-generating ventures which will allow them escape from the vicious cycle of "low income, low savings, low investment, low income". In other words, the banker's confidence rests upon the will and capacity of the borrowers to succeed in their undertakings."

Grameen Bank describes its *mode of operation* as follows:

"A bank branch is set up with a branch manager and a number of centre managers and covers an area of about 15 to 22 villages. The manager and the workers start by visiting villages to familiarise themselves with the local milieu in which they will be operating and identify the prospective clientele, as well as explain the purpose, the functions, and the mode of operation of the bank to the local population. Groups of five prospective borrowers are formed; in the first stage, only two of them are eligible for, and receive, a loan. The group is observed for a month to see if the members are conforming to the rules of the bank. Only if the first two borrowers begin to repay the principal plus interest over a period of six weeks, do the other members of the group become eligible themselves for a loan. Because of these restrictions, there is substantial group pressure to keep individual records clear. In this sense, the collective responsibility of the group serves as the collateral on the loan."

As regards loan size, purpose of the loans, the rate of interest charged, and the repayment rate, and the source of funds, Grameen Bank reports:

"Loans are small, but sufficient to finance the micro-enterprises undertaken by borrowers: rice-husking, machine repairing, purchase of rickshaws, buying of milk cows, goats, cloth, pottery etc. The interest rate on all loans is 16 percent. The repayment rate on loans is currently – 95 per cent – due to group pressure and self-interest, as well as the motivation of borrowers."

As these banks are usually agencies of government departments, their capital is provided by the relevant department. In cases where the bank is formed under its own statute the capital is voted by Parliament, and when new funds are required the bond market is accessed. In some cases these banks take deposits.

Download free eBooks at bookboon.com

4.3.10 Co-operative banks

In some developing countries there exists a bank-type institution, the village financial service co-operative. It goes by another name, rural bank, in other countries. As the name suggests, these banks are geographic-specific, and small-scale, financial services intermediaries. They are usually member-owned and -controlled co-operatives that provide basic financial services (mainly savings, loans and funds transmission) to members in rural areas not serviced by the mainstream banks.

Another type of co-operative bank is the savings and credit co-operative (SACCO). SACCOs are also known as *credit unions* in some countries. In a nutshell they are owned and governed by members who have the same common bond: working for the same employer, belonging to the same church, social fraternity or living/working in the same community. They are not-for-profit organisations, but maintain high prudential standards set down by the World Council of Credit Unions (WOCCU).

In some countries the co-operative type banks are formalised under a statute, such as the Co-operative Banks Act in South Africa. In South Africa there are two types of formalised co-operative banks: *savings co-operative banks* and *savings and loans co-operative banks.*

The prudential requirements for these banks are the same as for mainstream banks, but the entry level capital requirement is substantially lower.

4.3.11 Dedicated banks

Dedicated banking is a new banking genre (not yet tested in the world but considered in regulation circles) and includes two types of banking intermediaries:

- Core banks
- Narrow banks.

Core banks are those that will specialise in a particular field of banking such as cell phone banking. Narrow banks are those that will take deposits from the public and the funds will be invested in certain restricted, and marketable, securities such as government bonds and treasury bills. As such regulation will be minimal.

In a particular country, a Dedicated Banks Bill has been introduced (not yet promulgated) which provides for the creation of the legislative environment for two dedicated banks to be called:

- Savings banks.
- Savings and loans banks.

Download free eBooks at bookboon.com

The Bill states that a *savings bank* may:

- …accept deposits from the general public;
- make payments on behalf of a client thereof, provided the client has a credit balance in an account with the bank that is sufficient to cover such payments;
- provide trust or custody services to clients;
- open a savings account on behalf of a depositor into which the depositor may deposit money and from which the depositor may withdraw or transfer money.

The Bill also states that the savings bank may only invest money deposited with it in liquid assets (treasury bills and short-term government bonds in the main).

As regards the savings and loans banks, the Bill states that they may conduct the business of a savings bank, and may make loans to individuals and businesses under certain conditions (including concentration and terms of loans).

4.3.12 Discount houses

Discount houses had their genesis in the UK in the 18th century as bill brokers (in trade bills, which later became bankers' acceptances, and treasury bills). They later took on call deposits from banks to fund holdings of these assets and made markets in them.

Download free eBooks at bookboon.com

Click on the ad to read more

They emerged in developing countries (first in South Africa in 1961, next Rhodesia / Zimbabwe, Malawi, Zambia, etc.) with unsophisticated financial systems where the banks were enjoying wide margins, which constrained economic development. This situation is usually of concern to governments and to central banks for a number of reasons:

- It reflects a uncompetitive banking environment (in fact banks favour inefficient markets because of the opportunities for profit).
- There is no (or limited) secondary market in securities.
- Both these inhibit the implementation of monetary policy (discount rate cannot be effectively applied and open market operations are difficult to implement).
- Funding by government is not easy and this is reflected in rates that are higher than otherwise would be the case.
- Capital for the productive sector is expensive.
- Foreign investment is not forthcoming.

Thus, discount houses were actively encouraged in the 20th century to assist in the development of developing countries' financial systems. The essence of a discount house is as follows.

- A discount house is registered as a *banking institution* (banks and discount houses are regarded as *banking institutions*).
- The Registrar of Banks and the central bank, which requires of them to submit a statement of assets and liabilities on a daily basis, regulate the discount houses.
- Their liabilities are limited to call money from the banks, and certain government departments, and their assets are pledged as collateral for the money (this differs in countries).
- The assets of the discount houses are categorised in terms of term to maturity and limits placed on these categories and sub-categories. For example, there would be no limit on liquid assets, and a 10% limit on securities of longer than 3 years. Within the 90% category there may also be a limit on the holding of bankers' acceptances.
- The discount houses earn a margin between the rate paid for call money from banks and the rates earned on securities held in portfolio.
- The discount houses actively trade their portfolios and act as market makers in these securities, i.e. quote firm buying rates for securities offered and securities in portfolio which are in demand. In this way they make trading profits.
- The discount houses are instrumental in assisting the creation of instruments other than treasury bills (examples are: bankers' acceptances, commercial paper, repurchase agreements and NCDs.

Download free eBooks at bookboon.com

Discount houses usually have unique prudential requirements:

- No cash reserve requirement (motivation being that *they do not create credit*; they merely hold and trade in credit instruments already issued).
- A reasonable level of borrowings in relation to its capital and reserves. In South Africa it was: (call money + borrowings) / (capital and reserves) < or = to 50.
- Limits on non-liquid assets, for example, 80% short term liquid asset paper and 20% long term paper (government bonds and other non-liquid assets). This requirement essentially is a liquid asset requirement.

An interesting aspect of discount houses is that they, in the process of creating markets and building the financial system, bring about their own demise over time. Because they shrink bank margins, they shrink their own, and are obliged, in order to survive, to intrude on normal banking business. This does not enthral the banks, making them complain bitterly to the authorities, and eventually the authorities encourage the discount houses to transmute into banks. This happened or is happening in most of the countries that had / has these unique institutions.

4.4 Rationale, objectives & principles of regulation[38]

4.4.1 Introduction

There are four elements to regulation:

- Institution of rules of conduct (or rules for operation).
- Monitoring (observance of whether the rules instituted are obeyed).
- Supervision (observance of the behaviour of participants).
- Enforcement (ensuring that the rules are adhered to).

Regulation has a profound effect on the operation of the financial markets and its development, and it has to be adjusted frequently as developments in the financial sector take place (i.e. it must be efficient). However, to remain in step with innovation in the financial system is no mean task, because the business of the financial sector is innovation, and this applies particularly in banking which is at the very centre of the financial markets. New instruments are created frequently. For this and other reasons the regulatory authorities have to get the regulated "on board", i.e. involved in the regulation process, on the basis that the regulation of this sector is in the interests of the participants. Another important dimension of regulation is that it must be cost-effective. These and other issues pertaining to regulation are covered in this section under the following headings:

- Rationale for regulation.
- Objectives of regulation.
- Principles of regulation.

Download free eBooks at bookboon.com

4.4.2 Rationale for regulation

4.4.2.1 Introduction

The financial sector plays a pivotal role in the economy in that in its absence or partial failure the economic machine will be severely damaged. Imagine if the payments system failed or the banks are closed for extended periods (such as occurred in Argentina in 2001/2 – where segments of the economy were reduced to barter trade). The financial sector is also a major employer and is a major attractor of foreign exchange if soundly managed. This sector also carries the responsibility of allocating capital to the most productive uses.

The main rationale for government intervention is "market malfunction" which means that the financial system will produce a sub-optimal outcome in the absence of regulation. Thus, government intervention has welfare benefits. The consumer and the participants want regulation and are even prepared to pay for it.

The "rationale" for regulation amounts to "why regulation is necessary" There are a number of reasons:

- Systemic malfunction.
- Market imperfections.
- The moral hazard problem.
- Economies of scale.
- Consumer confidence and consumer demand for regulation.
- Supplier demand for regulation.

4.4.2.2 Systemic malfunction

As we have mentioned, the financial *system* plays a vital role in the economy, and failure or malfunction of the system can disrupt economic activity severely. Banks are the only financial intermediaries that intermediate between all sectors of the economy (household, corporate, government and foreign) and all the other financial intermediaries. In addition, the banking system provides the payments and clearing systems for all transactions that take place in the economy. The failure of a major bank not only causes losses for depositors and shareholders, but also disrupts payments and the settlement of previously effected transactions immediately and possibly for some time.

Within the financial sector there are major differences between intermediaries in terms of systemic issues. The banks are the prime focus in this regard because of the reasons: the payments system, the size of banks in relation to other financial intermediaries (the largest repository of financial wealth in the economy), the possibility of bank runs, and the fact that there are few large banks. The failure of one unit trust, for example, will not disrupt the functioning of the economy.

Download free eBooks at bookboon.com

4.4.2.3 Market imperfections

If the market were perfect in terms of competition, there would be no cause for intervention by the authorities. Perfect competition does not exist, and the consequence is that there are market imperfections. There are many examples of market imperfections that stand in the way of consumer protection:

- Problems of asymmetric information. This means that some persons have information that is denied to other persons or some persons supply information that is ambiguous or incorrect to other persons.
- Inadequate information on the part of the consumer of financial products and services.
- Consumers are not equally equipped to gauge the quality of bank products.
- Consumers are not able to assess the safety and soundness of financial intermediaries and agents in the financial system.
- Principal-agent problems. The directors and managers act as *agents* for the investors and shareholders of a financial intermediary (i.e. the *principals*). However, the agents may pursue their own interests at the expense of the principals. The best example is that the managers and directors may have a performance bonus scheme that encourages them to take risks in the financial markets.

Download free eBooks at bookboon.com

Click on the ad to read more

4.4.2.4 The moral hazard problem

The moral hazard problem in banking is associated with government preference for the introduction of safety net arrangements such as lender of last resort facilities and deposit insurance. The most potentially hazardous is the latter. Deposit insurance creates a condition that the event insured against (losing the deposit) is more likely to occur.

4.4.2.5 Economies of scale

Users of financial products (e.g. deposits) ideally should monitor the behaviour and soundness of financial intermediaries and markets. However, this is a laborious and costly task in terms of time involved. Essentially, the regulatory authorities undertake this task on behalf of the users. Rating agencies also play a role in this regard, but the cost of the reports of the rating agency is expensive for the proverbial man in the street.

4.4.2.6 Consumer confidence and consumer demand for regulation

The role of regulation is also to set minimum standards for products in order that consumers gain confidence in the system. The mere existence of inferior products may tarnish the good products. Consumer demand for regulation is rational for the following reasons:

- Lower transactions costs.
- Consumers have a lack of information and even if they had information they lack the ability to use the information.
- Consumers require a degree of assurance in their transactions with financial intermediaries.
- They may have had a bad experience with a bank in the past.
- The value of a long-term contract (e.g. a 3-year deposit) may be affected by the behaviour of the intermediary during the period of the deposit.

4.4.2.7 Supplier demand for regulation

It is in the interests of the suppliers of financial products to demand regulation. The motivation is that ill-behaved intermediaries may affect the business of well-behaved intermediaries. In some countries the ratio of notes in circulation to total money stock is significantly higher than in other countries, despite the existence of well-managed intermediaries. Clearly this means that the consumer keeps his/her wealth in bank notes under the proverbial mattress as opposed to bank deposits (and foregoes a return).

Download free eBooks at bookboon.com

4.4.3 Objectives of regulation

4.4.3.1 Introduction

The ultimate objectives of regulation need to be narrowly defined:

- Promotion of financial stability.
- Promotion of fair and healthy competition.
- Promotion of consumer protection.

The first two objectives may be rolled together under the heading "high degree of economic efficiency"

4.4.3.2 Promotion of financial stability

"Financial stability" is usually seen as having two elements, i.e. *price stability* and *stable conditions in the financial system*. A central bank defines these two elements as follows[39]:

> *"Price stability is achieved when changes in the general price level do not materially affect the economic decision-making processes. Although relative price movements will still have an impact on production, consumption, saving and investment, the rate of inflation or deflation would be so low that it would no longer be an important factor in economic decision making."*

Download free eBooks at bookboon.com

Click on the ad to read more

> *"Stable conditions in the financial sector are achieved when there is a high degree of confidence that the financial institutions and financial markets are able to meet contractual obligations without interruption or recourse to outside assistance. Such stable conditions do not preclude the failure of individual financial institutions. A financial institution can fail and be allowed to fail even under stable financial conditions. It is only when the whole, or an important part, of the financial sector is at risk, that the situation can be described as financially unstable."*

These two elements of financial stability are interrelated. It will be evident that financial regulation pertains to the second element, i.e. stability of the financial sector (or "promotion of financial stability", as the heading of this section states). This objective may be split into two categories:

- Systemic stability.
- Institutional safety and soundness.

Systemic stability means that the financial *system* is not compromised in any way, i.e. that the financial system is not subjected to shocks caused by the participants themselves through reckless trading, poor market infrastructure and inefficient clearing and settlement systems, lack of market liquidity, inefficient payments system and ineffective security delivery system (the latter is also called "delivery versus payment").

Institutional safety and soundness is closely related to the aforementioned and means that the authorities have to ensure that the intermediaries that make up the financial system are profitable, have sufficient capital to cover risk exposures, are competitive internationally, and are driven by "fit and proper" management and directors. Promotion of i*nstitutional safety and soundness* also means that the regulator should not impose regulatory hurdles that would impair their safety.

4.4.3.3 Promotion of fair and healthy competition

A major objective of the regulator is the promotion of fair and healthy competition in the financial system. This ensures competitiveness internationally, and fair pricing for the consumers of financial products. Healthy competition and fair pricing also aids in the efficient allocation of financial capital.

Another important dimension here is the effectiveness of monetary policy. Monetary policy can only be effective in an environment of intense competition amongst financial intermediaries, and this applies particularly to the banks.

Download free eBooks at bookboon.com

4.4.3.4 Promotion of consumer protection

A crucial objective of the regulator is to protect the consumer against the failure of intermediaries and against fraud. Fraud may take many forms, such as manipulation of share prices, concealment of crucial information from the investor / depositor, the sale of inappropriate policies (just to "earn" the commission), insider trading, and the misuse or plain stealing of the investor's funds. With the exception of the latter, these methods of fraud are possible because of the problem of "asymmetric information".

The job of the regulatory authorities in this regard is to promote integrity, transparency and disclosure of information of participants' firms and products. For this reason much emphasis is placed on the integrity of directors and managers of suppliers of financial products, as well as the agents for these products. Proper education of the suppliers and consumers is part of the job of the regulator.

4.4.4 Principles of regulation

4.4.4.1 Introduction

The principles of regulation are the principles that need to be applied when formulating regulatory policies, specific regulatory requirements and the structure of the regulatory institutions. They are derived from the objectives and may be categorised as follows:

- Efficiency-related principles.
- Stability-related principles.
- Conflict-conciliatory principles (to address conflicts between objectives).
- Regulatory-structure principles.
- General principles.

4.4.4.2 Efficiency-related principles

The principles that reside under this heading advance the achievement of a high level of *efficiency* in financial services, and there are two:

- Promotion of a high level of competition amongst financial system participants. Examples:
  - the removal of restrictive practices that impair trading in financial assets,
  - low barriers of entry to the financial markets,
  - freedom of choice regarding financial services.

- Creating competitive neutrality between existing and potential supplies of financial services ("level playing field").

Download free eBooks at bookboon.com

4.4.4.3 Stability-related principles

Stability-related principles are those that contribute to the promotion of stability in the financial system and the safety of financial intermediaries and institutions. They are:

- Incentives for the prudent assessment and management of risk. This requires the imposition of minimum prudential standards to be observed by participants, of which the capital requirement is the most important. Appropriate information systems are required. Cross-market risk management is also essential.
- Use of regulatory requirements that are based on market values. The viability of an institution can only be gauged with the use of market values of balance sheet items as opposed to historic values.
- A willingness of the regulators to take timely action to redress existing and future developments that threaten the stability of financial institutions and markets. By this is meant that the regulators should take appropriate action whenever actual or potential market deficiencies are detected.

Download free eBooks at bookboon.com
Click on the ad to read more

4.4.4.4 Conflict-conciliatory principles

Conflict-conciliatory principles are designed to address potential conflicts between regulatory principles. These principles involve:

- Following an integrated approach, aiming at the simultaneous achievement of the objectives of regulation.
- Pursuing a target-instrument procedure, whereby the regulatory instruments are selected and applied in such a way that they facilitate the implementation of the integrated approach.

The target-instrument procedure means that the instruments of regulation used to achieve particular targets simultaneously neutralise the negative effects of other instruments.

4.4.4.5 Regulatory-structure principles

An unsolved debate in regulation circles is whether there should be a single regulator or a number of specialist regulators. This is a debate that is particularly relevant as the financial system becomes more and more complex. The principles are:

- Following a *functional* as well as an *institutional* approach to regulation.
- Co-ordination of regulation by different agencies in order to assure consistency in regulation.
- A preference for a small number of regulatory agencies.

4.4.4.6 General principles

General principles are those that have a bearing on the general conduct of the regulatory process, and they are:

- Each regulatory arrangement must be related to one or more of the objectives identified.
- Regulatory arrangements must be cost-effective. A judgement has to be made on how far the objectives are pursued and what cost is reasonable to bear.
- Cost of regulation must be distributed equitably. There are two models in this respect: the taxpayer via government that funds the regulator, or the user, i.e. the institution being regulated, funds the regulator.
- Regulatory arrangements must be flexible. This is because of the innovative nature of the environment regulated – the financial system.
- Regulatory arrangements should be practitioner-based, i.e. the regulated and the regulator must have a good relationship and the regulated must be involved in the process of regulation.

Download free eBooks at bookboon.com

4.5 Prudential requirements

4.5.1 Introduction

Of all financial industry legislation, banking legislation is the most multifaceted and wide-ranging. This is a reflection of the central role played by banks in the financial system, and the inventiveness of bankers, given their need to stay ahead of competitors. Consequently, the regulators have difficulty in staying ahead of developments, i.e. they tend to be a hop and a skip behind their private sector banking counterparts.

In the past it was fashionable to say that banking legislation is primarily aimed at the protection of the depositor, and specifically the small proverbial *man in the street* who does not have the skills to protect himself / herself from the odd unscrupulous banker. Nowadays, this is seen as a narrow focus. Banking legislation worldwide is focused increasingly on the integrity of the financial system, i.e. *financial stability*, discussed earlier.

The US subprime banking crisis, which had international repercussions, showed how interconnected the financial systems of the world are, and therefore the importance of *international financial stability*.

This crisis is not the first one; it follows many others, such as the Japanese bank crisis, the Asian crisis, and so on. These led to a number of international financial-stability proposals. One example is the G20 initiative, the Financial Stability Forum (FSF), through which these countries adopted 12 key standards for sound financial systems. These standards are issued by various standard-setting bodies (such as the IMF, the World Bank, the OECD, the Basel Committee), and cover the following areas/issues:

- Monetary and financial policy transparency.
- Fiscal policy transparency.
- Data dissemination.
- Insolvency.
- Corporate governance.
- Accounting and auditing.
- Payments and settlement.
- Market integrity.
- Banking supervision.
- Securities regulation.
- Insurance supervision.
- Public debt management.

Download free eBooks at bookboon.com

In conclusion, it is useful to quote from the keynote speech of President and CEO of the Federal Reserve Bank of New York[40]:

> *"In a world of instantaneous communication, interconnected markets, and more complex instruments and risks, effective supervision is more important than ever to maintaining financial stability, both locally and globally. To remain effective and relevant, supervisors must understand how and to what extent the 'wired' economy and other technologies are changing banking and finance…we must take care that our efforts to ensure the safe and sound operation of the financial markets do not stifle the innovation and creative energy that is changing banking and finance – indeed the world – for the better."*

The key word in this text is *risk*. Ultimately, bank management, and bank regulation and supervision are about the *management and regulation of risk*. The broad strokes of bank regulation and supervision for the G-20 (and generally accepted by the world) are set out in the Basel Accords. We discuss the Accords briefly, before moving on to the prudential requirements.

Download free eBooks at bookboon.com

Click on the ad to read more

4.5.2 Basel accords

The term Basel Accords (German spelling, also referred to as the Basle Accords, British spelling) refers to the banking regulation / supervision Accords of the Basel Committee on Banking Supervision (BCBS). The BCBS is situated at the Bank of International Settlements (BIS) in Basel, Switzerland. The G-20 economies, as well as some other major banking locales such as Turkey and Singapore, are represented on the BCBS.

Essentially, the Accords are recommendations on banking laws and regulations, and there are three: Basel I, Basel II and Basel III (in progress).The BCBS, as an informal forum of countries, creates broad supervisory standards / guidelines / statements of best practice in banking, in the expectation that member and other countries' supervisory authorities will implement them. It therefore encourages countries to adopt common approaches to and standards of supervision.

Basel I was published by the BCBS (then populated by the G-10 countries' banking supervision representatives) in 1988 and enforced in 1992. It published a set of minimum capital requirements for banks, primarily focused on credit risk. The assets of banks were placed in five categories according to credit risk, carrying risk weights of 0% (government securities) in steps up to 100% (unsecured corporate debt). Banks with international presence were required to hold capital equal to 8% of the risk-weighted assets.

Basel I is now generally regarded as outmoded. As financial conglomerates and product innovation spread, risk management had to change Therefore, a more comprehensive set of guidelines, known as Basel II, was developed by BCBS; these have been implemented by the G-20 and most other countries. Basel III, a response to the financial crisis, following the "Great Recession" of 2007–09, is being phased in over a long period (see below). Basel III builds on Basel II.

4.5.3 Basel II

4.5.3.1 Introduction

Basel II sets up risk and capital requirements, the intention being that a bank holds capital (and reserves, from here on just called capital) commensurate with the risk inherent in its loans (MD and NMD), shares and derivatives. This means the greater the risk the more capital is required to ensure its solvency; if this approach is adopted widely it contributes to financial stability, locally and internationally.

The Basel II Accord was endorsed in 2004, and rests on three pillars:

- Minimum capital requirement (addresses risk) (Pillar 1).
- Supervisory review (regulatory response to Pillar 1) (Pillar 2).
- Market discipline (promotes greater stability in the financial system) (Pillar 3).

Download free eBooks at bookboon.com

4.5.3.2 Pillar 1: minimum capital requirement

Pillar 1 addresses the maintenance of capital required for three major risk-types a bank faces:

- Credit risk.
- Market risk.
- Operational risk.

The other risks were not considered quantifiable at that stage. There are three approaches to determining *credit risk* (IRB = internal ratings based):

- Standardised approach.
- Foundation IRB approach.
- Advanced IRB approach.

The standardised approach reflects the Basel I requirement, discussed earlier, but adds a new 150% rating: for borrowers with poor credit ratings. The minimum capital requirement (percentage of risk weighted assets to be held as capital) is the same as Basel I: 8%. Banks which adopt the standardised ratings approach are obliged to rely on the ratings produced by external rating agencies. For this reason many banks have adopted / are adopting the IRB approach.

The preferred approach for *market risk* is VaR, discussed earlier.

There are three approaches for *operational risk*:

- Basic indicator approach.
- Standardised approach.
- Internal measurement approach.

4.5.3.3 Pillar 2: supervisory review (regulatory response to Pillar 1)

As indicated, Pillar 2 is the regulatory response to Pillar 1, and it presents regulators much improved "tools" over those available under Basel I. It also provides a framework for managing the other bank risks: systemic risk, pension risk, concentration risk, strategic risk, reputational risk, liquidity risk and legal risk.

4.5.3.4 Pillar 3: market discipline (promotes greater stability in the financial system)

Pillar 3 promotes the sharing of bank information, which facilitates assessment of the bank by other bodies such as analysts, investors, customers, other banks and rating agencies. This amounts to peer review / market discipline, and it supplements regulation in that it leads to sound corporate governance.

Download free eBooks at bookboon.com

Pillar 3 encourages banks to make available to the general public the details of their management procedures regarding risk, and therefore capital adequacy. The public disclosures that banks are obliged to make under Basel II enable market participants (mentioned above) to develop a good understanding of the risk profile of the bank and commensurate capital compliance. Thus, they will be able reward / punish banks (in terms of share and bond prices, i.e. the price of existing and new capital) according to risk management procedures and capital adequacy.

4.5.4 Basel III

As mentioned above, Basel III builds on Basel II. As expressed by the BIS[41]: "Basel III is part of the Committee's continuous effort to enhance the banking regulatory framework… [It is] a comprehensive set of reform measures…to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to:

- improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source
- improve risk management and governance
- strengthen banks' transparency and disclosures.

Download free eBooks at bookboon.com
Click on the ad to read more

The reforms target:

- bank-level, or microprudential, regulation, which will help raise the resilience of individual banking institutions to periods of stress
- macroprudential, system wide risks that can build up across the banking sector as well as the procyclical amplification of these risks over time.

These two approaches to supervision are complementary as greater resilience at the individual bank level reduces the risk of system wide shocks."

Basel Committee on Banking Supervision reforms - Basel III

Strengthens microprudential regulation and supervision, and adds a macroprudential overlay that includes capital buffers.

	Capital					Liquidity
	Pillar 1			Pillar 2	Pillar 3	
	Capital	Risk coverage	Containing leverage	Risk management and supervision	Market discipline	Global liquidity standard and supervisory monitoring
All Banks	**Quality and level of capital** Greater focus on common equity. The minimum will be raised to 4.5% of risk-weighted assets, after deductions. **Capital loss absorption at the point of non-viability** Contractual terms of capital instruments will include a clause that allows – at the discretion of the relevant authority – write-off or conversion to common shares if the bank is judged to be non-viable. This principle increases the contribution of the private sector to resolving future banking crises and thereby reduces moral hazard. **Capital conservation buffer** Comprising common equity of 2.5% of risk-weighted assets, bringing the total common equity standard to 7%. Constraint on a bank's discretionary distributions will be imposed when banks fall into the buffer range. **Countercyclical buffer** Imposed within a range of 0-2.5% comprising common equity, when authorities judge credit growth is resulting in an unacceptable build up of systematic risk.	**Securitisations** Strengthens the capital treatment for certain complex securitisations. Requires banks to conduct more rigorous credit analyses of externally rated securitisation exposures. **Trading book** Significantly higher capital for trading and derivatives activities, as well as complex securitisations held in the trading book. Introduction of a stressed value-at-risk framework to help mitigate procyclicality. A capital charge for incremental risk that estimates the default and migration risks of unsecuritised credit products and takes liquidity into account. **Counterparty credit risk** Substantial strengthening of the counterparty credit risk framework. Includes: more stringent requirements for measuring exposure; capital incentives for banks to use central counterparties for derivatives; and higher capital for inter-financial sector exposures. **Bank exposures to central counterparties (CCPs)** The Committee has proposed that trade exposures to a qualifying CCP will receive a 2% risk weight and default fund exposures to a qualifying CCP will be capitalised according to a risk-based method that consistently and simply estimates risk arising from such default fund.	**Leverage ratio** A non-risk-based leverage ratio that includes off-balance sheet exposures will serve as a backstop to the risk-based capital requirement. Also helps contain system wide build up of leverage.	**Supplemental Pillar 2 requirements.** Address firm-wide governance and risk management; capturing the risk of off-balance sheet exposures and securitisation activities; managing risk concentrations; providing incentives for banks to better manage risk and returns over the long term; sound compensation practices; valuation practices; stress testing; accounting standards for financial instruments; corporate governance; and supervisory colleges.	**Revised Pillar 3 disclosures requirements** The requirements introduced relate to securitisation exposures and sponsorship of off-balance sheet vehicles. Enhanced disclosures on the detail of the components of regulatory capital and their reconciliation to the reported accounts will be required, including a comprehensive explanation of how a bank calculates its regulatory capital ratios.	**Liquidity coverage ratio** The liquidity coverage ratio (LCR) will require banks to have sufficient high-quality liquid assets to withstand a 30-day stressed funding scenario that is specified by supervisors. **Net stable funding ratio** The net stable funding ratio (NSFR) is a longer-term structural ratio designed to address liquidity mismatches. It covers the entire balance sheet and provides incentives for banks to use stable sources of funding. **Principles for Sound Liquidity Risk Management and Supervision** The Committee's 2008 guidance *Principles for Sound Liquidity Risk Management and Supervision* takes account of lessons learned during the crisis and is based on a fundamental review of sound practices for managing liquidity risk in banking organisations. **Supervisory monitoring** The liquidity framework includes a common set of monitoring metrics to assist supervisors in identifying and analysing liquidity risk trends at both the bank and system-wide level.
SIFIs	In addition to meeting the Basel III requirements, global systemically important financial institutions (SIFIs) must have higher loss absorbency capacity to reflect the greater risks that they pose to the financial system. The Committee has developed a methodology that includes both quantitative indicators and qualitative elements to identify global systemically important banks (SIBs). The additional loss absorbency requirements are to be met with a progressive Common Equity Tier 1 (CET1) capital requirement ranging from 1% to 2.5%, depending on a bank's systemic importance. For banks facing the highest SIB surcharge, an additional loss absorbency of 1% could be applied as a disincentive to increase materially their global systemic importance in the future. A consultative document was published in cooperation with the Financial Stability Board, which is coordinating the overall set of measures to reduce the moral hazard posed by global SIFIs.					

Table 1: Summary of Basel III requirements
Source: BIS.

A summary of the Basel III requirements is presented in Table 1, and the phase-in arrangements in Table 2.

Download free eBooks at bookboon.com

Basel III phase-in arrangements
(All dates are as of 1 January)

Basel Committee on Banking Supervision
BANK FOR INTERNATIONAL SETTLEMENTS

	Phases	2013	2014	2015	2016	2017	2018	2019
Capital	Leverage Ratio		Parallel run 1 Jan 2013 – 1 Jan 2017 Disclosure starts 1 Jan 2015				Migration to Pillar 1	
	Minimum Common Equity Capital Ratio	3.5%	4.0%	4.5%				**4.5%**
	Capital Conservation Buffer				0.625%	1.25%	1.875%	**2.5%**
	Minimum common equity plus capital conservation buffer	3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	**7.0%**
	Phase-in of deductions from CET1*		20%	40%	60%	80%	100%	**100%**
	Minimum Tier 1 Capital	4.5%	5.5%	6.0%				**6.0%**
	Minimum Total Capital		8.0%					**8.0%**
	Minimum Total Capital plus conservation buffer		8.0%		8.625%	9.25%	9.875%	**10.5%**
	Capital instruments that no longer qualify as non-core Tier 1 capital or Tier 2 capital		Phased out over 10 year horizon beginning 2013					
Liquidity	Liquidity coverage ratio – minimum requirement			60%	70%	80%	90%	**100%**
	Net stable funding ratio						Introduce minimum standard	

* Including amounts exceeding the limit for deferred tax assets (DTAs), mortgage servicing rights (MSRs) and financials.
– – transition periods

Table 2: Basel III phase-in arrangements
Source: BIS.

4.5.5 The banking statute: general

While the Basel Accord presents the broad outline of prudential requirements, it is individual countries that adopt and implement them, and they do so via the local banking statute and regulations under the statute. While the local banking statute provides a broad brush to local regulation, the regulations under the statute provide the details.

The banking statute of most countries is elaborate. In Box 1 we present the outline (chapter and section headings) of one such statute[42] in order to indicate its multifaceted nature. The statute is enacted "To provide for the regulation and supervision of the business of public companies taking deposits from the public; and to provide for matters connected therewith."

Download free eBooks at bookboon.com

BOX 1: CHAPTER AND SECTION HEADINGS OF A BANKING STATUTE

CHAPTER I: INTERPRETATION AND APPLICATION OF ACT

1. Definitions
2. Exclusions from application of Act

CHAPTER II: ADMINISTRATION OF ACT

3. Office for Banks
4. Registrar and Deputy Registrar of Banks
5. Delegation of powers and assignment of functions by Registrar
6. Powers of inspection of, and guidelines by, Registrar
7. Furnishing of information by banks
8. Power of Registrar to extend certain periods
9. Appeal against decisions of Registrar
10. Annual report by Registrar

CHAPTER III: AUTHORIZATION TO ESTABLISH, AND REGISTRATION AND CANCELLATION OF REGISTRATION OF, BANKS

11. Registration a prerequisite for conducting business of bank
12. Application for authorization to establish bank
13. Granting or refusal of application for authorization
14. Revocation of authorization
15. Formation of certain companies prohibited except with approval of Registrar
16. Application for registration as bank
17. Granting or refusal of application for registration
18. Conditions of registration
18A. Branches of foreign institutions
18B. Cancellation or suspension of authorization by Registrar and notice by Registrar of intention to cancel or suspend authorization
19. Repealed
20. Repealed
21. Untrue information in connection with applications
22. Use of name of bank
23. Cancellation or suspension of registration by Registrar
24. Notice by Registrar of intention to cancel or suspend registration
25. Cancellation or suspension of registration by court
26. Restriction by Registrar of activities of bank
27. Cancellation of registration at request of bank
28. Cancellation of registration upon winding-up
29. Withdrawal of suspension or restriction
30. Publication of information relating to banks and representative offices of foreign institutions
31. Date on which registration lapses
32. Repayment of deposits upon lapse of registration
33. Reregistration in terms of this Act
33A. Reregistration after commencement of Banks Amendment Act, 1994
34. Representative offices of foreign institutions
35. Annual licence

Download free eBooks at bookboon.com

CHAPTER IV: SHAREHOLDING IN, AND REGISTRATION OF CONTROLLING COMPANIES IN RESPECT OF, BANKS

36. Repealed
37. Permission for acquisition of shares in bank or controlling company
38. Registration of shares in name of nominees
39. Furnishing of information by shareholders
40. Absence of wrongful intent
41. Effects of registration of shares contrary to Act
42. Restriction of right to control bank
43. Application for registration as controlling company
44. Granting or refusal of application for registration as controlling company
45. Cancellation by Registrar of registration of controlling company
46. Cancellation by court of registration of controlling company
47. Cancellation of registration at request of controlling company
48. Lapse of registration of controlling company upon cancellation of registration of bank
49. Date on which registration of controlling company lapses
50. Investments by controlling companies

CHAPTER V: FUNCTIONING OF BANKS AND CONTROLLING COMPANIES WITH REFERENCE TO COMPANIES ACT

51. Application of Companies Act to banks and controlling companies
52. Subsidiaries, branch offices, other interests and representative offices of banks and controlling companies
53. Disclosure by banks and controlling companies of interest in subsidiaries, trusts and other undertakings
54. Compromises, amalgamations, arrangements and affected transactions
55. Reconstruction within group of companies
56. Alteration of memorandum of association or articles of association, and change of name
57. Alteration of memorandum of association or articles of association in accordance with direction of Registrar
58. Information regarding directors and officers
59. Returns regarding shareholders
60. Directors of bank or controlling company
61. Appointment of auditor
62. Appointment of auditor by Registrar
63. Functions of auditor in relation to Registrar
64. Audit committee
65. Forwarding of certain notices, reports, returns and financial statements to Registrar
66. Disclosure of issued share capital
67. Disclosure of names of certain shareholders
68. Special provisions relating to winding-up or judicial management of bank
69. Appointment of curator to bank
69A. Investigation of affairs of bank under curatorship

CHAPTER VI: PRUDENTIAL REQUIREMENTS

70. Minimum share capital and unimpaired reserve funds
70A. Minimum share capital and reserve funds in respect of banking group
71. Repealed
72. Minimum liquid assets
73. Large exposures
74. Failure or inability to comply with prudential requirements
75. Returns

Download free eBooks at bookboon.com

CHAPTER VII: PROVISIONS RELATING TO ASPECTS OF THE CONDUCT OF THE BUSINESS OF A BANK

76. Restriction on investments in immovable property and shares, and on loans and advances to certain subsidiaries
77. Restriction on investments with, and loans and advances to, certain associates
78. Undesirable practices
79. Shares, debentures, negotiable certificates of deposit and share warrants
80. Limitation on certain activities of banks

CHAPTER VIII: CONTROL OF CERTAIN ACTIVITIES OF UNREGISTERED PERSONS

81. Order prohibiting anticipated or actual contraventions of certain provisions of Act
82. Registrar's power to exact information from unregistered persons
83. Repayment of money unlawfully obtained
84. Management and control of repayment of money unlawfully obtained

Download free eBooks at bookboon.com

Click on the ad to read more

CHAPTER IX: GENERAL PROVISIONS

85. Certification of returns and other documents
86. Inspection, copies and keeping of documents
87. Minors and married women as depositors
88. Limitation of liability
89. Furnishing of information by Registrar
90. Regulations
91. Offences and penalties
92. Review of Act
93. Interpretation of certain references in existing laws and in other documents
94. Amendment of section 3 of Act 61 of 1973, as amended by section 106 of Act 82 of 1986
95. Repeal of laws, and savings
96. Short title

4.5.6 The banking statute: prudential requirements

4.5.6.1 Introduction

It goes without saying that the entire statute is devoted to the regulation and supervision of banks. However, only certain sections funnel in on risk management and ultimately on the solvency of banks. Of these, the most significant are the prudential requirements, which are:

- Share capital and unimpaired reserve fund.
- Liquid assets.
- Large exposures.
- Reserve requirement.
- Returns.

4.5.6.2 Share capital and unimpaired reserve fund

The statute / regulations under the statute define what qualifies as primary (ordinary shares, etc) and secondary share capital and unimpaired reserve funds, and prescribe the minimum amount of share capital and unimpaired reserves to be held, which is related to the risk/s[43] the bank is exposed to.

4.5.6.3 Liquid assets

The statute lists the assets which rank as liquid assets (LA). In most countries they are:

- Treasury bills.
- Short-term government bonds (< 3-years to maturity).
- Central bank money: bank notes and coins, reserves with the central bank.
- Bills of the central bank.

The regulations under the statute prescribe a minimum amount of liquid assets to be held, which is a ratio of deposits / liabilities, for example 5%. The ratio resides in the regulations because it can be changed.

Download free eBooks at bookboon.com

4.5.6.4 Large exposures

The statute of most countries state that: a bank shall not make investments with or grant loans or advances or other credit to any person, to an aggregate amount exceeding an amount representing a prescribed percentage of such bank's capital and reserves. The regulations under the statute then prescribe the ratio, for example 10%.

4.5.6.5 Reserve requirement

In most countries the banks are obliged to comply with *a (cash) reserve requirement.* Banks are required to maintain a certain minimum amount (e.g. 5% of deposits) in reserves, defined as bank deposits with the central bank. This requirement is related to liquidity risk (and some scholars see it as a monetary policy tool).

4.5.6.6 Returns

Returns at first glance may not seem like a prudential requirement. However, it is a *crucial* prudential requirement, because the collection of the right information by the supervisor is vital to the supervision function, and ultimately to the regulatory function. The returns that the banks are obliged to complete and submit to the Registrar of Banks are formidable, and require sophisticated IT systems.

4.5.7 The banking statute: other requirements associated with risk management

Other requirements of the banking statute associated with risk management include:

- Licensing of bank. The barriers to entry are high.
- The power of inspection of the Registrar of Banks. The statute determines that the Registrar has extensive powers of inspection, and may do so at any time.
- Furnishing of information by banks. Apart from the requirement to submit myriad detailed returns to the Registrar, this office has the power to request / demand any other information from banks.
- Only specific persons may be officers and directors of the banks. The statute is stringent in respect of the requirements (fit and proper and experience) of the persons who are directors and executive officers of banks. Also, the composition of the board of directors must be relevant to the nature of the bank's business.
- Fiduciary duties of non-executive directors. Directors are required to act in the best interests and for the benefit of the bank, its depositors and its shareholders.
- Restriction of voting of executive directors. In most countries, the statute ensures that the executive directors may not enjoy the majority of the vote at board meetings.
- Special functions of the auditor and the audit committee. In many countries a bank is obliged to appoint two auditors, and the auditors are required to furnish the Registrar with any information they may have regarding irregularities and any matter that may endanger the continued existence of the bank.

Download free eBooks at bookboon.com

4.6 Bibliography

ABSA Bank Limited, 1992. **Banks**. In Falkena, HB, et al (editors), *Financial institutions*. Halfway House: Southern Book Publishers.

Bessis, W, 1999. **Risk management in banking**. New York: John Wiley and sons.

Heffernan, S, 2000. **Modern banking in theory and practice**. New York: John Wiley and sons.

Grameen Bank [Online]. Available: www.grameenbank.org. [Accessed various dates].

Institute of Bankers in South Africa, 2002. [Online]. Available: www.iob.co.za. [Accessed June 2000].

McInish, TH. 2000. *Capital markets: A Global Perspective*. Blackwell Publishers Inc., Oxford.

Mishkin, FS and Eakins, SG, 2000. **Financial markets and institutions**. Reading, Massachusetts: Addison Wesley Longman, Inc.

Office of the Banking Adjudicator, 2002. [Online]. Available: www.oba.org.za. [Accessed June 2002].

Pilbeam, K. 1998. *Finance and financial markets*. London: Macmillan Press Limited.

Download free eBooks at bookboon.com

Click on the ad to read more

Public Investment Commissioners, 2003. Annual Report.

Reilly, FK and Brown, KC. 2003. *Investment analysis and portfolio management*. Mason, Ohio: Thomson South Western.

Rose, PS, 2000. **Money and capital market**s (international edition). New York: McGraw-Hill Higher Education.

Saunders, A, and Cornett, MM, 2001. **Financial markets and institutions** (international edition). New York: McGraw-Hill Higher Education.

Santomero, AM and Babbel, DF, 2001. **Financial markets, instruments and institutions** (second edition). Boston: McGraw-Hill/Irwin.

The Standard Bank of South Africa Limited, 2004. [Online]. http://www.standardbank.co.za/. [Accessed various dates].

South African Reserve Bank, 2001. *Annual report of the Bank Supervision Department*.

Statutes of the Republic of South Africa, 1989. *South African Reserve Bank Act, 90*.

Statutes of the Republic of South Africa, 1990. *Banks Act, 94*.

Statutes of the Republic of South Africa, 2000. *Regulations relating to banks*. Issued in terms of the Banks Act 94 of 1990, Government Notice R.1112, Government Gazette No. 21726, 8 November.

World Bank, 2005. **Deposit insurance around the world: a comprehensive database**. World Bank Policy Research Working Paper 3628, Washington D.C.: World Bank. [Online]. Available at: http://econ.worldbank.org, [Accessed December 2005].

Download free eBooks at bookboon.com

5 Endnotes

1. M3 is a broad measure of money and includes all bank deposits held by the domestic non-bank private sector (NBPS).
2. In this text we use the monetary unit "corona" of fictitious country "Local Country". Its currency code is LCC.
3. Examples are Reserve Bank of Malawi bills, Bank of Botswana certificates, and South African Reserve bank debentures. They can be regarded as a type of deposit security.
4. This section benefited from Heffernan, 1996.
5. Heffernan, 1996 (p 2).
6. See Mishkin, FS and Eakins, SG (2000: 395).
7. Note here that the words "part of the risk…" were used. This is because portfolio theory teaches us that these are two types of risk: systematic risk and unsystematic risk, and that only the latter can be diversified away.
8. *Expenditure on GDP*; this is the demand side of GDP; the other is the supply side.
9. The many smaller accounts, such as remittances in transit, fixed property, etc.
10. As noted, we ignore bank holdings a shares because it is such a small part of assets.
11. Note that "domestic" applies as the deposits of the foreign sector (= small) are excluded.
12. It will be pretty obvious that banks only lend when they consider the borrower to be creditworthy or the project to be viable (in the case of corporate borrowing).
13. LCC is the currency code for fictitious country Local Country (LC); the monetary unit of LC is called Corona (C).
14. This is a separate and interesting issue, which will detract from the principles we are discussing; therefore it will not be discussed here.
15. As we will show in a separate text, if there was another bank, the interbank market will make the market balance. We do not introduce this here in the interests of sticking to the principles.
16. A term used by my supervisor, mentor and boss, Dr JH Meijer, when I was a junior employee and he the Head of the Money and Banking Division of the central bank. Dr Meijer went on to become Deputy Governor.
17. At times banks do have excess reserves (usually as a result of an interbank settlement error). In certain developing countries banks have chronic ER (this is an interesting topic on its own). The concept NER accommodates this situation.
18. An extreme example: if its deposits (as a result of new loans) increase by LCC 100 million on 1 June, a bank, on the basis of its 30 June asset and liability return (which is submitted on say 21 July), is required to increase its reserves by LCC 10 (assuming an *r* of 10%) on 21 July. By that time many other items in the CB's balance sheets will have changed (such as the bank notes issue). The CB's job is to maintain a level of bank liquidity it deems appropriate for making the KIR effective.
19. "Most" is used because open-ended securities unit trusts transfer the risks of the trust to the unit holders.
20. See McInish, 2000:304.
21. See Reilly and Brown, 2003 (pp 210-211).
22. See Heffernan, 2000:164–165.
23. KIR is a benchmark rate; other benchmark rates are the 91-day TB rate and prime rate)

Download free eBooks at bookboon.com

24. A reminder of a yield curve: the relationship between interest return and term to maturity of homogenous securities (in this case government securities) at a specific time.
25. Excluding the many costs banks face.
26. South African Reserve Bank.
27. Certain intermediaries may also have positions in commodities such as gold.
28. South African Reserve Bank.
29. Standard Bank: www.standardbank.co.za
30. See Saunders and Cornett, 2001:599–603
31. South African Reserve Bank.
32. This section benefited much from Mishkin & Eakins, 2000:620–624.
33. South African Reserve Bank in this case.
34. In this regard see Santomero and Babbel, 2001 (the piece following relies heavily on this source; the example is same).
35. South African Reserve Bank in this case.
36. South African Reserve Bank in this case.
37. Grameen Bank, 2004. The pieces below in inverted commas are from the same source.
38. This section draws heavily on Falkena, et al, 2001, and Pilbeam, 1998.
39. South African Reserve Bank, www.reservebank.co.za
40. WJ McDonough; delivered at the Eleventh International Conference of Banking Supervisors, Basel, Switzerland, 20 September 2000.
41. http://www.bis.org/bcbs/basel3.htm. [Accessed June 2013.]
42. The South African Banks Act, No 94 of 1990, as amended.
43. In the case of credit risk: minimum capital required (MCR) = or > than: BCR × RW × A, where BCR= base capital requirement, RW = the asset's risk weighting, A = average amount of the asset held (or off-balance activity) in the period. For example, if the risk weighting of mortgages is 100% and the average amount the bank has on-balance sheet in the period is LCC 200 million, then the MCR against this asset is: BCR × RW × A = 10% × 100% × LCC 200 million = LCC 20 million.