

**Bank margins and related
profitability in South Africa**
A study

KPMG
20 November 1998
This report contains 58 pages

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1 Introduction and scope of study

This independent study into bank margins and related profits earned by South African banks was commissioned in July 1998 by the SARB in response to a wave of criticism directed towards the level of profitability of the local banking industry in the face of high interest rates threatening to push the economy into recession.

Our mandate, which has been approved by the Ministry of Finance, is set out below:

“To complete an independent study into bank margins and related profitability earned by South African banks, specifically those banks engaged in retail banking, and to report our findings to the Registrar of Banks. The study should focus on the profitability of banks from the intermediation function (the collecting of deposits from the general public and the lending of those funds) and the extent to which banks satisfy minimum investor expectations from banking activities including the intermediation function. The study should also consider international research into the determinants of bank margins and profitability, where possible, and benchmark local margins and their contribution to profitability against comparable banks in other countries. The purpose of the study is to determine whether local banks in their capacity as intermediaries in the financial markets enjoy wide margins thereby generating excessive returns to investors, at the expense of depositors and borrowers.”

This is not a comprehensive study of the business of banking nor is it intended to be a dissertation on banking risks. We were not mandated to consider the level of transaction fees nor did we extend this study to efficiency criteria, such as a study of the optimum cost to income ratio, when considering the quantum of net interest income necessary to sustain minimum expected returns on equity.

This report is structured to provide the reader in the first instance with a broad overview of how the banking industry works, before discussing the formation of interest rates - an appreciation of both being fundamental to understanding bank margins and related profitability.

The report covers the determinants of bank interest margins and profitability based on empirical research of banks in 80 countries, including 15 banks in South Africa, covering the period 1988 to 1995. We then discuss banking in South Africa, focusing specifically on the four major banks, covering the measures of bank profitability, capital management and the components of net income after tax or the return available to shareholders, including the contribution of net interest income and non-funded income to overall profitability.

The study then analyses the composition of the four major banks' income statements, differentiating in the first instance between what we have termed “lending” and “non-lending” activities and in the second instance determining the profitability of these two activities after taking into account the “cost of capital”, an economic measure of profitability vital to a true assessment of whether banks actually meet investor expectations considering the risk premium attached to investing in bank shares rather than in “risk-free” investments.

Finally we draw our conclusions.

The study was complex - it involved gathering financial data in a consistent form from the retail banking sector, computing the true margins earned by each of the retail banks after taking into account funding and operational costs, including inter alia extra-ordinary costs associated with security, white collar crime and robberies. It then required research as to whether there is any correlation between wide bank margins and high lending rates before benchmarking local margins against those earned by comparable banks in other countries, including countries with similar ratings as South Africa.

2 How the banking industry works

2.1 An overview

This is not a study of the business of banking nor is it intended to be a dissertation on banking risks. However, to have an appreciation of bank margins and related profitability, a broad understanding of how the banking industry works is necessary.

Banks serve as intermediaries between customers who save and customers who borrow. Their principal activities are to collect deposits and disburse loans in the capacity of principals. There is, however, a wide diversity among individual banks in terms of the markets they serve and their sources of earnings. In South Africa, the four major banks generally serve the same markets and derive their earnings from common sources.

2.2 Banking risks

In the banking industry, numerous risks impact on profitability.

During the seventies a number of factors helped stabilise the banking industry. The industry was heavily regulated and commercial banking operations basically centered around soliciting deposits and lending. Regulators were concerned by the safety of the industry and central bankers by the control of their ability to create money. Rules limited the scope of banking operations and limited their risks as well. There were low incentives to change and to competition.

During the later part of the seventies and during the eighties the first drastic changes in the industry started to take place. Volatility in foreign exchange markets accelerated the growth of uncertainty. Monetary policies favouring high and volatile interest rates emerged. In certain countries where intermediation was the major channel of financing the economy, disintermediation (the matching of surplus funds with shortfalls outside the banking system) increased at an accelerated pace. Deregulation grew progressively and with it new competitors, both for sources of funding and for product development and delivery. Deregulation drastically widened the range of products and services offered by banks.

Most banks diversified their operations away from their original businesses. New products were constantly originated, especially for those operating in the capital markets, such as options, swaps and futures. Active research for new market opportunities and products stimulated the growth of earnings from sources other than from the pure lending activity through intermediation. Value added services such as advisory, structured transactions, mergers and acquisitions, project finance, derivative trading and off-balance sheet activities developed at a rapid pace. Banks entered new business fields and faced new risks. New players, such as unit trusts and insurance companies soaked up limited sources of retail funding and micro-lenders reduced the market for loans. The market share of intermediation decreased with the development of capital markets, and competition, not least from foreign banks, increased significantly.

Today, based on a detailed analysis of South Africa's four major banks, it is estimated that 51% of banks' return is generated from traditional intermediation or lending activities, the balance from value added services and trading as described above.

These changes have altered the risk profile of banks and focused their risk management and measurement procedures and techniques.

Banking risks are usually defined by their adverse impact on profitability from several distinct sources of uncertainty. The principal banking risks are:

- Credit risk
- Liquidity risk
- Interest rate risk
- Market risk
- Foreign exchange risk
- Operational risk
- Solvency risk

Banks have to generate sufficient income from both the intermediation function (primarily interest margin) and from non-lending activities (i.e. value added services and trading) to cover any adverse impact on profitability from the risks described above, to maintain adequate capital to ensure the stability of the banking system and to satisfy the investment expectations of the providers of capital.

2.3 **Bank profitability**

The management of risks and of profitability are closely related. This is because risk taking is a necessary condition of future profitability. In banking the risk-reward trade off is constantly present. Risk taking generates higher expected earnings through various mechanisms. For example granting high margin loans to risky customers increases earnings in the short term but it also increases the credit risk profile and the probability of future losses.

In simplistic terms it is useful to split the source of bank earnings into two broad categories, being those derived from lending activities, through the intermediation function and those from non-lending activities.

2.3.1 ***The balance sheet and banking transactions***

There are several ways of grouping banking transactions. A bank's balance sheet can, in addition to off-balance sheet items, be divided into four levels.

- Treasury and banking transactions
- Intermediation (lending and collecting deposits)
- Financial assets and liabilities
- Fixed assets, equity and long term debt

The relative weights of the major categories of a bank's balance sheet vary considerably from one institution to another, depending on their core businesses. Commercial banks are in the business of collecting deposits and lending and all related transactions make up the "banking portfolio". Investment bankers are in the business of investing and trading in the capital markets: equity, fixed income, foreign exchange and derivative trading. Related transactions make up the "trading portfolio". Universal banks, such as South Africa's four major banks, have significant banking and trading portfolios.

2.3.1.1 *The banking portfolio*

In general the balance sheet of a bank's banking portfolio is not balanced. Funding can exceed credit extension and vice versa, with excess funds being invested in the capital markets and shortfalls financed by wholesale funding in the money markets or by borrowing funds from the SARB. In South Africa, banks are usually short of funds, hence the high proportion of wholesale funding.

The banking portfolio generates liquidity and interest rate risks. The asset side of the banking portfolio generates credit risk.

2.3.1.2 *The trading portfolio*

Turnover of positions in the trading portfolio is higher than that of the banking portfolio. Earnings are calculated as the changes in mark-to-market values of traded instruments between any two dates. Trading transactions are often conducted on an international scale and the portfolio generates market risk and credit risk, mainly for long maturity derivative positions.

2.3.1.3 *Off balance sheet transactions*

Off-balance sheet transactions are contingencies given and received. For banking transactions, contingencies include guarantees given to customers or to third parties, confirmed credit lines which are not yet utilised by customers, and standby lines of credit. These are contractual commitments which are activated at the initiative of the customer. The beneficiary can also be a third party who has obtained a guarantee from a customer of the bank. The guarantee is the commitment of the bank to fulfil the obligations of the customer, should he fail. Received contingencies can be exercised at the initiative of the bank (the beneficiary) and serve a symmetrical function.

The given contingencies generate revenues, with upfront and/or periodic fees or margins calculated as percentages of outstanding balances. They do not generate immediate risk exposures since there is no outflow of funds at origination. The outflows occur conditionally upon exercise by the counter-party. Once exercised, the corresponding outstanding balances appear in the balance sheet.

Off-balance sheet market transactions are derivatives. They include swaps, options, futures contracts and foreign exchange contracts. Given contingencies create an obligation to pay to counterparties stated amounts of money, conditionally upon the occurrence of some event defined in advance. Received contingencies create similar obligations for counterparties.

2.3.2 *The Income Statement and margins*

There are two types of earning measures:

- Accounting measures
- Market-based measures

Accounting measures of earnings provide profitability information based on international accounting standards.

The accounting measures of earnings are the contribution margins calculated at various levels of the income statement. They commonly serve as “targets” for risk management policies. They are key variables, whose level and stability should both be controlled through risk management.

Financial earnings are the interest margin, the difference between interest revenues and interest costs, plus fees. Owing to its direct link to interest rates, the interest margin deserves a lot of attention in interest rate risk management. It is one of the main objectives of Asset Liability Management (ALM) policies.

To the extent that the overhead operating costs are fixed, most of the instability of net income is generated by that of the interest margin. Since net income is both a profitability measure and a potential source of funds to increase the equity base, it is also an important target of interest rate risk policy.

Operating expenses have an impact on profitability as much as financial revenues and costs. However, they are managed, budgeted and controlled according to standard managerial practises, without the constant reference to risk which characterises the financial items.

Provisions deserve special attention. The earnings are heavily dependent upon the provision policy which, ideally, should also reflect current risks. Provisions are related to the credit policy and its risks, and have to comply with accounting and regulatory rules. Hence, the provisions posted in the income statement cannot be considered as an economic measure of risks.

Table 3.3.2.1: The income statement and earnings

Interest margin plus fees
- Operating costs
= Operating income
- Depreciation
- Provisions
- Tax
= Net Income

Often, provisions are recorded when risks have already turned into likely, or almost certain, losses.

The ratio of net income to equity is the accounting “Return On Equity”, or ROE. It is often used as a proxy for the market return on equity although this is a distinct concept. Both the ROE and market return on equity should be in line with shareholders’ expectations at a given level of risk. In South Africa the usual order of magnitude for the ROE is approximately 20% after tax.

Accounting measures have several limitations. As in all accounting flows, they capture earnings over a given period of time. But they do not give information over the long-term profitability of existing commitments. Also, they ignore the market conditions, which can be used as an economic benchmark for actual returns. For example, a fixed rate loan carrying a historical interest rate has less value today if interest rates have increased. It earns less than a similar loan based on current market conditions. Such limitations can be corrected with mark-to-market valuation of assets and liabilities.

The mark-to-market valuation of assets and liabilities can be obtained for all banking products. Its meaning remains limited by the fact that most banking assets and liabilities are not readily negotiable. In numerous instances, the lack of market liquidity generates a substantial discount from the theoretical mark-to-market value in the event of a sale.

Bankers use both accounting and mark-to-market information to assess and monitor both short and long term profitability.

2.4 **Minimising interest rate risks**

Assets and liabilities can mature or be re-priced in periods ranging from overnight to 30 years. Most, however, mature in less than one year, and few extend beyond five years. Interest rate risk occurs when a liability matures or is re-priced out of sync with the asset that it’s funding.

As a rule, banks don’t match the maturities of assets and liabilities on a one-to-one basis. Instead, assets and liabilities are grouped together into specific time frames, such as overnight, 30 days, 90 days, one year and the like. Thus, within a given period, banks can determine their interest rate sensitivity.

If more of a bank’s liabilities mature or are re-priced before assets, the bank is said to be ‘liability-sensitive’, or to have a negative gap. If more assets mature than liabilities, the bank is ‘asset-sensitive’, or has a positive gap. If a bank’s assets and liabilities are evenly matched, it’s said to be balanced. In a period of falling interest rates, a bank with a negative gap will see net interest margins widen. Conversely, a bank with a positive gap will benefit during a period of rising rates.

2.5 **Interest rates are key to bank profits**

The expectation for interest rate movements has important implications for banks’ profits. Because the bulk of a bank’s income is derived from net interest income (the interest income received on loans, minus the interest expense for borrowed funds), interest rates largely determine how profitable a bank can be.

Net interest margin (a bank's net interest income divided by its average assets) is a common measure of a bank's ability to generate profits from its loans. A bank's net interest margin widens or narrows depending on the direction of interest rate movements, the mix of funding sources underlying loans, and the time period until expiration (or duration) of the investment portfolio.

Unless structured to take advantage of rising rates, falling interest rates have a positive effect on banks for several reasons. One is that net interest margins can expand, at least in the short-term. This is because banks are still earning a higher-than-market yield on loans to customers, while the cost of funds declines more quickly in response to the new, lower rates.

An interest rate decline also enhances the value of a bank's fixed-rate investment portfolio, since a bond with a higher stated interest rate becomes more valuable as prevailing rates drop. In addition, an environment of declining rates often stimulates loan demand and reduces delinquency rates, because the cost of credit declines. Of course, not all banks are affected equally by rate decreases. Banks that rely more heavily on borrowed funds than on customer deposits to fund loan growth typically reap greater benefits.

Fluctuations in interest rates, while important, don't have an absolute influence over the net interest margins of banks, primarily because banks can adjust in time to such fluctuations. In theory, banks can match the maturities of their assets (loans and investments) and liabilities (deposits and borrowings) so that rates earned and rates paid move more or less in tandem and net interest margins remain relatively stable. In practice, however, banks can and do deviate from a perfectly balanced position which results in risk taking with the objective of earning a reward.

2.6 **How to analyse a bank**

When evaluating a bank, consideration needs to be given to not only its profitability but also its financial condition. Profitability, taken alone, can be misleading. For example, if a bank achieves high profits from excessively risky lending, it may be vulnerable to developments that would hurt its earnings or even threaten its survival.

To judge a particular bank's earnings and financial security, analysts use several measures. Such measures are most useful when trends are examined over a period of time and compared with data from similar banks.

Each and every bank makes trade-offs between the profitability level it's striving to achieve and the risks it's willing to take. When a bank is compared with other banks of similar size and business profile, a wide deviation from the norm on any one indicator can signal possible problems or advantages. Before drawing any conclusions, however, it's important to determine the reasons for the deviation.

2.6.1 *Measures of profitability*

2.6.1.1 *Return on assets (ROA)*

- A comprehensive measure of bank profitability is ROA. This is calculated by dividing a bank's net income by its total average assets during the same period. Historically, most banks have had ROAs within a range of 0.60% to 1.5%. In 1997, the industry's average ROA in South Africa was 1.35%* (1.39%* for the four major banks), up from 1.24% *(1.24%* for four major banks) in 1996.

A trend of rising ROA is generally positive provided it isn't the result of excessive risk-taking.

2.6.1.2 *Return on equity (ROE)*

- Another measure of profitability, usually considered in conjunction with ROA, is ROE. A bank's ROE is calculated by dividing net income by average shareholders' equity. Because shareholders' equity normally funds only a small fraction of a bank's assets - usually 5% to 10% - ROE is much larger than ROA. In 1997, the industry's average ROE in South Africa was 18.90%* (21.55%* for four major banks) compared with 17.10%* (19.94%* for four major banks) in 1996. As highlighted in chapter 4, the ROE measure is the more relevant performance measure for shareholders.

Banks that rely heavily on deposits and borrowings to support assets tend to have higher ROEs than those that don't. In fact, an unusually high ROE versus ROA can indicate that the bank's equity base is too small and its ability to borrow further is limited.

2.6.1.3 *Yield on earning assets (YEA)*

- Because banks can achieve a target profit level in a variety of ways, the components affecting net income must be considered when evaluating the quality of earnings. The principal source of most banks' revenues is interest-earning assets: loans, short-term money market investments, lease financings, and investment securities.

The YEA is calculated by dividing interest income on earning assets by the average value of these assets during the period. Because some investments earn dividends, the interest income side of the ratio is usually calculated on a tax-equivalent basis to account for the added value of dividend income.

Because it reflects general interest rate levels, the YEA can fluctuate considerably over time. If a bank's YEA is high relative to those of other banks, it may indicate a high-risk portfolio of earning assets, particularly high-risk loans. If it's substantially lower than that of other banks, it may indicate that the bank's portfolio has several 'problem loans' that are yielding less than they should. Or it may simply show that the bank has overly conservative lending policies.

In South Africa the average YEA for the four major banks was 16.19%.

2.6.1.4 *Rate paid on funds (RPF)*

- Money is the ‘raw material’ that banks use to produce income. Thus, the cost of funds has an important influence on banks profits. A measure of this expense is the RPF. This is calculated by dividing the interest expense on the funding a bank uses to support earning assets by the total average of funds employed in that way.

The RPF level varies with the general level of interest rates, and it’s also affected by the make-up of the bank’s liabilities. The greater the proportion of a bank’s non-interest bearing demand accounts, low interest rate savings accounts and equity, the lower its RPF will be. Consequently, retail-oriented banks that derive a higher proportion of their funds from consumer deposit accounts tend to have lower RPFs than wholesale banks that purchase most of their funds in the money market.

2.6.1.5 *Net interest margin (NIM)*

- The difference between YEA and RPF is the net interest margin, which can also be calculated by dividing tax-equivalent net interest income by average earning assets. A widening net interest margin is a sign of successful management of assets and liabilities, while a narrowing net interest margin indicates a profit squeeze.

A NIM of less than 3% is generally considered low, and more than 6% is very high. This range, however, should be used only as a rough guideline, because net interest margin can vary with the particular business mix of individual banks as well as the specific economic conditions of the country concerned.

In South Africa the average rate paid on funds by the four major banks was 12.46% and the average net interest margin in 1997 for the four major banks was 3.73% (3.67% in 1996). Refer chapter 6.

2.6.1.6 *Provision for loan losses*

- The provision for loan losses should be considered along with net interest margin when evaluating the quality of a bank’s financial performance. The provision, which appears on the income statement, is a charge taken against earnings; the charge then goes into a cumulative reserve to cover possible loan losses.

The level of provisions as a percentage of total loans reflects the success or failure of the bank’s credit evaluation procedures and the riskiness inherent in the bank’s loan portfolio. Over the short-term, risky loans may boost a bank’s YEA and, hence, its net interest margin. However, such risks tend to make the provision for loan losses rise in the longer term.

The provision for loan losses can vary greatly from year to year. In recessionary times, when corporate and private clients find it hard to service their debts, the level of the provision for loan losses tends to rise; it generally remains at high levels until well after an economic recovery has begun. In addition, the provision for loan losses rises over time to reflect growth in loan portfolios and increases in the Rand level of bad debts.

Bank executives can exercise a good deal of discretion in deciding on an appropriate provision for loan losses. Hence, the provision should be examined in conjunction with a bank's reserve for loan losses, its bad debt experience and its level of non-performing loans to see whether management is making adequate provisions or simply using the charge to manipulate reported earnings.

Specific provisions for loan losses for South African banks totalled R 7.3 billion in 1997, up from R 6.3 billion in 1996.

2.6.1.7 *Non-interest income*

- The proportion of non-interest income to total income has risen in recent years, and at most banks it now constitutes more than 20% of total revenues (total interest income plus non-interest income). In general, large banks tend to have a greater proportion of their total income attributable to non-interest bearing sources than do smaller banks. This reflects large banks' involvement in currency and bond trading, asset management services, corporate finance, and other fee based financial services.

2.6.1.8 *Non-interest expenses*

- Non-interest expenses represent all expenses incurred in operations. A rising cost to income ratio (non-interest expenses relative to net operating revenues) can signal inefficient operations, but it might also reflect heavy technology spending or restructuring charges.

In South Africa the industry's 1997 cost to income ratio of 55.73%* was better than in 1996 (61.10%)* and showed marked improvement from levels of about 70% seen five years ago. The improvement was brought about largely by recent cost-cutting through consolidation of activities.

In general, banks that obtain a significant portion of their funding from retail customers tend to have higher cost to income ratios than those that solicit wholesale funding. This reflects the costs involved in maintaining branches and serving retail accounts.

2.6.2 *Measures of financial condition*

2.6.2.1 *Reserve for loan losses*

- To cover possible future loan losses, banks maintain a reserve for loan losses. This appears on a bank's balance sheet as a net reduction, to loans outstanding. The provision arises from the charge for loan losses, as discussed above; it reflects management's judgement regarding the quality of its loan portfolio.

The general provision (reserve) for loan losses at most banks falls within a range of 0.25%* to 1.3%* of total loans outstanding whilst the specific provision (reserve) falls within a range of 0.5%* to 2.0%*. Total industry provisions amounted to 1.87%* of loans at year-end 1997, down from 1.96%* a year earlier.

The adequacy of a bank's provision for loan losses should be judged in relation to the amount of its problem loans and loan charge-off levels. Ratios at the higher end of the range usually indicate that a bank has a very high level of problem loans, such as non-performing home loans. On the other hand, if a bank has a provision considerably lower than similar-sized banks with similar loan portfolios, it may indicate a lack of management prudence or a reluctance to reduce reported earnings.

2.6.2.2 *Non-performing loans*

- Another indication of the quality of a bank's portfolio is its level of non-performing loans which include those for which interest is no longer being accrued and repayment has been re-scheduled.

The average ratio of non-performing loans in South Africa is 2.25%*. When it exceeds 3% - it can cause concern. In addition to reducing the flow of interest income, non-performing loans represent potential charge-offs if their quality deteriorates further .

As the level of non-performing loans rises, charge-offs and the provision for loan losses frequently rise as well. For a bank with a very high level of non-performing loans - approaching 7% or more - the future may be doubtful.

2.6.2.3 *Capital levels*

- Banks are required by regulators to maintain minimum capital levels. In general, the higher the capital ratio, the more conservative the bank. The capital ratio is calculated by dividing shareholder's equity by total risk-adjusted assets. A high capital ratio also indicates the ability to grow through either internal means or acquisitions.

2.6.2.4 *Liquidity*

- A low level debt contributes to a bank's liquidity - its ability to raise funds for lending and other purposes. One gauge of liquidity is the proportion of loans outstanding to total assets. A bank that's 'loaned up' has a high ratio of loans to assets, 65% or more is considered high. A liquid bank, on the other hand, has a smaller proportion of its assets in loans and more in short-term money market investments and investment securities, both of which can be quickly converted into funds that can then be loaned out. If a bank has a high proportion of such investments and a small proportion of loans, however, it could indicate a lack of good business opportunities in the bank's market.

2.6.2.5 *Derivatives*

- Banks are major players in the markets for derivatives, which are basically financial instruments that derive their value from an underlying security, the level of interest rates or currency values.

Derivatives, however, contain some inherent risks. The most prominent risk is the potential failure of a counterparty to fulfil an obligation specified by the derivative contract terms. This could be caused by wide swings in interest rates or currency values.

A key issue in understanding a bank's derivative exposure is the difference between notional principal and actual credit exposure. Notional principal is the amount on which interest and other payments in a transaction are based. In most derivative transactions, the parties don't exchange the notional principal; it's used only to calculate payments. Credit exposure is more accurately assessed by the cost to replace the derivative contract at current market rates in case a counterparty defaults before the settlement date; this is referred to as the replacement cost or mark-to-market exposure. Most banks don't deal in derivatives considered to be complex or highly leveraged. Accordingly, the notional amount of such derivatives tends to be immaterial when compared with a bank's total assets.

3 Interest rate formation

This chapter looks at exactly what interest rates are, why different levels of interest rates exist within any national economy, and why interest rate patterns in different economies may be considerably different at any given moment in time.

3.1 What is an interest rate?

If asked, a majority of economically self-supporting adults would probably offer a definition of interest as being “the price of money”. Their reasoning would run along the lines of “if I want to borrow money, I must pay interest on what I borrow, and therefore interest is the price of money”.

This intuitive definition approximates the real thing, but misses out the most important part of the concept of interest, which exists in the word “borrow”. The price of any article, even money, is simply what it can be exchanged for. If R10 can be exchanged for 5 pencils, the price of a pencil can be defined as R2, while the price of R10 can be defined as 5 pencils. Money can also be exchanged for other money. In early October 1998, R10 would have bought 1 Pound Sterling, or about US\$1.66. It is easy to see that the price of money is defined by what it can be exchanged for, rather than an interest rate which it attracts.

A more accurate definition of interest is that it is the price of credit, rather than the price of money. Credit is simply borrowed money. If money is borrowed, it must have been lent by somebody else. Expanding the definition of “interest is the price of credit”, it could be stated as “interest is the price of borrowed money paid by the borrower to the lender”.

It is important to note that there is a difference between the payment of interest and the repayment of the original amount of money borrowed. The amount borrowed is often referred to as the “principal amount”, or simply as “the principal”. If one borrows a sum of money, the lender is entitled to expect two things. Firstly, he will expect repayment of the amount borrowed over an agreed period of time. Secondly, he will expect interest payments on the amount outstanding (still borrowed) during the period of the loan. Repayment of principal amounts borrowed, and interest on those principal amounts are two entirely different things.

3.2 Forms that interest might take

The rate of interest, or amount of interest to be paid on a given borrowed amount, is usually expressed as a percentage (of the borrowed amount) over a period of time. Thus, if an interest rate of 20 % per year is quoted, every R100 borrowed will have a price of R20 per year in the hands of the borrower.

While this is the most common way of setting out interest rates, it is not the only way. Others exist, but can usually be brought back to a percentage per year basis.

Consider the following as an example. A borrower needs R100 worth of credit from a micro-lender. The lender agrees to grant the loan, under condition that the borrower will pay him R150 to settle the debt in one month's time. Effectively, the borrower pays back the principal amount of R100 after a month, plus R50 which is really interest. In this example, the interest rate is 50 % per month, an annual interest rate of 600 %.

3.3 Markets for credit

Over many hundreds, possibly even thousands of years, sophisticated markets for the borrowing and lending of money have evolved. They all work on the basis that certain parties have a surplus of funds available from time to time, and are willing to lend the surpluses to those who have less money than they need for specific purposes within a period of time. Interest is paid by borrowers to lenders at a given rate.

Borrowers require credit for different purposes and for different lengths of time. A borrower may, for instance, require a very large sum of money to buy a home, and only have the means to pay it back slowly over a long period of time (e.g. 20 years). At the other end of the scale, a borrower may require funds for a far shorter period, perhaps only until his or her next pay-day.

Similarly, potential lenders may have varying amounts of money that they are willing to lend to others for varying amounts of time. A given individual may have many thousands or millions of Rands that he is willing to lend to others for long periods of time. Others will have far less surplus funds available for loan for shorter periods – for example, immediately after pay-day, salary and wage earners will usually have more funds than they need to spend immediately, and that surplus of funds will gradually be run down over the period to the next pay-day.

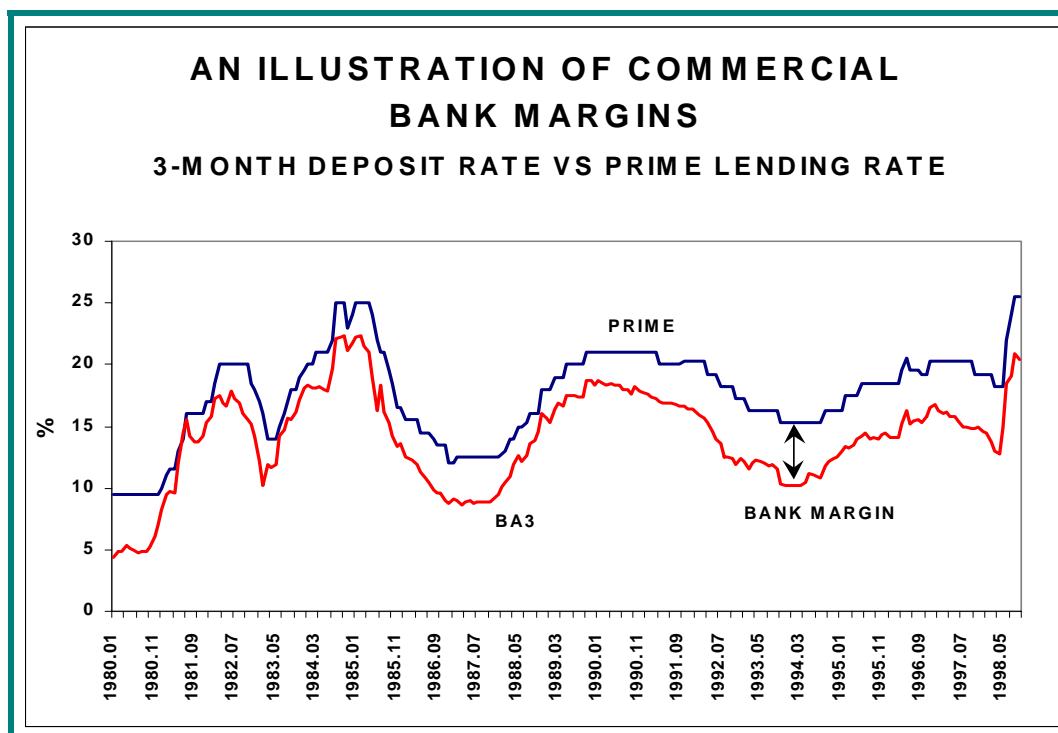
Sophisticated financial markets have evolved to attempt to match the surplus funds of lenders with the fund requirements of borrowers. Amongst these financial institutions, banks are certainly the key players in the market for money, or credit market. Collectively, they take on the role of borrowers when they accept deposits from individual members of the public, or businesses, or even other banks. As borrowers, banks pay interest to those lenders who deposit funds with them.

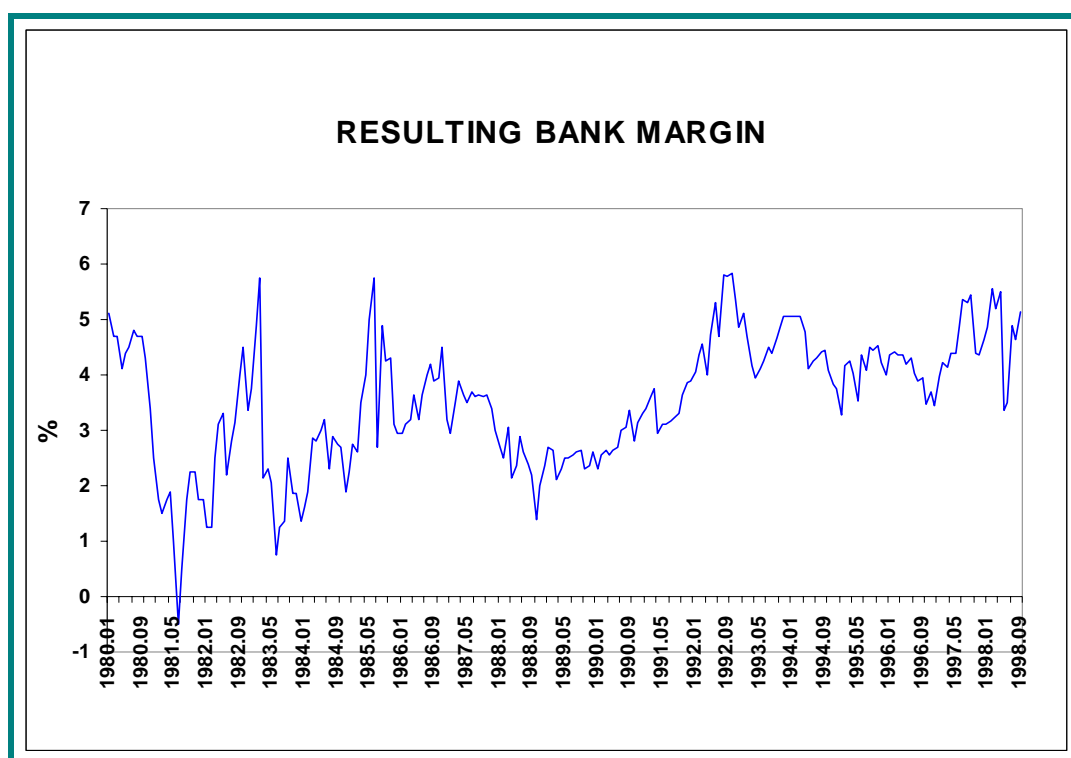
Banks also actively look for borrowers in the household, business and government sectors of the economy, in order to lend those parties the funds which they, the banks, have managed to attract from their own lenders. In return, the banks receive interest payments from borrowers who have accepted credit from them.

Banks are therefore the intermediary used by holders of surplus funds to reach potential borrowers who need more funds than they have available. To perform their functions, banks need to pay for staff, whose skills will range from the very highest, scarcest and highly paid, to the very lowest level of skills. They also have to pay for business premises, equipment such as computers, automatic teller machines, telephone services, and many costs of doing business that are common throughout the business world. These business costs, plus any profit that may be made, have to be covered from one of two sources.

Firstly, the bank could charge a given amount every time it performs a particular service, or set of services. While such charges may produce revenue for the retail commercial banks, which have very large numbers of customers, they would not produce anything of significance for the many wholesale banks in the system. Even if the commercial banks were to earn all their revenue from financial service charges, they would have to be four times higher than they are at the moment, which would hit hardest at the smallest of their clients. In all probability, so many clients would be knocked out of the commercial banks by the high financial service charges, that the factor of four mentioned here would probably not be enough, and the factor would have to increase even further, rendering services too expensive for an even greater number of clients. Funding banks' revenue line through financial service charges is not a practical proposition.

Instead, banks create revenue to pay for their costs and to make profit in exactly the same way that all other business institutions create income. They simply charge more for the credit that they sell than for the credit which they buy. The price of credit (i.e. the interest rate) which banks extend is higher than the price which they are prepared to pay for the credit extended to them by the holders of surplus funds. Banks' lending rates are higher than their borrowing rates. The difference, also known as the bank margin, pays for the expenses of running the bank, and creates profit as long as revenue exceeds expenditure. The diagrams below illustrate the concept of the bank margin in simplistic terms using the 3 month deposit rate and prime lending rate. These examples should not be confused with net interest margins (NIM) actually earned by banks.





3.4 Changes in the supply and demand for credit

It should be clear from the above that at any moment in time there is both a demand for and supply of credit. This is exactly the same as for all goods and services in any economy. If there was no price for credit, demand would be infinitely high, with everybody borrowing as much as they could to exchange for all goods and services to satisfy their wants and needs. But, if there was no price for credit, there would be no supply of credit, because those holding surpluses would be giving away their ability to convert those funds into goods and services without any return to themselves. This would be foolish behaviour indeed.

Suppliers of credit to the banking system require a return for the funds which they supply – in other words, they require to earn interest. As with other goods and services, the less that is supplied, the higher is the price that suppliers will request as the level of supply decreases. Deposit rates in the banking system must increase to attract ever increasing levels of deposits, or owners of the cash surpluses forming the supply will choose either to invest their funds elsewhere, or simply lend less to the banking system and consume more.

Similarly, as more and more funds are demanded from the banking system by borrowers, they will drive the price of credit upwards. The banks have to pay more to their own creditors, and must charge more for the funds which they lend.

The price of credit, or interest rate, is therefore a function of the demand for and supply of credit at any given moment in time. Both the level of demand and supply fluctuate continuously, causing continuous upward and downward pressures on the prevailing pattern of interest rates in an economy. Deposit and lending rates offered by the commercial banks are relatively stable in this constantly fluctuating demand and supply situation, with the banks' own margins absorbing any short-term under-recovery of the price of credit which may occur. Inevitably, however, if demand for credit consistently outperforms the supply of credit to the banks, interest rates will rise for both depositors and lenders. Similarly, if the demand for credit is depressed relative to the supply, banks will lower their deposit rates because they do not need to be supplied with quite as much credit, and will lower their lending rates in order to try to stimulate demand for funds which they have available for lending.

3.5 The changing value of money

We are all only too aware that the rate at which money can be exchanged for goods and services is by no means constant. Money prices fluctuate, sometimes rising, sometimes falling. This can happen for two reasons. Firstly, the relative quantities of demand and supply may alter. Increased demand for a good relative to the supply of that good will drive its money price upwards. Increased supply of a good relative to static demand will drive its price downwards. Such price movements are entirely natural and healthy in a market economy. Market equilibrium, or balance, occurs when the amount demanded at a given price equals the amount of goods and services supplied at that price.

When market equilibrium prices rise on a general and continuous basis, this is termed inflation. The inflation rate is the percentage change in the general price level over a period of time, usually expressed as an annual change.

Thus, if the general price level rises from an index value of 100 to 110 over the period of a year, the inflation rate is said to be 10 %. A further rise to an index level of 115 by the end of a second year, would imply that the inflation rate has declined from 10 % in year one to 4.5 % in year two. In subsequent years, the prevailing inflation rate could rise, fall or remain steady.

It would be a completely natural desire for depositors to want a deposit rate in excess of the expected inflation rate in the period that elapses while their money is on deposit at a bank. Economists therefore conventionally divide all interest rates into two parts, namely the inflation portion, equivalent to the rate of change of the general price level in percent, and the real portion, which is over and above the inflationary portion. This can be represented as formula:

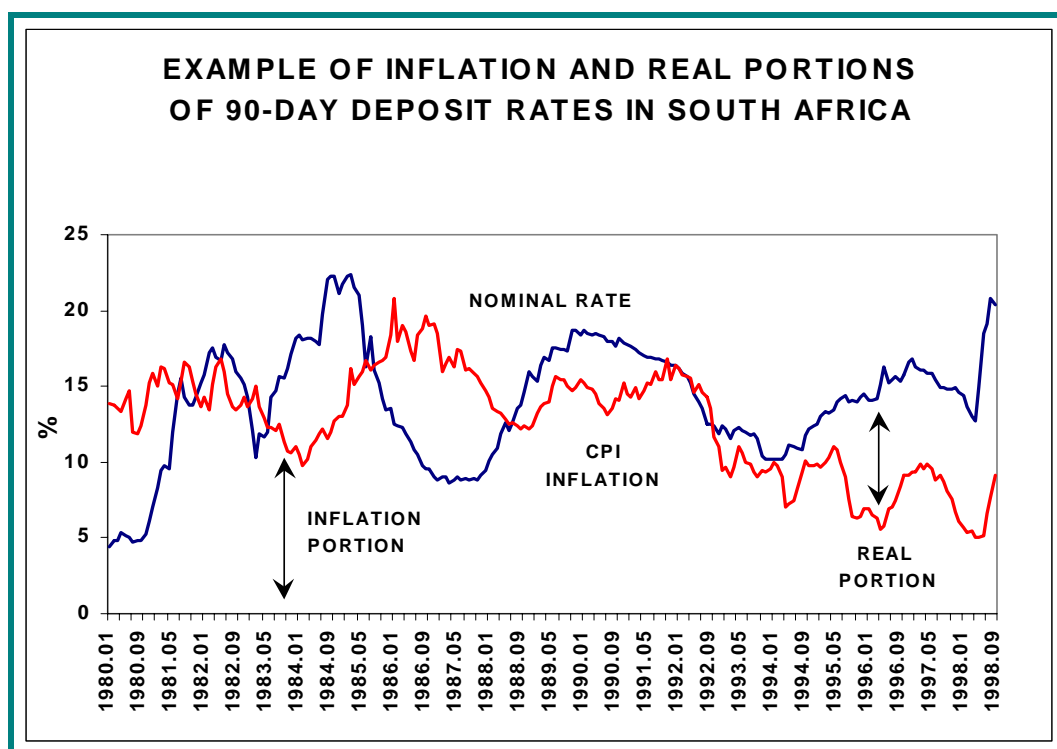
Nominal interest rate = inflation rate plus real interest rate

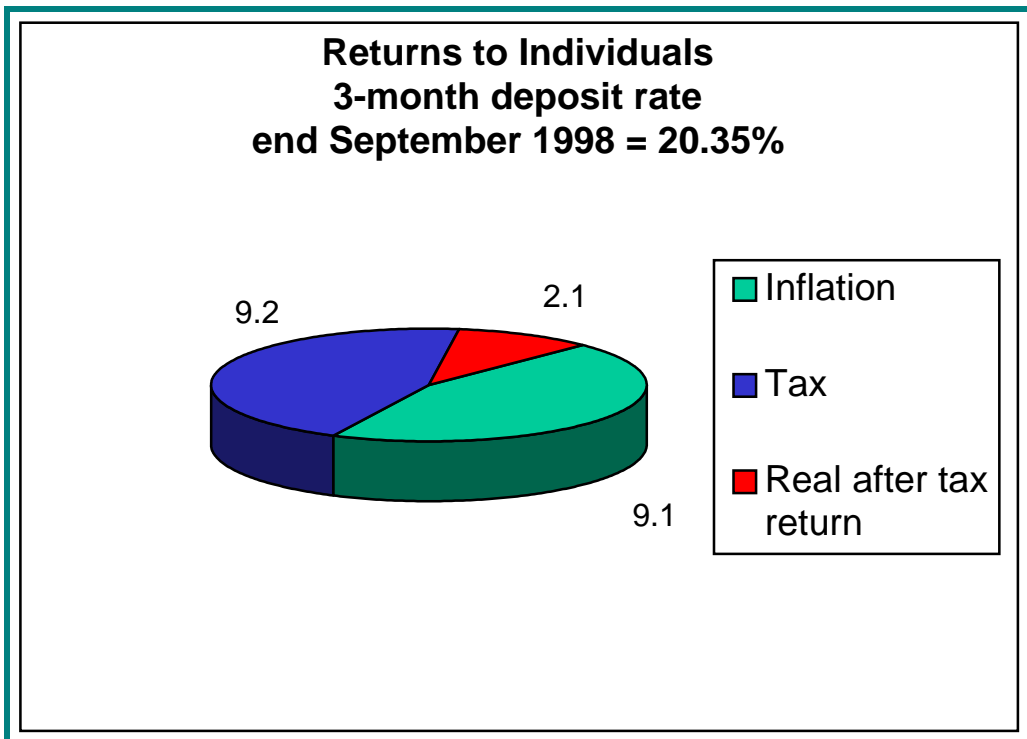
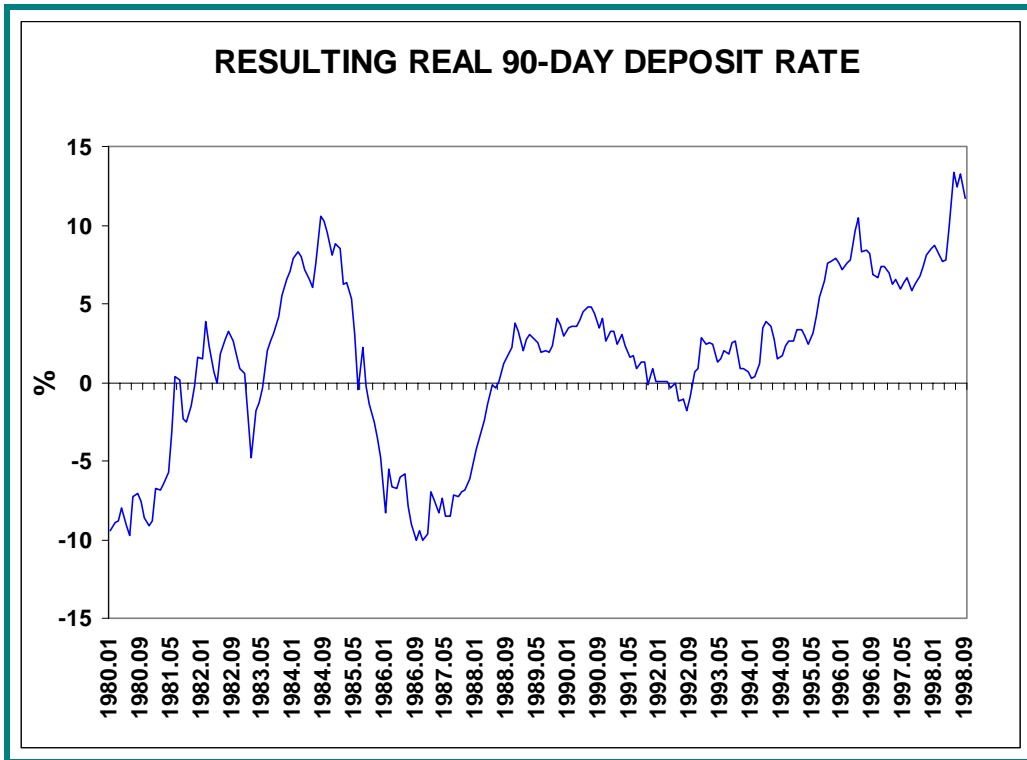
This can be rearranged to demonstrate the concept of the real interest rate:

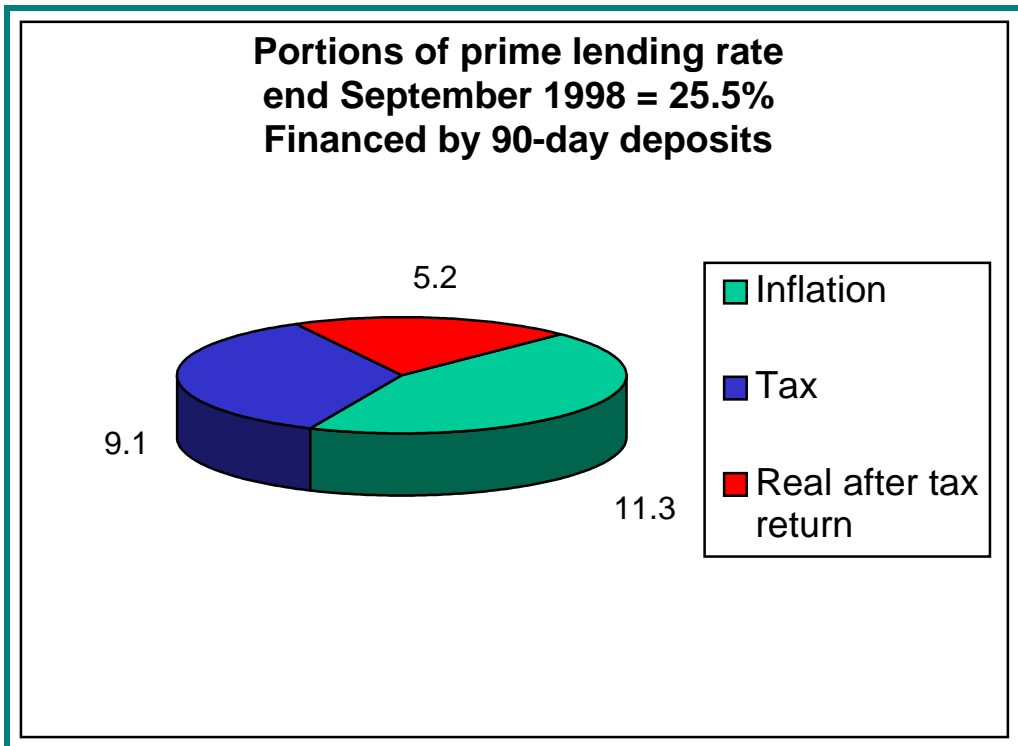
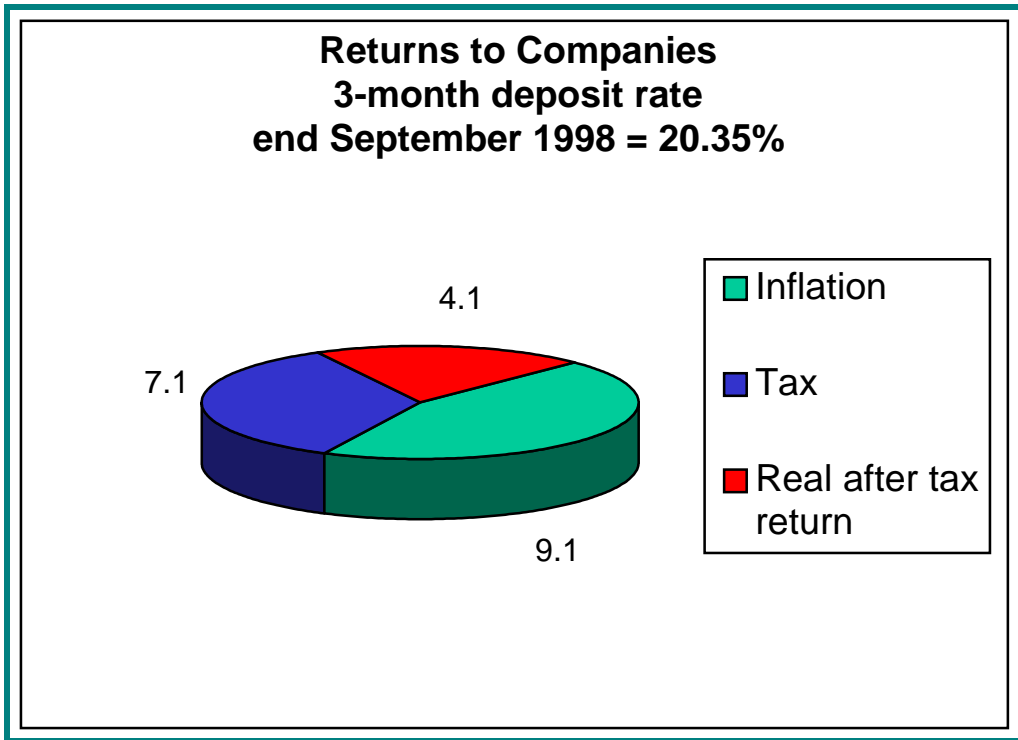
Real interest rate = nominal interest rate minus inflation

Even if the nominal interest rate is constant over an extended period of time, the rate of inflation usually is not. Real interest rates, therefore, tend to be continually on the move, more often because of changes in the rate of inflation, than because nominal rates have altered.

As previously noted, depositors are entitled to expect positive real interest rate earnings. If real interest rates offered to depositors were below the inflation rate, their money would be able to buy less when they came to withdraw it than it could have bought when they deposited it – nobody in their right mind would deposit any money, and banks would have no funds to lend to potential borrowers. Real interest rates that are positive (i.e. where the nominal rate is higher than the inflation rate) for depositors will allow them to purchase more real goods and services after they have earned interest for any period of time than they could have done if they had not deposited their funds in interest earning accounts. Negative real rates of interest will leave them with less real buying power when they come to withdraw and spend their funds than those funds had when they were deposited – a situation which holders of funds will usually avoid, simply by not depositing funds in accounts which offer negative real interest rates. The diagrams below illustrate the concept of real interest rates.







In economic systems like that prevailing in South Africa, where interest earnings are taxed, depositors will expect real after tax earnings of a reasonable level. Take the example of R100 invested at a deposit rate of 17 %, in a prevailing inflationary environment of 7 %. The real return to the depositor is 17 % minus 7 %, which equals 10 %. If the saver's marginal rate of tax is 45 %, his after tax return is reduced from the pre-tax 10 % to an after tax rate of 5.5 %. The following set of definitions have evolved from this discussion:

Real after tax interest rate = real interest rate minus tax portion

Real interest rate = nominal interest rate minus inflation rate

Nominal interest rate = rate paid to depositors or by borrowers

Bank margin = rate paid by borrowers minus rate paid to depositors

3.6 **The role of risk in determining interest rates**

In the chain of depositors, bankers and borrowers, each is exposed to an element of risk:

- Depositors take on the risk that the bank which takes their money may not be able to pay it back
- Banks face the risk that borrowers of their money may not be able to pay back the loans made by the banks
- Borrowers from banks face the risk that they may not be able to service (pay interest on) their debts or repay the principal amount

In sophisticated banking systems, such as that in South Africa, regulatory frameworks exist which attempt to minimise the risk to each of the three parties involved. The individual countries' Central Banks are usually the body which regulate the banking system, and which put in place prudential rules and set standards by which the banking and broader financial system has to abide. The Central Bank of any country is usually the lender of last resort if the banking system is short of liquidity, but there are usually no guarantees that Central Banks will bail out shareholders and depositors of individual banking institutions if they become the victims of massive defaults on the part of their borrowers, even if the bank management has been diligent in examining the quality of loan applications.

Risks faced by commercial banks can be considered in two generic areas, the first to do with the funds that they can attract as deposits, and the second to do with the behaviour of their borrowers.

The first set of risks revolves around the price that they will have to pay to attract funds that they can use as their lending base. During economic and business cyclical downturns, there will be less spare cash floating around for banks to attempt to borrow. During such downturns, they will be forced to offer higher and higher deposit rates, a situation which is usually accompanied by the Central Bank (the Reserve Bank in the case of South Africa) often trying to "mop-up" the excess liquidity in the monetary system created during the previous upswing. The gap between deposit rates and lending rates begins to narrow – remember that the gap is really the bank's margin, with which they meet operational expenses.

The banks can attempt to preserve their margins by raising their lending rates, but a direct consequence of rising lending rates is an increase in risk that individuals or organisations which had borrowed at an earlier lower interest rate can become hard pressed to pay the increased levels of interest, which in severe cases, can end up with borrowers defaulting not only on interest payments, but being squeezed to situations where they default on the principal amounts borrowed as well.

Sometimes banks are in a position to foreclose on defaulting borrowers in sufficient time to seize assets from the borrowers that were previously offered as collateral for the loan. However, a repossessed house, motor vehicle or business equipment can very rarely be sold off in the marketplace during times of high prevailing lending rates for enough money to completely cancel the outstanding debt to the banks, leaving residual bad debt. Bad debts are a loss to a bank, acting as a direct reduction of its interest rate margin in the profit and loss account. Rising interest rates increase the risk of bad debts for the banks, and when bad debts do eventuate, it has a negative influence on bank profits.

3.7 The role of the Reserve Bank in determining interest rates

According to the South African Constitution Act of 1996 and the South African Reserve Bank Act of 1989, the primary objective of the South African Reserve Bank is to protect the value of the currency in the interest of balanced and sustainable economic growth in the Republic. The Constitution also states that the SARB shall exercise its powers and functions independently. This provides the SARB with a mandate to pursue price stability, which is the ultimate objective of monetary policy in South Africa. Attaining price stability domestically, will at the same time ensure a stable nominal and real exchange rate of the Rand, resulting in a stable external value of the currency. From within this narrowly defined objective of price stability, a second main responsibility of the SARB is to ensure that South Africa has a stable and well functioning financial system, with sound and well managed banking institutions.

Although monetary policy ultimately aims to stabilise the general price level, the process involved, known as the transmission mechanism, is complex, time consuming and difficult to manage. Consequently the SARB aims at achieving intermediate targets which have a distinct bearing on the ultimate objective. The SARB uses the growth in the M3 money supply as a guideline and supplements it by monitoring a range of other financial indicators in determining the required monetary policy stance. These indicators include bank credit extension, the foreign reserves and the exchange rate. In effect, the SARB exercises discretionary judgement in deciding what combination of money supply growth, interest rates and exchange rates should be aimed at in any given set of circumstances in order to support the objective of low inflation.

According to this strategy the SARB uses interest rates as its operational variable i.e. it manages the level of short term interest rates. This strategy is based on the repurchase rate (repo rate) as the policy variable through which monetary policy is transmitted to the economy. In the day-to-day operations in the banking sector, it is impossible for the entire system to be in balance as far as the ratio of loans made to deposits held is concerned. Usually, the banking sector needs to balance its books by borrowing from the SARB, using underlying securities (Government bonds, Treasury bills, Reserve Bank debentures and Land Bank bills) as collateral for the borrowings. This borrowed amount is referred to as the money market shortage.

Since the introduction of the Repo system of providing accommodation to banks in March 1998, the SARB has offered a daily auction of funds to the commercial banks which they can use to adjust the balance between what they hold and what they have lent.

On a daily basis, the SARB estimates the money market shortage and offers an appropriate amount to the commercial banks to tender for and balance their short positions. The SARB will under normal circumstances finance the total liquidity shortage by means of repos. On occasions, however, the repo system is operated in such a manner that the tenders are not accepted in full i.e. banks require more funds than what they were allotted under the tender system, leaving them short of cash. These shortages can then only be replenished by borrowing from the SARB at a penalty rate, fixed by the SARB, called the marginal lending rate (MLR). Naturally, the commercial banks attempt to avoid borrowing at the MLR as far as possible.

The SARB repo rate is clearly a vitally important interest rate at which funds are lent to the banking system. The basic laws of economic supply and demand work through the repo system. If there is a shortage of liquidity in the money market i.e. the money market shortage is high, the rate at which the SARB provides liquidity to the banks needs to increase. The SARB will then offer less funds than required by the banks and banks will be forced to borrow the difference at the MLR. Banks will however, increase their deposit rates, trying to attract more deposits from the general public, to make up for any funds which they may require over and above those on offer through the repo system, and which they are forced to borrow at MLR. The banks will as a result also tend to offer higher tender rates within the repo system, driving the repo rate upwards. The same is true in the opposite direction. If the SARB decides, in reaction to changes in their elected financial indicators, to increase liquidity within the money market, it can offer more funds than is required at the tender. Banks will as a result tender lower rates within the repo system, driving the repo rate down. This will tend to influence the lending rates of the commercial banks downwards.

There is, however, no rigid mechanistic relationship between any pair of interest rates. Margins between interest rates are variable, and often depend as much on expectations of tightening or easing liquidity in the money market, as they do on the precise levels of a key rate like the repo rate at any moment in time.

Monetary policy put into effect by the SARB has to take account of a large number of other official policies and global realities, and has to attempt to optimise the production of the SARB's main objectives outlined above in an environment which is so complex that simple optimisation models often cannot be put into practice because of the consequential damage to political and economic objectives of the day. Amongst other issues, the monetary policy of the SARB has to be drawn up with due consideration to:

- The short term capital flows of the balance of payments
- Prevailing fiscal flows of the central government
- Domestic and international flows in and out of the government and parastatal bond market
- Domestic and international flows in and out of the domestic equity market
- The demand for credit by both the public and private sectors
- The level of exchange reserves

- Existing and anticipated levels of consumer and producer price inflation
- The rate of growth of the money supply
- The liquidity needs of the money market
- Broad foreign trade considerations
- Foreign interest rates and their movements

It is fair to say that every price and every transaction in the economy influences all other prices and transactions – some of these linkages will be more direct and obvious than others. Monetary policy certainly cannot be created in a vacuum.

3.8 Interest rate margins

The arguments relating to the fact that there is a margin, or spread, between deposit and lending rates offered by commercial banks has already been explored, as has the role of the SARB's Repo system in benchmarking short term deposit rates offered by the commercial banks. Further explanation of the spread of deposit and lending rates will add to an understanding of the entire interest rate system.

In general, the most vital question to be asked about any loan, whether to or from a bank is its duration. Having established the term of the loan, the expectations of both the borrower and lender concerning a number of economic factors come into play.

Consider, for example, the fact that banks will usually offer different rates for fixed deposits of 1 month, 6 months and 24 months duration. Note that the rate is fixed for the entire period of the deposit when it is made. Should the funds be withdrawn prior to the expiry date, penalties may be imposed on the interest already earned, but that is irrelevant to the analysis of why the offered rates may differ.

In mid-October 1998, with the SARB Repo rate having been steady at 21.855 % for some six weeks, commercial banks were offering 20.25 % on call, 16 % on 32-day deposits, between 14.75 and 16.75 % for 6 month deposits, and between 14 and 15.75 % for 24 month deposits. These rates, including the Repo rate and the three short and medium term deposit rates, clearly reflects an anticipation that the Repo rate would fall within the very near future, but that the money market could once again be relatively short of cash inflows after the Christmas period. The offered 24 month rate looks like it is anticipating easier money market conditions in October of the year 2000 than in October 1998, but that expectation is tempered by a risk of higher inflation reducing the real interest rate return to depositors.

This spread of interest rates shows the combination of short term expectations for interest rates, plus the fact that the longer the term of the deposit, the higher is the risk to the depositor that his future return could be reduced by increasing inflation.

Moving from this specific case at a specific point in time, the more general rules governing the level of deposit rates can be drawn out of the analysis. Firstly, the rates offered to depositors will reflect anticipated money market conditions for the period of the deposit (e.g. 32 days, 6 months and so on). Secondly, the interest rates offered will also be affected by future measures of inflation anticipated to exist during the life of the deposit. Thus, the anticipation of future events can be seen to have an important effect on the way that the pattern of deposit rates offered in the money market is arranged and graduated.

Two further factors can also influence the range of deposit rates. In analysing its particular cash requirements over a period of time in the future, a particular bank may find that it has a greater or lesser need for deposits of a particular length of time than its competitors do. It will then pitch its offered rate for deposits of the particular duration below or above those of its competitors in order to provide the appropriate level of attraction to depositors.

Finally, but this does not happen very often in a relatively secure banking system like the one in South Africa, depositors may view one particular bank within the system with a degree of suspicion regarding the security which it offers to depositors – under such circumstances, depositors may demand higher rates of interest from given banking institutions. It must be emphasised that these instances of suspicion are very rare, and attract the attention of the banking regulatory authorities extremely quickly.

The spread of banks' lending rates is also driven by a set of factors that change over time. Firstly, the lending rate pattern extends around a point determined by the existing combination of the SARB Repo rate and deposit rates, plus a desired bank margin. The level of the bank margin is limited by competitive pressures and the risk that very high lending rates attract increased probabilities of defaults by borrowers.

Adding to these forces, the lending rate pattern will be largely determined by the motive for the bank loan (e.g. is it a home loan, a loan to buy a car, a credit card loan), and the credit status of a particular client. The credit status of the client is perhaps one of the most vital factors in determining the rate at which an individual or corporation can borrow money from a bank. Higher credit status is usually equivalent to a perception of lower risk of default by a borrower, and that lower risk perception is reflected in lower lending rates. The highest credit status customers of a bank, ranked by financial analysis and the bank's experience of doing business with particular borrowers, will usually be able to borrow funds at the lowest lending rate, often referred to as the prime overdraft rate.

This prime rate may not always be the lowest lending rate, although it is generally true that it is for the purposes of unsecured borrowing from a bank. By offering some form of collateral or security to the bank, lending rates lower than the prime rate can be achieved. An example of this is the fact that home mortgage bond rates are priced slightly lower than the prime rate, because of the fact that the lending bank has a very direct call on the ownership of the property if the borrower should default. Other borrowing requirements such as credit for buying vehicles, may appear more risky to the banks – although partially secure by the possibility of repossessing the financed vehicle, there is an inherent risk that the vehicle will be in poor condition upon forced repossession, leaving the bank unable to recoup the outstanding borrowed amount.

In terms of interest rates payable on credit card purchases, two factors influence the lending rate to be above prime and other highly secured lending rates. Firstly, there is usually an amount of “revolving” credit available to the cardholder at no interest charge whatsoever. Purchase arrangements which do attract interest help to balance out the costs of the free credit by having their interest rates set at the upper end of the lending rate spectrum. Secondly, credit card loans are usually unsecured, making it very difficult for the card company to repossess specific items if the borrower defaults. This represents increased risk to the lender, reflected in higher interest rates.

Bank lending rates are influenced by a number of factors, and these usually fall into either the area of customer credit status versus customer risk, or the purpose of the loan and the bank’s ability to secure the loan through various forms of collateral. As a result, a range of lending rates from the commercial banks is usually available, and the rate at which a loan takes place can frequently be influenced by negotiations between the borrower and the banks.

Lending rates, unless a very specific agreement exists between the borrower and the bank, float upwards and downwards according to pressures in the money market. The degree of movement is influenced by what is happening to deposit rates at the time, and the degree of accommodation to the banking system (and its price) coming from the SARB, which will be monitoring the list of factors presented in the previous sub-section of this report. The third supply side factor influencing lending rates is the NIM, which itself is influenced by changing levels of risk of borrower default from time to time – in general, the higher the deposit and lending rate pattern, the lower is the effective margin of lending institutions, because of higher risks of borrowers getting into trouble and defaulting on their loans, not in a fraudulent but rather a forced manner.

4 Determinants of bank interest margins and profitability

4.1 Background

As financial intermediaries, banks play a crucial role in the operation of most economies. The efficiency of financial intermediation can also affect economic growth.

In a recent empirical study by the Development Research Group of The World Bank into the determinants of bank interest margins and profitability, the crucial affect financial intermediation has on the net return to savings and on the gross return for investments was noted. The spread between these two returns mirrors bank interest margins, in addition to transaction costs and taxes borne directly by savers and investors. This suggests that bank interest margins can be interpreted as an indicator of the efficiency of the banking system.

Using bank data for 80 countries covering the period 1988 to 1995, the empirical study shows that differences in interest margins and profitability reflect various determinants :

- Bank characteristics (such as size, leverage, type of business, ownership);
- Macro economic conditions;
- Explicit and implicit bank taxes, including regulatory costs and related opportunity costs;
- General financial structures; and
- Certain underlying legal and institutional indicators.

4.2 The data

The study used income statement and balance sheet data of commercial banks from the BankScope data base provided by IBCA, a major international ratings agency. Coverage by IBCA is very comprehensive in most countries, with banks included roughly accounting for 90 percent of the assets of all banks. The study started with the entire universe of commercial banks worldwide, with the exception that for France, Germany and the United States only several hundred commercial banks listed as large were included. To ensure reasonable coverage for individual countries, the study included only countries where there were at least three banks in a country for a given year. This yielded a data set covering 80 countries during the years 1988-1995, with about 7 900 individual commercial bank accounting observations. This data set includes all OECD countries, as well as many developing countries and economies in transition. For a list of countries, see Annexure 1.

Annexure 1 provides country averages of interest margins and bank profitability. Column 2 provides information on net interest income over assets, or net interest margin, as a percentage. At the low end, there are several developed countries, Luxembourg and the Netherlands, and Egypt with a net interest margin of about 1 percent (SA : 3.9%) For the case of Egypt, the low net interest margin can be explained by a predominance of low-interest directed credits by the large state banking sector. Generally, developing countries, and especially Latin American countries such as Argentina, Brazil, Costa Rica, Ecuador and Jamaica, display relatively large accounting spreads. This is also true for certain Eastern European countries such as Lithuania and Romania. Columns 3 to 6 provide an accounting breakdown of the net interest income into its four components: overhead minus non-interest income, taxes, loan loss provisioning, and net profits, all divided by net interest income. These components add to one hundred percent except for cases where information on loan loss provisioning is missing.

The tax net income (tax/ni) variable reflects the explicit taxes paid by the banks (mostly corporate income taxes). International banks also face implicit taxation due to regulatory cash reserves and liquidity requirements and other restrictions on lending through directed/subsidised credit policies. These indirect forms of taxing banks show up directly in lower net interest income rather than in its decomposition. Nonetheless, the tax/ni variable indicates that there is considerable international variation in the explicit taxation of commercial banks. Several countries in Eastern Europe (for example Lithuania, Hungary and Czech Republic) impose high explicit taxes on banking. The lowest value of tax/ni is at 0 for Qatar, in the absence of significant taxation of banking. For some countries, such as Norway, Sweden or Costa Rica, low tax/ni values reflect the tax deductibility of bad debts (SA : 11.8%).

The loan loss provisioning net income (loan loss provisioning/ni) variable is a direct measure of difference in credit quality across countries and it also reflects differences in provisioning regulations. This variable is high for some Eastern European countries. The loan loss provisioning/ni variable is also high for some developed countries such as France and the Nordic countries (SA : 16.1%). As a residual, the net profits to net income (net profits/ni) variable reflects to what extent the net interest margin translates into net-of-tax profitability (SA: 29%).

The results of the net profits/ni variable can be practically illustrated as follows:

Assuming a bank has an interest earning asset and interest bearing liability of 1 000 000 in currency X, the following margins and net profits after tax would be generated:

	Margin	Net Profit
Australia	30 000	9 960
USA	39 000	10 062
UK	23 000	9 407
Canada	29 000	5 510
Argentina	73 000	22 119
India	40 000	20 080
Mexico	46 000	7 084

South Africa	39 000	11 310
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Despite having a larger interest margin, South Africa generates a fairly average net profit in line with countries such as Australia and the U.K. The larger interest margin of the South African banks is required to cover:

- Substantially higher overhead costs (45.1%) than those incurred by the U.K. (18.4%) and Australian (32.8%) banks.
- Higher taxes (11.8%) than those incurred by Australian banks (8.5%).

The above results highlight the importance of viewing the margin in the context of the costs which it must cover, including:

- Overheads;
- Taxes; and
- Loan losses.

This concept is illustrated further in Annexure 5.

Columns 7-11 of Annexure 1 further tabulate the various accounting ratios (relative to total assets) in the accounting identity (1) presented above. The non-interest income to total assets (non-interest income/ta) variable reveals the importance of fee-based services for banks in different countries. Banks in Eastern Europe, for example in Estonia, Hungary and Russia, seem to rely heavily on fee-based activities. This is also the case in some Latin American countries such as Argentina, Brazil, Columbia, Peru and a few African countries as in Nigeria, and Zambia (SA: 1.9%).

The overhead to total assets (overhead/ta) variable provides information on the variation in bank operating costs across banking systems. This variable reflects variation in employment as well as in wage levels. Despite high wages, the overhead/ta variable appears to be lowest at 1 percent for high-income countries, such as Japan and Luxembourg. The overheads/ta cost measure is notably high at 3.6 percent for the United States, perhaps reflecting the proliferation of banks and bank branches due to banking restrictions (SA: 3.6%). In the tax to total assets (tax/ta) column, Jamaica, Lithuania and Romania stand out with high tax-to-assets ratios of around 2 percent (SA: 0.5%). Loan loss provisioning, proxied by loan loss provisioning to total assets (loan loss provisioning/ta), is equally high in Eastern Europe, and in some developing countries (SA: 0.7%). Finally, net profits over assets, or net profit/ta, also tends to be relatively high in developing countries (SA: 1.1%).

In Annexure 2 statistics on accounting spreads and profitability for selected aggregates are presented. The first breakdown is by ownership, a bank is said to be foreign-owned if fifty percent or more of its shares is owned by foreign residents. The table displays a rather small difference in the net interest margin variable for domestic banks (at 3.7%) and foreign banks (at 2.9%). This small difference, however, masks that foreign banks tend to achieve higher interest margins in developing countries, and lower interest margins in developed countries. These facts may reflect that foreign banks are less subject to credit allocation rules and have technical advantages (in developing countries), but also have distinct informational disadvantages relative to domestic banks (everywhere).

Interestingly, foreign banks pay somewhat lower taxes than domestic banks (as indicated by the tax/ta variable). This difference may reflect different tax rules governing domestic and foreign banks, but also foreign banks' opportunities to ship profits internationally to minimise their global tax bill. Foreign banks also have a relatively low provisioning as indicated by loan loss provisioning/ta, which is consistent with the view that foreign banks generally do not engage in retail banking operations.

The next breakdown in the table is by bank size. For countries with at least 20 banks, large banks are defined as the 10 largest banks by assets. Large banks tend to have lower margins and profits and smaller overheads relative to total assets and net interest. They also pay relatively low direct taxes, and have lower loan loss provisioning.

The table also considers bank groupings by national income levels and location. Analysing data on 4 income levels, the research indicates that the net interest margin is highest for the middle income groups. Banks in the middle income group also have the highest values for the overhead/ta, tax/ta and loan loss provisioning/ta variables. Banks in the high income group, instead, achieve the lowest net interest margin, and they face the lowest ratios of overheads, taxes, loan loss provisioning, and net profits to assets.

Next, the breakdown by regions reveals that the net interest margin is highest in the transitional economies at 6.4%, and also rather high in Latin America at 6.2%, while it is the lowest for industrialised countries at 2.7%. The transitional countries further stand out with high ratios of overheads, taxes, loan loss provisioning, and net profits to assets. Industrialised countries have the lowest net profit to total assets (net profit/ta) value at 0.4%, probably due to high level of competition in banking services.

Annexure 3 provides information on some of the macroeconomic and institutional indicators used in the regression analysis. The data is for 1995, or the most recent year available. The tax rate variable is computed on bank-by-bank basis as taxes paid divided by before-tax-profits. The figure reported in the table is the average for all banks in the country in 1995. The reserves/deposits variable is defined as the banking system's aggregate central bank reserves divided by aggregate banking system deposits. Actual reserve holdings reflect required as well as excess reserves. Reserves are generally remunerated at less-than-market rates, and therefore actual reserves may be a reasonable proxy for required reserves, as averaged over the various separate deposit categories. For several developing countries, Botswana, Costa Rica, El Salvador, Jordan and for Greece, the reserves ratio is above 40%, indicating substantial financial repression. In contrast, this ratio is rather low in Belgium, France and Luxembourg at 0.01 (SA: 0.04).

The deposit insurance variable is a dummy variable in the regression analysis that takes on a value of one if there is an explicit deposit insurance scheme (with defined insurance premia and insurance coverage), and a value of zero otherwise. Even for the case of an explicit deposit insurance scheme, however, the ex post insurance coverage may prove to be higher than the de jure coverage, if the deposit insurance agency chooses to guarantee all depositors.

With a value of zero, there is no explicit deposit insurance, even if there may be some type of implicit insurance by the authorities.

Next, the annexure presents some indicators of financial market structure. The concentration variable is defined as the ratio of the three largest banks' assets to total banking sector assets. As is well known, the concentration of the US banking market is rather low, at a value of 16%, compared to values of about 50% for France and Germany (SA: 71%). The number of banks in the table reflects the number of banks in the data set with complete information. (SA: 15). The bank to gross domestic product (bank/gdp) ratio is defined as the total assets of the deposit money banks divided by gross domestic product (GDP). This ratio reflects the overall level of development of the banking sector (SA: 67%). The next variable, market capitalisation to GDP (mcap/gdp) is the ratio of stock market capitalisation to GDP, as a measure of the extent of stock market development (SA: 2.09). Developing countries tend to have lower bank/gdp and mcap/gdp ratios, with some notable exceptions. Malaysia, South Africa and Thailand, for instance, have relatively high ratios for both variables.

The final column in the annexure provides an index of law and order, which is one of the institutional variables used in the regression analysis. This variable is scaled from 0 to 6, with higher scores indicating sound political institutions and strong court system. Lower scores, in contrast, reflect a tradition where physical force or illegal means are used to settle claims. The table reflects that there is considerable variation in legal effectiveness among countries in the sample (SA: 4).

4.3 Empirical results

In this section we summarise the empirical results of the World Bank study. The underlying methodologies used in the regression analysis are not discussed in this study, rather the findings are presented for consideration.

4.3.1 *Bank characteristics and macroeconomic indicators*

- There is a positive relationship between bank profitability and capitalisation. Well capitalised firms face lower expected bankruptcy costs for themselves and their customers, thereby reducing their cost of funding.
- Banks lending activities at higher income levels tend to be more profitable.
- In wealthier countries, the presence of non interest earning assets depresses net interest income and profitability more than in poorer countries.
- On the liability side, customer and short term funding consists of demand deposits, savings deposits and time deposits. On average, this type of customer funding may carry a low interest cost, but it is costly in terms of the required branching network.
- There is an indication that a larger share of overhead is passed on to financial customers in wealthier countries. This may reflect more competitive conditions in developed countries.
- Higher overheads eat into bank profits.
- Foreign banks realise relatively high net interest margins and profitability in relatively poor countries. This may reflect that foreign banks are frequently exempt from unfavourable domestic banking regulations, and may apply superior banking techniques.

- Foreign banks' technological and efficiency advantages in developed countries may be insignificant as they face informational disadvantages. This may explain that on net, foreign banks in developed countries are relatively unprofitable.
- Overall, the regression results suggest that inflation has a positive effect on profitability, but the results were not very significant statistically.
- There is some evidence that real interest rate rises do not increase spreads as much in developed countries, perhaps because their deposit rates are not tied down by deposit rate ceilings as real interest rates rise.
- Per capita GDP does not appear to have a significant impact on realised net interest margins. However, there is a positive correlation with profitability.

4.3.2 *Taxation variables*

Banks are subject to direct taxation through corporate income tax and other taxes and they are subject to indirect taxation through regulatory reserve requirements. Regulatory reserves act as an implicit tax if they are remunerated at less than market rates (i.e. the severity of the reserve tax depends on the opportunity cost of holding reserves).

- The holding of reserves negatively affects bank profitability. This suggests that banks are unable to pass on the cost of reserves to their customers in terms of higher interest margins.
- The opportunity cost of holding reserves may be lower in wealthier countries.
- Both the net interest margin and profitability increase with tax rates, but less so in richer countries. This suggests that the corporate income tax is completely passed through to bank customers. This complete pass through is consistent with the assumption that international investors demand a net of tax return on capital invested in a particular country independent of the country's source based taxes.

4.3.3 *Deposit insurance*

Various studies have shown that deposit insurance has a theoretically ambiguous effect on interest margins:

- Deposit rates for insured deposits should decrease given the insurance protection.
- Mispriced deposit insurance provides banks with an incentive to engage in more risky lending strategies to increase the contingent pay-out from the deposit insurance agency. This risk could lead to bank depositors demanding a higher interest rate.

The results of the study were:

- An explicit deposit insurance scheme lowers net interest margins but only has a small insignificant impact on bank profits. This small negative impact on profits may be due to the offsetting impact of mispriced subsidies in actual deposit insurance schemes.
- Explicit deposit insurance regimes do not produce higher bank profitability and margins, perhaps due to design and implementation problems.

4.3.4 *Financial structure variables*

- The bank concentration ratio has a significant and positive impact on bank profitability while bank size, as proxied by total assets, has a significant and positive impact on interest margins only.
- The number of banks has no significant impact on either interest margins or profits.
- A larger stock market per se enables banks to obtain higher interest margins. This may be due to the complementary effect between debt and equity financing. Empirical evidence is provided to show that ability to attract equity capital may also enhance a firm's borrowing capacity, especially in underdeveloped financial markets.
- As stock markets develop, improved information availability increases the potential pool of borrowers, making it easier for banks to identify and monitor them. This increases the volume of business for banks, making higher margins possible.
- A larger stock market relative to the banking sector lowers bank margins, reflecting substitution possibilities between debt and equity.
- The impact on interest margins of any stock market developments is muted in wealthier countries.

4.3.5 *Legal and institutional indicators*

- The degree to which contractual agreements are honoured and not subject to language and mentality differences affects both margins and profitability. Lower contract enforcement may in fact prompt banks to require higher interest margins and investors to require higher profitability to compensate for the additional risk.
- The effect of contract enforcement is more muted in wealthier countries.
- An effective legal system reduces the required risk premiums on bank lending. Therefore, the extent to which the legal system works well in adjudicating disputes lowers interest margins.
- Cleaner government (i.e. low likelihood of government officials taking a bribe) is associated with lower realised interest margins. This is because a bank may well require a lower risk premium for their investments in countries which have an environment relatively free of corruption.
- Overall, the legal and institutional variables are important in explaining cross-country variation in interest margins and bank profitability.

4.4 **Conclusions**

Banking systems around the world differ widely in size and operation. Across countries, commercial banks have to deal with different macroeconomic environments, different explicit and implicit tax policies, deposit insurance regimes, financial market conditions, and legal and institutional realities. Using a comprehensive cross-country data set with bank-level data, the study analyses how bank characteristics and the overall banking environment affect the functioning of banks, as reflected in interest margins and bank profitability.

The study confirmed some findings in earlier research, for instance a positive relationship between capitalisation and profitability, and a negative relationship between regulatory reserves and profitability. Other important determinants of bank margins and profitability, such as ownership, corporate taxation, financial structure and the legal and institutional setting were not considered in previous studies.

The study finds that foreign ownership is associated with higher interest margins and bank profitability, especially in developing countries. Similarly, several institutional factors, such as indices of credit rights, law and order and corruption, and differences in financial structure, have more pronounced effects on interest margins and bank profitability in developing countries than in developed countries. These results may reflect the relatively closed nature of banking markets in developing countries. Coupled with earlier empirical evidence that a weak institutional environment makes banking crises more likely (Demirguc-Kunt and Detragiache, 1997), these results suggest that returns to improving underlying institutions are indeed high.

Regulatory reserves also have a more pronounced impact on margins and profitability in developing countries than in developed countries. This latter result may simply reflect the relative high opportunity cost of holding regulatory reserves in poorer and more inflationary countries.

Corporate income tax appears to be passed on fully to bank customers, in developing and developed countries alike. This finding is consistent with the notion that bank investors require net-of-company-tax returns independent of the level of company taxation. It also implies that the corporate income tax on banks is likely to distort the underlying saving and investment decisions, with possibly negative implications for economic growth. These considerations have to weigh heavily in considering the merits of the corporate income tax on banks as part of the overall tax system.

On the other hand, the study finds that regulatory reserves depress bank profits. Prima facie this suggests that reserve requirements are a better instrument to tax bank profits than the corporate income tax. Note that the implicit reserve tax in many countries, however, is much more variable than the corporate income tax. The level of banking investment and activity therefore is unlikely to be adjusted to each and every change in the implicit reserve tax. Variability in the reserve tax therefore can go a long way towards explaining the responsiveness of bank profits to this tax.

5 Banking in South Africa

5.1 Introduction

Based on the macro picture outlined in the preceding chapters, the purpose of this chapter is to review the profitability of the four major banks in the South African market (i.e. ABSA, FNB, Nedcor and Standard Bank). Chapter 6 then differentiates between profitability generated from “lending” and “non-lending” activities.

Competition ensures that the right balance is struck between bank profits and consumer interest. Despite being dominated by four large banks, the South African banking system is known for its competitive nature. It is not in the interest of the consumer to have an unstable banking system, as they will be affected by losses from bank failures. In addition, an unstable bank system will deter foreign investors, which will in turn lead to lower economic growth and much needed job creation.

Banks protect themselves against risks in a number of ways:

- By earning sufficient margins they can provide for bad debts and cover operating costs;
- By diversifying sources of revenue to ensure that they are less margin sensitive; and
- By managing overhead costs, to ensure that they don't become excessive.

Historically, South African banks have had high cost ratios due to their large branch infrastructure, combined with rising staff and information technology (IT) costs. Furthermore, they have been reliant on margin income as their main source of revenue, an issue exacerbated by the fact that a large proportion of the funding in South Africa is short-term and has wholesale characteristics which means it is generally more expensive and re-prices more quickly than retail funding. Some banks have initiated successful restructuring programmes diversifying revenues and reducing costs. Some, however, still remain exposed, particularly those with lower levels of liquidity, which together with the increase in bad debts from high interest rates will have a negative effect on profitability levels. Smaller banks tend to be exposed to a greater degree than larger banks during high levels of market volatility, due to their niche focus and lack of critical mass. During these periods their ability to attract funding is also lower than larger players. Given their reliance on wholesale funding, this translates itself into a higher risk premium being paid for funds. However, higher levels of capital provide some comfort during these periods.

5.2 Overview

As discussed previously, two popular measures of bank profitability are return on equity (ROE) and return on assets (ROA). However, the asset based measure does not always reflect the fact that much of banking business is no longer reflected on the balance sheet and ROE is tending to emerge as the significant performance measure. In addition, ROE is more likely to be a more relevant measure of performance for shareholders as it focuses on the ability of management to generate profits per Rand of shareholders' equity.

ROE is defined as net income after tax divided by the average shareholders funds, expressed as a percentage. This can be shown as follows :

$$\frac{\text{Net income after tax}}{\text{Average equity}}$$

As stated above, this measure acts as an indicator of the return that shareholders achieve. Shareholders have an expectation of the required return and if this is not achieved, the shares of the bank will be sold until the price reaches a level that justifies the returns being achieved by the bank.

The ROE currently being achieved by the four major South African banks are :

Table 5.2.1 : Return on equity

Name of Bank	1997
ABSA	18.0
FNB	21.0
SBSA	21.0
Nedcor Bank	23.0

(Source: Annual Financial Statements - 1997)

The minimum return expected by shareholders can be estimated by using the Capital Asset Pricing Model (CAPM) which specifies the relationship between risk and required rates of return on assets when they are held in well-diversified portfolios. The calculated return is the minimum return required to persuade investors to purchase the share, or to hold it. The required rate of return equals a risk-free rate plus a risk premium. A share's *excess* return, for the purposes of the capital asset pricing model, is its expected rate of return less the risk-free rate of return. The capital asset pricing model describes an expected risk-return relationship for all individual shares under conditions of market equilibrium. A particular share's price will be in equilibrium only when the share's expected return equals its required rate of return. When there is market equilibrium, a linear relationship between a share's required excess return, and its systematic risk, measured by beta, will prevail. This linear relationship is manifested in the security market line, which relates the beta coefficients of individual securities to their required rates of excess return over and above the risk-free return. The equation of the security market line is :

$$E(R_j) = i + B_j[E(R_m) - i]$$

for a particular security j , and where the expected return for the market portfolio is $E(R_m)$, B_j is the beta of security j , i is the risk-free rate, and carry over $E(R_m) - i$ the required rate of excess return over the risk-free return. An example of this concept is shown in the box below.

If share ABC Ltd has a beta of 1,4, and if the expected return for the market portfolio is 19%, and the risk-free rate is 15%, ABC Ltd's expected return will be :

$$E(R_{ABC LTD})=0,15+1,4(0,19-0,15)=20.6\%$$

Conversely, the lower the beta, the lower the risk, and the lower the expected return required.

An estimated benchmark of the risk premium for the banking industry in South Africa is between 4% - 6%¹. Therefore, the required minimum return of a bank in South Africa can be estimated as follows :

1996	Required minimum return	=	Risk free rate + risk premium
		=	15.32% ² + 5%
		=	20.32%
1997		=	14.76% ³ + 5%
		=	19.76%

“Once a target ROE is set, it has to be consistent with pricing and operating costs. The net interest margin plus fees results from the target net income and all operating costs. Customer pricing results from this target interest margin.”⁴ Comparing these required returns to the ROE shown in Table 3.1 indicates that South African banks do not have excessive ROE. However, in order to analyse these ratio’s in more detail, it is necessary to analyse the individual components of the ROE equation.

5.3 Capital

Capital management is subject to minimum regulatory requirements. These constraints have several consequences:

- The shareholders’ required return sets the profitability target of the bank;
- This profitability target has an impact on the pricing policy; and
- Capital availability constrains the growth, either in volume of operations or in risks, or both.

In terms of the Banks Act of 1990, every bank is required to maintain a minimum amount of primary and secondary share capital and primary and secondary unimpaired reserves. Capital is held to ensure the solvency of the bank even if it experiences significant variations in performance. That is, the capital held acts as a buffer against future unidentified losses, whilst still leaving the bank able to operate at the same level of capacity. The amount of capital held is directly related to the risk exposure the bank faces.

¹ Decimax

² Average R150 rate for year ended 31 December 1996

³ Average R150 rate for year ended 31 December 1997

⁴ Jo 1 Bessis, Risk Management in Banking

Hence the regulators of the banking industry require that this 'safety margin' or buffer is enforced as the delivery mechanism and role of a sound banking system is, as previously stated, vitally important in an economy as a whole. The more capital a bank has, the safer it will be perceived and the more likely depositors and investors will place their funds with the bank.

The current South African capital requirement which is based on the 1988 Basle Capital Accord is that a bank's capital cannot be less than the greater of R50 million or 8% of the total value of its asset base, including off balance sheet exposures, weighted by set risk weightings on individual categories of assets. The minimum ratio of capital to risk weighted assets of 8% is in line with international requirements.

There is, however, a trade off because, as mentioned above, an optimum return on the capital invested in the bank by the shareholders is required. The more capital a bank holds, the more difficult it is to generate the return required by shareholders (i.e. the higher the amount of capital a bank maintains, the higher the profit it will have to earn in order to make the target return).

The table below highlights the capital position of the four major banks against the minimum requirements :

Table 5.3.1 : Capital adequacy ratios - South Africa's major banks

<i>Name of Bank</i>	<i>Capital Ratio</i>	<i>Minimum</i>
ABSA	9.8 (1998)	8%
FNB	10.8 (1997)	8%
SBSA	11.9 (1998)	8%
Nedcor Bank	10.6 (1997)	8%

(Source: Annual Financial Statements)

This can be compared to developed countries which have similar statutory capital requirements:

Table 5.3.2 Capital adequacy ratios - developed countries

<i>Country</i>	<i>1997 %</i>
USA	12.0
Canada	10.0
United Kingdom	12.3
Australia	9.8

(Source: 1998 Financial Institutions Performance Survey, KPMG - Australia).

The above tables highlight that South African banks do not carry excessive amounts of capital which might reduce their ROE. Therefore, if South African banks are to achieve their required ROE's, the focus will have to be on the return component of the ROE measure which is discussed below.

5.4 Return

The return of a bank can be broken down into the following elements :

- Interest income
- Add : Non funded income
- Less : Operating costs
- Less : Bad debt write off's

Return

While each of these elements are dealt with individually below, it must be reiterated that they are all interrelated. For example, if South African banks were to decrease their interest margins but still achieve their required ROE, one or a combination, of the following would have to take place :

- Increase in non funded income
- Decrease in operating costs
- Decrease in bad debt write off's

5.4.1 Interest income

The interest income is defined as the difference between the interest earned on interest earning assets and the interest paid on an interest bearing liability. This is traditionally the most significant component of earnings generated by the four major South African banks.

Table 5.4.1.1 Interest income as a % of total income

<i>Name of Bank</i>	<i>1997 %</i>
ABSA	65.87
FNB	51.63
SBSA	54.53
Nedcor Bank	57.71

(Source: *Banking Survey Africa, 1998, KPMG*).

Interest income is usually measured by the interest margin calculation. Interest margin is defined as the net interest income divided by average interest earning assets of the bank. Much has been said recently about South African bank's interest margins. Prior to the current market volatility, banks enjoyed what appeared to be relatively wide margins which attracted some negative publicity. These gains have however recently been eroded as capital outflows caused liquidity shortages which increased interest rates at which banks could borrow. Banks were slow to adjust their own rates in the hope that it was short-term, together with the adverse impact from bad debts and possibly to avoid further public criticism.

Bank margins should reflect the risks that banks are exposed to. Notwithstanding the South African banking sector's first world status, it operates in an emerging market and is exposed to various types of risks and, as such, comparisons should be made on this basis. SA's status as an emerging market with a non investment grade (BBB+) sovereign credit rating⁵ indicates that risks are inherently higher in this market than those of a 'AAA' status. These distinct circumstances mean that financial systems tend to compensate for the resultant market volatility. This can be classified as a 'risk premium' which would be priced into bank margins, resulting in wider margins than those in more stable economies. Therefore, it is not appropriate to compare the margins of South African banks to certain large US or European banks with their relatively strong and stable economies. If one compares South Africa with other emerging markets like Argentina, India and Mexico then South Africa finds itself at the lower end with margins averaging just below 4%.

This can be summarised in the tables below:

Table 5.4.1.2 : Interest margins - South Africa's major banks

<i>Bank</i>	<i>%</i>
ABSA	3.4
FNB	4.0
SBSA	4.2
Nedcor Bank	3.4
Average	3.7

(Source: Composition of income statement survey - 1998, KPMG)

⁵ Standard & Poor rating as at September 1998.

Table 5.4.1.3 : Interest margins - comparative countries

<i>Country</i>	<i>%</i>
Argentina	5.0
India	3.5
Mexico	4.4

(Source : Bank of International Settlements)

Table 5.4.1.4 Interest margins - other African countries

<i>Country</i>	<i>%*</i>
Botswana	8.8
Ghana	10.6
Kenya	6.9
Mauritius	4.6
Zimbabwe	7.7

* Calculated using total average assets

(Source: KPMG Africa)

Table 5.4.1.5 : Interest margins - developed countries

<i>Country</i>	<i>1997 %</i>
USA Supra-regional banks	4.5
Canada	2.3
United Kingdom	2.5
Australia	3.4

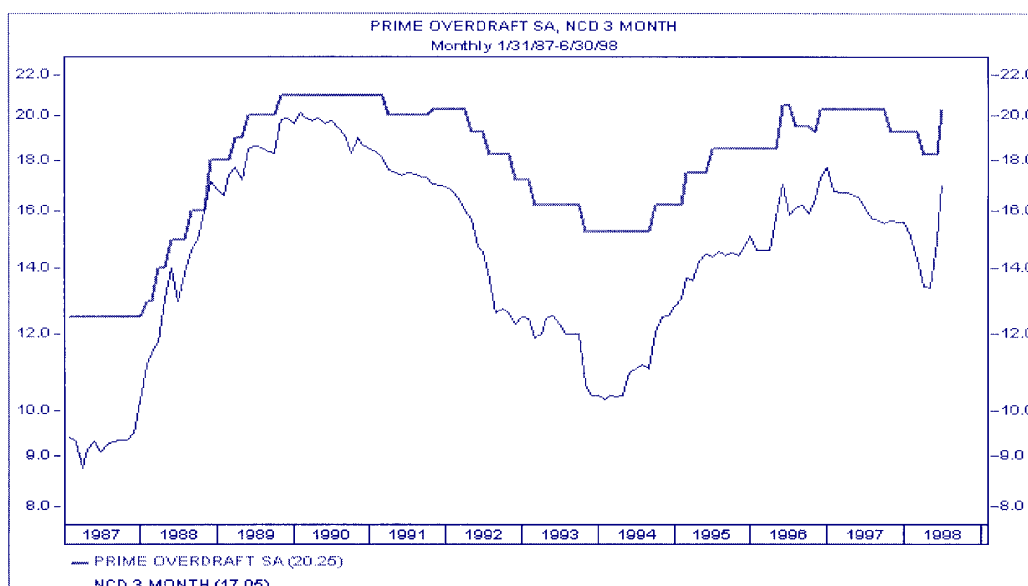
(Source: 1998 Financial Institutions Performance Survey, KPMG - Australia)

Other points to take into account when considering the size of the interest margins in South African banks are :

- The composition of a bank's funding is another factor causing pressure on margins. A large proportion of the bank's funding is raised by way of wholesale funds, which re-prices more quickly than retail funds and is thus a more expensive form of funding. This phenomenon, which is common amongst all local banks, results from the shortage of retail funds brought about by a poor history of domestic savings as well as attractive alternative investment options available to investors (especially when the impact of taxation is taken into account). In respect of the latter, the unit trust industry, which has shown tremendous asset growth over the past four years, has attracted a vast amount of available retail funds away from banks.

In other words, although retail cheque and transmission accounts earn a very low rate of interest and serve as a cheap source of funding for the commercial banks, they make up a very small portion of the four major banks total funding. The remainder of funding is from wholesale funds and from SARB borrowing which are much more expensive methods of funding.

- Banks interest margins are influenced by market fundamentals, in particular local interest rate trends, domestic credit growth and the money market shortage. The general affect that these items have on interest spreads are as follows:
 - As movements in deposit rates generally precede any movements in lending rates, available margins tend to narrow during periods of rising interest rates, but widen when interest rates fall. This can be illustrated by the gap between the prime rate and the three month NCD rate. This gap has traditionally been used as a proxy for what happens to bank margins. Note how the margin tends to widen at the bottom of the interest rate cycle and narrow at the top. It must be noted that this measure of margins is becoming less valid due to the ability of the banks to hedge their interest rate risk. This is illustrated further in part (B) of Annexure 5.



- The upward pressure that is exerted on deposit rates during times of strong credit growth causes interest margins to narrow during this time. This is due to the increasing demand for bank deposits during times of strong credit growth. Despite attempts by the SARB to curb high credit growth, the demand for credit in South Africa remains high.
- An increase in the level of the money market shortage is generally negative for bank interest spreads. This is because SARB accommodation is generally quite a lot more expensive than overnight call funding.
- Another important factor influencing bank margins is the regulatory environment. The two regulations affecting interest margins are the liquid asset requirement and the cash reserve requirement.
 - In terms of the liquid asset requirement a bank is required to hold liquid assets equal to at least 5% of its total liabilities less capital and reserves. Liquid assets include notes and coins, gold coin and bullion, clearing account balances, treasury bills, RSA government stock, securities of the Reserve Bank and Land Bank bills. These items generally yield a lower rate of interest than conventional bank lending, meaning that any increase in the liquid asset requirement is detrimental for bank margins.
 - In terms of the cash reserve requirement a bank is required to deposit cash equal to 2.5% of its total liabilities interest free with the Reserve Bank. In determining the quantum of the cash reserve, a bank is entitled to set off the amount of vault cash that it holds.
 - Historically, the cost of the above prudential requirements is estimated at between 50-60 basis points.

5.4.2 *Non funded income*

Non funded income consists of the non interest income earned by banks. This is tending to be a growing component of the majority of bank's total income.

Table 5.4.2.1 : Proportion of NFI to total income - South Africa's major banks

<i>Banks</i>	<i>%</i>
ABSA	34.13
FNB	48.37
SBSA	45.47
Nedcor Bank	42.29

(Source : *Banking Survey Africa, 1998, KPMG*)

As highlighted in chapter 3, banks will not be able to generate all of their income from this source. However, growing non funded income allows the banks to diversify their risk profile.

5.4.3 *Operating costs*

The cost to income ratio has become an important measure of bank efficiency. The tables below show the ratio for the four major South African banks.

Table 5.4.3.1. : Cost/income ratio - South Africa's major banks

	%
ABSA	68.24
FNB	63.77
SBSA	63.37
Nedcor Bank	58.67

(Source: *Banking Survey Africa, 1998, KPMG*)

Comparing to developed countries :

Table 5.4.3.2 : Cost/income ratio - developed countries

<i>Country</i>	%
USA	62.0
Canada	64.0
United Kingdom	55.5
Australia	63.2

(Source : *1998 Financial Institutions Performance Survey, KPMG - Australia*).

While South African banks have been focusing on bringing their cost to income ratios in line with those of the banks in the more developed countries, there are a number of specific factors which contribute to their high cost structures:

- South Africa is regarded as having one of the highest crime rates in the world. This has had a direct effect on banks, which have experienced an increase in the number of cash heists, robberies and white-collar crime. In addition, the costs of maintaining adequate security at outlets throughout the country runs into millions each year. Fraud and robberies are costing the banks over R1 billion per annum.
- The infrastructures which local banks maintain in order to conduct business are extremely large. This is mainly because of the geographic spread of their customer bases, the various levels of customer sophistication and the resultant diversity of customer needs. In addition, the banks maintain a large ATM network. These machines are obtained from overseas and are paid for in foreign currency, which makes them more expensive given the deterioration of the Rand.

Table 5.4.3.3: Number of branches, service branches and agencies

<i>Banks</i>	<i>Local Branches</i>
ABSA	1 090
FNB	690
SBSA	852
Nedcor Bank	465

(Source: Banking Survey Africa 1998, KPMG)

Table 5.4.3.4: Number of ATM machines

<i>Banks</i>	<i>ATM's</i>
ABSA	1 696
FNB	1 532
SBSA	2 099
Nedcor Bank	1 000

(Source: Banking Survey Africa 1998, KPMG).

- It is estimated that 60% of the economically active population is unbanked. There has been a steady move by the banks towards bringing this segment into the formal banking sector. However, there are costs associated with this move which need to be recovered. Such costs include, amongst others, consumer education, staff training, the provision of adequate infrastructure and investment in technology.
- Efficiency of staff - South African banks have to cope with a generally poorly educated staff and in the case of highly qualified staff, they are competing with emigration as well as local competition by overseas banks. As highlighted below, a significant portion of the bank's costs are related to staff costs.

Table 5.4.3.5: Staff costs as a % of total costs

<i>Banks</i>	<i>%</i>
ABSA	62.7
FNB	53.4
SBSA	50.0
Nedcor Bank	47.0

(Source: Annual Financial Statements - 1997)

- As South Africa continues to open up to international markets the requirement to invest in complex technology and systems, just to remain competitive, becomes imperative. However, the cost of maintaining a world-class banking sector is not cheap as a large proportion of the costs involved in development, testing and installation of new systems are paid in US Dollars or British Pounds, which, as a result of a deteriorating exchange rate, becomes increasingly more expensive. For example, since January 1998, the Rand has declined by approximately 29% against the British Pound and 27% against the US Dollar.
- South African banks operate in a comparatively high inflation environment. This translates into a continuous and rapid increase in administrative costs, including salaries. This inflation of costs must be covered by increasing transaction charges as the interest margin does not necessarily increase merely because of cost inflation.
- Due to the fact that the function of paying wage and salary earners in South Africa has largely been passed over to the banks, there has been an increase in banks' infrastructure to cope with the resultant peaks at the end of each week and the end of the month. This costly infrastructure remains under-utilised during off peak periods.
- Telecommunications costs are high due to the distances involved as well as frequent line and other failures. Banks have to run permanent backup lines and take other costly precautions.

5.4.4 *Write offs*

With the high real interest rates which currently exist in the South African market, the potential for a significant increase in bad debts is growing. An example of this can be seen with the 'de-linking' of the mortgage rate from the prime rate - banks did not want to continue pushing up their mortgage rates due to the off-setting (and potentially even larger) effect on bad debts. Household debt in South Africa as a percentage of personal disposable income is approximately 70% (1993-54%) and the trend remains upward. Consequently, in a high real interest rate environment the risk of default tends to increase for which increased provisions need to be made which in turn have a negative effect on the bottom line.

The extent of write-offs required by banks can be measured by the ratio :

$$\frac{\text{Charge for bad \& doubtful debts/}}{\text{average advances}}$$

This ratio has been summarised in the tables below:

Table 5.4.4.1 : Write offs - South Africa's major banks

<i>Bank</i>	<i>%</i>
ABSA	0.60
FNB	0.94
SBSA	0.55
Nedcor Bank	0.52

(Source : *Banking Survey Africa 1998, KPMG*).

Comparing to other countries:

Table 5.4.4.2: Write offs - comparative countries

<i>Country</i>	<i>%</i>
Argentina	1.8
India	0.7
Mexico	1.1

(Source : Asli Demirguc-Kunt and Harry Huizinga : *Determinants of Commercial Bank interest margins and profitability : Some international evidence*)

Table 5.4.4.3 : Write offs - developed countries

<i>Country</i>	<i>%</i>
USA	0.80
Canada	0.30
United Kingdom	0.40
Australia	0.22

(Source: 1998 Financial Institutions Performance Survey, KPMG - Australia).

As can be seen from the above tables, South African banks tend to experience higher levels of bad debts than the developed countries. There are a number of factors specific to South Africa which aggravate the level of bad debts and losses:

- A significant level of the population is unemployed or is vulnerable to retrenchment.
- South Africa continues to be a relatively high inflation and a high real interest rate environment.
- There are many communities where non-payment of service charges, rates and loan instalments has become endemic. An example of this is the 31 500 non performing loans in the low income housing market. In addition to not recovering interest on these loans, banks have also had to carry the cost of security, service charges and rates.

6 An analysis of South Africa's major banks - Lending vs Non lending activities

Following on from the previous chapter, chapter 6 attempts to split the profitability of the four banks into two components:

- Lending activities - representing the traditional intermediation function performed by banks
- Non lending activities - representing the non disintermediation functions of banks (e.g. trading, corporate finance etc.)

The figures presented below are based on the results of a detailed survey conducted amongst the four major banks who represent 80% of the industry on the net interest after tax basis, as reported by the banks in their DI200 returns to the Registrar of Banks. A copy of the survey and the definitions used is contained in Annexure 4. It must be noted that a survey of this nature has certain limitations due to the inability to ensure 100% consistency across all of the banks.

Inconsistencies result from:

- Different approaches being adopted
- Different interpretations
- Lack of adequate detailed management information to apply consistent methods.

Areas in which inconsistencies arise include:

- Funds transfer pricing

The banks in South Africa use different methodologies and transfer rates. Although there is a move towards Matched Funds Transfer Pricing, not all banks have implemented this methodology. This results in some banks being able to measure the income/loss embedded in the net interest turn that is attributable to mismatch of the banks balance sheet, while other banks do not separately identify this income/loss.

Some banks do not transfer price the shortfall in funding of the branches resulting in a net interest expense by the funding desk and a net interest income in the branches. This misrepresents the profitability from lending versus non-lending activities.

- Capital allocation

The allocation of capital to business costs based on risk is also a concept currently being implemented. Currently some banks allocate capital while others not. The allocation of capital based on risk is important in establishing the true cost of the business activity.

- Cost allocation

The allocation of costs between business activities varies between banks due to differences in interpretation of the nature of activities and the income arising from the activities.

Where possible adjustments have been made to eliminate inconsistencies but this has not been possible for all instances. The results reflected below do however provide an indication of the results of lending versus non-lending activities of the major banks in South Africa. The results should not be interpreted based on the Rand values but rather on the trend they indicate.

Table 6.1 : Composition of the income statements of the four major South African banks for the year ended 31 December 1997

	%	Income statement R'000	Cost of capital R'000	'True' profitability R'000
A. Lending activities				
■ Net interest margin		16 072 155		
■ Operating expenses		(12 061 019)		
■ Credit risk		(3 431 407)		
■ Transaction based income		2 656 911		
NIBT from lending activities	50.87*	3 236 640	(3 418 009)	(181 369)
B. Non lending activities				
■ Trading		2 772 808		
■ Credit risk		(36 000)		
■ Knowledge based income		1 084 381		
■ Operating expenses		(694 829)		
NIBT from non lending activities	49.13	3 126 360	(458 283)	2 668 077
Total NIBT	100	6 363 000	(3 876 292)	2 486 708
Taxation		(1 930 347)		(1 930 347)
Net income after tax		4 432 653		556 361
Average assets		430 997 000		
Average shareholders equity		21 842 000		
Ratios				
Net interest margin		3.7%		3.7%
Return on equity		20.3%		2.5%

The above table is split into the following columns:

- Income statement - this reflects the actual results of the banks. The NIAT reconciles to the DI200's submitted to the SARB. For definitions of the individual components, refer to Annexure 4 .

* Excluding the interest rate mismatch, the net income before tax (NIBT) from lending activities makes up 30% of total NIBT.

- Cost of capital reflects a deduction for the return required by the providers of capital and debt. The cost of capital was calculated using 16% Tier 1 capital and the banks actual cost for Tier 2 capital. Refer to section 5.2 for a discussion of the CAPM model. The allocation of capital between the lending and non lending activities is based on the individual banks method of allocation. This allocation methodology should be a reflection of the risk profile of the various activities.
- 'True' profitability reflects the returns generated by the four major banks after deducting the cost of capital.

Explanation of the results reflected in the survey:

- Net interest margin

The net interest margin represents the interest received from customers borrowings less the interest paid on customers deposits divided by average total assets. It also includes the interest received on the investments of the bank in liquid assets as these are made as a consequence of the deposits from customers. In addition the interest mismatch that arises from the maturity mismatch of the assets and liabilities of the bank is also included. There are differences of opinion as to whether the mismatch should be attributed to lending activities or rather due to the other activities of the bank. The estimate of the mismatch of the four major banks is R1 083 166.

- Operating expenses

Operating expenses reflect the costs to the bank associated with providing the services to the customers of the bank. The costs including staffing, administrative overheads, information technology and bank branch costs. The cost to income ratio of the major banks is further explained in section 5.4.3.

- Credit risk

Credit risk represents the bad debts and provisions for doubtful debts raised by the four major banks during the period. The level of bad debts is further explained in section 5.4.4.

- Transaction based income

This income is net of direct expenses associated with providing specific services to customers of the banks. The nature of the services include:

- Provision of bank statements
- Use of automated terminals and other electronic services

- Trading

Trading income generated by the banks arises from activities within the capital and money markets. They are not associated with customer activities.

- Knowledge based income

Knowledge based fee income includes income from buy outs, listing fees, mergers and acquisitions etc (i.e. not interest related).

The results of the above table highlight the fact that, after making the adjustment for cost of capital, the traditional intermediation function of the banks is not profitable. This is due to the fact that the net interest margin of the banks is not sufficient to cover operating expenses and write off's and still generate an adequate return on the capital required to cover the risks associated with the intermediation activities of the banks. The four major banks generated their profits out of the non lending activities.

The net income after tax earned by the four major banks is R4 432 653. Part of these earnings is reinvested for growth while the balance is then paid as a return to shareholders. The net interest margin of the four major banks is calculated at 3.7% of average total assets. This is further discussed in section 5.4.1.

The return on equity being return on Tier 1 capital is calculated at 20.3%. This is further discussed in section 5.2. The return after adjusting for the cost of capital reduces to 2.5%. This represents the return in excess of money market rates to reward shareholders for the extra risk of investing in banks instead of in "risk free" investments such as Government bonds.

7 Conclusion

Chapter 5 focused specifically on bank margins and their relationship to profitability of the four major banks in the South African market. Due to the fact that ROE was identified as being the significant performance measure, the profitability was reviewed on this basis.

Once it was established that the South African banks are not currently achieving excessive ROE's, the individual components of the ROE calculation were then reviewed in more detail to identify the factors contributing to the current profit levels. Although each component was discussed separately, it must be emphasised that all of the components are interrelated. Therefore, it is not possible to focus on an individual component (e.g. interest margins) while ignoring the others. For instance, the size of the interest margins must be reviewed in the context of:

- Levels of credit losses influenced by the high interest rate environment and significant levels of unemployment.
- High operating cost affected by factors including the high crime rate and significant infrastructural requirements.

In summary, the four major banks are achieving returns close to the minimum returns required by the CAPM model. If banks had to decrease their interest margins, these minimum returns would not be achieved unless one or a combination of the following happened:

- Increase in non funded income
- Decrease in operating costs
- Decrease in bad debt write off's

These results are consistent with the findings of an international empirical study conducted by the Development Research Group of The World Bank into the determinants of bank interest margins and profitability. The study highlighted the effect that a number of variables have on bank profitability and the return that banks generate for their shareholders. This is further illustrated by the fact that the margins of South African banks remain fairly stable under varying interest rate scenarios. That is, the size of the interest margin is not driven by the interest rate environment, but rather the return required to service the providers of capital.

Following on from this, chapter 6 highlighted the fact that, after adjusting for cost of capital, the traditional intermediation function of banks is not profitable. This is due to the fact that the net interest margins of banks is not sufficient to cover operating expenses and write offs and still generate an adequate return on the capital required to cover the risks associated with the intermediation activities of the banks.

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