Monetary Policy Review

May 2007

South African Reserve Bank

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Introduction

Although inflation has remained within the 3-to-6 per cent target range since the publication of the previous *Monetary Policy Review* in November 2006, and the inflation outlook initially improved in 2007, the perceived medium to long-term risks to the outlook have remained a concern to the Monetary Policy Committee (MPC). The challenge for the MPC in recent months has been to weigh these risks against the changing outlook. During this period, the economy entered the eighth year of the current upswing, with growth continuing at a robust pace and prospects for future growth remaining positive.

From early June to early December 2006, the repo rate was increased by a cumulative 200 basis points in order to keep the monetary policy stance consistent with the achievement of the inflation target. Concerns regarding the high rates of growth in consumer demand and credit extension were compounded by the high levels of volatility in international oil prices and emerging production price pressures during this period.

By the time the MPC met in February 2007, however, the outlook had, on balance, improved sufficiently to justify a pause in the upward phase of the interest rate cycle. The risks were still perceived to be somewhat on the upside but inflation outcomes, with respect to both consumer and producer prices, were below expectations, and inflation was projected to remain within the target range for the forecast period. In April, the monetary policy stance was left unchanged, although the inflation outlook had deteriorated slightly primarily as a result of less favourable developments in petrol and food prices.

This *Monetary Policy Review* provides an analysis of recent price developments, the factors that affect inflation and the outlook for inflation. In addition, three focus topics are presented in boxes. The first box presents a discussion of recent developments in domestic petrol prices in the light of international product price and exchange rate movements. The second box discusses the role of Taylor rules in monetary policy, and the third reports on recent research into the dynamics of inflation.

Recent developments in inflation

This section reviews recent trends in the main inflation indices, and analyses developments in the main factors impacting on inflation in South Africa.

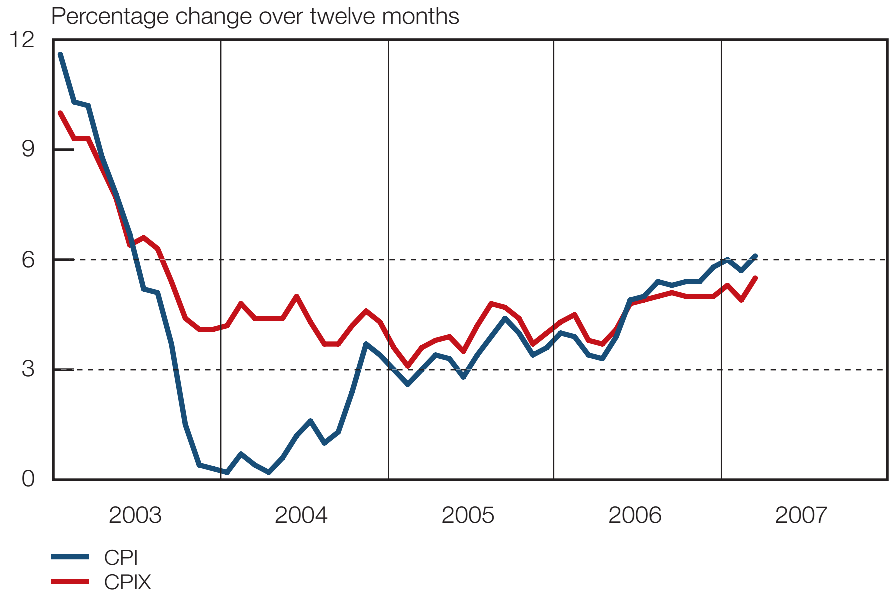
The evolution of indicators of inflation

The year-on-year increase in the consumer price index excluding mortgage interest cost for metropolitan and other urban areas (CPIX), the measure of inflation targeted by the South African Reserve Bank (the Bank), has remained within the inflation target of 3 to 6 per cent for 43 consecutive months up to March 2007 (Figure 1). Since the publication of the previous *Monetary Policy Review* in November 2006 when the latest available rate (for September 2006) was 5,1 per cent, CPIX inflation had declined marginally to 5,0 per cent in October and remained at this level until December. The inflation rate then rose to 5,3 per cent in January 2007, before slowing to 4,9 per cent in February and then increasing to 5,5 per cent in March. The analysis presented in this review reveals that these movements were largely due to developments in food and energy prices.

For the calendar year 2006, CPIX inflation averaged 4,6 per cent compared with 3,9 per cent during 2005. Measured from quarter to quarter at seasonally adjusted and annualised rates, the CPIX inflation rate increased from 3,4 per cent in the fourth quarter of 2006 to 4,1 per cent in the first quarter of 2007.

Figure 1 also plots the year-on-year inflation rate measured in terms of the headline consumer price index for metropolitan areas (CPI). CPI inflation increased from 5,3 per cent in September 2006 to 6,1 per cent in March 2007. The quarter-on-quarter CPI inflation rate (measured on a seasonally adjusted and annualised basis) declined from 4,9 per cent in the fourth quarter of 2006 to 4,1 per cent in the first quarter of 2007.

Figure 1 Consumer price inflation: CPIX and CPI

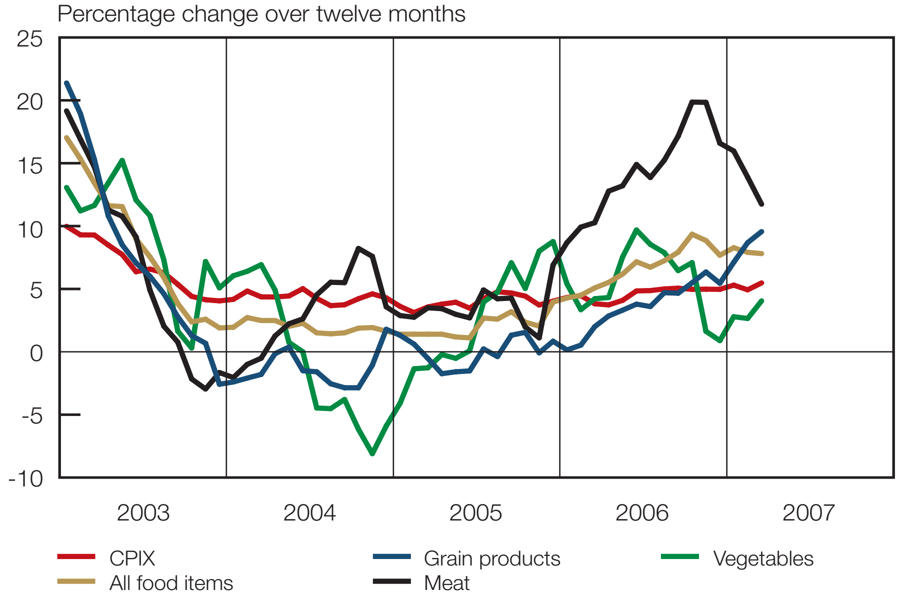


Source: Statistics South Africa

In the period under review, food prices continued to contribute significantly to the overall CPIX inflation rate. Figure 2 shows that year-on-year inflation in food prices increased from 7,9 per cent in September 2006 to 9,4 per cent in October, before declining to 7,8 per cent in March 2007. Meat prices, in particular, accelerated strongly in 2006, although the inflation rate for this component declined from a peak of over 19 per cent in October and November 2006 to 11,7 per cent in March 2007. The inflation rate for grain products continued to rise, however, increasing from 4,7 per cent in September 2006 to 9,6 per cent in March 2007.

Figure 3 shows the spot prices of white and yellow maize, and the export and import parity prices that provide the theoretical lower and upper bounds for these prices. Movements in maize prices may be considered in terms of both changes in the parity prices themselves and movements within the band they create. Since mid-2005, increases in international maize prices and the weakening of the exchange rate of the rand against the United States (US) dollar have resulted in the parity prices rising. The drought conditions experienced domestically, which have reduced the expected size of the maize harvest for 2007 by 10,3 per cent from its initial estimate, have contributed to the price of yellow maize, in particular, rising to near its import parity level. The price of yellow maize

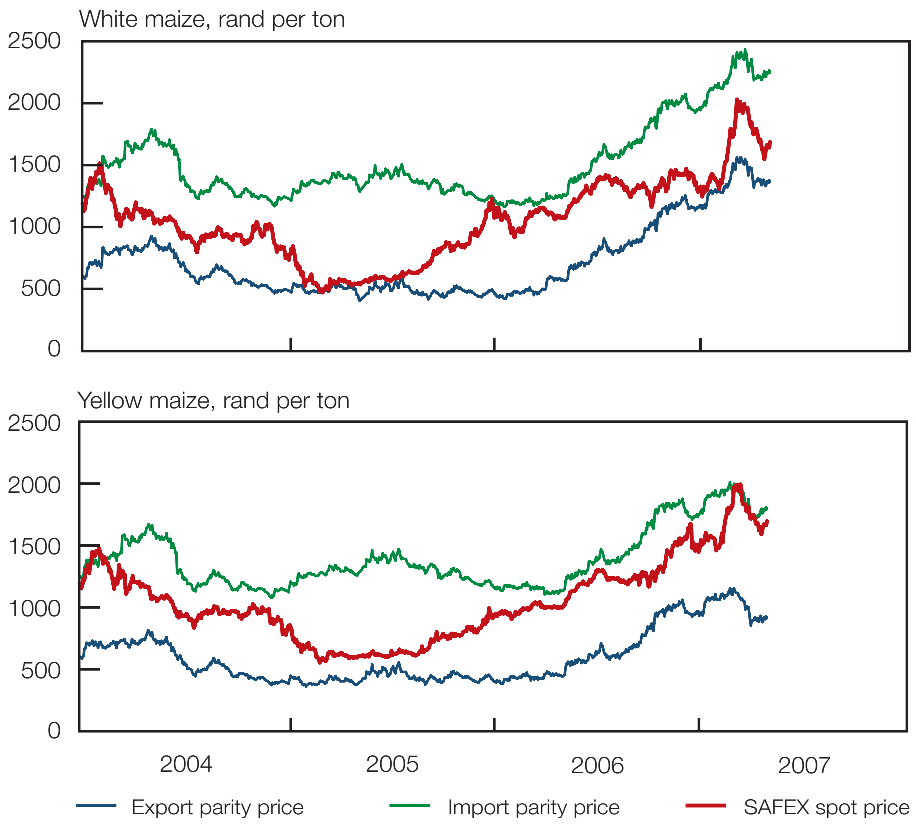
Figure 2 CPIX and food inflation



Source: Statistics South Africa

increased to R1 994/ton on 16 March 2007 before declining to R1 698/ton on 2 May, while that of white maize rose to R2 030/ton on 6 March before receding to R1 686/ton on 2 May. The declines in prices followed a strengthening of the foreign exchange rate of the rand against the US dollar and an upgraded forecast for the maize crop by the crop estimates committee.

Figure 3 Maize prices



Source: Grain South Africa

The contributions of the various components of the CPIX to the overall inflation rate are presented in Table 1. Given their weight of 25,7 per cent in the index, food prices continued to play a significant role in this regard, contributing over 2 percentage points to the twelve-month CPIX inflation rate in each month from September 2006. Movements in transport prices were an important driver of fluctuations in CPIX inflation, with contributions receding from 0,7 percentage points in September 2006 to 0,2 percentage points in October, and then increasing to reach 0,5 percentage points by December (offsetting the decline in the contribution of food prices over this period). The contribution of the transport component then grew to 0,7 percentage points in January 2007, dipped to 0,3 percentage points in February and increased once more to 0,7 percentage points in March. These movements in transport prices were largely the result of fluctuations in domestic petrol prices, which are discussed in greater detail in Box 1.

Table 1 Contributions to CPIX inflation

Percentage change over twelve months* and percentage points

	2006				2007		
	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Total*	5,1	5,0	5,0	5,0	5,3	4,9	5,5
Of which:							
Food	2,0	2,4	2,3	2,0	2,2	2,1	2,1
Housing	0,6	0,6	0,6	0,6	0,6	0,6	0,6
Medical care and health expenses	0,6	0,6	0,6	0,6	0,5	0,5	0,5
Household operation	0,2	0,2	0,2	0,2	0,2	0,3	0,4
Transport	0,7	0,2	0,3	0,5	0,7	0,3	0,7
Education	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Clothing and footwear	-0,2	-0,3	-0,3	-0,3	-0,3	-0,2	-0,2
Fuel and power	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Other	0,5	0,6	0,6	0,7	0,7	0,6	0,7

Source: Statistics South Africa

The contributions of the other main components of the CPIX remained relatively constant. Between September 2006 and March 2007, the housing and education components contributed 0,6 and 0,4 percentage points, respectively. The contribution of the medical care and health expenses component declined marginally from 0,6 percentage points between September and December 2006 to 0,5 percentage points between January and March 2007. The contribution of the household operation component increased from 0,2 percentage points between September and January 2007 to 0,3 percentage points in February. In March, this component contributed 0,4 percentage points as a result of updated survey data on the wages of domestic workers being incorporated into the index.

Box 1 Developments in domestic petrol prices

Petrol prices in South Africa are directly linked to the US-dollar petrol prices prevailing in international markets. It follows therefore that the domestic petrol price is affected by developments in both the rand/US dollar exchange rate and the supply and demand for petroleum products on international markets. This box briefly outlines aspects of the methodology employed in administering the regulated price of petrol in South Africa, and discusses recent developments in petrol prices in the light of international product price and exchange rate movements.

The pump price of petrol is made up of a number of elements, some being domestic (such as taxes and margins) and some international. The key international element is the basic fuel price (BFP), which reflects the cost of importing petroleum product from international refineries to South Africa. The BFP for a product is calculated as the sum of the following five elements:

- Average cost, insurance and freight price (free on board spot prices at international refineries and spot premiums plus freight, including demurrage allowances and insurance)
- Ocean loss allowance
- Cargo dues = landing costs for imports at South African ports
- Coastal storage cost
- Stock financing cost

This sum is converted to South African cents per litre using the rand/US dollar exchange rate, averaged over the pricing period.

In terms of the working rules employed by the Department of Minerals and Energy (DME) to administer regulated fuels[1], the prices of all grades of petrol, diesel and illuminating paraffin are adjusted on the first Wednesday of each month[2]. The price changes are intended, *inter alia*, to ensure that over or under-recoveries incurred in terms of the relevant BFP during the previous month are cleared during the following period. The formula to calculate the unit over or under-recovery value is:

$$UR = BFP^{C} - BFP^{N}$$

where UR is the average unit over or under-recovery in South African cents per litre, BFP^{C} is the "Contribution to Basic Fuel Price" as published in the DME Media Statement, and BFP^{N} is the average daily BFP value.

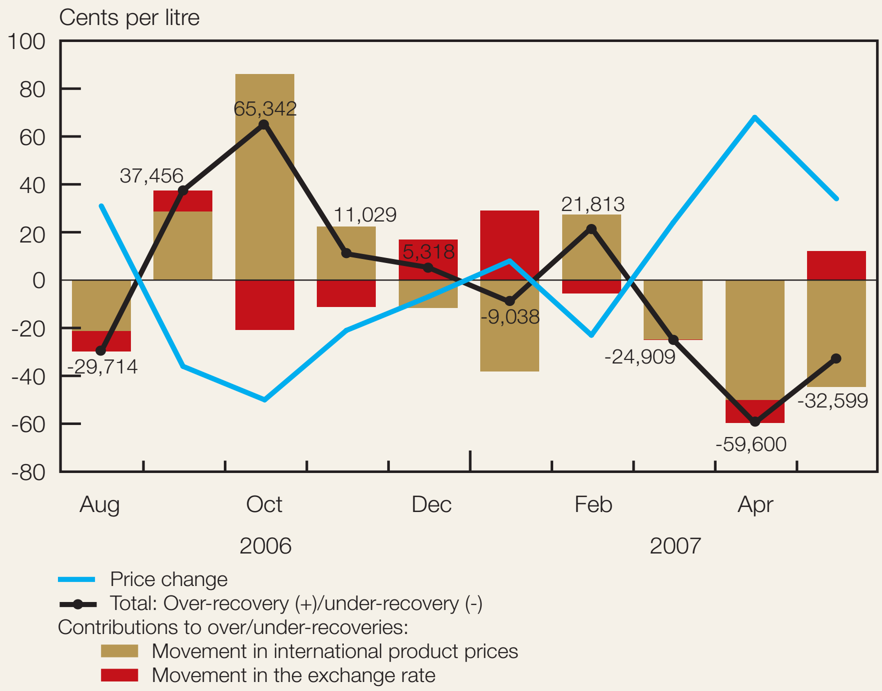
In terms of this formula, if BFP^{N} is less than BFP^{C}, a unit over-recovery results, and when BFP^{N} exceeds BFP^{C}, there is a unit under-recovery. Over-recoveries require the petrol price to be adjusted downward in the following month, and under-recoveries require that it be adjusted upward.

Figure B1.1 examines recent developments in the unit over or under-recovery and the resulting price changes for 95 octane unleaded and lead replacement petrol for the period August 2006 to May 2007. The unit over or under-recovery for each month is decomposed into the contributions of

1. *Department of Minerals and Energy "Working Rules to Administer the Basic Fuels Price Methodology", date effective: 2 March 2003 (revised 28 October 2005).*

2. *The Central Energy Fund administers the system on behalf of the DME.*

Figure B1.1 Over and under-recoveries and petrol price changes



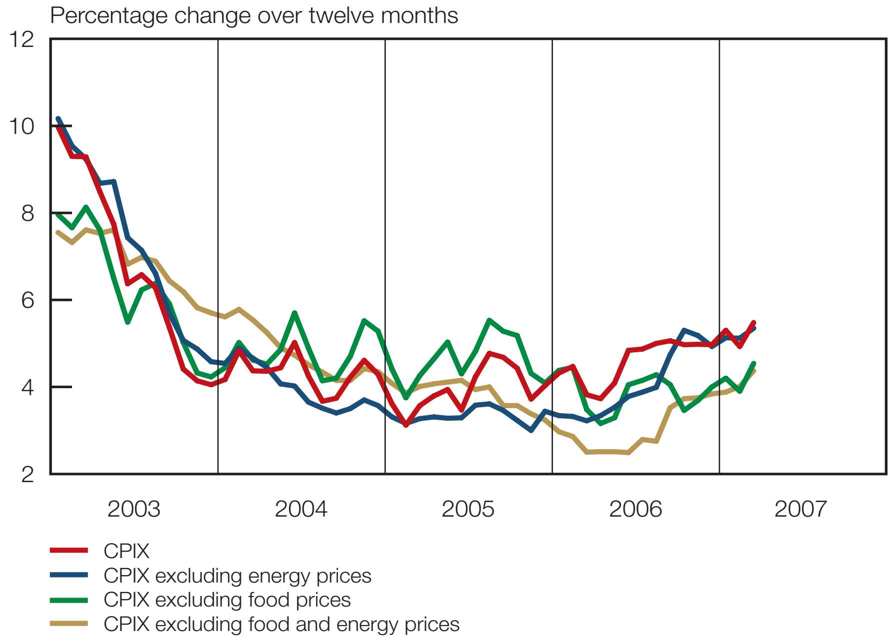
3. The average rand/US dollar exchange rate depreciated in March (to an average of R7,3841 to the US dollar between 2 March and 29 March 2007 from an average of R7,1956 to the US dollar during the previous period).

movements in international product prices and the exchange rate. The 59,6 cents/litre under-recovery in April 2007, for example, resulted from a 50,018 cents/litre contribution from international product prices (which were high relative to BFPC) reinforced by a 9,582 cents/litre contribution from exchange rate movements[3]. The pump price of petrol was raised by 68 cents/litre in April, which included a combined 10 cents/litre increase in the fuel tax and Road Accident Fund levy.

Figure B1.1 therefore shows how changes in the domestic petrol price are affected by developments in the rand/US dollar exchange rate and international petroleum product prices. These factors may partially offset one another, as was the case between October 2006 and February 2007, and in May 2007, or they may reinforce one another, depending on conditions in their respective markets. The relative magnitude of their contributions may also vary over time for the same reason. In recent months, however, the decomposition in Figure B1.1 shows that movements in international product prices have had a greater influence on domestic prices than exchange rate fluctuations.

Figure 4 shows the impact of excluding both energy and food prices from the year-on-year CPIX inflation measure. The resulting inflation rate increased from 3,5 per cent in September 2006 to 4,4 per cent in March 2007. Energy prices, which have provided upward pressure on CPIX inflation for most of 2005 and 2006, have had a neutral effect since October 2006. Excluding energy prices, CPIX inflation increased from 4,7 per cent in September 2006 to 5,4 per cent in March 2007. By contrast, the CPIX inflation rate excluding food prices has been significantly lower than the overall rate in recent months, declining from 4,1 per cent in September 2006 to 3,9 per cent in February 2007 before rising to 4,5 per cent in March.

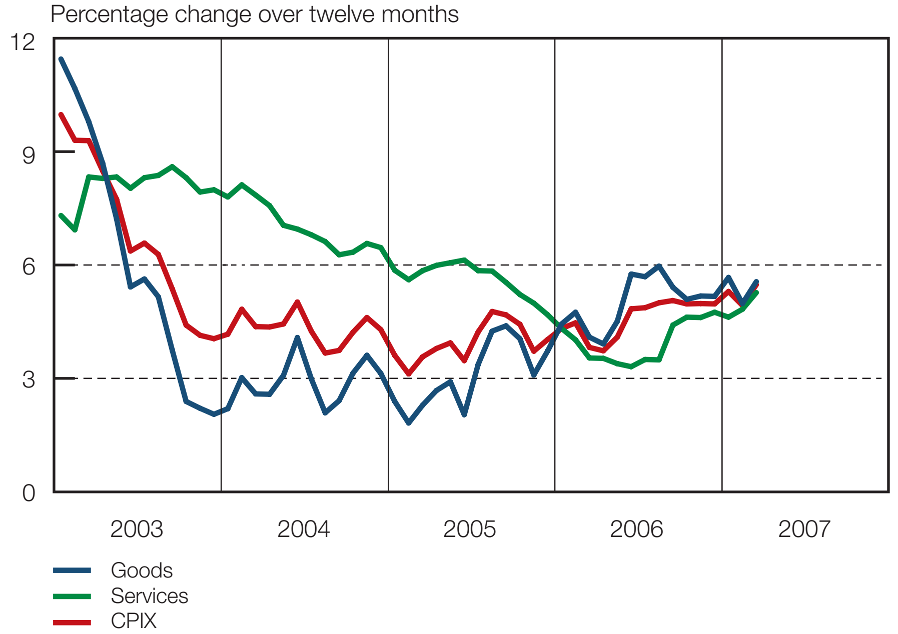
Figure 4 The effect of food and energy prices on CPIX inflation



Sources: Statistics South Africa and SARB calculations

Figure 5 presents the inflation rates for the goods and services categories of CPIX inflation. In recent months, goods and services inflation rates have converged, with the year-on-year inflation rate for goods prices having declined from 5,4 per cent in September 2006 to 5,0 per cent in February 2007 before increasing to 5,6 per cent in March. Services inflation rose from 4,4 per cent in September 2006 to 5,3 per cent in March 2007. The movement in goods price inflation can be attributed largely to developments in the food component, which has a weight of 38,7 per cent in the goods index, and the continued decline in clothing and footwear prices. The increase in services price inflation can be attributed mainly to developments in the housing, transport, education and medical services components of the index.

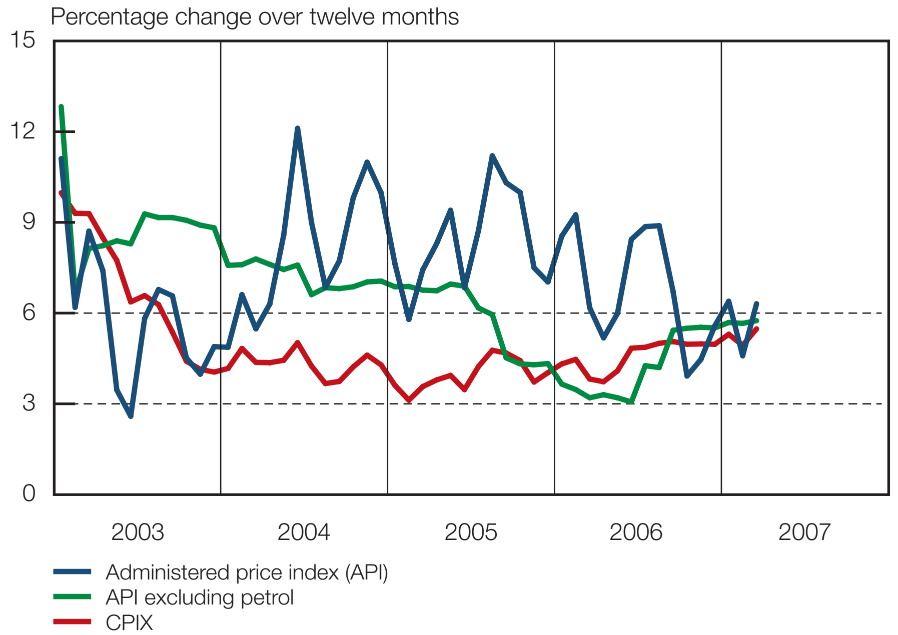
Figure 5 CPIX: Goods and services inflation



Source: Statistics South Africa

Administered prices have a weight of 20,01 per cent in the CPIX, including a weight of 5,08 per cent for petrol prices. On average, the year-on-year inflation rate for the overall administered price index (API) amounted to 6,8 per cent in 2006 compared with 8,3 per cent in 2005 (Figure 6). In the period under review, the API inflation rate declined from 6,7 per cent in September 2006 to 3,9 per cent in October, and fluctuated between 6,4 and 4,6 per cent in 2007. However, excluding the petrol component, the inflation rate for the remaining administered prices increased from 5,4 per cent in September 2006 to 5,8 per cent in March 2007.

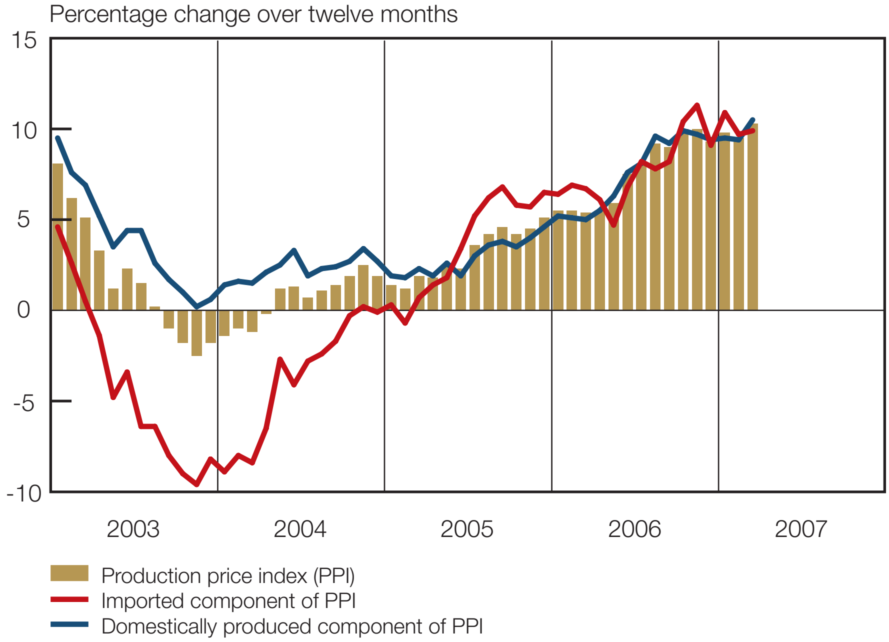
Figure 6 CPIX and administered prices



Sources: Statistics South Africa and SARB calculations

Robust increases in the prices of both imported and domestically produced goods continue to fuel overall production price index (PPI) inflation. Figure 7 shows that PPI inflation increased from 9,0 per cent in September 2006 to 10,0 per cent in October and November 2006, edged lower to 9,5 per cent in February 2007, and then rebounded to 10,3 per cent in March. On average, production price inflation was 7,6 per cent during 2006 compared with 3,1 per cent during 2005.

Figure 7 Production price inflation



Source: Statistics South Africa

The average year-on-year increase for the domestic component of the PPI between September 2006 and March 2007 was 9,7 per cent, slightly below the corresponding increase of 9,9 per cent for the imported component of the index. Food prices continued to influence the domestic component, with agricultural and manufacturing food prices increasing by an average of 16,0 and 11,0 per cent, respectively, over the period.

Factors affecting inflation

Recent developments in some of the main drivers of inflation in South Africa are reviewed in this section. The outlook for these variables and, therefore, for inflation, is discussed in a later section.

International economic developments

According to recent International Monetary Fund (IMF) data, the global economy recorded growth of 5,4 per cent in 2006, reflecting a continued strong, broad-based expansion (Table 2). Although the US economy faced some headwind from a downturn in the housing sector, growth gathered momentum in the euro area and the Japanese expansion accelerated towards the end of the year, after losing some momentum mid-year. The expansion in emerging markets has remained very strong, led by China and India. Global financial market conditions have continued to be supportive of growth and although the correction in the US housing market has been sharper than expected, it has so far had little effect on the broader US economy, and even less on the global economy.

Table 2 Annual percentage change in real gross domestic product and consumer prices

	2006		
	Share of global real GDP*	Real GDP	Consumer prices
World	**100,0**	**5,4**	**3,8**
Advanced economies	**52,0**	**3,1**	**2,3**
United States	19,7	3,3	3,2
Japan	6,3	2,2	0,2
Euro area	14,7	2,6	2,2
United Kingdom	3,2	2,7	2,3
Other advanced economies	8,1	4,3	2,0
Other emerging-market and developing countries	**48,0**	**7,9**	**5,3**
Africa	3,4	5,5	9,5
Central and eastern Europe	3,4	6,0	5,0
Commonwealth of Independent States	3,8	7,7	9,5
Developing Asia	27,0	9,4	4,0
China	15,1	10,7	1,5
India	6,3	9,2	6,1
Middle East	2,8	5,7	7,9
Western hemisphere	7,6	5,5	5,4

* GDP shares based on the IMF's purchasing-power-parity valuation of country GDPs for 2006

Source: IMF *World Economic Outlook,* April 2007

In the US, the housing sector was the main source of weakness in the second half of 2006, as residential investment subtracted around 1 percentage point from growth during this period. However, spillovers from the housing market into private consumption have been minimal so far, as key supporting variables for private consumption – employment growth, rising wages and incomes, and continued favourable financial conditions – remained in place. Real gross domestic product (GDP) growth of 3,3 per cent was measured in 2006 as upward revisions to inventory accumulation, net exports and government purchases more than offset downward revisions to residential and business investment.

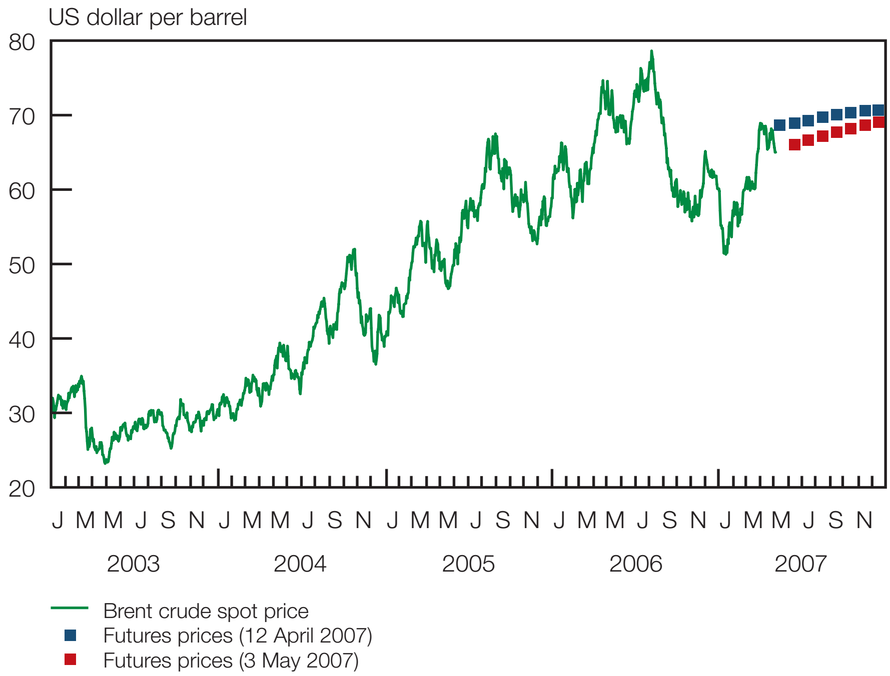
Japan recorded growth of 2,2 per cent in 2006, supported by accelerating business investment and consumer spending. In the euro area, the recovery remained firmly on track as growth rose to 2,6 per cent in 2006, almost double the 1,4 per cent recorded in 2005. Germany has been the main locomotive of the European recovery, with strong exports and investment reflecting major improvements in competitiveness. Overall euro area consumer price inflation reached 2,2 per cent in 2006, however, above the European Central Bank's (ECB's) target ceiling. In the United Kingdom (UK), revised estimates show that real GDP grew by 2,7 per cent in 2006. Final domestic demand was revised upwards as growth in consumer spending, government and business fixed investment was more buoyant than originally estimated.

Growth in developing Asia continues to be vigorous, with China and India recording sustained strong growth in 2006. In China growth reached 10,7 per cent in 2006, despite moderating slightly in the second half of the year as efforts were made to rein in the rapid expansion in fixed investment. India's economic growth accelerated to 9,2 per cent in 2006, raising fears of overheating. In Africa, real GDP growth of 5,5 per cent was recorded in 2006, while inflation rose to 9,5 per cent from the 8,4 per cent recorded in 2005. In sub-Saharan Africa, real GDP growth has averaged almost 6 per cent over the past three years – the strongest growth period in over 30 years. The higher growth in the region reflects, in part, robust domestic investment and productivity gains, supported by sound economic policies in many countries. Several countries have also benefited from debt relief, and the region was helped by strong world demand and commodity prices, and by the intensification of trade links with emerging-market countries, notably in Asia.

Oil prices

Crude oil prices fell significantly from a peak of US$79 per barrel in August 2006 to US$65 per barrel at the beginning of December, and then receded further to a 20-month low of around US$51 per barrel in mid-January 2007 (Figure 8). The easing of geopolitical tensions in Iran and Lebanon in September, a mild hurricane season in the Gulf of Mexico, and unseasonably warm weather in the northern hemisphere all contributed to the decline in prices over this period. In an effort to counter sliding prices, the Organization of the Petroleum Exporting Countries (OPEC) announced in mid-December 2006 a further cutback in production of 500 000 barrels per day, effective from 1 February 2007.

Figure 8 Price of Brent crude oil



Source: Bloomberg

Crude oil prices increased during February, returning to levels of around US$55 – US$61 per barrel before rising slightly to levels between US$59 and US$62 per barrel for most of March 2007 as colder winter temperatures were registered in the US, prompting fund buying and higher demand for heating fuel. The higher prices in February and March seem to have also reflected the increased credibility of OPEC actions to cut output, and a sense that the early January drop in prices had overshot fundamentals. Large consecutive declines in US distillate and gasoline inventories also provided upward pressure on prices. In addition, US refinery problems, a late cold snap in the US, plans to boost US emergency crude oil reserves and the resurgence of geopolitical tensions in Iran and Nigeria lent support to prices.

The price of Brent crude oil reached a seven-month high of around US$70 per barrel on 2 April 2007, amid supply concerns ahead of the US summer driving season and geopolitical tensions in Iran and Nigeria. Declining US gasoline inventories and an eighteen-day strike at a French oil terminal exacerbated these concerns, as did the seizure of 15 British personnel in the Persian Gulf on 23 March. The oil price remained above US$65 per barrel up to the end of April 2007.

Central bank interest rate developments

Table 3 shows that there has been no change so far in 2007 in the policy rates of the US Federal Reserve, the Bank of Canada and the Reserve Bank of Australia, all of which had undertaken prior tightening. However, the Bank of England, the ECB, the Bank of Japan, the Reserve Bank of New Zealand and the Reserve Bank of India have recently raised their key policy rates by 25 basis points each, while the People's Bank of China raised one-year lending rates by 27 basis points and reserve requirements by a further 50 basis points.

Table 3 Selected central bank interest rates

Per cent

Countries	1 Jan 2006	3 May 2007	Latest change (percentage points)	
United States	4,25	5,25	29 Jun 2006	(+0,25)
Japan	0,00	0,50	21 Feb 2007	(+0,25)
Euro area	2,25	3,75	14 Mar 2007	(+0,25)
United Kingdom	4,50	5,25	11 Jan 2007	(+0,25)
Canada	3,25	4,25	24 May 2006	(+0,25)
Denmark	2,25	3,75	9 Mar 2007	(+0,25)
Sweden	1,50	3,25	21 Feb 2007	(+0,25)
Switzerland	0,50 – 1,50	1,75 – 2,75	15 Mar 2007	(+0,25)
Australia	5,50	6,25	8 Nov 2006	(+0,25)
New Zealand	7,25	7,75	26 Apr 2007	(+0,25)
Israel	4,50	3,75	26 Apr 2007	(-0,25)
China	5,58	6,39	18 Mar 2007	(+0,27)
Hong Kong	5,75	6,75	30 Jun 2006	(+0,25)
Indonesia	12,75	9,00	6 Mar 2007	(-0,25)
Malaysia	3,00	3,50	26 Apr 2006	(+0,25)
South Korea	3,75	4,50	10 Aug 2006	(+0,25)
Taiwan	2,25	2,875	30 Mar 2007	(+0,125)
Thailand	4,00	4,00	11 Apr 2007	(-0,50)
India	6,25	7,75	30 Mar 2007	(+0,25)
Brazil	18,00	12,50	19 Apr 2007	(-0,25)
Chile	4,50	5,00	11 Jan 2007	(-0,25)
Mexico	8,25	7,25	27 Apr 2007	(+0,25)
Czech Republic	2,00	2,50	29 Sep 2006	(+0,25)
Hungary	6,00	8,00	25 Oct 2006	(+0,25)
Poland	4,50	4,25	26 Apr 2007	(+0,25)
Russia	12,00	10,50	29 Jan 2007	(-0,50)

Source: National central banks

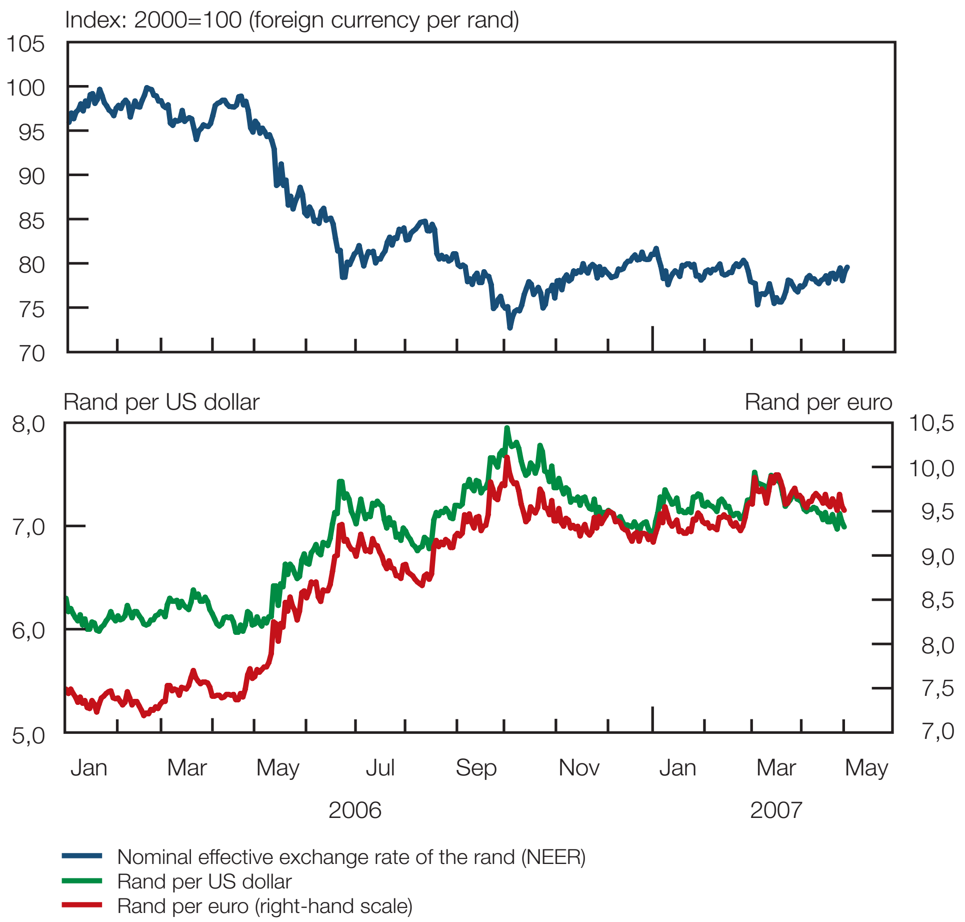
The Bank of Japan increased the uncollateralised overnight call rate by 25 basis points to 0,50 per cent in February 2007, citing a "longer-term perspective" on the economy and inflation, and the ECB announced a seventh consecutive increase in its policy rate in early March to 3,75 per cent. The Reserve Bank of New Zealand raised the official cash rate to 7,75 per cent as pressures from the housing market and domestic demand posed upside risks to the medium-term inflation outlook. India's central bank raised its key policy rate to 7,75 per cent at the end of March and also announced increases to the banks' cash reserve ratio.

The central banks of Thailand, Brazil, Indonesia, Israel and Russia recently lowered interest rates. The Bank of Thailand lowered the interest rate by 50 basis points to support expansion in the economy as domestic demand slowed in the first quarter of 2007, while Brazil reduced its Selic rate by a further 25 basis points to 12,50 per cent (the fifteenth reduction since the beginning of the easing cycle in September 2005). Bank Indonesia reduced its rate by a further 25 basis points to 9,0 per cent, while the Bank of Israel lowered its interest rate by a further 25 basis points as inflation was below the target range.

Exchange rate developments

Figure 9 shows that the nominal effective exchange rate of the rand (NEER), which measures the foreign exchange rate against a basket of thirteen currencies, has remained relatively stable after weakening in mid-2006. The NEER strengthened from 72,7 index points on 4 October 2006 to a level of 81,7 index points on 3 January 2007. A sell-off in emerging markets, which proved to be short-lived, resulted in the NEER spiking to around 75 index points in early March, before recovering in subsequent months to reach 78,6 index points on 3 May 2007. The bilateral exchange rates of the rand against the US dollar and the euro depicted in Figure 9 partly reflect the weakness of the US dollar against the euro in recent months. The rand depreciated from R6,94 against the US dollar on 2 January 2007 to R7,12 on 30 April, and then strengthened to R6,99 per US dollar on 3 May. Against the euro, the rand weakened from R9,22 to R9,69 before recovering to R9,51 over the same intervals.

Figure 9 Exchange rates of the rand



The domestic currency was supported by robust investment flows as South Africa benefited from excess liquidity and low yields in industrialised countries. The largest net annual capital inflow to date on the financial account of the balance of payments, amounting to

R140,8 billion, was recorded in 2006, although direct investment recorded a net outflow of R48,2 billion in the second half of 2006 compared with a marginal inflow in the first half. Non-residents' net purchases of shares and bonds showed strong growth in 2006, however, as non-residents increased their portfolio investments by R107,8 billion compared with a net increase of R39,5 billion in 2005. In the first three months of 2007, net purchases of shares and bonds by non-residents totalled R20,6 billion and R0,6 billion, respectively.

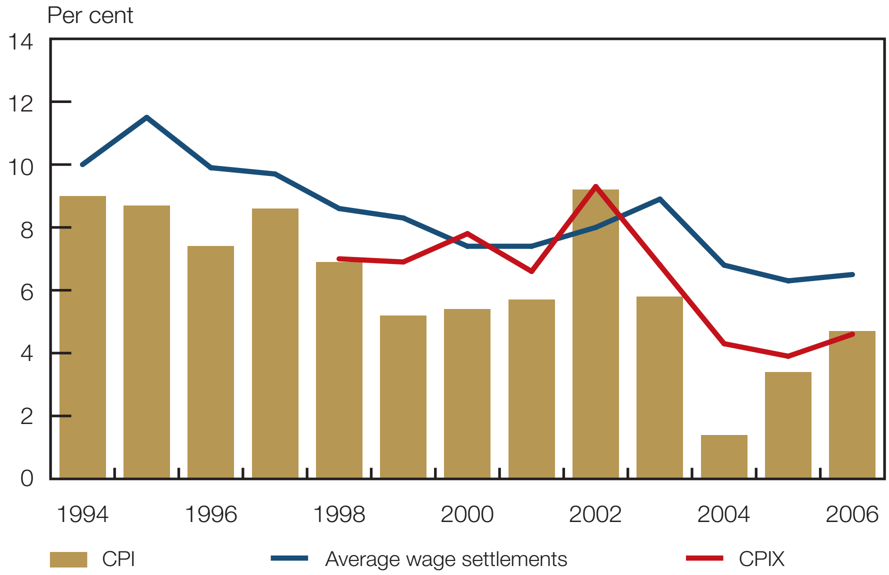
Labour markets

The analysis of labour market data for the period under review requires some caution, primarily as a result of the recent change in the sample size of the Quarterly Employment Statistics (QES) survey published by Statistics South Africa. From the quarter ending June 2004 to the quarter ending September 2006, the QES survey results were based on a sample drawn from a list of employer entities obtained from the Business Register in April 2004, mostly covering employing enterprises registered for income tax purposes. The recently released data, however, relating to the period from the second to the fourth quarter of 2006, are based on a new revised Business Register that was compiled in March 2006. This revised Business Register has enhanced coverage of employer entities, since it makes use of additional sources such as the lists maintained by the South African Revenue Service (SARS) of employers making contributions on behalf of their employees for Pay-As-You-Earn (PAYE) tax, and the Department of Labour's Unemployment Insurance Fund (UIF).

Indicative results obtained by linking the old and new data sets suggest that over the year to the fourth quarter of 2006, nominal wage inflation measured by growth in nominal remuneration per worker in the formal non-agricultural sectors of the South African economy amounted to 9,1 per cent. Productivity growth, i.e. growth in the ratio of value added to employment, was 3,0 per cent over the same period. Unit labour cost, calculated as wage growth adjusted for productivity changes in the formal non-agricultural sectors of the economy, increased by 5,9 per cent on a year-on-year basis in the fourth quarter of 2006, compared to 5,2 per cent in the third quarter.

According to the outcome of the December 2006 *Andrew Levy Wage Settlement Survey*, depicted in Figure 10, wage settlements averaged 6,5 per cent in 2006 compared with 6,3 per cent a year before.

Figure 10 Average annual inflation and wage settlements



Sources: Andrew Levy Employment Publications and Statistics South Africa

Demand and output

Growth in the South African economy continued at a robust pace, recording an annualised rate of 5,6 per cent during the fourth quarter of 2006 compared with a revised annualised rate of 4,5 per cent in the third quarter (Table 4). For 2006, the real GDP growth rate was 5,0 per cent, compared with 5,1 per cent in 2005.

Table 4 Growth in real gross domestic product and expenditure components

Per cent*

	2005	2006				
	Year	1st qr	2nd qr	3rd qr	4th qr	Year
Final consumption expenditure:						
Households	6,6	8,3	8,1	7,6	7,8	7,3
General government	5,2	-3,2	15,7	-4,3	4,7	5,4
Gross fixed capital formation	9,6	14,2	12,4	14,2	16,6	12,8
Change in inventories (R billions)**	8,8	15,9	16,3	9,0	21,8	15,8
Gross domestic expenditure	**5,9**	**14,9**	**9,0**	**1,4**	**12,3**	**8,7**
Exports of goods and services	8,0	-16,3	24,9	19,4	38,7	5,5
Imports of goods and services	10,7	18,2	34,4	5,5	58,3	18,4
Gross domestic product	**5,1**	**5,0**	**5,5**	**4,5**	**5,6**	**5,0**

* Quarterly data refer to quarter-on-quarter growth at annual rates of seasonally adjusted data
** Constant 2000 prices

The robust growth in the fourth quarter can be attributed to the strong performance of both the secondary and tertiary sectors. The secondary sector grew at an annualised rate of 8,5 per cent in the fourth quarter, compared with 5,6 per cent in the third quarter, while the growth rate of the tertiary sector increased from 4,8 per cent in the third quarter to 5,3 per cent in the fourth quarter. The strong growth in the secondary sector reflected the performance of the manufacturing sector, which continued to benefit from buoyant business confidence and domestic demand and recorded a growth rate of 8,3 per cent in the fourth quarter compared with 4,7 per cent in the third quarter of 2006.

The primary sector recorded a modest increase in the fourth quarter of 2006, growing at a rate of 1,1 per cent, compared with a contraction of 4,0 per cent in the third quarter. The performance of the primary sector was supported by strong growth in the mining sector, which grew at a rate of 4,6 per cent in the fourth quarter compared with a revised annualised rate of 0,3 per cent in the third quarter of 2006. This helped offset the continued contraction in the agricultural sector, which declined by 8,4 per cent in the fourth quarter compared with a revised annualised decline of 14,9 per cent in the third quarter of 2006.

Real domestic expenditure continued to expand at a brisk pace, recording an annualised growth rate of 12,3 per cent in the fourth quarter compared with 1,4 per cent in the third quarter of 2006. All components of final demand grew strongly in the fourth quarter, with household consumption expenditure expanding by an annualised 7,8 per cent, government consumption expenditure by 4,7 per cent, and gross fixed capital formation by 16,6 per cent. The ratio of gross fixed capital formation to GDP recorded its highest level since 1990, at 19,2 per cent, in the fourth quarter.

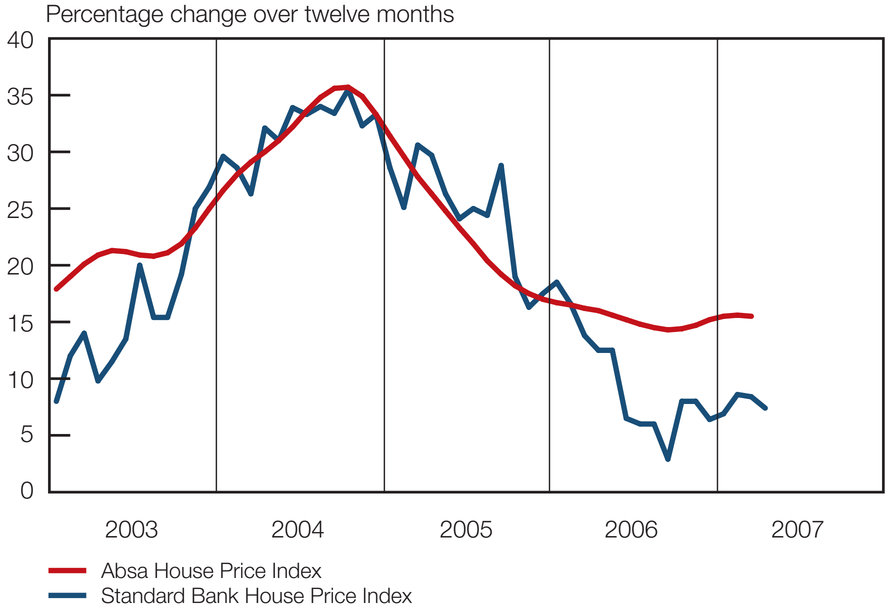
In the external sector of the economy, real exports of goods and services increased by an annualised 38,7 per cent in the fourth quarter of 2006. However, real imports of goods and services increased by 58,3 per cent in the corresponding quarter, largely as a result of sharply higher imports of crude oil. As a consequence, the trade deficit more than doubled from the third to the fourth quarter. Coupled with a strong rise in net service and income payments to non-residents and the weaker rand, these developments contributed to a further widening of the deficit on the current account of the balance of payments to 7,8 per cent of GDP during the fourth quarter of 2006. This deficit was more than covered by net financial inflows from the rest of the world in the fourth quarter, resulting in a continued surplus on the overall balance of payments. South Africa's reserve position continued to strengthen with the gross gold and other foreign reserves increasing from US$24,7 billion at the end of September 2006 to US$26,5 billion at the end of March 2007. The international liquidity position increased from US$21,2 billion to US$24,0 billion over the same period.

Real-estate and equity prices

The downward trend in house price growth that has been evident since late 2004, paused in the period under review. In Figure 11, the year-on-year rate of change in the Absa House Price Index increased slightly from 14,3 per cent in September 2006 to 15,5 per cent in March 2007, while that of Standard Bank increased from 2,9 per cent in September 2006 to 7,4 per cent in April 2007[4]. On average, the Absa and Standard Bank nominal house price indices increased by 15,3 and 9,8 per cent, respectively, in 2006 compared with 23,1 and 24,6 per cent in 2005.

4 The Absa House Price Index records the total purchase price of houses in the 80 – 400 m² size category, valued at R2,7 million or less in 2006 and for which loan applications were approved by Absa. The Standard Bank index is based on the median price of the full spectrum of recorded house prices.

Figure 11 House prices



Sources: Absa and Standard Bank

Table 5 presents building statistics as published by Statistics South Africa, which suggest that the level of economic activity in the residential real-estate sector continued to moderate in 2006. The real value of buildings completed increased by 15,3 per cent in 2006 compared with 25,8 per cent in 2005, mainly due to a significant slowdown in the real value of buildings completed in the residential sector. By contrast, the total real value of buildings completed in the non-residential sector rose by 21,8 per cent in 2006, up from 7,3 per cent in 2005.

Table 5 Real value of building plans passed and buildings completed in larger municipalities
Annual percentage change

	2003	2004	2005	2006	2007*
Building plans passed					
Total	**11,3**	**35,7**	**36,2**	**2,7**	**0,0**
Residential	16,3	42,0	29,8	-1,7	-6,7
Non-residential	3,5	23,8	53,3	21,6	18,6
Additions and alterations	6,3	29,1	41,6	0,6	2,4
Buildings completed					
Total	**6,8**	**26,2**	**25,8**	**15,3**	**24,4**
Residential	8,1	38,4	32,7	10,9	14,4
Non-residential	8,7	8,2	7,3	21,8	70,2
Additions and alterations	1,4	7,9	18,1	27,8	19,0

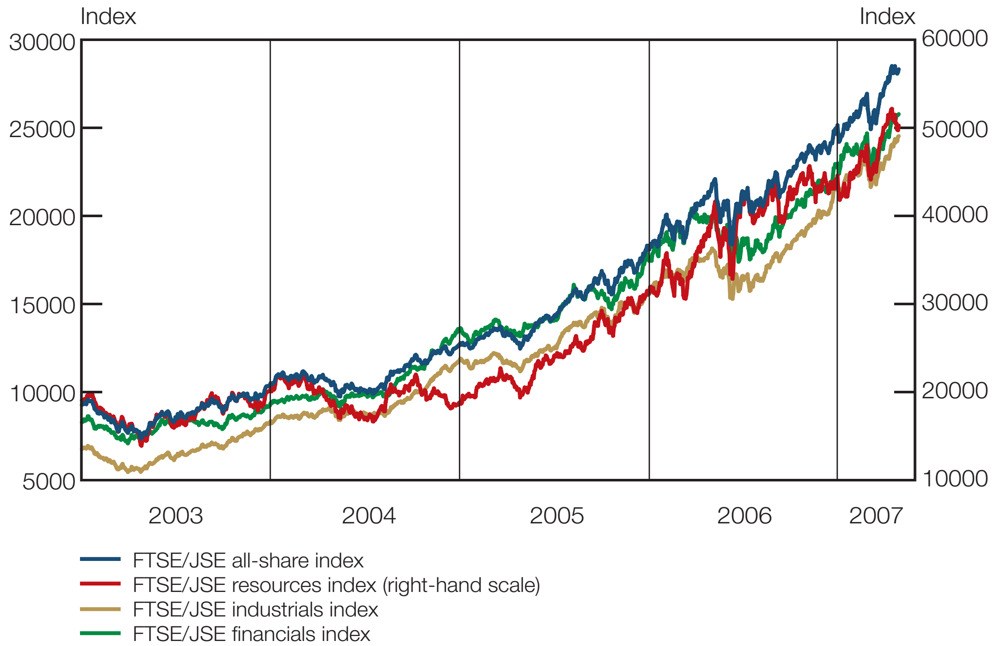
* Figures for January – February 2007 compared with the corresponding months of 2006

Source: Statistics South Africa

The corresponding real value of building plans passed, which provides an indication of future construction activity, points to a significant deceleration in building activity, particularly in the residential sector. The total real value of building plans passed grew by 2,7 per cent in 2006, compared with 36,2 per cent in 2005. This was once more the result of a significant slowdown in the residential sector, which contracted by 1,7 per cent in 2006 after increasing by 29,8 per cent in 2005. There was also a significant slowdown in the real value of building plans passed for the non-residential sector and for additions and alterations, which increased by 21,6 and 0,6 per cent, respectively, in 2006 compared with 53,3 and 41,6 per cent in 2005.

The continued improvement in corporate performances, the strong domestic economy, the favourable outlook for commodity prices, and strong global equity markets continued to offer support for equity prices on the JSE Securities Exchange SA (JSE). As Figure 12 shows, the closing levels of the daily All-Share Index continued to set record highs, after recovering from the sell-off in international markets late in February.

Figure 12 Share price indices



The index increased from 22 375 at the end of September 2006 to breach the 28 000 level in mid-April 2007. The performance of the resources index continued to fuel the overall performance of the JSE, breaking the 52 000 level in mid-April 2007, before declining slightly.

Fiscal policy

Notwithstanding significant increases in spending, the sustained strong performances of the economy and in revenue collection enabled the Minister of Finance to present a broadly balanced budget on 21 February 2007 (Table 6). According to the 2007 *Budget Review*, a revised surplus in the main budget of 0,3 per cent of GDP (R5,2 billion) was expected for the fiscal year 2006/07. Subsequent preliminary data show that the realised surplus in fact amounted to R10,3 billion. In the medium term, the budget balance is projected to be a surplus of 0,6 per cent of GDP in 2007/08, before returning to deficits of 0,1 and 0,4 per cent of GDP in the fiscal years 2008/09 and 2009/10, respectively.

Estimates for total revenue have been revised to R475,8 billion for the fiscal year 2006/07, which is R29,5 billion more than originally budgeted for. These revisions are mainly attributable to strong growth in tax revenues, owing in part to continued buoyant consumer demand and corporate profitability. Going forward, revenues are projected to rise, albeit at a slower pace, to R641,5 billion in the fiscal year 2009/10. Total expenditure has been revised downward marginally to R470,6 billion in the fiscal year 2006/2007, compared to R472,7 billion originally projected. As the Accelerated and Shared Growth Initiative for South Africa (Asgisa) and the 2010 Soccer World Cup projects gather momentum, expenditure is projected to pick up steadily in the medium term as reflected in Table 6.

Table 6 Public finance data
R billions* and per cent

	2004/05	2005/06	2006/07		2007/08	2008/09	2009/10
	Actual	Actual	Budget	Revised estimates	Medium-term estimates		
National government*:							
Deficit(-)/surplus(+)	-20,7	-5,0	-26,4	+5,2	+10,7	-3,0	-8,8
Revenue	347,9	411,7	446,4	475,8	544,6	591,2	641,5
Expenditure	368,5	416,8	472,7	470,6	533,9	594,2	650,3
As percentage of GDP:							
Deficit(-)/surplus(+)	-1,4	-0,3	-1,5	+0,3	+0,6	-0,1	-0,4
Revenue	24,3	26,1	26,0	27,1	28,1	27,6	27,0
Expenditure	25,8	26,4	27,6	26,8	27,5	27,7	27,3
Total net loan debt	32,9	29,8	29,6	27,1	24,3	22,3	20,7
PSBR**	1,5	-0,8	2,4	-0,7	0,3	1,2	1,4

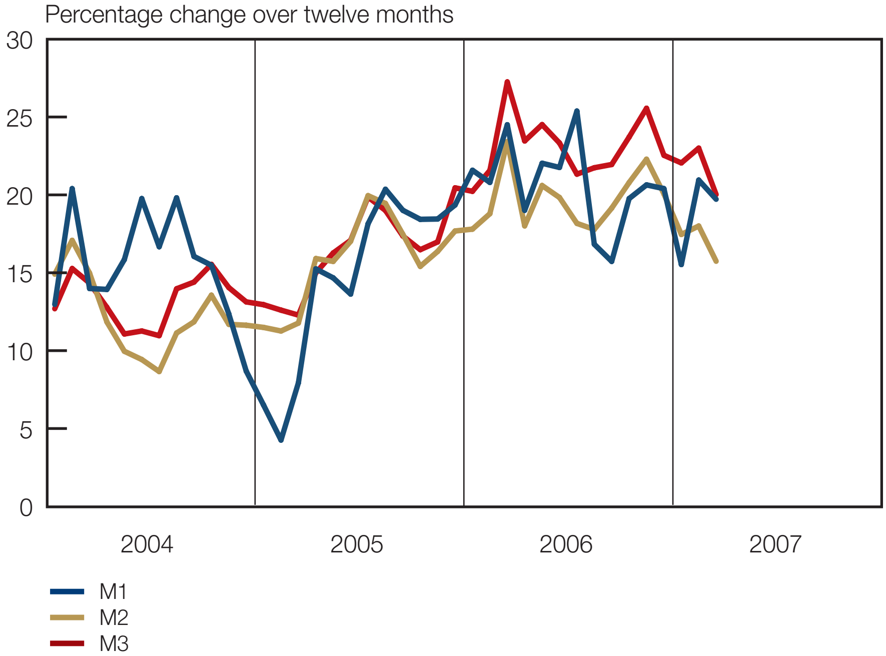
** PSBR: Public-sector borrowing requirement

Source: National Treasury *Budget Review 2007*

Monetary conditions

Growth in the monetary aggregates remained relatively robust, reflecting in part the strong acceleration in real domestic expenditure levels. On average, the twelve-month growth rate of the broad monetary aggregate (M3) was 23,1 per cent in 2006 compared with 16,4 per cent in 2005. For the period under review, Figure 13 shows that the twelve-month growth rate of M3 increased from 22,0 per cent in September to a peak of 25,6 per cent in November 2006 before declining to 20,0 per cent in March 2007. The corresponding rates for the narrower M1 and M2 aggregates increased to 20,6 and 22,3 per cent, respectively, in November 2006 before declining to 19,7 and 15,7 per cent in March 2007. The quarter-on-quarter annualised growth rate in seasonally adjusted M3 decreased from 21,7 per cent in the fourth quarter of 2006 to 20,4 per cent in the first quarter of 2007.

Figure 13 Growth in the monetary aggregates



5 *Total loans and advances to the private sector consist of instalment sale credit, leasing finance, mortgage advances, overdrafts, credit card and general advances. The first three categories are referred to as asset-backed credit, while the last three are referred to as other loans and advances.*

The growth in total loans and advances to the private sector[5] increased from 26,2 per cent in September 2006 to 27,8 per cent in February 2007, before declining to 26,3 per cent in March (Table 7). On average, total loans and advances to the private sector increased by 24,5 per cent in 2006 compared with 20,7 per cent in 2005. *Mortgage advances*, which grew at a rate of around 30,0 per cent for the period under review, continued to have a significant impact on the movements in total loans and advances. The continued securitisation activities in the banking sector saw *instalment sale credit and leasing finance* advancing at less robust rates of between 14 and 17 per cent between September 2006 and March 2007. In the *other loans and advances* category, growth in credit card advances remained robust at 43,8 per cent in March 2007, while overdrafts rose by 22,5 per cent over the same period.

Table 7 Bank loans and advances
Percentage change over twelve months

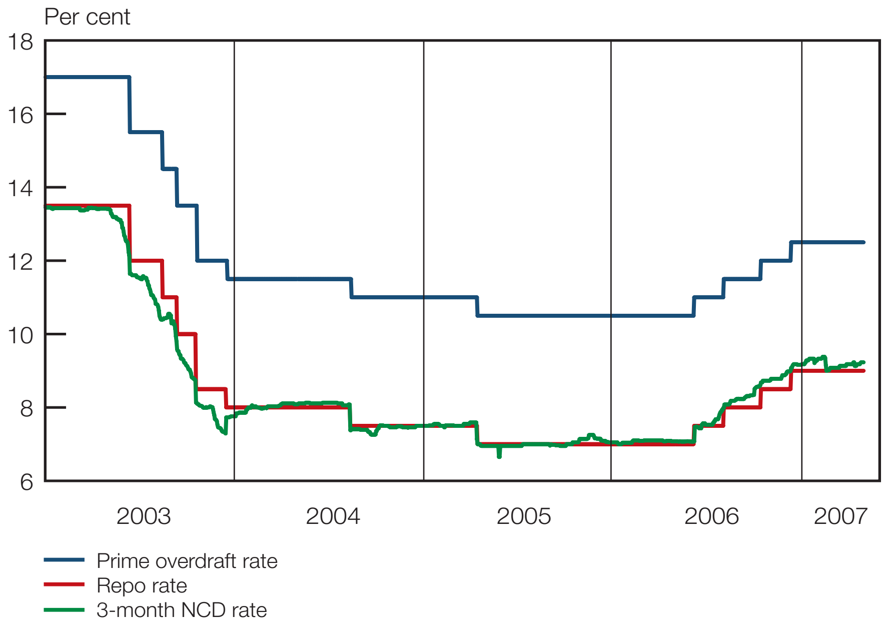
	Mortgage advances	Instalment sale credit and leasing finance	Overdrafts	Credit card advances	Total loans and advances*
2006 Jan	27,4	19,1	1,5	41,4	20,9
Feb	29,6	22,2	-5,6	40,5	22,6
Mar	30,0	19,6	1,0	38,2	24,1
Apr	30,1	19,2	1,4	39,5	22,7
May	30,0	18,1	0,7	39,4	22,2
Jun	29,8	18,6	10,0	40,2	22,8
Jul	30,3	18,4	12,4	38,6	24,2
Aug	30,3	16,9	25,0	40,9	26,1
Sep	29,6	15,8	13,7	40,8	26,2
Oct	30,9	15,0	22,7	41,1	26,8
Nov	30,4	15,3	25,4	40,9	27,4
Dec	30,0	15,8	27,2	40,8	27,6
Average	**29,9**	**17,8**	**11,3**	**40,2**	**24,5**
2007 Jan	30,1	16,2	18,8	42,5	27,1
Feb	29,6	14,0	27,2	42,2	27,8
Mar	27,9	17,2	22,5	43,8	26,3

* Total loans and advances to the domestic private sector excluding investment and discounted bills

Monetary policy

In June 2006, the monetary policy stance was changed to reflect the increased concern with the threats posed to the inflation outlook by the international oil prices and the continued high levels of domestic demand growth. These threats were also apparent in the inflation forecasts of the Bank which showed that the upper end of the inflation target range was coming under threat. In response, the repo rate was increased by 50 basis points at the MPC meetings in June, August and October of last year (Figure 14). The motivations for these increases were discussed in the *Monetary Policy Review* of November 2006.

Figure 14 The repo and other short-term interest rates



At the December 2006 meeting, the repo rate was increased by a further 50 basis points, making it a cumulative 200-basis-point increase in the current cycle. At that meeting, there was a moderate improvement in the inflation forecast. Although inflation was still expected to breach the upper end of the inflation target by the second quarter of 2007, it was then expected to follow a downward path to reach just above 5 per cent at the end of the forecast period at the conclusion of 2008. This improvement was attributed to the tighter monetary policy stance and the lower international oil price. Despite this slight improvement, the MPC still viewed the risks to the outlook to be on the upside with continued pressures on inflation emanating from a number of sources.

Uppermost on the list of concerns of the MPC was the responsiveness of domestic demand to the earlier interest rate increases. The data presented a mixed picture at that stage. There was some tentative evidence of a slowdown in demand for non-durable and durable goods, and motor vehicle sales growth in particular was showing signs of moderation. Despite these indications, private-sector credit extension remained at high levels, with twelve-month growth in total loans and advances being maintained at levels around 26 per cent.

Food price developments were also identified as threats to the inflation outlook. At that stage wheat and maize price increases had fed through to the production price level, but the full extent of the increases was still expected to be felt at the consumer price level. The MPC did note, however, that the futures prices of maize suggested some respite could be on the way by the middle of 2007.

A welcome change was that the risks to the inflation outlook emanating from oil price developments appeared to have abated, with oil having traded in the US$55 – 60 per barrel range during October and November. This had contributed to the R1,14 per litre decline in domestic petrol prices in the previous 4 months. Nevertheless, the MPC still considered oil prices to pose an upside risk to the inflation outlook, given the sensitivity of oil prices to geopolitical events and the continued tight supply and demand conditions in the oil market.

The volatility of the rand exchange rate was also seen to pose a moderate, albeit lesser, risk than before with the rand trading at levels of around R7,10 to the US dollar compared to levels of around R7,70 at the previous meeting. At the same time the deficit on the current account of the balance of payments had narrowed to 5,2 per cent of GDP in the third quarter of 2006, which was expected to reduce the risk to the exchange rate.

On the positive side, from an inflation perspective, the MPC noted in December 2006 the moderate level of wage settlements, despite evidence of a slight upward trend. Fiscal policy continued to support monetary policy and the international picture was seen to be favourable, as oil prices appeared to be easing global inflation pressures. Despite these positive developments, the MPC decided to increase the repo rate by a further 50 basis points, given the risks to the inflation outlook.

At the subsequent two meetings, February and April 2007, the monetary policy stance was kept unchanged. At these two meetings, the outlook was seen to have improved enough to justify a pause in the interest rate cycle. Nevertheless, the risks were still perceived to be somewhat on the upside. The challenge for the committee was to weigh the perceived medium to long-term risks against the more favourable outlook. Part of the difficulty facing the MPC was the inevitable lags in response to changes in the interest rate. Although the reaction to these changes was still seen to be tentative, the committee did recognise that it would still take some time for the full impact of the interest rate changes to work through the system.

At the February 2007 meeting, there was no longer an expectation that inflation would breach the upper end of the target range. By this time, the peak was expected to be around 5,6 per cent in the second quarter of 2007, with inflation receding to 4,7 per cent by the final quarter of 2008. This improved outlook was ascribed to the monetary policy actions taken to date, as well as the improved outlook with regard to international oil price developments.

However, in line with the deteriorating oil price outlook since February, the forecast was raised by the time of the April meeting. The increases in domestic petrol prices, which totalled R0,92 per litre in March and April, were primarily responsible for the upward shift of the inflation forecast. Inflation was now expected to peak in the second quarter at a level just below 6 per cent. It was expected to reach around 5 per cent by the end of 2008. This forecast is reproduced and discussed in more detail on page 31.

There were a number of positive developments which were evident in the past two meetings which gave the MPC reason to maintain an unchanged policy stance, although in some instances there was some deterioration in the risks between these two meetings.

International oil prices remained volatile, and as mentioned, were responsible for the upward shift in the forecast. At the February meeting, international oil price movements had had a strongly favourable impact on the outlook, but this had reversed by April. The MPC has made it clear in the past that it would not react to the first-round effects of exogenous shocks such as petrol price increases. Nevertheless, the risk remains that the increases that have occurred in the past months could ultimately pass through to more generalised inflation. For this reason, the MPC will watch these developments very carefully, but at the same time the view is that interest rates should not be adjusted each time the international oil price increases or decreases.

A further positive development related to the evolution of inflation expectations. In the past there had been some evidence of backward-looking expectations formation, with expectations adjusting according to past inflation. No new survey of inflation expectations was available at the February meeting, but the April meeting was presented with the Bureau for Economic Research (BER) survey for the first quarter of 2007. This survey showed that despite the upward shift in inflation outcomes, inflation expectations had improved and it appears that expectations are firmly rooted within the inflation target range. Compared with the survey undertaken in the fourth quarter of 2006, inflation expectations declined from 5,4 per cent to 5,2 per cent for 2007, and from 5,4 per cent to 5,1 per cent for 2008, while CPIX inflation is expected to average 5,1 per cent in 2009. These positive developments were also reflected in the yield curve and break-even inflation rates.

Wage settlements still appeared to be under control, and at both these meetings there was no clear evidence of a strong upward bias in wage settlements. Nevertheless, the MPC will continue to monitor these developments closely given the importance of wage settlements in the inflation process, not only because of their impact on overall demand, but also because of their possible cost-push effects. Fiscal policy and the global environment were also viewed as remaining supportive of monetary policy. The world inflation environment was seen to be favourable, and there were signs that the global interest rate cycle was reaching its peak. However, given the strong world growth outlook, the committee’s view was that global interest rates were unlikely to decline significantly in the near future.

The exchange rate, although volatile, was not viewed as a major risk factor at these meetings. Despite some volatility caused by the uncertainties in the international markets, the overall trend appeared to be relatively flat. At the February meeting, the MPC did raise the possibility of higher risk to the exchange rate outlook that could emanate from changing market perceptions concerning the widening of the deficit on the current account of the balance of payments. The committee emphasised that although the deficit for the fourth quarter of 2006 was expected to show a significant widening, this was due to exceptionally high levels of oil imports which were unlikely to be sustained. The committee also emphasised that capital inflows remained sufficiently strong to finance the deficit and also to allow for further accumulation of international reserves by the Bank.

The domestic economic growth performance was not believed to be a significant risk factor, despite the economy operating at high levels of capacity utilisation. The MPC noted that the economy was operating at levels which were probably at or slightly above the potential output growth rate. Nevertheless, it was felt that the positive trends with respect to investment growth implied that the potential output of the economy was probably increasing as well, and therefore the strong growth performance of the economy did not necessarily pose an immediate threat to the inflation outlook.

The major inflation concerns in the past two meetings, apart from the oil prices discussed above, revolved around the growing threat posed by food prices and the continued high rate of household expenditure growth and the associated increase in credit extension. Despite tentative signs of moderation in household demand, there were no clear signs that this trend would be sustained. The one area where the impact of higher interest rates was more convincing was with respect to motor vehicle sales. There were also some indications that the strong growth in credit extension was now being driven by companies financing investment expenditure, rather than by households borrowing for consumption purposes.

Despite the moderate deterioration of the inflation outlook between the February and April meetings, the MPC decided to leave the monetary policy stance unchanged. It indicated, however, that this did not necessarily signal an end to the tightening cycle. The outlook for interest rates would depend on the MPC's further assessment of the evolution of the determinants of inflation as well as its assessment of the risks to the outlook.

Box 2 Taylor rules and monetary policy

There is general consensus among economists that expectations play a critical role in determining macroeconomic outcomes. In order to anchor inflation expectations consistently and systematically at required levels, monetary policy has to be fairly predictable. Some argue that one way to achieve such predictability is for central banks to commit to a policy rule instead of implementing policies at the authorities' discretion[6]. One such policy rule is the Taylor (1993) rule. This rule has been widely used by, among others, market analysts, to assess and sometimes to predict the policies central banks might follow. This box provides a brief description of Taylor rules, their limitations and a bird's eye view of their role in monetary policy.

The Taylor rule stipulates that the instrument of the monetary authority reacts to two key goal variables: Deviations of contemporaneous inflation from a pre-set target rate and deviations of contemporaneous real output from its potential level. The original Taylor rule takes the form:

$$i_t = r^* + \pi_t + \alpha(\pi_t - \pi^*) + \beta(y_t - y_t^*)$$

where i_t is the nominal federal funds interest rate[7]; r^* is the inflation-adjusted federal fund interest rate, which is the rate that is consistent with neutral monetary policy; π_t is the rate of inflation over the previous four quarters; π^* is the target rate of inflation, y_t is real GDP and y_t^* is potential real GDP such that $(y_t - y_t^*)$ is the output gap. Assuming that, $r^*=\pi^* = 2$, $\alpha = 0.5$ and $\beta = 0.5$, Taylor (1993) showed that such a rule characterised the actual policy decisions made by the Federal Open Market Committee between 1987 and 1992 rather well.

Since its inception, the original Taylor rule has been subjected to numerous refinements and extensions by incorporating other elements and variables that are important in monetary policy-making. In particular, wide support has been found for modified Taylor rules[8] which include the forward-looking behaviour of monetary authorities as well as interest rate smoothing, i.e. inclusion of the lagged interest rate as an explanatory variable (see Clarida et. al., 1998). Other extensions include incorporating variables such as exchange rates, monetary aggregates, asset prices, etc., to which monetary policy might react.

Notwithstanding the simplicity of Taylor rules, there is still a fair amount of debate among policy-makers, academics and market analysts regarding the rules' appropriate role in monetary policy.

6. The basic premise is that under a rule, the policy-maker credibly commits to a sequence of policy decisions, making it easier for individuals to form expectations about policy decisions in the future. Under discretion, the policy-maker could always deviate to satisfy some short-run objective, thereby making it harder for individuals to form expectations.

7. This is the policy rate used by the Federal Reserve, i.e. the US central bank.

8. These are often referred to as Taylor-type rules in the literature, but no such distinction is made in this box.

Among central banks, however, there is a general understanding that Taylor rules are good organising devices for guiding monetary policy debates, as they can systematically and compactly summarise some of the relevant information in a manner that potentially provides a good starting point for discussion. However, because of the limitations associated with Taylor rules, they do not provide complete and precise information that would warrant the rules' rigid and mechanical implementation.

One of the limitations relates to the fact that central banks consider a large volume of information when making monetary policy decisions. It is not feasible to incorporate this complex information set in a rule, and consequently practitioners generally focus on simple rules where the instrument is a function of a small subset of the information available to the central bank. This makes the rule too simplistic to fully capture the considerations underlying policy decisions. As Woodford (2001) warned, commitment to simple rules may not always be optimal, as a simple policy rule may be a solution which is too simple for a task as complex as that facing a central bank.

Another limitation stems from the fact that most estimated Taylor rules are not robust to minor variations in the rule specification (Kozicki 1999) and are also not robust with respect to the estimation techniques used. Orphanides (2001) demonstrated that changing the horizon of the fundamentals in the rule changes the estimated coefficients. Moreover, he showed that rules based on real-time data may differ significantly from those using historical data[9]. Jondeau et al. (2004) show that, over the baseline period 1979 – 2000, alternative estimates of the Federal Reserve's reaction function using several Generalised Method of Moments estimators and a maximum likelihood estimator yield substantially different parameter estimates. A further limitation is that Taylor rules are heavily dependent on the estimation of the GDP gap and equilibrium interest rate, both of which present enormous scope for disagreement. Carare and Tchaidze (2005) surveyed different Taylor rules estimated for the United States and found that several authors found very different versions of monetary policy rules. For South Africa, the different specifications[10] and parameter estimates reported by Mohanty and Klau (2004), Woglom (2003) and Aron and Muellbauer (2000) are summarised in Table B2.1.

9. Most rules in the literature are estimated using historical and revised data. This is problematic because it obscures the behaviour that would otherwise be suggested by information available to the central bank in real time.

10. For example, Aron and Muellbauer (2000) used their own estimate for the output gap whereas the other two studies used Hodrick-Prescott filtered gaps. Woglom (2003) used the 3-month T-bill rate as the policy variable, whereas Aron and Muellbauer used the discount rate.

11. Note that the estimated rules presented here are just examples selected from the different versions estimated in those papers. Data for the period 1995 – 2002, 1990 – 1999 and 1986 – 1997 have been used in Mohanty and Klau (2004), Woglom G (2003) and Aron and Muellbauer (2000), respectively.

Table B2.1 Examples of Taylor-type monetary policy rules estimated for South Africa[11]

Author	Estimated monetary policy rule
Mohanty and Klau (2004).......	$i_t = -0.59 + 0.08\pi_t + 0.04y_{t-1} - 0.06\Delta xr_t - 0.06\, xr_{t-1} + 0.98i_{t-1}$
Woglom (2003)......................	$_t = 0.94i_{t-1} + 0.02\pi_{t-1} - 0.07y_{t-1} - 0.01App_{t-1}$
Aron and Muellbauer (2000)...	$i_t = 0.01 + 0.42i_{t-1} + 0.37USTB_{t-1} + 0.15\pi_t + 0.12y_t + 0.07M3_{t-1} + 0.09FLIB_{t-1}$

Notation: i = policy rate, π = inflation rate, y = output gap, xr = real effective exchange rate, App = real appreciation, USTB = US T-bill rate, M3 = excess M3 growth, FLIB = financial liberation variable. Note that notation may differ slightly from the actual papers.

As most estimated rules are reported to fit the data well, it is not certain which version provides an adequate description of monetary policy. These uncertainties make it a formidable task to settle on an empirical benchmark rule that can be used for policy recommendations.

The literature on Taylor rules has therefore so far failed to produce rules that are sufficiently robust to eliminate the need for some discretion in monetary policy-making. Most central banks recognise the potential pitfalls of purely discretionary policy-making and therefore constantly analyse developments in different economic variables in order to determine how relationships between them may have changed and what inferences can be made. These relationships are often embodied in formal empirical models. However, given constantly changing innovations and shocks, it is impossible to construct a completely infallible model of the economy. In this uncertain environment caution is called for. The spirit of Taylor (1993) should prevail, suggesting that a policy rule be regarded as a guidepost to policy making and not a rigid rule that would limit the flexibility and judgement which are necessary in setting monetary policy.

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The outlook for inflation

The outlook, risk and uncertainties relating to some of the factors that determine the outlook for inflation and that are embodied in the forecast, are presented in this section.

International outlook

Although the IMF expects global growth to moderate slightly to just under 5 per cent in 2007 and 2008 (about ½ percentage point slower than in 2006), the 2003 – 2007 period will represent the global economy's strongest five years of growth since the late 1960s. Table 8 reveals that the global expansion is expected to slow very modestly in 2007 and 2008, with inflationary pressures remaining contained and the composition of demand becoming more balanced among the major advanced economies.

Table 8 IMF projections of world growth and inflation for 2007* and 2008
Per cent

	Real GDP growth		Inflation rates	
	2007	2008	2007	2008
World	**(4,9) 4,9**	**4,9**	**(3,7) 3,5**	**3,5**
Advanced economies	**(2,7) 2,5**	**2,7**	**(2,3) 1,8**	**2,1**
United States	(2,9) 2,2	2,8	(2,9) 1,9	2,5
Japan	(2,1) 2,3	1,9	(0,7) 0,3	0,8
Euro area	(2,0) 2,3	2,3	(2,4) 2,0	2,0
United Kingdom	(2,7) 2,9	2,7	(2,4) 2,3	2,0
Other advanced economies	(3,7) 3,8	3,8	(2,2) 2,0	2,2
Other emerging-market and developing countries	**(7,2) 7,5**	**7,1**	**(5,0) 5,4**	**4,9**
Africa	(5,9) 6,2	5,8	(10,6) 10,7	10,4
Central and eastern Europe	(5,0) 5,5	5,3	(4,6) 4,8	3,7
Commonwealth of Independent States	(6,5) 7,0	6,4	(9,2) 9,0	8,3
Developing Asia	(8,6) 8,8	8,4	(3,6) 3,9	3,4
China	(10,0) 10,0	9,5	(2,2) 2,2	2,3
India	(7,3) 8,4	7,8	(5,3) 6,2	4,3
Middle East	(5,4) 5,5	5,5	(7,9) 10,6	8,7
Western hemisphere	(4,2) 4,9	4,2	(5,2) 5,2	5,7

* IMF projections for 2007 as at September 2006 in parentheses

Source: IMF *World Economic Outlook*, April 2007

Activity in the US slowed in mid-2006, and the risks to growth have become more skewed to the downside. US growth is projected to decline to around 2,2 per cent in 2007, having been revised downward from the 2,9 per cent forecast by the IMF in September 2006, before rising again to 2,8 per cent in 2008. Meanwhile, inflation is expected to average 1,9 per cent in 2007, a percentage point below the IMF's September 2006 projection, before rising to 2,5 per cent in 2008.

In Japan, the economy's underlying momentum is expected to remain similar to that of 2006, recording growth of 2,3 per cent in 2007 against a backdrop of firm domestic demand, expanding private investment, a pick-up in consumption and steady export growth. Inflation is projected to increase only slightly to 0,3 per cent in 2007.

In the euro area GDP growth is expected to be sustained at 2,3 per cent in 2007 and 2008. Although confidence is high and recent incoming activity data suggest that the recovery remains firmly on track, growth is expected to ease slightly in 2007 reflecting the gradual withdrawal of monetary accommodation and further fiscal consolidation. Real GDP growth in the UK in 2007 is poised to reach 2,9 per cent on the back of sustained strong domestic final demand, while inflation is projected to decline from current year-on-year levels to average 2,3 per cent in 2007 and 2 per cent in 2008.

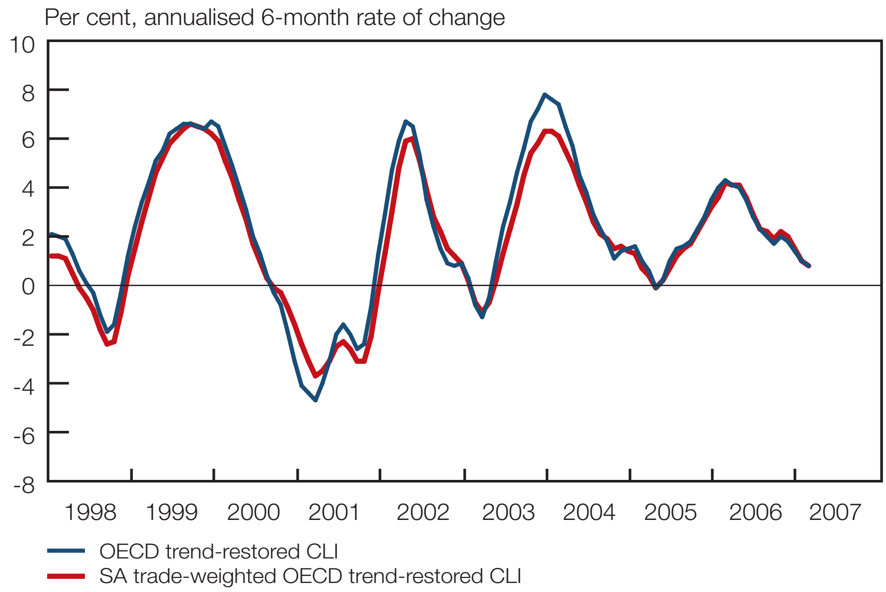
China's real GDP growth is anticipated to slow somewhat from the 10,7 per cent rate of expansion in 2006 to around 10 per cent in 2007. Meanwhile, inflation is forecast to accelerate to 2,2 per cent in 2007 and 2,3 per cent in 2008. India is expected to record 8,4 per cent growth in 2007 and 7,8 per cent in 2008, while inflation is projected to increase to 6,2 per cent in 2007 before declining to 4,3 per cent in 2008.

Higher non-fuel commodity prices and strong global growth have helped some developing countries weather the impact of higher oil prices, but the experience varies considerably across regions. For many oil-importing developing countries in sub-Saharan Africa and the western hemisphere, there has been an overall positive first-round effect on trade balances, although higher energy prices have adversely affected net commodity-importing developing countries in Asia, Central America and the Caribbean. Commodity-rich countries in the Commonwealth of Independent States, the Middle East and Latin America are expected to continue prospering, supported by benign financial conditions and commodity prices that are still generally high by historical standards.

Africa's economic outlook remains positive given the strong global growth environment, greater regional macroeconomic stability, the beneficial impact of debt relief, rising oil production and increased capital inflows. In sub-Saharan Africa, growth is set to accelerate moderately in 2007 as new oil fields come on stream. The most important downside risks for growth in the region would probably be a sharper-than-expected slowing in global growth and the impact thereof on commodity prices.

The Global Manufacturing PMI (Purchasing Managers' Index), produced by JPMorgan in association with research and supply management organisations, was still comfortably above the neutral 50 mark in the first four months of 2007, indicating continued expansion. The six-month rate of increase in the OECD composite leading indicator (CLI) also reflects improved performance in the major OECD economies, although there has been a continued slowing in rates of increase since the second quarter of 2006 (Figure 15).

Figure 15 OECD composite leading indicators



Sources: OECD and SARB calculations

There have also, on balance, been favourable developments in the past few months towards containing the large global imbalances that threaten global financial stability. These include the reduction in the real effective value of the US dollar, increased flexibility in the currencies of some surplus countries and a more balanced pattern of domestic demand growth in the global economy. However, IMF projections based on the current set of real exchange rates and policies reveal that global imbalances can be expected to remain substantial over the foreseeable future and therefore still pose a significant risk to the world economy if a disorderly adjustment were to occur.

In the oil market, risks to the price of Brent crude remain clearly to the upside as the market seems set to remain tight and as summer factors come to the fore. The International Energy Agency is projecting global consumption growth of 1,6 million barrels per day in 2007, owing to continued robust demand in the Middle East and from emerging markets such as China, and a planned build-up of official stocks by China and the US. On the supply side, capacity is expected to be boosted as investment projects come on stream by year-end, even though this projection is subject to downside risks. Fuel stocks in the US are still below year-ago levels amidst robust demand. In addition, the hurricane season could disrupt US oil production in the latter half of 2007.

While oil-price risks have declined from their peak in recent weeks, geopolitical developments could raise volatility in the coming months and the possibility of a continued upsurge in oil prices cannot be ruled out. Futures prices presented earlier, in Figure 8, suggest Brent crude oil prices of around US$70 per barrel for delivery in the fourth quarter of 2007. Futures/options markets also indicate that oil prices will average US$68 per barrel in 2007 and US$70 per barrel in 2008, with risks skewed to the upside, reflecting still-limited global spare capacity and the potential for heightened geopolitical tensions. In addition, OPEC's commitment to defend prices through production cutbacks could limit the extent of any downward price movements.

Outlook for domestic demand and supply

Economic growth is likely to remain robust until 2009, underpinned by a strong trend in the growth of investment expenditure. Consumer demand, which has been resilient and remains buoyant is, however, likely to slow somewhat during the year as the effects of previous monetary policy actions become more apparent.

In its *Budget Review*, the National Treasury expects economic growth of 4,8 per cent in 2007, increasing to 5,1 per cent in 2008 and 5,4 per cent in 2009. According to the latest Reuters consensus forecasts, for March 2007, the South African economy is expected to grow by 4,7 per cent in 2007, 4,9 per cent in 2008 and 5,2 per cent in 2009. These forecasts represent the mean of 13 individual forecasts for both 2007 and 2008 and the mean of 9 forecasts for 2009. They range from 4,2 to 5,3 per cent for 2007 and 2008, and from 4,3 to 5,7 per cent for 2009.

Consumer confidence, measured by the FNB/BER Consumer Confidence Index as the percentage of respondents expecting an improvement in conditions less the percentage expecting deterioration, is at a record-high level. The index increased from +18 in the final quarter of 2006 to +23 in the first quarter of 2007, the highest level of consumer confidence measured since the index was established 25 years ago. The previous high of +21 was measured in the first quarter of 2006.

Business confidence levels also generally remain high, although perhaps not as buoyant as in 2006. The RMB/BER Business Confidence Index, which reports the gross percentage of respondents who perceive business conditions as satisfactory, declined to 81 per cent in the first quarter of 2007 from 83 per cent in the final quarter of 2006. This decline was the result of lower retailer and wholesaler confidence, offsetting an increase in manufacturers' confidence. The level of the overall index is the lowest surveyed in two years. It is the first time since 2003 that the index has declined for two consecutive quarters.

The SACOB/Absa Trade Activity Index increased by 6 index points in February 2007, with 58 per cent of respondents optimistic about trade conditions. This index declined from a high of 60,4 in November 2006 to 52,3 in January, before rebounding in February. The Trade Expectations Index remained high at 69 index points in February.

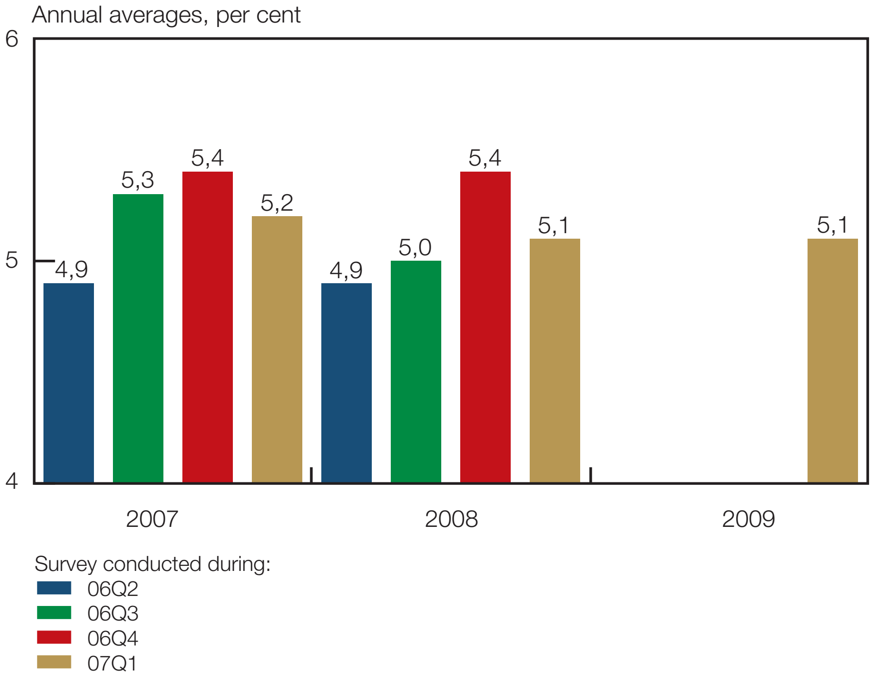
The Investec/BER Purchasing Manager's Index, a barometer of manufacturing activity, remained significantly above the 50-point level that indicates expansion, although on a seasonally adjusted and annualised basis it declined from 60,5 index points in March 2007 to 57,9 index points in April. The main contributing factor to the decline in April was slower growth in new sales orders.

Finally, confidence levels in the civil construction industry, which provide an insight into trends in fixed investment, remain very high in historical terms. The FNB Civil Construction Confidence Index, which reflects the proportion of managers expressing satisfaction with current conditions in the industry, remained unchanged at 83 per cent in the first quarter of 2007. The results of the survey also suggest a continued tightening of constraints such as skilled labour shortages and supplies of construction materials.

Indicators of inflation expectations

The results of the latest BER survey, undertaken in the first quarter of 2007 and reproduced in Figure 16, show that respondents expect CPIX inflation to average 5,2 per cent in 2007, before declining slightly to 5,1 per cent in 2007 and 2008. The results for 2007 and 2008 are notably below those obtained in the survey undertaken in the fourth quarter of 2006, despite an increase in reported inflation over the period, suggesting that inflation expectations may not always be backward looking in the South African context.

Figure 16 BER surveys of CPIX inflation expectations



Source: Bureau for Economic Research, University of Stellenbosch

Table 9 shows that the CPIX inflation expectations for 2007 of financial analysts, business executives and representatives of the trade union movement all declined since the survey undertaken in the final quarter of 2006. The expectations of business executives regarding inflation for 2007 decreased the most, from 5,5 to 5,1 per cent, compared with declines from 5,5 to 5,3 per cent for analysts and 5,2 to 5,1 per cent for trade unions. For 2008, business executives and trade unions expect lower average CPIX inflation rates of 5,2 and 5,1 per cent, respectively, although analysts have revised their expectations upward from 4,8 per cent to 5,0 per cent since the previous survey.

Table 9 BER surveys of CPIX inflation expectations

Per cent

	2006 4th quarter				2007 1st quarter			
	Financial analysts	Business	Trade unions	Average	Financial analysts	Business	Trade unions	Average
CPIX inflation during the year								
2007	5,5	5,5	5,2	5,4	5,3	5,1	5,1	5,2
2008	4,8	5,6	5,6	5,4	5,0	5,2	5,1	5,1
2009					4,9	5,3	5,1	5,1

Source: Bureau for Economic Research, University of Stellenbosch

The CPIX forecasts obtained from the March 2007 Reuters survey of long-term forecasts for the South African economy are reproduced in Table 10. According to this survey, CPIX inflation is expected to average 5,3 per cent in 2007, before slowing to 4,9 per cent in 2008 and 4,6 per cent in 2009. Compared with the February 2007 survey, the mean and median forecasts for 2007 show slight increases from 5,2 and 5,1 per cent, respectively, to 5,3 per cent.

Table 10 Reuters survey of CPIX forecasts: March 2007
Per cent

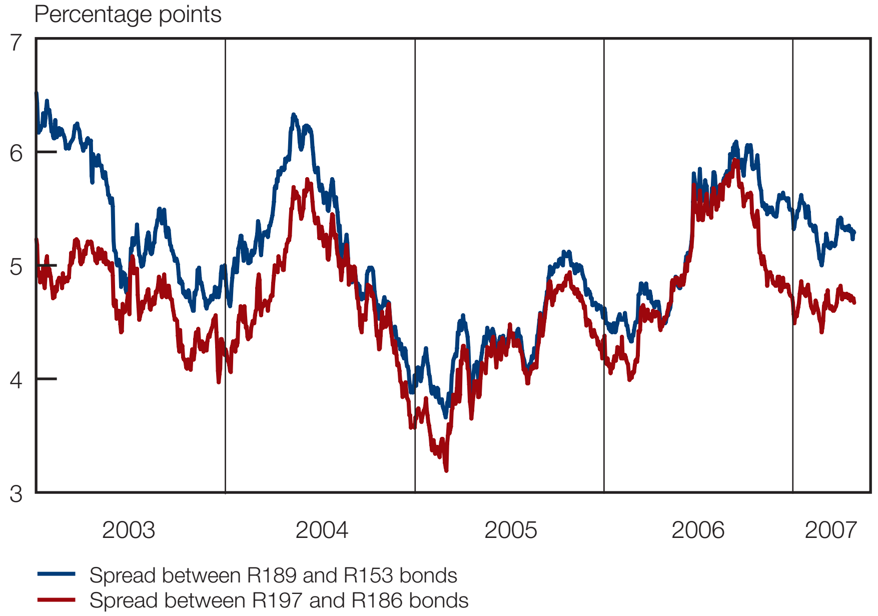
	2007	2008	2009
1. Mean	(5,2) 5,3	(4,9) 4,9	(4,8) 4,6
2. Median	(5,1) 5,3	(4,9) 4,9	(4,7) 4,7
3. Highest	(5,7) 5,7	(5,4) 5,6	(6,2) 5,7
4. Lowest	(4,7) 4,9	(4,0) 4,1	(4,3) 4,2
Number of forecasters	(13) 13	(13) 13	(7) 9

February 2007 survey results in parentheses

Source: Reuters

Breakeven inflation rates, measured as the difference between the yields on South African CPI inflation-linked bonds and conventional nominal bonds of similar maturity, suggest that inflation expectations have declined since September-October 2006 (Figure 17). Breakeven rates obtained from the R197 (maturing 2023) and R189 (maturing 2013) inflation-linked bonds declined from around 6 per cent at this time to around 4,7 and 5,3 per cent, respectively, by the end of April 2007.

Figure 17 Breakeven inflation rates



Box 3 Recent research on the evolving inflation process

Understanding the dynamics of the inflation process is important for central bankers. As a recent paper on “Understanding the Evolving Inflation Process” (Cecchetti et al., 2007) points out, there is still much to learn about the dynamics of inflation, and a better understanding of these dynamics would help monetary policy-makers to preserve the benefits of the low-inflation environment which have been secured. This box discusses some of the paper’s key findings.

The paper seeks to contribute to the understanding of inflation dynamics, with a particular focus on what is termed the “great inflation” of the 1970s and the “inflation stabilisation” that commenced in the mid-1980s. By comparing the experiences of the Group of Seven (G-7) industrialised countries from the early 1970s, the authors seek to identify cross-country differences that could provide a way to discriminate among the potential causes of the inflation experience over the period. The paper finds that the timing of the achievement of relatively low and stable inflation in the G-7 countries has been remarkably synchronised, as the level and volatility of the inflation trend rose and fell at roughly the same time across these countries. This synchronisation narrows the economic factors that could have triggered the great inflation of the 1970s and the subsequent inflation stabilisation in the mid-1980s.

Systematic shifts in central banks’ interest rate decisions are identified by the paper as a primary causative factor for the G-7’s synchronised inflation experience. According to the authors, this could not be ascribed to changes in the structure of the economy or the stability or instability of the relationship between inflation and unemployment. They conclude that in the late 1960s central bankers lost control by consistently under-responding to rising inflation and in the mid-1980s they collectively became more assertive and regained control. Factors such as commodity prices, globalisation and mis-estimates of productive capacity are found not to have triggered either the great inflation or the subsequent inflation stabilisation. For example, it is argued that the disinflationary impact of globalisation has been limited and would largely disappear if Asian currencies are left to float freely. The authors then examine the ability of a simple three-equation New Keynesian model to replicate the properties of G-7 inflation over this period.

Looking at the relationship of actual inflation to inflation expectations in the US, a series of in-sample causality tests are employed by the authors on six different measures of inflation expectations. The paper finds that, while changes in expectations helped to forecast the properties of the long-term inflation trend during the period of the great inflation, they no longer do. Instead, changes in actual inflation in the US are found to trigger movements in expectations. This could prove to be an important finding since it means that controlling expectations may not provide policy-makers with the leverage they hoped to use in keeping future inflation low and stable. Measures of US inflation expectations cannot, therefore, be relied on to anticipate future movements in the US inflation trend and when the trend changes, expectations are likely to follow. The paper cautions policy-makers against assigning too much weight to inflation expectations as a measure of their policy credibility, as these expectations appear likely to follow rather than lead the measures of inflation that are the objectives of monetary policy.

Given the fact that inflation expectations are among the most important variables monitored by policy-makers, the finding that post-1984 inflation expectations in the US have been a lagging indicator of the trend raises important questions about the accuracy of current inflation expectation measures and how expectations in effect influence price and wage setting. The finding can be expected to trigger further research.

At the height of the great inflation, prices were rising at double-digit rates in most countries and this was followed by a global disinflation experience that commenced somewhat earlier in the advanced industrialised countries than in the developing world (see Box 3 “Trends in global inflation” on p.17 of the November 2003 *Monetary Policy Review*). This latest research on the evolution of inflation in the G-7 provides valuable new insights into the complexity of the environment in which monetary policy operates and implies continued vigilance by policy-makers to keep actual inflation contained. Although questions have been raised about the accuracy of the key findings of the paper, the stage has been set for related research in other countries. The analysis also emphasises the importance of strong political support for stable prices, given the fact that changing policy preferences and/or political influences played an important role in explaining the duration of the great inflation.

Reference

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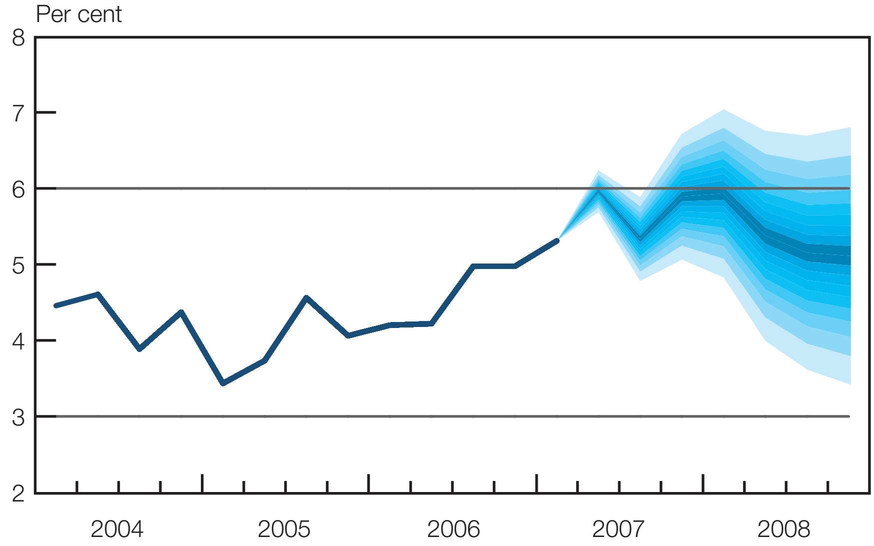
Date accessed: 26 March 2007.

The South African Reserve Bank inflation forecast

According to the latest quarterly projections of the Bank's inflation-forecasting model, the inflation outlook has deteriorated somewhat since the publication of the previous *Monetary Policy Review*. This deterioration is primarily attributable to adverse developments in the international oil market, and in food and administered prices. The projection presented to the MPC meeting on 12 and 13 April 2007 is reproduced in Figure 18. The central projection, conditional on a constant repo rate of 9,0 per cent, is for the CPIX inflation rate to increase to slightly below the upper level of the 3-to-6 per cent inflation target range in the second quarter of 2007. Thereafter, apart from a technical decline in the third quarter, CPIX inflation is expected to remain around this level until the first quarter of 2008, before slowing to 5 per cent by the end of the forecast period.

Figure 18 CPIX forecast



Note: The fan chart uses confidence bands to depict varying degrees of certainty. The darkest band of the fan chart covers the most likely 10 per cent of probable outcomes foreseen for CPIX inflation, including the central projection. Each successive band, shaded slightly lighter and added on either side of the central band, adds a further 10 per cent to the probability until the whole shaded area depicts a 90-per-cent confidence interval (see Box 4 "Understanding the fan chart" on p. 27 of the March 2001 *Monetary Policy Review).*

Due to various risk factors, the probability exists that the actual inflation outcome may diverge from the central projection. The risks posed by oil and food prices were deemed to have increased since the previous MPC meeting in February. International oil market conditions remain tight, and the risk of sustained geopolitical tensions and supply disruptions persists, with the possible consequence that oil prices could exceed those assumed in the forecast. Food prices also continue to present an upside risk to the inflation outlook, contingent on the impact of increases in international prices and the domestic drought conditions, although declining meat-price inflation may moderate this risk. Credit extension by banks to the private sector has continued to increase at uncomfortably high rates and remains a source of concern, as is the growth in household consumption expenditure. There is, however, some evidence of moderation in the growth of interest-sensitive durable goods consumption.

Assessment and conclusion

In response to the deteriorating inflation outlook, the repo rate was increased by a cumulative 200 basis points during 2006. The underlying pressures on inflation during that period emanated from the oil price and exchange rate developments, with food price increases exacerbating the situation. The risks posed to the inflation outlook by the high rates of household expenditure growth and related increases in credit extension added to pressure on monetary policy.

During the past few months, the outlook has changed somewhat. Initially, following a significant decline in international oil prices and relative exchange rate stability, the inflation outlook improved and this prompted the MPC to pause in the interest rate cycle. At the same time there were tentative signs that consumer demand was responding to the tighter monetary policy stance.

More recently, there has been some deterioration in the inflation outlook. The major cause has been the reversal of the oil price trend. Food price trends have also been a cause for concern, while the expenditure response to the tighter monetary stance is still tentative. Domestic output growth is expected to remain strong, although the main impetus for this is likely to come from investment expenditure rather than from consumption expenditure.

Although inflation is still expected to remain within the target range for the forecast period, it is likely to remain close to the upper end of the inflation target range over the coming months. In the event of significant adverse developments in the main determinants of inflation or an insufficient response to the previous monetary tightening, the target could be threatened. Monetary policy remains strongly focused on keeping inflation within the target range, and in the coming months the MPC will be assessing the inflation outlook in the light of unfolding developments and will act appropriately to ensure that its mandate is achieved.