

CHAPTER 7

MEASURING INFLATION CREDIBILITY

7.1 Introduction

The anchoring and measurement of inflation expectations are of importance to central banks within an inflation targeting country. Expectations are informed over time by the policy actions of the authorities and are sampled by means of opinion polls; an approach that has been followed in South Africa since 1999 (Kershoff and Smit, 2002: 445).

Inflation expectations are formed by and large through the historic policy decisions of central banks and their success in containing inflation, rather than through public announcements of the future intentions of the central bank. According to Mishkin, “... an essential ingredient to a successful anti-inflation policy is the credibility of the policy in the eyes of the public ...” (2004: 658). One approach to achieve this objective could be to make the central bank “... more independent from government and to charge it with the single responsibility of achieving and maintaining the price level” (Parkin, 1999: 809; see also Mishkin, 2004: 352 to 354; or Arnone et al., 2007: 5). De Wet confirms the view that “... the more independent the central bank is, the lower the inflation rate will be”, citing a number of studies that found that “... independence and inflation are highly negatively correlated”. (2003: 799)

Roach (2006a) is, however, of the view that an inflation target might be too narrow a scope for monetary policy, even if central banking autonomy has been established. It raises questions about the degree of autonomy that should be entrusted to a central bank, as well as the required degree of flexibility, if any, necessary in the setting of a nominal anchor for the central bank. In this regard Padayachee states that “[t]he key issue is ... to establish institutional mechanisms by which ... [central banks] ... can be held more accountable for their actions and their decisions be made to reflect the interests of the broader society” (2001: 750).

In instances where countries have been successful in containing inflation, central banks are not only allowed instrumental independence in achieving the goal of relative price stability, but inflation expectations have also been contained successfully. Lacker states “ ... low and stable inflation expectations have enhanced the ability of monetary policy to react flexibly to both positive and negative shocks ... ” (2005). Any lack of credibility of published inflation figures will therefore serve as an early warning of a possible change in inflation expectations, as “ ... a central bank ... does not have control over expectations of inflation” (Mishkin, 2004: 419). If the general public does not accept the rate of inflation as a true reflection of price increases in an economy, the benefits of anchoring inflation expectations in the current rate of inflation could be forfeited in the long run (Rossouw, 2005: 298). Moreover, a lack of credibility of current inflation figures as a true reflection of average price increases will feed into inflation expectations over time.

The next section considers the sampling of inflation expectations in South Africa. Section 7.3 highlights an assessment of the inflation experience of a typical middle-income South African household. Section 7.4 highlights national research on the percentage of respondents regarding the efforts of the authorities to contain inflation as successful. Sections 7.5 and 7.6 describe the development of a methodology to measure inflation credibility in South Africa and analyse conclusions from its use in five initial pilot studies and one extensive pilot study. Section 7.7 sets out the development and reports the results of the first representative study on inflation credibility in South Africa, using the methodology developed in Sections 7.5 and 7.6. Section 7.8 provides an analysis of the possible use of an inflation credibility barometer by developing economies, with particular reference to its possible use in SADC. The conclusions follow in Section 7.9.

7.2 Sampling of inflation expectations in South Africa.

Since the adoption of an inflation-targeting monetary policy regime in South Africa, the SA Reserve Bank has used the Bureau for Economic Research (BER) at the US to conduct inflation expectation surveys on its behalf (Kershoff, 2000: 1). Inflation expectations can be described as the expected future values of the inflation rate. Economic agents (e.g. consumers in consumption

decisions, trade unions in wage negotiations or producers in pricing decisions) build their inflation expectations into wage demands, asset prices and selling prices (Kershoff, 2000: 1). The problem of inflation expectations sustaining an inflationary process was identified as far back as 1967 by Samuels, who stated that “... once the market’s expectations ... are broken, the problems of the transition to a non-inflationary era will become progressively easier. The eradication of inflationary expectations will not be easy” (1967: 355).

The findings of inflation expectation surveys are used by central banks to evaluate the credibility of their inflation-fighting policies (Kershoff and Laubscher, 1999: 6). To the extent that private economic agents (consumers, trade unions, businesses, etc.) believe that the central bank is committed to achieving low inflation, they expect lower future inflation and plan accordingly. To this end the containment of inflation can become a self-fulfilling strategy. Such increased credibility can help to reduce the output loss that often accompanies disinflationary monetary policies (Kahn and Parish, 1998: 7). Kershoff and Laubscher state that “[t]he issue of the credibility of monetary policy is crucial. If actual inflation and expected inflation is the same, then the presumption is that society reaches a better economic outcome” (1999: 6). A central bank puts its credibility at risk if possible changes in the trend of inflation are not identified timely.

The BER samples the inflation expectations of business people, market analysts, trade unionists and households on a quarterly basis. While the BER does the sampling of the first three groups directly by means of questionnaires, the sampling of the inflation expectations of households is undertaken by AC Nielsen on behalf of the BER, as it involves sampling by means of personal interviews. This approach is followed because other alternatives will not provide satisfactory results in South Africa, e.g. postal surveys cannot be used owing to a high rate of illiteracy; and an unequal distribution of fixed-line telephones implies that telephone surveys will reach only a small portion of the population.

For purposes of sampling among business people, market analysts and trade unionists, questionnaires are mailed to respondents three weeks before the due date. The questionnaire

covers views of respondents on CPI and CPIX inflation for the current and following two years, as well as a number of other domestic economic indicators. In respect of households, AC Nielsen conducts personal interviews with a sample of 2 500 households, covering Blacks and Whites in metropolitan areas, cities, towns and villages throughout South Africa. The views of Coloured and Asian respondents are sampled only in the major metropolitan areas.

Table 7.1 Summary of inflation expectation survey results, third quarter 2006

	Analysts	Business people	Trade unions	Average	
Expected CPI during					
	2006	4,8	4,8	4,9	4,8
	2007	5,4	5,1	4,9	5,2
2008	4,6	5,1	4,9	4,9	
Expected CPIX during					
	2006	4,8	5,0	5,0	4,9
	2007	5,4	5,4	5,2	5,3
2008	4,7	5,4	4,9	5,0	

Source: BER, 2006

To cater for the possibility that respondents sampled by ACNielsen might not understand the meaning of inflation, the question to households takes the form of a statement on price increases over the preceding five years and the preceding year, followed by a question on expected price increases in the current year (see for instance Kershoff, 2000). While the other groups of respondents are requested to provide expectations for the current and following two years, the high cost of personal interviews makes it impossible to survey the inflation expectations of households for subsequent years (Kershoff, 2000). The survey results are published on a quarterly basis in considerable detail, e.g. in terms of income groups in respect of households. Table 7.1 provides a summary of the survey results for the third quarter of 2006.

The measurement of inflation expectations described in this section should, however, not be confused with the measurement of inflation perceptions described in Chapter 2. Inflation expectations in no way measure the credibility of published inflation figures. To the extent that published inflation figures lack credibility, there is a risk that inflation expectations might not be anchored in current figures. Measurements showing low inflation credibility or low credibility of current inflation figures as an accurate indicator of prevailing price increases, will therefore serve as an early warning system for authorities that inflation expectations might change. To this end this study reports on the measurement of inflation credibility in South Africa. Sections 7.6 and 7.7 of this chapter analyse conclusions from five initial pilot studies and an extensive pilot study measuring inflation credibility in South Africa, respectively, and the results of a first representative study on inflation credibility is discussed in Section 7.8.

7.3 Assessment of the inflation experience of a typical middle-income South African household

During October 2005, Momentum, a South African life assurance company, published an assessment of the inflation experienced by an average South African household⁸⁴. At the time of the assessment, South African inflation as measured in terms of changes in the South African CPI basket, covering approximately 1 500 goods and services, “... for the 2004 calendar year was 1,4 per cent – the lowest average level since 1963” (Momentum, 2005). Momentum assessed whether “... the average middle class household experience inflation at these low levels or are they in fact becoming poorer as result of their own spending patterns (baskets), increasing ahead of official inflation numbers” (Momentum, 2005).

⁸⁴ Momentum provides no definition for or description of an *average* South African household in the analysis.

Table 7.2 Percentage increase in prices of selected items between August 2004 and August 2005

Item	Percentage change	Weight in CPI	Weight in CPIX
Education	8,7	3,38	3,77
Reading matter	5,3	0,36	0,40
Transport	9,4	13,72	15,30
Medical care and health expenses	6,5	6,90	7,70
Domestic workers	12,1	3,22	3,59
Household operation	9,4	4,68	5,22
Cigarettes, cigars and tobacco	11,8	1,21	1,35
Alcoholic beverages	5,2	1,52	1,70
Non-alcoholic beverages	4,3	1,13	1,26

Sources: Momentum, 2005 (original source Statistics SA), and author's calculations of relative weights in CPI and CPIX

The assessment revealed that the rate of change in the prices of certain items was above the official total inflation figure for the period under review – as could be expected. However, the point made in the Momentum assessment is that “... for most households, these items above the official rates are broadly the larger numbers on the monthly budget spreadsheet. These items include things like medical costs, education, reading matter, transport and entertainment” (Momentum, 2005), and are highlighted in Table 7.2. For the period under review (August 2005 compared to August 2004), the rates of change of the CPI and CPIX was 3,9 per cent and 4,8 per cent, respectively.

This analysis demonstrates that the rate of inflation measured in terms of changes in the CPI is indeed averaged: the *average* rate of increase in prices for an *average* household based on an *average* spending pattern. As a result, “... the average household does often not experience

inflation at ... [the low reported] ... levels and, in most cases, find that their monthly budget is under siege by certain budget items increasing in excess of official rates” (Momentum, 2005). This assessment accordingly confirms the important point that individual households will experience inflation in accordance with their actual spending patterns, rather than the official rate of inflation, a conclusion also highlighted by Jonung (1981: 1) in respect of Sweden.

It should be borne in mind that the items included in the Momentum study comprises only 36,12 per cent of the CPI consumer basket and 40,29 per cent of the CPIX, respectively. The implication is, nevertheless, that individual households could express distrust of official inflation figures as an accurate indication of the rate of average price increases to the extent that their own spending patterns differ from the average pattern used to calculate changes in the CPI or CPIX.

7.4 Views on the success of authorities in containing inflation in South Africa

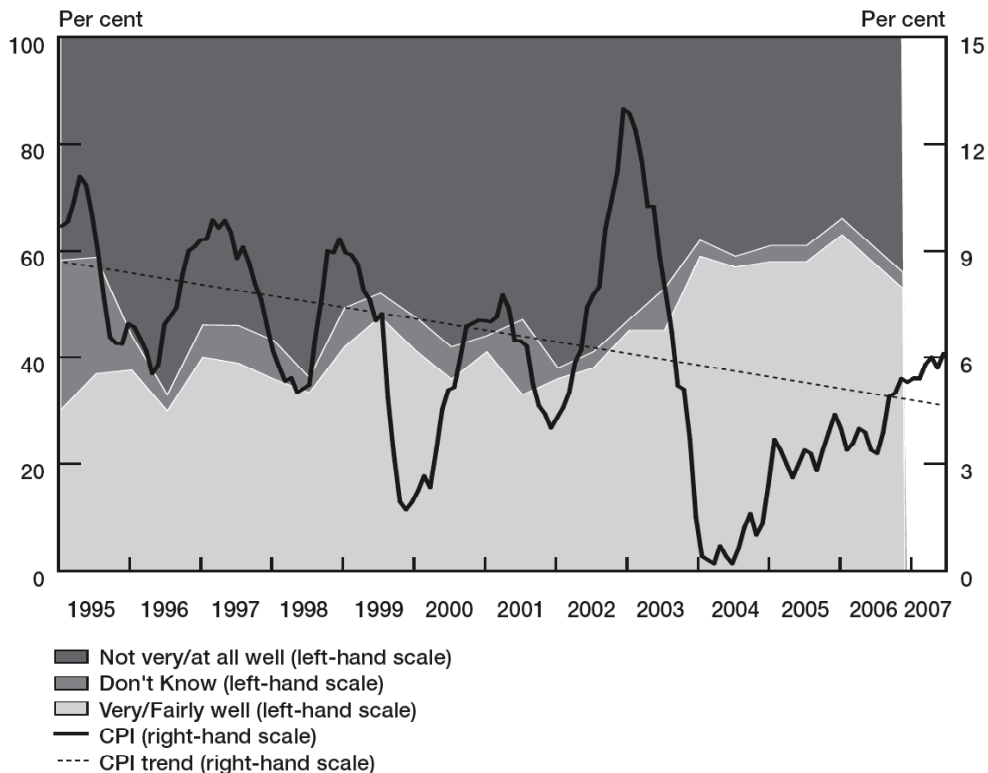
A South African market research company, Markinor⁸⁵, launched its *Government Performance Barometer* survey in its current format in May 1995. The survey has been expanded since inception and currently samples performance and delivery of the government on 23 critical areas, one of which pertains to inflation. The sample comprises 3 500 face-to-face interviews with randomly selected respondents drawn from the whole country. It is conducted every six months (in April/May and in October/November) and, for purposes of the survey, *government* is demarcated as the President; the Deputy President; the National Government; the nine provincial premiers; the nine provincial governments and local authorities. The performance of the SA Reserve Bank is therefore not covered by the scope of the sample.

Markinor’s *Government Performance Barometer* can be regarded as a composite measure of government performance, as it is a survey that polls the opinions of South Africans on the general direction in which the country and its government is moving, including the performance of the President, Deputy President and provincial governments. Specific issues covered include perceptions of respondents about the government’s performance in relation to overcoming

⁸⁵ Please see section 7.8 below for a discussion of Markinor.

corruption; maintaining transparency and accountability; promoting gender equality; delivery of basic services; improving health services; and reducing unemployment. Of particular interest for this study, however, is the inclusion in the questionnaire since 1995 of a question on perceptions on how well government is controlling inflation. In as much as containing inflation is a responsibility of the SA Reserve Bank, rather than of the South African Government, it can naturally be argued that the question should be formulated differently. However, for purposes of assessing perceptions about inflation over time, the formulation of the question in the Markinor survey does not limit in any way its usefulness for purposes of this study.

Figure 7.1 Perceptions on how well government is controlling inflation compared with actual rate of South African inflation, 1995 to 2006



Sources: Markinor, 2006; SA Reserve Bank, [S.a.]; Statistics SA, [S.a.]; author's calculations

Figure 7.1 compares the perceptions of respondents in the Markinor sample since May 1995 with the rate of inflation, measured in terms of changes in the CPI over the same period. The most significant finding is that perceptions about how well government is controlling inflation have improved in conjunction with an overall declining trend in changes in the domestic CPI since 1995. However, towards the end of 2006 the perception on how well government is controlling inflation did show a declining trend compared to the readings earlier in 2006 and of 2004 and 2005, which corresponds with an acceleration in inflation. The information was released for this research in conjunction with the research results reported below in Section 7.8, and is therefore published for the first time in this study.

The conclusion from this comparison is that perceptions about improvements in containing price increases are linked to movements in the rate of inflation, with an increasing trend in inflation towards the end of 2006 leading to a decline in the number of respondents indicating that government is controlling inflation fairly well or very well. The implication is therefore that declining inflation should enhance the credibility of inflation figures. The first measurements of inflation credibility in South Africa are reported in this chapter, but it will be necessary to measure it periodically over a period of time to ascertain whether it reflects the same trend as the responses recorded in the *Government Performance Barometer*.

7.6 Pilot studies on inflation credibility in South Africa⁸⁶

In an attempt to measure the credibility of changes in the CPI and/or CPIX as accurate indicators of the rate of change of prices in the South African economy, the researcher conducted five pilot studies aimed at such measurement at the University of Pretoria. This approach was necessary as methodology had to be developed for measuring inflation credibility. Despite the use of different questionnaires in the various pilot studies, it was decided in all the studies to provide the most recent official inflation figure at the time to respondents, as Kershoff and Smit state that “[t]he benefit of providing historical information is that all respondents have the same information

⁸⁶ The results of some of the pilot studies were published as Rossouw and Joubert, 2005a, and Rossouw and Joubert, 2005b.

available when completing the questionnaire ... [as] ... historic information provides respondents with a benchmark” (2002: 453).

The pilot studies⁸⁷ were conducted to ascertain whether similar research can be undertaken with a representative sample of respondents, and to obtain answers to the following questions, formulated, *inter alia*, in view of international experience with the measurement of inflation perceptions:

- (i) whether an inflation credibility barometer can be calculated;
- (ii) whether respondents generally accept inflation figures as accurate;
- (iii) whether respondents have a clear understanding of the meaning and measurement of inflation;
- (iv) the extent to which knowledge and information improve inflation credibility;
- (v) the optimal scope of a questionnaire for use to measure inflation credibility in a broad sample of the population;
- (vi) which particular measurement of inflation (CPI or CPIX) records a higher degree of acceptance as an accurate indicator of price increases in the economy and is therefore more suitable to use for sampling purposes;
- (vii) ascertain differences in the inflation perceptions of different genders in South Africa; and
- (viii) ascertain differences in the inflation perceptions of different population groups in South Africa.

The first pilot study aimed at measuring inflation credibility used a questionnaire (attached as Appendix P) based on earlier proposals for the content of such a questionnaire to use for the compilation of an inflation credibility barometer (Rossouw, 2003b: 84). In this pilot study the aim was to obtain answers to questions (i), (ii) and (iii) above. Three groups of respondents were selected to complete the questionnaire and were requested to indicate whether the latest available month-on-month inflation figure stated in the questionnaire is a true reflection of average price increases. For control purposes and to prevent a situation where one respondent could complete

⁸⁷ See for instance Struwig and Stead (2001) on the advisability of using pilot studies before sampling a representative population.

more than one questionnaire, respondents were requested in all instances to identify themselves in the completed questionnaire.

The second question in the questionnaire provided in section (a) an option of stating that inflation was lower than published to cater for such perceptions. In the alternatives in question 2 (b), dealing with a perception that inflation was higher than published, three possible alternatives that would not contribute to increases in the price level (e.g. expensive food) were deliberately included.

The first questionnaire was completed under supervision as a first phase of the first pilot study by 20 Master of Business Administration (MBA) preparatory students at the University of Pretoria during 2005. This group was selected as a first sample owing to the small number of students. As students participating in the first phase of the first pilot study experienced no difficulties in completing the questionnaire, two larger groups of second-year economics students following the EKN 213 and EKN 215 courses, respectively, at the same University during 2005 subsequently completed it as a second phase of the first pilot study.

The responses of the MBA preparatory students are highlighted in Appendix R. As only one student accepted the inflation figure as accurate, the credibility barometer reads 5 (out of a possible 100). The questionnaire was distributed before any lecturing on or explanation of inflation and its measurement. A large proportion of respondents displayed little understanding of inflation, as is evident by the fact that they have highlighted an item not contributing to price increases as a reason for not accepting the inflation figure as accurate.

As a second phase of the first pilot study, the responses of two groups of second-year students in the first pilot study are highlighted in Appendices S and T, respectively. The sample comprised eleven EKN 213 and ninety EKN 215 students. The analysis of the results obtained from the EKN 213 and EKN 215 students confirmed that an inflation credibility barometer could be constructed by expressing the total number of “yes” responses to the first question as a percentage of the total responses, but that it has a very low reading owing to a low degree of

credibility of the official inflation figure as a true reflection of average price increases.

In respect of the EKN 213 students, the credibility barometer reads 18 (out of a possible 100), as two out of 11 students accepted the inflation figure as accurate. Only one student mentioned a perception of price increases lower than the inflation figures. It is important to note that three students (some 27 per cent), mentioned as reasons for a perception of higher inflation an item (high prices) that is not used for measuring the rate of inflation. Broadly similar results were obtained from the questionnaires completed by the EKN 215 students. In this case the credibility barometer reads 13 (out of a possible 100) as 12 out of 90 students accepted the inflation figure as accurate. About 6 per cent of students indicated that price increases were lower than the inflation figures. In addition, 17 students (i.e. about 19 per cent) mentioned as reasons for a perception of higher inflation one of the items that are not used for measuring the rate of inflation.

The responses provided a satisfactory answer to question (i) above (an inflation credibility barometer can be constructed, albeit with a very low reading), but not to questions (ii) and (iii), casting some doubt on people's understanding of the meaning of inflation figures. Owing to these unsatisfactory survey results obtained from the first pilot study, revised second and third pilot studies were conducted, using the same groups of respondents, *inter alia*, to ascertain whether knowledge and information improve the credibility of inflation data. In the second pilot study, one group of respondents used before was requested to complete the first questionnaire for a second time. In the third pilot study a shortened second questionnaire, highlighted in Appendix Q, was developed for completion by the two other groups of respondents used in the second phase of the first pilot study. It comprises one question only, pertaining to the accuracy of the rate of inflation used for targeting purposes, rather than the overall rate of inflation.

As the group of 20 MBA preparatory students had no previous formal post-school training in economics and in view of the unsatisfactory findings about the acceptance of inflation figures, they were requested in the second pilot study to complete the first questionnaire for a second time. This followed an extensive lecture on the measurement of inflation, inflation targeting as a

monetary policy framework and the use of inflation targets in South Africa, which addresses question (iv) above. Moreover, the study also attempted to find satisfactory answers to questions (ii) and (iii), which were not answered satisfactorily in the first pilot study.

A comparison of the results of the first phase of the first pilot study and of the second pilot study, highlighted in Appendix R, confirms that knowledge and information increase the credibility of inflation figures. The credibility barometer reads 45 in the second pilot study, indicating a much higher degree of acceptance of the inflation figure as an accurate indicator of inflation after the lecture on inflation. This confirms that knowledge and information improve inflation credibility, despite the fact that three respondents still mentioned as reasons for a perception of inflation at a level higher than the official rate items not used for measuring the rate of inflation. This casts some doubt on the ability of people to understand fully in a reasonably short period of time the meaning of inflation figures. To the extent that this group of students reflects a cross-section of the general public, the finding is that communication increases the public's general level of understanding inflation, albeit that prolonged communication might be required for this purpose.

The second pilot study also provided satisfactory answers to questions (ii) and (iii) in as much as a higher credibility of inflation figures was recorded and less respondents selected as reasons for not accepting inflation figures as accurate an item not contributing to price increases.

In an attempt to find an answer to question (v), i.e. whether a long questionnaire, particularly one that allows for a choice in the answering of questions, might "induce" negative responses by respondents to ensure participation in subsequent questions, and to ascertain the optimum scope for a questionnaire, a more concise questionnaire was compiled for completion in a third pilot study by the same two second-year student groups who participated in the second phase of the first pilot study. The second questionnaire stated the inflation figure used for targeting purposes (CPIX), rather than the overall CPI inflation figure. For control purposes respondents were again requested to identify themselves.

The results of the third pilot study are summarised in Appendices S and T, respectively. The

sample comprised 16 students registered for EKN 213 and 62 registered for EKN 215. In the second sample of EKN 213 students, the credibility barometer reads 81 (out of a possible 100) as 13 out of 16 respondents accepted the inflation figure used for targeting purposes as accurate. In respect of the EKN 215 students, the credibility barometer reads 63 (out of a possible 100) as 39 out of 62 respondents accepted the inflation figure as accurate. In both cases a marked improvement in the reading of the barometer was recorded.

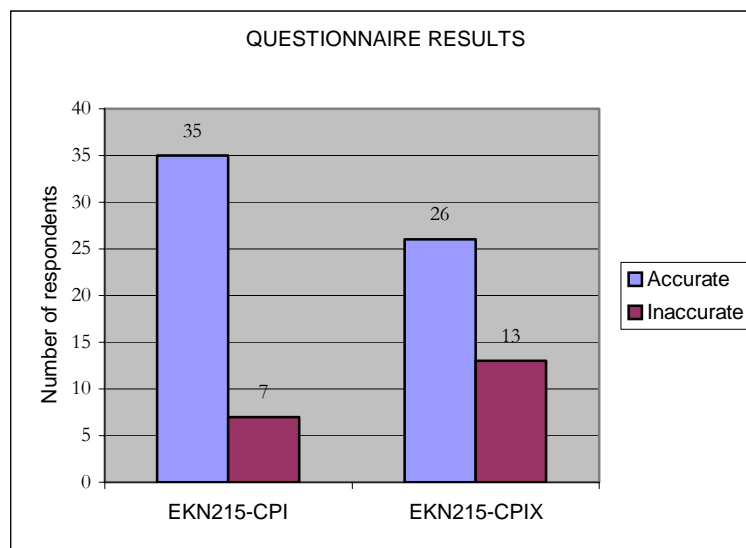
Owing to the fact that an answer could not yet be provided to question (vi) dealing with the particular index used for the measurement of inflation, a fourth pilot study was conducted. Two abridged questionnaires, attached as Appendices U and V, were developed for the fourth pilot study. Both questionnaires contained only one question on inflation, providing the latest relevant inflation figure to respondents. The one questionnaire provides the most recent official overall inflation figure (changes in the CPI in metropolitan and other urban areas) and the other provides the most recent inflation figure used for inflation-targeting purposes (changes in the CPI in metropolitan and other urban areas excluding changes in mortgage interest costs, i.e. CPIX). The respondents were randomly split into two groups and each group completed one of the questionnaires.

The purpose of using two questionnaires was to compare which measure of inflation recorded the higher degree of acceptance on the inflation credibility barometer and, therefore, to find an answer to question (vi). The two questionnaires were completed by the same group of second-year students following the EKN 215 course at the University of Pretoria who had completed the questionnaire in the earlier pilot studies. Based on experience gained from the earlier pilot studies, it was considered unnecessary to use more than one group of respondents. Respondents were requested to identify themselves in the completed questionnaire for control purposes and to prevent a situation where one respondent could complete more than one questionnaire. The sample comprised 81 EKN 215 students and the results are summarised in figure 7.2.

The credibility barometer for students who completed the questionnaire stating the CPI reads 83 (out of a possible 100), as 35 out of 42 students accepted the CPI as an accurate indication of

current inflation. In respect of CPIX the barometer reads 67, as 26 out of 39 students accepted it as accurate. This pilot study led to the conclusion that respondents attach a higher degree of credibility to changes in the CPI as an accurate indication of inflation, than to changes in the CPIX.

Figure 7.2 Inflation credibility: summary results of the surveys of the credibility of CPI and CPIX, respectively



As the first four pilot studies provided answers to the first six questions highlighted above only, and based on the conclusions from the analysis of international samples to measure inflation credibility highlighted in Chapter 2, it was decided to conduct one further pilot study, with four goals in mind. The first goal of the fifth pilot study was to establish differences, if any, in the inflation perceptions of the different genders in South Africa. This analysis was necessary to align the findings of the pilot studies with the results obtained in respect of gender groups by the measurement of inflation perceptions internationally and also to provide an answer to question (vii) above.

Secondly, given the observation of Bryan and Ventaku (2001b) about inflation perceptions of

different population groups and in view of South Africa's population composition and political history, it was decided to assess any possible differences in inflation perceptions of the different population groups in South Africa. Although it might be argued that it is less than desirable to make any attempt to split respondents in terms of population groups for research purposes, such a split was necessary to address question (viii) above.

Thirdly, as the next logical step following the pilot studies would be to measure the credibility of inflation figures of a broad sample of respondents, the fifth pilot study was used to test the suitability of a questionnaire designed specifically for use with a broader sample.

Lastly, it was decided to use the participants in the fifth pilot study as enumerators (fieldworkers) for the fieldwork of the broad study. By using these participants for a pilot study, care was taken to ensure that they understood the aim of the research and could complete the questionnaire. Moreover, such participation would increase their own understanding of the inflation perceptions of the broader population.

Owing to the four aims of the fifth pilot study it required elaborate planning, particularly also because it had to lay the foundation for a broader and more extensive pilot study on inflation credibility, discussed in Section 7.7 below. A concern was that some respondents could construe questions pertaining to population groups and gender to be of a controversial nature. To put it bluntly: it is not always considered politically correct to touch on issues of population classification and gender, even if it is done in the interest of scientific research. To prevent any possible negative consequences, the draft questionnaire and intended research were discussed with a randomly selected focus group of ten people from the envisaged sample of respondents identified for the fifth pilot study. Members of the focus group did not foresee any difficulty with the completion of the questionnaire, and particularly no difficulty with the questions pertaining to population group and gender. The 2006 group of EKN 215 students at the University of Pretoria was selected to complete the questionnaire (attached as Appendix W) under supervision, which was finalised for use only after the necessary approval had been obtained for its use in the fifth pilot study and the broad pilot study, as is explained in the next section dealing with the design,

methodology and execution of the broad pilot study.

The questionnaire contained only one question on inflation, providing the most recent official overall inflation figure (changes in the CPI in metropolitan and other urban areas) to respondents, based on the finding of an earlier pilot study that this figure recorded the highest reading on the inflation credibility barometer.

Table 7.3 Distribution of inflation credibility barometers in subsamples according to gender and population groups of a class of 2006 EKN 215 students

	Male	Female
	Number	Number
Subsample	32	65
Asian	3	5
Black	17	46
Coloured	*	*
White	12	14
	Credibility barometer	Credibility barometer
Subsample	56 (18/32)	62 (40/65)
Asian	66 (2/3)	60 (3/5)
Black	53 (9/17)	65 (30/46)
Coloured	*	*
White	58 (7/12)	50 (7/14)

* No respondents identified themselves as Coloured

The sample comprised ninety-seven EKN 215 students and the credibility barometer reads 60 (out of a possible 100), as 58 out of 97 students accepted the CPI as an accurate indication of current inflation. The inflation credibility barometers of different population groups and genders are summarised in Table 7.3. With only nine exceptions, all the EKN students were from the Faculty of Economic and Management Sciences of the University. The responses were therefore

not analysed in terms of faculty. Students reported no negativity on the questions pertaining to population group and gender when they completed the questionnaire under supervision.

Table 7.3 shows that the inflation credibility barometer for different groups ranges from as low as 50 for White females to as high as 66 (albeit on a small subsample) for Asian males. The barometers for the genders show a smaller range. However, these ranges confirm that a similar analysis with a larger sample of respondents showing differences in perceptions between genders and population groups, should provide a useful insight into the inflation perceptions of subsamples within the South African population. Questions (vii) and (viii) were therefore answered satisfactorily.

The five pilot studies provided satisfactory answers to the eight questions stated at the outset of this section. In respect of the first question, the finding is that an inflation credibility barometer can be constructed, albeit with a very low reading in certain instances. In general, respondents reported different degrees of acceptance of the accuracy of inflation figures under different circumstances in the pilot studies. However, the overall results are encouraging enough to justify the sampling of the inflation perceptions of broader samples of the South African population.

The results of the pilot studies show that respondents have a lot of misconceptions about inflation and its measurement, implying that a satisfactory answer has not necessarily been found to the second question. These misconceptions might be an obstacle in measuring inflation credibility in as much as respondents could report perceptions about price levels, rather than price changes. This remark also addresses the third question: the dissemination of information improves the understanding of inflation and therefore increases the credibility of inflation figures.

The findings of the pilot study provide an answer to the fourth question: in the long run a continued communication campaign by the central bank or another authority can improve inflation credibility.

The pilot studies show that the optimal scope for measuring inflation credibility in a broader sample of the population is a shorter and more concise questionnaire, rather than a longer questionnaire, as the shorter questionnaires delivered better results, which provides the answer to the fifth question above. Moreover, it would not be appropriate to request respondents to identify themselves in a broader sample, as was done for control purposes only in the pilot studies in both the longer and the shorter questionnaires.

In respect of the sixth question, the findings of the pilot studies show that changes in the CPI has measured the highest reading on the inflation barometer and should therefore be used for more representative sampling of the South African population.

In respect of question seven, dealing with differences in the inflation perceptions of the different gender groups, the finding is that it differs between these groups. However, the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4), and therefore attach a lower credibility to inflation figures, is not confirmed by the pilot studies: on the contrary, the inflation credibility barometer of female respondents reads 62, as opposed to a reading of 56 for male respondents. This point is discussed in more detail in the next section. However, large discrepancies are observed in the barometer readings of different subsamples within the gender differentiation.

Lastly, in dealing with question (viii) above, the pilot studies recorded differences in the inflation perceptions of the different South African population groups. The inflation credibility barometers recorded in the pilot studies range from a low of 50 for White females to 66 for Asian males.

Based on the insights gained from the literature review and particularly the analysis of the international measurement of inflation perceptions, and the methodology developed and tested in the five pilot studies discussed in this section, a broad pilot study measuring inflation credibility in South Africa was undertaken, as is explained in the next section.

7.7 Broad pilot study on inflation credibility⁸⁸

Based on the conclusions reached from the analysis of the international measurement of inflation perceptions and the five domestic pilot studies on inflation credibility, the methodology, design and findings of a extensive pilot study on the measurement of inflation credibility are discussed in this section. This research was undertaken after respondents in the fifth pilot study did not respond negatively to the questionnaire, as they were used as enumerators in this extensive study.

Despite the large degree of difference in the approaches of the small number of jurisdictions measuring inflation perceptions, the analysis in Chapter 2 and the findings of the pilot studies lead to the conclusion that the broad pilot study should:

- allow for the reporting of survey results from a sufficiently large group of respondents;
- ensure anonymity for respondents answering the question or questions in questionnaires;
- be stratified to provide for the separate reporting of the inflation perceptions of male and female respondents; and
- be stratified to provide for the separate reporting of the inflation perceptions of different population groups in South Africa.

In planning and executing the broad pilot study, the objective was therefore to find answers to the following five questions, rather than to all eight questions considered in the pilot studies:

- (i) whether inflation credibility barometers for a broad sample and subsamples can be calculated;
- (ii) whether respondents generally accept inflation figures as accurate;
- (iii) whether respondents studying in different faculties of a university report large discrepancies in their perceptions of the accuracy of the official rate of inflation;
- (iv) ascertain differences in the inflation perceptions of different genders in South Africa; and
- (v) ascertain differences in the inflation perceptions of different population groups in South Africa.

⁸⁸ A summary of this section was published as Rossouw and Padayachee, 2007.

From the experience gained from the five pilot studies, it has been concluded that coverage of these five aspects would be sufficient and that the broad pilot study:

- should use a short and concise questionnaire, as the shorter questionnaires delivered better results;
- should measure the credibility of changes in the CPI (and not the CPIX), as such changes have measured the highest reading on the inflation barometer; and
- should not measure the importance of knowledge and information in the understanding of the meaning and measurement of inflation, as this was confirmed beyond doubt in the pilot studies.

Respondents in the fifth pilot study (EKN 215 students) were used as for fieldwork in this study. Enumerators were requested to sample the inflation perceptions of five fellow students, using the questionnaire attached as Appendix W, which was also used for the fifth pilot study. As this was done without supervision, there was no way to prevent a situation where any enumerator could complete more than one or even all the questionnaires personally, which might cast a degree of doubt over the validity of the results of the broad study. In an effort to entice students into obtaining views of fellow students, they had each been asked initially to obtain the views of ten fellow students. Subsequently, the request was changed: the enumerators were asked to obtain the views of five fellow students, rather than ten as originally requested. Owing to this reduction in the number of students to be approached, students did commit themselves to the research at the planning stage, as the goal (obtaining views from five, rather than 10 students) became more achievable. It was also not possible to ascertain whether any particular respondents provided responses to more than one enumerator, implying that the response of one respondent could have been sampled and reported more than once.

In total, 95 out of 188 students registered for EKN 215 participated as enumerators and submitted 497 completed questionnaires, implying that a small number of students obtained the view of

more than five respondents each⁸⁹. The responses of four “respondents” handed in by one student were clearly photocopies of the same original, and these four “responses” were therefore discarded for purposes of this broad sample. This section deals therefore with the responses of 493 respondents.

The overall credibility barometer reads 51,9 out of a possible 100, as 261 respondents (out of a sample of 493) accepted the CPI as an accurate indication of price increases. The detail of the responses in respect of population groups is highlighted in Table 7.4.

Table 7.4 Responses of all respondents and according to subsample of population groups

Population group	Number of respondents	Barometer
Asian	54	53,7 (29/54)
Black	221	51,6 (114/221)
Coloured	32	56,3 (18/32)
White	179	53,1 (95/179)
Not indicated*	7	71,4 (5/7)
Total	493	51,9 (261/493)

* In total, seven respondents preferred not to answer the question about population group, or provided answers that could not be used, e.g. all the groups or other. Of these seven respondents, five accepted the inflation figure as a true reflection of price increases, giving a barometer reading of 71,4. However, owing to the small size of this subsample, these responses are discarded in the analysis pertaining to population group, implying that only 486 responses are analysed.

The barometer reading according to population group shows broadly similar readings for all the population groups, ranging from 51,6 for Blacks to 56,3 for Coloureds, albeit on a relatively small sample in the last instance. The detail of the responses in respect of population groups is highlighted in Table 7.5.

⁸⁹ Enumerators mentioned that some respondents requested the opportunity to answer *don't know*, rather than to choose between *yes* or *no*.

The barometer reading according to gender reconfirms the finding of the fifth pilot study, but contrasts findings abroad, particularly in the case of Sweden and the Federal Reserve Bank of Cleveland. Contrary to findings abroad, the inflation credibility barometer reading for female respondents in this sample and in the fifth pilot study is higher than for male respondents: 54,3 for this group of female respondents, as compared to 51,0 for the male respondents. The barometer ranges between 45,5 at the low end for Coloured males and 61,9 for Coloured females, albeit on relatively small samples in these two instances. This matter is reviewed in the discussion of the findings of the study below.

Table 7.5 Distribution of inflation credibility barometers in subsamples according to gender in terms of Asians, Blacks, Coloureds and Whites

	Male			Female		
	Accurate	Not accurate	Total	Accurate	Not accurate	Total
Subsample	123	118	241	133	112	245
Asian	20	15	35	9	10	19
Black	55	47	102	59	60	119
Coloured	5	6	11	13	8	21
White	43	50	93	52	34	86
	Credibility barometer			Credibility barometer		
Subsample	51,0 (123/241)			54,3 (133/245)		
Asian	57,1 (20/35)			47,4 (9/19)		
Black	53,9 (55/102)			49,6 (59/119)		
Coloured	45,5 (5/11)			61,9 (13/21)		
White	46,2 (43/93)			60,5 (52/86)		

In respect of respondents from the nine faculties at the University of Pretoria, the barometer readings are summarised in Table 7.6. However, as could be expected in view of the fact that the

majority of enumerators were from the Faculty of Economic and Management Sciences, more respondents from this faculty were sampled, obtaining an overrepresentation of students from this faculty, compared to student numbers. After submitting a written request stating, *inter alia*, the reasons for the request to obtain student numbers of the University, it was confirmed that 39 178 students registered (at all levels of study) at the University for the 2006 academic year. The Faculty of Economic and Management Sciences had the most students and the Veterinary Science Faculty had the smallest number of students, i.e. 706 (De Bruyn, 2006: 1).

Table 7.6 Inflation credibility barometer of CPI figures according to faculty, based on acceptance of CPI figures by respondents

	Number of respondents			Barometer
	Accurate	Not accurate	Total	
Economic and Management Sciences	143	115	258	55,4
Education	14	8	22	63,6
Engineering, the Built Environment and Information Technology	33	36	69	47,8
Health Sciences	13	12	25	52,0
Humanities	5	7	12	41,7
Law	18	21	39	46,1
Natural and Agricultural Sciences	30	29	59	50,8
Theology	3	1	4	75,0
Veterinary Science	2	3	5	40,0
Total/weighted average	261	232	493	52,9

Whereas 52,3 per cent of respondents was drawn from the Faculty of Economic and Management Sciences, the student numbers of the University of Pretoria for 2006 show that 23,7 per cent of students (9 293 in total) were registered for study in this faculty (SANSO, 2006). The credibility

barometers show that the highest reading was obtained among theology students and the lowest reading among students studying veterinary science. However, the samples of students from these two faculties are so small that no definitive conclusions are possible. A sample or subsample can be regarded as small if less than 30 respondents are included (Wegner, 1993: 197).

In respect of larger samples (i.e. $n > 30$) of respondents from specific faculties, the highest credibility is reflected among students in the Faculty of Economic and Management Sciences and the lowest among law students. Although it was not an initial objective of the extensive pilot study to measure the influence of knowledge and information on the credibility of inflation, this finding confirms a positive relationship between knowledge and information as an assumption can be made that students studying in the fields of accounting, economics, finance and management sciences will be the best informed about inflation and the accuracy of its measurement. This reconfirms the earlier finding that communication is important in enhancing inflation credibility.

The broad pilot study was planned and executed to find answers to the five questions stated earlier in this section. As could be expected, the different subsamples of respondents reported different degrees of acceptance of the accuracy of inflation figures. However, the overall results are encouraging enough to justify the sampling of the inflation perceptions of a representative sample of the South African population. The results of sampling for the whole group and subgroups could be reported by means of inflation credibility barometers, and the broad sample therefore provides a satisfactory answer to the first question.

The barometer readings vary between 45,5 for Coloured males (the lowest reading) and 75 for the small sample of students from the Theology Faculty (the highest reading). These results indicate that the inflation perceptions of different subsamples of the population do indeed differ considerably, implying that no general answer can be provided to the second question.

Thirdly, in respect of question (iii), the extensive pilot study reports a large difference in credibility between students in different faculties. However, in certain instances the samples are

not large enough to support any final conclusions, but in respect of faculties represented by larger samples ($n > 30$), the finding is that credibility differs considerably between faculties. Moreover, the research confirms that knowledge and information enhance the credibility of the measurement of inflation.

In respect of question (iv), the finding is that inflation perceptions differ between genders. However, the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4) and therefore attach a lower credibility to inflation figures, is not confirmed by the pilot studies: on the contrary, the inflation credibility barometer of female respondents reads 62, as opposed to a reading of 56 for male respondents. In addition, Bryan and Ventaku conclude that “... all we can say with any confidence is that it does not appear that women have a higher perception of inflation than men because of the things they buy, the frequency of their shopping, or their knowledge of officially reported statistics” (2001b: 4).

To the contrary, Jonung concluded that “... [w]ith respect to the perceived rate ... [of inflation] ... , the major difference was found between men and women ... [which] ... is most easily explained by a larger rise in food prices than in the consumer price level ... As women are responsible for the major share of the food purchases within Swedish households, they are more exposed to movements in food prices than men” (1981: 968). The broad sample, conducted among students (and in particular female students) who are normally not exposed to purchasing food or household requirements for a whole household, shows a higher (rather than a lower) degree of inflation credibility among females, as was found in credibility samples in other countries. However, large discrepancies are observed in the barometer readings of different subgroups within the gender differentiation, as explained below.

Lastly, in dealing with question (v) above, the finding of the extensive pilot study is that differences indeed occur between the inflation perceptions of the different South African population groups. Naturally the reaction would be to equate population groups to income differentials, but this does not provide any satisfactory answer to these discrepancies, particularly as the same trends are not reflected by subsamples of the same population group. As is the case

with the different genders, this matter justifies broader analysis, e.g. the calculation of confidence indicators. This finding also impacts on the findings in respect of question (iv) above, as the inflation perceptions in terms of gender differ considerably when analysed in terms of population group: the barometer readings vary between 45,5 for Coloured males (the lowest reading) and 61,9 for Coloured females (the highest reading).

In dealing exclusively with the fifth question above, the finding is that the barometer readings range between 45,5 and 57,1 for different male population groups and 47,4 and 61,9 for different female population groups, implying that the credibility of published inflation figures differs considerably between different population groups.

The aim of research is to obtain the view of a population on a specific matter, but without necessarily conducting interviews with every member of the population. In the broad pilot study the aim is to obtain some reflection of a sample of the South African population's perceptions about the credibility of South African inflation figures. In the comparison of the measurement of inflation perceptions internationally, reported in Chapter 2, it was ascertained that the Federal Reserve Bank of Cleveland reported inflation perceptions with a 90-per-cent confidence interval,

based on the formula $\bar{x} - 1,645 \frac{\sigma_x}{\sqrt{n}} \leq \mu_x \leq \bar{x} + 1,645 \frac{\sigma_x}{\sqrt{n}}$ (Bryan, 2006),

where \bar{x} = sample mean;

σ = population standard deviation;

n = sample size; and

μ = mean value (true population mean).

Based on this information, a confidence interval was also calculated for the respondents in the broader sample. Sampling techniques have been developed to limit errors in results when the opinions of a sample of a population are obtained to ensure that the results reflect as closely as possible the opinions or views of the entire population. To this end, confidence intervals provide an estimate of the possible size of any error in sampling data, highlighting the degree or level of accuracy (or confidence in) the statistical estimates, e.g. means, standard deviations, and

correlations. Confidence intervals are dependent on a value of a statistical estimate; the standard error (SE) of the measure; and the required size of the confidence interval, implying that it could be declared with the relevant degree of certainty that the results obtained from the sample reflects the view of the population from which the sample was drawn.

A confidence interval can be described as an area within which a researcher can declare with certain specified level of confidence that a population parameter lays (see for instance Easton and McColl, [S.a.]). In using a 90-per-cent confidence interval, a researcher can indicate with a confidence level (or degree of certainty) of 90 per cent that the result is within the spread of the normal distribution. With a normal probability distribution, 90 per cent of the area the curve will be included between the values of $z = -1,645$ and $z = 1,645$.

For the purpose of calculating a 90-per-cent confidence interval, the following information was used:

Number of observations in the sample	(n)	493
Number of successes	(x)	261
Proportion	(p)	$261 \div 493 = 0,529$; $\therefore q = 0,471$
Standard error	(SE)	$\sqrt{\frac{0,529 \times 0,471}{493}} = 0,0224$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,529 - 1,645(0,0224)] \leq \Pi \leq [0,529 + 1,645(0,0224)]$$

$$0,4922 \leq \Pi \leq 0,5658$$

This implies that there is a 90-per-cent probability that the actual population represented by the sample in this study who believes that the official rate of inflation is an accurate indication of price increases, lies between 49,2 per cent and 56,6 per cent.

The responses according to gender were analysed at a 90-per-cent confidence interval for a number of a null hypotheses, based on the relevant data. The first analysis was done in respect of respondents who did not agree that the rate of inflation is an accurate indication of price increases in the economy:

		Male	Female
Number of observations in the sample	(n)	241	245
Number of <i>no</i> responses	(x)	123	133
Proportion	(p)	0,5104	0,5428
Pooled estimate		$\frac{123 + 133}{241 + 245} = 0,5267.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,5104 - 0,5428}{\sqrt{(0,5267 \times 0,4733) \left(\frac{1}{241} + \frac{1}{245} \right)}} = -0,715.$$

The value $-0,715$ falls within the area of acceptance, i.e. between $-1,645$ and $+1,645$. The conclusion is that at the 10-per-cent significance level there is no difference between the proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy. However, owing to the important difference in findings between the broad pilot study and international studies about the inflation perceptions of male and female respondents, the conclusion is nevertheless that a sample used for such measuring should be stratified according to gender.

Similarly, the responses of the different population groups in the broader sample were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between the inflation perceptions of respondents from the different population groups in the sample. For this

purpose, the sample data of the groups reporting the largest and smallest credibility, i.e. Coloureds and Blacks, respectively, were used, based on the following data:

		Coloured	Black
Number of observations in the sample	(n)	32	221
Number of successes	(x)	18	114
Proportion	(p)	0,5625	0,5158
Pooled estimate		$\frac{18+114}{32+221} = 0,5217.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,5158 - 0,5625}{\sqrt{(0,5217 \times 0,4783) \left(\frac{1}{32} + \frac{1}{221} \right)}} = - 0,494.$$

The value - 0,494 falls within the area of acceptance, i.e. between - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is no difference between the proportions of different population groups that believe the rate of inflation is an accurate indication of price increases in the economy. In view of this finding and taking cognisance of the statement about population groups by Bryan and Ventaku made in respect of the different genders, i.e. that “[i]n an analysis of the reasons for such a large discrepancy ... even after adjustments between the genders to account for differences in ... [*inter alia*] ... race, ... women still perceived historic inflation as 1,9 percentage points higher than men” (2001b: 1), the conclusion from this analysis is that it might be unnecessary to stratify a sample measuring inflation credibility in terms of population groups⁹⁰.

The next section considers the application of the insights obtained from the pilot studies on a first

⁹⁰ Despite this finding, it was decided to stratify the representative study according to population group, so as to reassess this finding.

representative study of South African inflation credibility.

7.8 First representative study of inflation credibility in South Africa

The conclusions from the analysis of the international measurement of inflation perceptions, the five pilot studies on inflation credibility and the design and findings of a first extensive pilot study on the measurement of inflation credibility undertaken in South Africa, form the backdrop for a first representative study on inflation credibility in South Africa, and the construction of an inflation credibility barometer for a representative sample of the population. This section describes the design, planning, execution and conclusions of this representative study. As research into inflation credibility has not been undertaken on this scale in South Africa before, the findings of the pilot studies provided the methodology used in the sample and served as guidelines for the research design.

A challenge facing this representative study was to obtain responses on inflation credibility from a representative sample of the South African population. An alternative was for the researcher to conduct the research personally. However, it would have been time consuming to obtain sufficient results by means of personal interviews of a representative sample of the population to reach any conclusions about the degree of credibility of the inflation figures. Another alternative was the possible use of telephone research by means of Telkom telephone directories, but as only some 30 per cent of South Africans have residential landline telephones (National Gambling Board, 2005: 5), this possibility was discarded.

Other than undertaking the research personally, a number of possibilities for obtaining such results by means of research institutions were considered, e.g. in conjunction with the BMR of the University of South Africa. The possibility of using Consulta Research, a subsidiary of the campus company of the University of Pretoria, BE at UP (Pty) Ltd, was also explored. Actual cost of sampling would have depended on sample size, but would have been quite expensive. The quote of Consulta to obtain 274 responses amounted to R14 280,00, while the cost would have amounted to R44,91 per response to do a dedicated sample of 548 respondents. Moreover,

the sample would have been done by means of telephone interviews, therefore covering only respondents with Telkom landlines, which could result in sample biases.

After a consideration of the available possibilities, it was decided to use Markinor for sampling purposes. Markinor was established in 1972 and describes itself as “... the leading South African provider of research solutions” (Markinor, [S.a.]), and is a member of the Gallup International Association and the Walker Information Global Network. Markinor has a client base ranging from small companies to multinationals, and the client base covers clients active in diverse areas such as, for instance, financial services, health care, media, telecommunications, travel and tourism (Markinor, [S.a.]). Markinor regards as its main competitors the companies AC Nielson, Research International and Research Surveys. However, none of these competitors have a suitable product at a similar price that could be used for purpose of this research, and the development of a dedicated sample for purposes of this research would have been more expensive than the cost of research conducted by Markinor.

The decision to use Markinor was informed by a number of factors. First, Markinor conducts biannual sampling, known as its M-bus, which covers a broad number of questions on consumer behaviour and perceptions. Additional questions can be added to this survey at a prescribed fee, as the infrastructure to conduct the research is already in place⁹¹. This survey comprises sampling by means of personal interviews (thereby avoiding the possible sampling bias of telephone interviews) and does not only provide a broad sample of responses from respondents, but a minimum of 20 per cent of each interviewer’s work is back-checked on each project (Markinor, [S.a.], Markinor, 2006).

The second factor in support of the choice of Markinor was the size of the sample of respondents that could be reached, i.e. 3 500⁹², as well as the number of criteria in terms of which the sample

⁹¹ The use of omnibus research to contain the cost of sampling is an accepted research practice and is used by many different disciplines of study (see for instance Camponovo, 2006; Kearney et al., 1999; or Lindenmann, 2001). The same omnibus research approach was followed by the Federal Reserve Bank of Cleveland (Bryan, 2006).

⁹² After a 20-per-cent back-check was conducted to validate the results of the sampling of inflation credibility, the number of interviewees was adjusted to 3 493 adult South Africans of age 16 years and older (Markinor, 2006).

could be split, e.g. gender, income, employment status, etc. Markinor applies a statistically-based sampling procedure, in which each qualifying person in South Africa (i.e. 16 years and older) has a measurable chance for selection, which ensures a nationally representative sample.

The number of respondents for purposes of the survey corresponds broadly with the number of respondents (i.e. 3 100) covered by the most recent survey on gambling in South Africa (National Gambling Board, 2005: 6), which is regarded as a representative sample of the population. Moreover, the number of respondents covered by the Markinor research is substantially larger than the 1 441 respondents covered by the BMR in its living-standards measure group research (Bureau of Market Research, 2005: 17).

The third factor influencing the decision to use Markinor is related to the second one above. Whereas certain of the quotes for sampling amounted to as much as R52,17 per respondent, the Markinor sample covered the responses of 3 500 respondents at a cost of R10 174,50, or some R2,90 per respondent (a copy of the Markinor invoice is attached as Appendix X). Moreover, Markinor offered added value in as much as it made available as part of this research the results of its survey on perceptions about the successful containment of inflation since 1995 (see Section 7.4 in this regard).

The preparatory work required for the representative sample was undertaken in conjunction with Markinor over the period August to October 2006, with sampling completed in October and November 2006. Markinor made the results available in the second week of December 2006. There is no doubt in the mind of this researcher that it was the correct choice to use Markinor, rather than to make an attempt to do the sampling personally.

Despite the large degree of differences between countries measuring inflation perceptions or inflation credibility, an analysis of the salient features of the approaches used led to the conclusion that a first comprehensive research project measuring and reporting inflation credibility for a country or region with any degree of confidence should:

- be large enough to report survey results with at least an acceptable confidence interval to ensure international comparability;
- ensure anonymity for respondents answering the question or questions in questionnaires; and
- be stratified to provide for the separate reporting of the inflation perceptions of male and female respondents.

From the domestic experience with pilot studies, it has been concluded that the research project should:

- raise only one question, as short questionnaires delivered better results during the pilot studies;
- measure the credibility of changes in the CPI, as such changes have measured the highest reading on the inflation barometer during the pilot studies; and
- culminate in the construction of an inflation credibility barometer.

In planning and executing this representative study, these six salient features were used as guiding principles. The objectives of the representative study were to find answers to the following questions:

- (i) whether inflation credibility barometers can be calculated for a representative sample and subsamples;
- (ii) to ascertain differences in the inflation perceptions of different genders in South Africa;
- (iii) to ascertain differences in the inflation perceptions of different population groups in South Africa; and
- (iv) to include for the first time “don’t know” in the questionnaire⁹³, to prevent a situation where those respondents who have no knowledge about the rate of inflation answers “no”, hence

⁹³ It transpired from the broad pilot study discussed in Section 7.7 that some respondents indicated a preference to answer *don’t know*. This approach is also followed by the ECB (Bechtold and Linz, 2005: 8).

over-reporting non-acceptance of the rate of inflation as an accurate indication of price increases in the economy⁹⁴. The inclusion of this possible answer corresponds with the research of Markinor on perceptions about the success of government in controlling inflation, which also provides for “don’t know” as a response.

An extract from the questionnaire, dealing with the section on inflation credibility, is attached as Appendix Y. The detailed responses according to a number of criteria in terms of which the sample could be split, are highlighted in Appendices Z to DD.

The sampling process reports that 52,9 per cent of respondents indicated that they did not know whether the rate of change of 5,4 per cent in the CPI in August 2006 is a true indication of price increases. Of the remaining respondents, 18,5 per cent said that the official CPI was a true reflection of average price increases, while 28,6 per cent believed that it is not a true reflection of price increases in the economy. Although a higher degree of acceptance of the accuracy of inflation figures would naturally have been encouraging, the findings of this study cannot be compared with any other representative domestic research results. Domestically similar research has not been undertaken before, and this study accordingly sets the benchmark for future research of a similar nature.

The high ratio of *don’t know* as a response confirms that the sampling of inflation credibility should provide for *don’t know* as a possible response, as the omission of this possibility might result in the overmeasurement of other responses. This response was higher among women than among men; among Black respondents; among people with no employment (either unemployed or voluntarily outside the labour market); among people with no education; among respondents in the lowest income bracket up to R1 199 per month; among respondents living in a village or rural

⁹⁴ Three earlier pilot studies (discussed in section 7.6) provided respondents with the opportunity to highlight reasons why they did not believe the accuracy of published inflation figures (i.e. to explain why they answered *no* to the question). In one of the pilot studies some 27 per cent of the respondents mentioned as their reason for a perception of inflation higher than the official rate something (i.e. high prices) that is not used for measuring the rate of inflation. In another pilot study about 19 per cent of the respondents also mentioned as reasons for a perception of higher inflation items that are not used in measuring the rate of inflation. In view of these unsatisfactory results it was decided not to ask reasons for negative responses.

community; among respondents living in the Limpopo province; speaking Xhosa⁹⁵; and in the 16-to-24 age group.

The highest percentage of respondents accepting the inflation rate as a true reflection of price increases was recorded among men, among White respondents; among people who are employed; among people with tertiary education; among respondents in the income bracket R12 000 + per month; among respondents living in cities; among respondents living in the Western Cape; speaking Afrikaans; and in the 25-to-34 age group.

The profile of respondents not accepting the inflation rate as a true reflection of price increases corresponds to a large degree with the profile of respondents accepting the inflation rate as an accurate indicator of price increases. The highest ratio of these responses was recorded among men, among White respondents; among people who are employed; among people with tertiary education; among respondents in the income bracket R12 000 + per month; and among respondents living in the Western Cape, as was the case with respondents accepting the inflation figures as an accurate indication of price increases. However, the highest ratio of respondents not accepting the inflation figures is English speaking; are in the 50 + age group and living in large and small towns.

The implication is that respondents represented in both groups obviously had views about the rate of inflation, either positive or negative, while respondents in other groups refrained in relatively larger numbers from responding to the question, preferring to answer *don't know*.

The inflation credibility barometer reading is 41,9 per cent among male respondents (391 out of 542) and 35,7 (254 out of 457) among female respondents if only the responses are used of those who answered *yes* or *no*. This finding about male and female respondents does not correspond

⁹⁵ The findings about the Limpopo province and Xhosa-speaking respondents seemed somewhat contradictory at first glance, as most Xhosa-speaking respondents live in the Eastern Cape. The sampling results show that the Eastern Cape is the province reporting the second-highest number of *don't know* responses, and as such serves as an explanation for the finding on Xhosa-speaking respondents. The same number of respondents was sampled in both these provinces, but the Eastern Cape is a more homogeneous province from a language perspective.

with the findings of the pilot studies reported above, but confirms the international finding that women have a higher perception of inflation than men (Bryan and Ventaku, 2001b: 4; Jonung, 1981: 968) and therefore attach a lower credibility to inflation figures. The sampling results do not provide any reasons for this finding, as it was outside the scope of the research.

Again considering only the responses of respondents who answered *yes* or *no*, the highest inflation credibility barometer reading of 42,9 was recorded among Coloured respondents, and the lowest reading of 32,3 was recorded among Asian respondents. In considering the whole sample, Whites recorded the highest reading on the inflation credibility barometer of 30,7, and Blacks recorded the lowest reading of 14,8. The spread between Asians, Blacks, Coloureds and Whites can be attributed to the prevalence of *don't know* answers.

Based on the analyses of the Federal Reserve Bank of Cleveland and the calculation of 90-per-cent confidence intervals in the previous section, the sample results were also used to calculate a number of 90-per-cent confidence interval levels, with the value $z_{0,05} = 1,645$ and a normal distribution implying that 0,9 (or 90 per cent) of the area below the curve is included between $z = -1,645$ and $z = 1,645$. The following data were used for analysing the responses of respondents who indicated that they had a view (i.e. did not answer *don't know*) on the question whether the rate of inflation was an accurate indicator of price increases in the economy.

Number of observations in the sample	(n)	3 493
Number of successes	(x)	1 644
Proportion	(p)	$1644 \div 3493 = 0,471$; $\therefore q = 0,529$
Standard error	(SE)	$\sqrt{\frac{0,471 \times 0,529}{3493}} = 0,0084$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,471 - 1,645(0,0084) \leq \Pi \leq [0,471 + 1,645(0,0084)]]$$

$$0,4572 \leq \Pi \leq 0,4848$$

This implies that there is a 90-per-cent probability that the actual population represented by the sample that has a view on the official rate of inflation (i.e. did not answer *don't know*), lies between 45,2 per cent and 48,5 per cent. Similarly, there is a 90-per-cent probability that the actual population represented by the sample that does not know whether the official rate of inflation is a true indication of price increases in the economy, lies between 51,5 per cent and 54,8 per cent.

In total, 645 respondents accepted the rate of inflation as an accurate indicator of price increases in the economy.

Number of observations in the sample	(n)	3 493
Number of successes	(x)	645
Proportion	(p)	$645 \div 3493 = 0,185; \therefore q = 0,815$
Standard error	(SE)	$\sqrt{\frac{0,185 \times 0,815}{3493}} = 0,0066$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,185 - 1,645(0,0120)] \leq \Pi \leq [0,185 + 1,645(0,0120)]$$

$$0,1653 \leq \Pi \leq 0,2047$$

This implies that there is a 90-per-cent probability that the population represented by the sample who believes that the official inflation rate is an accurate indicator of price increases, lies between 16,5 per cent and 20,5 per cent. This is a somewhat disconcertingly low percentage range, implying that the general public can easily reach the conclusion that inflation targeting in South Africa brings simply only pain of higher interest rates without any benefits of lower inflation.

For the purpose of calculating a 90-per-cent confidence interval for respondents with a view on the accuracy of the inflation rate, only the *yes* and *no* responses of the relevant 1 644 respondents (or 47,1 per cent of respondents) were used. Of these 1 644 respondents, 645 accepted the rate of inflation as accurate, and 999 did not accept the inflation rate as accurate.

Number of observations in the sample	(n)	1 644
Number of successes	(x)	645
Proportion	(p)	$645 \div 1644 = 0,392; \therefore q = 0,608$
Standard error	(SE)	$\sqrt{\frac{0,392 \times 0,608}{1644}} = 0,0120$
Normal probability distribution	(z)	1,645 for a 90-per-cent confidence interval

The confidence interval at a level of 90 per cent is calculated as:

$$[0,392 - 1,645(0,0120)] \leq \Pi \leq [0,392 + 1,645(0,0120)]$$

$$0,3723 \leq \Pi \leq 0,4117$$

This implies that there is a 90-per-cent probability that the population with a view on the rate of inflation represented by the sample and believing that it is an accurate indication of price increases, lies between 37,2 per cent and 41,2 per cent.

The responses of all male and female respondents and of male and female respondents who had a view on the accuracy of the rate of inflation were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between male and female respondents in the population. In respect of the full sample, the following data were used:

		Male	Female
Number of observations in the sample	(n)	1 748	1 745
Number of successes	(x)	391	254
Proportion	(p)	0,2237	0,1456
Pooled estimate		$\frac{391 + 254}{1748 + 1745} = 0,1847.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,2237 - 0,1456}{\sqrt{(0,1847 \times 0,8153) \left(\frac{1}{1748} + \frac{1}{1745} \right)}} = +5,8284.$$

The value $+5,8284$ falls outside the area of acceptance, i.e. not between $-1,645$ and $+1,645$. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the overall proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy.

For the calculation of a similar null hypothesis for male and female respondents who had a view on the accuracy of the rate of inflation and therefore answered either *yes* or *no* to the question, the following data were used:

		Male	Female
Number of observations in the sample	(n)	933	711
Number of successes	(x)	391	254
Proportion	(p)	0,4191	0,3572
Pooled estimate		$\frac{391 + 254}{933 + 711} = 0,3923.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between $-1,645$ and $+1,645$.

$$Z_{calc} = \frac{0,4191 - 0,3572}{\sqrt{(0,3923 \times 0,6077) \left(\frac{1}{933} + \frac{1}{711} \right)}} = +2,5369.$$

The value + 2,5369 falls outside the area of acceptance, i.e. not between - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is statistical difference between the proportion of males and females that believe the rate of inflation is an accurate indication of price increases in the economy. For the whole sample and for the subsection of the sample that responded to the question, the statistical significance of the difference in responses of male and female respondents is such that separate measurement is justified. Taking cognisance of the statement of Bryan and Ventaku (2001b: 1) in respect of genders, the finding from this analysis is that a sample measuring inflation credibility should be stratified in terms of gender.

Similarly, all the responses of Asians, Blacks, Coloureds and Whites and their responses only in respect of those respondents who answered the questions, were analysed at a 90-per-cent confidence interval on a null hypothesis that there is no difference between the inflation perceptions of respondents. For the purpose of these two analyses, the sample data of relevant respondents reporting the largest and smallest credibility were used. In respect of all responses, this implied the use of the following data:

		Black	White
Number of observations in the sample	(n)	2 463	587
Number of successes	(x)	364	180
Proportion	(p)	0,1478	0,3066
Pooled estimate		$\frac{364 + 180}{2463 + 587} = 0,1784.$	

Assuming no difference in accuracy at a 10 per cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,1478 - 0,3066}{\sqrt{(0,1748 \times 0,8216) \left(\frac{1}{2463} + \frac{1}{587} \right)}} = - 9,1264.$$

The value - 9,1264 falls outside the area of acceptance, i.e. outside - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the proportion of Asians, Blacks, Coloureds and Whites that accept the rate of inflation is an accurate indication of price increases in the economy.

For the respondents who had a view on the accuracy of the rate of inflation and therefore answered either *yes* or *no* to the question, the following data were used:

		Coloured	Asians
Number of observations in the sample	(n)	163	96
Number of successes	(x)	70	31
Proportion	(p)	0,4294	0,3229
Pooled estimate		$\frac{70 + 31}{163 + 96} = 0,3900.$	

Assuming no difference in accuracy at a 10-per-cent significance level (i.e. $z = 1,645$):

$$H_0 = \Pi_1 - \Pi_2 = 0$$

Therefore accept H_0 if Z_{calc} falls between - 1,645 and + 1,645.

$$Z_{calc} = \frac{0,4294 - 0,3229}{\sqrt{(0,3900 \times 0,6100) \left(\frac{1}{163} + \frac{1}{96} \right)}} = + 1,6985.$$

The value + 1,6985 falls outside the area of acceptance, i.e. outside - 1,645 and + 1,645. The conclusion is that at the 10-per-cent significance level there is a statistical difference between the proportion of Asians, Blacks, Coloureds and Whites that believe the rate of inflation is an accurate indication of price increases in the economy. Based on these two null hypotheses, the separate measurement and reporting of inflation credibility in terms of an inflation credibility barometer for Asians, Blacks, Coloureds and Whites are justified.

In planning and executing this representative study, the objectives were to find answers to the four questions stated at the outset of this section. The conclusion in respect of the first question is

that inflation credibility barometers for a representative sample and subsamples can indeed be calculated. However, the disconcerting finding is not only the relatively low readings of the barometer for the overall sample and the various subsamples, but also the high number of respondents who did not know whether the rate of inflation is a true indication of price increases in the economy. The implications of this conclusion are discussed in more detail below.

Secondly, the inflation perceptions of men and women in South Africa differ considerably. Sampling of inflation credibility should therefore make provision for and report separately the inflation credibility barometers of the different genders. A related question for consideration, that is outside the scope of this research, is whether the measurement and reporting of inflation expectations should not also make provision for a separation of the inflation expectations of the different genders.

Thirdly, the inflation perceptions of Asians, Blacks, Coloureds and Whites differ considerably. Not only is the differentiated measurement of such perceptions therefore justified, but as is the case with the measurement of the different genders, the question should be asked whether the measurement and reporting of inflation expectations should not also make provision for a separation of the inflation expectations of Asians, Blacks, Coloureds and Whites.

Fourthly, the frequency of the alternative *don't know* as a response by respondents confirms that its inclusion was indeed justified. Its inclusion clearly prevented a situation where those respondents who have no knowledge about the rate of inflation answered *no*, hence over-reporting non-acceptance of the rate of inflation as an accurate indication of price increases in the economy. As is the case with the first conclusion, this conclusion also confirms the need for continued communication.

The last conclusion is somewhat disconcerting. The degree of credibility of the inflation figures and the perceptions of how well government is controlling inflation, discussed in Section 7.4 above, delivered seemingly contradictory results. On the one hand, respondents report not only a low degree of credibility of the inflation figures as an accurate indicator of price increases in the

economy, but there are also a high number of respondents who do not know whether the figure is an accurate indicator of price increases. On the other hand, respondents report an increasing perception of government's success in controlling inflation, with a very small percentage of respondents who do not know how successful government is in this regard. However, towards the end of 2006, with an increasing trend in inflation, the number of respondents indicating that government is controlling inflation well or fairly well has shown a decline. The timing of this sampling corresponded with the sampling for the measurement of inflation credibility for purposes of measuring inflation credibility in terms of an inflation credibility barometer. This possible discrepancy between the responses in these two samples and any corresponding trends are areas for further research.

The first and fourth conclusions confirm that communication aimed at increasing awareness of the calculation of the rate of inflation and its measurement should be a continued strategy of a central bank following an inflation-targeting monetary policy. This is necessary to ensure that the public does not reach the conclusion that inflation targeting brings only the pain of higher interest rates without any tangible benefits in the form of lower inflation. The successes of such a policy framework will only be recognised and supported by the public if they are aware of such achievements. The importance of communication supporting a policy of inflation targeting might be underestimated, particularly as no international benchmarks for successful central bank inflation have as yet been developed (see for instance Blinder, [S.a.]; *DNB Magazine*, 2007; or Ehrmann and Fratzcher, 2004).

The further important implication is related to the identification of anticipated and unanticipated inflation (see the discussion in this regard in Chapter 2 above). If the majority of respondents do not know whether the rate of inflation is a true indication of price increases in the economy, questions should be raised about their ability to anticipate inflation. Likewise, if people do not know what the inflation rate is, questions should be raised about adaptive expectations, i.e. the degree to which people base their expectations of inflation on past inflation rates (Sloman, 1994: 849).

7.9 Application of an inflation credibility barometer by developing economies with particular reference to its possible use in SADC

One of the stated development goals of the African Union is to build a monetary union for the entire continent in stages, starting with each of the subregions. As one of the important subregions on the African continent, SADC has set macroeconomic convergence criteria that will lead the region to monetary unification and a single central bank. This section highlights the benefits of the use of an inflation credibility barometer for developing economies, with specific reference to the achievement of SADC's convergence target for inflation rates.

The first of the macroeconomic convergence criteria set by SADC should be achieved by 2008. The Committee of Central Bank Governors (CCBG) of SADC, chaired by the Governor of the SA Reserve Bank, monitors progress towards the achievement of these macroeconomic convergence criteria. Satisfactory progress is necessary to achieve the goal of monetary union and a single central bank for SADC by 2016.

The SADC region has as member countries Angola, Botswana, Democratic Republic of the Congo (DRC), Lesotho, Malawi, Mauritius, Mozambique, Namibia, Republic of South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, while Madagascar joined during August 2005. A previous member, the Seychelles, left SADC owing to a number of reasons, *inter alia*, cost of membership considerations. The SADC Secretariat is located in Gaborone, Botswana (Background information on SADC, 2000).

SADC was established as the Southern African Development Co-ordination Conference on 1 April 1980 in Lusaka, and changed its name to SADC on 17 August 1992 in Windhoek (Background information on SADC, 2000). South Africa joined SADC in 1994.

Although member countries in the SADC region are committed to various goals, their main economic goals can be summarised as development and economic growth; poverty alleviation; improvement of living standards; harmonisation of socioeconomic policies; and the establishment

of suitable institutions and mechanisms for the mobilisation of resources to implement the programmes of SADC (Background information on SADC, 2000).

SADC countries have agreed on a number of targets to enhance co-operation and integration in the region and to support its various goals. These targets are embodied in SADC's *Regional Indicative Strategic Development Plan* which was launched on 12 March 2004 in Arusha, Tanzania (Gaolathe, 2004: 4; ISS, [S.a.]). The targets can be summarised as follows (see for instance Mboweni, 2003; or Southern African Development Community, 2002):

- Target 1: a SADC free-trade area by 2008;
- Target 2: completion of negotiations on a SADC Customs Union by 2010;
- Target 3: completion of negotiations on a SADC common market by 2015;
- Target 4: diversification of industrial structure and exports to enhance value addition across all economic sectors by 2015;
- Target 5: macroeconomic convergence targets for inflation rates, budget deficits as a ratio of GDP, and nominal value of public and publicly guaranteed debts as a ratio of GDP;
- Target 6: achievement of other financial indicators, i.e. reserves/import cover, central bank credit to government, domestic savings levels, domestic investment levels, interconnected payment and clearing systems, currency convertibility, dual and cross listings on regional securities exchanges, liberalisation of exchange control, and increased credit extension to women and SMEs; and
- Target 7: establishment of a SADC monetary union by 2016.

These targets of SADC are important in the promotion of regional integration and their achievement will have a positive impact on regional economic activity. Page states that “[e]ffective regional integration is essential if Africa’s landlocked economies are to deepen their links to the global economy” (2006: 539).

In setting macroeconomic convergence criteria, SADC has also agreed to “... a set of indicators that will allow monitoring of progress towards ... convergence” (Masson and Pattillo, 2005:

114). This aligns SADC with initiatives aimed at promoting "... economic development in Africa. Article 44 of the Abuja Treaty calls for the harmonisation of economic policies across the African continent. The Treaty emphasises two important pillars of economic integration across the African continent: the promotion of intra-Africa trade and the enhancement of monetary co-operation. The African Monetary Co-operation Programme seeks to operationalise the monetary co-operation mandate of the Abuja Treaty. In the main, this involves a single monetary area, encompassing a common currency and a common central bank ... [for Africa] ... by the year 2021" (Mboweni, 2003). In aiming for a monetary union and a central bank by 2016, SADC countries are aligned to the broader objectives for Africa.

In the consideration of progress with macroeconomic convergence an analysis of these targets, and particularly targets 5 and 6, is somewhat problematic. The goals stated in terms of target 5 are clearly macroeconomic convergence criteria. However, some of the goals stated in target 6, particularly goals regarding reserves/import cover and central bank credit to the government, can also be regarded as convergence criteria, although they are not primarily identified as such, while the other goals stated in target 6 are clearly not convergence criteria.

A further review of literature on SADC reveals a *Memorandum of Understanding* (MoU) between SADC countries that deals with macroeconomic convergence (Southern African Development Community, 2002). This MoU states in Section 3 that macroeconomic convergence in the SADC region will be measured and monitored in terms of the (i) rate of inflation in each country; (ii) ratio of the budget deficit to GDP; (iii) ratio of public and publicly-guaranteed (i.e. government) debt to GDP; and (iv) balance and structure of the current account (Southern African Development Community, 2002). The MoU defines some of the convergence criteria or elements of the criteria as follows (Southern African Development Community, 2002):

- budget deficit is the difference between government's expenditure and receipts from revenue and grants;
- inflation means the rate of change of the general price level using a headline index;
- public and publicly guaranteed debt comprises loans to government and includes loans to public enterprises and private companies enjoying government guarantees; and

- current account reflects transactions in goods, services, income and current transfers between residents of one country and another.

This paper uses for purposes of analysing progress with convergence the four criteria stated in the MoU, although these criteria show overlap to some extent with targets 5 and 6 in the in SADC's *Regional Indicative Strategic Development Plan*. Convergence goals (see for instance Mboweni, 2003; Rossouw, 2006a; or Rossouw, 2006b⁹⁶) were set for 2008, 2012, and 2018 for these indicators in SADC's *Finance and Investment Protocol* (SADC, 2003). The macroeconomic convergence goals for the relevant years are summarised in Table 7.7.

Table 7.7 Macroeconomic convergence criteria and goals for SADC, 2008 to 2018

Criterion	2008	2012	2018
Inflation rate	Single digits	5%	3%
Budget deficit	5% or less of GDP	3% of GDP as anchor, with a range of 1%	3% of GDP as anchor, with a range of 1%
Government debt	Less than 60% of GDP	Less than 60% of GDP	Less than 60% of GDP
Current account	Single digits	Single digits	Single digits

Sources: Southern African Development Community, 2002; see also Rossouw, 2006a; Rossouw, 2006b.

Co-operation aimed at achieving macroeconomic convergence in SADC and regional integration are enhanced by “... the harmonisation of legal and operational frameworks of SADC central banks, the SADC payment, clearance and settlement systems, as well as the co-ordination of training of central bank officials” (Gaolathe, 2004: 5). Progress with the goal of achieving the convergence criteria is monitored by the CCBG in terms of SADC's *Regional Indicative*

⁹⁶ Assessed in terms of the MoU, Rossouw, 2006a and Rossouw, 2006b erroneously also included central bank credit extension to the government as one of the macroeconomic convergence criteria.

Strategic Development Plan, launched on 12 March 2004 in Arusha, Tanzania (Gaolathe, 2004: 4).

Of the identified convergence criteria, the goals set for inflation have a direct bearing on this study. Progress in the convergence of the inflation rates of SADC countries (or lack of such progress) between 1999 and 2005, as well as compliance by 2005 with the inflation goal set for 2008, are highlighted in Table 7.8.

The analysis in Table 7.8 shows that 11 SADC countries made satisfactory progress during the period 1999 to 2005 towards achieving the goal set for inflation convergence by 2008, or stayed within the target range over this period. By 2005 seven countries already achieved the target set for 2008. The use of an inflation credibility barometer will provide SADC countries with a useful instrument to measure the extent to which inflation perceptions in their countries are anchored in the credibility of prevailing inflation figures. If SADC countries achieve the conversion goal set for inflation by 2008, but consumers in those countries have a perception that the figures do not reflect accurately price changes, the countries run both the danger of losing the gains made from low inflation and losing the opportunity of achieving the more challenging inflation goals set for periods following 2008. The credibility of inflation figures can also be jeopardised when one currency is replaced with another, as happened in Europe since 2002 (Issing, 2006). Timely steps aimed at enhancing inflation credibility are accordingly called for. To this end the use of an inflation credibility barometer will provide SADC countries with a useful instrument to measure the anchoring of inflation perceptions. The barometer will also serve as an early warning system for any delinking of perceptions and actual inflation rates.

The barometer can also be used by countries without the necessary capacity for inflation forecasting, as it serves as an indication of movements in credibility of published inflation figures over time. It can also find application as a suitable tool in instances where the necessary capacity for the measurement of inflation expectations does not exist. In as much as barometer readings change, it can serve as an early warning for possible changes in inflation expectations.

Table 7.8 Goal for SADC inflation rates: single digits by 2008

Country	1999	2005	Progress towards target/ remained within target	Target achieved by 2005
Angola	329,0	17,6	Y	N
Botswana	8,4	11,4	N	N
DRC	483,7	21,3	Y	N
Lesotho	8,6	3,4	Y	Y
Madagascar	14,4	18,4	N	N
Malawi	44,7	15,4	Y	N
Mauritius	6,9	4,9	Y	Y
Mozambique	6,2	6,4	Y	Y
Namibia	8,6	2,3	Y	Y
South Africa	5,2	3,4	Y	Y
Swaziland	5,9	4,8	Y	Y
Tanzania	7,9	4,4	Y	Y
Zambia	26,8	15,9	Y	N
Zimbabwe	58,5	585,8	N	N

Source: Bank of Namibia, 2006: 17; Committee of Central Bank Governors, 2005.

As an initial step in the preparation for macroeconomic convergence and the use of an inflation credibility barometer, SADC countries should harmonise the techniques used in the measurement of inflation. Large discrepancies in measuring price increases cannot only be an obstacle in comparing progress towards and compliance with the inflation criterion set for the different time periods, but might also limit the use of an inflation credibility barometer for sampling the credibility of inflation rates as an accurate indication between the SADC countries. The harmonisation of the measurement of inflation will go a long way towards overcoming these difficulties.

7.10 Conclusions from measuring inflation credibility in South Africa

The general conclusions from the first attempts at measuring South African inflation credibility and constructing an inflation credibility barometer are summarised in this section. The measurement of the credibility of an inflation rate by means of an inflation credibility barometer differs from the approaches followed by the Swedish Riksbank, the ECB, the Reserve Bank of New Zealand, the Federal Reserve Bank of Cleveland and Mexico, discussed in Chapter 2. An exact and accurate degree of acceptance of an inflation figure is measured by the barometer, whereas:

- (i) the ECB measures perceptions as a quantitative indicator, calculated as a difference in percentage points between the proportion of respondents stating that the cost of living was higher and the proportion of respondents stating that the cost of living was lower or unchanged;
- (ii) the Swedish Riksbank measures perceptions about changes in the current rate of inflation, but reports the average view;
- (iii) the Reserve Bank of New Zealand measures perceptions about changes in the current rate of inflation, but reports the mean and median perceptions;
- (iv) the Federal Reserve Bank of Cleveland measured the variation between the average perceived inflation and the official rate of inflation; and
- (v) Mexico's use of ISO certification provides neither for any pronouncement on the degree of accuracy with which the inflation figures reflect actual price increases in the economy, nor for any measurement of general public acceptance of the rate of inflation.

The first conclusion is that the inflation credibility barometer delivers significantly better results than the international approaches reported in Chapter 2, in as much as it (i) provides a comparable indication of the degree of acceptance of the accuracy of current inflation data; (ii) highlights any change in the degree of such acceptance over time at each occasion of measurement; (iii) can easily be communicated to the general public; and (iv) provides a measurement of inflation credibility that can be compared internationally between countries. The

overall results justify a recommendation for the periodic sampling of the inflation perceptions of a representative sample of the South African population.

The second conclusion is that a representative sample of inflation credibility for a country or region should be disaggregated by gender, by population group and by income group, as these respondents report statistically significant differences in the credibility of inflation figures.

The next conclusion is that an abridged questionnaire should be used to measure inflation credibility, as the inclusion of subsequent questions could “induce” respondents to respond negatively to the question on the credibility of inflation. Credible results were obtained with the abridged questionnaire, confirming that such a questionnaire is suitable for use with larger groups of respondents to establish the credibility of published inflation figures.

The fourth conclusion is that the CPI should be used to measure inflation credibility, as it recorded a higher level of general acceptance of the inflation figure than the CPIX.

The fifth conclusion is that a questionnaire measuring the credibility of inflation figures should provide respondents with the opportunity to answer that they are unsure (i.e. *don't know*) about the accuracy of the inflation figures. If respondents are not provided with such an opportunity, their response seems to be that they do not believe the figures, hence over-reporting the negative responses with a concomitant undermeasurement in terms of the inflation credibility barometer. Although a higher degree of acceptance of the accuracy of inflation figures would naturally have been encouraging, this study sets the benchmark for future research of a similar nature.

The next conclusion is that communication strategies to increase awareness of the calculation of the rate of inflation and its measurement should be a continued initiative of a central bank following an inflation-targeting monetary policy. The successes of such a policy framework will only be recognised and supported by the public if they are aware of such achievements. The importance of communication supporting the containment of inflation was perhaps underestimated, particularly as no specific international benchmarks for successful central bank

communication have as yet been developed (see for instance Blinder, [S.a.]; *DNB Magazine*, 2007; or Ehrmann and Fratzcher, 2004).

Based on the findings in Section 7.8, the occurrence of anticipated and unanticipated inflation should be reconsidered. If the majority of the population does not know whether the rate of inflation is a true indication of price increases in the economy, a possible implication is that all inflation might become unanticipated inflation. However, the further analysis of this question is outside of the scope of this study.

The eighth conclusion is that the sampling of responses in respect of the inflation credibility barometer and the responses in respect of perceptions on how well government is controlling inflation, seem somewhat incompatible. Any possible discrepancy between the responses in these two samples and any corresponding trends are areas for further research.

The ninth conclusion is that use of an inflation credibility barometer by developing economies, and particularly by SADC countries aiming at an inflation convergence goal, will provide the relevant authorities with an additional instrument to monitor whether progress with achieving lower inflation is indeed perceived as such by the general public, or whether it should be supported by communication initiatives.

The tenth conclusion is that SADC countries should harmonise the techniques used in the measurement of inflation in the interest of macroeconomic convergence in SADC. Such harmonisation will enhance the use of an inflation credibility barometer for sampling the credibility of inflation rates as an accurate indication between the SADC countries. Moreover, if SADC countries other than South Africa adopt inflation targeting as a nominal anchor for monetary policy in the period running up to the introduction of a monetary union in the region in 2016, alignment of the rates of inflation used for targeting purposes will become particularly important.

Finally, individual households will express distrust of official inflation figures as an accurate indication of the rate of average price increases to the extent that their own spending patterns differ from the average pattern (or basket) used to calculate changes in the CPI or CPIX. Moreover, female respondents normally not exposed to purchasing food or household requirements (e.g. female students at the University of Pretoria), report a higher degree of inflation credibility than is observed nationally and internationally. Certain purchases therefore undoubtedly have a negative demonstration effect on inflation perceptions.