

**ASPECTS OF THE NEW REPURCHASE SYSTEM OF
MONETARY CONTROL IN SOUTH AFRICA**

by

SAMANTHA CLAIRE SPRINGFIELD
B.Econ., B.Econ.(Hons)(Rhodes)

DISSERTATION SUBMITTED TO THE FACULTY OF
COMMERCE IN FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF ECONOMICS
IN THE
**DEPARTMENT OF ECONOMICS AND ECONOMIC
HISTORY**
AT
RHODES UNIVERSITY

SUPERVISOR: PROFESSOR HUGO NEL
DATE SUBMITTED: January 2001

DECLARATION

**ASPECTS OF THE NEW REPURCHASE SYSTEM OF
MONETARY CONTROL IN SOUTH AFRICA**

MASTER OF ECONOMICS 2001

I, **Samantha Claire Springfield**, do hereby declare that this dissertation which is submitted to Rhodes University for the degree of Master of Economics has not been previously submitted by me for a degree at any other university, that it represents my own work both in conception and execution, and that all the sources that I have used and quoted have been indicated and acknowledged by complete reference.

Signed by me _____ on this 10th day of JANUARY, 2001

DEDICATION

This work is humbly dedicated to
my mother, Valerie Springfield, for her
inspiration and determination which saw me
through my university career.

I also wish to dedicate this to my brothers and sisters, who have
been an inspiration to me.

ACKNOWLEDGEMENTS

I wish to thank the following people for their endless support, help, and contribution in the completion of this study.

To my supervisor, Professor H Nel, without whose guidance, this would not have been possible.

I wish to thank my brothers, Gareth, Vaughan, Ivor, and Roger, and my sisters, Simone and Nicole, for all their support and encouragement. I wish to thank Marius Botha, for his endless support. Finally, a very special thanks to my mother, Valerie Springfield.

ABSTRACT

The main objective of monetary policy is to protect the value of the currency, and in so doing, achieve the objectives of maximum economic growth, development, and the creation of employment opportunities. As from 1985, under the advice of the De Kock Commission, the South African Reserve Bank (SARB), implemented the classical cash reserve system of monetary control. Under this system, the SARB was willing to refinance the money market shortage fully, automatically, and on certain predetermined terms, conditions and costs. However, since the new political dispensation in 1994, South Africa's financial markets have become more globalized, liberalised, and integrated. Thus, the classical cash reserve system had lost its usefulness, and was no longer effective. As from March 1998, the SARB implemented the new repurchase system of monetary control.

In implementing the repurchase system of monetary control, South Africa was adopting a more eclectic approach. This system is aimed at making monetary policy more effective and more flexible in a financial environment filled with complexities. This study finds that the repurchase system has thus far been successful in meeting its objectives. Interest rates are more flexible and sensitive to developments in the domestic and external environment, the signalling mechanism of the SARB has proved to be successful, accommodation and interest rates are closely related and the interbank market has become more developed. Therefore, the repurchase system appears to be more efficient than the previous system of monetary control in South Africa.

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

1.1	CONTEXT OF THE STUDY.....	1
1.2	GOALS OF THE RESEARCH.....	2
1.3	METHODOLOGY.....	3
1.4	RESEARCH FRAMEWORK.....	4

CHAPTER TWO

THEORETICAL FOUNDATIONS OF MONETARY POLICY

2.1	INTRODUCTION.....	6
2.2	DEFINITION OF MONETARY POLICY.....	7
2.3	THEORETICAL SCHOOLS OF THOUGHT.....	7
2.3.1	Classical Theory.....	7
2.3.2	Orthodox Keynesian Theory.....	15
	(1) Monetary Transmission Mechanism.....	18
2.3.3	Monetarist Theory.....	24
2.3.4	Post-Keynesian Theory.....	30
	(1) Common Themes.....	30
	(2) Wealth Effects and Credit Rationing Effects.....	36
2.4	CONCLUSION.....	38

CHAPTER THREE

MONETARY POLICY IN SOUTH AFRICA UP TO 1998

3.1	INTRODUCTION.....	40
3.2	THE PERIOD BEFORE THE DE KOCK COMMISSION.....	40
3.3	DEFICIENCIES OF MONETARY POLICY BEFORE THE DE KOCK COMMISSION.....	45
3.4	THE DE KOCK COMMISSION'S RECOMMENDATIONS.....	48
3.5	MONETARY POLICY UNDER DR. GERHARD DE KOCK.....	51
3.6	THE CONTROL MECHANISM IN MORE DETAIL.....	56
3.6.1	The Cash Reserve System.....	58
3.6.2	Policy Instruments.....	59
	(1) Public Debt Management.....	59
	(2) Open Market Operations.....	60
	(3) Bank Rate and Discount Policy.....	62
3.7	EVENTS LEADING TO THE DEMISE OF THIS SYSTEM.....	64
3.8	CONCLUSION.....	68

CHAPTER FOUR

MONETARY CONTROL PROCEDURES IN GERMANY: A CASE STUDY

4.1	INTRODUCTION.....	69
4.2	THE INTERMEDIATE TARGETS OF MONETARY POLICY.....	69

4.2.1	The Bundesbank Monetary Targets.....	72
4.3	OVERVIEW OF THE GERMAN MODEL.....	74
4.4	MONETARY CONTROL PROCEDURES IN MORE DETAIL	75
4.4.1	Minimum Reserve Policy.....	76
4.4.2	Refinancing Facility.....	79
	(1) Rediscount Policy.....	79
	(2) Lombard Policy.....	82
4.4.3	Open Market Policy under Securities Repurchase Agreements.....	85
4.5	SUCCESSSES OF THE SYSTEM.....	89
4.6	CONCLUSION.....	91

CHAPTER FIVE

THE NEW REPURCHASE SYSTEM IN SOUTH AFRICA

5.1	INTRODUCTION.....	93
5.2	THE REPURCHASE SYSTEM.....	94
5.2.1	The Repurchase Lending Facility	97
	(1) Practical Procedures for the New Repurchase System.....	102
5.2.2	The Cash Reserve Requirement.....	106
5.2.3	The Marginal Lending Facility.....	107
5.2.4	Signalling to the Market.....	109
5.3	IMPLEMENTATION OF THE REPURCHASE SYSTEM.....	110
5.4	CONCLUSION.....	111

CHAPTER SIX

IMPACT OF THE REPURCHASE SYSTEM ON MARKET INTEREST RATES, MONEY SUPPLY GROWTH, AND ACCOMMODATION PROCEDURES

6.1	INTRODUCTION.....	113
6.2	MONEY MARKET INTEREST RATES.....	114
6.2.1	Analysis of Money Market Interest Rates under the Previous System of Accommodation versus the New Repurchase System of Accommodation.....	114
6.3	MONEY SUPPLY GROWTH.....	121
6.3.1	The Bank Rate and Money Supply Growth versus the Repo Rate and Money Supply Growth.....	121
6.4	ACCOMMODATION.....	125
6.4.1	Comparison between the Bank Rate and Repo Rate regarding Accommodation.....	125
6.5	UNDER/OVERPROVISION OF LIQUIDITY AND THE REPO RATE.....	131
6.6	CONCLUSION.....	134

CHAPTER SEVEN

RESERVE BANK ACCOMMODATION PROCEDURES AND DEVELOPMENTS IN THE INTERBANK LOANS MARKET

7.1	INTRODUCTION.....	137
7.2	BACKGROUND TO THE INTERBANK LOANS MARKET.....	137

7.3	FUNCTIONING OF THE INTERBANK MARKET.....	139
7.4	THE INTERBANK MARKET IN GERMANY.....	142
7.5	ADVANTAGES OF HAVING A MORE DEVELOPED INTERBANK MARKET.....	144
7.5.1	Risks Associated with the Interbank Market.....	146
7.6	DEVELOPMENT OF THE INTERBANK MARKET.....	147
7.7	ANALYSIS OF THE INTERBANK MARKET.....	148
7.8	CONCLUSION.....	151

CHAPTER EIGHT

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

8.1	SUMMARY OF CONCLUSIONS.....	153
8.2	RECOMMENDATIONS FOR FURTHER RESEARCH	160
	BIBLIOGRAPHY.....	167

LIST OF FIGURES

2.1	TRANSMISSION MECHANISM OF THE CLASSICAL SCHOOL.....	12
2.2	KEYNES' COST OF CAPITAL CHANNEL.....	19
2.3	THE POST-KEYNESIAN MONEY SUPPLY PROCESS.....	34
3.1	SOUTH AFRICAN RESERVE BANK MONETARY POLICY FRAMEWORK IN THE DE KOCK ERA.....	57
5.1	SOUTH AFRICAN RESERVE BANK CURRENT MONETARY POLICY FRAMEWORK.....	96
6.1	BANK RATE VS OTHER MONEY MARKET INTEREST RATES.....	115
6.2	REPO RATE VS OTHER MONEY MARKET INTEREST RATES.....	115
6.3	BANK RATE VS MONEY SUPPLY GROWTH.....	122
6.4	REPO RATE VS MONEY SUPPLY GROWTH.....	122
6.5	BANK RATE VS ACCOMMODATION.....	126
6.6	REPO RATE VS ACCOMMODATION.....	126

6.7	UNDER/OVERPROVISION OF LIQUIDITY AND THE REPO RATE.....	132
7.1	INTERBANK RATE, BANK RATE AND LEVEL OF INTERBANK LENDING.....	149
7.2	INTERBANK RATE, REPO RATE AND LEVEL OF INTERBANK LENDING.....	149

LIST OF TABLES

5.1	MONETARY AND SECURITY FLOWS OF A REPURCHASE TRANSACTION.....	99
5.2	MECHANICS OF THE REPURCHASE SYSTEM.....	104

LIST OF APPENDICES

APPENDIX I	DAILY TIMETABLE FOR REPURCHASE TRANSACTIONS.....	162
APPENDIX II	EXAMPLE OF SCREEN ANNOUNCEMENTS.....	163
APPENDIX III	REPURCHASE TRANSACTION NOTICE.....	164
APPENDIX IV (a)	MARGIN TRANSFER TO THE SARB.....	165
APPENDIX IV (b)	MARGIN TRANSFER BY THE SARB.....	166

CHAPTER ONE

INTRODUCTION

1.1 CONTEXT OF THE STUDY

The main objective of monetary policy in South Africa is to protect the value of the rand, that is, to combat the problem of inflation (Stals, 1997b: 1; Mboweni, 2000: 3). If achieved, this could also result in success regarding the secondary objectives of maximum economic growth, development and the creation of employment opportunities. Thus, the goal of price stability is a precondition for the attainment of optimum economic development, growth and stability. On a more technical note, the monetary control mechanism used by central banks to achieve the above differ from country to country. This is the area in which this research is intended to make a contribution, as be will be highlighted below.

In South Africa, the De Kock Commission was appointed in 1977 to investigate various aspects of monetary control. In its final report (1985), the Commission recommended a control mechanism based on the classical cash reserve system, which was a market-oriented approach. This led to the implementation during the 1980s of the control procedures which had been in place up to March 1998. Under this system, the South African Reserve Bank was willing to refinance the money market shortage fully and automatically, on certain prearranged terms, conditions and costs, which meant that the banks' demand for liquidity was met fully, provided that they could supply the collateral needed. Herein the Bank Rate was the key operational variable of the control mechanism. Hence, changes in the Bank Rate and associated

refinancing rates were used to influence the general level of interest rates, growth in bank credit and in the money supply, and through the transmission mechanism, economic activity and inflation.

A new monetary control procedure, called the 'repurchase system', was introduced in South Africa in March 1998. In the new system, access to Reserve Bank funds is restricted to the amount put up for tender on a daily basis. Banks tender for funds by using repurchase agreements. One of the reasons given by the South African Reserve Bank (SARB) for the introduction of the new system is that the financial markets have been moving towards being more globalised, liberalised, and integrated, with more volatile capital movements between countries in which South Africa's financial institutions have to operate (Van der Merwe, 1997a: 1).

The implementation of this new system currently represents breaking new ground, as a result of which various uncertainties regarding its operation still exist. There are several research questions relating to the new repurchase system, which will form the basis for this research.

1.2 GOALS OF THE RESEARCH

The first goal of this research is to explore the theoretical foundations of the systems of monetary control in place in South Africa from the time of the De Kock Commission. The reasons for the implementation of these systems will also be addressed. The present system will be compared to the previous one.

Secondly, the research will attempt to assess the relative merits of the new policy, by considering international evidence, particularly Germany. It is important to investigate how other countries using this system have

fared with it, in order to ascertain South Africa's potential success with it.

The third goal is to investigate the impact of the new procedures on the financial aggregates in South Africa, such as interest rates, money supply growth and SARB accommodation.

Finally, it needs to be investigated whether or not banks are making more use of the interbank loans market as an alternative to SARB accommodation under the present system. This is an important issue in the light of the uncertainty and risk attached to the new process of tendering for Reserve Bank funds.

1.3 METHODOLOGY

This study will cover the time frame between 1945 and 2000, placing emphasis particularly on the period between 1980 up to January 2000.

The theoretical foundations of the new control mechanism will be explored by means of a literature study. In comparing the present policy with the previous one, secondary information, particularly Reserve Bank publications, will be used.

The relative merits of the present system will be evaluated by considering evidence from Germany, where the same approach has been in place for some time. Through this case study, the potential success of the policy could be brought to light and inferences for South Africa may be drawn.

Regarding the empirical part of the research, that is, the relationships between the Bank Rate and the Repo Rate on the one hand and money market interest rates, the level of accommodation, and the money supply on the other, data analysis as well as basic time series studies, will be used.

In the case of the impact of the repurchase system on Reserve Bank accommodation to the banking system and possible developments in the interbank loans market, statistical comparisons will be done.

1.4 RESEARCH FRAMEWORK

The following study outline has been developed to facilitate the realisation of the aims of the research:

Chapter Two will discuss the theoretical foundations of monetary policy. This chapter will focus on the various schools of thought, and how they view monetary policy in terms of its effectiveness in achieving its goals. In particular, the Classical, orthodox Keynesian, Monetarist and Post-Keynesian schools of thought will be analysed.

Chapter Three is devoted to the development of monetary policy in South Africa from the period of Dr. Gerhard De Kock up until March 1998. This chapter will look at the various phases of monetary policy and what impact the various schools of thought had on them. In so doing, it will also discuss how monetary policy functioned in this period, and the different instruments used in achieving its objectives. Finally, Chapter Three will investigate why the previous system of monetary policy was abandoned in South Africa, so as to understand why it was necessary to implement a new system of monetary control.

Following the discussion of the previous system of monetary control, it will become evident for what reasons South Africa had to implement a new system. Therefore, Chapter Four will discuss the repurchase system as applied in Germany, examining how it worked, and establishing the successes and failures it has had with the system. This discussion will therefore serve as an introduction to Chapter Five, which deals with the repurchase system as applied in South Africa. This chapter will discuss how the repurchase system functions in South Africa.

Building on the above, Chapter Six will analyse the impact of the repurchase system on various financial aggregates in South Africa. In particular, interest rates, money supply growth and SARB accommodation will be analysed, comparing the previous system with the present one. The statistical comparisons will date from January 1996 to February 2000. Finally, Chapter Seven will analyse the impact of the repurchase system on the interbank loans market. Chapters Six and Seven will therefore investigate how successful the present system has been in comparison to the previous one.

Chapter Eight will conclude the study, and identify possible areas for further research.

CHAPTER TWO

THEORETICAL FOUNDATIONS OF MONETARY POLICY

2.1 INTRODUCTION

The design of monetary policy does not take place in an isolated manner. Monetary policy in South Africa seems to have been influenced strongly by monetary policy developments in the leading Western economies, particularly Great Britain (Rogers, 1986: 66). In formulating monetary policy, a significant number of theoretical or academic inputs are used as a basis, determining the path monetary policy is to follow. The inputs consist of views about the manner in which the economy operates, and these views together form a model. The model forms the basis upon which economic policy is designed and implemented (Snowdon, Vane & Wynarczyk, 1995: 1). Each country has a unique economic environment and will opt for a theoretical input, or combination of these to suit its particular economic environment. This decision is also based on the “theoretical appeal, and ideological persuasion” of a particular theory (Natrass, 1995: 2). As conditions in the country's economic environment change, the theoretical inputs it uses too will change. Although this study is concerned with the technical nature of monetary policy, it is necessary to first look into the broader role of monetary policy within a macroeconomic framework. This chapter explores the theoretical foundations of monetary policy in order to contextualise the development and implementation of the repurchase system in 1998.

2.2 DEFINITION OF MONETARY POLICY

According to Chrystal & Price (1994: 3), the reoccurrence of severe recessions posed a policy problem, which needed to be addressed. This was the reason behind the invention of macroeconomics. Accordingly, it is concerned with the overall structure, performance, and behaviour of the economy. Therefore, through analysing and viewing the underlying determinants of the economy, that is, total production, unemployment, and balance of payments equilibrium, macroeconomists hope to gain a better understanding of the economy (Snowdon, Vane & Wynarczyk, 1995: 1). These determinants also form the objectives of monetary policy, that is, high and stable rates of employment, balance of payments equilibrium, domestic price stability, and long-run economic growth (Meijer, 1996: 217). “Monetary policy in itself consists of decisions that are made and implemented by the monetary authorities, to attain or to help attain the ultimate objectives of monetary policy” (Meijer, 1996: 207). However, monetary policy is viewed differently by opposing schools of thought, each differing in their opinion regarding the effectiveness of monetary policy in achieving these objectives.

2.3 THEORETICAL SCHOOLS OF THOUGHT

2.3.1 Classical Theory

The Classical school of thought based its theory on the premise that money is neutral. They believed that money merely acts to conceal the underlying forces of the real economy (Struthers & Speight, 1986: 147). Thus, to the Classical economists, money, and the use thereof, did not disturb the patterns of economic activity, and hence, did not affect the real economy. Consequently, the analysis of the Classical school was split into two sectors, the real and the monetary sector, with the two

being independent of each other. The role of money was specified in terms of the “quantity theory”.

This quantity theory was formulated by Irving Fischer¹ in the well-known “equation of exchange”, which is:

$$MV = PT.....(2.1)$$

In this equation;

- M is the quantity of money,
- V is the velocity of circulation,
- P is the price level, and
- T is the number of transactions (Struthers & Speight, 1986: 148).

The Classical economists saw M as the fundamental mover in the exchange equation, which when altered, caused changes in V and PT . They treated V and T as stable or constant, in which case changes in M would be the main driver behind changes in P . Therefore, in this equation, a change in the money supply would only cause the price level to change.

An alternative version to Fischer’s equation of exchange is the Cambridge version², also referred to as the “cash balances theory” (Struthers & Speight, 1986: 149).

¹ An American economist in his book entitled “The Purchasing Power of Money”, published in 1911 (Struthers & Speight, 1986: 148).

² Developed in the twentieth century by a succession of economists at Cambridge University, notably Marshall, Pigou, Keynes, and Robertson (Struthers & Speight, 1986: 149).

In this version, V is replaced by money demand, and reads as follows:

$$M=kPR\text{.....(2.2)}$$

In this equation;

- M is the money supply,
- k is the proportion of real resources over which people wish to hold command in the form of money, and
- R is real resources (Morgan, 1979: 16).

The cash balances theory was held as superior to the transactions velocity version, as it was concerned with money held, as opposed to the transactions approach, which was concerned with the flow of spending. From equation 2.2, it is evident that it is concerned with decisions regarding the size of k . Furthermore, it raises the question as to the motives for holding money, an issue Keynes explored further, as will be discussed in 2.3.2.

Under the cash balances approach, an increase in the money supply would result in people holding excess cash. The excess cash balances are spent, increasing the surplus cash holdings of other people. Prices are then pushed up due to the excess money supply, which again causes increased spending and output. The increase in M increases PR , and k is restored to its equilibrium level. In contrast, under the transactions approach, the increased money supply will result in velocities being halved (Struthers & Speight, 1996: 153). This has the effect of increasing prices, and this effect will continue until V takes on its original value.

All of the above relates back to the Classical school's belief in full employment equilibrium. This belief rests on the assumption that there is perfect competition in the labour market, and that money wages are flexible (Snowdon, Vane & Wynarczyk, 1995: 50). Although the Classical economists believed in full employment equilibrium, they were aware that a market economy could deviate from this. However, they further believed the economy to be rapidly self-equilibrating, allowing it to move back to a level of full employment quickly. Therefore, they ignored the factors promoting full employment, and hence aggregate demand. In line with their belief in full employment equilibrium, they did not believe in the concept of involuntary unemployment, and believed the only unemployment that exists would be of a frictional and/or voluntary nature (Snowdon, Vane & Wynarczyk, 1995: 51). The Classical economists therefore did not see a need for policy intervention.

The Classical economists further explained the concept of full employment by what is known as "Say's Law". Say's Law states that "supply creates its own demand", implying that aggregate supply always equals aggregate demand (Keynes, 1936: 26). However, this law was set in the context of a barter economy where money was used only as a medium of exchange.

In order for Say's Law to hold in a money economy, two conditions are required:

- the aggregate cost of production must equal the aggregate factor incomes generated in production; and
- the aggregate value of factor income must equal aggregate expenditure, and hence aggregate demand (Pierce & Tysome, 1985: 107).

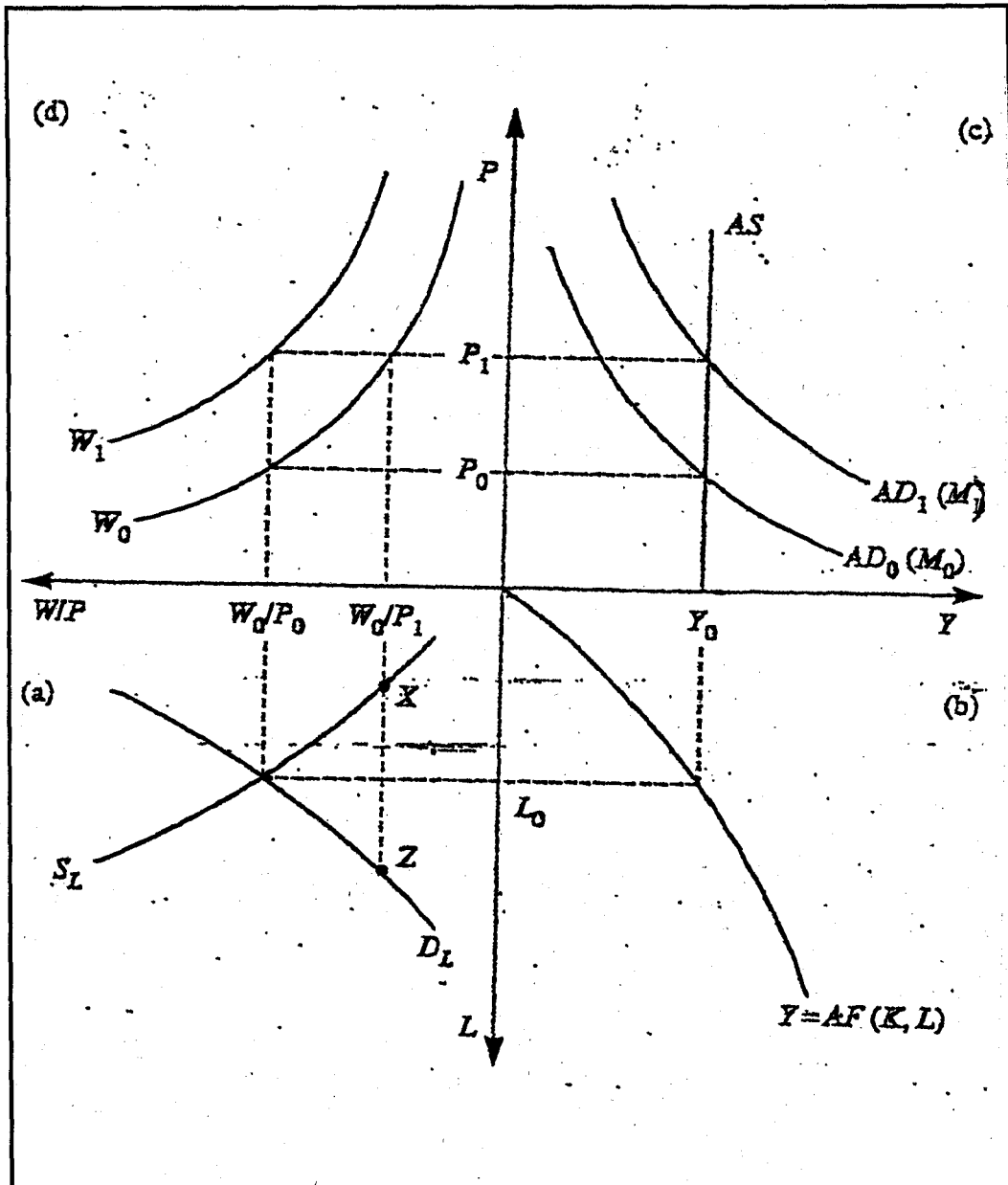
The first of these conditions can be attained only in an economy that is static. The second condition will hold if household consumption expenditure equals the value of firms' investments, that is, if consumption equals investment. Thus, the Classical economists did believe it possible for money to be hoarded (saved), but also believed that the interest rate would react to this and ensure the equilibrium level is reached where planned savings is equal to planned investment (Struthers & Speight, 1986: 157). The interest rate would then form part of the real analysis of the Classical school, because even though it may be the price paid for the use of money, it is determined by the real forces of productivity and savings.

However, there is a contradiction between the quantity theory and Walras' Law, which states that with the money and goods markets taken together, if excess supply were summed with excess demand, it would equal zero. Say's Law states that supply always equals demand, but considers only commodity markets. Therefore, in terms of Walras' Law, a change in the money supply will have no effect on the price level since there can be no excess demand for, or excess supply of money. This implies that it is not possible to determine the price level with this equilibrium condition. Clearly this contradicts the quantity theory, wherein the quantity of money determines the price level (Struthers & Speight, 1986: 160).

This contradiction, however, can be resolved. The Classical economists integrated real and monetary theory, and by so doing, included the value of real balances as a determinant of the demand for goods and money (Pierce & Tysome, 1985:108). Thus, we have a "real balance effect" (Pierce & Tysome, 1985: 108). The demand for money is a demand for the real value of money, that is, for the purchasing power it holds

Figure 2.1

TRANSMISSION MECHANISM OF THE CLASSICAL
SCHOOL



Source: Snowdon, Vane & Wynarczyk, 1995: 59

(Struthers & Speight, 1996: 161). If demand is a function of money balances, then it also depends on the absolute price level. An increase in the price level reduces the purchasing power of money (real value of money), thereby reducing the demand for goods, causing an excess supply. This destroys the conjecture of Say's Law but provides for internal consistency in the model (Struthers & Speight, 1986: 161).

Figure 2.1 is a diagrammatic representation of the relationship between money and the real economy of the Classical school. In this diagram, panel (a) illustrates the Classical labour market, where demand (D_L) and supply (S_L) are in equilibrium, establishing a real wage of W_0/P_0 , and an equilibrium level of employment, L_0 . This establishes an equilibrium level of output in panel (b) of Y_0 . Panel (c) illustrates the Classical aggregate demand (AD) and aggregate supply (AS) functions. The aggregate supply function is perfectly inelastic, showing that the price level does not affect real output. Finally, panel (d) shows the nominal wage and the relationship between the real wage and the price level at this nominal wage. If the nominal wage is W_0 , then a higher price level will decrease the real wage.

Assume an increase in the money supply. In Figure 2.1, (panel c), this will shift the aggregate demand curve $AD_0 (M_0)$ to the right, to $AD_1 (M_1)$. At price P_0 , the increase in the money supply will create disequilibrium in the money market, as money demand will be greater than money supply. This will lead to an increase in the demand for goods and services. There will be an excess supply of money, therefore prices will rise to P_1 in panel (c). The increase in prices will result in the real wage decreasing, which creates disequilibrium in the labour market. An excess demand for labour of XZ emerges, at the real wage W_0/P_1 in panel (a). The excess demand of labour will cause nominal wages to increase, until it reaches a value of W_1 in panel (d), which restores the

real wage to its equilibrium value ($W_0/P_0 = W_0/P_1$). The competition in the labour market will drive up the money wage, causing an increase in prices and money wages of equal proportion, and no change in output, real wages, and interest rates.

Thus, money as we can see from this analysis, does not matter, only the nominal variables are influenced, leaving the real variables unchanged (Pierce & Tysome, 1985: 112).

The quantity theory has been criticised for being too simplistic. Firstly, money payments are not always fulfilled immediately, sometimes money is paid in arrears or advance. The quantity theory does not consider this. Secondly, the quantity theory consists of a number of restrictive assumptions, and through these arrives at the direct relationship between M and P . These restrictive assumptions are firstly, the demand for money is a demand for real balances. Secondly, all the terms of the equation are independent variables with the exception of P , thirdly prices are flexible, and finally V and T do not change. (Struthers & Speight, 1986: 164-165).

The Classical economists placed great faith in the power of the market to adjust itself to an equilibrium level of full employment and output, believing it to be almost an instantaneous process. They further did not believe there to be any involuntary unemployment. Money was neutral in the long-term, therefore having no real effects. Despite the neutrality of money, the Classical economists were aware that an expansionary monetary policy could lead to inflation. However, they further believed that monetary expansion, by creating inflation, would also raise the nominal interest rate, therefore the demand for goods will decrease and prices will be pushed down (Snowdon, Vane & Wynarczyk, 1995: 60).

2.3.2 Orthodox Keynesian Theory

During the first four decades of the twentieth century, it became apparent that the Classical model of full employment equilibrium was no longer applicable, the reason being that this period was characterised by the trade cycle, with alternating periods of booms and slumps. One critic of the Classical school of thought was John Maynard Keynes³. He was the first economist to give a satisfactory explanation and alternative theory to the Classical model (Struthers & Speight, 1986: 169). Keynes' "General Theory" became very popular and soon inspired economic policy.

Keynes argued that the Classical model was only applicable to a special case, not to the general case. He attacked this theory by stating that it was "...a tautology with little economic meaning unless added assumptions were made" (Dennis, 1981: 80). Keynes rejected the Classical model on a number of grounds. Firstly, he dispelled the quantity theory by introducing the precautionary motive for holding money. He believed that not the entire increase in the money supply (in the event of an expansionary monetary policy) would be spent, instead some of it would be voluntarily held as idle cash balances (discussed further below). This implies that expenditure need not increase in proportion to the increased money supply. Secondly, Keynes rejected the assumption that there existed perfect competition in the labour market. Finally, Keynes ruled out Say's Law and further added that if supply were to equal demand, it would only be a coincidental occurrence (Pierce & Tysome, 1985: 123-124).

³ In his book entitled "The General Theory of Employment, Interest and Money", published in 1936 (Struthers & Speight, 1986: 169).

There are numerous significant differences between Keynes' theory and the Classical theory. Keynes placed emphasis on aggregate demand as a determinant of income, employment, and prices, and by so doing, neglected supply. In this respect, for Keynes, it was demand which determined supply. This was a clear rejection of Say's Law, which held that supply creates demand. Furthermore, Keynes made the assumption that prices, wages and interest rates did not move instantly from one equilibrium position to another (Barro & Grossman, 1971: 82). Hence, there was no price-wage flexibility as the Classical school had assumed, instead it was a change in quantities that was the macro-economic equilibrating mechanism. The reasoning behind this was simply that if costs remained constant, but prices were cut, then profits of businesses would decrease. Therefore, price cuts would not be viewed favourably (Eltis & Sinclair, 1988: 16). Assuming that prices were flexible, Keynes still did not believe that this would ensure full employment equilibrium. His reasons for this were, firstly, because he believed that changes in relative prices would not affect the determinants of expenditure, because these were a function of income. Secondly, cutting wages would be reducing a major source of demand and hence expenditure, and as such was unlikely to restore equilibrium (Struthers & Speight, 1986: 171).

Furthermore, he showed that expenditure could be greater, less than, or equal to output in the short-term, causing the level of employment to increase, decrease, or remain unchanged, respectively. Consequently, Keynes introduced the notion of effective demand, for which there was only one equilibrium position, and not a number of them as under Classical rules. As stated earlier, Keynes did not believe in full employment equilibrium and introduced the notion of involuntary unemployment, which did not exist in the Classical model (Snowdon, Vane & Wynarczyk, 1995: 63). Keynes furthermore added that the economy was not rapidly self-equilibrating. For this reason, the

authorities could intervene to affect the level of aggregate effective demand to ensure that the economy reached equilibrium faster. Therefore, for Keynes, market forces alone could not maintain full employment, and hence, he advocated the implementation of demand management policies to reach full employment (Eltis & Sinclair, 1988: 3).

For Keynes, expectations played a very important role in his model. He introduced the liquidity preference concept, under which he analysed the demand for money. It was stated earlier that not all money would be held as active balances, but a portion of it would be held idle. Keynes distinguished three motives for holding money:

- The *transactions motive* which occurs because people need to make transactions in the present time, either for business or personal reasons, therefore they require cash. Under this motive, Keynes further distinguished the incomes and business motives. The incomes motive depends on the amount of income and receipts and expenditures. The business motive depends on the value of current output and the number of hands through which the output passes.
- The *precautionary motive* arises because people desire to have security regarding the future cash value of their resources. This motive is to provide for contingencies requiring sudden expenditures.
- The *speculative motive* refers to people holding money to avoid capital losses in a dwindling securities market. According to Keynes, it "...is the object of securing profits from knowing better than the market what the future will bring forth" (Keynes, 1936: 170).

The speculative motive has an inverse relationship with the interest rate, and depends on the current interest rate relative to the normal interest rate (Struthers & Speight, 1986: 183). The interest rate is determined by the demand for, and supply of money, and therefore is set in the monetary sector. The precautionary and transactions motives together

form the demand for active balances and interest rates do not play a significant role with these two motives (Struthers & Speight, 1986: 175-178). It is therefore through the speculative motive that the management of money influences the economic system. The public will usually hold a portfolio of the different balances.

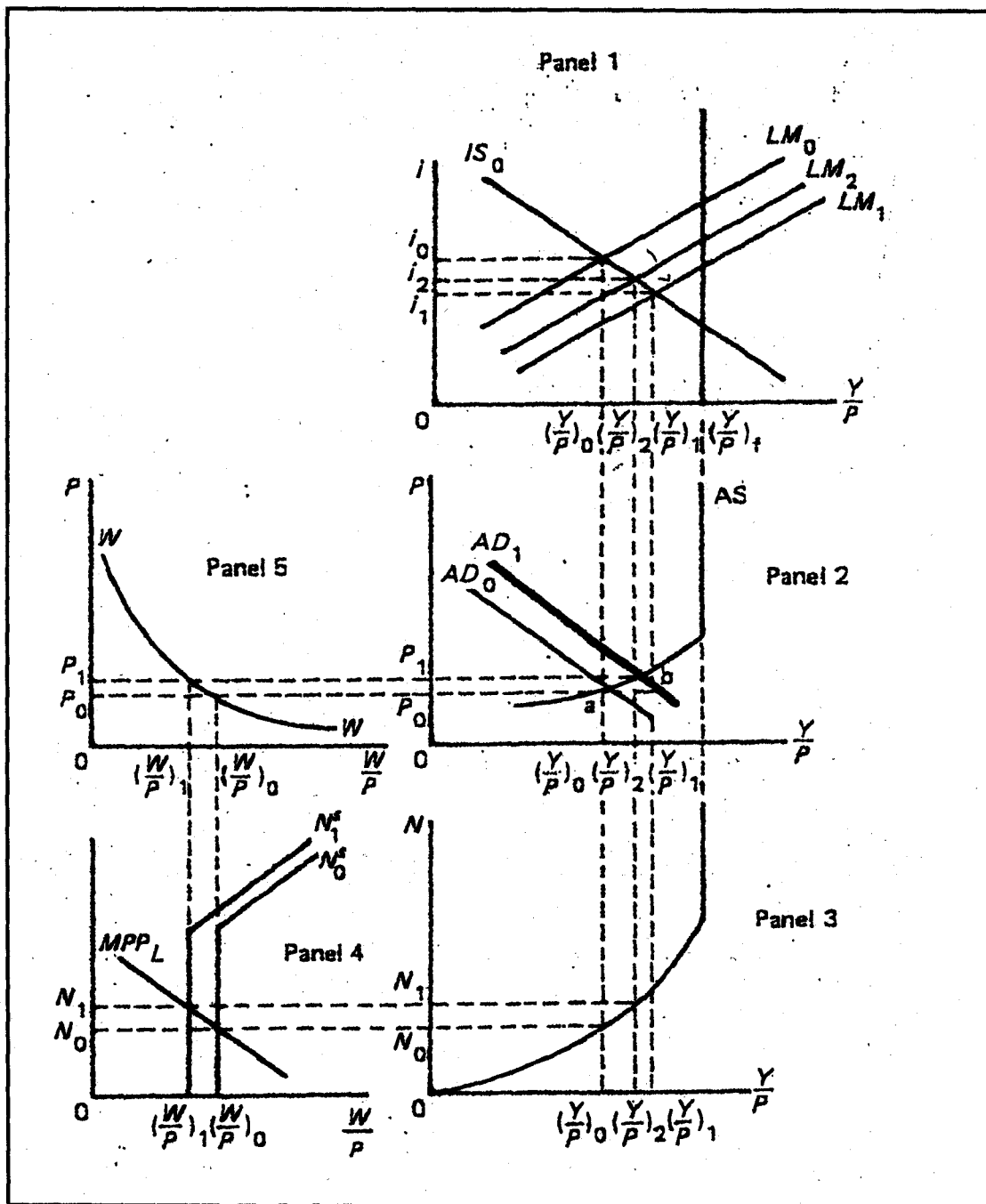
Keynes' most basic assumption, which was also a core assumption of the General Theory, was that money and other financial assets are close substitutes. The importance of this assumption will become evident at a later stage. This assumption implies that the elasticity of demand with respect to interest rates is high, hence, a small rise in interest rates on financial assets would cause investors to move out of them and into money. With this background, we then begin to analyse the monetary transmission mechanism within the orthodox Keynesian school.

(1) Monetary Transmission Mechanism

In 2.3.1, it is evident that for the Classical school, the price level is determined by the nominal quantity of money in circulation. For Keynes, however, prices and interest rates are determined by the interaction of aggregate demand and aggregate supply. This will be demonstrated further in Figure 2.2. The transmission mechanism shows that money supply changes affect expenditure primarily through its impact on interest rates of financial assets (Vane, 1979: 12). The transmission mechanism in Keynesian theory is termed the "cost of capital channel", and there are two variations to this channel, the strong and the weak version. Before beginning the analysis of the cost of capital channel, it is necessary first to note that this channel includes Hicks' IS/LM model. At the time, this model became the established model for macroeconomic theory, and had an enormous influence on the path of macroeconomic policy up to the mid-1960s (Snowdon, Vane &

Figure 2.2

KEYNES' COST OF CAPITAL TRANSMISSION
MECHANISM



Source: Pierce & Tysome, 1985: 127

Wynarczyk, 1995: 90). The IS curve refers to the goods market and the situation where investment equals savings. The IS curve traces out the various equilibrium positions in the goods market, and therefore the various combinations of interest rates and incomes that produce equilibrium in this market. Due to the fact that investment is negatively related to interest rates, the IS curve is negatively sloped. The LM curve refers to equilibrium in the money market, where money demand equals money supply. The LM curve is positively sloped because money demand is positively related to income and negatively related to interest rates (Snowdon, Vane & Wynarczyk, 1995: 92). Keynes assumed the money supply was exogenous, that is, the central bank is able to control the money supply and changes thereof are the prime cause of changes in nominal national income (Edkins, 1989: 57). Thus, the money supply curve is a vertical line.

Figure 2.2 is a diagrammatic representation of Keynes' monetary transmission mechanism. Panel 1 represents the IS/LM curves discussed above. Panel 2 illustrates the aggregate demand, and aggregate supply relation, panel 3 shows the economy's production function, and panel 4 represents the labour market situation. Panel 5 shows the relationship between money and the real wage.

The strong version proceeds as follows. Assume an initial portfolio equilibrium at i_0 , Y/P_0 , and W/P_0 , in panel 1 to 5. Should the monetary authorities conduct an open market purchase of government bonds, the money supply will increase. Hence, the LM curve will shift out to the right, from LM_0 to LM_1 in panel 1. There will be relatively more money than bonds, therefore causing an excess demand for bonds. This causes the price of bonds to be pushed up until just enough bondholders are influenced to replace the bonds in their portfolio with new money.

Under Keynesian theory, there is a high substitutability between bonds and money. Therefore, in order to re-establish equilibrium, interest rates fall and bond prices rise. However, the new money holders will be in portfolio disequilibrium, and will substitute financial assets for money, causing the prices of financial assets to rise. This effect will continue until such time that the fall in the interest rates on financial assets causes the extra money to be willingly held. People are willing to hold the extra money because of the lower interest rate, which makes the cost of holding money less, making a further drop in interest rates improbable. Finally, the rise in bond prices makes bondholders richer, thus they wish to hold more money to maintain the balance between the values of their holdings of money and bonds (Struthers & Speight, 1986: 181).

This fall in the interest rate will cause an increase in the demand for investment goods (as investment and interest rates are inversely related). The increased demand is the horizontal distance ($Y/P_0 - Y/P_1$) in panel 2. At price P_0 the excess demand is $(b - a)$ in panel 2. For this reason, the price level increases to P_1 , and there is no longer an excess demand. There is now a lower real wage of W/P_1 , and the level of output and employment has increased. This effect, together with the decline in interest rates (causing increased investment) is an injection into the circular flow of income, which increases through the multiplier effect. The rise in income exerts a feedback effect on the economy. Money is taken out of speculative balances and put into precautionary and transactions balances. The LM curve shifts back partially to LM_2 in panel 1. This causes interest rates to rise, and investment to fall. This effect will continue until equilibrium is reached in a cyclical fashion.

Thus, the traditional Keynesian view of monetary expansion as transmitted to the real economy proceeds as follows:

$$M \uparrow \rightarrow i \downarrow \rightarrow I \uparrow \rightarrow Y \uparrow \dots\dots\dots(2.3)$$

In this equation;

- M is the money supply,
- i , the interest rate,
- I , investment, and
- Y , the output (Mishkin, 1995: 4).

Equilibrium in this transmission mechanism is restored through changes in interest rates and income, with the demand for money rising until it reaches equality with the increased money supply. It is evident that the real economic variables have been affected, hence, money does matter in the strong version of the Keynesian analysis, and there is scope for effective monetary policy.

The weak version of Keynes' cost of capital channel renders monetary policy ineffective as an economic policy tool. There are three reasons for this. Firstly, there is the liquidity trap, which means that at very low interest rates, the demand for speculative balances might become infinitely elastic (Pierce & Tysome, 1985: 129). This is because people, based on past experiences, believe that interest rates cannot move down further, therefore the authorities' attempts to decrease interest rates will be an exercise in futility. The additional money will be hoarded. "If the liquidity trap lies above that necessary to produce a volume of investment capable of supporting a full employment level of output, then there will be a continuing state of unemployment" (Pierce & Tysome, 1985: 129). However, this is likely to be a short-term phenomenon. Secondly, there is the interest sensitivity of aggregate expenditure. If the

interest rate has a negligible impact on investment and consumption, then the IS curve will be vertical. If the IS curve is to the left of (Y/P_f) in Figure 2.2, then no increase in the money supply will influence real expenditure, and interest rates will fall until all additional cash is held idle. Monetary policy is then ineffective. Finally, there is the possible discrepancy between investment and savings. In an economic system where investment opportunities are low and the community is frugal, a positive interest rate will result in savings exceeding investment, thereby resulting in deficient demand in the economy. Monetary policy will again have no effect (Pierce & Tysome, 1985: 132).

Therefore, under the strong version, there is scope for monetary policy, but under the weak version, monetary policy has no effect. However, within the orthodox Keynesian school, money demand is viewed as highly responsive to changes in the interest rate (relatively flat LM curve), and investment fairly unresponsive to the interest rate (relatively steep IS curve). For this reason, fiscal policy is preferred to monetary policy.

Keynes, unlike the Classical school had limited faith in the power of the markets to produce a social maximum, because of the slow adjustment of prices. For Keynes, changes in the money supply did affect the real variables of the economy, and money was not neutral. Keynes introduced the notion of deficient demand, and accordingly advocated demand management policies. Keynes did believe there to be scope for monetary policy in containing inflation, but preferred the use of fiscal policy as he believed it to be more effective than monetary policy.

Keynesian theory, whereby fiscal policy is treated as more important than monetary policy, has been challenged by the Monetarist school of thought. The Monetarists believe that in the long-term, an expansionary fiscal policy will lead to certain components of private expenditure being

crowded-out, but this will have a negligible impact on aggregate demand, and therefore the level of output and employment. We now turn to the Monetarists' transmission mechanism.

2.3.3 Monetarist Theory

The 1970s saw rising inflation, and the breakdown of Keynesian demand management policies. As a result, Monetarism became increasingly popular (Healey, 1992: 197). Milton Friedman, the leading Monetarist economist of this period, believed the depression at the time to be a direct result of an inappropriate monetary policy.

The Monetarists emphasise the potency of money and stress the importance of following a monetary rule in conducting monetary policy, to avoid economic instability. They believed that the behaviour of employment, output, and prices, is best assessed by the growth rate of the money supply, and the effectiveness of monetary policy is most usefully measured in terms of the growth of the monetary base⁴ (Hamburger, 1970: 32).

Monetarists, as orthodox Keynesians, treat the money supply as exogenous (Edkins, 1989: 7). Due to the money supply being an independent variable, it has a major effect on the level of economic activity. Furthermore, money is only one asset in a generalised portfolio of many assets, and not a substitute for other financial assets, as under Keynesian assumptions. Therefore, the choice is not just between money and bonds, but between a much wider range of financial assets.

⁴ Includes high-powered money, that is, total bank reserves adjusted for changes in reserve requirements and public currency holdings.

Friedman re-emphasised the quantity theory of money in his analysis, and stated it as a theory of the demand for money. He assumed that money demand was a stable function of a limited number of variables (permanent income/wealth, nominal income, people's tastes and preferences, return on financial assets, and the expected rate of inflation) and has a low interest elasticity (Snowdon, Vane & Wynarczyk, 1994: 139). This belief is necessary as it allows for the condition that changes in the money supply are a dominant cause of changes in national income, to hold (Pierce & Tysome, 1994: 139).

The quantity theory under Friedman proceeds as follows:

$$MV = PY \dots \dots \dots (2.4)$$

In this equation;

- *M* is the money supply,
- *V* is the velocity of circulation of the money supply,
- *P* is the price level, and
- *Y* is output (Pierce & Tysome, 1985: 150).

Under Monetarist assumptions *MV* influences *PY*. Furthermore, *V* and *Y* are assumed independent of *M*. *V* is stable and predictable, and money is non-neutral and does influence *Y* and *P*, but has a tendency towards a stable long-run equilibrium (Dennis, 1981: 118).

Friedman, therefore, made the following proposals:

- He called for a fixed growth rule in terms of some monetary aggregate, (initially M1) and;
- maintained that rules should replace discretion, because he believed discretion would be destabilising to the economy. This is because

the lags between changes in the money supply and income are long and variable (Snowdon, Vane & Wyncarczyk, 1994: 145).

Friedman also wanted the money creating powers of the central bank to be curtailed, and a 100 percent reserve requirement imposed on commercial banks. By doing this, he believed that the economic system would be insulated from any economic instability created by the banking system (Pierce & Tysome, 1985: 8).

With this background, one can begin to analyse the monetary transmission mechanism under the Monetarist theory. What is provided here is a broad overview of the main Monetarist ideas. More in-depth discussions are available from Brunner & Meltzer (1993), Mishkin (1995:3-10), Dennis (1981), Meltzer (1995: 49-72), and Struthers & Speight (1986).

An initial equilibrium in the goods and money markets are assumed, which is followed by an increase in the money supply. This will decrease the marginal rate of return on money balances, as individuals will have excess cash holdings. Due to the fact that Monetarists assume prices to be flexible, the surplus money holdings cause prices to increase, so that the extra nominal money supply is willingly held (Meltzer, 1995: 55). People will therefore exchange money for financial assets, the prices of these assets will rise, and therefore the yields on them will decrease (Brunner & Meltzer, 1993: 8). Banks' cash reserves will also increase due to the surplus cash, and they too will diversify their holdings of earning assets, depressing the yields on the assets they acquire. Under Monetarist assumptions, as mentioned above, there is a much wider range of assets to choose from, there will consequently be substitution further along the spectrum of assets. This is called the "shunting effect" (Pierce & Tysome, 1985: 152). There is also a wealth effect. As prices

are driven up, wealth holders experience a capital gain and increase their expenditures. There is thus a general increase in output and prices, signifying that the real value of the money supply is decreasing, hence, individuals and firms have to hold increased amounts of nominal money so as to maintain the real value of their money balances (Brunner & Meltzer, 1993: 8). The adjustment in the cost of capital channel now takes place over a much wider range of assets and a ripple effect is set in action across all markets (Dennis, 1981: 119).

It is evident that in the Classical model (2.3.1), all of the change in the money supply is absorbed by a change in prices, whereas under Keynes, the change takes place in output. With Monetarists, the explanation of change is provided by the "expectations-augmented Phillips curve"⁵ (Pierce & Tysome, 1985: 157). The natural rate of unemployment is critical in this explanation, and is the equilibrium level of unemployment, because it is associated with equilibrium in the product and money markets and all other relevant sectors (Pierce & Tysome, 1985: 157). This rate possesses no tendency to change.

Now assume that unemployment and output are at their equilibrium levels. From the above, it is apparent that an increase in the money supply leads to a portfolio readjustment, which causes aggregate expenditure to increase, as well as prices. Employers recognise the increase in prices of their own products before they perceive the increase as an increase in prices in general, and therefore interpret it as an increase in the relative price level. Thus, they produce more and are prepared to pay a higher wage to attract more labour required for increased output. Workers see the increase in money wages as an

⁵ Derived from a statistical investigation undertaken by AW Phillips in 1958 into the relationship between unemployment and the rate of change of money wages in the UK over the 1861-1957 period (Levacic & Rebman, 1982: 338).

increase in real wages, and thus labour supply increases in the short-term. The increase in the money supply results in an increase in prices, money wages, output and employment, all of which are consistent with the Phillips curve. Due to the cost of obtaining information, employers interpret the increase in prices wrongly, because they require time to distinguish between permanent and temporary impulses, and real and nominal impulses. For this reason, the Monetarists believe that monetary policy should be used to achieve and maintain price stability and recommend that policy be conducted by means of rules, as this will decrease the cost of information to the public.

In the short-run, the effect is evident on output and prices, but in the long-run, output and employment are back to their natural levels and only prices and other nominal variables are affected. This is known as the "natural rate hypothesis". In the long-term, workers realise the truth, and labour supply declines to its original level and output and unemployment return to their natural levels. Therefore, in Monetarist theory, expectations play a very important role.

The Monetarist transmission mechanism can also be viewed in terms of the IS/LM model. There are, however, three major points of difference between the Monetarist and Keynesian explanations:

- The Monetarist LM curve is much steeper - reflecting a low substitutability between money and bonds, and a low interest rate elasticity with money demand.
- there is no liquidity trap, therefore a change in the money supply will always alter the interest rate; and
- the Monetarist IS curve is less steep - reflecting a large interest elasticity of investment. (Dennis, 1981: 119)

It is clear from the above, that the effects of falling interest rates and rising income is much more pronounced under Monetarist theory.

Hence, monetary policy is a much more powerful instrument. The Monetarist transmission mechanism is wider and more powerful than the Keynesian cost of capital transmission mechanism for a number of reasons. Firstly, aggregate demand increases, which shifts the IS curve to the right. Secondly, although the Monetarists were criticised for omitting wealth effects, if these were to be included, they would also shift the IS curve to the right. Finally, Monetarists place considerable importance on the effects of expectations on the transmission mechanism, although this does not lead to an unambiguous shift of the IS curve to the right, all the combined effects discussed above will.

However, according to Dennis (1981: 121), the IS/LM model is not satisfactory for outlining the channels of influence in Monetarist theory, as it is too simple a diagram to capture all the effects. Although it is evident from the above that an increase in the money supply leads to a rise in income and a fall in the interest rate, the situation is not as simple as illustrated here. The LM curve will shift back to the left after the price level increases. Furthermore, many of the mechanisms at work here take a considerable amount of time, and the exact location of the IS curve is not known, and whether the economy is in equilibrium or not is also not known. Finally, if the monetary sector adjusts faster than the real sector, the cost of capital channel will split up into an income effect and a substitution effect, thereby reducing interest rates and increasing income respectively (Dennis, 1981: 121). However, monetary forces will always have a crucial role to play in the determination of nominal income in terms of Monetarist thought.

Monetarists stressed the potency of money and advocated a monetary rule in conducting monetary policy. Like the Keynesians, they believe that money is non-neutral, and therefore does influence output and prices, tending towards equilibrium in the long-term. However, like the

Classical school they also believe prices to be flexible, a belief Keynes disagreed with. They also placed great emphasis on expectations, as did Keynes.

Given their view of the money supply process, Monetarists argue that effective monetary control requires the central bank to focus on the quantity/availability of bank reserves, rather than the cost of reserves. It will be illustrated in Chapter Three and Five how this view influenced the development of the monetary control mechanism in South Africa.

2.3.4 Post-Keynesian Theory

The Post-Keynesian school of thought arose as a reaction to American Keynesianism or the Neo-classical synthesis. The Neo-classical synthesis is a combination of Keynes' theory and the ideas of the Classical school. This Neo-classical synthesis was labelled by the Post-Keynesians as "Bastard Keynesianism", as they felt that the Neo-classical synthesis completely misrepresented what Keynes was trying to say (Davidson, 1991: 23). The Post-Keynesians represent a minority view in economic thought, although their work is becoming more and more recognised and used in the making of monetary policy. They are also a very divided and young school of thought, but share a number of common themes.

(1) Common Themes

The first common theme the Post-Keynesians share is the belief in "effective demand failures". This theme has its origins in the problems associated with time and money (Snowdon, Vane & Wynarczyk, 1995: 95). The world is uncertain, resulting in people's actions being based on the lack of knowledge or ignorance, which leads to mistakes that cannot

be easily or costlessly made undone. However, they further believe that our present is a link between a known past and a highly uncertain future, and as such, money and financial assets play a very important role in connecting these time frames. This is because economic decisions are taken in the present that requires actions that have to be completed at a future date.

Apart from money, expectations also play an important role, as they have a significant effect on economic outcomes. The Post-Keynesians focus on heterogeneous expectations, which is in contrast to the Monetarists' natural rate hypothesis, which requires a fully foreseen future with homogenous expectations. People's actions are based on past experiences, and past decisions made. For this reason, historical time (past) should be taken seriously according to the Post-Keynesians (Eichner, 1980: 122).

Significance is placed on the symbiotic relationship between micro and macroeconomics. The Post-Keynesians adopt a dual approach, where macro influences upon micro are given as much importance as micro influences on macroeconomics. For the Post-Keynesians, the distribution of income and power is a fundamental concern, especially in terms of inflation. Inflation is seen as the symptom of a struggle between economic and political institutions, and involves the redistribution of income from the weaker to the more powerful groups. Furthermore, they believe that a restrictive monetary policy, with a monetary growth rule below the current level of inflation, will exacerbate unemployment and not moderate wage demands (Snowdon, Vane & Wynarczyk, 1995: 372). For this reason, they suggest the adoption of an incomes policy as an addition to traditional demand management policies, which will result in a stable price and output mix. According to Davidson (1981: 163), "...the incomes policy will serve to obtain social

agreement among domestic competing groups to limit their demand for real income in a socially responsible manner for distributing the remaining gross national product (GNP), and hence, limiting current inflation”.

The Post-Keynesians focus on the transitory period where changes in the money supply have powerful real effects on output and employment in both the short and long-run (Eichner, 1980: 125). As the orthodox Keynesians, they also believe money to be important for the following reasons:

- existing monetary economies do not possess an automatic tendency towards full employment of resources over time;
- underemployment equilibrium is a recurring phenomenon in a money using production economy; and
- underemployment equilibrium is associated with the characteristics of money and related institutions and the way in which production is organised. (Davidson, 1981: 164)

Money is seen as a human institution, connected to other institutions, and the interconnectedness requires liquidity to be available from time to time. In a modern market-oriented production economy, production is organised on a “forward money contracting”⁶ basis, which when fulfilled requires money to be available. One forward contract is that of the money-wage contract.

According to Keynes, money and liquid assets possess two essential properties:

- The elasticity of production must be zero, therefore an increase in demand for the good will not encourage suppliers to make more of it by hiring additional labour;

⁶ Forward contracts stipulate a future date for both delivery and payment.

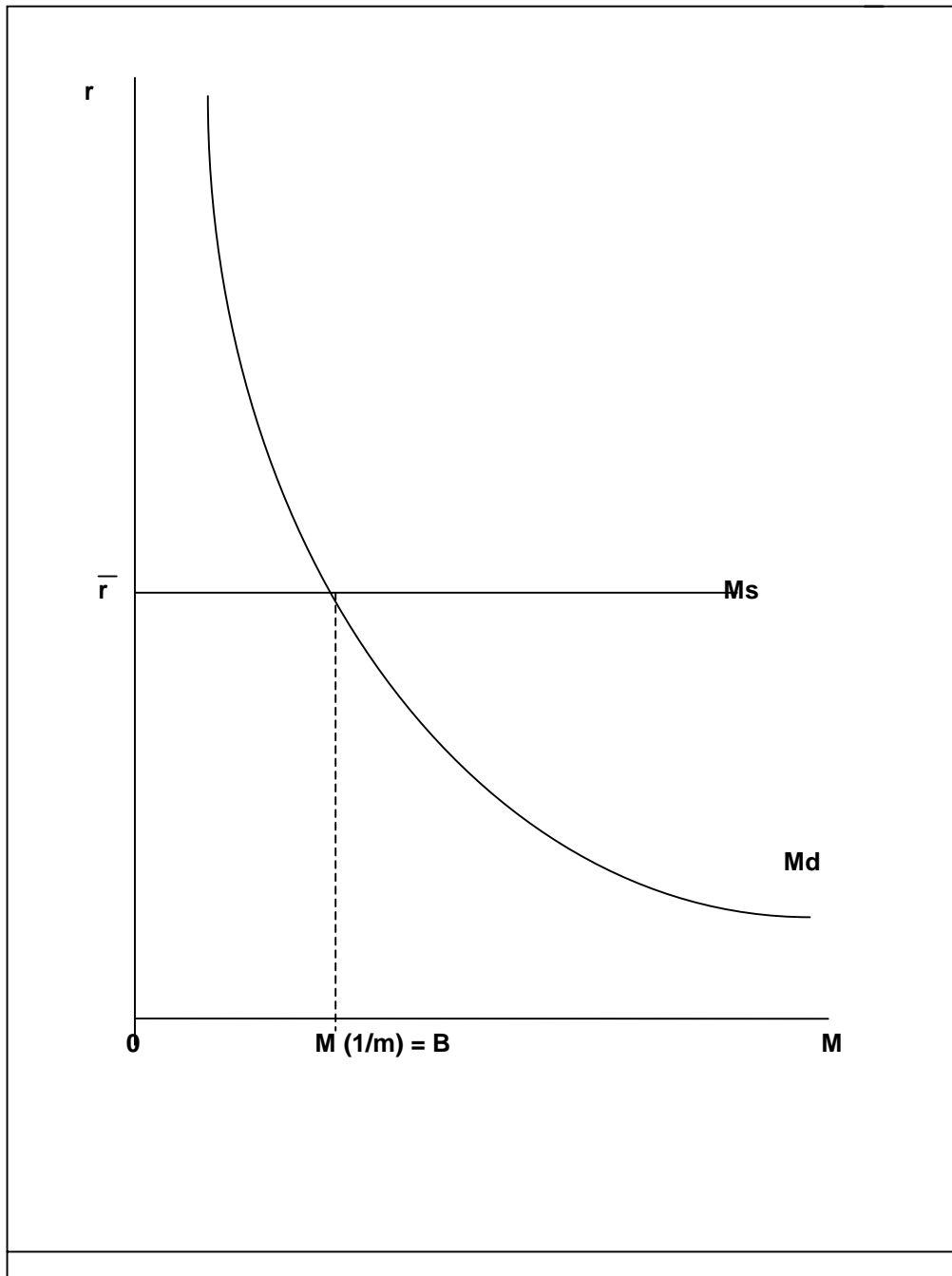
- The elasticity of substitution must be zero, therefore if the price of a good increases, people will not be able to substitute it with another commodity (Davidson, 1981: 167-8).

The Post-Keynesians see Keynes' theory of liquidity preference playing a vital role in explaining the failure of the market signalling mechanism. Assume for example that people become cautious about their money, and there is an ensuing rush into liquidity, obstructing the transfer of intertemporal price signals (Davidson, 1981: 169). This will result in a decreased demand for goods, consequently, sales will decline and workers will be discharged, causing increased unemployment. The increase in the demand for liquid assets, however, causes their prices to increase but this does not alleviate the unemployment problem, as liquid assets have a zero elasticity of production. Furthermore, the elasticity of production between liquid assets and producible goods is zero, therefore the increased demand for liquidity will not be diverted to other substitutes. For Post-Keynesians, the rush to liquidity causes workers to be laid off and they cannot be re-employed. Thus, unemployment is seen as a fundamental problem of any money economy where liquidity considerations are important. For this reason, the Post-Keynesians believe the economy could settle down at any level of employment, and can therefore exhibit unemployment equilibrium in the short and long-term.

The money supply is treated as endogenous, responding and accommodating itself to changes in the level of money wages (Eichner, 1980: 125). Furthermore, the money supply is seen as a response, and not a cause of inflation. The central bank has no influence over the money supply, the only influence it has is to set the interest rate at which it provides the lender of last resort liquidity. The central bank can then only affect short-term interest rates in the economy. This is illustrated in Figure 2.3, which shows the Post-Keynesian analysis of the money

Figure 2.3

THE POST-KEYNESIAN MONEY SUPPLY PROCESS



Source: Edkins, 1989: 11

supply process. This is a deviation from the orthodox Keynesian and Monetarists schools, where the money supply is treated as exogenous, which the Post-Keynesians believe not to be valid in a modern credit economy, but only in a commodity economy where money is simply used as a medium of exchange. If the public wishes to increase their expenditures, it can be put into effect if the banks create the necessary amount of credit. Therefore, signals have to be sent to the banking system.

Hence, the money supply in the Post-Keynesian theory is demand driven, with the control instrument being the interest rate (Lavoie, 1992: 171). Therefore, supply changes precede those of money income changes and causation runs from income to money and not from money to income as the Monetarists had presumed. The Post-Keynesian money supply process can be viewed as follows:

$$B=(1/m)M.....(2.5)$$

In this equation,

- M is the money supply;
- B is the monetary base (see footnote 4); and
- m is the money multiplier (Edkins, 1989: 10).

Herein, M is treated as a divisor m of the monetary base, B .

In Figure 2.3, it is evident that the money supply (M_s) is regarded as perfectly elastic in the short-run at an interest rate (r) determined by the monetary authorities. Although the money supply is treated as endogenous, it has been shown above that the central bank is able to employ monetary targeting by varying the interest rate. Therefore, the money supply determines the monetary base. The endogeneity of the

money supply also implies that equation 2.4, ($MV=PY$), should rather be read from right to left.

This view has a bearing on the monetary control procedures recommended by the De Kock Commission (1985), as will be discussed in Chapter Four. The Post-Keynesians furthermore recognised two other monetary transmission channels. These will now be discussed.

(2) Wealth Effects and Credit Rationing Effects

In terms of the wealth effect, a change in the real quantity of money can affect aggregate demand even if it does not change interest rates (Havrilesky & Boorman, 1976: 48). The stock of “outside money” is a component of the net wealth of the economy. “Outside money” is, however, non-interest bearing debt of government, therefore when the balance sheets of the private and government sector are added together, it will be cancelled as an item of net wealth. For this reason, it cannot exert a wealth effect. However, a change in “outside money” results in an increase in the assets of the private sector and therefore does increase wealth. This wealth effect is extended beyond money to other forms of wealth such as interest-bearing government debt and real market values of equities.

The interest burden of interest-bearing government debt must be financed by future taxes. If the private sector deducts future tax liabilities, then the existence of government bonds are both assets and liabilities to the public, and therefore, not net wealth. If the public considers only a percentage of interest bearing government debt as a liability, then the open market purchase of bonds results in an increase in net private wealth, and hence, a change in aggregate demand.

The second channel is that of credit rationing (Havrilesky & Boorman, 1976: 49). Due to imperfect capital markets, institutional forces (not the market) control the interest rate charged. Therefore, the interest rate will change when there is a change in the demand for funds. The demand for credit is limited by lenders' willingness to lend. Hence, there is not a single interest rate, but a number of different interest rates. Therefore, even if monetary controls do not change significantly, or if aggregate demand is inelastic, monetary policy will affect total expenditure directly by changing the degree of credit rationing, and therefore the volume of lending.

Overall, the Post-Keynesians stress uncertainty and therefore effective demand failures. Like Keynes, they also stress the importance of expectations. They believe that a monetary growth rule as advocated by the Monetarists, would only serve to worsen unemployment. They advocate traditional demand management policies, but call for the implementation of an incomes policy as a supplement. The Post-Keynesians also believe that money is non-neutral, and therefore has powerful real effects.

Furthermore, they believe the money supply is predominantly demand determined, therefore the central bank can influence the money supply only indirectly via interest rate instrumentation (Edkins, 1989: 7). Thus, for the Post-Keynesians, monetary policy has an important role to play in achieving price stability, balance of payments equilibrium, and decreased unemployment.

2.4 CONCLUSION

For the Classical economists, the money supply and changes in the money supply did not have an effect on the real economy. Increases in the money supply would cause an increase in expenditure and therefore the only effect this would have would be to increase prices. The Classical economists believed that market forces would instantaneously remove any disequilibrium. For this reason, there would be no need for policy intervention. Money, therefore, was regarded as neutral and not important.

Inasmuch as the Classical economists focused on the money supply, Keynes focused on money demand, and neglected supply factors. According to Keynes, unlike the Classical assumptions, there is not one full employment equilibrium, but a number of them, and the economy takes a long time to adjust. Therefore, Keynes advocated demand management policies, and believed the adjustment would take place through quantities and not prices. For Keynes, expectations played a very important role, whereas the Classical economists did not consider expectations to be important. Under Keynesian analysis, changes in the money supply do affect the real variables in the economy, and therefore, he believed there to be scope for monetary policy. However, because Keynes viewed money demand as highly responsive to interest rates and investment as fairly unresponsive to interest rates, he preferred fiscal policy to monetary policy.

Monetarists stressed the potency of money and advocated a monetary rule in conducting monetary policy. Like the Keynesians, they believed money to be non-neutral, but believed it influenced output and prices, tending towards equilibrium in the long-term. However, like the Classical school they also believed prices to be flexible, a belief Keynes disagreed

with. The Monetarists believed monetary policy to be a powerful tool, and in conducting monetary policy favoured rules and not discretion. They also placed great emphasis on expectations as Keynes did.

The Post-Keynesians stress uncertainty and therefore effective demand failures. Like Keynes, they also stress the importance of expectations. They believe that a monetary growth rule as advocated by the Monetarists, would only serve to intensify unemployment and therefore advocate the implementation of an incomes policy. The Post-Keynesians also believe that money is non-neutral, and therefore has powerful real effects. They recognise that there is also a wealth effect where monetary policy can affect aggregate demand even if interest rates do not change. They further recognise the credit rationing effect where monetary policy affects total expenditure by changing the degree of credit rationing and thus the volume of lending even if interest rates do not change. The Post-Keynesians treat the money supply as endogenous, therefore the central bank can only influence the money supply indirectly through variations in interest rates.

The following chapter discusses how the aforementioned schools of thought influenced the development of monetary policy in South Africa from World War II up to the time of the De Kock Commission.

CHAPTER THREE

MONETARY POLICY IN SOUTH AFRICA UP TO 1998

3.1 INTRODUCTION

Since World War II, South African monetary policy has undergone numerous changes. It would be logical to look at past official approaches to monetary policy in South Africa, in order to contextualise the current developments. Furthermore, it would also help one appreciate how and why monetary policy came to assume the form it did, and why it was only partially successful in meeting its objectives. It is the aim of this chapter to focus on how monetary policy in South Africa has evolved to what it is today, and why it has been deemed necessary to implement the new repurchase system in 1998.

3.2 THE PERIOD BEFORE THE DE KOCK COMMISSION

South African monetary policy has undergone several transformations in the period from World War II. The first phase occurred in the post-World War II period. At this stage, the worldview was that fiscal policy was the most effective instrument in attaining economic stability, which was clearly Keynesian in nature. Hence, the only function monetary policy performed was to saturate the economy with liquidity to keep interest rates at very low levels. This allowed investment and consumption expenditure to increase swiftly enough to provide full employment (RSA, 1985: 144). South Africa followed a somewhat different view. Money was recognised as a unique

financial asset, and held to have a notable influence on production, incomes, prices, and balance of payments equilibrium (RSA, 1985: 144).

Furthermore, the production of money was viewed as a task that could only be carried out by the SARB and commercial banks (De Kock, 1981: 321). Clearly, great importance was attached to money, and therefore it needed to be controlled.

The second phase occurred in the late 1950s to the early 1960s (De Kock, 1981: 322). During this phase, inflation was as yet not a major problem, and great importance was attached to high and stable levels of employment, the money supply, and interest rates (although interest rates were still kept at very low levels) (Meijer, 1996: 238). It was only during this, the second phase of monetary policy, that South Africa adopted the worldview, and ascribed importance to fiscal policy. The authorities accordingly placed a great deal of emphasis on Keynesian demand management policies, whilst still recognising the importance of monetary policy (RSA, 1985: 144). Money was still held as important because expenditure, income, and prices changed in response to a change in it (De Kock, 1981: 322). Furthermore, it was believed that changes in the money supply could exercise a significant influence on interest rates, which in turn would impact on investment and consumption. Thirdly, the authorities expressly recognised that there was a correlation between the general availability of credit and an increase in the money supply, and finally, it was accepted that a change in the money supply could sometimes have a direct bearing on total spending. (RSA, 1985: 144) This phase took on characteristics of conservative Keynesianism with elements of Monetarism (De Kock, 1981: 322).

Since commercial banks were able to create money, and the money supply was deemed important, monetary policy was directed towards the commercial banking system. In order to gain control over credit and the money supply, the SARB operated on commercial banks' cash reserves and liquid assets, through instruments such as discount policy and moral suasion. Apart from these instruments, the SARB also varied the Bank Rate, which caused shifts in commercial banks' prime and lending rates, and was furthermore granted authority to enforce upon banks additional cash reserve requirements (RSA, 1985: 145).

It is evident from the above that Monetarist theory (as discussed in the previous chapter) clearly influenced the general thinking of the time, particularly due to the great importance attached to the money supply.

The third phase occurred during the time of the 1961-1964 Technical Committee⁷. It became apparent that the authorities were not successful in their attempts to keep interest rates at very low levels. Not only was the economy suffering from high interest rates, but also high unemployment (De Kock, 1981: 323). The supposition at this time was no longer that money was a unique financial asset, but instead it was believed to be a series of liquid financial assets. Furthermore, where commercial banks were heretofore seen as the only institutions (together with the SARB) that could create money, it was now recognised that they were not fundamentally different from other financial institutions (RSA, 1985: 145).

⁷ This Committee was appointed in 1961 to advise the authorities on desirable amendments to the Banking and Building Society Act, in the light of complaints received about unfair competition between different banking institutions and building societies. The report of the Committee was published in 1964. (De Kock, 1981: 323)

The Technical Committee did not agree with this and suggested a few modifications. Firstly, they proposed that in addition to money, there is 'near-money', that is, deposits or other financial assets that serve as close substitutes for money, and which can easily and costlessly be converted into money. Furthermore, they suggested that the SARB and commercial banks were not the only financial institutions able to create money, but that other deposit taking institutions in South Africa, such as merchant banks, discount houses and general banks could also co-operate in this process (De Kock, 1981: 324). Out of this approach grew what is known as the monetary banking sector⁸.

The approach was still in essence Keynesian, but contained elements of Monetarism. Money was thus seen as an important determinant of total spending and interest rates, and in this sense was Monetarist, but they did not see it as the main determinant of prices and economic activity. The Technical Committee further favoured a policy of demand management, and the use of the liquid asset system to control bank credit (RSA, 1985: 146). This policy was then Keynesian.

The 1964 to 1980 period coincided with the fourth phase of monetary policy in South Africa, at which time Monetarism became increasingly popular (Rogers, 1986: 66). During this phase, monetary policy consisted of direct methods of control⁹, combined with semi-market-oriented policy instruments¹⁰ (De Kock, 1981: 326). No doubt, market-oriented methods of monetary policy were not given recognition, in particular open market

⁸ The SARB, commercial banks, and other banking institutions with monetary significance.

⁹ Bank credit ceilings, exchange controls, and import deposits.

¹⁰ Variable liquid asset and cash reserve ratios.

operations, and other forms of intervention in the financial markets by the SARB. Interest rates still played a minor role at this time.

The arguments put forward for not using market-oriented methods of monetary policy were threefold. According to the De Kock Commission, South Africa's financial markets were still under-developed, and therefore not equipped for such methods. Secondly, interest rates in South Africa at the time were highly sensitive to the political environment, and for this reason, the De Kock Commission preferred to avoid large increases in interest rates. The authorities also needed to make certain forms of socially desirable credit more attractive, and therefore had to increase the amount of such credit, for example, building society mortgage loans. This made interest rate rises more undesirable. Finally, in financing its deficit before borrowing, government would resort to bank credit. This action had the effect of increasing the money supply directly, and increasing banks' liquid assets, and hence their ability to create credit for the private sector. (RSA, 1985: 147) Still, the SARB deemed it necessary in this period to curb bank credit extended to the private sector, and achieved this by means of direct instruments such as credit ceilings, and substantial increases in the minimum liquid asset requirements.

The direct methods of control used by the SARB at this time were not effective in achieving the objectives of monetary policy. Avoiding direct controls is advantageous as it means more efficient financial markets, making the real costs of investment lower and the real rewards for savers higher, as loanable funds are allocated more efficiently (Kantor, 1986: 98). Furthermore, direct controls tend to be clumsy and take effect only with substantial time lags. Hence, the De Kock Commission of Enquiry was appointed in 1977. They published a preliminary report in 1978, and a final

report in 1985 (RSA, 1985: 148). Before discussing the recommendations put forward by the De Kock Commission, it is necessary to first identify the deficiencies of the above system of monetary policy.

3.3 DEFICIENCIES OF MONETARY POLICY BEFORE THE DE KOCK COMMISSION

According to De Kock (1981: 327), monetary policies applied since 1946 suffered certain deficiencies, and these help to explain why the authorities were not always successful in attaining the ultimate policy objectives. The underlying reasons for the deficiencies in monetary policy follow.

As discussed above, South Africa relied on direct controls and not on market-oriented policies. In 3.2, the disadvantages of using direct controls were briefly mentioned. Market-oriented financial markets improve economic growth, and allow the application of monetary policy to become more effective (RSA, 1985: 162). Numerous contributing factors helped explain why South Africa did not give market-oriented policies their due recognition.

Firstly, although the financial markets were developing rapidly, the authorities did not appreciate this or recognise its ramifications for monetary policy. Secondly, it was not believed that these markets were capable of producing optimal economic results. Thirdly, there was the fear that if left alone, these markets would suffer negative consequences such as high interest rates (RSA, 1985: 162). All of these factors contributed to South Africa's dependence on direct controls.

It is clear from the above reasons why the monetary authorities placed heavy reliance upon direct methods of control and on semi-market-oriented methods. These methods, however, did not allow the monetary authorities to influence changes in monetary aggregates, interest rates, exchange rates, and credit, and as such, failed to achieve their goals. Therefore, the use of direct methods of control led to disintermediation¹¹, thereby reducing the efficiency of monetary policy.

Secondly, monetary policy was viewed as the equivalent of the monetary authorities' attempts to control credit extended by the banking sector to the private sector (RSA, 1985: 163). As such, importance was attached to instruments such as higher cash reserve requirements, liquid asset requirements, and credit ceilings, which control bank credit extended to the private sector. Therefore, it took emphasis off other instruments such as public debt management, discount policy, the exchange rate and exchange control policy, which impact on money, credit, interest rates, exchange rates, and hence aggregate demand (De Kock, 1981: 328). This view was regarded as narrow, as monetary policy should rather include all measures that influence the various monetary aggregates, interest rates, and the flow of funds in general.

Thirdly, the relationship between the monetary aggregates and interest rates was not clearly defined (RSA, 1985: 164). None of the monetary aggregates such as M1¹², M2¹³ or M3¹⁴ were used as targets (RSA, 1985:

¹¹ The replacement of credit normally/previously extended through the intermediation of a bank or other financial institution by money broking and non-intermediated credit extended directly by primary lenders to ultimate borrowers (RSA, 1985: 163).

164). Neither was any use made of interest rate targeting, but instead interest rates were kept at unrealistic levels. In using these as monetary policy targets, it allows for the goal of economic stability to be attained. The result of this was conflicting objectives between money supply and interest rate policy, which allowed for disintermediation and thus weakened monetary policy. An example given by De Kock (1981: 330) is where it would be official policy to reduce monetary expansion, yet the authorities would employ deposit rate controls so that deposit rates were kept below market levels, thereby encouraging monetary expansion.

Fourthly, instruments used in the monetary policy strategy, in particular that of exchange rate and exchange control, had not been properly co-ordinated, thereby reducing the effectiveness of monetary policy as a whole (RSA, 1985: 164). Finally, the liquid asset system of bank credit control was not adequately implemented, and also suffered fundamental weaknesses (RSA, 1985: 166). The De Kock Commission identified these weaknesses as follows:

- There were no similarities between the interest rates on statutory liquid assets and non-liquid assets. The interest rate differential on these tended to widen if bank liquidity was in short supply. This made inflationary financing attractive to borrowers,

¹² M1 = notes and coins in circulation outside the monetary banking sector, cheque and other transmission deposits of the domestic private sector with the monetary banking sector, and other demand deposits of the domestic private sector with the monetary banking sector (ABSA, 1998: 164).

¹³ M2 = M1 plus short and medium term deposits of the domestic private sector with the monetary banking sector (ABSA, 1998: 16).

¹⁴ M3 = M2 plus long-term deposits of the domestic private sector with the monetary banking sector (ABSA, 1998: 16)

- It became more difficult to implement effective monetary policy because this system led to deficiencies in the short-term financial markets, distortions in interest rates, and a misallocation of resources, and finally
- It provided an incentive for disintermediation (as explained above), which led to a widening of the gap between banks' lending and borrowing rates, resulting in financial markets becoming less competitive. (RSA, 1985: 170-171).

In order to control the credit creating ability of banks, their required liquid asset ratios were varied, or the authorities would operate on their liquidity base (RSA, 1985: 166). However, the authorities failed to achieve this objective.

As will be evident later, in the fifth phase of monetary policy, from the late 1970s, there was a movement away from these direct methods of control towards a full reliance on indirect instruments. This implementation of indirect methods of control, was however, at first limited to the industrialised countries, and adopted by emerging and other developing economies from the late 1980s (Van der Merwe, 1997b: 5). The discussion will now focus on the recommendations of monetary policy as made by the De Kock Commission.

3.4. THE DE KOCK COMMISSION'S RECOMMENDATIONS

The De Kock Commission, after evaluating the deficiencies of the previous system, recommended a market-oriented approach to monetary policy, as they believed such an approach would serve South Africa better (RSA, 1985: A9).

The Commission's reasons for suggesting a market-related approach were the following:

- Firstly, financial markets function efficiently only if they are reasonably free, competitive, dynamic, and liberal, and make an important contribution to the general economic growth and welfare of the country.
- Secondly, growth in the monetary aggregates is stabilised and moderated with market-oriented policies, thereby allowing more effective control over disintermediation; and leading to interest rates and exchange rates that are more realistic and market related. If these could be achieved, the monetary authorities' influence over aggregate money demand would be improved (RSA, 1985: A9). Therefore, the De Kock Commission believed such an approach would overcome the weaknesses of monetary policy as experienced in the past.

They recommended that in addition to the objectives of balance of payments equilibrium and economic growth, the principal long-term goal of monetary policy should be the preservation of a relatively stable domestic price level. Although this would form the primary objective, relative prices would still be given sufficient freedom to change (RSA, 1985: A10). The De Kock Commission saw no compromise between these goals of monetary policy in the long-term.

The De Kock Commission furthermore recommended that the SARB adopt monetary targets as its specific intermediate objective of monetary policy (RSA, 1985: A10). This recommendation was based on the belief that inflation is a monetary phenomenon, and therefore, if the rate of growth in the money supply could be curbed effectively, inflation would be controlled (ABSA Bank, 1998: 4). This recommendation appears to have been influenced by the Monetarist school of thought (see Chapter Two) that

favoured a monetary growth rule. The De Kock Commission preferred monetary targeting to interest rate targeting, as it believed the disadvantages of the latter would far surpass the advantages.

In targeting the money supply, the De Kock Commission believed that this target should be applied flexibly. Therefore, interest rates and exchange rates would not be completely free to find their own levels at all times, but would be given a certain degree of freedom to reflect the varying degrees of tightness in the market. This meant they would at times have to rise to very high levels, and not be kept at artificially low levels as had been done in the past. Thus, whatever circumstances the SARB may encounter, it would have to use its discretion in deciding what combination of monetary aggregates, interest rates, and spot and forward exchange rates to aim at.

The De Kock Commission further recommended that the money supply objectives be expressed in terms of rates of increase which the SARB find reasonable. These would be set once a year (RSA, 1985: A11). The fact that the De Kock Commission recommended discretion and not rules made it different from what the Monetarist advocated, as they preferred a fixed growth rule.

In order to control bank credit creation, the De Kock Commission recommended the use of the "classical cash reserve system" (RSA, 1985: A14). In fulfilling the minimum cash reserve requirement, banks would, if necessary, have to supplement their cash reserves, by approaching the discount window of the SARB. Therefore, banks would be forced to obtain financing from the SARB, and pay at the rate set by the SARB. The rate charged for accommodation would be the prime instrument of control (Meijer, 1996: 242). Therefore, discount policy would be applied to influence the cost of credit and the demand for credit. This includes the

cost to the banking system, and to the banks' clients (De Wet, Jonkergouw & Koekemoer, 1995: 578). Rogers (1985: 241) points out that this proposed control mechanism closely resembles the Post-Keynesian exposition of the money supply process and their recommended monetary control mechanism. This is explained further in 3.5.

The market-oriented instruments of monetary policy recommended by the De Kock Commission, would, through the purchase and sale of appropriate financial securities impact on prices and quantities in these markets (SARB, 1997d: 32). The De Kock Commission recommended the use of the following instruments:

- Public debt management;
- Open market operations;
- Discount and general accommodation policy; and
- Intervention in the spot and forward exchange markets. (RSA, 1985: A13)

The above instruments would be supplemented with semi-market-oriented techniques.

3.5 MONETARY POLICY UNDER DR. GERHARD DE KOCK

The De Kock era started during the early 1980s and signified the fifth phase of monetary policy in South Africa. This period displayed a clear transition to a more market-oriented monetary policy. The main steps signalling this transition, were as follows:

- In March 1980, deposit rate controls were abolished,
- In September 1980, bank credit ceilings were abolished;
- In September 1980, South Africa's balance of payments situation deteriorated, and consequently, the financial markets were allowed to

tighten, and interest rates were allowed to increase. Phasing out the liquid asset instrument between 1982 and 1984 further reinforced the role of flexible interest rates.

- In December 1983, rediscount rates were determined separately, instead of being set at a rigid margin over market interest rates. The accommodation rates were varied more frequently in accordance with changes in market conditions, and the SARB's own policy stance. (RSA, 1985: 148).

Several of the De Kock Commission's recommendations were implemented. In order to achieve the ultimate objectives and ultimately the containment of inflationary pressures, the SARB in March 1986 set specific targets for growth in one or more of the money supply targets (Gidlow, 1995: 22). Annual targets for the growth in the M3 money supply were then set, and the guideline growth range was set as an upper and lower limit of 10 percent and 6 percent respectively. These limits did not remain constant, but were gradually reduced. By targeting the money supply, the SARB was following a Monetarist approach. The Bank, however, made it clear, that these targets would not signify a strict and tight monetary growth rule, but should rather be seen as an acceptable rate of monetary expansion (RSA, 1985: A10).

It was proposed that monetary targeting has various advantages:

- Firstly, it makes the public alert to the fact that there is a relationship between the money supply and prices;
- The business community, consumers, and the labour movement are able to deduce what actions the monetary authorities will take in the future,
- Government's propensity to spend public funds is restrained, hence they

will not be as enthusiastic to resort to bank credit, thereby also limiting the likelihood of exceeding the money supply targets, and finally

- If the monetary authorities announce in advance their intended stance on monetary policy, then the appropriate adjustments in wages and salaries of employees and spending plans of business can take place. (ABSA, 1998: 4)

The German Bundesbank was the first central bank to announce money supply targets in 1975, with other central banks following suit thereafter. These policies have been successful in bringing down the average rate of inflation in industrialised countries until the 1980s. Furthermore, other economic indicators were also used in conjunction with the money supply, such as changes in bank credit extension, overall liquidity in the banking system, level of and changes in the yield curve and interest rates, and actual and expected movements in the rate of inflation (Van der Merwe, 1997b: 2).

The operational variable in the SARB's monetary policy at this time was interest rates. The SARB provides the private sector with additional bank credit, and by so doing, money is created. The amount of bank credit extended to the private sector is dependent on the amount of liquidity available within the banking system, and the demand for credit emerging from the private sector. Total demand is driven by the level of interest rates. Therefore, the SARB had to observe and constrain growth in total bank credit extended, and therefore influence the level of interest rates through its operations in the financial markets (Stals, 1999e: 2). Clearly, there was a distinct recognition of the importance of interest rates as a control mechanism under Dr. Gerhard De Kock. This view was in line with the Post-Keynesian theory of the money supply process, as discussed in 2.4.

Furthermore, the authorities recognised that there was a relationship between monetary aggregates and interest rates, and were aware that the two could not be determined independently.

The monetary authorities favoured discretionary monetary policy as recommended by the De Kock Commission. Despite the increased emphasis on market-oriented economic policies, the SARB did not adopt a purely free market approach, and therefore did intervene in determining interest rates and monetary aggregates. This was done through the above instruments such as open market operations, public debt management, and rediscount policy, as suggested by the De Kock Commission (Gidlow, 1995: 15). Semi-market-oriented techniques of varying the banks' cash reserve requirements were used to supplement the above instruments.

The Bank Rate¹⁵, and changes thereof became the key element in the SARB's refinancing policy, because the Bank Rate directly affected money market interest rates, which affected the volume of bank credit, money demand, money supply, and the cash reserve requirements of banks (De Wet, 1986: 10). It is evident from the above that causation ran from money demand and credit, to the monetary base (Rogers, 1985: 246).

The refinancing rates of the SARB were made effective by forcing the smaller banks to borrow from the SARB at these rates, through the management of the shortage of liquidity in the money market. The SARB has the ability to provide and destroy banks' reserves, and is the only institution able to do so. Therefore, through influencing the lending rates of

¹⁵ The Bank Rate was the basic rate for refinancing, and also the rate on which other refinancing rates were largely based (Nel, 1994: 25).

banks, the SARB is able to influence short-term interest rates (Guma, 1999: 16). Prior to April 1993, accommodation was provided in two ways, firstly "...through the rediscounting of treasury bills, Reserve Bank bills, Land Bank bills and liquid bankers acceptances with an outstanding maturity of 91 days, at different rates set by the SARB. Secondly, through the extension of overnight loans against the security of specified paper of a specified maximum maturity at specified rates" (Schoombee, 1996: 85). Rediscounting was always the cheaper option, and therefore the most preferred. As from April 1993, cash reserve shortages were accommodated by extending overnight loans to the commercial banks at the Bank Rate (in the case where treasury bills, Reserve Bank bills, Land Bank bills, and government stock with a maximum outstanding maturity of 91 days were pledged), or the Bank Rate plus a margin (in the case of the aforementioned paper with outstanding maturity of between 91 days and 3 years), depending on the securities offered as collateral (Schoombee, 1996: 85). The Bank Rate placed a ceiling on short-term interest rates.

The Monetarists favoured control of the money base, and therefore reject the interest rate approach. Thus, both the SARB and Monetarists favoured monetary targets, but differed regarding the manner in which it was to be achieved. The SARB's monetary policy was compatible with Post-Keynesian monetary theory, and incompatible with the quantity theory of money (Rogers, 1985: 241). However, although they employed a Post-Keynesian analysis of the money supply, they put forth a policy of monetary targeting as Monetarist. Thus, they followed the lead of other central banks around the world (Rogers, 1985: 241).

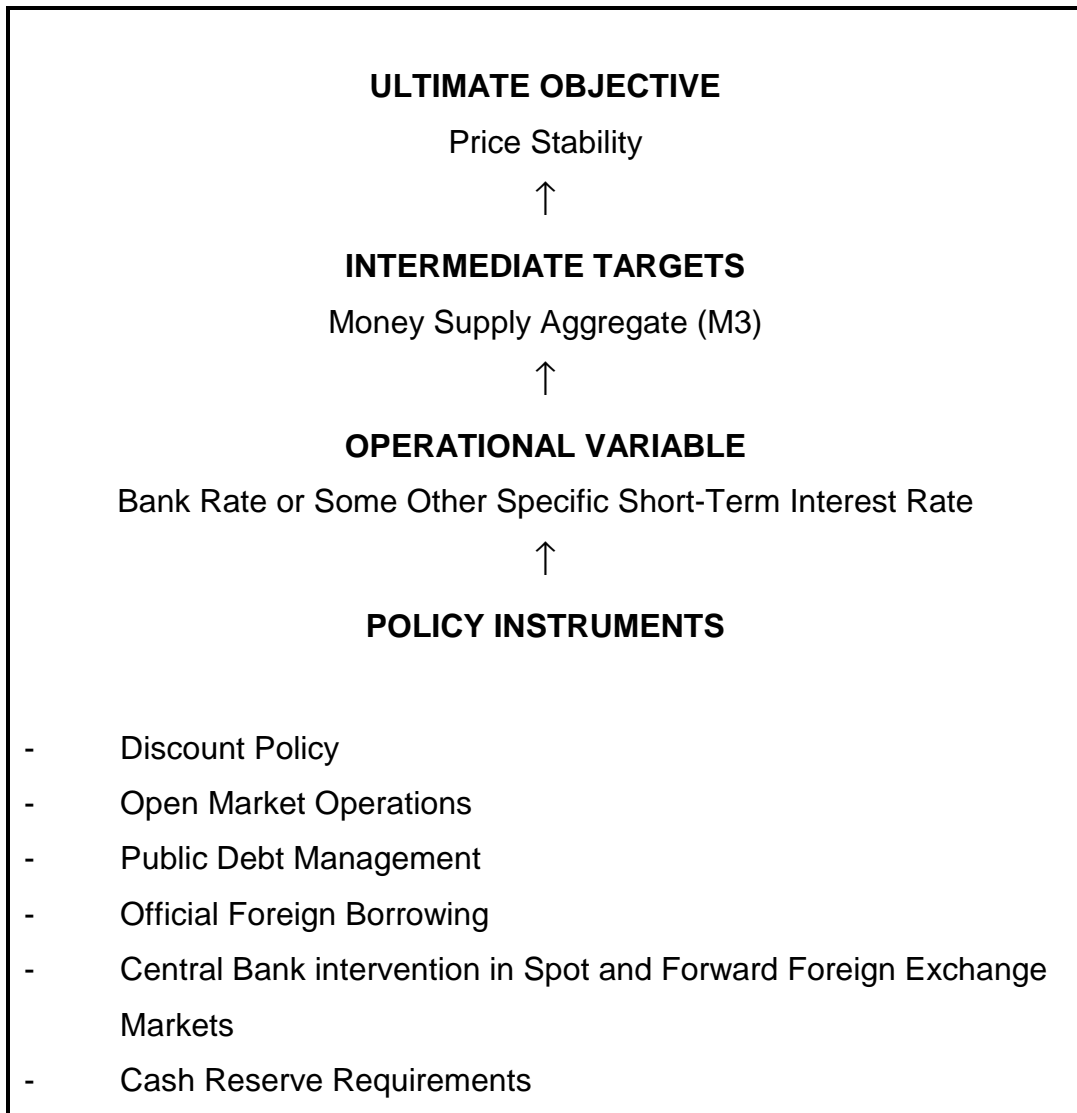
Thus, the operational variable in the SARB's monetary policy during the 1980s has been the general level of interest rates, and the SARB's prime policy instrument in influencing the operational variable remained its refinancing policy. The SARB opted for the so called "classical cash reserve system", whereby they refinanced the money market shortage fully, unconditionally and on certain prearranged conditions, terms and costs, as recommended by the De Kock Commission. The SARB could affect the demand for liquidity only through variations in interest rates (Van der Merwe, 1997b: 3). The classical cash reserve system closely corresponds to the Post-Keynesian analysis of the money supply process as discussed in Chapter Two. The Post-Keynesians treat the money supply as synonymous with money demand. Furthermore, the SARB achieved its monetary targets by manipulating interest rates and not the cash reserves. This is therefore incompatible with the Classical and Monetarist schools' quantity theory.

3.6 THE CONTROL MECHANISM IN MORE DETAIL

As stated above, the Bank Rate was used as the prime instrument of the SARB enabling it to control the ability of banks to create credit by influencing the cash base of the banks (their balances with the SARB) (SARB Training Institute, 1997b: 39). This was because the Bank Rate had a quick and comparable effect on other market interest rates (SARB Training Institute, 1997b: 39). According to Nel (1994: 15), the objective of the Bank Rate was to make it gain a greater degree of influence over market interest rates. This was supplemented by varying the cash reserve ratios of the banks. From 3.5, it is clear that in attaining its ultimate objective of price stability, the SARB targeted the money supply. It used the

Figure 3.1

**SOUTH AFRICAN RESERVE BANK MONETARY POLICY
FRAMEWORK IN THE DE KOCK ERA**



Source: SARB Training Institute, 1997a: 132

Bank Rate as its key operational variable in achieving the money supply targets, through its influence on the money market shortage.

Figure 3.1 below is a diagrammatic representation of the SARB monetary policy framework during the De Kock era. It shows that the SARB employed various policy instruments in order to have an effect on the Bank Rate and other short-term interest rates, which in turn had an impact on the growth in the money supply. Through targeting the growth in the money supply, the ultimate objective of price stability was aimed for. This section will now discuss in more detail the various instruments the SARB used in making monetary policy more effective.

3.6.1. The Cash Reserve System

Until 1981, the monetary authorities controlled banks' credit creating ability by influencing their holdings of liquid assets and/or varying the ratios of their required liquid assets (RSA, 1985: 181). However, in 3.3, the weaknesses of this system were identified. Based on this, the De Kock Commission recommended that the SARB should influence banks' cash bases instead, and if necessary, vary the required cash reserve ratios. Hence, the classical cash reserve system was introduced in South Africa in the 1980s.

A restrictive monetary policy would, for example, result in the SARB increasing the cost of its accommodation rates, therefore impacting on interest rates generally, and on the demand for credit. In this way, the SARB could influence the total liabilities of the banks to the public, and therefore their cash reserves (De Kock, 1983: 3). This system was then essentially Post-Keynesian in nature. This meant that interest rates would, at times, have to rise sharply and to relatively high levels.

Policy instruments such as open market operations were used to supplement the above policy. These instruments influenced the banks' cash reserve holdings and in so doing, created indebtedness, which in turn made the Bank Rate more effective. In this system, it was the cost of cash reserves that deterred expansion in the money supply in an inappropriate manner. Furthermore, the central bank could extend its accommodation to the banking system via a limited group of privileged institutions, such as discount houses. These institutions served as a funnel through which only the net shortage of cash reserves in the banking system was channelled to the central bank (RSA, 1985: 184).

The banking sector would obtain full, immediate and unconditional access to cash reserves through the discount window, but at a rate set by the SARB. This was precisely due to the fact that the growth in the money supply was demand determined with the central bank manipulating interest rates and not the cash reserves (SARB Training Institute, 1997b: 55). Cash reserves borrowed through the discount window are known as borrowed cash reserves. The policy instruments used to give effect to the above mechanism will now be discussed in more detail.

3.6.2 Policy Instruments

(1) Public Debt Management

Public debt management was one of the main instruments used in the conduct of monetary policy. It consists of "decisions and actions by the relevant public entities to attain premeditated effects with regard to the size, the composition by type of debt instruments or variety of borrowing, the maturity of structure and the ownership distribution of the public debt,

notably the debt of the central government " (RSA, 1985: 187). The De Kock Commission recommended that there be a close relationship between this instrument and open market operations, where both the SARB and the Treasury have input regarding the use of these two instruments (RSA, 1985: 193). This recommendation was implemented, to support the SARB's refinancing policy, thereby making the Bank Rate effective (Meijer, 1996: 263).

Under this system, the deposit liabilities of the banks would expand if government spending were financed through the extension of additional credit to the government sector. Such actions would increase the money supply, and expand the deposit liabilities of the banks, thereby requiring them to hold additional reserves with the SARB. These additional reserves were obtained by monetising part of their liquid assets, thereby putting upward pressure on interest rates (Gidlow, 1995: 59). Under the cash reserve system an increase in net bank credit extended to government still increased the money supply directly, but did not increase the banking system's ability or desire to extend more credit, or expand the money supply further. It is through the level and structure of interest rates, including its influence on the SARB's discount policy, that it exerts its influence on monetary conditions (RSA, 1985: 190).

The fact that banks made good their shortfall of cash by withdrawing funds from discount houses, forced the discount houses to make use of SARB accommodation. As a result thereof, the costs of accommodation, and hence interest rates, became important variables. In South Africa, however, public-debt management was not used extensively as an instrument of monetary policy, but close consultations between the Treasury and the SARB did indeed take place.

(2) Open Market Operations

As discussed in 3.4, the De Kock Commission recommended that the SARB expand its use of open market operations as a means of influencing the money supply and interest rates. It was also used to smooth out seasonal fluctuations in money market conditions instead of relying solely on rediscounting and overnight loans. Furthermore, they recommended that different prices and quantities be used, without the exclusion of one or the other, so as to develop open market techniques best suited to South African conditions.

Open market operations refer to “...the purchase or sale of securities (government stock, Land Bank bills, bankers acceptances, and foreign exchange), by the central bank in a secondary market in support of its monetary policy aims (SARB Training Institute, 1997a: 125). It was introduced in September 1973, but the SARB started placing emphasis on it as an instrument only in March 1980. It was introduced at this late stage because there was no active market in government securities at the time, and the SARB held an inadequate portfolio of government securities (SARB Training Institute, 1997a: 69). Subsequently, the scale of open market operations grew considerably (Gidlow, 1995: 53). Initially, open market operations were to be conducted in government stock, treasury bills, Land Bank Bills, and banker’s acceptances. However, there was a limited availability of such liquid paper, and the SARB was frequently compelled to use securities of other public sector bodies (Meijer, 1997: 29).

An open market sale or purchase of assets will have an immediate effect on the supply of money circulating in the economy, and the cash reserves of banks, immediately decreasing or increasing these respectively (SARB

Training Institute, 1997b: 63). If the central bank conducts an open market sale of assets, the cash reserves of banks decrease. This increases their need for accommodation, and therefore, the money market shortage (Guma, 1999: 18). Cash reserves obtained under open market operations are known as non-borrowed cash reserves. According to Schoombee (1996: 62), short-term interest rates should be influenced mainly by changes in the supply of non-borrowed cash reserves, at market determined prices, in order to influence the operational variable. This point will be referred to in Chapter Five.

According to Gidlow (1985: 79), "...open market operations have the advantage that they are less visible, more flexible, and facilitate a more efficient functioning of the markets in which rates are more sensitive to changes in monetary conditions". It is, however, inefficient in terms of its flexibility and manoeuvrability for purposes of very short-term management of the market. This is because settlement of these transactions could only take place two weeks after they had been concluded (Meijer, 1997: 29). However, this issue will be discussed later in section 3.7.

(3) Bank Rate and Discount Policy

Discount policy formed an integral part of the classical cash reserve system, together with public debt management and open market operations. Discount policy refers to "...the SARB's policy in regard of its extension of financial assistance or refinancing to discount houses and banks, at their insistence, in the form of rediscounting of treasury bills and other acceptable financial instruments, in the form of collateral lending against the security of such instruments" (Gidlow, 1995: 67). It therefore provides banks with the necessary credit to meet their cash reserves for either their minimum

cash reserve requirements or overnight loans (Meijer, 1996: 252). The need for credit could arise as a result of open market sale of assets (open market operations), or increased government spending financed by domestic banks (public debt management). The interest rate at which refinancing is provided, determines the effective cost of cash reserves at the discount window.

Due to the fact that accommodation was granted immediately, unconditionally, automatically, and to the full extent of the shortfall in the banks' aggregate cash balances, changes in the cost of accommodation was the only way in which the terms and conditions of accommodation could be changed. Because the Bank Rate was the lowest refinancing rate available, it became the basic rate for rediscounting. It was set and varied at the Reserve Bank's own discretion.

Short-term interest rates were usually below the Bank Rate, and the gap between short-term interest rates and the Bank Rate indicated a change in the underlying demand for bank credit, the liquidity position of banks, and expectations of the market regarding the future change in the Bank Rate (SARB Training Institute, 1997b: 117). If the central bank's rates were higher than the market rates, banks would bid for paper, thereby losing cash reserves and therefore would experience a cash reserve deficiency. This deficiency was then made good at the central bank's discount window, driving up the prices of this paper and driving down the corresponding market yields and interest rates. This process continued until these yields and interest rates reached approximate equality with the central bank's rediscount rates. The reverse of this process holds true (Meijer, 1996: 253). The SARB was therefore able to exert a dominant influence over money market and other short-term interest rates.

The SARB therefore followed the De Kock Commission's recommendation that the Bank Rate be used as the rediscount rate, and that the SARB would use its discretion in setting this rate. Changes in the Bank Rate policy in the 1980s were designed to place the authorities in a position whereby they could lead, and not follow market interest rates. At times however, decreases in the Bank Rate followed decreases in market interest rates that took place in anticipation of an expected change in the Bank Rate, but this will be discussed further in Chapter Six.

3.7 EVENTS LEADING TO THE DEMISE OF THIS SYSTEM

As indicated above, monetary policy decisions under the De Kock Governorship were linked to changes in the M3 money supply. At this time, there existed a stable relationship between the money supply and total domestic expenditure on the one hand, and the money supply and inflation. The importance attached to the money supply was a result of the monetary authorities' assumption that there was a link between the rate of increase in the money supply and inflation (Stals, 1997b: 2). As discussed above, in this system, the Bank Rate and other refinancing rates were set and varied at the discretion of the SARB. These rates were used to influence the general level of interest rates in the economy, as well as other economic aggregates mentioned previously.

This approach applied since 1986, served South Africa well as its financial markets were isolated from international markets, and capital flows were determined by exchange controls. However, with the new dispensation since 1994, major political and social reforms took place, and South Africa was reintegrated into the global economy. Three major structural changes have occurred throughout the world, which forced South Africa to rethink its

monetary policy. These were globalisation, the liberalisation of the financial markets worldwide, and international co-operation and integration (Van der Merwe, 1997a: 1). This called for a drastic restructuring of South Africa's financial sector, as it made the objective of price stability all the more difficult to attain. The credibility of the M3 money supply as an intermediate guideline of policy became questioned, as it was rendered a less reliable indicator of inflation, as well as a less reliable anchor for monetary policy.

The environment in which monetary policy was conducted changed considerably as a result of the financial liberalisation and globalisation. This was because the national financial markets increasingly became interdependent. This interdependency has various implications. Firstly, domestic interest rates may now have to adjust less in order to achieve the objectives of monetary policy (Van der Merwe, 1997a: 2). Furthermore, shocks are more easily transmitted from one market to another, and the growth of the financial markets has increased the capital flow between countries, as well as the volatility of movement of these funds between countries (Van der Merwe, 1997a: 2). Large international capital movements easily disrupt trends in all the major financial aggregates. As a result, the financial instruments must be able to react quickly and sensitively to changes in the underlying conditions in the financial markets to restore equilibrium (Stals, 1998b: 2). Furthermore, interest rates and exchange rates must be flexible and not be constrained by rigid money rules. As is evident, international convergence, co-operation and integration have serious implications for the role and conduct of monetary and other economic policy measures that the authorities institute.

In South Africa, there has been an increase in non-resident participation in the domestic financial markets, resulting in a large turnover. Moreover, this has led to greater volatility in long-term interest rates, as investors are quick to alter their positions as changes occur in the domestic environment (Van der Merwe, 1997a: 3). The large degree of volatility in capital movements is not only influenced by domestic developments, but also by events in other countries, such as the Mexican and Brazilian crisis in 1994 and 1998 respectively.

Although the inflation rate in South Africa had been brought down to more acceptable levels, the core inflation rate at 7,2 percent in January 1998, was still twice as high as the average rate of inflation in the economies of South Africa's major trading partners (Stals, 1998a: 4).

The rate of increase in bank credit extension to the private sector slowed down significantly, but the net claims of monetary institutions on the government increased sharply, thus causing the growth in total credit extension to increase. The growth rate in the money supply also remained high, appreciably higher than the upper limit of the SARB's guideline range of between 6 percent and 10 percent. Growth in the M3 money supply consistently increased at high rates, fluctuating at around 15 percent while the income velocity declined sharply. All the above trends were reflected in interest rates, which remained at relatively high inflation-adjusted levels.

The exchange rate of the rand although relatively steady in 1997, was still affected by international developments (Stals, 1998a: 4-7). Furthermore, the amount of liquidity available in the banking sector declined from R10, 6 billion in March 1997 to R5, 3 billion in October, showing that the banks no longer needed assistance of large amounts from the SARB for most of the time (Stals, 1997e: 2).

Apart from the negative events just described, there were intrinsic weaknesses in the conduct and development of monetary policy itself. The disadvantages to the system discussed above are many. Firstly, it made money market interest rates insensitive to changes in liquidity. The low net direct effective cost of refinancing has also contributed to the insensitivity of money market interest rates. The easy access banks had to SARB accommodation, at a fixed Bank Rate, contributed to the rigidity of the money market. Secondly, the SARB was unable to provide clear signals to the market about its monetary policy stance, and in turn could not receive clear signals from the market regarding the banks' perceptions of the developments taking place in the markets. Finally, development of the interbank market was discouraged, as well as trading in treasury bills and short dated government bonds (SARB, 1998f: 1). It was recognised there was a need for greater flexibility in the market for short-term funds.

Market interest rates have become increasingly volatile, therefore monetary control procedures have to be able to respond quickly to such changes. According to Schoombee (1996: 92), the use of automatic access to the central bank's discount window to influence short-term interest rates has come under increasing criticism. Central banks over the world have reduced their use of the discount window, and instead began to use open market operations and other such instruments. The focus has moved from controlling banks' cost of cash reserves, to the quantity of reserves. As is evident throughout this chapter, South Africa has concentrated a large amount of reliance on its discount window, and therefore on the cost of cash reserves.

Furthermore, the classical cash reserve system was not useful in managing the money market on a day-to-day basis, it was only applicable when large and sustained changes in domestic liquidity occurred, the reason being that it takes time to apply and is unwieldy. Also, frequent increases in the reserve requirements could disrupt the efficient management of banks' portfolios, and could lead to disintermediation, thereby weakening monetary control. The open-market operations also did not have an immediate effect on interest rates, because the SARB relied mainly on long-term government bonds (Van der Merwe, 1997b: 4).

Due to these weaknesses, the SARB adopted the repurchase system in March 1998. This system is similar to the one in use by Germany as will be discussed in Chapter Four.

3.8 CONCLUSION

Monetary policy as laid down in South Africa since the time of the De Kock Commission, has proceeded along Keynesian lines, with Monetarist influences. This policy, which incorporated the targeting of the M3 money supply, served the country well. This was the case as long as the financial markets in South Africa were relatively isolated from the rest of the world, and exchange controls were firmly in place. At this time, there existed a stable relationship between changes in money supply and total domestic expenditure, and therefore between money supply and inflation (Stals, 1998b: 1). The SARB used the instruments it had at its disposal, namely the cash reserve requirements, discount window, and open market operations, to ensure its money supply guidelines would be achieved. However, with the integration of South Africa into international markets, and the relaxation of exchange controls, the picture had changed. The

monetary policy applied was no longer effective, and was riddled with difficulties. For this reason, the suitability of continuing with this policy was questioned, both within and outside the SARB. Central banks around the world discovered that the successful application of money supply guidelines or targeting posed several difficulties. With this then came the advent of a new monetary policy, which will be discussed in Chapter Five.

CHAPTER FOUR

MONETARY CONTROL PROCEDURES IN GERMANY: A CASE STUDY

4.1 INTRODUCTION

The previous chapter discussed the various phases of monetary policy in South Africa since the World War II period up to March 1998. It was illustrated in particular that the previous monetary policy system became ineffective after 1994. Hence, South Africa adopted the repurchase system in March 1998, a system which has been in place in Germany since 1985. For this reason it would be logical and useful to use Germany as a case study to see how this system was applied and what successes and failures Germany has had thus far. This chapter will serve as an introduction to the following chapter, which discusses the repurchase system as applied in South Africa. The targets of monetary policy in Germany, as well as an overview of their repurchase system are discussed in the sections below. A short overview of the German interbank market is provided in Chapter Seven.

It is important to note that since the beginning of 1999, the European Central Bank has been responsible for monetary policy in the European Monetary Union, which includes Germany. For this reason, the monetary control procedures discussed in this chapter are no longer in operation in Germany.

4.2 THE INTERMEDIATE TARGETS OF MONETARY POLICY

Due to the complex nature of the transmission mechanism, and the time lags associated with it, in order to achieve its objectives, the Bundesbank has to gear its monetary policy to an intermediate target, over which its operational variable has some control. In order to be effective, the intermediate target variable has to give a relatively early indication of the impact of monetary policy. The intermediate target and operational variable therefore have to satisfy certain requirements. Firstly, it must be possible for the central bank to draw reliable conclusions from the operational variable regarding the outcomes of monetary impulses. Secondly, the intermediate target must have a stable relationship with the final target variable and, therefore, the achievement of the intermediate target must ensure the attainment of the final goal. Thirdly, the central bank must be able to control the operational variable with sufficient accuracy with the aid of instruments. (Clarida & Gertler, 1996: 10)

In deciding on an intermediate target for monetary policy, it was argued in Germany that real interest rates are unlikely to provide a realistic base for the price level, as a particular interest rate pattern may be consistent with both price stability and high inflation (Deutsche Bundesbank, 1995: 68-69). Consequently, it is not suitable as an intermediate target, or as a leading indicator of monetary policy.

Secondly, monetary impulses are passed on in the transmission mechanism mainly through credit aggregates, that is, the volume of bank lending to enterprises and individuals. However, the problem with using it as an intermediate target is that a close and stable relationship

between credit aggregates, and hence, price movements cannot be unequivocally assumed theoretically, and has not yet been empirically validated for Germany. It would therefore not be wise to use credit aggregates as a leading indicator (Deutsche Bundesbank, 1995: 69).

Monetary aggregates, however, are far less prone to the above uncertainties. It has been empirically proven that there does exist a relationship between movements in the money stock and the overall price level (Deutsche Bundesbank, 1995: 70). Over the long-term, money is created mainly through lending by the banking system to the private sector and the net appropriation of external assets by the banking system (Deutsche Bundesbank, 1995: 71). Furthermore, the Bundesbank can control the expansion of the money stock through the terms at which it supplies central bank money (see footnote 16). Through its management of liquidity in the money market, the central bank can influence the banks' willingness to lend, and therefore overall growth in the money supply.

In deciding to use monetary aggregates as an intermediate target of monetary policy, the question as to which monetary aggregate to use is vital. The M1 and M2 monetary aggregates are extremely volatile in Germany. Regarding the M1, it seemed to overstate the effects of interest rate policy pursued by the central bank (Deutsche Bundesbank, 1995: 73). Furthermore, the M1 only measures the actual cash in hand, and therefore does not give a realistic picture of the money supply in the economy, making it appear to be tighter or easier than what it actually is (Deutsche Bundesbank, 1995: 73). The M2 again distorts the trend of monetary growth in the opposite direction. The M2 expands strongly in periods when short-term interest rates increase very rapidly, and

furthermore understates the prohibitive effects of monetary policy and can even run counter to the direction of monetary policy (Deutsche Bundesbank, 1995: 73).

The Deutsche Bundesbank therefore favours the broader definition of the money stock, M3. The growth of the M3 has shown a stable positive relationship with the growth of aggregate production, and a negative relationship with interest rate movements (Deutsche Bundesbank, 1995: 74). In the long-term, a clear connection between the growth of the M3 money supply and price movements has been evident, and economic studies show that through controlling M3, the Bundesbank can influence the price level in the desired direction. This facilitates the medium-term direction of monetary policy when the annual monetary target is determined, evaluating the macro-implications of current monetary trends and gauging the appropriate monetary policy actions (Deutsche Bundesbank, 1995: 75). However, it is possible that the underlying relationships could become distorted in the short-term, but in the long-term, there is no convincing evidence that the relationship between monetary growth and price movements have become unstable in Germany or that the strategy of monetary targeting should be abandoned. As was seen in Chapter Three, South Africa also preferred and used the M3 money supply as an intermediate target from 1986. It will be indicated in Chapter Five, however, that South Africa later discontinued this practice.

4.2.1. The Bundesbank Monetary Targets

Each year the Bundesbank establishes a goal for inflation, and based on this goal, sets a target for its monetary aggregate, which is consistent with its inflation goal (Bernanke & Mihov, 1996: 2).

It was indicated in Chapter Three that the Bundesbank was the first central bank to set monetary targets in 1975, and at this time used the “central bank money stock”¹⁶ as its target (Eizenga, 1987: 6). In 1988, it was replaced by the M3 money stock. The reason for this change was that the central bank money stock was prone to serious disturbances, and often went above the target range (Schmid & Jerrmann, 1991: 74). Events in the real economy also caused the Bundesbank to deviate from these guidelines, however, there was always an official explanation provided (Deutsche Bundesbank, 1989: 103).

This system has the advantage that it is flexible, because the monetary targets are only guidelines and not legal mandates. Between 1975 and 1978, the Bundesbank announced a point target of 8 percent each year, which was always more or less exceeded. From 1979, it chose to publish an intermediate target range that was checked and revised in the middle of each year, and in 1991, a monetary target for a reunified Germany was announced for the first time. (Schachter & Stokman, 1995: 476)

¹⁶ The central bank money stock comprises of currency in circulation and minimum reserves, which the banks are required to hold against their domestic liabilities.

Since using the M3 monetary aggregate, the Bundesbank has more often than not met its targets, although in some years it has overshoot the target. Therefore, despite facing a number of constraints due to its integration into the world's financial markets, Germany's success rate with monetary targeting has been favourable. Germany's floating exchange rates provide some room for manoeuvre, but the growing interdependence of financial markets and increased international monetary policy co-operation have created new dependencies, as has been the case in South Africa. In implementing monetary targeting, Germany has managed to slow down long-term rises in interest rates; regain price stability; decrease the growth rate of the cost of living; and moved business activity on to the path of sustained growth (Deutsche Bundesbank, 1995: 87).

4.3 OVERVIEW OF THE GERMAN MODEL

According to the Deutsche Bundesbank Act¹⁷, the Bundesbank is responsible for monetary policy in the Federal Republic of Germany, and commits itself to stabilise the value of the German currency, the Deutsche Mark. This ensures domestic price stability, and the stability of purchasing power in terms of foreign currencies (Schachter & Stokman, 1995: 476). By keeping purchasing power stable, the Bundesbank believes it can create the monetary conditions allowing for the maintenance of a long-term, high level of employment with steady economic growth (Deutsche Bundesbank, 1995: 66).

¹⁷ Article 3 of the Deutsche Bundesbank Act of 1957 (Schachter & Stokman, 1995: 476).

The Bundesbank furthermore defines its role as “...to safeguard the currency by regulating the amount of money in circulation and the amount of credit supplied to the economy” (Deutsche Bundesbank, 1995: 66).

Like South Africa, the Bundesbank uses instruments that influence interest rates and the availability of funds in the money market, in order to achieve its monetary objectives. This is aimed indirectly at the amount of credit supplied to banks and at the demand for money and credit. Previously, the Bundesbank used instruments such as rediscount policy, lombard policy (to be defined below), variations in rediscount quotas and minimum reserve requirements. Through these instruments it was able to influence short-term interest rates and money market conditions because it has the power to:

- change the minimum reserve obligations of the banks;
- conduct open market operations;
- influence holdings of public balances, in particular their allocation between the central bank and commercial banks, and also to influence the manner in which public cash deficits are financed;
- to lay down conditions for access to rediscount credit from the central bank;
- fix advances on securities; and
- to engage in intervention in the foreign exchange market. (European Communities Monetary Committee, 1972: 92).

The discount rate and the lombard rate represented the most important interest rates in Germany. There are no upper and lower limits for these rates, but generally the discount rate is the cheapest rate and the lombard rate the most expensive rate. The instruments of discount and

lombard policy are discussed in further detail below in 4.4.2. Besides acting on interest rates, the Bundesbank endeavours to influence money demand, by influencing bank liquidity. Through influencing bank liquidity, demand and supply relations on the money market are altered, therefore causing movements in interest rates.

4.4 MONETARY CONTROL PROCEDURES IN MORE DETAIL

Despite the great amount of importance attached to the monetary aggregates, daily management of monetary policy is concerned with setting the short-term interest rates. The Bundesbank, in its publications, states that in the short-term, moderating market interest rate fluctuations take preference over meeting monetary aggregate targets (Clarida & Gertler, 1996: 11). The Bundesbank translates its goal of monetary policy into near-term interest rate objectives, and supplies the banks with reserves to meet these objectives (Clarida & Gertler, 1996: 11). Until the mid-1980s the Bundesbank manipulated short-term interest rates and bank reserves via discount window lending to banks, making available two types of credit, discount credit and lombard credit. Therefore, the focus was on the cost of reserves.

In the last few years, the Bundesbank increasingly used more market oriented policies (Jahnke & Reimers, 1995: 75). These instruments, together with the restructuring of the minimum reserves, enabled the Bundesbank to adjust the size of the demand for central bank money, by varying the reserve ratios. Secondly, it has reduced the quantitative significance of rediscount credit, and is therefore no longer used as an instrument for managing liquidity. Finally, the repurchase system has become the key determinant of banks' overall refinancing. This section

will now focus on the Bundesbank's instruments of monetary policy, indicating how and why it moved to a securities repurchase system in 1985.

4.4.1 Minimum Reserve Policy

The minimum reserve policy was introduced in 1948 (Deutsche Bundesbank, 1989: 56). Under this policy, banks keep a certain percentage of their deposits covered by balances at the central bank.

The minimum reserve policy was introduced to provide the central bank with a flexible and effective instrument of liquidity policy. The minimum reserve requirement serves the same purpose as the cash reserve requirement in South Africa, for this reason it would be useful to look at it.

In implementing the minimum reserve policy, the Bundesbank intended it to perform a dual task (Deutsche Bundesbank, 1995: 125). Firstly, it was meant to create a demand for central bank money by banks when the volume of credit and money expands in the economy. When this happens, banks are forced to obtain financing from the Bundesbank, and therefore see it as a lender of last resort. The central bank can also modify the reserve ratios, therefore altering the amount of central bank balances permanently supplied to banks. This keeps the creation of money by banks under control. Since a change in the reserve requirements will either absorb or release central bank money for banks, the minimum reserve policy can also compensate for developments which entail the creation or destruction of central bank money, such as foreign exchange flows (Deutsche Bundesbank, 1989: 63). Monetary expansion can only take place if the Bundesbank accommodates this

need, and makes its own contribution to banks' creation of money. The Bundesbank determines how much and at what interest rate it provides additional central bank balances (Deutsche Bundesbank, 1989: 63).

Secondly, the minimum reserve policy acts as liquidity buffer absorbing unforeseen fluctuations in liquidity needs, generally with no intervention by the Bundesbank. This results in stable interest rates (Deutsche Bundesbank, 1995: 126).

The minimum reserves carry no interest, thus this policy initially dampens bank profitability, creating a burden for banks which they pass on to their customers. The minimum reserve ratios have to be fulfilled only on average over a month, therefore banks can use their central bank balances for payment purposes, and if necessary, withdraw them temporarily. If banks fall short of their minimum reserve ratios, the amount is subject to a special rate of three percentage points above the current lombard rate. If the amount exceeds the minimum reserve ratio, banks acquire investments at the central bank which earn interest. Under the previous system in South Africa, the cash reserves were held in two accounts, with the one earning interest and the other non-interest earning. Furthermore, the cash reserve requirements had to be fulfilled on a daily basis. This was changed with the introduction of the repurchase system in 1998, but further discussion on South Africa's cash reserve requirement policy will follow in Chapter Five.

There has been an increasing interdependence between international financial markets. Consequently, this has resulted in increased money holdings outside Germany, impairing the ability of domestic monetary aggregates to provide accurate information to the authorities.

Consequently, the minimum reserves have created competitive distortions, which are harmful to Germany. Furthermore, a change in the minimum reserve ratios can send unwarranted signals to the markets, and these are not desirable. Thus, the Bundesbank restructured the minimum reserve ratios to lower them substantially.

For these reasons, the incentive to bypass the minimum reserve ratios has increased. This instrument is much less significant today, and is held solely for regulatory purposes, forcing the banks to refinance at conditions set by the Deutsche Bundesbank (Eizenga, 1987: 8). For example, when banks increase their lending operations, this automatically decreases the liquidity within the banking system as a whole. Therefore, banks will refinance this shortage from the Bundesbank. In this manner, the efficiency of rediscount and open market policy is enhanced (Eizenga, 1987: 8). The minimum reserves were last used in 1987 to absorb heavy inflows of foreign exchange.

4.4.2 Refinancing Facility

Refinancing refers to "...lending by the Bundesbank to credit institutions through the purchase of bills of exchange (rediscounting) and the granting of loans against the collateral of securities (lombard loans)" (Jahnke & Reimers, 1995: 98). The aim is to influence the quantity of money and credit circulating in the economy. The instrument of control in this facility are interest rates, but the Bundesbank can use quantitative and qualitative restrictions as well.

Individual banks have no general right to refinancing facilities at the Bundesbank. Every institution holding the minimum level of reserves, however, is offered access to the refinancing facility, depending on the general monetary situation and the particular circumstances of the institution seeking credit (Deutsche Bundesbank, 1989: 46). The various refinancing options available to banks are now discussed below.

(1) Rediscount Policy

Under rediscount policy, commercial banks can obtain liquidity from the central bank by selling it bills of exchange, which have to be paid back in no more than three months, and no less than seven days. Banks are able to use this facility at a preferential interest rate (Clarida & Gertler, 1996: 12). Changes in the discount rate usually entailed a shift in the pattern of interest rates in the Federal Republic of Germany. The trend was for interest rates to change much more in short-term business than in long-term business, that is, more vigorously on the money market (European Community Monetary Committee, 1972: 96).

The discount rate is the lowest boundary for money market interest rates, therefore there are quotas attached to rediscount credit. Furthermore, if money market interest rates were lower than the discount rate, banks would finance purchases of new bills by money market credit, thus increasing demand for money market credit and therefore increasing interest rates. This would have the effect of closing the gap with the discount rate. Before the introduction of the Repo Rate, this rate was similar to the Bank Rate as used in South Africa.

What is of importance in this facility is that the amount of rediscount credit is limited through the establishment of rediscount quotas. By increasing the discount window borrowing quotas of banks, it is possible for the central bank to tighten policy. This is therefore a quantitative control procedure. In the past, quotas were increased or decreased according to the requirements of monetary policy, alternatively, banks were only allowed to use a certain percentage of their quotas (Deutsche Bundesbank, 1989: 47). Fixed quotas were applied for one year at a time. If the rediscount quotas were raised, the immediate result was an increase in unutilised rediscount facilities. These unused facilities were used in times when liquidity was scarce, especially if refinancing credit was more expensive (Deutsche Bundesbank, 1989: 48). If the quotas were raised to compensate for losses in liquidity, or to provide central bank balances, then this signified a technical adjustment to liquidity and was not indicative of an expansionary monetary policy (Deutsche Bundesbank, 1989: 48). However, this was often misunderstood by the public, with the result that a change in rediscount quotas frequently had signal effects that were not warranted.

The Bundesbank Act did not lay down minimum or maximum levels for the discount rate, thus the Bundesbank could act in a discretionary manner in setting this rate. The Bundesbank introduced a uniform method of calculation in 1974, to enable a standard quota to be calculated for each bank according to objective criteria.

Rediscount quotas do not affect liquidity immediately, if rediscount quotas are increased, then only the unused portion for rediscounting is increased. The rate at which it is used depends on whether banks wish to repay more expensive types of central bank borrowing, and the extent

to which they are able to obtain additional bills. A cut in quotas can only take place as bills which have already been discounted fall due (Deutsche Bundesbank, 1995: 103). Changes in these quotas had an impact on the average cost of borrowing from the Bundesbank.

For a long time, changes in rediscount quotas were not aimed at changing the banks' refinancing at the Bundesbank through bills, but instead the focus was on banks' unused refinancing facilities and liquid bank assets which could be sold to the central bank at any time, and therefore provided automatic access to central bank money. These unused refinancing facilities increased the time lag with which restrictive monetary policy measures took effect. The quantitative significance of rediscount credit has diminished substantially, and it is no longer used as an instrument for managing liquidity.

(2) Lombard Policy

Lombard loans cannot be granted for longer than three months, and are extended only to bridge the temporary liquidity needs of banks (Deutsche Bundesbank, 1995: 101). The lombard rate can be changed daily, and can be revoked. Lombard loans have always been fixed above the discount rate, reflecting their purpose, which is only for emergency funding. In this sense, lombard loans are used for second-tier accommodation. If money market interest rates were higher than the lombard rate, it would be profitable for banks to borrow from the Bundesbank and lend in the money market. This would increase supply and decrease demand in the money market, resulting in declining money market interest rates. The Bundesbank can affect the quantity of loans

borrowed through this facility by changing the interest rate charged to banks on these loans, namely the lombard rate.

For a long time, the gap between the lombard rate and the discount rate was never more than one percentage point, but occasionally in times of restrictive policy, it has been as wide as 3 percentage points (Deutsche Bundesbank, 1989: 51). Under the traditional methods, sometimes banks met all their needs for the reserve requirements through lombard loans. According to the Deutsche Bundesbank (1989: 52), this had two disadvantages:

- Banks came to regard the lombard loans facility as a permanent source of central bank money, and the day-to-day rate remained closely linked to the lombard rate. Changes in the lombard rate did not allow for flexibility.
- Short-term and minimum changes in money market conditions offered a greater chance of not being seen straight away as a basic change in monetary policy stance, and therefore, of being misunderstood.

The lombard window lost its role as a last resort refinancing facility, creating havoc with the Bundesbank's monetary policy instruments, and weakening the central bank's controlling position (Dudler, 1986: 66). Banks borrowed heavily through the lombard window, therefore the call money rate was virtually pegged at the level of the Bundesbank's lombard rate. This was a problem also faced by South Africa in its previous accommodation system, which will be discussed in Chapter Six.

Setting the discount rate and the lombard rate was the cornerstone of interest rate policy. The discount rate represents a floor for the rates, and the lombard rate represents a ceiling. The lombard rate is of more significance to the interest rate trend, as it is an upper limit for the day-to-day money market rate. If the liquidity position is well balanced, that is, when there is sufficient liquidity in the market, no bank will pay higher rates than it has to for lombard credit. However, even though the lombard rate is a ceiling for short-term interest rates, it might happen that the day-to-day rates exceed it, if liquidity is very scarce. Banks' lending and deposit rates largely followed the lombard and discount rates. Besides influencing the credit costs of commercial banks, by setting official interest rates, changes in the discount rate and the lombard rate were also viewed as indicators for the direction of Bundesbank monetary policy. An increase in interest rates was interpreted as contractionary monetary policy, and a decrease in interest rates as an expansionary monetary policy.

These instruments placed the Bundesbank in a good position to exercise control over the money supply. In practise, however, the Bundesbank found it increasingly difficult to rely exclusively on these familiar policy instruments. According to Dudler (1986: 57), there were a number of reasons for this:

- They required formal decisions by the central bank's council;
- They were accompanied by pronounced signal effects not always desired; and
- banks need considerable time to adjust their deposit and lending rates and their reserve positions to conventional policy measures.

Furthermore, the lombard facility was regarded as a permanent source of central bank money, therefore, any easing or tightening of liquidity was reflected in the differences of levels in lombard borrowing. Due to the strong links between the German money and capital markets, and those abroad, there was a growing need to be able to respond quickly to changing conditions in financial markets (Deutsche Bundesbank, 1995: 112). The traditional instruments were unable to do this, and the effects of these instruments took place only with substantial time lags.

The Bundesbank wanted more discretion in influencing the monetary situation in the money market, and to limit the use of lombard loans so that they would be used only temporarily to meet peak needs in the money market, in line with its intended purpose. The discount policy and lombard policy became inflexible, and could only be changed on a discrete basis. Thus, the Bundesbank lacked the ability of targeting interest rates.

Flexibility in managing the money market could be enhanced by the more active use of short-term, reversible open market operations, such as securities repurchase agreements. In such a system, the initiative would remain in the hands of the Bundesbank. Over the last 15 years, the Bundesbank began dealing in repurchase agreements, and made increasing use of the United States style auction of open market operations. These two changes have greatly increased the Bundesbank's ability to fine tune movements in market interest rates. They are more desirable as instruments of monetary control, especially since the 1980s, with the economy exposed to larger and more frequent interest rate and exchange rate shocks from abroad. Thus, it was only

from 1985 that the management of the money market was done in a more flexible manner.

This change to a more flexible system occurred as a result of the growing inter-linking of Germany as a financial centre with financial international markets. Since then, the Bundesbank has only modified the weighting and adjustment of individual instruments to cope with the underlying changing conditions that have taken place. The next section will discuss securities repurchase agreements.

4.4.3 Open-Market Policy under Securities Repurchase Agreements

Open-market policy refers "...to the purchases and sales of securities by the central bank for its own account in the open market" (Deutsche Bundesbank, 1989: 65). The central bank buys and sells at market prices, therefore it cannot choose arbitrary prices. When the central bank participates in the market, this has an effect on the market situation, and the interest expectations of open market players are altered so that the Bundesbank is forced into the position of being an interest rate leader.

The Bundesbank since the late 1970s had developed open market operations under securities repurchase agreements. They provide banks with temporary central bank funds. Initially, open market operations were traded in bills of exchange, but this has since changed to debt securities, as credit institutions have virtually no major stocks of bills in their portfolios (Deutsche Bundesbank, 1995: 111). The interest rate relevant to the securities repurchase agreements, is the Repo Rate.

Under this system, the Bundesbank purchases securities eligible as collateral for the lombard loans from banks, subject to a minimum reserve requirement, on condition that the bank simultaneously purchases the securities forward (Deutsche Bundesbank, 1995: 110).

Securities repurchase agreements are offered to banks in the form of fixed-rate tenders (stating in their bids only the amount required) or variable rate tenders (stating in their bids both the amount required and the interest rate they are willing to pay). In the fixed rate tender, the Bundesbank sets the Repo Rate itself, and institutions state in their bids the amount required (not less than DM1 million). Of the total bids received, the Bundesbank allots the amount on offer, should this not be sufficient to cover all the banks, the Bundesbank will then reduce the bids accordingly. In the variable rate tender, allotments are made either at uniform interest rates (Dutch style auction), or at individual bidding rates tendered by banks (United States style auction). Bids at rates above the average allotment rate are provided in full, and bids below this rate are reduced accordingly. Until 1988, the Bundesbank used only the Dutch style auctions for variable rate tenders, and set a minimum interest rate as a guideline. Afterwards, the United States style auction method of variable rate tenders was instituted, with no minimum bidding rate given and allotments made at credit institutions individual bidding rates, starting with the highest rate (Deutsche Bundesbank, 1995: 112).

Historically, the fixed rate tender has prevailed in periods when interest rates are on a downward trend, and the variable rate tender in periods of rising interest rates (Schmid & Asche, 1997: 83). The Bundesbank has generally stuck to the fixed rate tenders for a long time at unchanged interest rates. When the Bundesbank introduced the repurchase system, it raised the lombard rate, while offering increased

amounts of securities repurchase agreements at rates significantly below the new lombard rate (Dudler, 1986: 67). Initially, banks anticipated an increase in the money market rates and continued to borrow heavily through the lombard window (Dudler, 1986: 68). After this was overcome, the new techniques operated smoothly, facilitated by favourable domestic economic developments, fairly steady and moderate expansion of key monetary aggregates, and an improved external environment (Dudler, 1986: 71). Therefore, the repurchase system passed the initial test successfully, making it easier for the Bundesbank to cope efficiently with external disturbances and growing influences of volatile market expectations on short-term interest rates and exchange rate developments.

When the securities repurchase agreements were introduced in February 1985, the Bundesbank offered three repurchase agreements per month, which was changed in August 1988 to four per month. In December 1993, this changed to one per week, and then changed again to four short-dated and two long-dated transactions between July 1989 and October 1992. In November 1988, the repurchase agreements were supplemented with quick tenders, enabling the Bundesbank to influence the money market flexibly on a day-to-day basis (Deutsche Bundesbank, 1995: 113). Quick tenders are settled on the same day with securities repurchase agreements allotted the day after the tender. This differs to the customary repurchase transaction, where the repurchase agreement is allotted one day after the tender.

The Bundesbank began to use this instrument so that it could eliminate the excessive use of lombard borrowing. However, this could only be accomplished if repurchase agreements were offered at a rate below the

lombard rate. If they were above or at the level of lombard loans, banks would still meet part of their funding needs via lombard loans, which they could use in a more flexible manner (Deutsche Bundesbank, 1989: 69).

For this reason, the Repo Rate lies below the lombard rate. There is therefore now an interest rate corridor, with the ceiling fixed by the lombard rate, and the floor by the discount rate.

The advantages of the use of the securities repurchase agreements in Germany are:

- they are reversible at short notice;
- the initiative is in the hands of the Bundesbank;
- their terms can be varied in accordance with the current liquidity situation;
- they do not directly affect prices in the debt securities market; and
- they only serve to regulate the money market (Deutsche Bundesbank, 1995: 112).

Securities repurchase agreements primarily determine the movements of the day-to-day money market rates within an interest rate corridor (mentioned above), where the floor is set by the discount rate and the ceiling by the lombard rate. Furthermore, the Repo Rate has psychological signal effects and the central bank uses these to influence interest expectations in the market. Furthermore, securities repurchase agreements mature and are renewed at short intervals, and the terms can be adjusted immediately to the changed market conditions, therefore they are perfect for this day-to-day money market management.

4.5 SUCCESSES OF THIS SYSTEM

The securities repurchase system was introduced because the traditional instruments suffered certain weaknesses (discussed in 4.4.2). These instruments were ineffective because they took effect with substantial time lags, and they created undesirable signal effects. Furthermore, the lombard facility lost its role as an emergency lending facility. The Bundesbank needed instruments that would be flexible and quick to respond to dynamic market conditions. Hence, the securities repurchase agreements were introduced.

Since its implementation, there has been a large volume of securities repurchase agreements conducted by the Bundesbank. This means that the Bundesbank has been successful in its aim to become more flexible in its interest rate and liquidity policies (Deutsche Bundesbank, 1989: 70). For example, in 1986, there were massive inflows of foreign exchange into the country. The Bundesbank reacted to this by decreasing the volume of securities repurchase agreements. In 1987, the amount of foreign exchange inflows increased even further, the Bundesbank therefore had to continue decreasing the volume of repurchase agreements, but could not do this indefinitely as it would hamper the smooth continuation of flexible money market management. Therefore, the Bundesbank increased the minimum reserve ratios and decreased the discount quotas (Deutsche Bundesbank, 1995: 118). This proved to be successful.

Under securities repurchase agreements, the volatility in the day-to-day money market rate has decreased (Deutsche Bundesbank, 1995: 118).

At the same time, the demand for central bank money has remained responsive enough so that liquidity shocks can be absorbed by interest rate changes in a subtle manner.

The increased use of securities repurchase agreements since the mid-1980s has effectively restored the lombard loan facility to its traditional function of an emergency facility and a ceiling for the day-to-day money market rate. Since then, the level and pattern of interest rates has been largely determined by liquidity and the rate structure of such transactions (Deutsche Bundesbank, 1989: 75). However, it is possible that the role of the lombard facility may be strengthened temporarily for monetary policy reasons, to selectively tighten liquidity in the money market. It may also happen that banks take up exceptionally large amounts of lombard loans for speculative reasons, thus impeding liquidity management by the Bundesbank. The Bundesbank can break free from this "liquidity trap" by calling for an increase in the lombard rate so that the lombard loan facility reserves its function of an emergency funding facility for the banks.

Furthermore, should the Bundesbank find it difficult to influence interest rates, it may take recourse to the liquidity channel in order to do this, but will only be successful if:

- It is able to foresee market-determined liquidity shocks with sufficient reliability; and
- the banks' behaviour is not determined by pronounced expectations of interest rate changes (Schmid & Asche, 1997: 87).

In the second requirement above, the Bundesbank opts for the fixed rate tender to give the market guidance. If the variable rate tender is used,

it might happen that interest rates push it against the limits of the interest rate corridor. If interest rates increase, then the Repo Rate will closely follow the lombard rate, and the Bundesbank will be in danger of falling into a "liquidity trap" (continuously increasing interest rates). Should this happen, the lombard rate will take over the function of the Repo Rate, making the Repo Rate ineffective. If interest rates decrease, the Repo Rate approaches the level of the discount rate, and the discount trap opens (continuously decreasing interest rates). However, despite these risks, the money market management through securities repurchase transactions has proven its worth. The Repo Rate has assumed interest rate leadership in the day-to-day money market in both the short and medium-term. Markets respond directly to the announcement of a change in the Repo Rate.

4.6 CONCLUSION

Prior to the period with the introduction of the securities repurchase transactions system, the discount policy, lombard policy, and minimum reserve policy formed the key policy instruments in Germany. However, Germany found it increasingly difficult to rely on these, and needed a more flexible alternative, as these instruments proved to be cumbersome. The lombard facility, which was intended for emergency funding, was used for daily refinancing. Furthermore, the country was suffering from more frequent interest rate and exchange rate shocks from abroad. This was the reason for the introduction of the securities repurchase system, which provided a more flexible alternative. From this time, the minimum reserves were held solely for regulatory purposes, and the discount policy was no longer used as an instrument for managing liquidity. With the extension of the open market operations,

in the form of securities repurchase agreements, this has become the key determinant of banks overall refinancing. This change has increased the Bundesbank's ability to fine tune movements in the market for interest rates, and recourse to the lombard facility has taken on its original purpose. This system has proved to be very successful in Germany.

The adoption of the repurchase system in South Africa as from 1998 is the topic of the next chapter.

CHAPTER FIVE

THE NEW REPURCHASE SYSTEM IN SOUTH AFRICA

5.1 INTRODUCTION

The previous system of Reserve Bank accommodation was discussed in Chapter Three. This system, which had been in place from 1985 onwards, was a market-oriented approach targeting the growth in the M3 money supply. The SARB accommodated the banks fully, automatically, and on certain predetermined terms, conditions and costs. Central banks all over the world, however, abandoned money supply targeting as an intermediate objective of monetary policy, with the exception of Germany as discussed in Chapter Four. South Africa was somewhat slower in following suit, due to the country's economic isolation from the rest of the world (Stals, 1997d: 2).

With the new political dispensation coming into effect in 1994, the country's long economic isolation ended, and South Africa's economic system became open to international developments. Distortions developed in the relationship between changes in the money supply and inflation. The volume of financial transactions increased to a large extent, therefore increasing the money supply, but this did not contribute to the demand for real goods and services. As a result, although the income velocity of circulation of the money supply declined sharply, the total transactions velocity of circulation did not decrease. It would be expected that the increase in the money supply would lead to rising inflation. However, this was not the case, in fact inflation had been on a downward path (Stals, 1999b: 2).

This was but one of the many associated problems of the previous system. On 9 March 1998, South Africa moved to a more eclectic approach to monetary policy, and started to manage the money market through securities repurchase agreements. Until recently, this approach was still based on the guidelines for the M3 money supply. This chapter will discuss the repurchase system as applied in South Africa.

5.2 THE REPURCHASE SYSTEM

The system of money supply targeting in South Africa was abandoned as a result of developments which took place world-wide, these being the financial liberalisation, globalisation and integration of the country into the world financial markets. These developments weakened the ability of the money supply to achieve the primary goal of protecting the value of the rand.

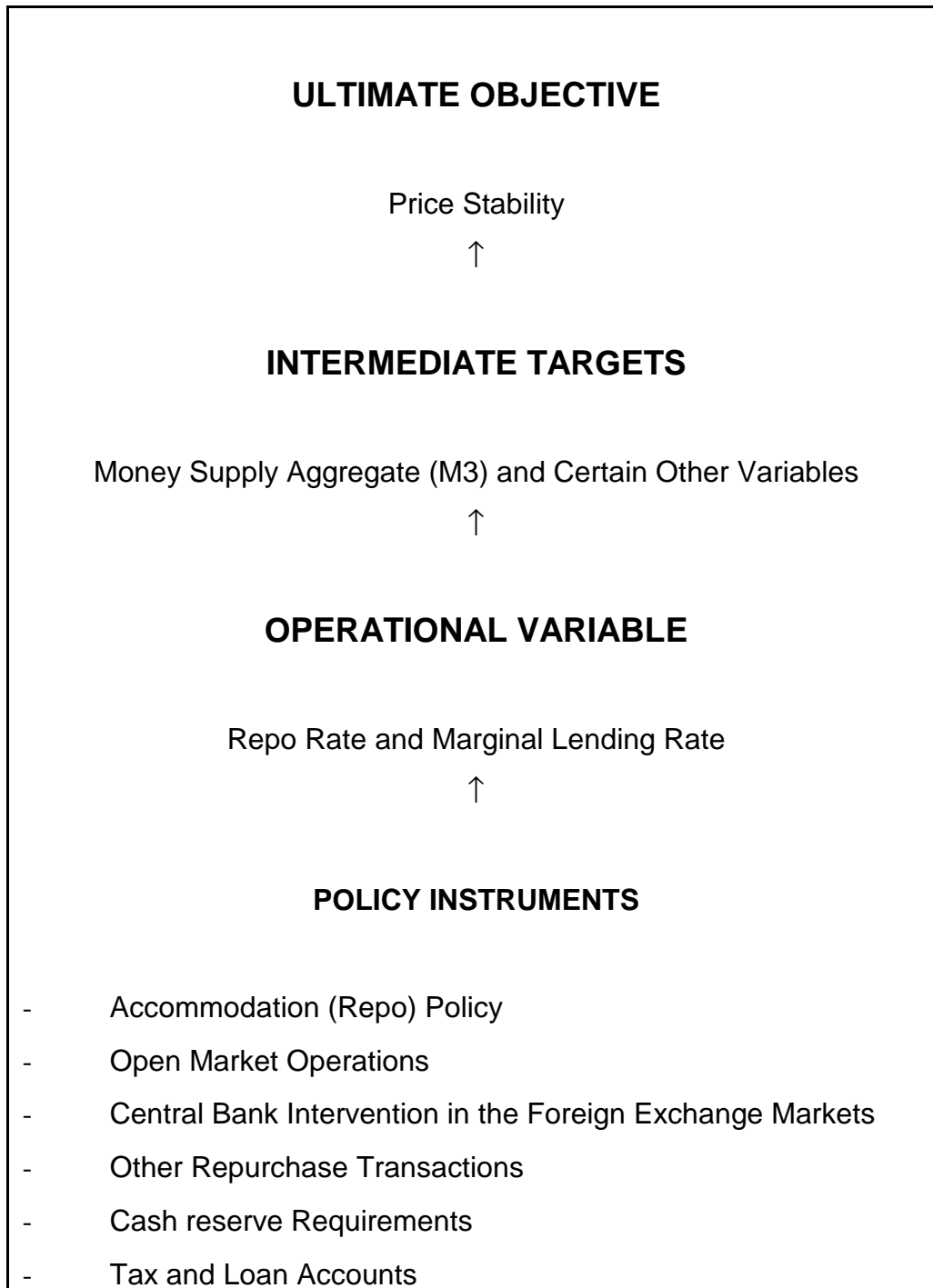
With the above developments, came a relaxation of many of the exchange controls, which had been in place for so long. With exchange controls relaxed, foreign capital movements across international borders became increasingly volatile, as did exchange rates (Barnard, 1998: 1). For this reason, short-term interest rates, which were previously insensitive to changes in the domestic financial environment, need to act as a shield against domestic and external fluctuations, and therefore be more sensitive to such developments.

In the new system, repurchase agreements between the SARB and banks have become the new mechanism whereby the SARB provides liquidity to the market (SARB, 1998f: 1). The new procedures are intended to make monetary policy and the instruments of monetary policy more effective and flexible in a complex financial environment.

As before, the SARB continues to intervene in the financial markets and use its discretion when deciding what combinations of money supply growth, interest rates, and exchange rates should be aimed at in a given set of circumstances, in order to support the objective of low inflation (Stals, 1999a: 7). However, the relationship between the various financial aggregates is becoming increasingly complex, for this reason the SARB decided to de-emphasise money supply and bank credit extension as indicators for its monetary policy decisions (Stals, 1998a: 10). By taking the emphasis off the money supply, the SARB has included other financial indicators, which it would monitor in conjunction with the money supply. These include other price indices, the level of interest rates and the slope of the yield curve. Inflation can also be affected by developments in other economic aggregates such as the balance of payments position; gross gold and other foreign exchange reserves, and changes in these aggregates may affect the financial aggregates and can also influence the stance of monetary policy (Stals, 1998a: 11).

It is still the aim of monetary policy to influence the overall lending policy of banks, and also the demand for credit and money in the economy indirectly through changes in bank liquidity and interest rates in the money market (Barnard, 1998: 3). Instead of using refinancing fully, automatically, and on certain prearranged terms, conditions and costs, the SARB now actively manages money market liquidity through conducting open market operations in securities repurchase agreements. In the previous system of accommodation, refinancing was regarded as a permanent source of liquidity, therefore accommodation had very little effect on interest rates. At the time the repurchase system was implemented, it was hoped that regular repurchase transactions would become the main apparatus to regulate money market liquidity.

Figure 5.1

**SOUTH AFRICAN RESERVE BANK CURRENT
MONETARY POLICY FRAMEWORK**

Source: SARB Training Institute, 1999: 43

Whether or not this has been achieved will be discussed further in Chapter Six. The objective of this is to make domestic liquidity management the most important operational tool of monetary policy and to reduce the SARB's role in the foreign exchange market. The repurchase agreement is better known as a 'repo', which is an acronym for sale and repurchase agreements.

In addition to implementing the repurchase system, three other changes were made to the accommodation system to enable monetary policy to operate more efficiently. The changes made were the discontinuance of the daily net cash reserves, the introduction of signalling to the market and the implementation of the marginal lending facility. These will be discussed below. Figure 5.1 is a diagrammatic representation of monetary policy under the new repurchase system. In comparing Figure 5.1 with Figure 3.1, it is evident that the Bank Rate has now been replaced by the Repo Rate, and the number of intermediate targets has increased.

5.2.1 The Repurchase Lending Facility

The repurchase lending facility is a facility whereby the SARB provides accommodation to banks when they are short of cash. Banks no longer discount eligible paper with the SARB but enter into repurchase transactions with it on an overnight basis. Repurchase transactions take place against the same collateral as used to be accepted at the previous discount window, that is, 105 percent of the market value of treasury bills, SARB bills, Land Bank bills and government bonds with an unexpired maturity to redemption of less than two years (Guma, 1999: 24).

“The repurchase agreements involve the outright buy and sell transactions with the full transfer of ownership of the underlying assets” (SARB, 1998g: 3). The counter parties allowed to tender for the repurchase agreements are restricted to banks, because the objective of the repurchase system is to regulate liquidity in the banking system. In order to obtain funds, the holder of a security will sell it to a counter party. The seller agrees to purchase the security back at a prearranged future date and interest rate (Barnard, 1998: 4). Table 5.1 is a diagrammatic representation of this process. In the first round of the repurchase transaction, AA sells securities to AB, and enters into a legally binding agreement, whereby AA agrees to purchase the equivalent securities from AB for an agreed price, at a specified date in the future. AB has an open title to the securities, but also has a responsibility to deliver the equivalent securities to AA at the end of the repurchase period. The interest rate charged is the Repo Rate, and constitutes the difference between the sale price (the price at which AA sells the security to AB), and the repurchase price (the price at which AA buys back the security) (Barnard, 1998: 5). The maturity period of the repurchase agreement was initially set at one week, but should conditions require it this could be altered. In June 1998, this was changed to one day (Meijer, 1997: 9).

The SARB announces daily how much accommodation it is willing to provide, the banks tender for the amount of accommodation they require, and state in their bids the interest rate they are willing to pay for this facility. Banks must have a sufficient amount of underlying eligible securities in order to tender. The amount the SARB puts up for accommodation is then apportioned to the banks, providing first for the banks with the highest bid rates. Therefore bids are allotted from the

Table 5.1

**MONETARY AND SECURITY FLOWS OF A
REPURCHASE TRANSACTION**

LEG 1

Party AA Sells R100 million worth government securities → **Party AB**

Party AA ← Party AB pays for government securities

Party AA now has R100 million worth of cash against which it has delivered R100 million worth of securities to which **Party AB** has full title.

LEG 2

Party AA Pays R100 million worth of cash plus Repo Rate → **Party AB**

Party AA ← Party AB sells R100 million worth of government securities.

highest to lowest rate tendered. Banks therefore co-determine the Repo Rate with the SARB, whereas previously, the SARB determined the Bank Rate (Guma, 1999: 24). At times, the amount the SARB puts up for accommodating the money market shortage may not be sufficient to accommodate all the banks. In this case, the banks may finance the remaining shortage from their settlement account balances, borrow from the interbank loans market, or borrow under the marginal lending facility at a penalty rate, but this will be discussed further below. Clearly, the repurchase agreement is used under deficit money market conditions.

There is a second type of repurchase agreement, the reverse repurchase agreement, which is used to drain liquidity from the market.

This is used under surplus money market conditions, which are created when banks hold large amounts of excess cash reserves. The SARB drains the surplus by selling securities in the market. A system of second repurchase transactions was introduced in South Africa, which would take place on certain days, and include reverse repurchase agreements in government stocks. This will therefore increase the money market shortage and force banks to borrow from the SARB under normal repurchase agreements at a higher interest rate than the rate earned on government stock bought from the SARB under the reverse repurchase agreements. This has the effect of boosting the income flow of the SARB (SARB Training Institute, 1999: 54).

The repurchase agreement is conducted at a variable rate and therefore the SARB uses the United States style auction which is the same as that used in Germany (see Chapter Four). Under this method, banks tender at an "interest rate they are prepared to pay on cash balances provided to them, and tender against the temporary and to-be-reversed sale of approved securities to the SARB" (Barnard, 1998: 5). Each successful

tenderer is awarded his/her tender, at the specific successful interest rate tendered. Banks therefore know the price of the funds they borrow, but the amounts of funds to be received could be different from the tendered amount. The SARB then makes public the weighted average of all successful tendered interest rates. The SARB can reject certain individual tenders and accept others. This is known as partial allotments.

The securities used by private banks as collateral have been mentioned under 5.2.1. Each of these has different risk or return profiles. In order to protect themselves against such risks, the banks provide the SARB with securities at an adjusted market value. This adjusted market value is called a 'haircut valuation', and is the purchase price plus repurchase interest multiplied by the appropriate ratio (SARB, 1998g: 8). This means that the market value of the securities must equal the total repurchase price multiplied by the appropriate ratio (risk weighting).

The tenders are conducted on a daily basis, therefore the Repo Rate is expected to fluctuate daily, and it is hoped that these fluctuations will lead to a more flexible structure of interest rates than that prevailing under the previous system (Barnard, 1998: 15). Furthermore, it is believed that the flexibility of interest rates will result in clearer signals being sent to the monetary authorities regarding monetary conditions.

With this in place, the SARB should be able to contain any weaknesses in the rand, and at the same time be able to relax exchange controls further (Barnard, 1998: 16). Banks will furthermore be given more scope to manage their liquidity positions more efficiently.

Monetary policy is therefore expected to be more market orientated than before. It is also anticipated that key bank lending rates will change in line with the Repo Rate. Changes in the Repo Rate should also affect deposit and lending rates of commercial banks. It is expected to have a direct impact on liquidity in the money market, therefore also having significant indirect effects via interest rates on other macroeconomic variables. These questions will be explored in Chapter Six.

There are various procedures that have to be followed in conducting repurchase transactions, which are discussed below.

(1) Practical Procedures for the New Repurchase System

Appendixes I to IV (b) present the daily timetable, as well as the screen announcement and repurchase agreement entered into between the SARB and private banks. From Appendix I, it is shown that the SARB publishes a preliminary amount, which it will put up for tender at 12:00 every day. In this, the SARB makes known what it estimates the money market shortage to be for that day. The estimates are calculated by means of liquidity forecasts. Liquidity forecasts are essential because they form the basis for planning and decision-making, and are particularly significant in the new accommodation operational procedures. However, it is an extremely difficult task estimating the daily money market shortage, because there are factors influencing money market liquidity over which the SARB has no direct control. These are:

- Changes in note and coin circulation outside the SARB.
- Autonomous balance of payments transactions affecting the net foreign assets of the SARB;
- Changes in government deposits held at the SARB; and

- Surpluses/deficits due to transactions in the forward market and exchange rate. (Barnard, 1998: 11)

The SARB therefore needs to have historical and projected time series data of changes in these factors. Forecasting the deposits of the government at the SARB is the most difficult. Close co-operation and co-ordination between the Department of Finance and the SARB is therefore essential for success of the new operational procedures. The SARB furthermore requires fine-tuning measures, in order to predict banks' liquidity needs as accurately as possible. Such measures include quick tenders; sale/purchase of short-term treasury bills; adjustment in the portfolio of the Corporation for Public Deposits and transfer of government funds between the tax and loan account of government at private banks and the exchequer account with the SARB.

The bids for the repurchase agreements are allotted sequentially, from highest to lowest until the full amount on offer is allotted. The SARB decides on the minimum accepted bid rate when all tenders have been received. Bids for funds from banks are irrevocable. The minimum amount that banks are allowed to bid for is R10 million and thereafter in multiples of R1 million (SARB, 1998g: 8). Within fifteen minutes of each tender, the SARB announces the result of each round, stating the amount of funds to be provided and the average Repo Rate. The funds are not released to the banks if their financial instruments register account is not in order. Delivery of securities takes place either physically to the SARB settlement division (bills), or transferred to the SARB safe custody account in the central depository within one hour, via the South African

Table 5.2**MECHANICS OF THE REPURCHASE SYSTEM**

	Bid rate (%)	Tendered amount (R mill)	Amount received (R mill)	Repo interest (R)	Collateral Value (R)	Deficit (R)
Bank A	20,00	350	350	142 000	344 760 569	5 381 431
Bank B	19,96	200	200			
Bank C	19,92	400	400			
Bank D	19,88	300	50			
Total	19,95	1250	1000			

Total amount tendered = R1.25 billion

Reserve Bank financed = R1 billion

Analysis of Bank AA's Repo bid rate, amount tendered, nominal interest payable, market value of securities offered, and margin deficit:

Purchase Price (repo allotment)	350 000 000
Interest (at repo tender rate)	142 000
Total Repurchase Price	350 142 000
Market value of bonds sold to the Bank	AA 201 336 488
Market value of Treasury Bills sold to the bank	<u>AB 143 424 081</u>
Total Market Value	334 760 569
LESS Repurchase Price (sell back price)	<u>350 142 000</u>
Equal Margin Deficit	5 381 431

The margin deficit has to be made good to the Reserve Bank.

(Barnard, 1998: 6-7)

multiple options settlement system (SAMOS) (discussed further in Chapter Seven).

When the repurchase agreements mature, participants buy securities from the SARB equivalent to those sold to it in the first leg of the repurchase transaction. On, or after the payment, the securities are returned to the banks. Appendixes III to IV (b) are examples of the repurchase agreements and the margin transfer to and from the SARB.

Table 5.2 illustrates the mechanics of the repurchase system involving banks tendering different bid rates for a specified amount of central bank funds. In this table, Bank A tenders for an amount of R350 million at an interest rate of 20,00 percent, while Bank B tenders for R200 million at 19,96 percent, and Bank D tenders for R300 million at an interest rate of 19,88 percent. Bank A and B, who tendered at the highest bid rate are allotted their amounts in full, whereas Bank D only receives R50 million, which is less than what was tendered for. Bank D will therefore have to find alternative financing for the extra R250 million, either through using its settlement account balances or the marginal lending facility. In analysing the position of Bank A, a 20 percent interest rate on its tendered amount of R350 million will amount to R142 000, effectively bringing the total repurchase price of the financing to R350 142 000. This is the amount Bank A has to pay to repurchase the securities from the SARB. Bank A, however, sells securities to the SARB to the value of R334 760 569, which when subtracted from the repurchase price equals a margin deficit of R5 381 431. Bank A has to provide the SARB with this difference.

5.2.2 The Cash Reserve Requirement

Previously, the cash reserve requirement was used to create a demand for central bank money, whenever the volume of money and credit expanded because it forced banks to obtain the necessary liquidity from the central bank. It also gave the SARB the ability to adjust the required reserve ratios if conditions in the money market required this (Van der Merwe, 1997b: 12). Under the repurchase system, it is now used to decrease extreme volatility in interest rates on a day-to-day basis. In the past, the cash reserves had to be maintained at legally specified minimum levels, on a daily basis, equivalent to 2 percent of all liabilities, and 1 percent of short-term liabilities. Previously the cash reserves were split into two accounts, with the one account earning interest (short-term liabilities account) and the other non-interest earning. With the implementation of the repurchase system, this requirement was changed to 2,5 percent of banks' total liabilities. Furthermore, these cash reserves have to be maintained over an average basis of one month, as is the case in Germany with its minimum reserve policy (see Chapter Four) (Meijer, 1997: 7). See also Hugo (1998: 2).

The cash reserve ratios have become less popular as a monetary control instrument because of certain specific drawbacks. To make it more effective as an instrument of monetary control, the SARB no longer pays interest on any part of the required cash reserves (Meijer, 1997: 8). Banks previously were not allowed to be in overdraft at the end of the daily settlement period, and if they were, they would be charged a penalty rate equal to the Bank Rate plus a margin. Under the repurchase system, however, banks are able to use their cash reserves early in the month, and rebuild them later in the month (to be discussed

in 5.2.3). The SARB determines at what ratios the cash reserve requirements have to be maintained at, and does this based on its evaluation of economic circumstances, and as an alternative monetary policy instrument. These ratios cannot be changed frequently because even a small change could induce relatively large shifts in banks' assets.

For the instrument to be effective, it must be applied equitably to all banks and all deposits. However, the SARB reserves the right to change the cash reserve requirement and induce supplementary requirements should the situation call for this.

The reserve requirements have to be kept at a minimum, as this is necessary for effective monetary control, and do not include interbank deposits as this could inhibit the development of the interbank market (Hugo, 1998: 3). Cash reserves are held at the SARB and are also used to make and receive payments (Van der Merwe, 1997b: 16-18).

The SARB furthermore drains liquidity by issuing debentures. Banks can make up this lost interest incurred on them as a result of the termination of reserve requirements on short-term liabilities on which interest was previously paid, by investing in these debentures (Guma, 1999: 23).

5.2.3 The Marginal Lending Facility

It has already been established that the SARB can influence the total liquidity shortage through repurchase agreements, but as stated above in 5.2.2, on occasion the tenders are not accepted in full. When banks are short of cash, it is replenished by borrowing under the marginal lending facility, at a penalty rate equivalent to the old Bank Rate, which is now called the Marginal Lending Rate. Therefore, it is used to bridge

the temporary liquidity shortfalls not provided for under the repurchase tenders. The SARB's objective is to make the cost of funds more responsive to supply and demand conditions, so that it can send signals to banks reflecting its view on money market conditions. No limits are set on the use of this facility provided the banks present the required collateral. The Marginal Lending Rate forms an upper ceiling/limit to the overnight market rate for funds (SARB, 1998f: 1). Therefore, there is a divergence between the Repo Rate and the higher Marginal Lending Rate. Should the difference between the two narrow, it could be indicative of a future rise in the Marginal Lending Rate, and *vice versa*.

This facility is intended to be used on an infrequent basis, that is, overnight or for a few days, so that the outstanding balance on this lending facility is kept to a minimum. For this reason, it was initially set at 3 percentage points above the Repo Rate to discourage its use, however, with the crisis in 1998, it was set at a much higher rate to the Repo Rate and varied with it (Stals, 1998c: 1). There is no floor facility offered by the SARB, implying a more active interbank market. This means that interest rates in this market are more responsive to changes in banking conditions and will therefore give a better signal to the central bank of the general monetary conditions (SARB Training Institute, 1999: 53).

The marginal lending facility forms part of the SAMOS system, whereby all banks are allowed to open settlement and loan accounts at the SARB, in order to participate in the interbank settlement process. It may be that at times the SARB will fix the Marginal Lending Rate at a premium to the Repo Rate, in order to discourage banks from making extensive use of this facility. The Marginal Lending Rate performs the

same function as the lombard rate in Germany. The SARB maintains the right to limit or suspend a bank's access to this facility, amend conditions of this facility, or suspend the facility for an indefinite period of time (Van der Merwe, 1997b: 17).

5.2.4 Signalling to the Market

The Governor of the SARB announced that banks should not see the size of the daily liquidity requirement as an important indicator of SARB policy on short-term interest rates. Instead the amount of liquidity the SARB offers at the daily tender relative to the overall liquidity need in the market, will be used to signal the SARB's intentions to the market (Stals, 1999d: 1).

The SARB in its sole discretion determines the amount of refinancing which it is willing to provide, and this can be greater than, less than, or equal to the money market shortage. A full provision of liquidity suggests a neutral stance on the part of the SARB, where it supports the current direction and extent of interest rate movements in the market. An under-provision indicates that the SARB is of the opinion that interest rates should rise, and an over-provision signals that the SARB wants the Repo Rate to decrease (Stals, 1999e: 2). In exceptional circumstances, the SARB reserves the right to conduct auctions with a predetermined fixed interest rate. This would occur where the SARB wants to obtain an immediate and substantial change in money market interest rates (Guma, 1999: 25).

5.3 IMPLEMENTATION OF THE REPURCHASE SYSTEM

The SARB phased in the new system by fixing the Repo Rate for a week from 9 March 1998, at 15 percent, and the Marginal Lending Rate was set at the level of the previous Bank Rate, at 16 percent, effectively decreasing the cost of borrowing from the SARB by one percentage point. In April 1998 the Repo Rate became receptive to money market developments and moved down to 14,79 percent on 11 May 1998. Subsequently, strains developed in the foreign exchange market where the rand was put under pressure (Barnard, 1998: 14). The SARB reacted by providing less than the estimated liquidity requirement. This resulted in interest rates increasing, and the Repo Rate increased to 16,09 percent on 25 May 1998, producing a Marginal Lending Rate increase to 3 percentage points above the daily average Repo Rate. On 26 May 1998, the SARB introduced the fixed Repo Rate at 18 percent, and the Marginal Lending Rate increased to 10 percentage points above the Repo Rate (SARB, 1998e: 39). This was to be maintained only until conditions in the money market had calmed down. On 2 June 1998, the spread between the Repo Rate and the Marginal Lending Rate was 15 percentage points.

When it became apparent that the rand would remain vulnerable for a longer period, the SARB abandoned the fixed rate tender in favour of the variable rate auction system on 19 June 1998, and widened the spread to 20 percentage points. In July 1998, the Repo Rate gradually crept higher. In August and September of 1998, the Repo Rate was fairly constant, and in October when conditions in the money market had improved, the Repo Rate declined to around 20 percent. These general interest rate conditions will be discussed in more detail in 6.2.1.

Under the repurchase system, banks are able to manage their liquidity positions more efficiently. Furthermore, repurchase transactions are advantageous because they can be implemented quickly, and do not have significant price effects, and are easily adapted to changing conditions. When banks tender, the amount of the tender will normally equal the projected liquidity need, that is, what they presume their liquidity need to be. As stated above, where the total liquidity needs of the market are not met on a specific day, the remaining shortage can be financed from the banks' settlement account balances, which are held with the SARB. Alternatively, banks can make use of the marginal lending facility or the interbank loans market (to be discussed further in Chapter Seven).

The SARB believes that daily changes in the Repo Rate should not lead to volatility in the Prime Overdraft Rate and the mortgage lending rates of the banks. Banks will have to find a new base for these rates, which could possibly be linked to a "moving average of the Repo Rate" (Stals, 1998a: 13). Banks' lending rates should follow their average effective cost of total funds. Clearly, with the implementation of the repurchase system, the SARB is focussing more attention on controlling the amount of cash reserves rather than the cost of cash reserves.

5.4 CONCLUSION

With the globalisation, liberalisation, and co-operation of international financial markets, the SARB found its previous monetary policy instruments to be ineffective in the changing financial environment. They were not flexible enough, and generated broad and lagged effects. As such, the SARB implemented the repurchase transactions system, as

was done in Germany. This was done to regulate liquidity in the money market. In the new system, the SARB wants to guide interest rates rather than control them. Furthermore, in order to prevent turbulence in the domestic financial markets, the signalling capacity of the SARB has become more important. The new procedures make various forms of signalling possible, which are hoped to lead to greater transparency of monetary policy than the previous procedures.

The impact of the repurchase system on money market interest rates, money supply growth and accommodation procedures will be discussed in the next chapter.

CHAPTER SIX

IMPACT OF THE REPURCHASE SYSTEM ON MONEY MARKET INTEREST RATES, MONEY SUPPLY GROWTH AND ACCOMMODATION PROCEDURES

6.1 INTRODUCTION

The objective of this chapter is to explore the relationship between the new repurchase system and certain financial aggregates in South Africa, and how it has changed from the previous system of accommodation. Statistical information has been obtained from the SARB. All data are of a monthly nature, dating back to January 1996, with the exception of the over/under-provision information, which is of a daily nature. This study covers the period up to February 2000.

Particular objectives are to establish whether there is a different relationship between the Repo Rate and money market interest rates than there was between the previous Bank Rate and money market interest rates. Furthermore, the difference in the relationship between the M3 money supply and the Bank Rate, and between the M3 and the Repo Rate will be examined. The relationship between the level of accommodation and the Bank Rate on the one hand, and the Repo Rate on the other, will be investigated to establish if there are any differences. Finally, it will be investigated if the SARB's system of under- and over-accommodating of liquidity has had any impact on interest rates, and whether this had made signalling to the market more effective. This is done in order to establish whether the new system has achieved its objectives.

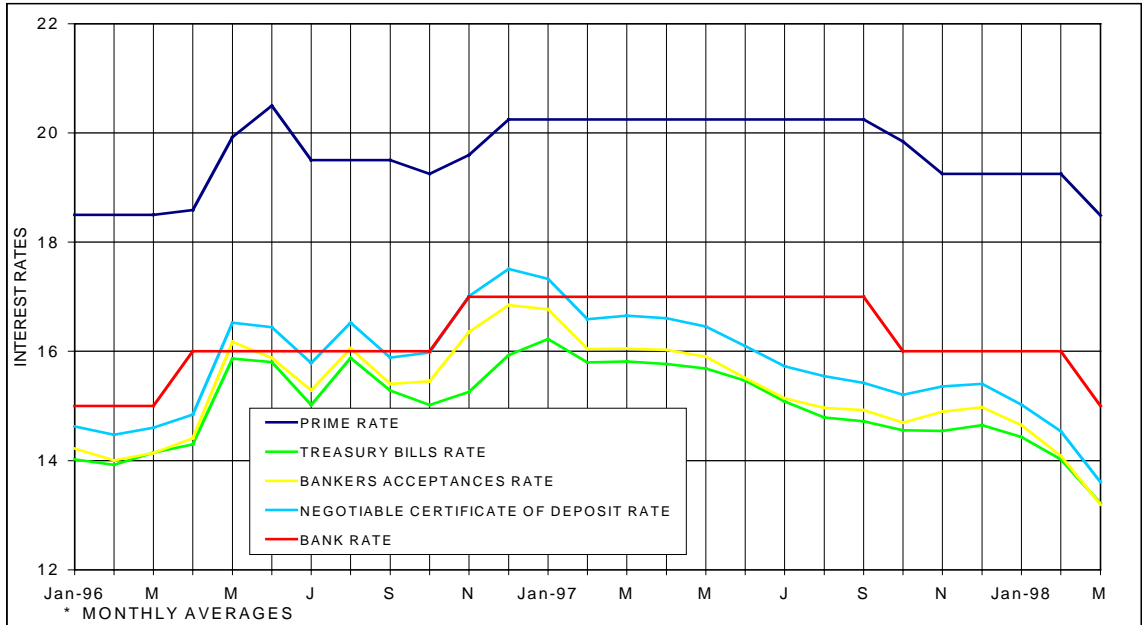
6.2 MONEY MARKET INTEREST RATES

6.2.1 Analysis of Money Market Interest Rates under the Previous System of Accommodation versus the New Repurchase System of Accommodation

Figure 6.1 plots the relationship between the Bank Rate and other money market interest rates, and Figure 6.2 plots the relationship between the new Repo Rate and other money market interest rates in South Africa. It is evident from Figure 6.1, that there was a positive association between the Bank Rate and money market interest rates, despite minor short-term fluctuations. The Bank Rate, however, was set at the discretion of the SARB, and as such changed infrequently. Money market interest rates remained posted to the Bank Rate, and so suffered the same weakness. The fact that the Bank Rate was determined by the SARB, and not allowed to fluctuate in accordance with market conditions, made it rigid and inflexible.

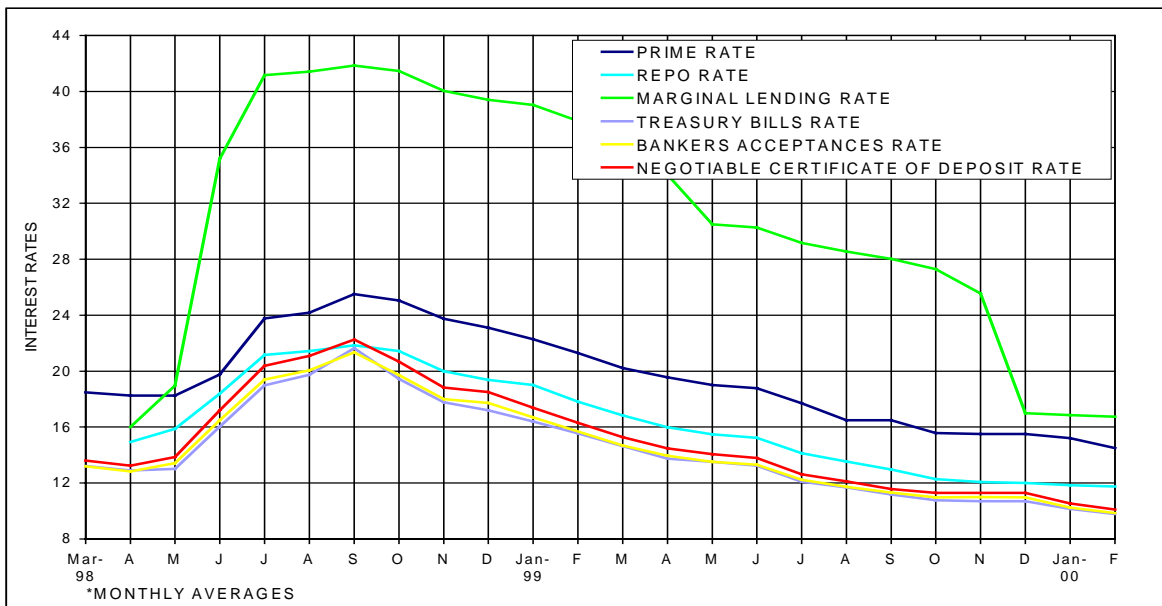
Furthermore, money market interest rates and the Prime Overdraft Rate reacted to changes in the Bank Rate with a substantial time lag. In February 1996, there were disturbances in the foreign exchange market, and the external value of the rand dropped (SARB, 1996: 35). It is apparent in Figure 6.1 that the SARB followed a restrictive monetary policy in order to buffer this. However, referring to Figure 6.1, short-term interest rates first reacted in April, after the Bank Rate was increased. According to Guma (1999: 21), it was only after long and sustained increases in the money market shortage, that some reaction in short-term interest rates could be detected. This was clearly inefficient.

Figure 6.1
BANK RATE VS OTHER MONEY MARKET INTEREST RATES
1996/01 – 1998/03



(SOURCE: Compiled using SARB data)

Figure 6.2
REPO RATE VS OTHER MONEY MARKET INTEREST RATES
1998/03 – 2000/01



(SOURCE: Compiled using SARB data)

Money market interest rates reflected market expectations as to what the SARB was likely to do, and did not reflect shifts in the market's own perception of policy needs in prevailing money and credit situations (Meijer, 1997: 40). As such, there were instances when money market interest rates seemed to have influenced the Bank Rate. In October 1997, the Bank Rate was decreased in reaction to the decline in money market interest rates. As such, instead of being an interest rate leader, the Bank Rate would be an interest rate follower. This was primarily due to expectations in the market regarding the future course of the Bank Rate. Expectations about the Bank Rate tended to dominate the determination of the structure of short-term interest rates. If participants expected the Bank Rate to increase, they would increase their short-term interest rates, regardless of money market liquidity conditions. In December 1996, for example, the BA Rate declined for 15 months consecutively due to widespread belief that the Bank Rate was going to decrease (SARB, 1998e: 40). In fact, Figure 6.1 indicates that money market interest rates in general started to decline before the Bank Rate decreased in October 1997. As Van der Merwe (1997b: 4) puts it, expectations about a change in the Bank Rate became a much more important factor than the available liquidity in the money market in explaining changes in interest rates.

Market interest rates sometimes behaved perversely, for example, a rise in the money market shortage would create an increase in the demand for treasury bills for presentation at the discount window. Increased demand for treasury bills would increase their price, thereby decreasing their yield. Therefore, instead of seeing interest rates increase to reflect the money market shortage, the authorities would observe a decrease in the tender rate for treasury bills (Guma, 1999: 22). As is visible in

Figure 6.1, this was the case in October 1996, when the Treasury Bills Rate moved in the opposite direction of the other money market interest rates. The Treasury Bills Rate decreased to 14,94 percent, when the others were increasing in response to the tight conditions in the market. According to the SARB (1997d: 41), this was primarily due to "...the special status enjoyed by the short-term Treasury Bills Rate, a limited availability of liquid assets in the market, and a relatively strong demand by banks for high quality paper used as collateral against borrowing at the discount window".

It is apparent from Figure 6.2, that the Prime Overdraft Rate, as well as other short-term market interest rates are closely associated with the new Repo Rate. Initially, due to the uncertainties regarding the new system, the Repo Rate fluctuated widely, but soon became steadier. In Figure 6.2, it is evident that the other money market interest rates followed the trend of the Repo Rate perfectly, increasing when the Repo Rate increased and *vice versa*. The positive relationship between the Repo Rate and the other money market interest rates that is expected to exist is clearly evident.

It would appear that the Repo Rate has thus far changed in line with conditions on the domestic and external front. In April 1998 the rand came under pressure and the SARB under-provided the estimated daily liquidity requirement, nudging the Repo Rate higher (SARB, 1998e: 39). This occurred after the Russian government unilaterally declared a moratorium on the repayment of the rouble-denominated debt, and non-residents began to withdraw large sums of portfolio investment made in South African government bonds (Stals, 1999c: 3). The Repo Rate increased to as much as 21,86 percent in September 1998 and

remained there until it was clear that the crisis was over. It is also evident that the Repo Rate, as the other money market interest rates, changed relatively quickly and easily. The Repo Rate increased from 14,79 percent in May 1998, to 21,86 percent in September 1998 (SARB, 1998d: 25). Thus, at the time of the crisis, the Repo Rate showed its flexibility in the extent of the upward adjustment made in this short period of time.

The curve of the Repo Rate in Figure 6.2 appears to be much smoother if compared to that of the Bank Rate in Figure 6.1. In theory, the Repo Rate is not fully determined and set by the SARB, but allowed to fluctuate with the market. Being market determined makes it possible for the Repo Rate to change at smaller intervals than the previous Bank Rate, being sensitive to such fluctuations.

There does not appear to be a substantial time lag between changes in the Repo Rate and money market interest rates as there was with the Bank Rate and money market interest rates. Figure 6.2 shows that the market interest rates reacted to changes in the Repo Rate almost immediately. For example, in May 1998, when strains developed in the foreign exchange market, the Repo Rate adjusted upwards sharply and quickly, and the other rates followed suit immediately. According to Stals (1999a: 2), the repurchase system was introduced for the "...specific purpose of accommodating periodic volatile situations in the financial markets".

The volatile behaviour of the money market interest rates as explained above in the analysis of the Bank Rate and money market interest rates, has not been observed under the new system. One can conclude from

Figure 6.2 that money market interest rates have largely followed the trend of the Repo Rate, increasing when the Repo Rate increases and *vice versa*. In this respect, it is clear that the Repo Rate has been an interest rate leader, and not a follower as the Bank Rate had been. Furthermore, under the new system, it would appear that conditions in money market liquidity and the signals sent out by the SARB certainly do affect changes in the Repo Rate, and hence, the money market interest rates. The signalling mechanism of the SARB, as explained in Chapter Five, appears to be relatively efficient. During the crisis in May 1998, the SARB under-provided the daily liquidity requirement, and only provided 60 percent of banks' estimated liquidity needs (SARB, 1998e: 46). The Repo Rate reacted by increasing substantially, as did the other money market interest rates. This issue, however, will be explored later in 6.5.

Finally, from Figure 6.2, it is apparent that as from May 1998, the Marginal Lending Rate increased dramatically. This was necessary to achieve the goal of this facility as a last resort lending facility. Whether this has been achieved will be discussed in 6.4. However, referring back to Figure 6.2, it is evident that the Marginal Lending Rate has always remained well above the Repo Rate, and has followed the trend of the Repo Rate.

As mentioned in Chapter Five, the SARB believes that daily changes in the Repo Rate should not lead to volatility in the Prime Overdraft Rate.

In Figure 6.1, it is evident that the gap between the Bank Rate and the Prime Overdraft Rate was always approximately three or four percentage points. In Figure 6.2, it would appear that there is still a three or four percentage point difference between the Repo Rate and the Prime Overdraft Rate. According to SARB (1999a: 25), during the

crisis in 1998, and the resultant volatility in the Repo Rate, the banks were guided in the setting of their Prime Overdraft Rates by the prevailing margin between the Prime Overdraft Rate and the Repo Rate of the SARB. Following the decrease in the Repo Rate in October 1998, if this margin widened to more than four percentage points during this period, the banks would respond by lowering their Prime Overdraft Rates by approximately one percentage point at a time. Thus, one could conclude that the Prime Overdraft Rate is linked to a moving average of the Repo Rate, because it will change only after the Repo Rate has changed by approximately four basis points.

From the above discussion, one can conclude the following differences between the two systems of monetary control. Firstly, the Bank Rate stayed at the same level for long periods of time whereas the Repo Rate changes much more frequently. Secondly, there was a positive association between the Bank Rate and money market interest rates, but this association is also present under the repurchase system. Thirdly, the curve of the Repo Rate is much smoother than that of the Bank Rate, and the benefit of this is increased money market stability. Fourthly, the movements in interest rates under the previous system reflected market expectations as to what the SARB was likely to do, and as such did not send out accurate signals to the market or the SARB.

Under the repurchase system, however, movements in interest rates seem to be grounded in actual market conditions. Furthermore, under the previous system, there were time lags between changes in the Bank Rate and money market interest rates, and at times, the Bank Rate would be an interest rate follower and not a leader. These lags have not been evident under the repurchase system, and the Repo Rate appears to be in the lead at all times. Finally, the volatile behaviour of interest

rates as experienced in the previous system has not been observed in the new system. It would appear that the Repo Rate is more flexible, sensitive, and quick to respond to external fluctuations, and therefore has been more efficient than the Bank Rate system.

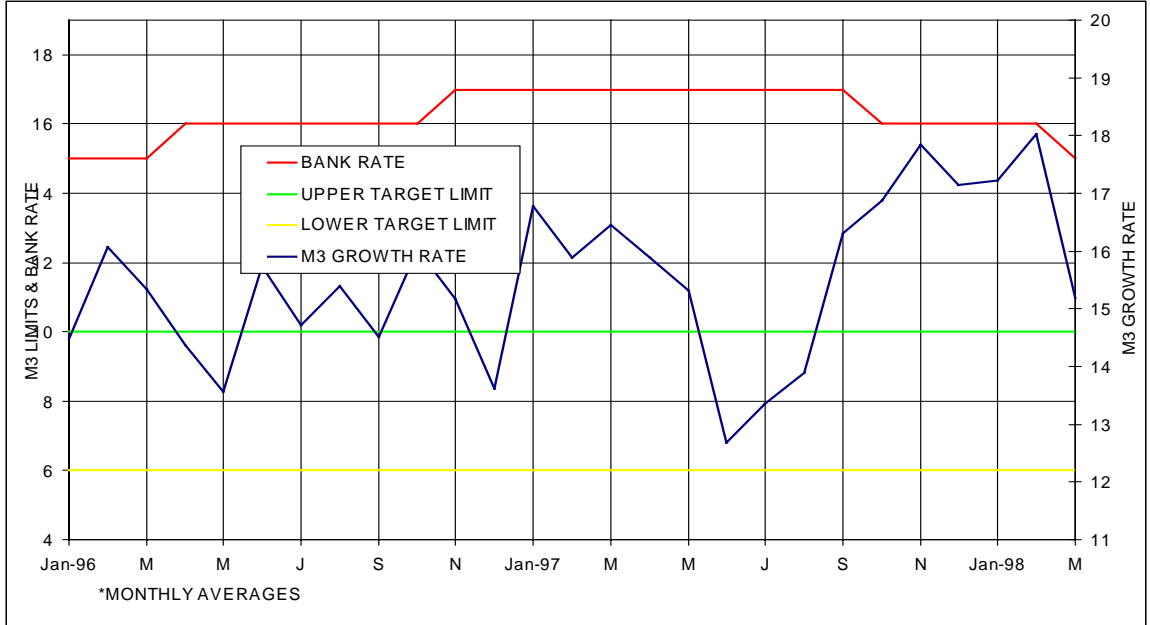
6.3 MONEY SUPPLY GROWTH

6.3.1 The Bank Rate and Money Supply Growth versus the Repo Rate and Money Supply Growth

Figure 6.3 shows the relationship between the Bank Rate and the money supply growth rate, and Figure 6.4 shows the relationship between the Repo Rate and the money supply growth rate. It is clear from Figure 6.3 that the M3 money supply growth rates consistently breached the upper limits of the guideline range of between 6 and 10 percent, between 1996 and 1998. Figure 6.3 reveals that this has occurred despite a fairly high and rising Bank Rate in 1997, which stood at 17 percent. It is apparent that the M3 money supply growth met the guideline ranges very rarely.

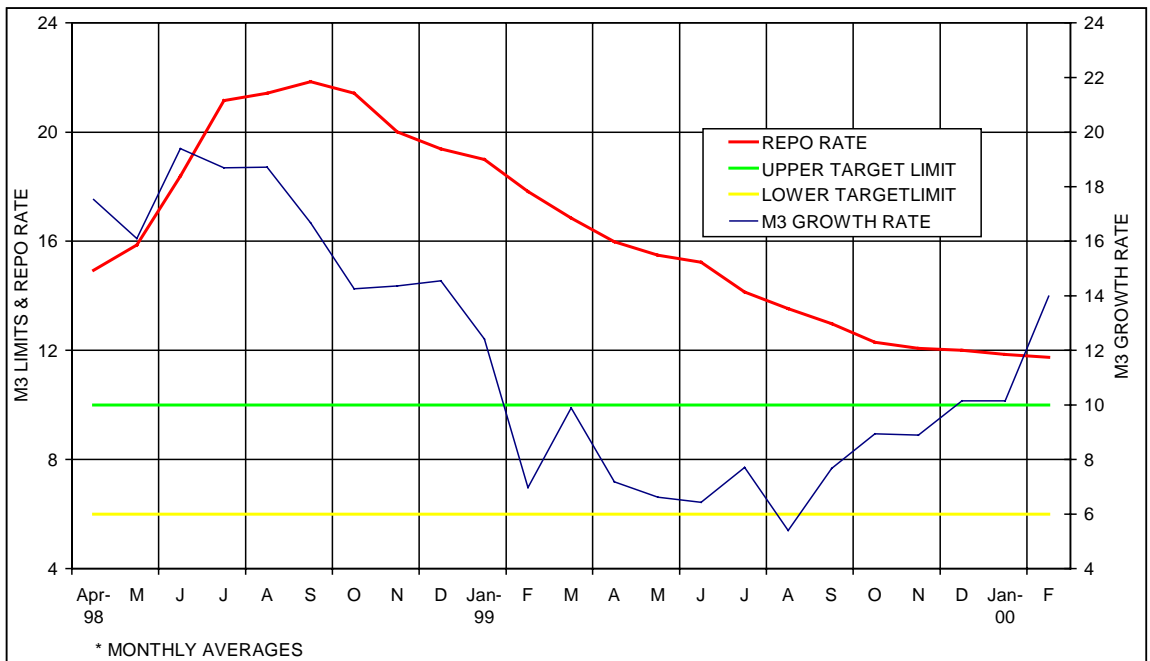
Referring again to Figure 6.3, it is evident that in the overall period of May 1996 to February 1998, the Bank Rate did not appear to have a material effect on the growth rate in the M3 money supply. There may have been instances when the increase in the Bank Rate succeeded in bringing down the M3 money supply growth, however, most of the time it appeared to have been ineffective. For example, restrictive monetary policy did succeed in decreasing the rate of growth in the money supply in the first few months of 1996 (Stals, 1996: 1). In the first half of 1996, the M3 growth decreased after the SARB increased its Bank Rate. However, according to the SARB Training Institute (1999: 31), the

Figure 6.3
BANK RATE VS MONEY SUPPLY GROWTH
1996/01 – 1998/03



(SOURCE: Compiled using SARB data)

Figure 6.4
REPO RATE VS MONEY SUPPLY GROWTH
1998/03 – 2000/02



(SOURCE: Compiled using SARB data)

increase in the Bank Rate appeared to be a result of the weakness of the rand at the time, rather than a response to the movements in the M3 money supply growth rate. The Bank Rate was ineffective in curbing the growth in the M3 money supply in the previous system of accommodation.

The trend in the Bank Rate further seems isolated from the trend in the M3 money supply growth rate in Figure 6.3. There appears to be no correlation present between the two. The negative relationship that is expected to exist is not evident, serving as a further indication that the Bank Rate did not appear to be successful in its objective of influencing the growth in the M3 money supply. Furthermore, the money supply has been highly volatile, yet the Bank Rate has changed infrequently, and as such could not have a noticeable effect on the growth in the M3 money supply.

For the above reasons, the implementation of the new repurchase system coincided with a more eclectic approach. As discussed in Chapter Five, the SARB de-emphasised the importance of the M3 money supply growth, and set target guideline ranges for a period of three years at a time, and not twelve months at a time (Stals, 1998a: 10). Furthermore, the SARB now uses a set of indicators, and not just the M3 money supply as an indicator, making it much less significant in the new system.

Referring to the new system in Figure 6.4, for most of 1999, the target guideline ranges have been reached. This cannot be attributed solely to the new repurchase system, but also to the improved global economic and financial conditions, and the significant decrease in the growth in

total domestic credit extended to the private and banking sector, which forms a large part of the M3 money supply (SARB, 1999c: 34). The M3 money supply growth rate does seem to be under control, staying below the target guideline ranges for much longer periods of time than under the Bank Rate system.

Further, there appears to be a positive relationship between the M3 money supply growth and the Repo Rate, as is evident in Figure 6.4. According to Van den Heever (2000), the M3 money supply in South Africa consists mostly of interest-bearing deposits, with just a small fraction of coins and notes that does not earn interest. As such, if interest rates rise, it encourages people to hold more of their wealth in M3 deposits, and therefore, one might expect a bit of a perverse short-run relationship. It would only be in the long-run that higher interest rates would dampen income and expenditure, which would reduce the transactions demand for money, as discussed in Chapter Two, and then the conventionally expected negative relationship will emerge. Hence, one would expect a positive relationship in the short-run.

Furthermore, the relationship between the Repo Rate and the M3 money supply in Figure 6.4 seems much closer than that between the Bank Rate and M3 in Figure 6.3. The volatility as experienced in the Bank Rate system is also not evident under the repurchase system.

Thus, in the previous system of accommodation, the money supply growth constantly exceeded the upper guideline range set by the SARB. This occurred despite high and rising interest rates in the period of 1996 to 1997. There were instances when the guideline ranges were met, but it occurred rarely and for very short periods of time. Under the

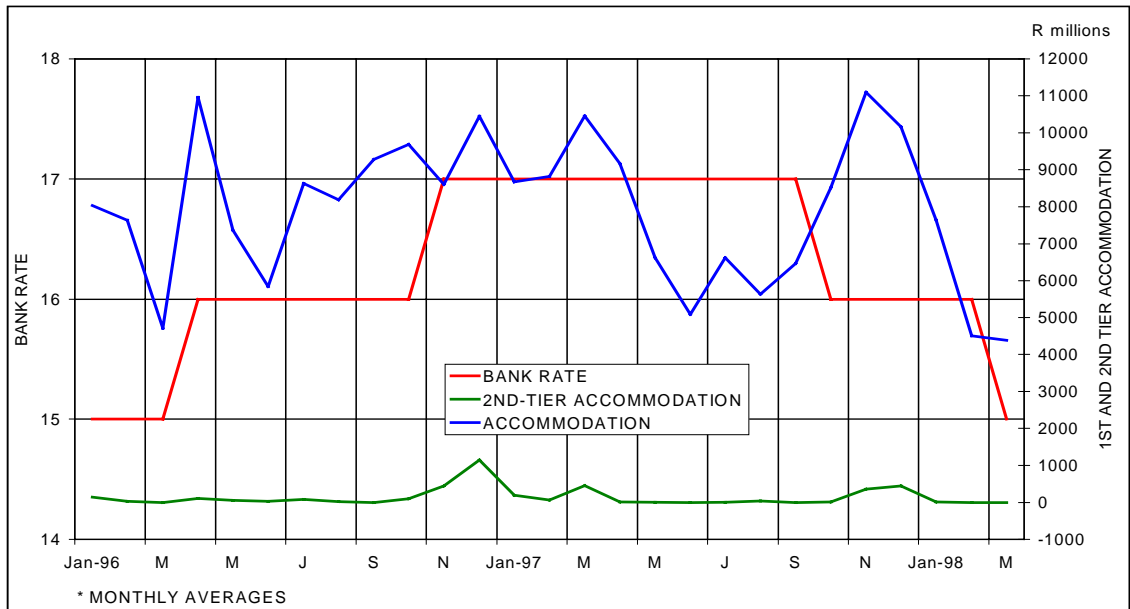
repurchase system, the money supply has stayed within the guideline ranges for most of the time. Furthermore, the negative relationship that is expected to exist between the Bank Rate and money supply growth in the short-term is not evident in Figure 6.3, neither is it evident in Figure 6.4. This is probably due to the content of the money supply and time lags. Also, money supply growth has been highly volatile, yet the Bank Rate has changed infrequently. The trend between the money supply growth and the Repo Rate has been much smoother, and the trend less volatile.

6.4 ACCOMMODATION

6.4.1 Comparison between the Bank Rate and the Repo Rate regarding Accommodation

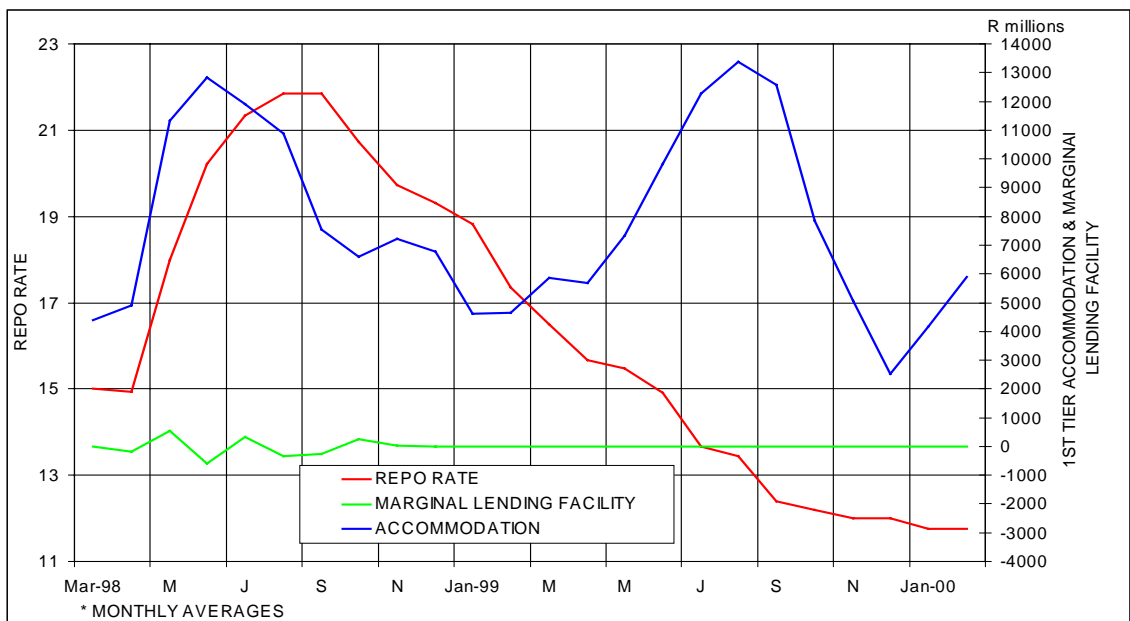
As indicated in Chapter Five, under the previous system, accommodation referred to the provision of overnight loans at the Bank Rate against the collateral of treasury bills, Reserve Bank bills, Land Bank bills and central government bonds with an unexpired maturity of 91 days or less. Under the new repurchase system, accommodation refers to the tendering for funds through repurchase agreements, where bids are covered by a sufficient amount of eligible underlying assets which can only consist of treasury bills, Land Bank bills, Reserve Bank debentures and central government bonds, irrespective of maturity (SARB, 1998f: 2). First-tier accommodation refers to accommodation provided to banks at the Bank Rate under the previous system, and now the Repo Rate. Second-tier accommodation refers to accommodation provided to banks at the Bank Rate plus a margin under the previous system, and now at the Marginal Lending Rate under the new system.

Figure 6.5
BANK RATE VS ACCOMMODATION
1996/01 – 1998/03



(SOURCE: Compiled using SARB data)

Figure 6.6
REPO RATE VS ACCOMMODATION
1998/03 – 2000/01



(SOURCE: Compiled using SARB data)

Figure 6.5 plots the relationship between the Bank Rate and the level of first and second-tier accommodation. Figure 6.6 is the relationship between the Repo Rate, the level of accommodation provided under the Marginal Lending Facility and the level of accommodation provided at the Repo Rate. Figure 6.5 indicates that in the previous system of accommodation, the Bank Rate seemed to be insensitive to liquidity changes. As discussed previously in 6.2, expectations about changes in the Bank Rate appeared to be a much more important factor in the movements of interest rates, than money market liquidity. The size of the money market shortage seemed to have no significant influence on money market interest rates because of the neutral expectations environment where these rates remained posted to the Bank Rate, which itself was not influenced by the money market shortage. Thus, the SARB found it difficult to signal its views on interest rates to market participants through variations in the liquidity shortage. It was only after prolonged and sustained increases in the money market shortage and when second-tier accommodation was provided that a reaction was detected. In Figure 6.5, for example, in the last four months of 1996, when second-tier accommodation was utilised, only then did the Bank Rate increase.

According to Van der Merwe (1997b: 4), market interest rates did not respond well to liquidity conditions, and as such, did not accurately reflect money market conditions. Market interest rates were usually only affected by the size of the shortage when second-tier accommodation was provided, and generally were much more responsive to actual or expected Bank Rate changes. Thus, the SARB experienced difficulties when attempting to signal its views on interest rates to market participants through variations in the liquidity shortage.

Furthermore, the SARB relied primarily on long-term government bonds in its open market operations, with settlement periods of 8 - 14 days (Van der Merwe, 1997b: 3). This helped to explain why open market operations did not have an immediate effect on interest rates. South African banks also had easy access to financing from abroad, so upward pressures on interest rates when domestic liquidity was tight were not as pronounced as would have been otherwise. All of this was exacerbated by the fact that the banks had easy access to SARB accommodation at a fixed Bank Rate. Money market interest rates seemed to react to the size of the money market shortage with a substantial time lag.

One would expect to find a negative correlation between the Bank Rate and accommodation, but this is not evident in Figure 6.5. At times, it would appear to be the complete opposite. There is no clear negative relationship in the short-term between the Bank Rate and accommodation, the two appear to be isolated from each other.

Finally, regarding the use of second-tier accommodation, it is quite evident from Figure 6.5, that banks made frequent use of this facility under the previous system. As such, it sometimes defeated the purpose of monetary control as discussed in Chapter Five. A possible explanation, not evident in these figures, is that the difference between the Bank Rate and the rate used to provide second-tier accommodation was not large enough to discourage its use. The rate on second-tier accommodation was generally between 1,5 and 0,75 percentage points above the Bank Rate (SARB, 1998f: 1). Furthermore, second-tier accommodation was used frequently because accommodation was so easily available from the SARB.

In Figure 6.6, it appears that under the repurchase system, the Repo Rate has been far more responsive to liquidity conditions than the previous system had been. The negative correlation that is expected to exist between the Repo Rate and accommodation is more apparent in Figure 6.6. For example, when the level of accommodation increased in the first half of 1998, the Repo Rate increased sharply, and the level of accommodation began to decline again. At this time, there was financial turbulence in the South East Asian markets, which had spillover effects in South Africa. As a result, conditions were tight, and only in the last three months of 1998, did liquidity conditions ease and the Repo Rate begin to decline.

Between February and August 1999, there was a negative correlation between the Repo Rate and the level of accommodation. The Repo Rate continued to decline, while the level of accommodation required increased. This was, however, due to the actions of the SARB, which caused the daily liquidity requirement of banks to increase steadily, through its liquidity-draining operations. This was intended to increase private banks' dependency on central bank funding and therefore their participation in respect of the daily auction of repurchase agreements (SARB, 1999e: 43). The SARB drained liquidity by means of entering into foreign currency swap transactions with the private banks; issuance of SARB debentures; and conducting reverse repurchase operations in government securities (SARB, 1999d: 35).

In Figure 6.6, between September and December 1999, the Repo Rate continued to decline whilst accommodation also decreased. This behaviour was somewhat unexpected, as it was contrary to the negative relationship that is expected to exist between the two. However, this

relationship occurred as a result of concerns by the SARB about the seizing up of liquidity in the money market because of millennium-related problems. These problems caused the SARB to change its strategy and to deliberately assist in the easing of the liquidity positions of banks in the fourth quarter (SARB, 1999c: 43). Since the SARB deliberately eased liquidity conditions, there was no reason for the Repo Rate to increase in response to this.

The time lag associated with the previous system of accommodation does not appear to be evident in the new system. This is because of the flexibility and sensitivity of the Repo Rate as discussed in 6.2. Furthermore, banks no longer have the easy access to SARB accommodation they had before, and the settlement period of the repurchase transactions is presently much shorter. When the repurchase system was first introduced, the repurchase transactions had a maturity of seven days, however with the crisis in May 1998, it was reduced to one day (SARB Training Institute, 1998: 51).

Regarding the marginal lending facility, referring to Figure 6.6, it would appear that the SARB has had considerable success in achieving its goal of making this facility one of a last resort lending facility. When the repurchase system was first implemented in March 1998, it is apparent in Figure 6.6, that banks still made use of the marginal lending facility to a large extent. However, when the SARB increased the Marginal Lending Rate in May 1998, banks cut down their use of this facility and it is subsequently barely ever used. The amount loaned under this facility decreased from R7, 3 billion on 22 May 1998 at a rate of 18,8 percent, to R1, 5 billion in June 1998, at a rate of 44 percent (SARB, 1998e: 45).

Under the repurchase system as portrayed in Figure 6.6, there appears to be an efficient functioning money market, where interest rates are co-determined by the SARB and the private banks, and not solely by the SARB as previously. Thus, money market interest rates appear to be far more responsive to liquidity conditions than previously. The negative relationship between the Repo Rate is more evident under the new system than it was under the Bank Rate system, and the time lags associated with the previous system are not apparent under the repurchase system. Finally, the SARB has achieved its goal of making the marginal lending facility a last resort facility, as much less use has been made of accommodation at the Marginal Lending Rate. Under the previous system, greater use was made of second-tier accommodation than under the repurchase system.

6.5 UNDER/OVERPROVISION OF LIQUIDITY AND THE REPO RATE

Under the previous system, accommodation was provided automatically and to the full extent of the money market shortage. Therefore, signals were sent out through variations in the Bank Rate. However, from the analysis in 6.4.1, it is apparent that the SARB found it difficult to signal its views on interest rates to market participants, and hence, the signalling mechanism was ineffective. Under the new procedures, banks bid for funds through daily auctions, and they are not always accommodated to the full extent of the money market shortage. It is through changes in the level of liquidity provided that signals are sent out. The SARB has made it clear that an under-provision signals that it would like to see interest rates rise. An over-provision would in turn mean that the SARB would like to see interest rates decrease, and a full

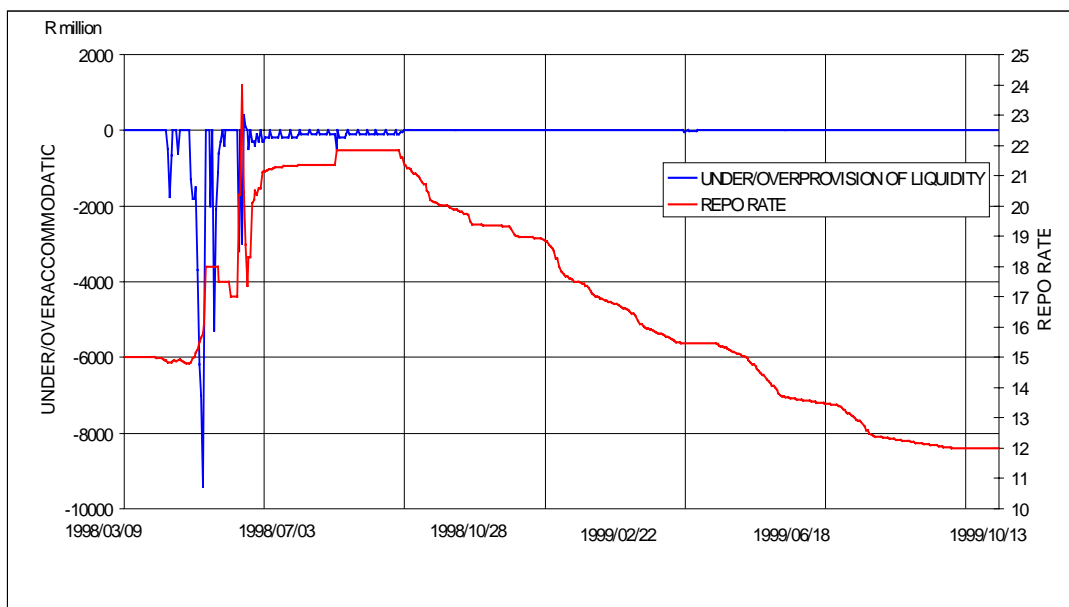
provision implies a neutral monetary policy stance. It is therefore important to look at whether this signalling mechanism has been efficient.

Referring now to Figure 6.7, in the first four months of 1998, monetary policy was broadly neutral and the Repo Rate remained relatively stable.

In May and June 1998, the Asian contagion affected South Africa and it is apparent from Figure 6.7 that the SARB under-provided the money market shortage significantly. During this time the Repo Rate increased dramatically. It was only between 26 May 1998 and 14 June 1998, when the SARB fixed the Repo Rate at 18 percent, that the under/over-provision did not affect the Repo Rate (SARB, 1998e: 38). However, when the fixed rate auction was abandoned, the SARB under-provided the money market shortage and the Repo Rate increased dramatically.

Figure 6.7

**UNDER/OVERPROVISION OF LIQUIDITY VS REPO RATE
1998/03 – 1999/12**



(SOURCE: Compiled using SARB data)

At the beginning of July, the daily liquidity requirement was over-provided and the Repo Rate decreased. However, between July and September 1998 the SARB under-provided the daily liquidity requirement and the Repo Rate increased steadily. It was only from mid-October when the daily under-provision was met in full that the Repo Rate entered a period of general decline, and then remained fixed at 12 percent between November and December 1999.

At the end of June 1999, the SARB over-provided the money market shortage, signalling its preparedness to accept a faster decline in the Repo Rate (SARB, 1999d: 30). The change in the Repo Rate is evident in Figure 6.7 where the slope of the curve is steeper. In July 1999, the SARB under-provided the money market shortage by R10 million, signalling a slowdown in the Repo Rate (SARB, 1999d: 30). In Figure 6.7, this is once again evident by the flatter Repo Rate curve in this period. There is a clear negative relationship between the Repo Rate and the amount of liquidity provided in Figure 6.7.

When the SARB under/over-provides the money market shortage, clear signals are sent out and the Repo Rate behaves accordingly. Previously the SARB accommodated the money market shortage fully and automatically, and so had to send signals via changes in the Bank Rate. However, as discussed in 6.4.1, this signalling mechanism was ineffective. The money market shortage seems to have a much more significant influence on the Repo Rate than what it had under the Bank Rate system. The repurchase system has worked very well in this respect, sending out clear signals, and allowing the appropriate adjustments in the Repo Rate to take place. One can therefore

conclude that the SARB appears to have been successful in terms of its signalling mechanism.

6.6 CONCLUSION

Under the Bank Rate system of accommodation, there was a positive association between the Bank Rate and money market interest rates. However, the Bank Rate changed infrequently, and so did money market interest rates, despite a few minor fluctuations. Thus, money market interest rates and the Bank rate were rigid and inflexible. Furthermore, money market interest rates reacted to changes in the Bank Rate with a substantial time lag, and this was inefficient. Money market interest rates also reflected the market's expectations as to what would happen to the Bank Rate in future, and did not reflect the true market conditions. Sometimes, money market interest rates were volatile, with interest rates decreasing at times when liquidity was tight, instead of increasing, as they should. Thus, under the previous system of accommodation, money market interest rates were inflexible and insensitive to domestic and external fluctuations. They were unable to send accurate and reliable signals to the SARB.

Under the repurchase system, however, there is clearly a positive relationship between money market interest rates and the Repo Rate. Money market interest rates and the Repo Rate have changed in line with conditions on the domestic and external fronts, and have reacted in a quick and sharp manner. The Repo Rate is grounded in actual money market conditions, and not determined by market expectations of the likely actions of the SARB. The time lag associated with the previous system is not evident under the repurchase system, and the volatile

behaviour of interest rates has not been evident. The Repo Rate and money market interest rates appear to be much more flexible and sensitive to market conditions, than the previous Bank Rate system.

Regarding the M3 money supply growth, it regularly breached the upper limits of the SARB's guideline range, despite the Bank Rate being at a high level. Changes in the Bank Rate did not appear to have a material effect in curbing the growth of M3 under the previous system. However, under the new system, the SARB has de-emphasised the significance of the M3 money supply growth rate. Under the new procedures, the growth in the M3 has stayed within the target guideline ranges for most of the time, but this has not been attributable solely to the repurchase system, but to improved global financial conditions. However, the growth in the M3 does appear to have been put under more effective control in the new system, and it has therefore been more successful than the previous system in this regard.

Finally, in the previous system of accommodation, the Bank Rate and money market interest rates seemed to be insensitive to changes in money market liquidity. This was a result of the neutral expectations environment prevalent in South Africa. Due to this, the SARB found it difficult to signal its views, and only when second-tier accommodation was used, did the Bank Rate increase. All of this was exacerbated by the fact that banks had easy access to SARB accommodation. Furthermore, there was no clear negative relationship between the Bank Rate and accommodation. Under the repurchase system, the Repo Rate seems to be far more responsive to liquidity conditions, and the negative relationship between the Repo Rate and level of accommodation is evident. The SARB has also appeared to be

successful in terms of signalling to the market in its under/over-providing actions. Finally, the marginal lending facility has been restored to a facility of last resort. Much less use is now made of second-tier accommodation under the marginal lending facility. The repurchase system appears to have been much more successful than the Bank Rate system. It is more sensitive, quick to respond, and generally works more efficiently.

The impact of the new system on the development of the interbank loans market is the topic of the next chapter.

CHAPTER SEVEN

RESERVE BANK ACCOMMODATION PROCEDURES AND DEVELOPMENTS IN THE INTERBANK LOANS MARKET

7.1 INTRODUCTION

One of the objectives of this study is to examine whether the interbank loans market has become more developed since the introduction of the repurchase system of accommodation. The interbank market seems not to have developed under the previous Bank Rate system. This was apparently due to the easy access banks had to SARB accommodation, which discouraged active trading in treasury bills and short dated government bonds (Van der Merwe, 1997b: 2). However, with the introduction of the new system, it was hoped that the interbank market would become more developed and active.

7.2 BACKGROUND TO THE INTERBANK LOANS MARKET

Under the previous system of accommodation, banks had to hold statutory minimum cash reserves based on the size of their liabilities. The minimum cash reserve requirement was 2 percent of total liabilities less capital and reserves, and amounts owing by banks and mutual banks. There was a further 1 percent of banks' short-term liabilities after adjusting for deposits pledged as security for loans, amounts owing by banks, and 50 percent of remittances in transit (Van der Merwe, 1998: 7).

These minimum cash reserves were held in reserve accounts, besides which banks also maintained current or free balance accounts with the SARB. These were used to deposit free reserves, which were used as a first line of liquidity or for settling interbank claims arising out of the daily cheque clearing (Falkena, Faure, & Kok, 1984: 37). The automated cheque clearing bureau (ACB) calculated the settlement of claims banks had with each other.

Interbank settlement under this system did not take cognisance of increasing exposures and risks, which, because of the exponential increase in the volume and values of transactions, grew very large. Neither the banks, nor the SARB, knew what the settlement exposure of any particular bank would be, since it was determined to a large extent by the payment transactions of the customers of banks, with computation being an “after-the-event affair” (SARB, 1998h: 1). Banks therefore had no way of determining what their settlement obligations would be. The ACB settlement procedure required manual intervention and did not provide banks with any intra-day information. Finally, the system was ultimately dependent on the SARB for settlement, and failure to meet settlement obligations at the time of settlement would cause serious disruptions in the financial system (SARB, 1998h: 1).

In March 1998, with the introduction of the repurchase system, the ACB cheque clearing system was replaced by the new National Payments System (NPS), facilitated by the introduction of the South African Multiple Options Settlement System (SAMOS). Under the SAMOS system, all registered banks are eligible to open settlement and loan accounts with the SARB, so that they are able to directly participate in the interbank settlement process. The SAMOS system works on a

prefunding principle, where payments can be made only if the paying bank has sufficient funds in its settlement account (SARB, 1997c: 2). This removes the problem of settlement failure. Furthermore, with the introduction of the repurchase system, the minimum cash reserve requirements of banks was changed to 2,5 percent of their total liabilities. It was indicated in Chapter Five that the SARB uses an average basis, where the cash reserves have to be maintained over the period of one month, and not on a daily period as previously (Hugo, 1998: 2). Banks therefore have more flexibility in managing their liquidity on an on-line, real-time basis. Daily and intra-day calculations of compliance to the cash reserve requirements are made possible (Van der Merwe, 1997b: 16).

Changes in the interbank settlement system during 1998 improved the clearing process in the market and allowed banks to use the available reserves more economically (Van der Walt, Wesso, & Morudu, 1999: 8). Actions by the SARB to accommodate temporary reserves effectively stabilised the interbank settlement market.

7.3 FUNCTIONING OF THE INTERBANK MARKET

The interbank market is an informal market where banks lend funds to each other, where the amounts are generally large and the maturities are of a short (overnight) nature. The funds in the interbank market take the form of NCD's, non-negotiable deposits and other loans and advances (Van der Walt, Wesso, & Morudu, 1999: 8). As stated above, one of the reasons for the introduction of the new system of accommodation was to further develop South Africa's financial markets, by giving a boost to the interbank market in overnight and other very

short-term funds, and to the markets in short-term market instruments (Meijer, 1999: 6). In South Africa, funds in the international interbank market form a very small portion of the total funds in the interbank market (Van der Walt, Wesso, & Morudu, 1999: 8).

At the end of the daily cheque clearing, banks have to transmit settlement instructions to the SAMOS system, but are generally left with a temporary excess or shortfall on their clearing accounts with the SARB. However, in order to submit settlement instructions, they need to have funds available in their settlement accounts. Banks therefore need a channel for making good the shortages of some from the surpluses of others. Such a channel in the United States is known as the 'federal funds market', or in South Africa, the "call fund". This mechanism is supplemented by interbank lending (RSA, 1985: 24).

Should banks be short of funds, they currently have a number of funding options:

- borrowing from the SARB under the repurchase system;
- utilising their required cash reserve funds or liquid asset holdings to obtain funds from the SARB;
- utilising call funds;
- borrowing under the marginal lending facility, and finally;
- borrowing from the interbank loans market.

Approximately 80 percent of banking business are presently conducted by the big four¹⁸ commercial banks in South Africa. When faced with deficits at the daily cheque clearing, these banks try to avoid undertaking

¹⁸

ABSA BANK, NEDCOR, FIRST NATIONAL BANK, and STANDARD BANK.

significant repurchase agreements with the SARB, and instead, opt to borrow from the interbank market at the Interbank Rate. The Interbank Rate generally lies below the rate for SARB funds. Banks would also borrow under this facility should they lack the suitable collateral to obtain the use of funds under the repurchase system (Van der Merwe, 1998: 8).

The previous Bank Rate, and now the Repo Rate, is set above the Interbank Rate, because should a bank experience a debit position, it would not have any reason to pay more than the SARB's rate for additional cash balances. If the Interbank Rate were above the Bank Rate or Repo Rate, banks would first borrow from the SARB. This would then inhibit the development of the interbank market. Similarly, if a bank experiences a credit position, it would not be willing to accept a lower rate than the SARB's rate on its clearing surplus, or anticipated clearing surplus (Meijer, 1997: 15). Previously, the SARB rarely paid interest on banks' cash balances or any portion thereof, and if the SARB did pay interest, it would be at a rate which was not market-related or competitive (Meijer, 1997: 15). Under the new procedures, the SARB does not pay any interest on these balances at all. Therefore, just as banks would opt to borrow from the interbank market before approaching the SARB, so banks will avoid maintaining a surplus cash balance with the SARB. These surplus cash balances can therefore be passed on to banks which are indebted by means of interbank loans. This is one of a number of co-operative relationships banks have with each other in order to facilitate the smooth functioning of money and credit markets (Lipsey, Steiner, Purvis & Courant, 1990: 652).

The level of interest rates in the interbank market is dependent on the previous day's general level of interest rates and the estimated size of the current and future cash shortage faced by the market (Van der Merwe, 1998: 7). The monetary authorities in South Africa do not regard the new interest rate established in the interbank market on any particular day as an indicator of future trends in interest rates. It does, however, have an influence on expectations and consequently on other money market interest rates (Van der Merwe, 1998: 8). The interest rates in the interbank market tend to move closely in line with the rates prevailing in the domestic money market (Bank of International Settlements, 1983: 8).

7.4 THE INTERBANK MARKET IN GERMANY

It is useful to look at the German case, in order to establish how the interbank market has developed there, and to make a comparison between South Africa and Germany. This section forms part of the German case study in Chapter Four, but is presented here for convenience. The interbank market in Germany, as in South Africa, is largely driven by reserve management considerations. The period over which the required level of reserves is computed, begins on the 16th day of each month, and ends on the 15th day of the following month (London School of Economics, 1994: 87). This implies that banks will either wish to lend excess reserves, or borrow reserves to cover a deficiency. Most interbank deals are conducted directly between banks themselves, rather than through brokers, and the daily turnover mainly comprises of unsecured one-day loans, although maturities stretch out to one year. The rates in the interbank market exhibit very little intra-day movement,

remaining close to the official interest rates on regular repurchase agreements (London School of Economics, 1994: 83).

The Overnight Rate, which is the interest rate charged on interbank loans, will be equal to, or lower than the official rate at which lombard credit (as discussed in Chapter Four) is available to banks, and equal to, or higher than the official rate at which the Bundesbank sells treasury bills. Although the Overnight Rate can lie anywhere in this corridor, it generally lies close to the rate on securities repurchase agreements (London School of Economics, 1994: 92). Changes in these two rates are regarded as significant indicators of a change in the stance of monetary policy, since they are designed to permit either a higher or lower overall level of short-term interbank rates.

The Overnight Rate is relatively stable during the maintenance period, because of the high level of reserves banks hold in order to meet their cash reserve requirements. It is only as the end of the reserve maintenance period approaches that the Overnight Rate becomes more variable, because banks are less able to work off any deviations from their average reserve balances.

Banks are charged a penalty rate of 3 percentage points above the lombard rate for failing to meet their reserve requirements, therefore they will use lombard credit if they cannot obtain funds on the interbank market. This works much the same way in South Africa, where banks are charged the Marginal Lending Rate, which is also a penalty rate if they fail to meet their cash reserve requirements. Furthermore, the Bundesbank may not be prepared to sell treasury bills on the final day

of meeting the cash reserve requirement, therefore the Overnight Rate may fall to zero if banks in aggregate find they have excess reserves.

7.5 ADVANTAGES OF HAVING A MORE DEVELOPED INTERBANK MARKET

According to Van der Walt, Wesso & Morudu (1999: 7), an active interbank market eases the liquidity management of banks and improves the efficiency of the money market as a whole. In many countries, attempting to improve financial efficiency has led to greater volatility in interest rates. With a well functioning interbank market and other money markets, this risk can be reduced. Furthermore, the averaging principle, as discussed in Chapter Five, in the application of the cash reserve requirement, should ensure more stability in short-term interest rates while making use of repurchase agreements (Barnard, 1998: 12).

A more active interbank market also implies that rates in this market are more responsive to changes in banking conditions, as some banks are reluctant to borrow for a week under the repurchase system when their need for such cash could quickly disappear (Barnard, 1998: 18). This will therefore give a better signal of conditions on the monetary policy front to the central bank. Thus, it implies more responsive and sensitive interest rates in the interbank market, as well as better signalling from the market to the SARB.

A close correlation should exist between the Repo Rate and call interest rates in the money market under normal financial conditions (Barnard, 1998: 18). This implies that the Interbank Rate will move in harmony with the Repo Rate, increasing when the Repo Rate increases and *vice*

versa. A more active interbank market also implies that less use will be made of the marginal lending facility, which is one of the objectives of the new repurchase system. A more active interbank market implies that banks will approach each other for funds before borrowing under the repurchase facility or marginal lending facility, since such a route would be the more costly one. With a more active interbank market, in terms of banks' management of their cash, their accounts with the SARB must be in order, and therefore better managed (Hugo, 1998: 7).

An active interbank market makes it easier for banks to adjust the volume of their assets and liabilities, as some banks may find they can attract more deposits than they can use, while others may be unable to take advantage of lending opportunities because of a shortage of funds. Thus, non-bank depositors and end-users can more efficiently be brought together if banks transfer funds between themselves (Bank of International Settlements, 1983: 10).

Banks are likewise better able to manage interest rate risks arising from their customer business under an active interbank market. If a bank funds a six-month customer loan with a three-month customer deposit, it faces an interest rate risk. This can be avoided by placing the deposit in the interbank market and funding the loan with six-month funds borrowed from the market. Therefore, banks can hedge mismatches resulting from differences in interest rate periods (Bank of International Settlements, 1983: 10).

Finally, the interbank market can be a source of profit by correctly anticipating interest rate movements and placing them for a few months when the yield curve is positive and when interest rates subsequently fall (Bank of International Settlements, 1983: 11).

7.5.1 Risks associated with the Interbank Market

Although the interbank market has many advantages associated with its use, there are also risks involved, which need mentioning. One of the major risks banks face is that of creditworthiness. Any bank is eligible to borrow from the interbank market provided it can convince other banks that it is creditworthy (Bank of International Settlements, 1983: 32). Major banks have lines¹⁹ which are unadvised (where the borrowing bank is not told how large its line is), and uncommitted (where the lender is not obliged to provide any funds). A variety of factors are used to influence a bank's assessment, such as the reputation of the bank, quality of management, degree of personal contact and day-to-day information provided by dealing in the market (Bank of International Settlements, 1983: 34). The majority of banks have a wide spread of loans in their portfolio and as such, bank lending to them is in the same sense sharing this portfolio. By diversifying their portfolio's, banks can decrease the risk involved. Not all banks, however, have well diversified portfolios or are well managed, and banks' monitoring procedures may not always make an adequate distinction between the riskiness of lending to different banks in the market (Bank of International Settlements, 1983: 35).

¹⁹ A line specifies the maximum amount a bank is willing to have outstanding to the borrower at any time and the maximum maturity (Bank of International Settlements, 1983: 33).

Therefore, the interbank market can be a profitable source of business, if banks guard against risks created by other lending banks if they diversify their portfolios.

7.6 DEVELOPMENT OF THE INTERBANK MARKET

Competition for funds in the interbank market has been impeded to some extent by the ever-present indebtedness of the big four banks in aggregate to the SARB. This, according to Meijer (1997: 15), was unnatural and unhealthy and had a crippling effect on interbank competition. However, the rates quoted for deposits by the banks are not always equal, indicating that a degree of competition for deposits does exist in this area. If the big four banks rely extensively on assistance from the SARB by bidding up rates for deposits in the market, they might find their deposit rates become somewhat uncompetitive *vis-à-vis* other banks outside the big four (SARB Training Institute, 1999: 57).

Furthermore, as mentioned before, the easy former access of banks to SARB accommodation also had a negative impact on the development of the interbank market, because banks were accommodated automatically and to the full extent. As a result, they had no need to borrow from the interbank market, as funds were so readily available from the SARB. Banks also on occasion held large sums of excess cash reserves even though they did not earn interest, or if they did earn interest on their cash reserves, it was not a market-related interest rate (Meijer, 1999: 12). Finally, previously banks' minimum reserves included interbank deposits, inhibiting the development of the interbank market.

Banks' minimum cash reserves are now kept at a minimum and do not include interbank deposits as this could inhibit the development of the market (Hugo, 1998: 3). Banks no longer have the easy access to SARB accommodation and this should provide further strengthening to the interbank market. Finally, the SARB discourages banks from holding excess cash reserves as they are told that these balances should, and may be essentially held only for making good a cash balance shortfall (Meijer, 1999: 13). No interest is paid on any part of the required cash reserves, further discouraging banks from holding excess cash balances, and instead lending the excess cash to other banks and earning interest on these balances.

Some other central banks have also opted for a deposit facility where surplus funds of banks can be deposited at these central banks at a predetermined interest rate which serves as a floor for other short-term interest rates (Meijer, 1999: 12). As mentioned previously, Germany operates with an interest rate corridor, and therefore has a floor facility. This corridor system of accommodation seems to be an arrangement suited for countries with well developed and established markets for interbank funds (Meijer, 1999: 12). South Africa does not belong to this category. Should this stand-by facility therefore be introduced in South Africa for interest-bearing deposits, it may retard the development of the interbank market. Thus, no floor facility implies a more active interbank market in South Africa.

7.7 ANALYSIS OF THE INTERBANK MARKET

This section explores the efficiency and level of development of the interbank market presently as compared to the previous system.

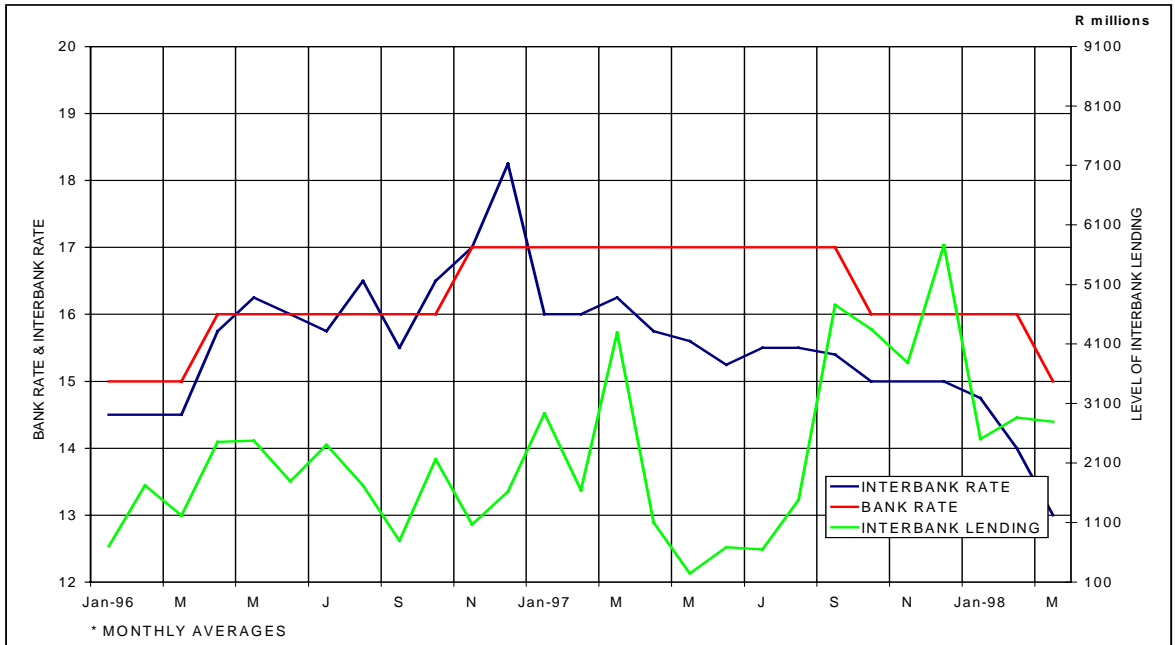
Figure 7.1 represents the relationship between the Bank Rate, the Interbank Rate and the level of interbank lending. Figure 7.2 shows the relationship between the Repo Rate, the Interbank Rate and the level of interbank lending. As is evident from Figure 7.1, there were relatively small volumes of trading in interbank loans in the period 1996 - 1997.

It was only at the end of 1997, and beginning of 1998, that larger volumes of interbank loans were witnessed. As such, one could conclude that in the 1996 - 1997 period, the interbank market was not much developed and used. This could probably be attributed to the permanent indebtedness of the big four banks to the SARB, and the easy access these banks had to SARB accommodation.

Furthermore, one would expect there to be some negative correlation between the level of interbank lending and the Interbank Rate, but there does not appear to be any correlation. In fact, in the 1996 period, there were instances when one could see a positive correlation between the two.

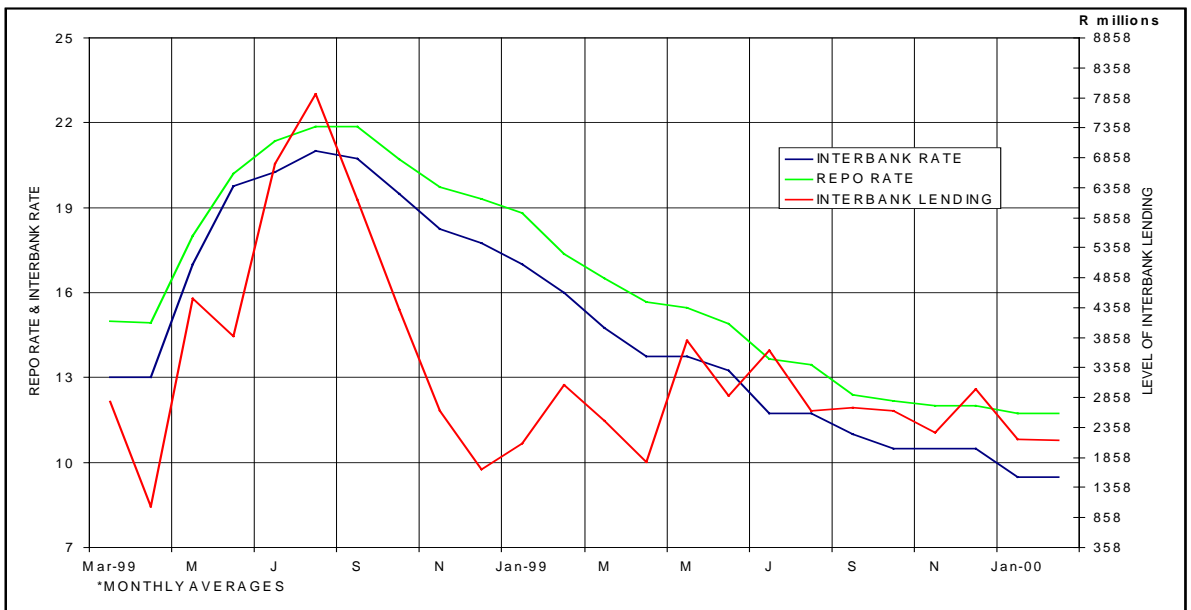
As was mentioned earlier, the Bank Rate was set above the Interbank Rate. However, from Figure 7.1, one can see that the Interbank Rate at times rose above the Bank Rate. Naturally, this kind of behaviour had a negative impact on the interbank market, since no bank will pay higher rates in the interbank market for funds than it has to at the SARB. For example, in May, July, and October 1996, the Interbank Rate went

Figure 7.1
INTERBANK RATE, BANK RATE & LEVEL OF INTERBANK LENDING
1996/01 – 1998/03



(SOURCE: Compiled using SARB data)

Figure 7.2
REPO RATE, INTERBANK RATE & LEVEL OF INTERBANK LENDING
1998/03 – 2000/02



(SOURCE: Compiled using SARB data)

above the level of the Bank Rate. In these periods, it is evident that the level of interbank lending decreased in response to these developments. Towards the end of 1997, and beginning of 1998, the Interbank Rate remained below the Bank Rate and was on a decline, and in this period the amount of interbank lending increased significantly. Finally, there appears to be no cyclical trend between the Interbank Rate and the Bank Rate prior to December 1996. The Bank Rate changed infrequently, yet in Figure 7.1, one can see that there was a great deal of volatility in the Interbank Rate.

Considering Figure 7.2 and the new repurchase system, as from March 1998, it would appear that the level of interbank lending has increased since the previous system. Between June and August 1998, more use was made of this facility than in any period between 1996 and 1997. The reason for the more active interbank market could possibly be because banks no longer have the easy access to SARB accommodation. In Figure 7.2, one can also see that there is a more stable relationship between the level of interbank lending and the Interbank Rate. There appears to be a close correlation between the two, with the exception of a few brief periods. There appears to be much less volatility in the level of interbank lending.

Finally, the Interbank Rate in Figure 7.2 appears to be sensitive to developments in the Repo Rate. One can see that the two have moved in harmony with each other, and therefore the Interbank Rate has become a more market-related rate. The Interbank Rate has stayed very close to the Repo Rate, as is the case in Germany. Under the previous system, there were times when the Interbank Rate moved above the level of the Bank Rate, but this has not occurred under the

new system. The Interbank Rate has always remained below the level of the Repo Rate, and followed the same cyclical trend. This would, in principle encourage banks to make more use of the interbank market.

7.8 CONCLUSION

The previous system of accommodation was not successful in enhancing the development of the interbank loans market. This was mainly due to the fact that the SARB accommodated the money market shortage fully and automatically, and at a fixed Bank Rate. As such, the Interbank Rate was not sensitive to liquidity conditions, and at times rose above the level of the Bank Rate. This inhibited the development of the interbank loans market, as banks would not borrow from the interbank market at a higher rate than what they could get at the SARB. Furthermore, the banks' minimum reserves included interbank deposits, inhibiting the development of the interbank market. Under the previous system, there were smaller volumes of interbank loans, and there did not appear to be any correlation between the Interbank Rate and the level of interbank lending. There was also no cyclical trend apparent between the Interbank Rate and the Bank Rate.

However, it appears that under the repurchase system of accommodation there has been increased lending in the interbank market than previously. The Interbank Rate appears to be sensitive to the Repo Rate, and therefore, to liquidity conditions. The Interbank Rate has also remained below the level of the Repo Rate, which is another factor which helps explain why the Repo Rate has been more successful in achieving the objective of developing the interbank market. There appears to be a close correlation between the Interbank Rate and

interbank lending, and the Interbank Rate appears to be following the same trend as the Repo Rate. The next chapter summarises the findings and conclusions of this study.

CHAPTER EIGHT

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

8.1 SUMMARY OF CONCLUSIONS

For the Classical economists, money supply and changes in the money supply did not have an effect on the real economy. Increases in the money supply would cause increases in expenditure and therefore the only effect this would have would be to increase prices. The Classical economists believed that market forces would instantaneously remove any disequilibrium. For this reason, there would be no need for policy intervention. Money, therefore, was regarded as neutral and, not important.

Whereas the Classical economists focused on the money supply, Keynes focused on money demand, and neglected supply factors. According to Keynes, unlike under Classical assumptions, there is not one full employment equilibrium, but a number of them, and the economy takes a long time to adjust. Therefore, Keynes advocated demand management policies, and believed the adjustment would take place through quantity and not prices. For Keynes, expectations played a very important role, whereas the Classical economists did not consider expectations to be important. Under Keynesian analysis, changes in the money supply do affect the real variables in the economy, and therefore, he believed there to be scope for monetary policy. However, because Keynes viewed money demand as highly responsive to interest rates and investment as fairly unresponsive to interest rates, he preferred fiscal policy to monetary policy.

Monetarists stressed the potency of money and advocated following a monetary rule in conducting monetary policy. Like the Keynesians, they believed money to be non-neutral, but believed it influenced output and prices, tending towards equilibrium in the long-term. However, like the Classical school they also believed prices to be flexible, a belief Keynes disagreed with. The Monetarists believed monetary policy to be a powerful tool, and in conducting monetary policy favoured rules and not discretion. They also placed great emphasis on expectations as Keynes did.

The Post-Keynesians stress uncertainty, and therefore, effective demand failures. Like Keynes, they also stress the importance of expectations. They believe that a monetary growth rule as advocated by the Monetarists, would only serve to intensify unemployment, and therefore, advocate the implementation of an incomes policy. The Post-Keynesians also believe that money is non-neutral, and therefore has powerful real effects. They recognise that there is also a wealth effect where monetary policy can affect aggregate demand even if interest rates do not change. They further recognise the credit rationing effect where monetary policy affects total expenditure by changing the degree of credit rationing and thus the volume of lending even if interest rates do not change.

Monetary policy as laid down in South Africa since the time of the De Kock Commission, has proceeded along Post-Keynesian lines, with Monetarist influences. This policy, which incorporated the targeting of the M3 money supply, served the country well. This was the case as long as the financial markets in South Africa were relatively isolated from the rest of the world, and exchange controls were firmly in place. At this time, there existed a stable relationship between changes in the money supply, and total domestic expenditure, and therefore

between the money supply and inflation (Stals, 1998b: 1). The SARB used the instruments it had at its disposal, namely, cash reserve requirements, the discount window, interest rates charged by the SARB on its loans and open market operations, to ensure its money supply guidelines would be achieved. However, with the integration of South Africa into international markets, and the relaxation of exchange controls, the picture changed. The monetary policy applied was no longer effective, and was riddled with difficulties. For this reason, the suitability of continuing with this policy was questioned, both within and outside the SARB. Central banks around the world discovered that the successful application of money supply guidelines or targeting posed several difficulties.

Under the Bank Rate system of accommodation, there was a positive association between the Bank Rate and money market interest rates. However, the Bank Rate changed infrequently, and so did money market interest rates, despite a few minor fluctuations. Thus, money market interest rates and the Bank Rate were rigid and inflexible. Furthermore, money market interest rates reacted to changes in the Bank Rate with a substantial time lag, and this was inefficient. Money market interest rates also reflected the market's expectations as to what would happen to the Bank Rate in future, and did not reflect the true market conditions. Sometimes, money market interest rates would behave perversely, with interest rates decreasing at times when liquidity was tight, instead of increasing, as they should. Thus, under the previous system of accommodation, money market interest rates were inflexible and insensitive to domestic and external fluctuations. They were unable to send accurate and reliable signals to the SARB.

Regarding M3 money supply growth, it regularly breached the upper limits of the SARB's guideline range, despite the Bank Rate being at a high level. Changes in the Bank Rate did not appear to have a material effect in curbing the growth of M3 under the previous system. Finally, in the previous system of accommodation, the Bank Rate and money market interest rates seemed to be insensitive to changes in money market liquidity. This was a result of the neutral expectations environment prevalent in South Africa. Due to this, the SARB found it difficult to signal its views, and only when second-tier accommodation was used, did the Bank Rate increase. All of this was exacerbated by the fact that banks had easy access to SARB accommodation. Furthermore, there was no clear negative relationship between the Bank Rate and accommodation.

The previous system of accommodation was not successful in enhancing the development of the interbank loans market. This was mainly due to the fact that the SARB accommodated the money market shortage fully and automatically, and at a fixed Bank Rate. As such, the Interbank Rate was not sensitive to liquidity conditions, and at times rose above the level of the Bank Rate. This inhibited the development of the interbank loans market, as banks would not borrow from the interbank market at a higher rate than what they could get at the SARB. Furthermore, banks' minimum reserves included interbank deposits, inhibiting the development of the interbank market. Under the previous system, there were smaller volumes of interbank loans, and there did not appear to be any correlation between the Interbank Rate and the level of interbank lending. There was also no cyclical trend apparent between the Interbank Rate and the Bank Rate. With this then came the advent of a new monetary policy.

The new monetary policy followed by South Africa is very much like the one used in Germany. Prior to the period with the introduction of the securities repurchase transactions system, the discount policy, lombard policy and minimum reserve policy formed the key policy instruments in Germany. However, Germany found it increasingly difficult to rely on these, and needed a more flexible alternative, as these instruments proved to be cumbersome. The lombard facility, which was intended to be used for emergency funding, was used for daily refinancing. Furthermore, the country was suffering from more frequent interest rate and exchange rate shocks from abroad. This was the reason for the introduction of the securities repurchase system, which provided a more flexible alternative. From this time, the minimum reserves were held solely for regulatory purposes, and the discount policy was no longer used as an instrument for managing liquidity. With the extension of open market operations, in the form of securities repurchase agreements, this has become the key determinant of banks overall refinancing. This change has increased the Bundesbank's ability to fine tune movements in the market for interest rates, and recourse to the lombard facility has taken on its original purpose.

With the globalisation, liberalisation, and co-operation of international financial markets, the SARB found its previous monetary policy instruments to be ineffective in the changing financial environment. They were not flexible enough, and generated broad and lagged effects. As such, the SARB implemented the repurchase transactions system, as was done in Germany. This was done so as to regulate liquidity in the money market. Under the new system, it is hoped that interest rates will follow the Repo Rate more closely, more active use will be made of the interbank loans market, and more market related interest and exchange rates would be achieved. The new system was

implemented on 9 March 1998. In the new system, the SARB will be able to guide interest rates rather than control them. Furthermore, in order to prevent turbulence in the domestic financial markets, the signalling capacity of the SARB has become more important. The new procedures make various forms of signalling possible, and are hoped to lead to greater transparency of monetary policy than the previous procedures.

Under the repurchase system, there is a positive relationship between money market interest rates and the Repo Rate. Money market interest rates and the Repo Rate have changed in line with conditions on the domestic and external fronts, and have reacted in a quick and sharp manner. The Repo Rate is grounded in actual money market conditions, and not determined by market expectations of the likely actions of the SARB. The time lag associated with the previous system is not evident under the repurchase system, and the perverse behaviour of interest rates has not been evident. The Repo Rate and money market interest rates appear to be much more flexible and sensitive to market conditions, than the previous Bank Rate system.

The SARB has furthermore de-emphasised the significance of the M3 money supply growth rate. Under the new procedures, the growth in the M3 has stayed within the target guideline ranges for most of the time, but this has not been attributable solely to the repurchase system, but to improved global financial conditions. However, the growth in the M3 does appear to have been curbed tremendously under the new system, and it has therefore been more successful than the previous system in this regard.

The Repo Rate seems to be far more responsive to liquidity conditions, and the negative relationship between the Repo Rate and level of accommodation is evident. The SARB has also appeared to be successful in terms of signalling to the market in its under/over-providing actions. Finally, the marginal lending facility has been restored to a facility of last resort. Much less use is now made of second-tier accommodation under the marginal lending facility. The repurchase system appears to have been much more successful than the Bank Rate system. It is more sensitive, quick to respond, and generally works more efficiently.

It appears that under the repurchase system of accommodation, there has been more activity in the interbank market than previously. The Interbank Rate appears to be sensitive to the Repo Rate, and therefore, to liquidity conditions. The Interbank Rate has also remained below the level of the Repo Rate, which is another factor which helps explain why the Repo Rate has been more successful in achieving the objective of developing the interbank market. There appears to be a close correlation between the Interbank Rate and interbank lending, and the volume of interbank lending seems to be much larger. Finally, the Interbank Rate appears to be following the same trend as the Repo Rate.

It would therefore appear that the repurchase system has achieved the objectives for which it was intended. It is evidently more efficient and effective than the previous Bank Rate system.

8.2 RECOMMENDATIONS FOR FURTHER RESEARCH

With the introduction of the new repurchase system, the SARB moved to a more eclectic approach where emphasis of its monetary policy model shifted from movements in the money supply to using a package of economic indicators as a guideline for making monetary policy decisions in March 1998. However, the SARB abandoned the eclectic approach in 2000, and set a formal inflation target. Undoubtedly, this new inflation-targeting model has raised numerous questions for the conduct of monetary policy in South Africa.

Firstly, the advantages and concerns of implementing such a policy need to be addressed. Secondly, it is important to establish the prerequisites for implementing such a model, and establish whether South Africa has these in place. Furthermore, such a model may be in conflict with other policy objectives, and these need attention. Another important question is how to measure inflation, that is, what should be included in measuring the inflation target. Finally, inflation targets are about the future, therefore, in forecasting inflation, a forward-looking model would have to be used, raising another research question as to which model should be used for this purpose.

In researching this topic, it would be useful to use another country such as New Zealand or Canada, who have had such a policy in place for some time. This would be necessary in order to determine what successes and failures they have had with this model, thereby giving an idea of what South Africa could expect. Furthermore, it could be compared to the previous system of money supply targeting, to establish how it is different and whether it has been more successful in achieving the objectives of low inflation and price stability.

Finally, in setting an inflation target, the central bank's accountability increases, and it is feared that the central bank may lose monetary policy independence. It also requires co-ordination between monetary policy and fiscal policy. These are further areas that can be researched.

APPENDIX I

DAILY TIMETABLE FOR REPURCHASE TRANSACTION

Deadline/Time	Action by the Reserve Bank	Action by Participant
+/- 09:30	Announce the final money market shortage for the previous day as well as the amount of liquidity provided to banks under the marginal lending facility.	
09:45	Announce preliminary amount available on tender – possible first round of operations.	
10:00		Deadline for bids
10:15	Announce results of round	Confirm amount allotted
10:45		Split of securities
11:15		Delivery confirmation for 09:45
12:00	Announce amount available on tender (if revised) – normal first round of repo's	
12:15		Deadline for bids
12:30	Announce results of round	Confirm amount allotted
13:00		Split of securities
13:30		Delivery confirmation for 12:00
15:00	Announce amount available on tender (if revised) – normal second round of repo's	
15:15		Deadline for bids
15:30	Announce results of round	Confirm amount allotted
16:00		Split of securities
16:15		Delivery confirmation for 15:00

Source: SARB, 1998g: 8

APPENDIX II

EXAMPLE OF SCREEN ANNOUNCEMENTS

+/- 09:30 The final money market shortage for the previous trading day amounted to:

R.....million. An amount of R.....million as been provided in the marginal lending facility.

09:45 Initial liquidity requirement forecast = R..... million shortage

A round of fixed/variable rate repo operations is invited (if applicable).

The Bank's Repo Rate is *% (in case of fixed rate tender).

Total amount on tender = R.....million

Maturity Date =

10:15 Result of repo operations (if applicable).

Total amount allotted = R.....million at an average rate of ...% (in case of variable rate tender).

Noon First liquidity forecast revision = R.....million shortage.

A round of fixed/variable rate repo operations is invited.

The Bank's Repo Rate is * % (in case of a fixed rate tender).

Total amount on tender = R.....million.

Maturity Date =

12:30 Result of repo operations (if applicable).

Total amount allotted = R.....million at an average rate of ...% (in case of variable rate tender).

15:00 Second liquidity forecast revision = R.....million shortage.

A round of fixed/variable rate repo operations is invited.

The Bank's Repo Rate is * % (in case of a fixed rate tender).

Total amount on tender = R.....million.

Maturity Date =

15:30 Result of repo operations (if applicable).

Total amount allotted = R.....million at an average rate of ...% (in case of variable rate tender).

APPENDIX III

REPURCHASE TRANSACTION NOTICE

CONTACT NAME:

DATE:

TIME OF ROUND:

REPO'S BETWEEN : AND THE SOUTH AFRICAN RESERVE
BANK

We refer to the Reserve Bank's telephone confirmation that, as a result of the acceptance of bids under the round of repo operations specified above, we are to enter today into the following repo transactions with the Reserve Bank. This notice is given under the Reserve Bank's Operating Procedures relating to its repo transactions which are subject to the Master Repurchase Agreement between us and the Reserve Bank.

SUMMARY OF BIDS:

BID ALLOCATION	PURCHASE PRICE	REPO MATURITY DATE	REPO RATE	REPURCHASE PRICE
FIRST BID				
SECOND BID				
THIRD BID				
FOURTH BID				
Totals $\leq A + B$				

BONDS:

TYPE (eg. R150)	Nominal	Ytm	ADJUSTED MARKET VALUE	HAIRCUT RATIO	MARKET VALUE
TOTAL A					

BILLS:

TYPE	Nominal	Days to Maturity	DISCOUNT RATE	ADJUSTED MARKET VALUE	HAIRCUT RATIO	MARKET VALUE
TOTAL B						

Source: SARB, 1998g: 10

APPENDIX IV (a)**MARGIN TRANSFER TO THE SARB****FROM:**

N.B. If insufficient room available on this form for number of securities to.

be delivered, please fax additional forms.

PARTICULARS OF SECURITIES TO BE TRANSFERRED TO THE RESERVE BANK.**BONDS**

TYPE (e.g. R150)	NOMINAL	Ytm	MARKET VALUE
TOTAL			

BILLS

TYPE	NOMINAL	DAYS TO MATURITY	DISCOUNT RATE	MARKET VALUE
TOTAL				

Source: SARB, 1998g: 11

APPENDIX IV (b)**MARGIN TRANSFER BY THE SARB****BONDS**

TYPE (eg. R150)	NOMINAL	Ytm	MARKET VALUE
TOTAL			

BILLS

TYPE	NOMINAL	DAYS TO MATURITY	DISCOUNT RATE	MARKET VALUE
TOTAL				

Source: SARB, 1998g: 11

BIBLIOGRAPHY

ABSA Bank, 1998. *The Future Course of Monetary Policies in South Africa*. ABSA Bank: Johannesburg.

Barnard, L, 1998. *Practical Functioning of the New Accommodation System*. South African Reserve Bank Training Institute: Pretoria.

Bank of International Settlements, 1983. "The International Interbank Market: A Descriptive Study", in *Bank of International Settlements Economic Paper (8)*. Bank of International Settlements: Basle.

Barro, RJ & Grossman, HI, 1971. "A General Disequilibrium Model of Income and Employment". *The American Economic Review*. 61, 82-93.

Bernanke, B & Mihov, I, 1996. *What does the Bundesbank Target?* National Bureau of Economic Research, Inc: Cambridge.

Brunner, K & Meltzer, A, 1993. *Money and the Economy: Issues in Monetary Analysis*. Cambridge University Press: Cambridge.

Chrystal, K & Price, S, 1994. *Controversies in Macroeconomics*. Harvester Wheatsheaf: New York.

Clarida, R & Gertler, M, 1996. *How the Bundesbank Conducts Monetary Policy*. National Bureau of Economic Research, Inc: Cambridge.

Davidson, P, 1991. *Controversies in Post-Keynesian Economics*. Edward Elgar Publishing: England.

Davidson,P, 1981. "Post Keynesian economics: solving the crisis in economic theory", in Kristol,I, Bell,D. *The Crisis in Economic Theory*. Basic Books: New York.

De Kock, GPC, 1981. "New Developments in Monetary Policy in South Africa". *South African Journal of Economics*. 49,4: 321-333.

De Kock, GPC, 1983. *Present Monetary Policy in South Africa*. Government Printers: Pretoria.

De Wet, GL, 1986. "Monetary Control as seen by the De Kock Commission: An Assessment". *South African Journal of Economics*. 54,1:9-21.

De Wet, GL, Jonkergouw, E & Koekemoer, R, 1995. "An Econometric Model for Monetary Policy in South Africa". *South African Journal of Economics*. 63,4: 577-597.

Dennis, G, 1981. *Monetary Economics*. Longman: London.

Deutsche Bundesbank, 1989. *The Monetary Policy of the Bundesbank*. Deutsche Bundesbank: Frankfurt Am Main.

Deutsche Bundesbank, 1995. *The Monetary Policy of the Deutsche Bundesbank: Its Monetary Policy, Instruments, and Functions (3 ed)*. Deutsche Bundesbank: Frankfurt Am Main.

Dudler, HJ, 1986. "Changes in Money Market Instruments and Procedures in Germany", in Bank of International Settlements: *Changes in Money Market Instruments and Procedures: Objectives and Implications*. Bank of International Settlements: Basle.

Edkins, BIM, 1989. "The Domestic Money Supply: Friedman and his Post-Keynesian Critics". *Journal for Teachers of the Economic Sciences*. 3:7-14.

Eichner, AS, 1980. *A Guide to Post-Keynesian Economics*. Macmillan: London.

Eizenga, W, 1987. "The Independence of the Deutsche Bundesbank and the Nederlandse Bank with regard to Monetary Policy: A Comparative Study". *Monetary Policy and Financial Systems 2*. SUERF Papers: The Netherlands.

Eltis, WA & Sinclair, PJN, 1988. *The Money Supply and the Exchange Rate*. Clarendon Press: Oxford.

European Communities Monetary Committee, 1972. *Monetary Policies in the Countries of the European Communities Institutions and Instruments*. European Communities Monetary Committee: London.

Falkena, HB, Fourie, LJ, Kok, WJ, 1984. *The Mechanics of the South African Financial System: Financial Instruments and Markets*. Macmillan: Johannesburg.

Gidlow, RM, 1985. "The Modified Role of Discount Houses and Accommodation Policies of the Reserve Bank". *South African Journal of Economics*. 53,1:67-81.

Gidlow, RM, 1995. *South African Reserve Bank Policies under Dr Gerhard De Kock (1981-1989)*. Government Printers: Pretoria.

Guma, XP, 1999. *Lecture Notes on Monetary Control Procedures in South Africa*. Rhodes University: Grahamstown

Hamburger, MJ, 1970. "Money within the General Framework of the Economic System: Indicators of Monetary Policy: The Arguments and the Evidence". *American Economic Review*. 60, 2: 32-53.

Havrilesky, TM & Boorman, JT, 1976. *Current Issues in Monetary Theory and Policy*. AHM Corporation: Arlington Heights ILL

Healey, N, 1992. *The Macroeconomic Environment*. London: Weidenfeld and Nicolson.

Hugo, C, 1998. *The Contra Account System: Historical Developments and Proposed Adjustments*. South African Reserve Bank: Pretoria.

Jahnke, W & Reimers, HE, 1995. "The Transmission of Monetary Policy in the Econometric Model of the Deutsche Bundesbank for the German Economy", in Bank of International Settlements, *Financial Structure and the Monetary Policy Transmission Mechanism*. Bank of International Settlements: Basle.

Kantor, BS, 1986. "The De Kock Report: A Monetarist Perspective". *South African Journal of Economics*. 54,1:94-107.

Keynes, JM, 1936. *The General Theory of Employment, Interest and Money*. Macmillan: London.

Lavoie, M, 1992. *Foundations of Post-Keynesian Economic Analysis*. Aldershot Elgar: United States.

Levacic, R & Rebman, A, 1982. *Macroeconomics: An Introduction to Keynesian Neo-classical Controversies*. Macmillan: London.

Lipsey, RG, Steiner, PO, Purvis, DD & Courant, PN, 1990. *Economics*. (9 ed) Harper Row Publishers: United Kingdom.

London School of Economics, 1994. *The Domestic Money Markets in the UK, France, Germany, and the US*. London Business School: London.

Mboweni, T.T. 2000. *The Role of the South African Reserve Bank in the Economy*. Address at the Pretoria Council for Businesswomen. Pretoria.

Meijer, JH, 1996. "Monetary Policy", in Fourie, LJ, Falkena, HB, & Kok, WJ. *Fundamentals of the South African Financial System*. Southern Book Publishers: Halfway House

Meijer, JH, 1997. *Reserve Bank Accommodation: The Money Market Shortage and Monetary Policy*. ABSA Bank. March 1997.

Meijer, JH, 1999. *Alternatives in the conduct of Monetary Policy: The South African Reserve Bank's New Monetary Policy Operational Procedures*. Rand Afrikaans University: Johannesburg.

Meltzer, AH, 1995. "Money, Credit, and other Transmission Processes: A Monetarist Perspective". *Journal of Economic Perspectives*. 9,4:49-72.

Mishkin, FS, 1995. "Symposium on the Monetary Transmission Mechanism". *Journal of Economic Perspectives*. 9,4:3-10.

Morgan, B, 1979. *Monetarists and Keynesians: Their Contributions to Monetary Theory*. Macmillan Press: London.

Natrass, N, 1995. *Intermediate Macroeconomics Theory*. David Phillip: Cape Town.

Nel, H, 1994. "Monetary Control and Interest Rates during the Post De-Kock Commission Period". *South African Journal of Economics*. 6,1:14-27.

Pierce, D & Tysome, P, 1985. *Monetary Economics: Theory, Evidence and Policy*. Butterworths: London.

Rogers, C, 1985. "The Monetary Control System of the South African Reserve Bank: Monetarist or Post-Keynesian?" *South African Journal of Economics*. 53,3:241-247.

Rogers, C, 1986. "The De Kock Report: A Critical Assessment of the Theoretical Issues". *South African Journal of Economics*. 54,1:66-79.

RSA (Republic of South Africa), 1985. *Final Report of the Commission of Enquiry into the Monetary System and Monetary Policy in South Africa. De Kock Commission*. Government Printers: Pretoria

Schachter, A & Stokman, ACJ, 1995. "Interest Rate Policy of the Deutsche Bundesbank: An Econometric Analysis for 1975 to 1992". *The Economist* 143(4).

Schmid, P & Asche, H, 1997. *Monetary Policy Instruments and Procedures in Germany - Evolution, Deployment and Effects*. Bank of International Settlements: Basle.

Schmid, P & Jerrmann, H, 1991. "Federal Republic of Germany: Old and New Problems posed by a target guided Monetary Policy", in Bank of International Settlements: *Orientation of Monetary Policy and the Monetary Policy Decision Making Process*. Basle

Schoombee, G.A., 1996. "Recent Developments in Monetary Control Procedures in South Africa." *South African Journal of Economics*. 64,1: 83-96.

Snowdon, B, Vane, H & Wynarczyk, P, 1995. *A Modern Guide to Macroeconomics: Introduction to Competing Schools of Thought*. Edward Elgar Press: Vermont.

South African Reserve Bank, 1996. *Annual Economic Report*. Government Printers: Pretoria.

South African Reserve Bank, 1997a. *Quarterly Bulletin*, March.
Government Printers: Pretoria.

South African Reserve Bank, 1997b. *Quarterly Bulletin*, September.
Government Printers: Pretoria.

South African Reserve Bank, 1997c. *Quarterly Bulletin*, December.
Government Printers: Pretoria.

South African Reserve Bank, 1997d. *Annual Economic Report*.
Government Printers: Pretoria.

South African Reserve Bank, 1998a. *Quarterly Bulletin*, March.
Government Printers: Pretoria.

South African Reserve Bank, 1998b. *Quarterly Bulletin*, June.
Government Printers: Pretoria.

South African Reserve Bank, 1998c. *Quarterly Bulletin*, September.
Government Printers: Pretoria.

South African Reserve Bank, 1998d. *Quarterly Bulletin*, December.
Government Printers: Pretoria.

South African Reserve Bank, 1998e. *Annual Economic Report*.
Government Printers: Pretoria.

South African Reserve Bank, 1998f. *The Reserve Bank System of
Accommodation*. Government Printers: Pretoria.

South African Reserve Bank, 1998g. *South African Reserve Bank Repurchase Operations in the Domestic Money Markets: Operational Notice*. Government Printers: Pretoria.

South African Reserve Bank, 1998h. *NPS Update version 3(1)*. June. South African Reserve Bank: Pretoria.

South African Reserve Bank, 1999a. *Quarterly Bulletin*, March. Government Printers: Pretoria.

South African Reserve Bank, 1999b. *Quarterly Bulletin*, June. Government Printers: Pretoria.

South African Reserve Bank, 1999c. *Quarterly Bulletin*, December. Government Printers: Pretoria.

South African Reserve Bank, 1999d. *Annual Economic Report*. Government Printers: Pretoria.

South African Reserve Bank, 2000. *Annual Economic Report*. Government Printers: Pretoria.

South African Reserve Bank Training Institute, 1997a. *Introduction to Central Banking*. Course Material: South African Reserve Bank Training Institute: Pretoria.

South African Reserve Bank Training Institute, 1997b. *Monetary Policy*. Course Material: South African Reserve Bank Training Institute: Pretoria.

South African Reserve Bank Training Institute, 1998. *Introduction to Central Banking*. Course Material: South African Reserve Bank Training Institute: Pretoria.

South African Reserve Bank Training Institute, 1999. *Monetary Policy*. Course Material: South African Reserve Bank Training Institute: Pretoria.

Stals, C, 1996a. *The Monetary Policy of the South African Reserve Bank*. Address at a business conference on South African/Italian Economic Relations. Johannesburg, 23 April.

Stals, C, 1996b. *The Role of Monetary Policy*. Address at a conference on "Growing the South African Economy", arranged by the Bureau of Economic Research of the University of Stellenbosch, 8 November.

Stals, C, 1997a. *Monetary Policy: Options and Strategies*. Address at the 20th Annual Investment Conference of Societe Generale, Frankel Pollak (Pty) Ltd, Johannesburg, 18 February.

Stals, C, 1997b. *The Role of Central Banks in Today's Economies: The Experience of South Africa*. Address at a conference on current economic policy issues, arranged by the Economics Department of the University of Durban-Westville, and the Mercury. Durban, 25 April.

Stals, C, 1997c. *South Africa: Opportunities and Concerns*. Address at Forex'97:39th International Congress of the Association of Cambiste International, Toronto, Canada, 30 May.

Stals, C, 1997d. *Monetary Policy Challenges in South Africa*. Address at a conference on South Africa's Financial Markets, arranged by Standard Bank of South Africa. Cape Town, 7 November.

Stals, C, 1997e. *The Current Monetary Situation and Implications for 1998*. Address at a conference arranged by Huysamer Stals. Johannesburg, 18 November.

Stals, C, 1998a. *Monetary Policy and the Reserve Bank Accommodation Procedures*. Statement issued by Dr. Chris Stals, Governor of the South African Reserve Bank, 7 March.

Stals, C, 1998b. *Monetary Policy in South Africa*. Address at the International Conference: "South Africa and the Emerging Markets", organised by the Department of Economics, Faculty of Commerce and Administration of the University of Durban-Westville, Sandton, 24 April.

Stals, C 1998c. *Reserve Bank Accommodation Procedures*. Statement issued by Dr. Chris Stals, Governor of the South African Reserve Bank, 14 May, Pretoria.

Stals, C, 1998d. *The Economy from a Monetary Perspective*. Address at the 1998 Mid-Year Economic Outlook Seminar of the South African Chamber of Business, Witkoppen, 30 July.

Stals, C, 1999a. *Statement of the Monetary Policy*. Issued by Dr. Chris Stals, Governor of the South African Reserve Bank, 10 March.

Stals.C, 1999b. *Inflation Targeting as an anchor for Monetary Policy in South Africa*. Address at a breakfast meeting of the Johannesburg branch of the Institute of Bankers in South Africa, 17 March.

Stals, C, 1999c. *Challenges to Monetary Policy in an Increasingly Volatile International Markets*. Address at a conference on the “South African Economy in a world of volatile Financial Markets”, arranged by the Bureau for Economic Research, at the University of Stellenbosch, Johannesburg, 25 May.

Stals, C, 1999d. *Reserve Bank Accommodation Procedures*. Statement issued by the SARB, 23 June, Pretoria.

Stals, C, 1999e. *A Universal Framework for Monetary Policy*. Notes on a presentation to post-graduate students at the University of Pretoria.

Struthers, J & Speight, H, 1986. *Money Institutions, Theory and Policy*. Longman: London

Van den Heever, J, 2000. *Personal Communication*. South African Reserve Bank: Pretoria.

Van der Merwe, EJ, 1997a. *South African Monetary Policy: Where are we heading?* Address at the conference of the Institute for Strategic Studies and the Graduate School of Management at the University of Pretoria, 14 August.

Van der Merwe, EJ, 1997b. *Discussion Paper on Monetary Policy Operational Procedures*. SARB, October, Pretoria.

Van der Merwe, JJO, 1998. *The South African Interbank Market*. Unpublished Departmental Memorandum. SARB: Pretoria.

Van der Walt, SJ, Wesso, GR, Morudu, MD, 1999. *The Money Market in South Africa*. Unpublished Departmental Memorandum. SARB: Pretoria.

Vane, H, 1979. *Monetarism: Theory, Evidence and Policy*. New York: Wiley Publications.