South African Reserve Bank

Curriculum Vitae

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Anton Casteleijn joined the South African Reserve Bank's Economics Department (current Research Department) in September 1987 as an assistant economist. He worked in the national accounts, capital market and business cycle analysis divisions and co-ordinated South Africa's subscription to the International Monetary Fund's Special Data Dissemination Standard in 1996/97 before being promoted to senior economist in the Macro Models Unit in 1998.

He holds BCom and BCom (Hons) (Econometrics) degrees and has also completed courses on Economic Analysis Techniques (1989, IMF), Mathematics for Financial Markets (1993, Euromoney) and on Financial Markets (1998, SARB). He has completed research on aspects of South Africa's capital market and inflation targeting. Recent publications include an article on "The viability of implementing an Inflation Targeting Monetary Policy Framework in South Africa", South African Reserve Bank Quarterly Bulletin, June 1999 and "South Africa's Subscription to the International Monetary Fund's Special Data Dissemination Standard", South African Reserve Bank Quarterly Bulletin, June 1998.

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South Africa's Monetary Policy Framework

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South Africa's monetary policy framework[1]

1. Introduction

South Africa's approach to overall economic management changed significantly when the new government assumed office in 1994 and embarked upon a concerted effort to achieve macroeconomic stability. In the past there had been many attempts to achieve sustained growth and higher levels of employment by stimulating demand in the economy through expansionary monetary and fiscal policies, without proper regard to the underlying supply-side capacity of the economy to meet that demand. Short-term demand management through accommodating monetary policies had often led instead to accelerating inflation and increasing external deficits, which eventually had to be brought under control through restrictive monetary policy. Expanding government expenditure had to be financed either through higher taxation or increased borrowing, thereby crowding out the private sector. Monetary and fiscal policy were often clearly out of kilter and persistently large deficits and an increasing government debt to gross domestic product ratio gave rise to expectations of stubborn inflation even in the face of relatively firm monetary policies. This short-term approach by government engendered a similar short-term approach by businesses. The private sector's capacity to generate employment and create wealth was weakened by the ever-higher levels of taxation and borrowing.

Shortly after being elected in 1994, the new democratic South African government decided that the central thrust of trade and industrial policy had to be the pursuit of employment-creating growth through international competitiveness. Government concentrated on improving supply-side flexibility and moved away from demand-side interventions, such as tariffs and subsidies, to supply-side measures designed to lower unit costs. These measures included the rationalisation of the tariff structure and the abolition of import surcharges. It was also decided that effective price stability would become an accentuated objective of macroeconomic policy – not simply as an end in itself but as a measure of the balance between aggregate demand and underlying supply in the economy as a whole. It was decided that monetary policy should stabilise the economic cycle and provide the basis for sustainable growth. At the same time government began to bring fiscal policy into line. The objective of fiscal policy was to limit public-sector borrowing and public-sector debt to levels that could be sustained in the longer term without the need to impose higher real interest rates or to increase the tax burden on the private sector.

South African monetary policy has changed further in recent years and since February 2000 has been firmly rooted in an inflation-targeting framework. This paper discusses a few of the reasons for the change in the monetary policy regime and some of the most important dimensions of the new framework. The first section briefly outlines the objective, autonomy and functions of the South African Reserve Bank. The next two sections cover the evolution of South Africa's monetary policy framework in recent years and the reasons for moving towards inflation targeting. The strategic aspects of policy need to be supported by an appropriate operating framework and subsequent sections cover the characteristics of the current monetary policy framework and operational procedures, focusing specifically on the main defining features, the new decision-making process and ongoing changes to the implementation structure. Finally, the new inflation-targeting framework and challenges for policy posed by the new international environment are assessed. The conclusion summarises the key points emanating from the paper.

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1 The author is grateful for valuable contributions made by colleagues in the Research and Legal Services Departments of the South African Reserve Bank. However, the views expressed in this paper are those of the author and do not necessarily represent those of the Bank.

2. Objective, autonomy and functions of the South African Reserve Bank

The primary objective of the South African Reserve Bank is stated in the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996 – the "Constitution"), as follows: " (1) The primary object of the South African Reserve Bank is to protect the value of the currency in the interest of balanced and sustainable economic growth in the Republic. (2) The South African Reserve Bank, in pursuit of its primary object, must perform its functions independently ...". Section 224(2) of the Constitution therefore implies that the South African Reserve Bank has operational autonomy. In terms of the Constitution, the Reserve Bank must perform its functions independently without fear, favour or prejudice; but there must be regular consultation between the Bank and the Cabinet member (the Minister of Finance) responsible for national financial matters.

Any deviation from the primary objective of the South African Reserve Bank could be contested in the Constitutional Court and the objective as formulated in the Constitution may only be amended by a two-thirds majority vote in Parliament. Although the Bank's operational independence is entrenched in the Constitution, that Act provides that the powers and functions of the Bank are to be determined by a separate Act of Parliament. The South African Reserve Bank was initially established in 1921 under the Currency and Bank Act, 1920 (Act No. 31 of 1920). Current legislation pertaining to the South African Reserve Bank is contained in the South African Reserve Bank Act, 1989 (Act No. 90 of 1989 – the "SARB Act"), as amended. The Bank is listed on the Johannesburg Securities Exchange SA and its shares are privately held. The SARB Act provides for a Board of 14 directors, seven of whom are elected by shareholders and seven (including the Governor and three deputy governors) are appointed by the President of the Republic of South Africa. The Bank is partly responsible for the management of public debt in an advisory capacity. It also functions as a bank of issue, custodian of gold and foreign-exchange reserves, banker to the government, lender of last resort, controller of credit, bank of central clearance and supervisor of banks. The Bank's Research Department collects, analyses and publishes a wide array of economic statistics and conducts research into topics relevant to central banking and monetary policy.

Monetary policy decisions are in practice taken after deliberations by the Bank's Monetary Policy Committee (MPC). The operation of the main monetary policy tool, the setting of the level of the repurchase rate, de jure remains the prerogative of the Governor, after consultation with the deputy governors and other MPC members (see Section 6 below for a discussion of the new monetary policy decision-making process). The Minister of Finance may also be consulted, but monetary policy changes do not require ministerial approval. Furthermore, the minutes of the Minister's meetings with the management of the South African Reserve Bank are not published. The Governor and three deputy governors are appointed for 5-year terms and the SARB Act assigns responsibility for the Bank's management and functions to the Board of Directors, which meets four times a year.

3. Previous monetary policy regimes in South Africa[2]

The monetary policy frameworks in South Africa since the 1960s are shown in Table 1 and comprise five broad frameworks. Firstly, there was a liquid asset ratio-based system with quantitative controls over interest rates and credit up to the early 1980s. In the liquid asset ratio-based system the interest rate played a minor part as a corrective instrument whereas the main form of monetary control was achieved through liquid asset requirements. Commercial banks were required to hold specific assets deemed as "liquid" as a minimum proportion of deposits. The thinking at the time was that the limited supply and low yields of these assets would limit bank lending and money supply growth. From 1978 until December 1983 the Reserve Bank began setting its accommodation rates at a margin above the money-market rates of the previous week, which resulted in an upward ratcheting of interest rates when money-market shortages were experienced. During this period, credit extension data were distorted significantly by the large degree of disintermediation brought about by the direct limits on credit extension by the banking system up to 1980, and then by the reintermediation when the credit ceilings were abandoned.

2 This section draws on Van der Merwe (1997) and Aron and Muellbauer (2000a)

Table 1:Evolution of South Africa's monetary policy framework

Years	Monetary policy framework
1960–1981	Liquid asset ratio-based system with quantitative controls over interest rates and credit
1981–1985	Mixed system during transition
1986–1998	Cost of cash reserves-based system with pre-announced monetary targets (M3)
1998–1999	Daily tenders of liquidity through repurchase transactions (repo system), plus pre-announced M3 targets and informal targets for core inflation.
2000	Formal inflation targeting

The liquid asset ratio-based system was gradually changed to a cost of cash reserves-based system by about 1985. There was increasing dissatisfaction with the liquid asset ratio system and, following the recommendations of the De Kock Commission, a range of reforms was introduced from the early 1980s (De Kock, 1985). Reintermediation resulted from the removal of some direct controls such as deposit rate controls and bank credit ceilings during 1980. After a number of changes to asset requirements in various years and a redefinition of the role of the discount rate, the cost of cash reserves-based monetary system came into operation by the middle of 1985.

Following the recommendations of the De Kock Commission, explicit monetary growth targets and later guidelines for M3 were announced annually from 1986 to 1998. The pre-announced monetary targets were to be achieved indirectly by adjusting interest rates. The short-term interest rate became the main monetary policy instrument as the Bank's discount rate was employed to influence the cost of overnight collateralised lending and hence market interest rates. In order to reduce demand for bank credit, Bank rate was increased. This was the lowest interest rate at which the Reserve Bank provided accommodation at the discount window to banking institutions (against the collateral of various government bills). Various measures such as open-market operations were used to influence overall liquidity and credit extension to the private sector. Monetary control operated indirectly through the slowing of the demand for money.

Financial liberalisation and other structural developments in the 1990s resulted in a changed relationship between growth in money supply, output and prices, and also significantly reduced the usefulness of money supply targets. These targets were subsequently formally supplemented by a broader set of indicators which included the exchange rate, asset prices, the output gap, the balance of payments, wage settlements, total credit extension and the fiscal stance. These indicators had also been taken into account in preceding years but had played a less prominent role. At the beginning of March 1998, a new system of monetary accommodation commenced with daily tenders of liquidity through repurchase transactions. Although money supply guidelines were still announced, they received less emphasis than before in short-term policy formulation.

Policy increasingly moved towards greater transparency, aimed at achieving greater credibility and a more pronounced effect on inflation expectations. From March 1998 the M3 growth guidelines were set for a three-year period and an informal inflation target of 1 to 5 per cent was set for the first time. The new monetary system sought to effectively ration the amount of liquidity. From the outset the Bank aimed at signalling its policy intentions for short-term interest rates through the amount offered at the daily tender for repurchase transactions. A large under-provision of liquidity would signal a preference for a significant upward movement in the repurchase rate, and vice versa.

4. Reasons for moving from money supply targets to inflation targets

Although significant success had been achieved with the previous monetary policy framework, important structural changes in the South African financial system in recent years altered the transmission mechanism. This weakened the more stable relationships that had previously prevailed

between changes in the money supply and in bank credit extension, on the one hand, and in nominal spending on goods and services and in prices on the other. Large deviations from the target had already occurred during the 1980s and persistent overshooting from 1994 onwards, after the sharp increase in capital inflows to South Africa (see Table 2). From 1994 onwards M3 money supply increased at rates consistently higher than the indicated guideline ranges for growth, but inflation nevertheless declined, contradicting previous expectations.

Changes in the monetary aggregates lost some of their usefulness as the most important indicators of possible future trends in inflation, and therefore also as an anchor for monetary policy decisions. In March 1998 the Governor of the Reserve Bank indicated that the Bank would strive to bring the domestic inflation rate down to a level more in line with inflation in the economies of South Africa's major trading partners. He also indicated that an informal inflation target range of 1 to 5 per cent would provide an important economic guideline when taking monetary policy decisions aimed at longer-term objectives.

A type of informal inflation targeting was therefore introduced by the Reserve Bank early in 1998, and simultaneously guidelines were announced for the rate of growth in the M3 money supply. As mentioned above, the money supply guidelines had been increasingly supplemented by an eclectic set of indicators during the course of the 1990s, including the exchange rate, asset prices and the output gap. The guideline three-year average growth rate in M3 was expected to contain inflation without inhibiting stronger economic growth. However, if conflicting signals were to emanate from the money supply and from inflation it was not quite clear which objective would carry the most weight.

Table 2:Money supply growth and inflation outcomes from 1986 to 2000

Percentage change

Year	Money Growth Guidelines	Money Growth Actual	Inflation CPI	Inflation CPIX [3]
1986	16-20	9,3	18,6	
1987	14-18	17,6	16,1	
1988	12-16	27,3	12,9	
1989	14-18	22,3	14,7	
1990	11-15	12,0	14,4	
1991	8-12	12,3	15,3	
1992	7-10	8,0	13,9	
1993	6-9	7,0	9,7	
1994	6-9	15,7	9,0	
1995	6-10	15,2	8,7	
1996	6-10	13,6	7,4	
1997	6-10	17,2	8,6	
1998	6-10	14,6	6,9	7,1
1999	6-10	10,2	5,2	6,9
2000	6-10	7,5	5,3	7,8

Source: South African Reserve Bank Quarterly Bulletin, various issues.

A disadvantage of the informal inflation target was that it could not be expected to elicit the same commitment to policy co-ordination that would follow if the government had formally endorsed or set the target. Furthermore, inflation had been brought down successfully in recent years in South Africa but underlying or core inflation remained stubbornly higher than that of South Africa's most important trading partners, despite having fallen to a single-digit level. A number of important factors associated with a formal inflation-targeting framework, such as improved policy focus, policy co-ordination, transparency and accountability, also contributed to the move away from the eclectic monetary policy framework.

3 CPIX inflation is measured as the overall CPI excluding interest costs on mortgage loans.

5. Key characteristics of the inflation-targeting policy framework[4]

Inflation targets were first introduced by New Zealand in 1990 and a number of industrialised and developing countries followed in ensuing years. Among the industrialised countries were Canada (1992), the United Kingdom (1992) and Sweden (1993). The developing countries included Chile (1991), Israel (1991), Mexico (1994), Brazil (1999) and Thailand (2000). Some transition economies, namely the Czech Republic (1997) and Poland (1999), also adopted inflation-targeting monetary policy frameworks. South Africa formally adopted an inflation-targeting monetary policy framework on 23 February 2000 when the Minister of Finance announced an inflation target of 3 to 6 per cent to be achieved by 2002. By 2000 over 50 countries were using explicit inflation targets and over 80 per cent of these countries were doing so as part of a disinflation process. However, only 18 of these countries (including South Africa) are classified as fully fledged "inflation targeters" (Mahadeva and Sterne, 2001).

5.1 Target announced by Government

After the Governor of the Reserve Bank mentioned the possible introduction of formal inflation-targeting in a section of his address to the annual ordinary meeting of shareholders of the Bank in August 1999, a number of initiatives followed. These included further research on the topic, the development of the Bank's inflation-forecasting and modelling capacity, technical discussions on the issue with the National Treasury, consultation with other central banks that were already engaged in formal inflation targeting, and discussions with trade unions and business organisations in South Africa.

In the new inflation-targeting framework, the government through the Ministry of Finance specifies that a particular price index must fall within the bands of a specific target range and within a specific time frame. Unlike some other inflation-targeting countries there are as yet no legal specifications for non-achievement of the target but provision is made for non-achievement of the set target due to exogenous supply shocks (see discussion on escape clauses below).

5.2 Dimensions of the inflation target

South Africa opted for a price measure that would be acceptable to all South Africans as being as inclusive as possible in terms of both item and geographical coverage. The authorities realised there were potential disadvantages in opting for an overall CPI, but did not regard any of the alternative "core" measures of inflation as viable candidates for the task. The key issue centred on the exclusion of mortgage interest costs.

South Africa's inflation target specifies that the Reserve Bank is to achieve an average rate of increase in the CPIX measure of inflation of between 3 and 6 per cent for the year 2002. The CPIX measure is derived by excluding mortgage interest costs from the overall consumer price index. It was chosen to ensure a wide coverage of consumer items, but without the mortgage interest component that would perversely fall as the Reserve Bank relaxed monetary policy, and vice versa. Wide coverage was deemed to be quite important and narrower measures of inflation were found unsuitable, since in the real world the consumer eventually confronts an overall cost of living in which the effects of drought on food prices or crude oil costs on petrol prices cannot be wished away. The CPIX measure chosen covers metropolitan and other urban areas where prices are surveyed, also ensuring as wide a geographical coverage of price information as possible.

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4 This section draws heavily on Van den Heever (2001).

The South African authorities chose a target range rather than a single numerical point as target. A specific numerical target is clear and straightforward and focuses attention, expectations and policy actions on a single numerical value. It implies a degree of precision which cannot realistically be expected of monetary policy, especially in a small, open economy. A degree of variation in inflation is to be expected, even under the calmest economic conditions, and many inflation-targeting countries explicitly allow for such variation by setting a target range, such as New Zealand's 0 to 3 per cent. Some inflation-targeting countries stipulate a specific point target but allow a deviation from it – for example the United Kingdom's 2½ per cent plus or minus 1 per cent per annum (see Annexure).

The inflation target range was determined by Government in consultation with the Reserve Bank. The 3 to 6 per cent target for South Africa reflects the desire of the authorities that the deflationary process should firmly move the economy in the direction of price stability, but that the target should not be too narrow to be fully credible. The target also provides a reasonable measure of latitude and it was felt that the band could accommodate an outcome which the Bank believed it could achieve. Furthermore a larger, more rapid reduction in inflation through demand-management policy would be costly in terms of absolute reductions in production and employment. This is largely because inflation expectations tend to be rigid, usually only changing slowly over time. The time horizon over which to target inflation is also important, given the lags in the monetary transmission mechanism (see discussion on the transmission mechanism in Section 8 that implies a target horizon of at least six to eight quarters).

5.3 Escape clauses

Unforeseen shocks to the economy, such as a doubling of oil prices or the effects of a severe drought, could steer inflation off the required course during a disinflation process. For instance, a doubling of the oil price in a particular year would make the set target extremely difficult to achieve, especially if such a shock occurs close to or during the period when the quantitative target is to be achieved. A temporary deviation from the target may therefore be unavoidable. It would certainly be counterproductive to try immediately to neutralise the first-round effects on inflation of a large economic shock through monetary policy. Such an outcome would require a huge adjustment to interest rates, with a significant negative effect on the real economy. In some countries, therefore, the conditions under which temporary deviations from the inflation target are permissible, are stipulated in a formal document.

In South Africa the formalisation of escape clauses has not been deemed practical at this stage, not least because of the many potential sources of shocks. However, the Finance Minister wrote a letter to the Governor in February 2000, outlining the handling of unforeseen economic shocks beyond the control of monetary policy, which could make it difficult to achieve the inflation target. The letter represents the agreement between the Bank and the Government on inflation targeting. The shocks mentioned include a sharp rise in international oil prices, drought, changes in indirect taxes and international financial contagion. The Finance Minister has stated that if these circumstances result in the failure to achieve the target, the Reserve Bank would have to give a full public explanation. He has nevertheless reaffirmed that the Bank has "complete instrument independence" in attaining the target.

The Minister's letter to the Governor emphasises the benefits of a low inflation rate and stresses that the success of the inflation-targeting regime would require the participation of all South Africans. He also restates the government's belief that there is no long-term trade-off between inflation and unemployment, and mentions that the new inflation target will be announced when the Medium-Term Budget Policy Statement is tabled in October this year.

5.4 Instrument independence

The task of a central bank operating an independent monetary policy is in a sense a limited task, not least because it effectively has only one important instrument – its control over short-term inter-

est rates. The central bank's role is essentially to use that instrument to influence aggregate demand in the economy, with the aim of keeping demand broadly in line with the supply-side capacity of the economy. The measure of its success is consistently low or steady-state inflation[5] (see Annexure for inflation-targeting countries that have achieved steady-state inflation rates).

Monetary policy affects the economy only after a long time lag, so policy makers need a long time horizon. Short-sighted politicians may try to engineer a boom before an election, hoping that inflation will not rise until after the votes have been counted. The inflation-targeting framework that has been adopted, involves an extremely serious but not totally inflexible target. A significant degree of central bank independence (in particular the freedom to set policy instruments and freedom from budgetary demands) is deemed an essential precondition for successful inflation targeting. A central bank shielded from political pressures is more likely to give priority to price stability; as a result financial markets will regard its policies as more credible. This enables an independent central bank to deliver lower inflation and more stable growth.

As discussed earlier, the South African Reserve Bank has the necessary degree of independence, granted under the Constitution read together with the SARB Act. A tradition of independence has been developed in recent years but independence should not necessarily imply isolation. Consultation with the Minister of Finance continues in the interest of policy co-ordination. Policy is formulated with a view to ensuring inflation outcomes within the target range. If there are clear indications that with unchanged short-term interest rates, the inflation outcome in the target period will exceed the target, interest rates will be raised, and the converse if undershooting of the target is expected. To support this process, the staff of the Reserve Bank have developed a suite of econometric models aimed at understanding the inflation process and forecasting inflation (see Section 7 below).

5.5 Accountability and transparency

The SARB Act does not as yet prescribe a completely transparent framework for monetary policy, and soon after assuming office Governor Mboweni proposed steps towards a comprehensive review of the Act. The Act for example does not specify what level of inflation offers sufficient price stability, the specific index to be used to measure inflation or even explicitly who is ultimately responsible for price stability. Secondly, although the South African Reserve Bank is in principle accountable to Parliament through briefings and reports, the Act does not specify explicit benchmarks against which the performance of the South African Reserve Bank can be judged. The SARB Act determines that the South African Reserve Bank shall be managed by its Board. However, though the Board may discuss monetary policy, it does not in practice take interest rate decisions – though there is nothing in the Act to prevent the Board from doing so (see also Aron and Muellbauer, 2000a).

Although not yet reflected in the relevant legislation, the new inflation-targeting framework has substantially improved the accountability and transparency of monetary policy. In previous policy regimes there was no explicit benchmark against which the performance of the Bank could be judged objectively but in the new inflation-targeting regime, the Ministry of Finance determines a specific target range for a particular price index to be achieved within a specific time frame. The SARB Act (S8) provides for the South African Reserve Bank's Board to delegate certain powers to the governors. In terms of this section the Board has inter alia delegated certain powers relating to monetary policy to the governors. An important aspect of the South African framework is therefore that the SARB Act in effect assigns monetary policy decision-making authority and responsibility solely to the Governors' Committee comprising the Governor and three deputy governors. Of the 15 members of the Monetary Policy Committee (MPC)[6] only the Governor and deputy governors

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5 Steady-state inflation is generally regarded as being inflation of no more than 3 per cent.

6 The Monetary Policy Committee comprises four voting members and 11 policy officials and economic researchers.

are de jure voting members with the final authority for making decisions on monetary policy. This aspect of the framework is important since it determines where responsibility for the conduct of monetary policy rests, and in that way sharpens the focus on the delivery of price stability. According to Van den Heever (2001), "accountability acts as a counterweight to independence and, therefore, constitutes a necessary additional ingredient in the appropriate response of an independent central bank with a discretionary policy framework".

Transparency increases monetary policy efficiency, especially in an environment of uncertainty. It encompasses communication with the markets and the public in order not only to be understood but also to be effective. The nature of the inflation-targeting framework, progress towards the target and the policy steps taken have to be communicated to all relevant parties, including the general public, so that this communication will have an appropriate influence on inflation expectations and enhance public understanding of and support for monetary policy. Unlike some inflation-targeting countries, none of the minutes of meetings of the Board of the South African Reserve Bank, the MPC or the Governors' Committee is published at this stage. Several actions have nevertheless been taken or are in the pipeline to improve monetary policy transparency (see Van den Heever, 2001):

- The inflation target is publicly announced;
- policy is explained in a statement issued after each meeting of the Reserve Bank's Monetary Policy Committee;
- economic developments and monetary policy actions are also discussed in the Reserve Bank's *Quarterly Bulletin, Annual Economic Review* and in the Governor's Address to the annual ordinary meeting of shareholders;
- a *Monetary Policy Review* is issued every six months;
- Monetary Policy Forum meetings, in which the Bank's governors explain developments in monetary policy to and obtain feedback from organised business, labour, politicians and academics, are held twice a year in ten centres, covering all provinces;
- the Governor regularly appears in Parliament before the Portfolio Committee on Finance; and
- the governors and senior staff participate in panel discussions and other public events.

In June 2001 the Governor also initiated an annual Economic Forum of economists from the private sector, state enterprises and trade unions as part of the strategy for improving domestic economic debate and promoting transparency.

6. The new monetary policy decision-making process

In practice, the Bank's new monetary policy process centres on the six-weekly formal MPC meetings scheduled during a year. It involves the production and submission to the MPC of economic projections, a comprehensive macroeconomic and financial market review and the release of the Monetary Policy Statement after an MPC meeting. Key data series in South Africa are assessed as soon as they become available. The Bank works with all available relevant data to ensure accurate projections, as the MPC's attitude to current policy is conditioned by emerging data on the recent past and projections based thereon. The projections assist the MPC in identifying the monetary stance which it deems necessary to bring CPIX inflation into the target band of 3 to 6 per cent in 2002.

The Bank's Monetary Policy Statement is released to the media at the conclusion of each of the seven Monetary Policy Committee meetings during the course of the year. In the first two weeks of a six-week cycle, the Bank's economists do an intensive analysis of a comprehensive range of the latest available macroeconomic data covering the domestic economy and important interna-

tional economies. The Bank's Research Department prepares alternative model simulations in the third and fourth weeks. A suite of models is used to test more and less aggressive monetary policy approaches given consensus assumptions for key exogenous variables. In the fifth week, the Research Department prepares draft economic forecasts and a domestic and international review for presentation to the MPC for its detailed consideration, and other key departments also prepare an overview of, for example, developments in the capital market and international banking sectors. In the sixth week the MPC meets and ultimately drafts the Monetary Policy Statement and releases it to the media at the conclusion of the MPC meeting.

On the basis of comprehensive analysis and deliberations, the Bank announces its monetary policy stance and, if necessary, the change to its repurchase rate, the principal instrument of policy. If deemed appropriate, the repurchase rate is changed, based on current macroeconomic data and inflation prospects for the target year. An extraordinary review of economic conditions and updated projections, but without the advantage of a fully developed set of macroeconomic data, can also be scheduled between formal MPC meetings if the need arises.[7] In the normal course of events, as the framework has evolved, there should be seven Monetary Policy Statement releases a year. In reaching decisions on the monetary policy stance and on the desired level of the Bank's repurchase rate, the key deliberative body is the MPC constituted from the Bank's key staff members.

7. The Bank's econometric modelling framework

Attempts in recent years by the South African Reserve Bank to measure and model the relationships between the main variables of macroeconomics such as aggregate income, consumption, investment, price indices, interest rates, exchange rates and unemployment have been subjected to comprehensive review. In the first attempts many years ago, large simultaneous models were developed with quarterly data and constrained by what was viewed as generally accepted economic theory. The Bank's large model gradually became more dynamic and the model specifications changed considerably over the years. In line with international experience, the emphasis began shifting to smaller models and the Governor initiated steps towards co-operating with other central banks to develop new models.

Since the introduction of formal inflation targeting, the Bank's own research has been increasingly focused on the transmission mechanism of monetary policy in South Africa and the development of state-of-the-art inflation forecasting models. In co-operation with the staff of other central banks, a suite of new models was developed, comprising a core model, a small-scale model, vector models using vector autoregressions (VAR) or error-correction specifications, Phillips-curve models and indicator models. The Bank is also currently developing and using structural VARs to estimate the effect of monetary policy on output and inflation as part of the new suite of models.

Some of the important issues for the Bank since early 2000 have been to determine the optimum model size and how best to handle structural breaks, regime changes and outliers. Another important consideration was the extent to which economic fundamentals might have changed. Productivity and technology changes have a significant impact on the economy, so the important question is how best to model trends when such fundamental changes are taking place. The Bank's suite of forecasting models has become the cornerstone in assessing the prospects for inflation and growth in the economy. The models have enabled the Bank to assess more effectively the risks associated with the predicted outcomes of several variables. The forecasts do not in themselves indicate how the monetary policy stance should be changed but they are a crucial source of information for the MPC.

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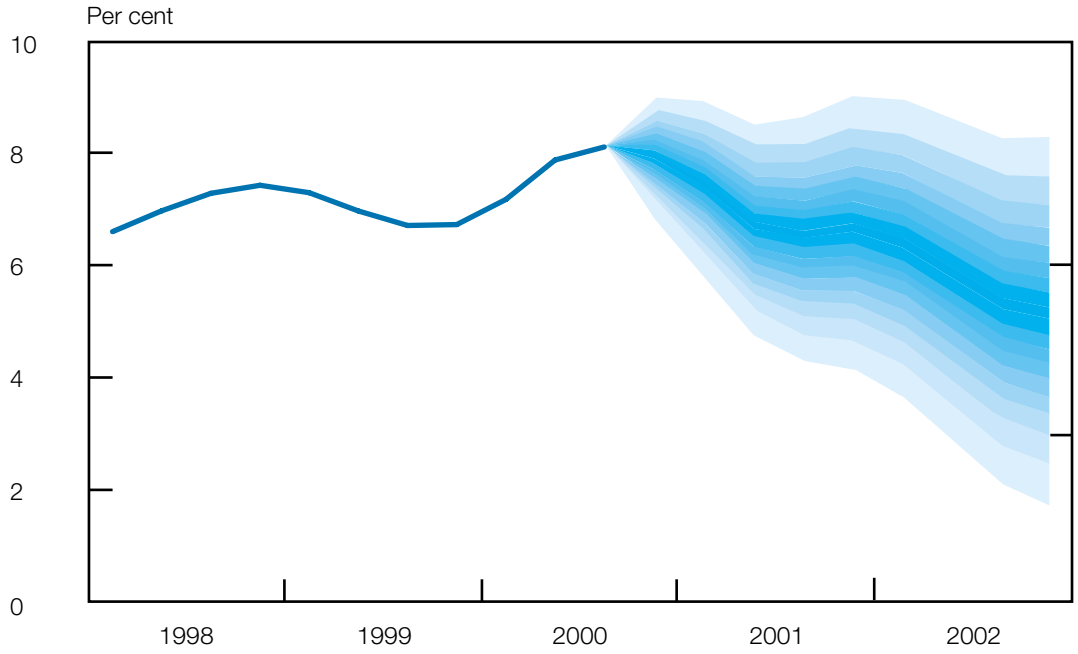
[7] The 25 basis point increase in the Reserve Bank's rate on repurchase transactions in October 2000 was announced after a special MPC meeting held on 16 October.

The MPC uses a fan chart (see Figure 1) to assess the risks inherent in the forecast and to communicate to the public the uncertainties that lie ahead (the Bank publishes the current fan chart in the six-monthly Monetary Policy Review). The fan chart allows the MPC to focus its discussions on the potential upside and downside risks lying ahead and more particularly on the possible effect of these risks on inflation. Inflation-targeting central banks use fan charts not only to illustrate the large degree of uncertainty to which an inflation forecast is subject but also to give a clear indication of the probability of a particular outcome. The fan chart and the models used to investigate the outcome of various scenarios are indispensable for inflation targeting. However, the monetary policy decisions are taken on the basis of professional judgement rather than relying solely on the models' results.

Figure 1: Fan chart depicting CPIX forecast



8. Importance of the transmission mechanism of monetary policy[8]

After introducing the inflation-targeting monetary policy framework, the Bank increasingly focused its research on the relative roles of interest rates and of the exchange rate in the transmission of monetary policy. The forward-looking nature of the inflation-targeting framework makes it imperative to understand and acknowledge the time lag before monetary policy has an impact on the real economy and eventually on inflation. There are long lags in the transmission mechanism (i.e. between a change in the monetary policy stance and its effect on the rate of inflation) and these lags differ from country to country and also in 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. 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.

Empirical evidence in the major industrialised countries of the world shows that on average it takes 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 another year for these activity changes to have their greatest impact on the inflation rate. Research by the Bank on the transmission mechanism in South Africa confirms international experience. However, the research also shows clearly that the average time lags tend to vary between economies and remain uncertain between different points

8 This section draws on Smal and De Jager (2001) and Aron and Muellbauer (2000b).

in time, depending 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 and combine with slow adjustments to ensure that the impact of monetary policy is subject to long, variable and uncertain lags.

9. Ongoing changes to the implementation structure

The choice of a structure for implementing monetary policy is extremely important as it can ease or complicate the conduct of monetary policy. Monetary policy in South Africa is implemented and communicated by way of the Monetary Policy Statements released after MPC meetings and through the Bank's monetary policy operational procedures. Although the implementation structure that the Bank has been employing has worked effectively, the operational procedures for the repurchase system introduced in March 1998 created a measure of uncertainty about the Bank's intentions. This, at an awkward time, encouraged an unhelpful degree of volatility in short-term interest rates and in some ways complicated the task of communicating the Bank's desired policy stance.

In May 2001 the Reserve Bank issued a discussion document on amending the repurchase system procedures for providing cash to banks, because of some shortcomings encountered with this system during its three years of implementation. The objective in March 1998, when the repurchase system was introduced, was to let the market play a bigger role in determining interest rates. The expectation was that banks would give the central bank accurate signals about underlying market conditions by tendering for cash at different interest rates. The intention was that the Bank's repurchase rate should fluctuate daily and that interest rates in general would become far more responsive to rapidly changing market conditions. In practice the system worked out differently, largely as a result of difficulties encountered by the individual banks in assessing underlying money market conditions (in a setting characterised by the considerable market power of South Africa's big banks). Since participation in the daily repurchase auctions was in practice limited to a few banks, money-market rates were relatively inflexible and the interbank market did not always clear effectively.

The Bank has actively pursued a transparent, flexible system of determining rates and, as an initial interim measure, the Reserve Bank moved to a semi-fixed-rate system at the end of last year. In the meantime, the Bank has conducted comprehensive research on ways of modifying the refinancing system in order to make the domestic money market more effective. The South African banking sector and experts from a number of other central banks and international organisations were consulted in order to determine appropriate steps to eliminate any ambiguity in the Bank's monetary policy signals and to improve the effectiveness of operational procedures. The following steps were announced by Governor Mboweni at the ordinary general meeting of shareholders of the Bank on 28 August 2001:

- A one-off adjustment to the spread between the Reserve Bank's repurchase rate and the interbank call rate by lowering the Reserve Bank's repurchase rate by 100 basis points with effect from 5 September 2001. The adjustment was purely for administrative reasons and did not imply any change to the monetary policy stance or to any other interest rates.

- With the help of the banking sector, the Reserve Bank would on a daily basis calculate a South African Overnight Index Average (SAONIA), intended to serve as a benchmark for money-market interest rates and to enhance the functioning of the interbank market. SAONIA would be a benchmark for liquidity in the money market.

- The Bank would fix the repurchase rate to eliminate any ambiguity in the Bank's monetary policy signals.

- To create an incentive for banks to square off in the interbank market, the Bank would discontinue its practice of announcing the estimated liquidity requirement prior to the repurchase auctions. Instead, from 5 September 2001 the tender amount provided and the amount allocated

in the repurchase tenders would be announced shortly after the tender.

- As an additional incentive for the interbank market to clear, weekly repurchase tenders with a seven-day maturity would commence on 5 September, instead of the previous daily tenders.

- The Reserve Bank would, at its discretion, conduct daily final-clearing repurchase, reverse repurchase or supplementary tenders to enable banks to square off their positions. Banks that did not clear their positions between the weekly auctions would receive a rate of 1,50 percentage points lower than the repurchase rate for money deposited, but the rate banks paid for loans would be 1,50 percentage points higher than the repurchase rate.

- For purposes of calculating the minimum reserve balance that banks had to hold in an account with the Reserve Bank, the amount of vault cash that qualified as a deduction would be limited to 75 per cent of the total amount of vault cash held. This limit would be reduced by a further 25 percentage points a year over a three-year period.

The Bank's techniques for giving effect to monetary policy in the financial markets have proved less effective on occasions over the past three years than initially envisaged. The risk is that a poorly specified implementation structure will not be as effective in achieving the longer-term objectives of monetary policy. Indications are that the new arrangements will address this problem sufficiently by making the demand for funding in the money market more competitive and interest rates more flexible. The smaller banks have been funding themselves through the bigger banks, therefore a more flexible money-market interest rate environment and lower repurchase rate should encourage more banks than only the four major banks to take part in the weekly repurchase auctions held by the Reserve Bank. The new system should enhance the money market so that the rates at which banks lend to one another will become more useful as policy signals.

10. Assessment of the inflation-targeting monetary policy framework

South Africa could not escape the inflationary consequences of rising international crude oil prices over the past two years but has been more successful than many countries in withstanding inflationary pressures. Since the introduction of the inflation-targeting monetary policy framework in South Africa in February 2000, monetary policy has been characterised by greater interest rate stability. The MPC has adjusted the rate on repurchase transactions on only two occasions during this period.

Despite the weakening in the value of the rand and higher oil prices, the Bank held the repurchase rate steady at 11,75 per cent from 14 January 2000 until 16 October when it raised the rate by 25 basis points. The MPC had been concerned about the inflationary consequences of a depreciation in the exchange rate of the rand and rising crude oil prices. A special meeting of the MPC was convened to assess the potential inflationary consequences of the depreciation of the rand and the high world market price of petroleum. The decision to tighten monetary conditions marginally was viewed as an appropriate signal that second-round price effects following the depreciation in the value of the rand would not be accommodated. Among the most important counter-inflationary forces working to subdue inflation in South Africa during 2000 were the adoption of the new formal inflation target early in the year which focused inflation expectations and moderated nominal remuneration demands; solid productivity growth; slow growth in nominal unit labour cost; continued trade liberalisation which prevented domestic producers from raising prices in the face of increased competition by international suppliers; and Government's commitment to fiscal prudence and greater efficiency in public-service delivery. Average overall consumer price inflation in South Africa barely changed from 5,2 per cent in 1999 to 5,3 per cent in 2000.

The rate on repurchase transactions by the Reserve Bank declined again from 12 to 11 per cent on 15 June 2001 when evidence accumulated that inflation for 2002 would fall within the target range. Since the introduction of formal inflation targeting, public acceptance of the price stability target has grown significantly and inflation expectations appear to have become better anchored. This is borne out by the successive results of the inflation expectations survey conducted on the Bank's

behalf by the Bureau for Economic Research (BER) at Stellenbosch. Although South Africans have turned in somewhat conflicting sets of inflation expectations according to the successive surveys, inflation expectations have probably become somewhat more forward looking. The BER reported in its survey for the second quarter of 2001 that although financial analysts were the only group surveyed who were confident that the Bank would meet the inflation target by 2002, household inflation expectations had averaged 6,8 per cent compared with 7,3 per cent in the first quarter. This 50 basis point drop was the biggest fall in a single quarter since the BER started measuring household inflation expectations during the third quarter of 2000.

The inflation-targeting policy framework provides a fair measure of flexibility for the Bank. First, it is an average inflation rate of 3 to 6 per cent for 2002 that needs to be achieved. Second, as in other countries that target inflation, the policy allows for some discretion in the case of serious supply shocks to avoid costly losses in terms of output and jobs. In this regard Svensson (1997: 8) writes: "In practice ... (central banks) avoid causing this instability to other variables than the CPI, by adopting a more gradualist approach. They do not attempt to take inflation back to target as fast as possible. Instead they ... set monetary conditions such that the inflation projection hits the target at a longer horizon than the shortest possible ... in this sense ... inflation-targeting central banks have made the choice to pursue flexible rather than strict inflation targeting."

Global financial integration has brought with it the problem of how to cope with movements in financial asset prices, including exchange rates. In the context of macroeconomic stabilisation, central banks have to take account of asset prices in their projections and policy decisions. The strengthening or weakening of stock markets in an economy is one of the factors that will to varying degrees influence investment and consumer demand. The behaviour of the exchange rate is a factor influencing inflationary pressures in the economy, through its direct effect on prices and through its indirect impact on net external demand. Although a central bank can try to allow for these effects, it cannot predict future asset price movements accurately and therefore these movements remain a major source of uncertainty. They also, of course, represent a major potential threat to financial stability which is a necessary component of monetary stability.

11. Policy challenges posed by the new international environment

The need for changing an existing monetary policy regime generally arises only when it consistently fails to achieve its objectives. Significant changes have occurred in the monetary policy frameworks of many countries since the early 1980s and a great deal of attention has been devoted to devising monetary policy frameworks that could help to secure price stability. This followed the increasingly widespread acceptance of the view that price stability fosters a better economic performance. Price stability has been adopted by more and more countries as the sole or primary objective of monetary policy since the early 1980s and this trend accelerated during the 1990s. More specifically, the early 1990s witnessed a rapid rise in the number of industrial countries that adopted explicit inflation-targeting monetary policy regimes.

Monetary policy credibility has increasingly come to rely on clearly defined and publicly understood long-term policy objectives. According to Sir Edward George, Governor of the Bank of England, “the global economy has changed significantly and countries worldwide have been moving away from short-termism to new monetary and fiscal frameworks that go beyond the crude Keynesian fine tuning of the fifties and sixties and the crude monetarism of the seventies and eighties and, instead, provide a far more effective route to stability”. In recent years South Africa has also established a broader framework for economic stability. South Africa’s new framework equips the country far better to cope with the ups and downs of the economic cycle. The new framework includes clear policy rules, a stated formal inflation target and fiscal discipline.

Global economic integration has led to new and more complex relationships between macroeconomic variables. There have been significant changes in innovation and productivity which call for revisions of the existing economic models. Global economic integration allows new macroeconomic conditions to be transmitted rapidly and extensively through new channels. Central banks increasingly confront new and rapidly changing technologies and methods of payment. There are several kinds of uncertainty and, therefore, different types of information are needed. These include

information on the current state of the economy and information on how the monetary policy instruments affect inflation and economic activity.

Central banks and other agencies will have to continue to produce more complete, accurate, frequent and timely statistics. Greater emphasis will have to be given to specific types of information. Financial markets have for example become deeper, more flexible, in certain ways more standardised and more liquid; and the information coming from them has become more relevant to monetary policy decisions. Concerning the need for additional information related to the monetary policy transmission mechanism, the appropriate answer for central banks is to enhance research in order to develop more accurate models. The need for additional information about the data and the monetary transmission mechanism calls for the enhancement and, where necessary, the upgrading of the statistical and research functions in the internal organisation of the central bank. Global integration, and the uncertainty resulting from it, call for a monetary policy response which must be realistic, effective and therefore credible.

In an atmosphere of global integration and greater uncertainty, the best monetary policy choice, according to Professor Eugenio Domingo Solans, "... implies pre-commitment, time consistency, transparency and accountability. These conditions require discipline, which is closer to a rule than to discretion". Countries are increasingly opting for greater central bank independence – and independent central bankers – as an institutional arrangement to avoid inflationary bias and to gain credibility and a sound reputation. Besides being independent, central bankers are also advised to be conservative, i.e. more inflation-averse than society as a whole. Countries have also increasingly been opting for pre-established, socially accepted and clearly prioritised monetary policy objectives as the anchor for central bank decisions. They have strategies that are clearly specified, i.e. their monetary policy frameworks establish the relationships between the variables relevant for monetary policy decisions in order to make explicit the criteria for a decision and to make it possible to adopt consistent decisions.

12. Concluding remarks

Inflation targeting is a suitable monetary policy framework, provided that the preconditions for its implementation are met. Of paramount importance are the central bank's scope for conducting independent monetary policy and the undisputed primacy of the inflation objective. It is a more complex and in many senses more demanding framework, and requires a strengthening of the institutional framework and an increasing market orientation. An effective analytical framework for forecasting inflation and assessing the effects of monetary policy is crucial. Furthermore, the implementation of the framework requires addressing important issues related to the choice of the inflation measure, the level and path of the inflation target and practical escape clauses.

Although the South African Reserve Bank has had a relatively brief experience with the new inflation-targeting framework, this framework has undoubtedly already reinforced the longer-term focus of monetary policy. The immediate effects of shocks are discounted by reverting to the question of what their consequences will be for inflation eighteen months into the future and reacting to that, rather than attempting to neutralise the shock immediately. This should reduce the amplitude of policy changes. In a wider context, inflation targeting is part of a process in which economic policy-making is becoming more transparent and subject to more accountability and technical rules, and less to unconstrained discretion. According to Van den Heever (2001) "inflation targeting's transparency and lack of subtle intermediate variables and nuances are significant advantages but the framework is no panacea as central banks will still need to earn their credibility and work hard at maintaining it".

The key parameters of the inflation-targeting framework implemented in South Africa from February 2000 were determined on the basis of thorough research and took into account best international practice and advice. Government believes that South Africa's economic prosperity will be enhanced by a price stability approach to monetary policy. The merits of such an approach have been debated at length by economists and policy makers alike. Some economists think that a monetary policy based on price stability will compromise economic growth. However, governments

and central banks internationally have recognised that inflation harms people, and not just economies in some abstract sense. To quote Donald Brash of the Reserve Bank of New Zealand: "I am sometimes rebuked by critics who say that the Reserve Bank should pay more attention to the impact of its policies on people, and less to inflation. But this is to totally misunderstand the situation: 'economies' are simply groups of people, organising their lives to best advantage, and inflation has a huge and often unpredictable effect on their ability to do that ... it turns out that it is not so much the rich that are most advantaged by controlling inflation as the poor, since, like most taxes, inflation is a tax that the poor find particularly hard to avoid."

South Africa's monetary policy is firmly aimed at achieving the inflation target in 2002 and beyond. In this regard Governor Mboweni stated the following in June 2000: "May I conclude with a quotation from a recent press release by the Bank for International Settlements (5 June 2000): 'Maintaining price stability is the best contribution that central banks can make to continued prosperity.' We in the Reserve Bank endorse this view and undertake to pursue prudent monetary policy to achieve the inflation target range of 3 – 6 per cent in CPIX(mu) on average in 2002 as set by the Government."

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ANNEXURE

International experience with inflation targets

	Adoption date, initial target, current target	Long-term target. Years of convergence from adoption to steady state	Index used for targeting	Target horizon or escape	Exemptions clauses
COUNTRIES CONVERGING ON STEADY-STATE INFLATION RATES					
Chile	Started Sept. 1990 initial range 15% - 20% Current target ± 4.3%	Centred on 3% 11 years	Consumer Price Index	Annual, Dec. to Dec. Until 2000. Unlimited for 2001 onwards.	None
Israel	Started 1991, initial target 14 - 15% Current target 4%	3-4% (2000-01) 9 years +	Consumer Price Index	2000-01	None
COUNTRIES AT STEADY-STATE INFLATION RATES					
New Zealand	Started Mar 1990, initial range 0-2% Current range 0-3%	0-3%. 1.5 years	All Groups Consumers Price Index	Governor's term of office	When target missed, RBNZ presents an explanatory *Policy Statement,* announcing corrective measures.
Canada	Started Feb. 1991, initial range 2-4% Current range 1-3%	1-3%. 1 year	Consumer Price index, excluding various items	1998 -2001	Target range not absolutely rigid, but deviations expected small and temporary.
United Kingdom	Started Oct. 1992, initial range 1-4% Current target 2.5% ± 1%	2.5% ± 1% 1.5 years	Retail price index, excluding mortgage interest payments (RPIX)	Parliamentary period	BoE required to write open letter to Chancellor when deviating from target range.
Sweden	Started Jan. 1993, initial and current target 2% ± 1%	2% ± 1% 1 year	Consumer Price Index	Unlimited	Target range not absolutely rigid, but deviations expected small and temporary.
Australia	Started Sep. 1994, initial and current range 2-3%	2-3%. 0 year	Consumer Price Index, excluding various items	Unlimited	Target must be maintained on average in the medium term; small temporary deviations allowed.

Source: Landerretche, Morandé and Schmidt-Hebbel (1999) p27 (updated)