

CHAPTER 6

SOUTH AFRICAN PRICE AND SALARY CHANGES MEASURED AGAINST INFLATION SINCE 1921

6.1 Introduction

The aim of this chapter is to ascertain whether changes in the CPI accurately reflect price increases in the South African economy over time, thereby testing the sub-hypothesis of this thesis. This hypothesis is tested by comparing the price increases of selected identifiable consumer goods and services, as well as increases in salaries, to changes in the South African CPI over different periods. The purpose of the comparison is to ascertain whether the actual prices of goods and services, and salaries, increased at rates slower or faster than the CPI.

In the second section of this chapter certain difficulties in comparing goods, services and prices over time are discussed. In the third section a methodology is developed to compare the historic prices of selected goods and services adjusted by changes in the CPI with current prices, and an inflation accuracy indicator (IAI) is developed. Section 6.4 provides a comparison of same-item prices over a period of 32 years. In Section 6.5 a first attempt is made to compare historic salaries with current salaries. Owing to difficulties identified in the initial comparison, a methodology is developed in Section 6.6 for a detailed comparison of salaries and inflation. The use of the analysis in this chapter by developing economies is highlighted in Section 6.7. The conclusions follow in Section 6.8.

6.2 Difficulties in historic comparisons

The identification and selection of products (other than food) and services to use for purposes of historic comparisons pose a challenge, as the nature of products and services used by an average household have changed considerably over time. Some of the most obvious changes and

challenges are summarised below. Problems in respect of the identification of salaries for comparative purposes are also highlighted below.

Quality improvements

Consumable products and services have undergone numerous quality improvements over the period of comparison. As the detail of such improvements is too vast to discuss in detail, it is sufficient to mention that the true value enhancement of many improvements to products and services can hardly be expressed in monetary terms.

For purposes of this chapter, identifiable products and services will, despite quality improvements, be assumed to be homogeneous over the period of comparison, implying that the true value of such quality improvements will be taken simply as price increases for comparative purposes. Various techniques have been developed to adjust data over time to compensate for quality adjustments, but are not applied for purposes of comparison in this chapter, *inter alia*, because the period of comparison for the measurement of the majority of products (2004 to 2006) and their nature (mainly food) is such that quality changes will not have a major influence on the conclusions reached in this chapter. Moreover, such adjustments also do not apply in respect of remuneration.

Relative scarcity

The main function of prices is to reflect the relative scarcity of goods and services. Changes in relative scarcity should accordingly be reflected in prices, thereby signalling to consumers that consumption patterns should be amended in accordance with changes in the relative scarcity. For purposes of the comparison in this chapter, it is necessary to discard price changes owing to changed relative scarcity, as such changes cannot be constructed *ex post*, and all price increases are therefore attributed to an increase in the general price level in the economy. However, an important conclusion is reached in respect of changes in relative prices and salaries.

Decimalisation

South Africa adopted a decimal currency system, replacing the previous system comprising pounds, shillings and pennies (£/s/d) on 14 February 1961 (see for instance SA Reserve Bank, 1971). In terms of the £/s/d system, 20 shillings (s) comprised £1 and 12 pennies, abbreviated as d from the abbreviation for *denarius*, a Roman coin similar to a penny, comprised 1 shilling. For purposes of this chapter, the official conversion rate used at the time of the introduction of decimalisation on 14 February 1961 is used to convert pre-1961 prices to rands and cents: £1 = R2; 10 shillings = R1; 12 pennies = 10 cents; 2½ pennies = 2 cents; and 1 penny = 1 cent (see for instance Engelbrecht, 1987).

Metrification

South Africa has moved from an imperial system of measurements and weights to a metric system on 1 April 1971. For purposes of this chapter, the following conversion rates will be used where applicable (see for instance Simetric, [S.a.]):

1 inch = 2,54 centimetres;

1 pound = 454 grams;

1 ounce = 28 grams;

26 fluid ounces = 750 millilitres;

1 pint = 0,57 litres; and

1 gallon = 4,55 litres.

Relaxation of controls

South Africa, as many other countries, has a history of extensive control measures, e.g. import control; price control; wage control; and controlled standardisation in terms of weight and measurement (see for instance Wessels, 1996). Control measures have been relaxed gradually over many years in the case of South Africa, particularly because these measures were used primarily during periods of armed conflict such as World War II. Currently price controls over

petrol and illuminating paraffin and the single exit price controls in respect of medicine are the best-known examples of products still subjected to such controls in South Africa.

One result of such relaxation is that a degree of standardisation in goods (and to a lesser extent services) has disappeared. For purposes of this study, any large degree of maintained standardisation would have made for easier historic comparison, as sizes, packaging and weights would not have differed between outlets or over time. The necessary adjustments to ensure comparability are highlighted in this chapter.

Rationing

As was the case internationally (see for instance Tomkins, 2006: 2), quantitative rationing rather than price as a means to limit demand was also used in South Africa, particularly during World War II (see for instance Chetty, [S.a.]: 17; Chetty, 2001: 20; Sloman, 1994: 292; or Wessels, 1996). It was also used after the first oil shock in 1973, when fuel sales were rationed by means of restricting of selling hours.

One effect of rationing was that market prices did not reflect supply, demand or market equilibrium, as the authorities had set prices. This might have distorted prices for comparative purposes at the time, but as this is no longer practiced in South Africa, it is assumed that it no longer has any influence on current domestic prices. However, historic prices might be reported at artificially low levels.

Relative wealth and productivity

Over the period of comparison, relative wealth of consumers changed. Another way to refer to this notion of relative wealth could be a reference to the work/leisure balance. This is naturally related to improvements in productivity. This point is also related to the number of hours of work required to purchase a particular item. Cox and Alm (1997: 4) explain that it took an average American 30 minutes of labour to earn enough to buy a pound of ground beef in 1919,

whereas the labour time required decreased to 6 minutes by 1997. The implication is that the work/leisure time allocation balance has moved significantly over the period of comparison. Marber (2003: 25) states that an average American had to work some 260 hours in 1895 to purchase a bicycle, while it took only 8 hours of work to purchase a bicycle in 2003.

One result of this increase in relative wealth, is increased leisure time available to consumers. To this end Fogel (2000: 185) states that the average American worker laboured 3 069 hours per year in 1870 (six 10-hour days per week), compared to 1 730 hours per year currently. This reduction in the number of hours worked per week, combined with full-time education until a higher age than in the 19th century and increased life expectancy, have lead to a situation where “[f]rom 1880 to 1990, the average American’s life-long spare time increased from 48 300 hours to 246 000 hours” (Marber, 2003: 147). However, the comparison in this chapter cannot account for increases in leisure time, decreases in the number of hours of work required to afford any particular purchase, or improvements in productivity in the comparison of remuneration.

Remuneration

Numerous difficulties have to be overcome in the identification of suitable positions for purposes of comparing historic and current remuneration (salaries and cost-to-company remuneration). Owing to its emotional nature, information about remuneration is not readily available. In the collection of data for research purposes, Boyd et. al. (1977: 380) state that refusals to answer questions in sampling “... may occur on specific questions, particularly those relating to income”.

The identification of salaries poses the problem that employers have increasingly abandoned the approach of structuring remuneration as a salary plus add-on benefits in favour of a “cost-of-employment” approach. In terms of the latter approach, the full cost of employment, rather than a salary and other identifiable components in remuneration, e.g. employer contributions to medical and retirement provision, has become the norm for comparing remuneration. To

overcome this difficulty, the portion of a cost-of-employment package on which retirement contributions is based, will be taken as the “salary” for purposes of this comparison.

In analysing salaries and remuneration over time and adjusting them to real (current) levels by means of changes in the CPI, it is important to note that “... volgehoue inflasie die enkele vernaamste rede is hoekom verhogings op 'n gereelde grondslag aan werkers toegestaan word” [... sustained inflation is the single most important reason why increases are granted to workers on a regular basis⁷⁷] (Rossouw, 1983: 58). The use of changes in the CPI is therefore the most suitable index to adjust historic salaries or cost-to-employer remuneration to current levels for comparative purposes. However, this comparison will not provide any answer to the question whether the current remuneration is at an appropriate level, as no judgement can be made about the appropriateness of the identified remuneration in the base period. Conclusions can only be drawn about the comparison between adjusted historic remuneration and current remuneration and changes in the cost of living as reflected by the rate of inflation.

Despite the difficulties highlighted in this section, suitable methodology could be developed to ensure that prices and salaries could be compared over time. The next section highlights the selection of products and services used in the comparison of prices with changes in the CPI.

6.3 Identification and selection of products and services for comparison

For comparative purposes, the prices of various goods and services at different dates since 1921 have been identified for use in this section. The guiding principle in the identification of prices of goods and services was availability of information. A number of valuable sources of detailed unprocessed data pertaining to prices were obtained.

First, the *Official Yearbook of the Union of South Africa and of Basutoland, Bechuanaland Protectorate and Swaziland – No 5, 1922* (Union of South Africa, 1923), published annually from 1919, reported actual prices and weights (or quantities) of food and other household items

⁷⁷ Author’s translation.

for a number of cities (called towns at the time) and regions. For purposes of this study the data published for 1921 are used, because this corresponds with the starting point of the comprehensive CPI data available in South Africa.

Secondly, an edition of a magazine, *Die Huisgenoot* published in 1938 contained useful information for purposes of comparison.

Thirdly, copious records of private household expenditure (Cillie, [S.a.]) were obtained, and some of the information recorded could be used for purposes of comparison.

In the fourth place, it was noted that two vehicles were launched in South Africa quite a number of years ago and are still being sold domestically, albeit with some minor modifications: the Nissan 1400 pick-up truck (which started out as the Datsun 1200) and the VW Citigolf, which was launched in the 1970s as the first VW Golf series.

Lastly, the BMR at the University of South Africa, which collected data annually for the compilation of a research paper (Bureau of Market Research, 2004), still has available some actual unprocessed price data for March 2004. This data could be used for purposes of comparing adjusted historic and current prices. Each of these sources and the available price information are considered below.

Official statistics from the year book

The *Official Yearbook of the Union of South Africa and of Basutoland, Bechuanaland Protectorate and Swaziland – No 5, 1922* (Union of South Africa, 1923), reports somewhat comprehensive data on retail prices of selected items from 1921, although incomplete data pertaining primarily to certain foodstuff, paraffin, coal and housing rent are available from 1895 (Union of South Africa, 1923: 327). This publication states that “[w]hile variations in prices and variations in average rentals are calculable by methods giving accurate results, the same cannot be said of other items of necessary expenditure in an average household, particularly items such

as clothing, boots, etc ... [and] ... sundries was approximately one-third of the household expenditure ... [in 1921] ... ” (Union of South Africa, 1923: 343). The necessary adjustments to record accurately the price levels of such items until 31 March 1922, and subsequently after that date, were undertaken in 1922 and 1923 (Union of South Africa, 1923: 343). In respect of wholesale price data, some information is reported as far back as 1910 (Union of South Africa, 1923: 325).

The retail prices reported as the average of price levels per item “ ... for nine principal towns of the Union ... ” (Union of South Africa, 1923: 326), are used in this study, although price information for seven regions was also recorded (Union of South Africa, 1923: 326). The nine principal towns included for reporting purposes are Bloemfontein, Cape Town (including Wynberg), Durban, East London, Johannesburg (including other Witwatersrand towns), Kimberley, Pietermaritzburg, Port Elizabeth and Pretoria (Union of South Africa, 1923: 341). The weighted average prices reported per item are used for comparative purposes in this study, and are compared to current price levels in Pretoria, also to align them with the data obtained from the BMR described below.

In the period 1910 to 1921 the weighted average increase in prices in these nine cities was 49,4 per cent, or on average 3,72 per cent per annum (Union of South Africa, 1923: 341). The largest increase over this period was recorded in Cape Town, where prices increased by 4,96 per cent per annum, while the highest price levels for 1921 were recorded in Pretoria (Union of South Africa, 1923: 341). The source provides no explanation for either this increase in Cape Town or for the price level in Pretoria. The information obtained from this source is highlighted in Appendix H. For purposes of projecting expected current prices, the actual CPI figure for June 2006 has been used in Appendices H to K and Table 6.1. The CPI for June 2006, with CPI = 100 in 2000, was 133,6.

Price information obtained from Die Huisgenoot

In an advertisement in *Die Huisgenoot*, P. J. Joubert wine merchants of Johannesburg advertised 12 bottles of Montac brandy at 69/- (or R6,90, implying an equivalent price of R 0,57½ per bottle) in 1938 (*Die Huisgenoot*, 1938: 14).

Volkskas Co-operative Bank advertised in 1938 shares in its permanent capital at a price of 4/-, or R0,40, payable in two equal payments, but a minimum of 5 shares had to be bought (*Die Huisgenoot*, 1938: 32). These shares were subsequently converted to ABSA shares on 22 March 1991 at a ratio of 100 Volkskas shares for 240 ABSA shares. The price of ABSA shares at the time was R 7,10/share.

Meisieskool Oranje of Bloemfontein advertised hostel accommodation at a rate of £10/10/- (R21) per quarter per learner (*Die Huisgenoot*, 1938: 35), implying that accommodation at Bloemhof Meisieskool of Stellenbosch was comparatively cheaper at £9 (R18) per learner per quarter (*Die Huisgenoot*, 1938: 158), which was also the rate at Hoër Jongenskool Wellington (*Die Huisgenoot*, 1938: 190). At the same time, all-inclusive hostel accommodation at the University of Potchefstroom (today the Potchefstroom campus of the University of North West) was advertised at £50 (R100) per annum (*Die Huisgenoot*, 1938: 130).

J. L. van Schaik Publishers of Pretoria advertised the *Grootwoordeboek* by Kritzinger, Steyn, Schoonees and Cronjé for 20/-, or R2,00, and the *Verklarende Afrikaanse Woordeboek* by Kritzinger, Labuschagne, Pienaar, Rademeyer and Steyn for 9/-, or R0,90 (*Die Huisgenoot*, 1938: 146).

Admission to the Kango caves was advertised at 5/- (or R0,50) for adults and 1/3 (R0,12½) for children under 16 (*Die Huisgenoot*, 1938: 58), and Aspro was advertised at 3/6 (R0,35) for 60 tablets (*Die Huisgenoot*, 1938: 84). The information obtained from *Die Huisgenoot* is summarised in Appendix I, with adjustments according to changes in terms of the CPI over the

period to provide projected current prices, should prices have moved strictly in accordance with changes in the CPI over the relevant periods to 2006.

Records of Cillie

Over many years Cillie, an engineer, kept copious records of his personal expenditure on a monthly basis (Cillie, [S.a.]: various pages). Although a wealth of information has been recorded, much of it cannot be used for purposes of this research owing to the fact that either descriptions (e.g. exact type of goods or services purchased), exact quantities, or relevant periods pertaining to payments were not recorded. Moreover, no record has been kept of the number of people whose needs were covered by purchases, e.g. the number of people in the household whose consumption was covered by certain purchases of services (e.g. water and electricity). Despite these shortcomings, the records of payments reveal some useful information, which is summarised in Appendix J.

Car prices

In respect of the Nissan 1400 pick-up truck and the VW Citigolf, price information for any period since their respective launches could actually be used. However, as both vehicles did undergo quality improvements from time to time, it was decided to use a relatively shorter, rather than longer period, to account for some of the improvements since their initial launch. This analysis is highlighted in Table 6.1, and the cheapest model available at the time is used for purposes of comparison. It is interesting to note from comparing Table 6.1 and Appendix L the change in relative prices between the two vehicles. While the Citigolf was more expensive in 1988, it was cheaper than the Nissan in 2006.

Table 6.1 Historic prices adjusted in accordance with relevant changes in CPI, 1988 to 2006

Item	Historic price in 1988	CPI in 1988, 2000 = 100	Projected price, CPI June 2006 = 133,6
Nissan 1400	R17 000	32,4	R70 099
VW Citigolf 1300	R18 210	32,4	R75 088*

* Citigolf 1400

Sources: *Car*, 1988: 253 and 254; Statistics SA; author's calculations

Information obtained from the BMR

In terms of the prices of groceries (household consumables, including food), detailed information pertaining to March 2004 was obtained for three shops in the Pretoria area, used by the BMR at the University of South Africa in the compilation of their research report (Bureau of Market Research, 2004). Some data on four surveyed shops were available, but extensive comparative data were available in respect of three shops only. Although the research of the BMR covered 13 cities or regions in South Africa to provide a representative geographical sample of cost of living for all areas and population groups in South Africa (Bureau of Market Research, 2004: 3), the collated information in the report cannot be disaggregated to basic information on actual prices of individual items. Unprocessed data for Pretoria were accordingly chosen for use as a representative proxy for prices in South Africa at the time.

The actual sample survey data were obtained from the BMR for purposes of comparative research. The data reflecting the average price per item based on actual prices for the three stores are summarised in Appendix K. It has been ascertained from the BMR that the cheapest price for each product was recorded for use in their surveys. Accordingly, for comparative purposes in this chapter, the same approach is used in respect of goods where more than one brand or more than one model is available. While older price data are adjusted by means of annual CPI figures in respect of the base year, the relatively brief period that lapsed in respect of the data obtained

from the BMR necessitated a different approach. The actual CPI figure for March 2004 was used as a basis for adjusting the prices to projected prices for June 2006.

Comparison of prices

In Appendix L the projected prices of all the products and services highlighted in Appendices H to K and in Table 6.1, are compared with the current prices of such goods and services. The selection of shops and other retail outlets to record prices for comparative purposes was a matter for consideration. In view of the approach followed by the BMR to select the cheapest example of an item used for survey purposes, it was decided to use the shop that recorded the lowest total price for the basket of goods identified in Appendix K, and obtain prices for as many items as possible for comparative purposes from that store. On further examination it has been ascertained that the shop where the lowest prices had been recorded, had merged with one of the other shops used for data collection in the BMR survey. This “new” shop was accordingly used, also because it “represents” two stores included in the earlier survey. In respect of the other goods and services, the relevant sources are reported with Table L1 in Appendix L.

This analysis shows that certain actual prices exceed projected prices, but in other instances projected prices are higher, implying that changes in the CPI “overmeasured” the rate of price increases in those instances. No systematic trend of actual prices exceeding projected prices is discernable. This confirms that perceptions about inflation can easily be distorted and that inflation credibility is more likely than not to be influenced by recent purchasing experiences of consumers.

In respect of food prices, the finding is that the actual prices of food and food-related items were lower than projected prices in 28 instances over the period since 1921, and higher in 12 instances. In view of the analysis in Tables 3.1, 3.2 and 3.3, this finding is important as food and food-related items impact more heavily on the rate of inflation of the low income group in South Africa, rather than the overall price index, where the weight of food in the spending basket

carries a much smaller weight. This finding provides limited grounds for low inflation credibility among the low income group in South Africa.

Of the 104 items covered by this analysis, the prices of 38 (or 36,5 per cent) increased at rates faster than the rates of inflation over the relevant periods, while the prices of the rest of the items increased at slower rates. This analysis and the methodology used in this paper can be applied to calculate an inflation accuracy indicator (IAI). The IAI is calculated around a reading of zero, with readings lower than zero indicating that a larger number of prices analysed increased at rates exceeding the rate of inflation. It is calculated by deducting the percentage of prices that increased at a rate higher than the rate of inflation from zero, and adding the percentage of prices that increased at a rate slower than the rate of inflation to the result, to provide the IAI reading. Applying this to the analysis for South Africa in this section, the IAI reading is + 27 (zero minus 36,5 plus 63,5). This result indicates that most of the prices increased at a rate slower than the rate of inflation over the period of comparison.

The IAI has certain shortcomings which might limit its usefulness under certain circumstances. First, it allocates the same importance in its calculation to all items, irrespective of actual weights or importance in the spending basket of an average household. Secondly, the IAI provides no clarity on changes in relative prices over time. Changes in relative prices influence consumer behaviour, but the IAI is merely a static measure of prices and cannot shed any light on spending patterns. Thirdly, it makes no allowance for quality improvements.

Despite its shortcomings and the need for further development of the IAI, periodic measurement in terms of the IAI can show a trend in the correlation between actual price increases and the rate of inflation over time. A stable trend in the IAI of any particular country can serve as an indication that the rate of inflation shows a correlation with actual price changes over time.

Price declines recorded in an economy are also not immediately obvious to consumers. A case in point is price declines occurring at wholesale level, rather than retail level, illustrated by movements in tractor prices and in the price of weed killers. From October 2002 to October

2003, the price index of weed killers declined by 16 per cent (Brink, 2006: 23). The declining trend in the price of tractors is even more pronounced. The index for tractor prices declined by 1,6 per cent over the period October 2002 to October 2003, then by 6,8 per cent in the year to October 2004 and by a further 3,6 per cent in the year to October 2005 (Brink, 2006: 23). As an index, tractor prices declined from 195,6 index points in October 2002 to 172,9 index points in October 2005 (Brink, 2006: 23).

6.4 Comparison of same-item prices over time

The analysis in the previous section provides no basis for a low credibility of inflation figures over any period of comparison. In this section the conclusion reached in the previous section is tested by means of the comparison of same-item prices over a period of 32 years, i.e. from 1974 to 2006. For purposes of this analysis, historic price data were obtained from the Institute for Planning Research, an Institute at the University of Port Elizabeth which subsequently merged with other institutions of higher learning to form the Nelson Mandela Metropolitan University.

The Institute calculated minimum living wages for different income groups on an annual basis from 1974. The prices of groceries (household consumables, including food) and clothing are available from that date. Records are available until 2004, when it was decided to discontinue the research. In collecting price data, the Institute used the same approach as the BMR, i.e. to record the cheapest prices for purposes of comparison. The data of the Institute were obtained for research purposes early in December 2006 and are therefore compared to price data in December 2006. It was decided to sample prices of groceries at the same shop used for sampling purposes in respect of the price data of the BMR to ensure some alignment in the approaches followed in the comparison of prices. In respect of items not stocked by the grocer, shops in the same complex were used to sample prices for comparative purposes.

The actual sample survey data for 1974, 1984, 1994 and 2004 were obtained from the Institute for purposes of comparative research. The data reflecting the prices per item for these periods are summarised in Tables M1 to M4 in Appendix M. While older price data (including that for

2004⁷⁸) are adjusted by means of annual CPI figures in respect of the base year, the data for 2006 are adjusted in terms of the CPI figure for December 2006. The results are summarised in Tables M1 to M4 in Appendix M, with the data for 1974, 1984, 1994 and 2004 forming the four base periods of comparison.

As is the case in Section 6.3, the analysis in this section over all four periods of comparison shows that certain actual prices exceed projected prices, but in other instances projected prices are higher, implying that changes in the CPI “overmeasured” the rate of price increases in those instances. No systematic trend of actual prices exceeding projected prices is discernable over this period of 32 years. The two most noteworthy trends over this period are that the actual prices of:

- household consumables (mainly household cleaning material) with a current weight of 1,25 per cent in the CPI basket often exceeded projected prices; and
- clothing and footwear (with a weight of 3,25 per cent in the CPI basket) are generally lower than the price levels projected in terms of the CPI.

The principles used for the development of the IAI in the previous section can also be applied to the analysis of the data obtained from the Institute. In total the prices of 47 items could be used in the analysis of price movements over the period of 32 years. Not all the price data could be used over the full period of analysis, implying that the projected and actual prices of items could be compared 409 times. Of these 409 comparisons, 251 actual prices (or 61,4 per cent of the prices) are lower than the projected prices, and 158 prices (or 38,6 per cent of the prices) are higher. Based on this data, the IAI reading is + 22,8 (zero minus 38,6 plus 61,4). This result indicates that more prices increased at a rate slower than the rate of inflation over the period of comparison than at a rate faster than the rate of inflation. The reading is closer to zero than the reading obtained from the analysis of price changes in the previous section (22,8 against 27), indicating more of a spread between prices increasing faster and slower than the rate of inflation.

⁷⁸ While the approach used in respect of the data for September 2004 differs from the approach used in respect of the March 2004 data of the BMR, it was decided to use the annual CPI figure for 2004 in respect of the September 2004 data in this instance to ensure a better basis of comparison with the data for 1994, 1984 and 1974. The use of the actual September 2004 CPI figure (124,1 with 2000 = 100), rather than the annual CPI figure of 123,8 for 2004, would not have changed the conclusions reached in this section.

As is the case in the previous section, no adjustment can be made for changes in quality or relaxation of control measures that could have influenced the prices of any of the items.

This analysis reconfirms that perceptions about inflation can easily be distorted. Inflation credibility is more likely than not influenced by the most recent purchasing experiences of consumers. No systematic basis for low inflation credibility is indicated by this analysis.

6.5 Comparison of salaries over time and with the CPI

In this section historic salaries of identifiable positions are adjusted in accordance with changes in inflation over the relevant period for a comparison with current salaries of the same positions. In the identification of comparable positions, some difficulty is experienced owing to “*job-title inflation*” that took place over the past two decades. By and large, positions carry more impressive titles than 20 years ago, e.g. chief executive, rather than managing director; divisional managing director, rather than general manager; chief operations officer, rather than manager, etc. Some positions nevertheless remained fairly homogeneous both in scope of responsibilities and in terms of job titles. This section analyses the salaries of two such positions; in the one instance at two different periods.

Kapp (2005: 63) mentions the appointment of Franken to the first chair of French at the University of Stellenbosch (US) in 1929. He mentions that “Franken se salaris was £718-15. Senior professore aan die US se salaris het toe tussen £900 en £1 000 per jaar gewissel” [Franken’s salary was £718-15. At the time the annual salaries of senior professors at the US ranged between £900 and £1 000⁷⁹] (2005: 64), implying that the salary of Franken was equal to some 79,8 per cent of the lowest salary notch. The reference to the salary of Franken is interpreted as £718 and 15 shillings per annum, or £718/15/-, as South Africa did not use a decimal system at the time, as is implied by Kapp. The relevant rand amounts for comparative purposes are R1 437,50, R1 800 and R 2 000. These figures are analysed in Table 6.2. Current information about remuneration was obtained from the US and pensionable remuneration was

⁷⁹ Author’s translation.

taken as salary. In 2006 the remuneration package of a professor at the University ranged from R262 471 to R372 096 per annum, and 75 per cent of the package constitutes pensionable emoluments, which is regarded as salary for purposes of comparison (Arangies, 2006).

Table 6.2 Historic annual salaries, projected salaries and actual salaries of a number of identifiable positions, various periods

Position	Year and historic salary	CPI in relevant year	Projected salary, CPI June 2006 = 133,6	Current salary	Difference + = larger actual - = smaller actual
Professor	1929 = R1 800,00	1,4	R171 771	R 196 853	+ R25 082
Professor	1929 = R2 000,00	1,4	R190 857	R 279 072	+ R88 215
Professor	1929 = R1 437,50	1,4	R137 179	R 157 089*	+ R19 910
Reverend	1947 = R1 400,00	1,9	R98 442	R 152 540	+ R54 098
Synod	1966 = R2 280,00	3,5	R87 031	R 105 600	+ R18 569
Synod	1966 = R4 500,00	3,5	R171 771	R 152 640	- R19 130

* Calculated as 79,8 per cent of the lowest notch for professors

Sources: Kapp, 2005; NG Kerk Noordelike Sinode, 2005; NG Gemeente Suid-oos Pretoria, 2006; Statistics SA; University of Stellenbosch, 2006; Van der Watt, 1997; author's calculations

In 1947 the top notch of the salary scale of a reverend of the Dutch Reformed Church amounted to £700 (or R1 400), according to Van der Watt (1997: 19), who reported information on the NG Kerk Suid-oos Pretoria congregation. The same source mentions in respect of the same congregation that “[d]ie traktament ... is gedurende Junie 1966 volgens die sinodale aanbeveling aangepas, en wel op die skaal van R2 280 + 120 – 3 600 + 150 – 4 500. Daarby word ‘n vakansiebonus van 5 persent van die salaris bygevoeg en die reistoelae is op R750 per jaar vasgestel” [the salary was reviewed in June 1966 in accordance with the prescriptions of the synod to R2 280 + 120 – 3 600 + 150 – 4 500 per annum. An annual holiday bonus of 5 per cent

of the salary and an annual travel allowance of R750 were also set⁸⁰] (Van der Watt, 1997: 52). The salary information is summarised in Table 6.2. For comparative purposes current information about remuneration was obtained from the congregation and pensionable earnings were taken as salary.

The analysis in Table 6.2 shows only one period where the actual salary did not grow faster than the rate of inflation, i.e. that of reverends at the top notch over the period 1966 to 2006. The other salaries in this comparison moved ahead in real terms. However, trend changes in remuneration and changes in taxation (e.g. a broadening of the tax base owing to the introduction of fringe benefit taxation) might distort these results, implying that a more detailed analysis is required. Employers have increasingly moved from salaries plus add-on benefits, to cost-to-employer remuneration. Accordingly a need for a more detailed comparative analysis, taking into consideration also these changes, has been identified. This analysis is explained in the next section.

6.6 Detailed comparison of cost-to-employer remuneration over time and with the CPI

In this section methodology is developed to ensure a detailed analysis of cost-to-employer remuneration. Changes in taxation over the period of comparison are also taken into consideration. Some difficulty was experienced in identifying suitable positions and to obtain historic remuneration data, but an article appeared in November 1984 in *Finansies en Tegnies* (at the time a monthly publication) that analysed the salaries, cost-to-employer remuneration packages and retirement benefits of two homogeneous and identifiable positions in the civil service (Director-General and Assistant-Director), in considerable detail (*Finansies en Tegnies*, 1984). Table 6.3 shows the remuneration information as at November 1984.

⁸⁰ Author's translation.

Table 6.3 Annual salaries and cost-to-employer remuneration of two civil service positions, November 1984

Type of remuneration	Assistant-Director	Director-General
	R	R
Salary	30 408	66 225
Service bonus	2 357	5 132
Housing subsidy	6 222	6 222
Additional housing subsidy	2 937	2 937
Car allowance	n/a	6 990
Employer pension contribution	9 223	14 569
Employer medical contribution (3 dependents)	660	660
Total cost to employer	51 807	102 735

Source: *Finansies en Tegnies*, 1984

The most obvious way of comparing the real remuneration of these two positions would be to adjust the respective salaries and cost-to-employer remuneration with changes in the inflation rate for the same period and to compare the results with the current salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director. As was explained above, the focus in remuneration since 1984 has moved from salaries to cost-to-employer remuneration, also in view of the introduction of income tax on fringe benefits. For purposes of comparing salaries in the classic sense of the word, pensionable emoluments are therefore used. In 1984 the salaries (= pensionable emoluments) of these two positions were respectively 64,5 per cent and 58,7 per cent of cost-to-employer remuneration. In addition, the ratio of the salary and cost-to-employer remuneration of an Assistant-Director to that of a Director-General were 45,9 per cent and 50,4 per cent, respectively.

The comparative salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director in July 2005 are highlighted in Table 6.4. As incumbents of both these positions are remunerated in accordance with salaries and cost-to-company remuneration that increase according to notches, with incumbents receiving one notch increase annually based on satisfactory performance, and because the civil service currently has two remuneration levels for Assistant-Directors, it is necessary to make certain assumptions for purposes of comparison.

The annual bottom and top notches applicable to the salary of a Director-General as at July 2005 were R500 551,20 and R539 229,60, with six notches in total, including the bottom and the top. Similarly the bottom and top notches applicable to the cost-to-company remuneration of a Director-General ranged between R834 250,00 and R898 716,00, with four notches between the bottom and the top. This implies that the pensionable component of the remuneration, described as a salary in this analysis, amounts to 60 per cent of the cost-to-company remuneration, whereas it amounted to 64,5 per cent in November 1984.

The annual bottom and top notches applicable to the salary of an Assistant-Director as at July 2005 were R139 302,00 and R201 852,00, spread over two job levels, albeit with the same job title, with sixteen notches and two special notches at the lower level and an additional sixteen notches at the higher level. The bottom and top notches applicable to the cost-to-company remuneration of an Assistant-Director (albeit over two job levels) ranged between R185 675,76 and R261 569,76. This implies that the pensionable component of the remuneration, described as a salary in this analysis, amounts to 75 per cent of the cost-to-company remuneration, whereas it amounted to 58,7 per cent in November 1984.

For comparative purposes, it is assumed that the analysis in November 1984 used the highest possible remuneration levels or top notches of the respective positions, as the article at the time aimed at reaching the conclusion that the remuneration of civil servants exceeded that of comparable positions in the private sector, and therefore had an incentive to use the highest figures available. In this regard the article stated, *inter alia*, that “ ... selfs op ‘n hoër, maar steeds betreklik junior vlak begin die byvoordele van die staat so ‘n verskil maak dat die private

sektor moeilik vind om kers vas te hou” [... even at a higher, but still fairly junior level the fringe benefits of the civil service make such a difference that the private sector has difficulty competing⁸¹] (*Finansies en Tegniek*, 1984: 13). The highest salary and cost-to-company remuneration notches applicable to these two positions are accordingly used for purposes of this comparison. It is also necessary to assume that the incumbents have a spouse and two dependant children for purposes of comparing medical aid benefits.

Table 6.4 Annual top-notch salaries and cost-to-employer remuneration of two civil service positions, July 2005

Type of remuneration	Assistant-Director	Director-General
	R	R
Salary	201 852,00	539 229,60
Service bonus	16 821,00	44 935,80
Housing subsidy	4 488,00	n/a
Car allowance	n/a	224 679,00
Employer pension contribution	26 240,76	70 099,85
Employer medical contribution	12 168,00	n/a
Total cost to employer	261 569,76	898 716,00

Source: Republic of South Africa, [S.a.]

Results of adjusting the salaries and remuneration packages for inflation, are highlighted in table 6.5. Table 6.5 indicates that the real salary of an Assistant-Director nearly kept pace with inflation⁸², but total cost-to-company remuneration declined sharply in real terms. Both the salary and the cost-to-company remuneration of a Director-General increased in real terms over the period 1984 to 2005.

⁸¹ Author's translation.

⁸² The average inflation rate over this period of 21 years was 9,82 per cent per annum, while the average annual rate of increase in salary was 9,43 per cent.

It is noteworthy that the salaries of the Director-General and Assistant-Director in 2005 were respectively 60 per cent and 75 per cent of cost-to-employer remuneration, compared to 64,5 per cent and 58,7 per cent, respectively, of cost-to-employer remuneration in 1984. In addition, the ratio of the salary and cost-to-employer remuneration of an Assistant-Director to that of a Director-General were 37,4 per cent and 29,1 per cent, respectively, compared to respectively 45,9 per cent and 50,4 per cent in 1984.

Table 6.5 Inflation adjustment of the salaries and remuneration packages of an Assistant-Director and a Director-General, 1984 to 2005

	Assistant-Director		Director-General	
	Salary	Remuneration	Salary	Remuneration
Position 1984	R30 408	R51 807	R66 225	R102 735
CPI index 1984	17,9	17,9	17,9	17,9
CPI index 2005	128,0	128,0	128,0	128,0
Projected real position	R217 443	R370 463	R473 564	R734 641
Actual position	R201 852	R261 570	R539 230	R898 716
Real difference	- R15 591	- R108 893	R65 666	R164 074

Sources: *Finansies en Tegniek*, 1984; Republic of South Africa, [S.a.]; Statistics SA [S.a.]; author's calculations

Although this comparison cannot provide any answer to the question whether the current remuneration or the adjusted real remuneration are at appropriate levels as no judgement can be made about the appropriateness of the identified remuneration in the base period, it is noteworthy that the salary and remuneration of a Director-General have increased considerably in real terms when compared to that of an Assistant-Director.

Table 6.6 After-tax incomes of an Assistant-Director and a Director-General, 1984 and 2005

	R
Taxable income of an Assistant-Director in 1984:	32 765
Tax on R32 765 (after rebates):	7 372
Net remuneration	25 393
Taxable income of a Director-General in 1984:	71 357
Tax on R71 357 (after rebates):	27 379
Net remuneration	43 974
Taxable income of an Assistant-Director in 2005:	223 161
Tax on R223 161 (after rebates):	37 706
Net remuneration	187 455
Taxable income of a Director-General in 2005:	696 505
Tax on R696 505 (after rebates):	238 302
Net remuneration	458 203

Sources: *Finansies en Tegniek*, 1984; Republic of South Africa, [S.a.]; SA Revenue Service [S.a]; author's calculations

In an effort to account for this difference in real growth in remuneration, an obvious explanation might be found in taxation applicable to the two positions. In addition to adjusting the salaries and cost-to-employer remuneration of these two positions for inflation only, an assessment of the real after-tax income of these two positions would show whether changes in income tax had any dramatic influence that had to be neutralised by means of differentiated remuneration adjustments, particularly owing to taxation of fringe benefits. For the purpose of this further comparison, it is assumed that for the 2006 tax year the tax deduction on fringe benefits calculated in terms of the tax table is sufficient to cover the tax liability, and that no additional payment would be required. This implies implicit assumptions about the use of fringe benefits such as the price and usage of a vehicle and medical aid contributions. Moreover, it is also assumed that the relevant person is married, has a spouse and two dependant children and is

under 60 years of age, to take account of children's rebates still applicable in 1984, as well as differentiated income tax rates at the time for married and unmarried tax payers and additional rebates for tax payers over the age of 60 in the 1985 tax year. The tax table for the 1985 tax year takes account only of tax on income (defined as salary and bonus), as taxation of fringe benefits (other than bonuses) was introduced in South Africa on a phasing-in basis from the 1986 tax year only. The tax table for the 1985 tax year is given in Appendix N. The tax payable on salaries and fringe benefits for the 2006 tax year is displayed in Appendix O.

In the calculation of the tax payable by incumbents of the two positions for the 2006 tax year, it should be noted that housing benefits are taxed as income, and two-thirds of medical aid contributions are tax free. For comparative purposes it is assumed that the full amount of employer medical-aid contribution shown in respect of an Assistant-Director is deductible for tax (i.e. comprises the two-thirds portion). A similar amount is assumed as tax deductible in respect of the Director-General, and is accordingly deducted in the calculation of taxable income. Car allowances in the 2006 tax year are subject to a 50-per-cent deduction for Pay-As-You-Earn (PAYE) at the marginal rate. The after-tax salaries and cost-to-employer remuneration of a Director-General and an Assistant-Director are compared on this basis in Table 6.6.

Table 6.7 highlights a comparison of the calculated real adjusted after-tax incomes and actual incomes of the two positions under review. In real terms (after income tax has been taken into consideration) the remuneration of both an Assistant-Director and a Director-General not only kept pace with inflation, but moved ahead of inflation, albeit more so in the case of the Director-General. The conclusion from this analysis of the financial positions of two identifiable positions in the civil service is therefore that actual spending patterns in terms of a consumer basket at a particular point in time and movements in spending patterns over time, rather than a lack of remuneration adjustments to cater for inflation and concomitant price increases on an after-tax basis, would result in a perception that actual inflation is higher than the published official inflation figures. It is also important to note the relative change in the remuneration of these positions.

Table 6.7 Inflation adjustment of the after-tax remuneration of an Assistant-Director and a Director-General, 1984 and 2005

	Assistant-Director Remuneration	Director-General Remuneration
Position 1984	R25 393	R43 974
CPI index 1984	17,9	17,9
CPI index 2005	128,0	128,0
Projected real position	R181 581	R314 451
Actual position	R187 455	R458 203
Real difference	R5 874	R143 752

Sources: *Finansies en Tegnies*, 1984; Republic of South Africa, [S.a.]; Statistics SA, [S.a.]

This comparison of real after-tax remuneration raises questions about changes over time in the affordability of big-ticket expenditure items for an average household. The analysis in Appendix L addressed to some extent the affordability of motor vehicles, one important big-ticket expenditure item for an average household. However, the tables do not cover in any way the affordability over time of home ownership for an average household. For purposes of such an analysis only the position of an Assistant-Director is considered, as this position has shown a smaller increase in real remuneration than a Director-General. It is necessary to make a number of assumptions:

- the typical price that an Assistant-Director pays for a house is equal to the cost-to-employer remuneration of a Director-General;
- no deposit is paid;
- the whole purchase price is borrowed as a bond and repaid over 240 months;
- transfer fees, legal fees and commissions are disregarded for purposes of this comparison; and
- bond rates were equal to the average prime overdraft rates in 1984 and 2005, i.e 21,25 per cent and 10,5 per cent, respectively.

Table 6.8 highlights the comparative positions of assistant-directors in 1984 and 2005 in terms of affordability of houses. The analysis shows an assumed repayment in 1984 at an unacceptable ratio to the net remuneration of an Assistant-Director (87,3 per cent), while the ratio of affordability improved to 57,4 per cent by 2005. However, in both instances the houses used in the example are priced outside the affordability range of an Assistant-Director.

An analysis from an affordability perspective, based on an assumption that 27 per cent of net remuneration can be used for bond repayment (ABSA, [S.a.]), shows that a house of R31 786 could have been afforded in 1984 at an interest rate of 21,25 per cent, with a monthly repayment of R571,34 on a 100-per-cent home loan over a period of 20 years. Adjusted with the rate of inflation, the price would have been R227 297 in 2005. However, on the 27-per-cent affordability assumption, an Assistant-Director would have been able to afford a house of R422 458 in 2005, with a monthly bond repayment of R4 217,74 on a 100-per-cent home loan at a rate of 10,5 per cent over 20 years. Based on these assumptions, it seems that housing became more, rather than less, affordable, provided that remuneration after tax kept pace with inflation.

Table 6.8 Comparable affordability of houses, 1984 and 2005

	1984	2005
Net remuneration	R25 393	R187 455
Assumed house price	R102 735	R898 455
Ratio	4,05	4,79
Monthly bond repayment	R1 846,60	R8 972,60

Source: Author's calculations

A more complete picture emerges when actual house price movements are compared. ABSA, a commercial bank in South Africa, publishes an index of house prices (ABSA, [S.a.]). Before the establishment of ABSA in 1991, this index was published by the United Building Society, which merged with other banks to form ABSA. With 2000 = 100, the index was 28,6 for 1984 and

259,6 for 2005. Based on this index, the price in 2005 of a house priced at R31 786 in 1984 would have been R288 519, which would clearly have been more affordable for an Assistant-Director.

In addition to the actual index, ABSA also publishes two house price data series:

- the purchase prices of all sizes of old and newly-built middle-range houses for the whole of South Africa; and
- reports real house prices in terms of prevailing prices in 2000.

In terms of the first series, the average house price in 1984 was R79 048, and in 2005 it was R706 130 (Du Toit, 2006). In terms of the second index, average real house prices moved from R442 485 in 1984 to R551 432 in 2005 (Du Toit, 2006). These increases exceeded the rate of inflation, but housing affordability compared in terms of salaries, remuneration and affordability in terms of monthly repayments improved over this period.

This analysis shows that this big-ticket expenditure item has also become more affordable over the period under consideration, as is the case with the two motor vehicles used for comparative purposes in Table 6.1 and Appendix L, particularly when the general lower interest rate environment is also taken into consideration.

Although a matter outside the scope of this study, the methodology developed in this section can be applied to assist in calculating fair and reasonable adjustments in remuneration negotiations.

6.7 Use of historic price information by developing economies

Developing economies can use the methodology developed in this chapter to validate the accuracy of their rates of inflation over time, particularly in instances where countries suffered sustained inflation over a prolonged period⁸³. The methodology serves as a simplified measure to assess the accuracy of inflation data and to ascertain whether a lack of inflation credibility is

⁸³ See for instance Coorey et al. (2007) for a discussion on the accurate measurement of sustained inflation.

based on fact or perception. This method does not require the use of any technical or statistical measures or capacity that might not be readily available in, or at the disposal of, developing economies. To the contrary, the requirements are simply sufficient data about historic prices at different periods in time, current price information and inflation data over the same time periods. The same applies in comparing historic and current remuneration in terms of this analysis: suitable positions should simply be identified for comparison over time, and relevant information about historic remuneration levels of such positions should be available.

Developing economies can publish periodically the results of such analyses to enhance public awareness of the link between price movements and the rate of inflation – provided the data confirm that the inflation figures reflect with a large degree of accuracy average movements in prices and remuneration over time. Such publicity will improve the credibility of inflation data, therefore anchoring inflation expectations in current inflation figures.

It is important that the agency entrusted with responsibility for the analysis should have trustworthiness in the public eye, thereby validating the analysis. Generally speaking, central banks should ideally not be entrusted with this responsibility, as it could be argued that central banks have a vested interest in the confirmation of the accuracy of inflation data, because such confirmation might support the implementation of monetary policy.

Maxwell states that “[t]he impact of central bank independence on employment in developing countries is an important area for future research” (1997: 147). This matter is, however, not only of importance in developing countries. In respect of two of the objectives of the Fed (low inflation and low unemployment), it was recently observed that if one of these objectives is targeted and not the other, the objective used for targeting purposes will receive most of the attention (Guha, 2007: 14). The debate about the possible impact of monetary policy on unemployment is therefore not limited to developing countries only. The comparison of actual price increases with average price increases measured in terms of the consumer price index might shed some light on this debate. Any research about the impact of monetary policy on inflation and unemployment based on inaccurate inflation data not supported by average actual price

increases over any period of time, will distort the research results. If inflation cannot be verified over time by means of a comparison between actual and projected price and remuneration increases, the possibility of distortions in other economic data (e.g. employment data) should also be considered.

The publication of results based on the methodology followed in this study will enhance its usefulness. Publishing detailed research results will help to ensure that public and private-sector decision-makers and international investors anchor their planning and decision-making in current inflation rates – provided that the accuracy of inflation figures is confirmed by acceptable readings of the IAI.

6.8 Conclusions

Despite the difficulties in comparing historic prices and remuneration adjusted in terms of changes in the CPI with current prices and remuneration, highlighted at the outset of this chapter, suitable adjustments could be made to ensure a basis of comparison.

Historic prices of a broad variety of goods and services could be identified and adjusted for comparative purposes, and same-item comparisons could also be done for a period of 32 years. Over periods of comparison no systematic over-reporting or under-reporting of changes in prices in terms of the CPI was discernable. As should be expected with adjustments reflecting average price increases, the current prices of some goods and services were lower than projected prices, while the actual prices of other goods and services exceeded projected prices. Based on this analysis, no basis for a low credibility of inflation figures as an accurate indication of price increases in the South African economy could be found. The methodology developed for purposes of this analysis is suitable for use in future to revalidate the accuracy of inflation figures, using the research results in this study as a benchmark.

In respect of the prices of food and food-related items, some items increased to price levels much higher than their projected price levels, based on historic prices adjusted for CPI. This could

provide some basis for low-income earners to attach less credibility to inflation figures than high-income earners. In as much as the spending pattern of housewives correspond to a larger degree with the spending patterns of low income earners than with average spending patterns, this finding could indicate that the credibility of inflation figures might be lower among housewives than among the population in general.

This analysis was also used to assess the affordability of big-ticket items. Over the period 1984 to 2005 the affordability of motor vehicles and houses improved, therefore showing no tendency that big-ticket items became less affordable as a result of sustained high inflation.

A precondition for the efficient functioning of a market in any economy is that producers and consumers must be able to identify changes in the relative prices of goods and services over time. The identification of changes in relative prices allows producers and consumers to take appropriate economic decisions in the allocation of productive resources and in consumption expenditure, respectively. Producers and consumers will take decisions not only to their own detriment, but also to the detriment of the economic system as a whole, if they cannot distinguish between increasing prices reflecting changes in relative scarcity and price increases owing to an ongoing inflationary process. Relative remuneration of positions also changes over time. If such changes are viewed merely as inflationary adjustments, prospective employees might make wrong career decisions.

An IAI was calculated for South Africa, based on the data collected for this study. Despite its shortcomings, it can be used to enhance inflation credibility, particularly because it is easy to understand. If calculated periodically by countries, it can serve as a benchmark for the measurement of inflation accuracy. The ease of calculation of the IAI makes it a particularly useful instrument for use by developing countries. In further research some modifications to the IAI might be considered, e.g. in respect of the items to be included; the period or periods of comparison; and the treatment of changes in relative scarcity and quality improvements.

The research in this chapter can be applied by developing economies in as much as trends and changes in prices and remuneration over time can be compared with inflation data – provided that reliable inflation data are available. To this end the importance of reliable economic data in general and, for purposes of this study, inflation data in particular, cannot be overemphasised. Confirmation of accurate inflation data can be an important tool for anchoring inflation expectations in developing countries where the necessary tools for other statistical analyses or forecasting capacity are not available.

In this chapter no basis, other than possible problems for low-income earners and housewives in respect of food purchases, has been found to justify low inflation credibility. To this end the sub-hypothesis, i.e. the prices of various identifiable consumer goods and services and remuneration increased on average in accordance with the official overall rate of inflation over time, has been proved. This hypothesis was tested by comparing the actual price increases of various identifiable consumer goods and services, as well as increases in remuneration, with the South African CPI for different periods.

The final conclusion from this comparison is therefore that any low readings of an inflation credibility barometer is based on perception, or at best own spending patterns, rather than a general tendency of prices of goods and services increasing at a faster pace, and remuneration increasing at a slower pace, than the CPI. In view of this analysis, the next chapter highlights the measurement of inflation credibility in terms of an inflation credibility barometer following the finding that price and remuneration increases in South Africa broadly remained in step with the rate of inflation.