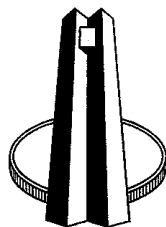


The monetary transmission mechanism in South Africa

by M M Smal and S de Jager

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Contents

	Page
1. Introduction.....	1
2. Monetary policy in South Africa over the past two decades....	2
3. The monetary transmission mechanism	5
4. A graphical exploration of channels in monetary policy transmission.....	6
4.1 Interest rate channel.....	6
4.2 Other asset price channels.....	8
4.3 Credit channel.....	9
5. Illustration of the monetary transmission mechanism by means of a model	9
6. Concluding remarks.....	14
References	15

List of graphs

Graph 1: M3 money supply growth and the M3 target ranges	3
Graph 2: Change in central bank interest rate.....	4
Graph 3: Nominal interest rates.....	7
Graph 4: Real private consumption expenditure, real fixed capital formation and real prime rate	7
Graph 5: Net exports as percentage of gross domestic product and the real prime rate	8
Graph 6: The simulated adjustments to the repurchase rate	11
Graph 7: The simulated results to the real exchange rate.....	11
Graph 8: The simulated results to real gross domestic demand.....	12
Graph 9: The simulated results to the real gross domestic product.....	13
Graph 10: The simulated results to rate of inflation.....	13

Diagram

Diagram 1: Monetary policy transmission mechanism	5
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by M M Smal and S de Jager¹

The South African Reserve Bank adopted an inflation targeting monetary policy framework in February 2000. This is essentially forward-looking, in that a specific target for inflation has to be met within a predetermined time. The forward-looking nature of the framework makes it imperative to understand and acknowledge the time lag for monetary policy to impact on the real economy and eventually inflation, i.e. the transmission mechanism of monetary policy. This paper firstly investigates the evolution of monetary policy in South Africa since the 1980s, before briefly discussing the various channels of the transmission mechanism. A small model was developed for this article to illustrate the various channels of the transmission mechanism and demonstrate the time lags of a monetary policy initiative. The results of the model indicate that there is a fairly long time lag of approximately one year before a change in monetary policy affects the level of real economic activity, and another year before it has an effect on the domestic price level. However, the study concludes with a word of caution that the actual effects of the monetary policy initiative may change over time and that the magnitude and time lags of these effects will depend on various factors prevalent at that particular time.

1. Introduction

Central banks often have to act or react in response to actual, perceived or anticipated events. In the ever-changing internationalised economy, the South African monetary authorities have increasingly become exposed to numerous challenges in their efforts to achieve domestic price and financial market stability. Throughout the world, most central bank policy initiatives have been aimed at achieving and maintaining price stability and the South African Reserve Bank is no exception to this rule. In this regard, the Bank's primary objective remains protecting the value of the currency so as to achieve balanced and sustainable economic growth over the long term. This objective has become entrenched in the Bank's monetary policy formulation and implementation procedures and it has been articulated in both the Constitution of the Republic of South Africa, Act No. 108 of 1996, and in the South African Reserve Bank Act, Act No. 90 of 1989.

When the central bank decides on a route or action to be taken, it sets in motion a series of economic events. The sequence of events starts with the initial influence on the financial markets, which in turn slowly works its way through to changes in current expenditure levels (especially private consumption and investment). Changes in domestic demand influence the current production levels, wages and employment, and in the process eventually leads to a change in the domestic prices, i.e. the rate of inflation. Economists refer to this chain of developments as the "transmission mechanism of monetary policy".

Since there are long lags in the transmission mechanism (i.e. between monetary policy initiatives and the rate of inflation), the chain of events emanating from a change in the Reserve Bank's repurchase rate needs to be studied and analysed conclusively. The study of these intricate links between the key economic variables will ensure that correct policy measures are taken now to affect a specific outcome in future. The purpose of this study is therefore to give a short description of monetary policy developments and how the monetary transmission mechanism has evolved in South Africa over the past two decades. Specific reference will also be made to the new inflation-targeting monetary policy framework. Sections 3 and 4 refer to the various channels of the monetary transmission mechanism, and the final section considers the use of a macro-econometric model in an effort to describe the monetary policy initiative and the time lags before its impact on the domestic economy and inflation.

¹ Valuable assistance in the paper's preparation was provided by M Mashiane, M van Zyl and M G Ferreira. Assistance in the form of helpful comments and suggestions by various staff members of the Research Department is also gratefully acknowledged.

2. Monetary policy in South Africa over the past two decades

The De Kock Commission of Inquiry into the Monetary System and Monetary Policy in South Africa (De Kock, 1985) laid the foundation for monetary policy implementation during the 1980s. The report proposed a monetary policy model firmly directed towards the overall objective of maintaining a stable financial environment, which was very much in line with the actions taken in most developing countries during that time. Most central banks viewed a stable financial environment as a precondition for low rates of domestic price increases, i.e. a rate of inflation that would have no material effects on the decision-making processes of all the participants in the economy.

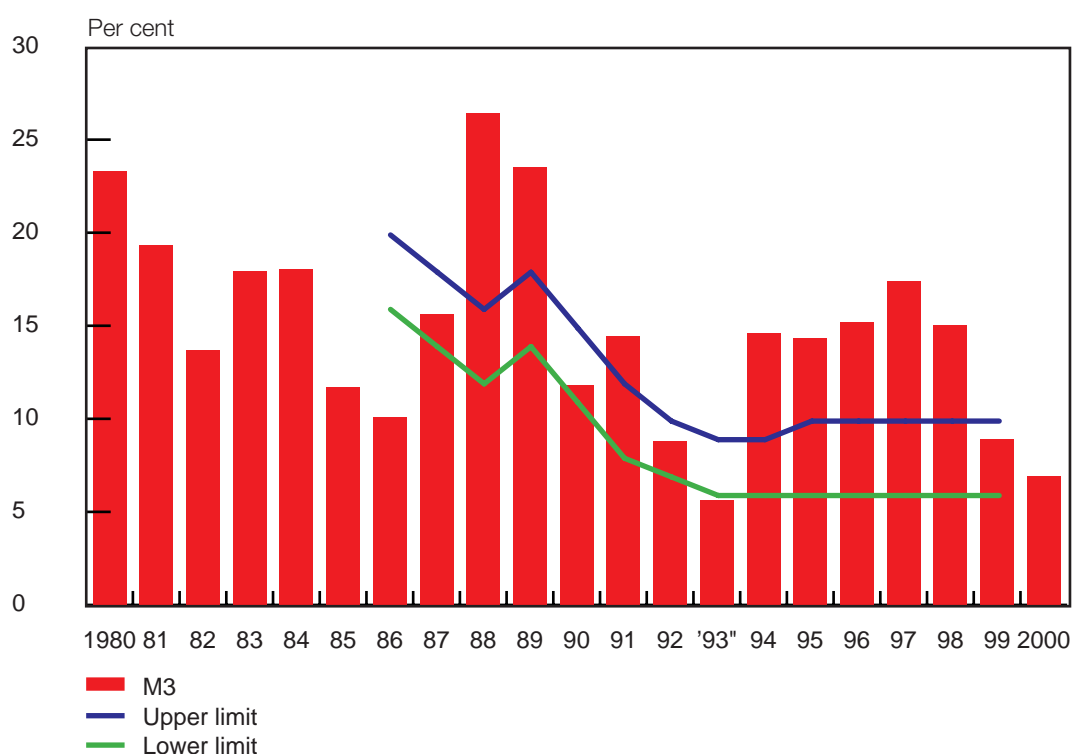
The monetarist approach to monetary policy in South Africa during the 1980s did not imply that the central bank was absolutely resolute in its policy initiatives. On the contrary, it did have sympathy for national objectives such as the generation of economic growth, the creation of job opportunities and the improvement in the living conditions of the average citizen. However, it was believed that maximum economic development could only be achieved and sustained in an environment in which the financial conditions were stable (Stals, 1997). The De Kock report summarises its findings by stating that higher rates of inflation will impede real growth and employment in the long run, and that balance of payments objectives, growth and employment can best be supported by maintaining a climate of reasonable domestic price stability (De Kock, 1985: A10).

The strategy recommended by the De Kock Commission and followed by the South African Reserve Bank in its pursuance of protecting the value of the currency was initially based on monetary targeting. This strategy essentially anchored monetary policy decisions to changes in the growth rate of the domestic M3 money supply. Broad money supply targets were announced for the first time in the second half of 1985 for the period starting in the last quarter of 1985. In the first quarter of each subsequent year, a target for M3 growth was announced. Graph 1 illustrates the target ranges, later referred to as “guidelines”, and the actual growth in the M3 money supply. M3 growth was brought within the target range in 1992 and undershot the target range in 1993. The target was substantially overshot in subsequent years before declining again to fall within the target range in February 1999 (Casteleijn, 2000).

The relationship between M3 and the demand for goods and services was significantly changed by the growing integration of global financial markets, the liberalisation of the South African capital market, the relaxation of exchange controls, and financial deepening in the form of the extension of banking services to the previously unbanked. Van der Merwe (1997) notes that the pursuance of price stability was made even more difficult by the fact that the complex transmission mechanism of monetary policy had become distorted by these changing world conditions. The relationship between changes in interest rates, money supply and the inflation rate had now become far more obscure under these liberalised conditions than in the period in which South Africa was to a great extent isolated from external foreign influences. As a result of the increased volume of international capital flows, the effect of changing domestic interest rates began to reflect the change in the external value of the rand, i.e. the exchange rate. This had the ultimate effect that longer time lags had become discernible between the policy change and its desired impact on the real economy and inflation.

It was essentially these changes in the transmission mechanism of monetary policy that eventually affected the credibility of the money supply as the intermediate

Graph 1 M3 money supply growth and the M3 target ranges



guideline of monetary policy. As international capital flows and developments in domestic financial markets began to obscure the transmission mechanism of monetary policy, it became apparent that the change in the money supply had become a less reliable indicator of underlying inflation, and therefore also a less reliable anchor for monetary policy.

The South African Reserve Bank accordingly started to move away from formally targeting the money supply and began using a far broader range of economic indicators for the determination of its policy actions, called the eclectic approach to monetary policy decision-making. According to Stals (1997) the wider range of indicators included in this approach consisted of

- changes in bank credit extension;
- the overall liquidity in the banking system;
- the level of the yield curve;
- changes in the official foreign reserves and in the exchange rate of the rand; and
- actual and expected movements in the rate of inflation.

At the time, many countries had shifted their monetary policy efforts towards inflation targeting as a means of ensuring price and financial market stability. Stals (1998) commented that South Africa should also gradually move towards a similar situation, and that in the absence of a predetermined inflation target, the Bank should strive to bring inflation down to the average of South Africa's major trading-partner countries, i.e. inflation rates of between 1 per cent and 5 per cent.

The repurchase rate (repo) system² was introduced on 9 March 1998 in an effort to ensure that financial instruments become more flexible and that interest rates would react more quickly and sensitively to the periodic changes in the underlying financial market conditions. The repo rate system was considered far more transparent than the

² For a detailed discussion on the repo system of Reserve Bank accommodation see van der Merwe (1998) and the statement issued by Stals on 7 March 1998.

previous method of accommodation in that it continuously signals the Bank's policy intentions, i.e. through the regular disclosure of the amount of liquidity that the Bank is prepared to make available on a daily tendering basis to the banking institutions. The most important signal is the amount of liquidity provided by the Bank.

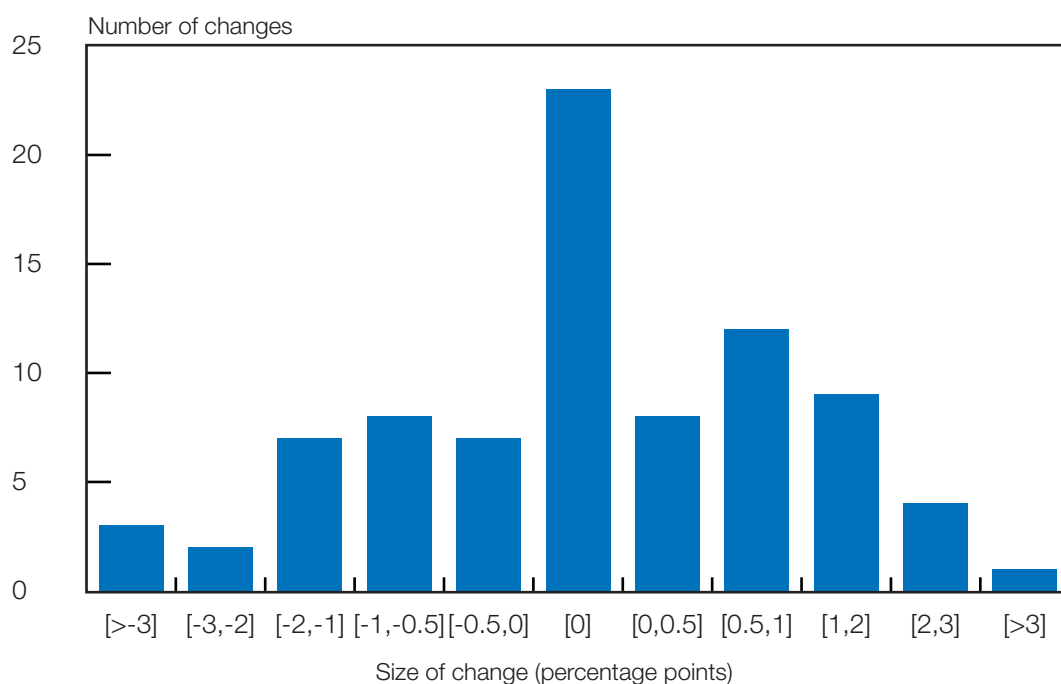
The Minister of Finance announced on 23 February 2000 that inflation targeting would be the new monetary policy framework in South Africa and that the government had decided to set an inflation target range of 3 to 6 per cent for the year 2002. The primary objective of monetary policy would remain the protection of the value of the currency in order to obtain balanced and sustainable economic growth in the country.

Monetary policy is forward-looking, i.e. because of the long lags (from about 18 to 24 months) that monetary policy initiatives take to make their mark on inflation (Mboweni, 2000: 67). Although the adoption of this framework implies that the central bank must remain resolute in its efforts to achieve the target, it does not necessarily mean that the monetary authorities are left without any form of discretion. The Bank will accordingly monitor domestic economic developments closely in order to determine the origin and likely impact of any subversive shock or impediment to its ultimate goal in achieving the target. Allowance will be made for serious supply shocks. If such shocks do occur, the public will be informed of the likely consequences for the attainment of the inflation target.

The monetary policy stance will also be communicated regularly to the public. A monetary policy statement is released after every meeting of the Monetary Policy Committee. A Monetary Policy Forum, which meets twice a year in the major centres of South Africa, has also been established for ongoing discussions on monetary policy. In addition, a Monetary Policy Review is published twice a year to increase transparency in the application of monetary policy.

Graph 2 shows the size of the quarterly changes in the South African Reserve Bank's official discount rate relative to the number of changes of that particular magnitude

Graph 2 Change in central bank interest rate

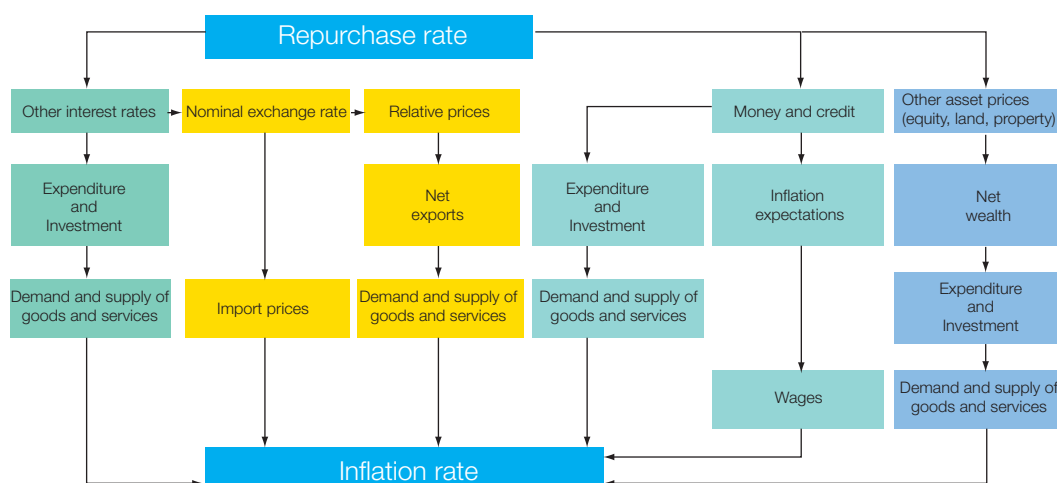


since 1980. The modal, or most frequent, event is for the Reserve Bank not to change its interest rate, in line with the frequency observed in other central banks worldwide (Mahadeva & Sinclair, 2001). From the graph it can be deduced that when South African official rates do change, the changes, measured over one quarter, are usually between 50 and 200 basis points. This is similar to the quarterly changes in central bank rates observed in OECD countries. This compares to the quarterly changes of at least 300 basis points in central bank rates in much of Latin America and the transition countries. By contrast, many African and Asian countries appear loath to change their central bank interest rates at all (Mahadeva & Sinclair, 2001). Given that these changes refer to nominal interest rates, one should take the levels of inflation in the various regions into consideration when analysing the magnitude of change.

3. The monetary transmission mechanism

When the Reserve Bank decides to influence the change in the repurchase rate, it sets in motion a series of economic events. Economists refer to this chain of developments as the “transmission mechanism of monetary policy”. The main links in the transmission mechanism of monetary policy, depicted in the flow chart in Diagram 1, can be briefly described as follows: the main instrument for monetary policy is the repurchase (or repo) rate. The repo rate has direct effects on other variables in the economy, such as other interest rates, the exchange rate, money and credit, other asset prices and decisions on spending and investment. So, changes in the repo rate affect the demand for and supply of goods and services. The pressure of demand relative to the supply capacity of the economy is a key factor influencing domestic inflationary pressures. Inflation is, amongst others, the result of pressures originating in the labour market and/or the market for goods and services as well as a result of imported inflation, which is influenced by exchange-rate movements.

Diagram 1 Monetary policy transmission mechanism



The size of the change in any central bank’s interest rate is not a good indication of the likely impact of monetary policy on that economy. If market interest rates, the exchange rate of the rand, credit or other asset prices do not respond meaningfully to changes in the official interest rate, monetary policy will have little effect on the economy, i.e. the channels are blocked or not fully functional (*The Economist*, 30 June 2001, p 70).

Central banks change interest rates to stabilise the economy in the face of shocks. However, it should be noted that if successful stabilisation is achieved, the trend in

inflation and output would remain fairly stable, whereas the trend in interest rates would be more volatile. This is because the interest rate was used as an instrument to affect the stability in output and inflation in the first place, so that in hindsight (*ex post*), the link between interest rates, output and inflation becomes somewhat ambiguous. It is hence often erroneously inferred that monetary policy instruments are powerless and unnecessary in a stable economy. Boivin and Giannoni (2001) conclude that what appears to be a decline in the impact of monetary policy is in fact testimony to the improvement in the conduct of monetary policy since the 1980s. Central banks now respond more quickly to changing economic expectations, thus smoothing out the effect of interest rate shocks and reducing the variability of output and inflation.

There are long lags in the transmission mechanism (i.e. between a change in the monetary policy stance and the rate of inflation) and it is important to note that these lags differ from country to country and also within the same country from time to time. The asymmetries in monetary policy transmission are in a large part attributable to the differences in the financial structures, which in turn are due to differences in the legal structures in countries (Cecchetti, 1999). In general, it is accepted that the lag varies between 12 and 24 months, but with rapid financial market innovations and globalisation, this lag may change.

4. A graphical exploration of channels in monetary policy transmission

Through economic research, various models were developed to explore and better understand the channels through which monetary policy affects aggregate demand and ultimately inflation. This section briefly describes some of the channels, or transmission mechanisms, using the categories provided by Mishkin (1995), namely an interest rate channel, other asset price channels and a credit channel.

4.1 Interest rate channel

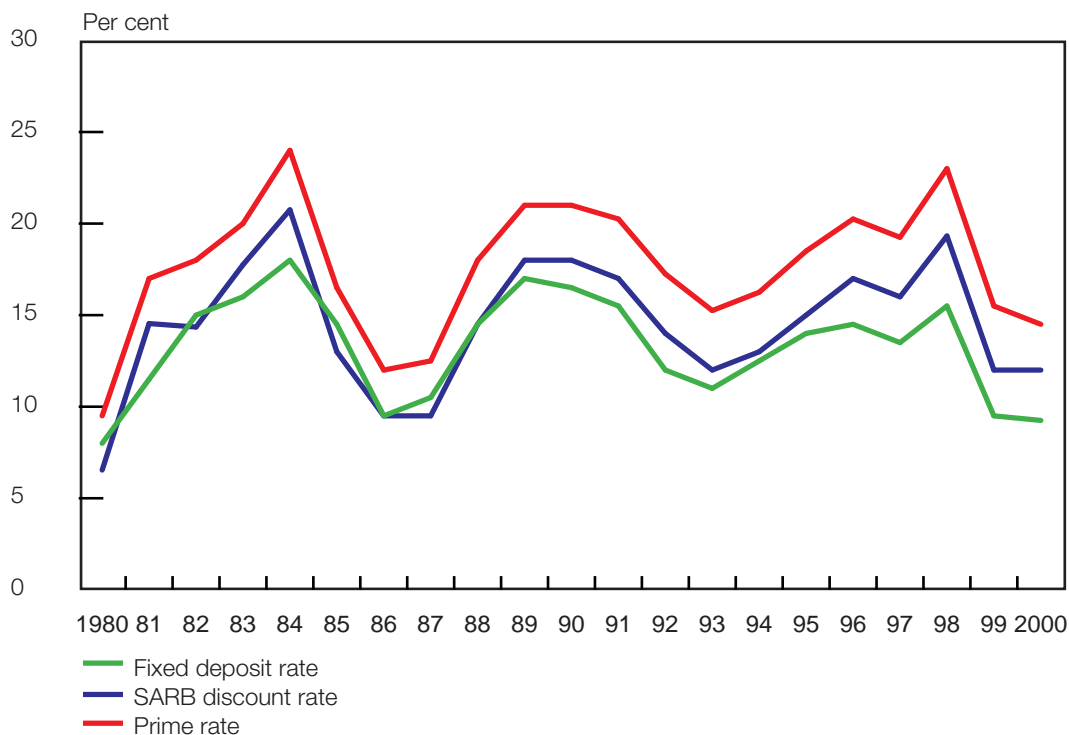
The interest rate impact, i.e. changes in the repo rate, influences the interest rates on retail financial products. Soon after the official rate is changed, domestic banks are inclined to adjust their lending rates, usually, but not necessarily, by the same amount as the policy change. Mahadeva and Sinclair (2001) explore the econometric link between official interest rates and interest rates on loans and deposits in a number of countries. They estimate the long-run effect of official interest rates on deposit rates as 0,935 for South Africa, also finding coefficients close to unitary for the United Kingdom, Germany and Switzerland. Coefficients significantly less than unitary indicate some form of imperfect competition among retail banks, thus weakening the transmission channel via deposit rates to household savings. On loan rates, the long-run relationship for South Africa was estimated as 1,006. Graph 3 shows the relationship between the Reserve Bank discount rate, the prime overdraft rate of commercial banks and the interest rate on fixed deposits. It is clear that these rates move in tandem.

Firms and individuals respond to the change in interest rates by altering their investment and spending patterns. As a result, consumer spending (C), fixed capital formation (I) and real output (y) start to respond. It is precisely through this channel that demand pressures feed through changes in the output gap to inflation.

Following the simple, yet adequate, framework of Mishkin (1995), the interest rate channel can be presented as follows:

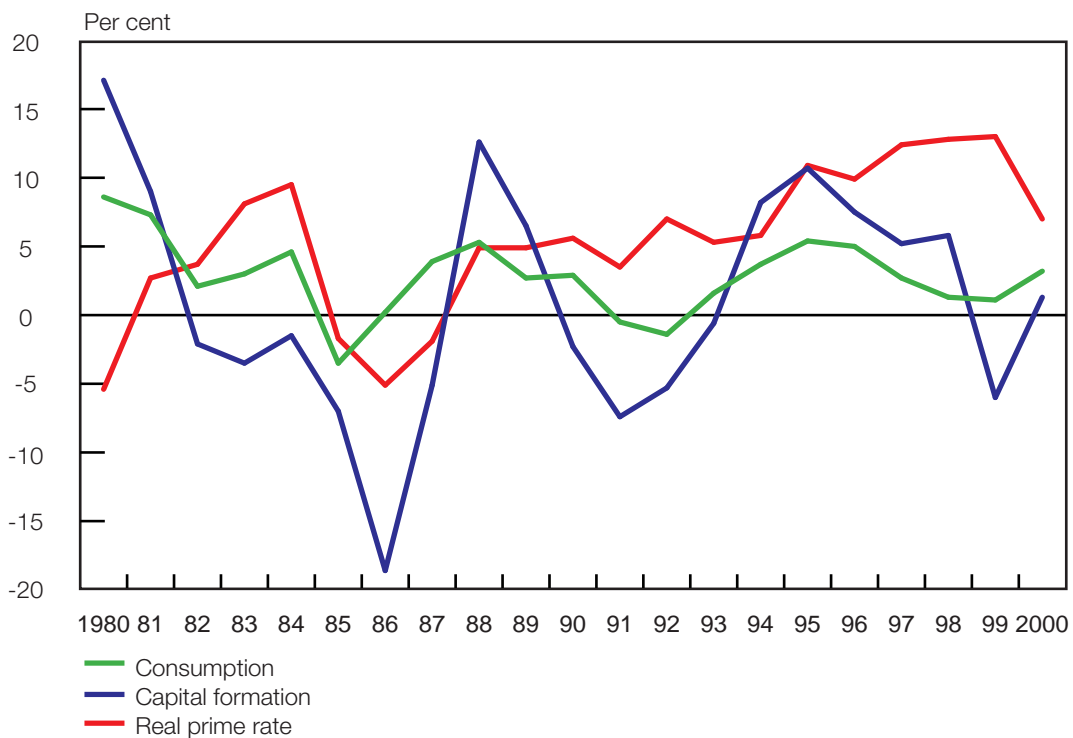
$$\downarrow \text{repo} \rightarrow \downarrow \text{interest rates} \rightarrow (\uparrow I, \uparrow C) \rightarrow \uparrow y$$

Graph 3 Nominal interest rates



Graph 4 shows the changes in real private consumption expenditure, real fixed capital formation and the real prime rate of banks.

Graph 4 Real private consumption expenditure, real fixed capital formation and real prime rate



4.2 Other asset price channels

Other relative asset prices and real wealth are also channels for transmitting monetary effects through the economy. Two other asset prices, those on foreign exchange and equities, in addition to bond prices, act as channels for the transmission of monetary effects.

When South African real interest rates fall, deposits denominated in rand become less attractive than deposits denominated in foreign currencies and the rand depreciates. The lower value of the rand (ER) makes foreign goods more expensive than domestic goods, causing a rise in net exports (NX) and hence in aggregate output. The schematic illustration of the exchange rate channel is:

$$\downarrow \text{repo} \rightarrow \downarrow \text{interest rates} \rightarrow \downarrow \text{ER} \rightarrow \uparrow \text{NX} \rightarrow \uparrow y$$

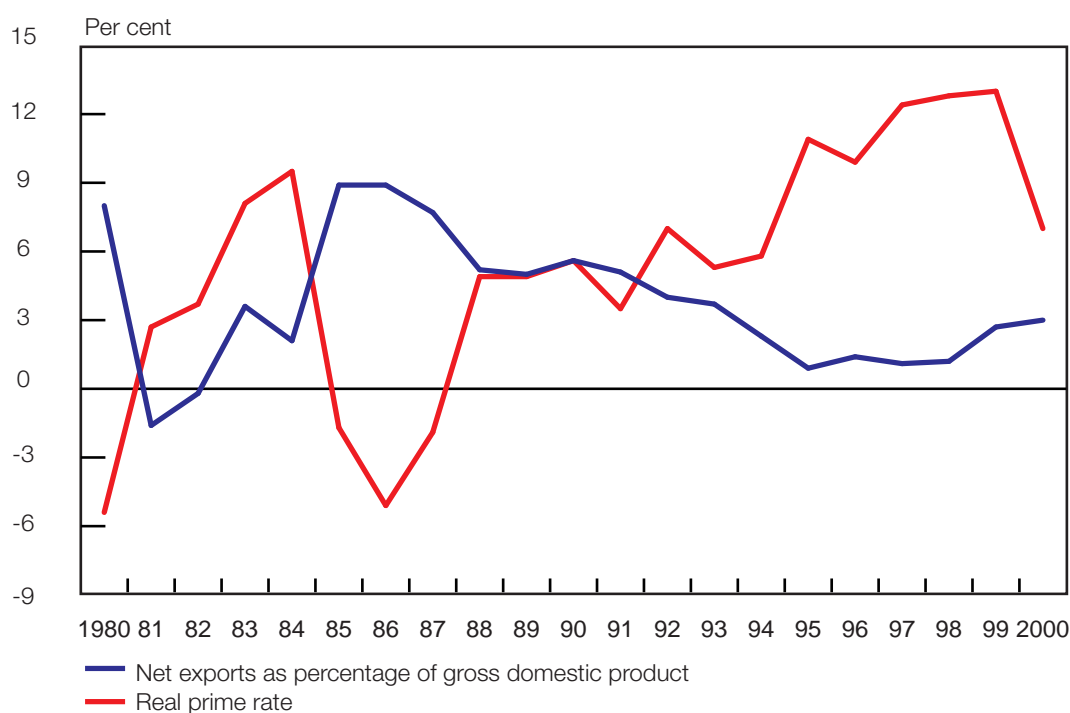
Graph 5 shows the net exports of goods and services as a percentage of gross domestic product and the real prime rate.

A further important consequence of the depreciation of the rand is that it directly increases the cost of imported goods and therefore has a negative effect on the domestic price level, and hence on inflation.

Monetary policy can also affect the economy through its effect on the valuation of equities. As monetary policy is relaxed, the public finds it has more money to spend and one potential place for spending this money is the stock market. The higher demand for stocks leads to a subsequent rise in their prices. Combining higher equity prices with higher investment spending leads to the following schematic transmission of monetary policy:

$$\downarrow \text{repo} \rightarrow \uparrow \text{equity prices} \rightarrow \uparrow I \rightarrow \uparrow y$$

Graph 5 Net exports as percentage of gross domestic product and the real prime rate



For households, wealth is an important component of their lifetime resources. Portfolios consisting of common stocks and property form a major part of an individual's wealth. Monetary policy has the ability to influence the balance sheets of consumers, i.e. their wealth. Relaxing monetary policy will result in an increase in equity and property prices, thereby increasing the lifetime resources of consumers and consequently raising their consumption. Schematically this transmission channel is as follows:

$$\downarrow \text{repo} \rightarrow \uparrow \text{prices on equity, housing, land} \rightarrow \uparrow C \rightarrow \uparrow y$$

As Mishkin (1995) pointed out, this can be a powerful channel that adds substantially to the potency of monetary policy.

4.3 Credit channel

The third channel relates to asymmetric information in financial markets and works firstly, through effects on bank lending and secondly, through effects on the balance sheets of firms and households.

Certain borrowers will not have access to credit markets unless they borrow from banks. Expansionary monetary policy increases bank reserves and bank deposits, thus increasing the amount of loans available. This increase in loans will cause investment and consumer spending to rise. Schematically, the monetary policy effect is represented as:

$$\downarrow \text{repo} \rightarrow \uparrow \text{bank deposits} \rightarrow \uparrow \text{bank loans} \rightarrow \uparrow I, \uparrow C \rightarrow \uparrow y$$

An important implication is that monetary policy through this channel will have a greater effect on those more dependent on bank loans, such as smaller firms, since larger firms have recourse to obtaining funds by issuing new share capital. As circumstances and restrictive regulatory frameworks change to allow banks greater ability to raise funds, the potency of this channel will be reduced (Mishkin, 1995).

The balance sheet channel also arises from asymmetric information in credit markets. The higher net worth of firms and households leads to more collateral available for loans and the banks' potential losses from adverse selection become lower. This, coupled with the improvement in the cash flow situation of firms and individuals, can be represented in the following schematic illustration for the balance sheet channel of monetary policy transmission:

$$\begin{aligned} \downarrow \text{repo} &\rightarrow \uparrow \text{price expectations, } \uparrow \text{cash flow} \rightarrow \downarrow \text{adverse selection,} \\ \downarrow \text{moral hazard} &\rightarrow \uparrow \text{lending} \rightarrow \uparrow I, \uparrow C \rightarrow \uparrow y \end{aligned}$$

5. Illustration of the monetary transmission mechanism by means of a model

The aim of this section is to illustrate the possible macroeconomic impacts of a change in monetary policy. In reality, the economy is continually affected by various external influences and disturbances, and the aim of monetary policy is to return the economy to a state of equilibrium, rather than to disturb it. The actual outcome of a change in the policy stance therefore also depends on the prevailing domestic and foreign economic circumstances. These factors include the extent to which the change in policy adjustment was anticipated, current business and consumer confidence, the

fiscal policy stance, the state of the global economy, and the credibility of the monetary authorities. All these factors (either separately or in combination with one another), have the capacity to influence the eventual magnitude and time-path of the monetary policy response, i.e. the monetary policy transmission mechanism.

A small macroeconomic model, incorporating as fully as possible the channels described, has been developed in an attempt to illustrate the transmission mechanism of monetary policy in South Africa. The repurchase rate is shocked by an increase of 100 basis points from its baseline scenario during the very first year of the three-year simulation period in order to illustrate graphically the change and time lag of the response. The results of the model have been categorised by means of the following two alternative scenarios:

- A one percentage point increase in the repurchase rate;
- A one percentage point increase in the repurchase rate, with a Taylor-type monetary policy reaction function added to the model.

In both scenarios the repo rate is increased by 100 basis points from its baseline level and then kept unchanged for a period of four quarters. The first scenario makes provision for the interest rate differential and purchasing power parity to play a role in the trend in the real exchange rate. The second scenario depicts a situation in which the real exchange rate still reflects the change in the interest rate and inflation differentials, but has the added feature that the repo rate also adjusts to the change in domestic inflation and output by means of a Taylor-type rule.

Taylor (1993) developed the rule as a suitable formulation to set nominal interest rates in reference to a change in domestic growth (or the output gap) and the deviation in the current rate of inflation from the rate specified in the inflation target. The adapted Taylor rule in this analysis is similar to the one used by the Bank of England (Westaway, 1999: 30) and is specified as follows:

$$i = r + \pi_t + \lambda_1 (\pi_t - \pi_t^*) + \lambda_2 (y_t - y_t^*)$$

The adapted Taylor rule therefore implies that nominal interest rates (i) are a function of the equilibrium real interest rate (r), the current rate of inflation (t), current inflation less the inflation target ($\pi_t - \pi_t^*$), and the output gap specified as the excess of actual output over potential output ($y_t - y_t^*$). In this simple rule, the responsiveness of nominal interest rates to the deviation of inflation from target, and the output gap is determined by the weights λ_1 and λ_2 and both are usually set at 0,5 (see Westaway, 1999: 35).

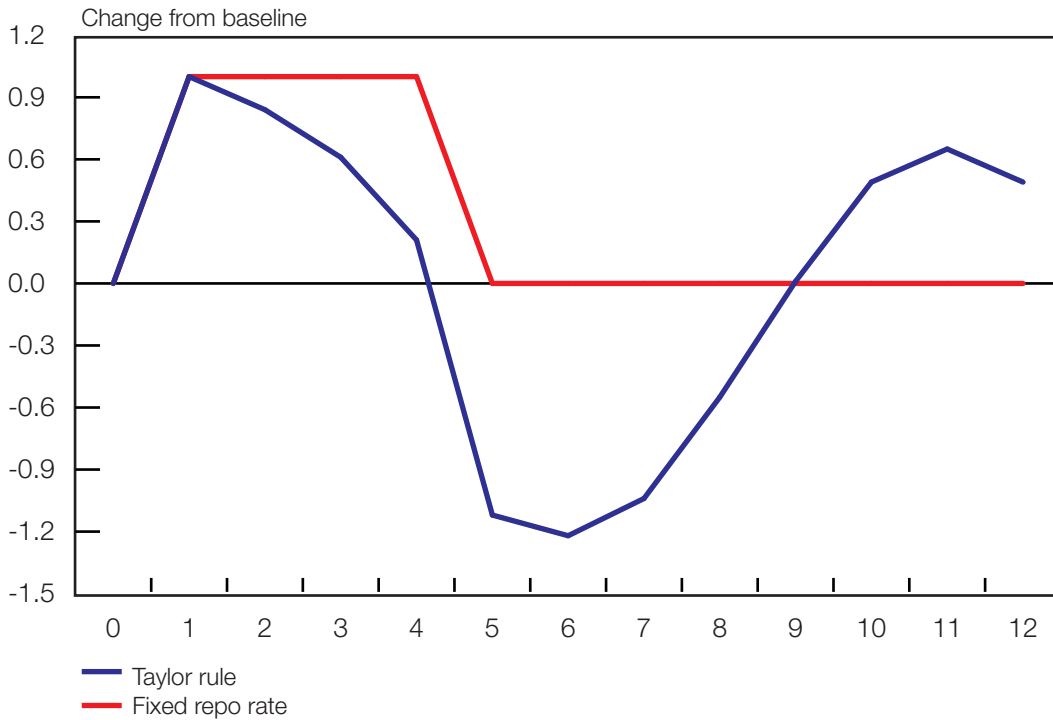
The results show that in both scenarios, the initial impact of the raised level of the interest rate will be to lower real domestic demand (consumption and investment expenditure in particular), and consequently real GDP output. In addition, since the exchange rate is endogenous in the model, the rising repo rate alters the interest rate parity differential between domestic and foreign interest rates, and in this way serves as a means to attract foreign funds. These capital inflows cause the exchange rate of the rand to appreciate and the relative price of imported goods to decline. The next two graphs show the effect of the initial change in the repo rate and the responses that this caused.

Graph 6 shows the 100 basis point adjustment to the repo rate over the first four quarters, and how the repo rate reverts back to the baseline level as from the 5th quarter of the simulation period. The Taylor rule scenario differs in that once the repo rate has been raised and growth and inflation start to decline, there is scope for the

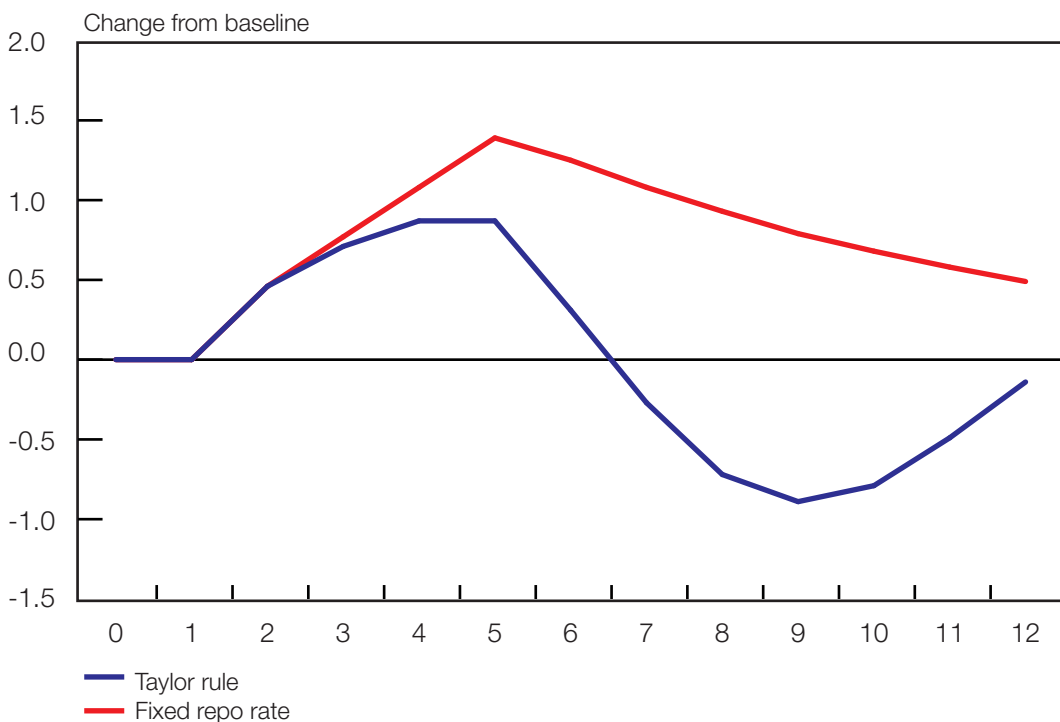
repo rate to be reduced, so that as from the 5th quarter to the 9th quarter the repo rate remains below the baseline level.

Graph 7 shows how the real exchange rate reacts to the change in the repo rate (i.e. the interest rate differential) as well as to the change in purchasing-power parity. The

Graph 6 The simulated adjustments to the repurchase rate



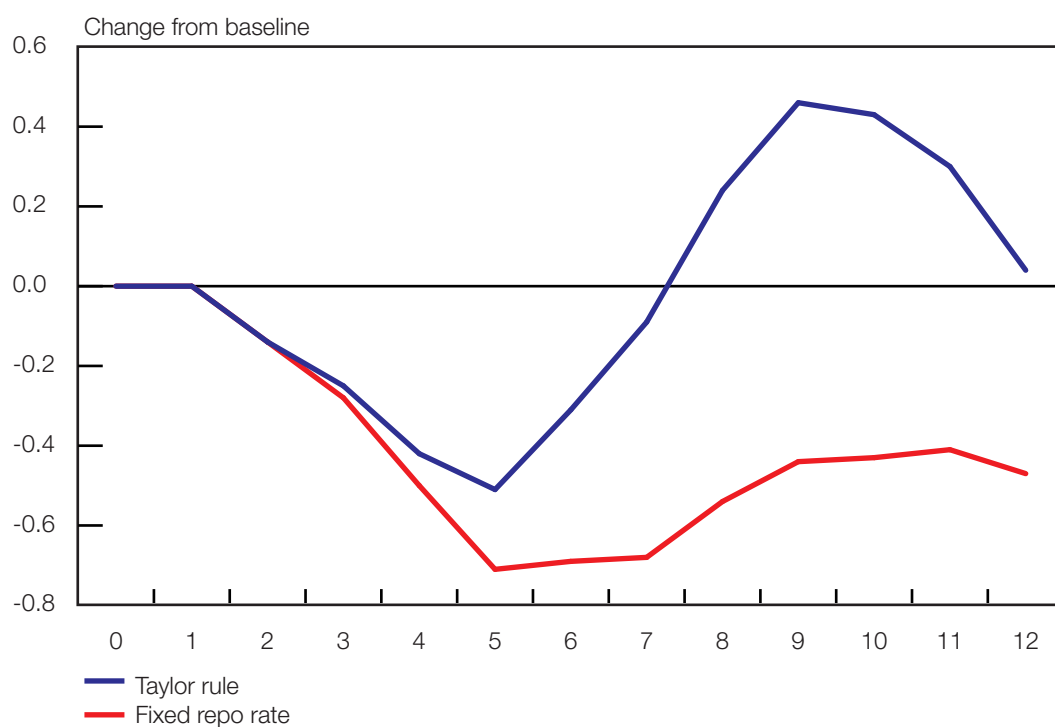
Graph 7 The simulated results to the real exchange rate



graph shows that in both scenarios the depreciation reaches a peak after 5 quarters before returning to the baseline level. After undershooting the baseline level, the rising levels of output and inflation towards the end of the simulation period (caused by the reduced level of the Taylor-rule-adjusted repo rate), essentially mean that the inflation disparity is negated after approximately three years.

The dual effects of the interest rate and the exchange rate on economic activity are illustrated in the following two graphs. Graph 8 depicts the change in the real domestic demand or gross domestic expenditure, and Graph 9 tracks the trend in the real gross domestic product or output. The trends are fairly similar. Domestic demand responds directly to the raised level of interest rates (specifically on household consumption and private investment expenditure), and real output growth reflects both the decline in demand and in net exports, due to the effects of the appreciation of the real exchange rate.

Graph 8 The simulated results to real gross domestic demand

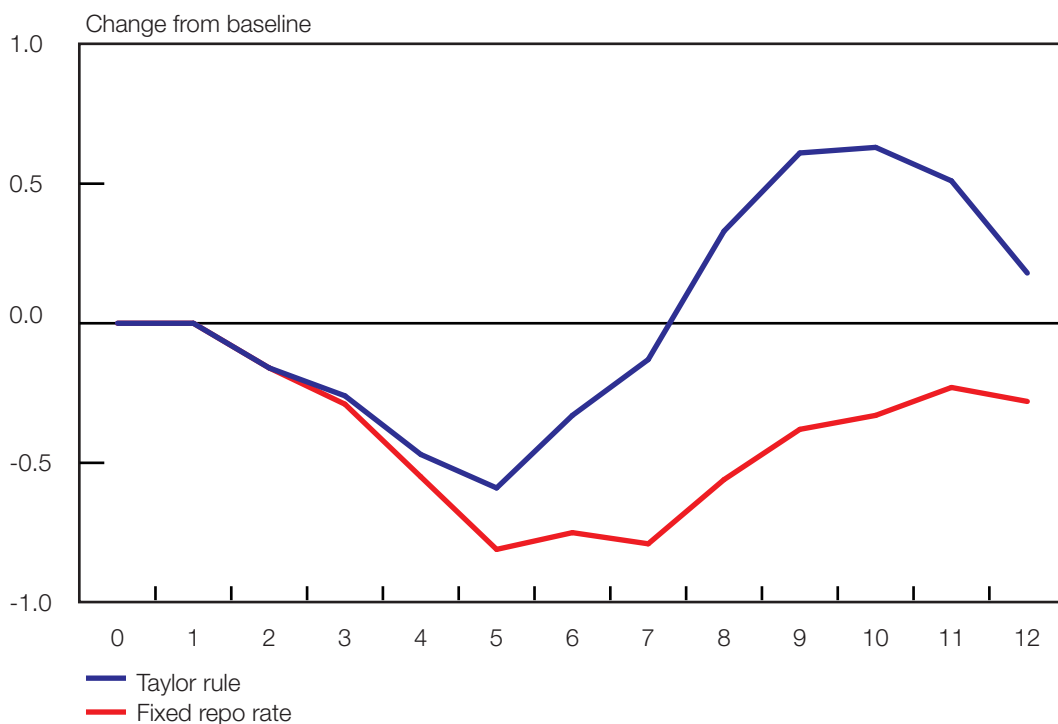


Real demand and gross domestic product output growth both start to fall after the initial policy adjustment, reaching a maximum decline after 5 quarters. From this point on, economic activity starts to return smoothly back to base.

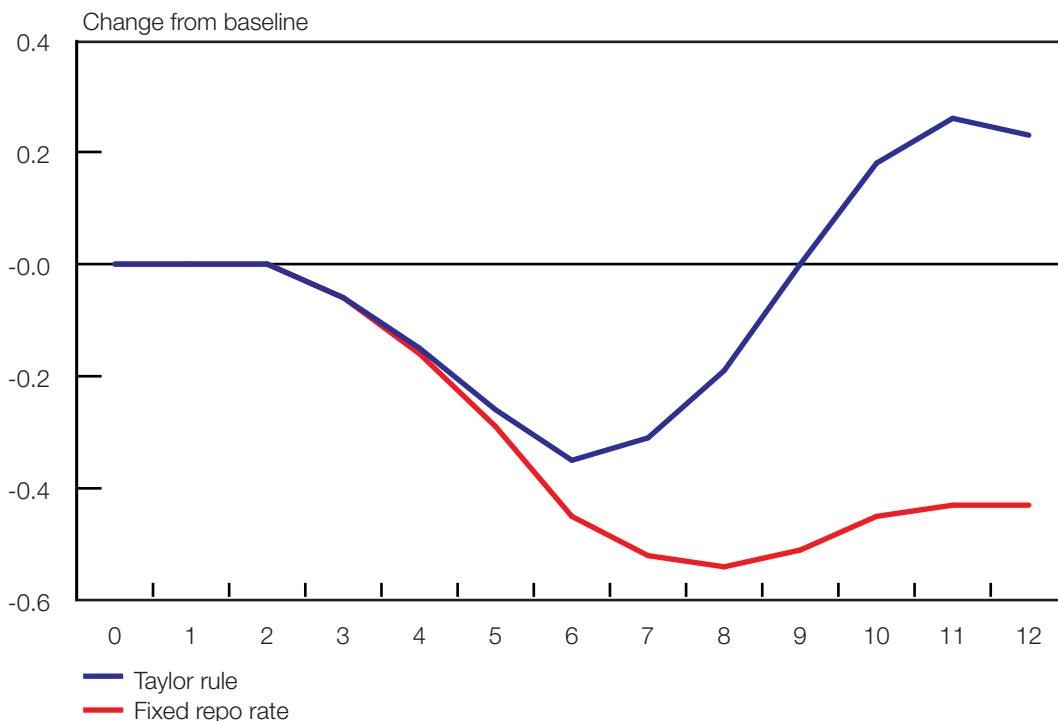
Graph 10 shows that the Taylor rule and fixed repo rate scenarios reach their peak after a period of 6 to 8 quarters, or 18 to 24 months. This suggests that it would take approximately two years for an interest rate adjustment to have its maximum effect on inflation.

However, it should be stressed that this simulation exercise is purely illustrative. The assumption that the policy change is reversed after one year means that the results cannot be used to infer how much the interest rate needs to be adjusted in order to achieve a desired reduction of inflation over a specific period of time.

Graph 9 The simulated results to real gross domestic product



Graph 10 The simulated results to rate of inflation



The results of the two simulations nevertheless prove that any change in the official interest rate takes time to achieve its full impact on the economy and inflation. Empirical evidence in the major industrialised countries of the world suggests that it

takes on average up to one year for the response to a monetary policy change to have its peak effect on demand and production. In addition, it takes up to a further year for these activity changes to have their greatest impact on the inflation rate (Bank of England, 1999: 9). However, these average time lags tend to vary between economies and remain uncertain between different points in time. In particular, they would depend on many other factors such as the state of business and consumer confidence, the stage of the business cycle, current events in the world economy and expectations about the future trend in inflation. These other influences remain beyond the direct control of the monetary authorities, but combine with slow adjustments to ensure that the impact of monetary policy is subject to long, variable and uncertain lags (Bank of England, 1999).

6. Concluding remarks

The purpose of this study was to define and illustrate the various channels of the monetary transmission mechanism in South Africa. In order to ascertain the importance of the link between interest rates, the real economy and inflation, it is imperative to understand the perceptions and decision-making processes of the monetary authorities at a particular time. To this end, provision has been made to explain briefly the various monetary policy regimes since the mid 1980s, i.e. with specific reference to the time lags in which it was believed that inflation would react suitably to the monetary policy initiative. Only in the year 2000 when South Africa adopted an inflation-targeting monetary policy framework, did the importance of the time lags and magnitude changes of key economic variables begin to gain more prominence.

The results of simulations with a macroeconometric model support the notion that there are long time lags between a change in interest rates and the impact on the real economy, and that in some instances this impact will only be felt after a period of between four to six quarters. Fluctuations in the real economy influence the output gap, so that as the gap between actual and potential economic activity adjusts, inflationary pressures will start to change. However, the effects of the change in real output will only start to affect inflation after a further three to four quarters, with the result that the monetary policy transmission mechanism can be expected to have an impact on inflation after a period between 12 to 24 months, with the full impact taking at least two years.

It should be noted that these results are somewhat ambiguous and therefore it is dangerous to infer that a specific interest rate adjustment is needed now to bring inflation down by a certain magnitude two years hence. The impact of the interest rate is not universal and may even vary between two different periods of time. Reasons for the possible variations in the impact can be attributed to other external factors, such as the current perception of the economy, business and consumer sentiment, the state of the global economy, the extent to which the interest rate adjustment was anticipated and the structure and functioning of the financial market. Unfortunately, it is difficult to make provision for many of these factors in the structure of a model as they merely represent perceptions, and are accordingly difficult to quantify in the context of a model. The specification for any model therefore reflects a judgement between complexity and simplicity, and there will always be the age-old argument that certain aspects can be evaluated and appraised better by utilising a different type of model or different model structure.

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