



South African Reserve Bank

## Assessing the Measurement of Inflation Expectations under South African Inflation Targeting<sup>1</sup>

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### Abstract

The main objective of most central banks is to maintain price stability. Therefore within an inflation-targeting framework; central banks are faced with the greatest challenge in understanding the state of inflation expectations. In the case of the Republic of South Africa (RSA), there are at least three measures of inflation expectations, namely, Bond Market Break-Even Inflation, the Bureau for Economic Research (BER) Inflation Expectations Survey and the Reuters Inflation Expectations Survey (RIE). This paper reviews and compares the three inflation expectations measures against actual inflation reported. The paper begins by providing a brief history of inflation targeting in RSA and then defines the inflation expectations measures. An assessment of the performance of all the measures against actual inflation is then made before concluding.

**Keywords:** break-even inflation, inflation expectations, inflation-targeting framework, price-stability

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<sup>1</sup>Paper prepared for the World Statistics Congress (WSC) Special Topic Session No. 081 to be held in Hong Kong, China from 25 to 30 August 2013.

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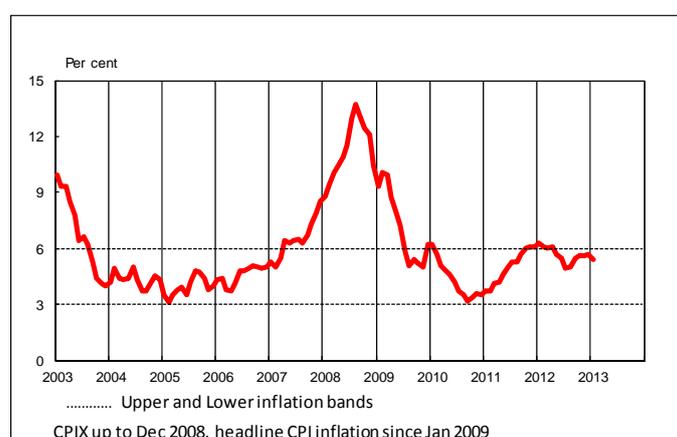
## 1. Introduction

The main objective of most central banks is to maintain price stability. In an inflation-targeting environment, central banks are faced with the greatest challenge in understanding the state of inflation expectations. Inflation expectations influence price formation. Changes in inflation expectations affect real interest rates and may lead to changes in aggregate demand. This paper aims to assess the performance of survey-based and market-based measures of inflation expectations against the actual inflation reported and whether or not these measures of inflation expectations are anchored within the 3 to 6 per cent inflation target band.

## 2. Background of Inflation Targeting in South Africa

In 2000, formal inflation targeting was adopted in the RSA as the national monetary policy framework, with an objective of maintaining inflation<sup>3</sup> within a target range of between 3 per cent and 6 per cent in the medium to long-term. Figure 1 below shows the South African CPI headline inflation rate adopted in the inflation targeting framework over the past decade.

**Figure 1: Targeted measure of consumer price inflation**



The mandate of the South African Reserve Bank (SARB) in focusing on price stability seems to have been strengthened since the implementation of an inflation targeting framework as depicted in Figure 1 above, with the rate of price increases brought to within the target range since the second half of 2003. However, headline consumer price inflation exceeded the upper limit of the inflation target range for 28 consecutive months throughout 2007 and 2008 and amounted to 6,7 per cent in the year to July 2009. Soaring food prices, surging international crude oil prices, the depreciation of the external value of the rand and domestic supply constraints in certain sectors, in particular, kept inflationary pressures high. This was also on the back of the financial crisis. Consequently, corrective measures were taken to bring inflation back to within the target range, when the SARB increased interest rates by a total of 300 basis points from June 2007 to November 2008. It is therefore plausible to conclude that the introduction of inflation targeting generally benefits the implementation of monetary policy in RSA.

The process by which consumers and investors form their expectations of future inflation is equally important in getting a reliable measure of inflation and forms a key feature in the inflation-targeting framework. Inflation expectations play a fundamental role in price and wage setting behaviour, and since the introduction of this framework, investors assume expected future rates of inflation in comparison to the actual rate of inflation in order to assess the transparency and credibility of monetary policy. From a policy making point of view, it is therefore important to monitor these expectations through survey information and market-determined interest rates.

<sup>3</sup>SARB initially targeted CPIX (CPI excluding mortgage costs) and more recently targets headline CPI. In 2002 an inflation target was specified for the first time, on the basis of an annual rate of increase of between 3 and 6 per cent.

### 3. Inflation expectations: Bond Market Break-Even Inflation, the BER and RIE Surveys

One way of determining inflation expectations is to look at the break-even inflation rate (BEIR)<sup>4</sup> calculated as the differential between the nominal yield of a conventional government bond and the real yield on an inflation-linked bond of the same maturity. It measures expected inflation for the remaining maturity period of the bonds used. The BEIR does not only reflect expected inflation, it also includes risk premium reflecting the uncertainty about future inflation outcomes as a result of other risk<sup>5</sup>.

Inflation expectations are also measured through inflation surveys. There are currently two sources of inflation expectations survey data for RSA, namely the BER inflation expectations and RIE surveys.

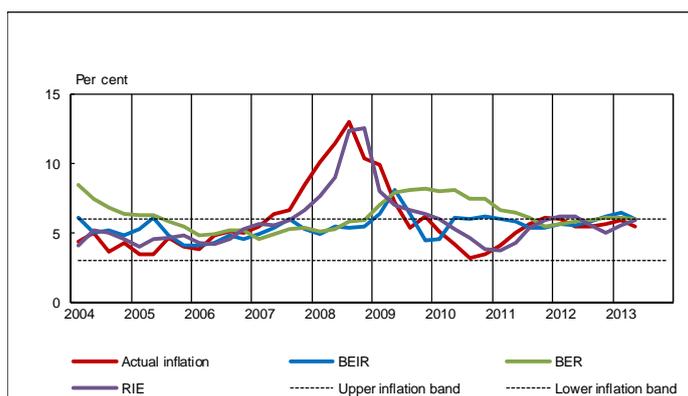
The BER inflation expectations survey is conducted quarterly using direct quantitative surveys<sup>6</sup> and records inflation expectations in terms of four different economic sectors, namely, the financial analysts, business, labour as well as the household sector. With the exception of the household survey where only the households' expectation of price increases is required for the current year, the BER inflation expectations survey captures respondents' inflation expectations for the current year, one year ahead and two years ahead. For purposes of this paper, the current year BER inflation expectations survey is used.

The RIE survey data presents monthly results of forecasted inflation, derived from a poll of South African economists. More specifically, each forecast is prepared by different individuals or groups within institutions, applying the forecasting methodology they believe will be the most appropriate to produce an accurate forecast for inflation.

### 4. Performance of inflation expectation measures against actual inflation

Figure 2 below reviews the performance of all three measures of inflation expectations against actual inflation. The actual inflation outcome and inflation expectations can be broken down into three broad phases. The first phase covers a downward movement in the period prior to 2006. The second phase, from 2006 to the second half of 2008 projected an upward movement, as this was a period of broad instability in inflation and expectations thereof. This time horizon was mainly characterised by persistently high food and petrol prices as well as frail global economic growth conditions arising from the financial and broader economic crisis. The third phase, from 2009, inflation and its expectations moved downward to well within the inflation target band.

**Figure 2: Targeted inflation and expected inflation rates**



<sup>4</sup>Determined by market prices.

<sup>5</sup>The premium for other risks provides for risks such as: 1) Liquidity risk, the probability that investors will not be able to recover the principal of the bond over a relatively short period without incurring significant costs; 2) Marketability risk, the probability that the bid/offer spread will widen when selling the bond; 3) Credit risk, the probability of not receiving the principal at maturity.

<sup>6</sup>The nature of the questionnaire is such that respondents have to indicate their expected inflation for a particular year and not whether they expect inflation to increase, decrease or remain the same when compared to the same time of the previous period.

During the first phase, inflation expectations calculated by way of the BEIR as shown in Figure 2, remained within the inflation target, on average, amounting to 4,9 per cent. Subsequently, in the second phase, the gap between actual inflation and the BEIR widened as inflation peaked way above the target at 13,0 per cent in the third quarter of 2008. However, the BEIR measure moved back to within the target range for the most part of the remaining period to 2013, as it became clear that inflation is not going to be a major risk globally.

Inflation expectations recorded by the BER inflation expectations survey were generally higher than when compared to the BEIR. Table 1 below depicts averages in the BER inflation expectations survey. It shows data for financial analysts, business representatives, trade unions and the average. The data is compiled on a sectoral basis at current, one year ahead and two years ahead time horizons.

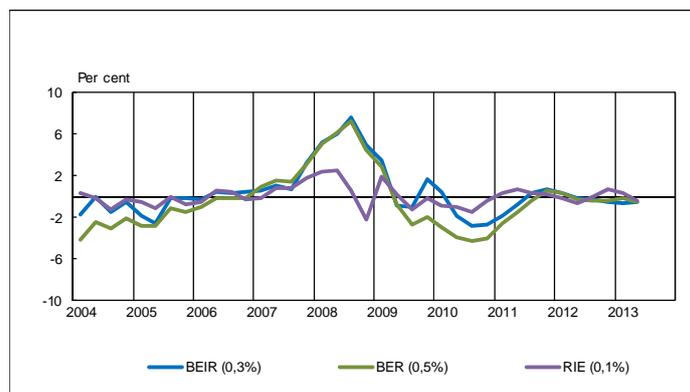
**Table 1: BER inflation expectations: Averages of 2003 Q1 to 2012 Q4**

	Current year	One year ahead	Two years ahead
<b>Financial Analysts</b>	6.1	5.6	5.4
<b>Business</b>	6.7	6.8	6.8
<b>Trade Unions</b>	6.7	6.7	6.7
<b>Average</b>	6.5	6.4	6.3

The evidence from the BER inflation expectations survey suggests that the averages of inflation expectations of financial analysts are comparable to those of the BEIR and are relatively anchored to actual inflation which recorded an average of 5,9 per cent over the review period. This may be reflective of the fact that most South African economic agents form their inflation expectations in a rather slow adjusting manner or perhaps even backward looking in nature. However, financial analysts seem to be forward-looking.

As shown in figure 2, respondents of the RIE survey produced estimates of inflation which were closely aligned with actual inflation. On average, the RIE survey recorded expected inflation at 5,9 per cent compared to the 5,9 per cent actual inflation in the ten year period to 2013.

**Figure 3: Deviations of inflation expectation measures from actual inflation**



The spreads between the three measures of inflation expectation rates and the actual inflation outcome indicates whether market participants over or under estimated inflation. The spread is calculated as the variance from actual inflation to expected inflation in all three measures of expected inflation. The negative spreads up to the first quarter of 2006 and the period between the fourth quarter of 2008 and the last quarter of 2012 signalled that the market-based and survey-based inflation expectation rates exceeded the actual inflation rate and tended to translate into actual inflation undershooting inflation expectations. The inverse is true for the positive spread.

## **5. Conclusion**

Non-anchored inflation expectations cause volatility in price-setting, wage-setting and spending behaviour. Inflation expectations from market-based and survey-based measures can be used to assess the increased credibility and reasonable predictability of monetary policy. For example, the average deviation of 0,1 per cent in the RIE survey is much less and also closer to zero than that of the BEIR survey at 0,3 per cent and BER inflation expectations survey at 0,5 per cent. This suggests that the RIE survey is more consistent with regard to the direction of inflation and remains broadly anchored to the actual inflation rate compared with the other measures of expected inflation. However, the financial crisis contributed to volatile inflation expectations, which have subsequently moved in line with actual inflation in recent times. This stability of inflation expectations supports monetary policy making and its commitment to maintaining price stability.

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