DEPARTMENT: AGRICULTURE
REPUBLIC OF SOUTH AFRICA

FOOD PRICING MONITORING COMMITTEE

FINAL REPORT

December 2003

NAMC

Foreword

This document contains the full report of the work of the Food Pricing Monitoring Committee since its appointment on 20 January 2003. The activities of the Committee have resulted in a well documented overview of many aspects related to the agri-food industry in South Africa and should be widely disseminated in order to create a greater understanding of the agri-food industry and also increased awareness of the various relevant aspects of this industry.

The Committee tasked many researchers and fieldworkers to assist in its investigations and monitoring activities. We thank them for a job well executed.

The Committee would also like to express its thanks to the Secretariat of the Committee, Tshifiwa Madima and Maria Armstrong at the NAMC; Billy Morokolo, Ben van Wyk and Rodney Dredge at the Department of Agriculture who provided administrative support and also very important inputs. The Directorate Agricultural Statistics of the Department of Agriculture assisted by seconding staff to the Committee to help with analysis while the Directorate Economic Analysis commissioned a number of studies that were made available to the Committee.

The Chairperson of the National Agricultural Marketing Council, Mr Godfrey Rothogwa, all council members as well as the NAMC secretariat are thanked for their support and assistance throughout the year.

In closing the members of the Committee would also like to remember Ms Nonia Rampomane one of our colleagues who died in August 2003.

The Committee is confident that the implementation of the recommendations made in this report will make an important contribution to ensuring food security for all households while maintaining a competitive and prosperous agricultural and food industry.

Prof Johann Kirsten (Chairperson)

Pretoria
12 December 2003

<u>**FOOD PRICING MONITORING COMMITTEE**</u>

Established by the Minister of Agriculture and Land Affairs as a Section 7 Committee under the Marketing of Agricultural Products Act.

Final report

PART 1

SUMMARY REPORT

Executive summary

Introduction

Despite national food security, many South African households experience continued food insecurity, malnutrition and unemployment. According to data from StatsSA, approximately 14.3 million South Africans are vulnerable to food insecurity. These are the households that seem to have been severely affected by the price increases of basic foods during 2002. The dramatic impact of rising food prices on these households, and also the effect of food price inflation on South Africa's inflation rate, compelled the Government to investigate ways and means to deal with this crisis.

Suspicion about manipulation in the commodity market, and concerns about concentration and market power in the food manufacturing and retail sector created the perception amongst consumers and Government that the role players in the food sector were unfairly increasing the prices of basic foods. All of this pointed to the need for an investigation into pricing behaviour in the food sector.

Terms of reference

On 28 November 2002, the Minister for Agriculture and Land Affairs, Ms Thoko Didiza, announced that Cabinet had approved the establishment of a Food Pricing Monitoring Committee (FPMC). The Committee held its inaugural meeting on 20 January 2003. Following an initial briefing by the Hon. Minister, the Committee deliberated on the terms of reference, the scope of its operations as well as its plan of action. The Committee then agreed on amended terms of reference:

- To monitor the prices of a basket of 26 basic food items (Reported in Part 3 of the main Report);
- To investigate any sharp or unjust price increases (Reported in Part 3 of the main Report);
- To investigate price formation mechanisms in selected supply chains. This would include the following (Reported in Parts 4 and 5 of the main Report):
    - Determining the numbers of producers and processors and levels of concentration;
    - Determining the extent of vertical/horizontal integration and concentration in the food supply chain;
    - Gross margin analysis at each node of the food chain;
    - Establishing the magnitude of difference between urban and rural pricing structures;
    - Reporting on the pricing structure of certain food chains;
    - Determining the ratios of prices to costs and profits;
- To review the effectiveness of government monitoring of and information dissemination on food prices (Discussed in Part 7 of this Report)
- To establish and maintain a national food pricing monitoring database (Discussed in Part 7 of this Report)
- To monitor the regional SADC food situation (Reported in Part 6 of this Report)
- To investigate incidents of predatory and monopolistic tendencies in collaboration with the Competition Commission.

Outline of the Report

The report of the FPMC has been divided into seven parts. In Part 1, a summarised report on the main activities, findings and recommendations of the Committee is presented. This is followed in Part 2 by three Chapters on the background to the appointment of the Committee, and an explanation of the manner in which the Committee approached its terms of reference.

In Part 3 the Committee approached its key task of monitoring food prices from five different angles, that is, using time series from StatsSA (Chapter 1); actual prices from time series of aggregate data (Chapter 2); data from 6 monitoring points (two in rural areas, two in peri-urban areas (townships) and two in main cities or towns) in each of the 9 provinces as well as data extracted from pay point scanners in retail stores (Chapter 3); and, lastly, data on the differences between prices in urban stores and those of spazas/general dealers in remote rural areas (Chapter 4).

Part 4 addresses the 'investigation' element of the Committee's terms reference. The first Chapter deals with the agricultural commodity market and with aspects related to potential manipulation of the market. This is followed by eight Chapters discussing selected food value chains in detail with the aim to determine how prices are formed at each stage of the value chain.

Part 5 continues the 'investigations' and addresses issues related to the causes of food price increases. Chapter 1 considers the influence of price increases of farm requisites. Chapter 2 considers the role that is played by other exogenous factors such as transport costs and the perceived collusive behaviour of silo owners vis-à-vis the cost of basic food. Chapter 3 addresses practices related to the relationships between food manufacturers and retail stores, while in Chapter 4 aspects related to market structure and market power are analysed, and how these influence the transmission of prices through the value chain.

In Part 6 of the Report the Committee brings into effect point 6 of its terms of reference, namely to " …monitor the regional SADC food situation".

Part 7 of the Report contains the concluding chapters as well as the recommendations of the Committee.

Main findings from price monitoring

The various analyses of food retail prices reported in Part 3 of this Report clearly confirm the initial sharp increase in basic food commodity prices (notably maize). This initial shock then spread through several food value chains followed by a levelling off of price increases for virtually all food items, and even a decline for some products (red meat, maize meal, samp and cooking oil). However, while it is true that these prices came down from their peaks in 2002 and early 2003, in all cases the decline was not as large as the initial increases during 2001/2002. When considering the period (Jan – Oct 2003) over which the Committee monitored food prices, the trends reflect price declines for 11 out of 24 monitored by the Committee. The data do show a few anomalies, for instance for products such as milk powder, peanut butter, margarine and onions, of which the prices have increased to far above the current rate of food price inflation.

The analysis of food price inflation for different income groups shows that poor households experienced higher inflation rates than wealthier households. At its peak, in October 2002, poor households were confronted with a year-on-year food price inflation of 23.1% while richer households experienced a food price inflation of 19%. The benefit to the poor of the recently lowered prices for most staple foods is reflected in a food inflation rate of 3.35% compared to that of richer households of 4.21%.

Rural households experience food prices and food price inflation differently from urban households. The analysis in Part 3 (Chapter 5) has shown that prices in rural stores are generally higher than in urban centres. This applies largely to processed goods. Fresh produce prices, and sometimes milk prices, at these stores are lower. Mark-ups between retail and wholesale prices are fairly high; they are largely due to transport costs between wholesale outlets and trading stores. Price trends in rural stores also show some levelling off, with decreases being notable in prices for maize meal, dry beans and red meat.

The fact that the Committee received virtually no inputs and complaints from the public through the toll-free number and e-mail line after June 2003 may have been some indication that food price inflation abated, and that consumers did not pick up any extraordinary increases. The monitoring process by the Committee also found no 'sharp' increases in food prices in the period since its appointment. The existence of a monitoring mechanism, increased public awareness as well as improved and more stable macro-economic conditions all assisted in achieving slower food price inflation and even resulted in food price reductions in some cases.

Lower food price inflation does not necessarily translate into cheaper food. Since lower inflation implies only a lower rate of increase in prices this is to be expected. In other words, prices are on average still increasing, albeit at a lower rate than the year before. As indicated earlier, only certain food products are now cheaper than in 2002. Others have become more expensive, which is why there is still a common complaint that the consumer's monthly food bill has not declined. The Committee's analysis in Part 3 (Chapter 2) shows that in September 2003 the total cost of the basket of food items monitored by the Committee was only 1.5% cheaper than in September 2002, which confirms the sentiment expressed by consumers.

The future of price monitoring

The Committee found the monitoring process a useful exercise that assisted in the understanding and monitoring of food price trends of specific food items. This promotes the protection of consumer rights and it provides valuable information for policy analysis, which should lead to a better understanding of the variation in prices of similar products in rural and urban settings. As one observer commented: "The one good thing about the Food Pricing Monitoring Committee is that there is a Monitoring Committee". The advantage of this system of monitoring price trends is that it allows qualitative observations of a variety of factors and behaviours that influence food prices in different social environments.

The Committee is of the opinion that the National Department of Agriculture should implement a reliable and consistent price monitoring network throughout the country, as this affords policy makers the opportunity to gain first-hand qualitative and quantitative data on price trends, and enables the Department to make informed decisions and implement appropriate actions.

Main findings from the supply chain analysis

Any analysis of food supply chains has to start with an analysis of producer prices at the farm gate (i.e. agricultural commodity prices). Increasing commodity prices (aided by world prices and the exchange rate) were largely responsible for the increases in retail food prices during 2002. On the other hand, the subsequent sharp decline in commodity prices back to pre-2001 levels did not have the same dramatic effect of lowering the retail prices.

Trading positions

Sharp rises in commodity prices, and the fact that they remained high for a number of months after the 2002 harvest, created suspicion about trader behaviour on the agricultural futures market (SAFEX). Large losses by one trading house early in 2003, and an investigation by the Financial Services Board into trading practices of this firm, confirmed this suspicion. The investigations of the Committee have shown that a combination of factors, including a large open trading position on the futures market, inexperienced traders and incomplete information about the real size of the South African crop, as well as the supply and demand situation in the SADC region, created a situation where hoarding of the market was possible for a certain period during 2002, after which the market corrected itself. New rules on trading positions on the futures market as well as improved, unbiased and timely access to information are clearly required.

Price flexibility

The analysis of the various supply chains in Parts 4 and 5 of the Report provides some explanation for the downward stickiness of retail prices. Other costs such as processing costs, wages, and distribution costs also increased with the normal inflationary trend, making it difficult for manufacturers to reduce prices fully. The ability of manufacturers to recuperate losses and/or to prevent losses through appropriate pricing policies and, therefore, not passing on the full benefit of cheaper raw materials to the consumer, can partly be explained by the oligopolistic structure in most of the food industries. This aspect came out fairly clearly in the investigations of the Committee and is highlighted in Part 4 and Part 5. The analyses presented provide substantial evidence of oligopolistic behaviour and monopolistic competition. Brand loyalty by consumers, a limited number of competitors, market segmentation by supermarkets and manufacturers, and also the nature of demand often put the supermarket/manufacturer in a position where price could be dictated.

The Committee holds the view that the long period of correction of food prices indicates the role of many factors. These include market power/structure as well as supply and demand forces and lag effects. High prices and high margins were detected in certain markets and during certain months. It is true that the market eventually corrected itself, but in the process poor households were adversely affected. This should be a major concern to Government and to society as a whole. The effect of high prices on food affordability vis-à-vis the right of people to sufficient food is a reality, which needs to be addressed.

The Committee's work presents a much clearer understanding of the working of various food supply chains in South Africa. For the first time the monitoring results yield a clear understanding of costs and structure within food supply chains. Nevertheless, the information remains very sketchy since most of the analyses were based on industry averages. It is, therefore, difficult to link any changes in prices to specific behaviour by particular role players. Confidentiality and the proprietary nature of detailed financial information of companies made it difficult for the Committee to pick-up any 'unjust' price increases.

Thus, although the market structure allows the opportunity for predatory and unjust pricing, there is limited evidence that this actually happened. What the analyses of the Committee do show is that all price increases seemed to follow trends in the prices of raw materials, other costs and the exchange rate. This, plus the results of most of the supply chain investigations provide sufficient evidence that collusive and unfair business practices are not prevalent.

Despite finding only limited evidence of unjust price increases and collusive and unfair practices, Government still has a duty to address some of the imperfections in the market. It is against this background that recommendations on potential interventions are made in Part 7 of the Report. The Committee made 16 recommendations along five main themes:

- Strategic grain reserves
- Direct government programmes
- Improved agricultural information systems
- Increasing competition and reducing barriers to entry
- SAFEX rules, transport and logistics

The details of the recommendations are contained in Chapter 6 of Part 7 and are also listed from page 28 onwards in the Summary Report that follows the Executive Summary.

The Committee's recommendations must be seen against the argument that Government has an important role to play in the food sector. The sole objective of Government's engagement with the role players in the food chain is to ensure food security at household level. It is the duty of Government to ensure that all its citizens have access to basic food because it is a fundamental human right, which is also entrenched in the Constitution.

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Glossary

AFMA	Animal Feed Manufacturing Association
AMT	Agrimark Trends
BLS	Bureau of Labor Statistics of the US Department of Labor
CBRTA	Cross Border Road Transport Agency
CPI	Consumer Price Index
CPIF	Food Price Index
CPIX	CPI excluding interest rates on mortgage bonds
DPO	Dry Bean Producers' Organisation
DRC	Democratic Republic of the Congo
ERS	Economic Research Service of the United States Department of Agriculture
FEWSNET	Famine Early Warning Systems Network
FOB	Free on Board
JSE	Johannesburg Stock Exchange
NAMC	National Agricultural Marketing Council
NCEC	National Crop Estimates Committee
DoA	Department of Agriculture
PPI	Producer Price Index
SADC	Southern Africa Development Community
SADC REWU	SADC Regional Early Warning Unit
SADC FANR	SADC Food, Agriculture and Natural Resources Development Unit
SADC GIEWS	SADC FAO Global Information and Early Warning System on food and agriculture
SAFEX	South African Futures Exchange
SAGIS	South African Grain Information Services
SAMIC	South African Meat Industry Company
SAMPRO	South African Milk Producers Organisation
SARS	South African Revenue Services
SASA	South African Sugar Association
StatsSA	Statistics South Africa
WFP	World Food Programme

1. THE ESTABLISHMENT AND PURPOSE OF THE COMMITTEE

1.1 Introduction

On 28 November 2002 the Minister for Agriculture and Land Affairs, Ms Thoko Didiza, announced that Cabinet had approved the establishment of a Food Pricing Monitoring Committee (FPMC) as one of the strategies to deal with the continuing problem of high food prices, first triggered by the rapid increase in food prices at the end of 2001. A public call was made for the submission of names of interested individuals, for consideration as members of the Committee, who possessed the necessary technical knowledge in analysing the food chain. Subsequently, on 8 January 2003, the Minister announced the appointment of the following individuals to serve on the Committee:

- Prof. Johann Kirsten – Chairperson
- Dr. Fikile Mazibuko - Deputy Chairperson
- Prof. Johann Potgieter
- Prof. Sibusiso Vil-Nkomo
- Ms. Josephilda Nhlapo-Hlope
- Prof. Herman van Schalkwyk
- Mr. Lumkile Mondi
- Ms. Nonia Rampomane[1]

The Committee was established in terms of Section 7 of the Marketing of Agricultural Products Act, No 47 of 1996 (as amended) and it acts under the auspices of the National Agricultural Marketing Council (NAMC), which advises the Minister for Agriculture and Land Affairs.

The Committee was charged with the following Terms of Reference:

- Monitor the pricing of basic foodstuffs;
- Investigate any sharp or unjustified price increases;
- Determine the competitiveness of production operations;
- Investigate price formation mechanisms within the value chain of basic foodstuffs;
- Recommend required productivity improvements;
- Investigate collusive, discriminatory or any unfair business practice in the basic food value chain;
- Investigate and make recommendations on market inefficiencies and distortions;
- Investigate incidents of predatory pricing and monopolistic tendencies.

The FPMC held its inaugural meeting on 20 January 2003. Following an initial briefing by the Hon. Minister, the Committee deliberated on the terms of reference, the scope of its operations as well as its plan of action. The Committee then agreed on slightly amended terms of reference:

[1] Unfortunately Ms Rampomane passed away on 16 August 2003.

- To monitor the prices of a basket of 26 basic food items (The results are reported in Part 3 of the main Report);
- To investigate any sharp or unjust price increases (The results are reported in Part 3 of the main Report);
- To investigate price formation mechanisms in selected supply chains. This would include the following (The results are reported in Parts 4 and 5 of the main Report):
  - Determining the numbers of producers and processors and levels of concentration;
  - Determining the extent of vertical/horizontal integration and concentration in the food supply chain;
  - Gross margin analysis at each node of the food chain;
  - Establishing the magnitude of difference between urban and rural pricing structures;
  - Reporting on the pricing structure of certain food chains;
  - Determining the ratios of prices to costs and profits.
- To review the effectiveness of government monitoring of and information dissemination on food prices (Discussed with recommendations in Part 7 of this Report)
- To establish and maintain a national food pricing monitoring database (Discussed with recommendations in Part 7 of this Report)
- To monitor the regional SADC food situation (The results are reported in Part 6 of this Report)
- To investigate incidents of predatory and monopolistic tendencies in collaboration with the Competition Commission.

1.2 Research methods

1.2.1 Price monitoring

The Committee immediately commenced with the monitoring of food prices of a selected basket of basic products (see Table 1) in order to bring into effect the first two points in the Terms of Reference. This involved the following activities:

- The NAMC was requested to continue their process of monitoring the retail prices of the basket of food items on a monthly basis;
- The Committee was able to tap into an existing database on food price changes over the past 30 years. The results of the annual Cost of Living survey of September 2003 were added to this database;
- The Committee established channels of communication with the public, with consumer groups, and with other elements in civil society, in so doing enabling the public to report sharp increases of food prices. Inputs were substantial during the first 2 months but dropped in number as prices of key products were reduced;
- Official data on retail food prices and time series on the consumer price index were obtained from StatsSA.
- The Committee was able to access the database of retail prices extracted from the pay point scanners in retail stores. This independent database, managed by AC Nielsen on behalf of the retailers and manufacturers, provides valuable data for most major urban stores.

The Committee was therefore able to monitor retail prices of the most important foodstuffs from at least 5 sources.

The SADC food security situation (Item 6) was also monitored through collaboration with the NDA and various food security organisations in the SADC region.

Table 1: List of 26 food products identified by the Committee

250g Margarine	1 litre Milk
750ml Sunflower Oil	Chicken/kg
410g Peanut Butter	1 Dozen Eggs
White Bread	425g Pilchards
Brown Bread	Potatoes/kg
250g Tea Leaves	Onions/kg
250g Instant Coffee	Tomatoes/kg
2.5kg and 12.5 kg Maize Meal	Cabbage/head
1kg Samp	Apples/1.5kg bag
Stewing Beef/kg	Oranges/kg
Bananas/kg	Sugar beans (500g)
2kg Rice	Butter Beans (500g)
2.5 kg White Sugar	Sorghum meal

1.2.2 Pricing behaviour

A central part of the terms of reference of the Committee related to the analysis of the **price formation mechanism in supply chains of basic foodstuffs**. In this respect particular attention was given to:

- Market power as determined by the level of concentration and the extent of vertical and horizontal integration;
- Price formation at different points in the supply chain;
- Costs and margins at each stage of the value chain.

In order to comply with points 3 and 7 of the Terms of Reference, the Committee addressed these aspects in a comprehensive manner. The Committee was aware, however, that research into behaviour in food supply chains must be seen against the background of the changing nature of the agricultural and food industry worldwide, and also in South Africa. Essentially, supply chains of vertically related oligopolies have emerged either through ownership, strategic alliances, or contractual relationships. This presents a challenge for governments to ensure that potential social welfare losses resulting from the misallocation of resources and possible abuse of market power are avoided.

In this new structure the transmission of prices between vertical stages of the supply chain are likely to happen via proprietary information. This entails that missing market price information makes an investigation into anti-competitive behaviour difficult. At the same time, the potential benefits of the new agri-food structure should not be ignored. These benefits include potential efficiency gains through reduction of transaction costs, minimising wastage, etc.

An in-depth analysis was completed for each of eight separate, identified supply chains (maize-maize meal; wheat-bread; sunflower seed-cooking oil; sugar; red meat; milk; dried beans; and potatoes). This incorporated a) a structure/conduct analysis, b) the analysis of farm-to-retail-price spreads, c) an investigation of price transmission mechanisms and the role of market power. These analyses were also extended to retail stores/spaza shops and general trading stores in remote rural areas in four provinces.

1.2.3 Data sources

Most participants in the food industry gave full cooperation to the investigation, often providing information normally regarded as proprietary. The various industry associations provided data in the form of industry average processing and distribution costs, etc. As the investigation progressed, it became apparent that many detailed processing costs were not provided. Despite this, sufficient data were obtained to establish, for the first time in South Africa, a comprehensive database on various aspects of the food industry. This database could form the basis for a recommended annual "South African Food Cost Review", which is discussed in the recommendations of the Committee.

The Committee was also able to draw on the earlier report to the Treasury on pricing behaviour (Vink and Kirsten, 2002)[2] and on the databases used there.

1.3 Outline of the report

The report of the FPMC has been divided into seven parts. In Part 1 (Summary Report), a summarised report on the main activities, findings and recommendations of the Committee is presented. This is followed in Part 2 (The Government responding to the food price crisis) by three Chapters on the background to the appointment of the Committee, and an explanation of the manner in which the Committee approached its terms of reference.

In Part 3 the Committee sets out its approaches to the Committee's key task of monitoring food prices from five different angles. In Chapter 1 the Committee uses various time series of aggregate data depicting food price inflation on a national scale, while in Chapter 2 actual prices for the month of September 2003 are compared for individual products at different localities throughout the country. The Committee, in collaboration with the NAMC, also set up 6 monitoring points (two in rural areas, two in peri-urban areas (township) and two in main cities or towns) in each of the 9 provinces to monitor the prices of a basket of 26 food products. Chapter 3 deals with the results of this monitoring activity. As another avenue for monitoring retail prices, the Committee utilised the data extracted from pay point scanners in retail stores. The results from the trend analysis of these monthly data are presented in Chapter 4. Finally, since the majority of poor households reside in remote rural areas and because the data sources listed above have a relative strong urban bias, it was decided to also monitor the difference between prices in urban stores and those of spazas/general dealers in remote rural areas.

Part 4 addresses the causes of food price increases in Chapter 1, while from Chapter 2 onwards eight food value chains are analysed in great detail in order to understand the pricing behaviour in each chain and to understand the factors contributing to various movements in prices within each of the chains.

[2] Vink, N and JF Kirsten, 2002, Pricing behaviour in the South African food and agricultural sector. A report to the National Treasury, Pretoria

Part 5 continues with issues related to the core aspect of the terms of reference, namely to understand the causes of food price increases. Chapter 1 considers the influence of price increases of farm requisites, while Chapter 2 considers the role that is played by other exogenous factors such as transport costs and the perceived collusive behaviour of silo owners vis-à-vis the cost of basic food. The Committee assumed that certain practices related to the relationships between food manufacturers and retail stores could potentially lead to extra costs for the consumer. This aspect is investigated in Chapter 3. In Chapter 4 aspects related to market structure and market power, and how these influence the transmission of prices through the value chain are analysed.

In Part 6 of the report the Committee gives effect to point 6 of its terms of reference, namely to " …monitor the regional SADC food situation". Part 7 of the Report contains the concluding chapters as well as the recommendations of the Committee.

2. INFLATION AND FOOD PRICE INFLATION IN SOUTH AFRICA, 1991 – 2003

In Part 3 of the main report a broad overview of general inflation trends in South Africa, as measured by the Consumer Price Index (CPI), is presented. The CPI measures how the price level of consumer goods and services purchased by households changes between two periods. Currently StatsSA compiles and disseminates a number of different CPI aggregates, each serving a number of different analytical purposes. These include:

- **Consumer Price Index**: This index is used to calculate the official or headline rate of inflation, and consists of price increases for all goods and services in the main metropolitan areas of the country.
- **Core Index**: Certain items are excluded from the CPI basket on the basis that their prices are highly volatile, subject to temporary influences, or affected by government policies. These exclusions include fresh and frozen meat and fish, fresh and frozen vegetables, fresh fruit and nuts, interest rates on mortgage bonds and overdrafts/personal loans, and changes in VAT and assessment rates. This index is used to calculate core inflation and is a reflection of the underlying inflationary pressures in the economy.
- **CPIX**: The CPI excluding interest rates on mortgage bonds (CPIX), a measure designed to assist with inflation targeting.
- **CPIF, or the Food Price Index**: Only the food items appearing in the CPI basket are included. The index is regarded as useful to assess the impact of price increases on poverty, as food is the single biggest item in the total basket for the CPI.

South Africa battled with double-digit inflation from the 1970s until, in the early 1990s, the CPI was eventually brought below 10% on a sustained basis (see Figure 1). Subsequently, inflation remained below 10% after 1995 and even reached figures of around 5% until it increased to the above 12% in 2002. The data in Figure 1 also reflect the trend in the CPIF, which fluctuates more widely than the CPI, reaching around 30% in 1991/92 and then declining and stabilising gradually until the sudden surge to 20% in 2002. However, by September 2003 CPIF was only 4.2%, and CPI had declined to 3.7%.

The data in Figure 1 show that when CPI-food was growing at a relatively constant rate (up to the end of 1999), the overall inflation rate was declining. It is clear, however, that between the end of 1999 and the middle of 2000, and again from the middle of July 2001 the increase in CPI-food preceded an increase in the overall rate of inflation. This interpretation is emphasised by the difference between the CPI and CPI ex-Food, illustrating the important contribution of food price inflation to total inflation during the early part of 2002. Figure 1, however, also shows how the effect of food price inflation on total inflation has diminished over the past year. Whereas the difference was almost 2 percentage points in September 2002, there was virtually no difference in September 2003 indicating that the impact of food price inflation on total inflation has diminished.

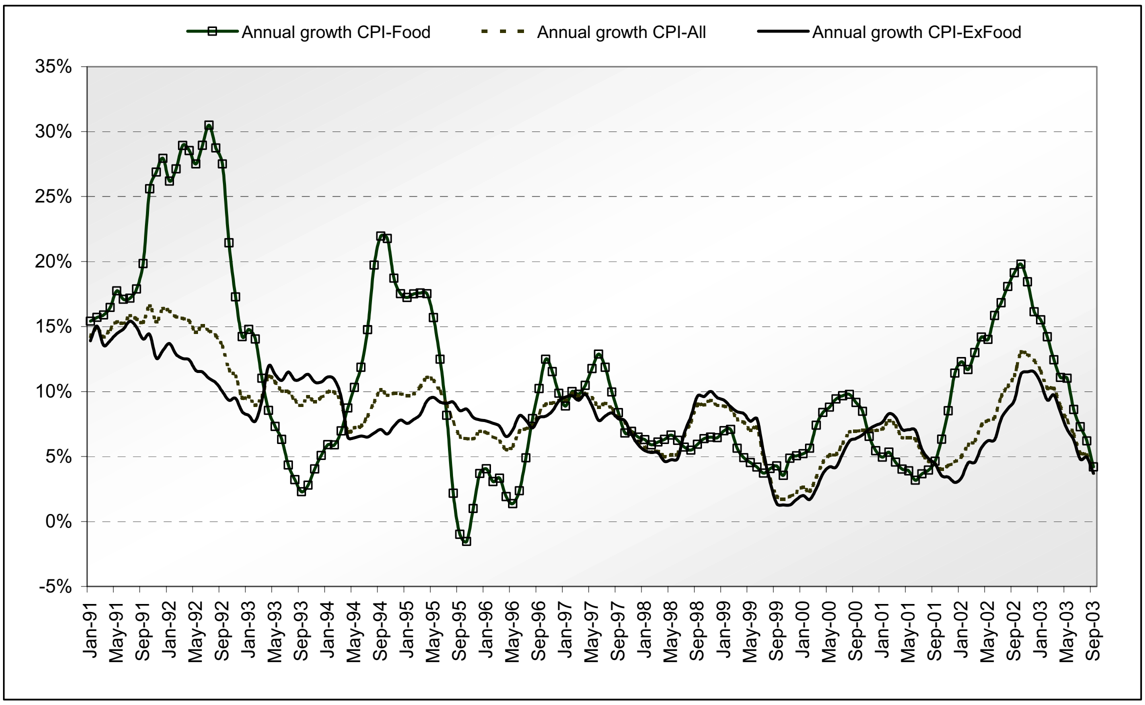

Figure 1: Change in CPI, CPI-food and CPI ex-food: Jan 1991 – Sept 2003

A disaggregation of the various CPI series in the StatsSA database shows an interesting dichotomy between food price inflation in rural and urban areas, with the CPIF generally at a higher level in rural areas, while the CPI is generally higher than in urban areas. Finally, the concern about rising food prices also relates in many ways to the impact that rising costs have on poorer households, who spend a much larger share of their monthly budget on food. The effect of food price inflation on the urban poor is illustrated in Table 2, confirming that poorer households were more severely affected by the rate of food price increases during 2002 than more affluent households.

Table 2: Year-on-year food price inflation for different income groups

	October 2002	**January 2003**	**September 2003**
Income group	%		
Very low income	23.13	17.21	3.35
Low income	22.72	16.42	3.89
Middle income	21.77	16.07	4.15
High income	20.88	15.84	4.17
Very high income	18.99	15.26	4.21

2.1 Annual retail food price movements

The Institute for Planning Research, a research Institute attached to the University of Port Elizabeth, started a longitudinal research project in April 1973 to determine the cost of basic needs of low-income households. The survey was originally conducted in eleven urban centres (later increased to 15). The cost of 18 food items (later increased to 23) formed part of the survey. The surveys were originally carried out during March/April and updated in August/September of each year, but six years ago, this was changed to an annual survey for the August/September period.

In the first section of Chapter 2 in Part 3 of the Report, the findings of the last four survey updates (2000 – 2003) were analysed in order to illustrate price trends over the crucial period of high food price inflation. These data show annual price increases of as high as 103.2% for maize meal and 53.8% for samp.

In the second section of this Chapter, the information for eleven centres is used to illustrate price trends during the period 1995 to 2003. Both analyses confirm that there is a wide variation of price movements for food products and that, while the rate of price increases has declined significantly since the middle of 2003, the general trend is still upwards at a rate higher than that of the general rate of inflation.

2.2 National average monthly retail prices: 2000 to 2003

The FPMC was able to reach an agreement with the Consumer Goods Council of South Africa through which they gained access to an independent database on retail prices managed by AC Nielsen. These data originate from retail scanner data as well as from a monthly audit of 7 000 stores across the country. The price series covers the period January 2000 up to October 2003 and provides the lowest, highest and average prices for a large range of food products. In Chapter 4 of Part 3 of the Report, the average monthly retail prices for all the products monitored by the Committee are analysed. The key commodity in the surge in food price inflation that started at the end of 2001 was maize meal. This analysis shows that, after the initial surge, maize meal prices have actually dropped since reaching their peak at the beginning of 2003. The trend is illustrated in Figure 2. Given the normal 3-4 months time lag in the milling chain, maize meal prices are expected to decrease further as a result of the large drop in the producer price of white maize.

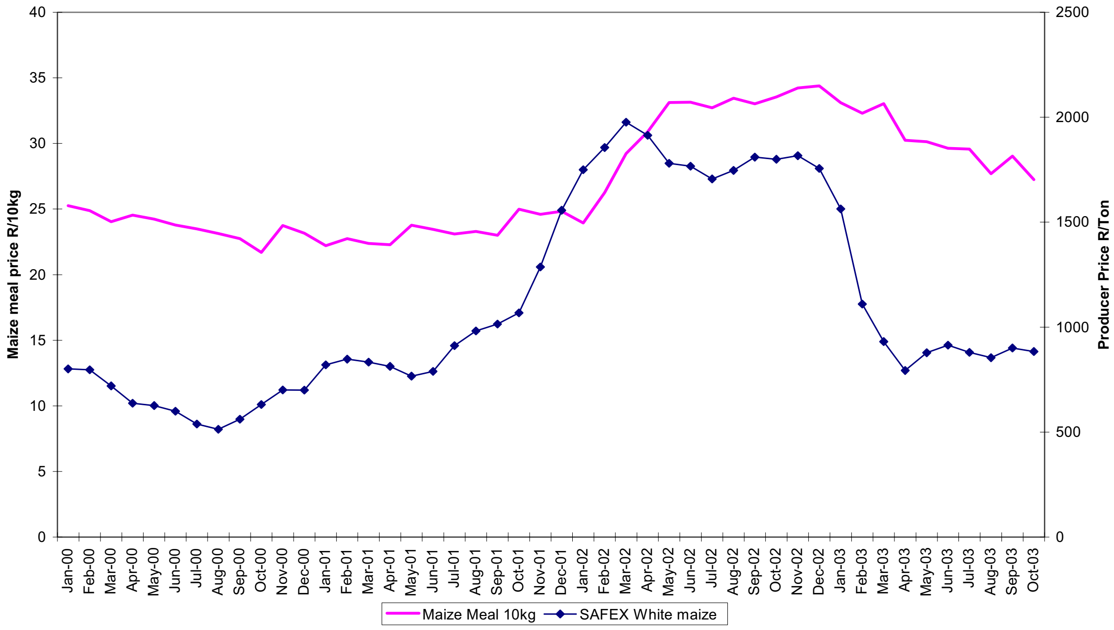

Figure 2: National average retail price for 10 kg maize meal: Jan 2000 to Oct 2003

2.3 Prices of selected food products at rural stores

The aim of Chapter 5 of Part 3 of the Report was to trace and record the mark-up as food products move from wholesalers (or sometimes supermarkets) to small shops in rural areas of the Free State, Northern Cape, KwaZulu-Natal, Eastern Cape and Limpopo Provinces. Wholesale-to-retail price spreads were determined over the period April – July 2003 for selected commodities. Prices were monitored at spaza shops in rural areas as well as at wholesalers where spaza shop owners source commodities. Most of the stores are located considerable distances away from major towns. Store owners buy stock at wholesalers and usually use their own transport.

The major objective of this exercise was to determine how and by how much rural prices differ from the price of the same product in the nearby town or city, and more particularly, whether the difference between prices in rural and urban stores reflect true transport and distribution costs and a normal profit margin.

The results clearly indicate that:

- For most processed products, prices tend to be higher at rural stores than the national average, while fresh products like milk, dry beans and potatoes, which require less processing, are cheaper at rural stores than the national average;
- In some commodities and in some provinces a decrease in prices was noted indicating that rural storeowners were passing on decreases at wholesale level to their customers;
- Mark-ups are very high but even more so in the rural areas of KwaZulu-Natal.

3. PRICE DETERMINATION ON SAFEX

Parts 4 and 5 of the Report address a core aspect of the terms of reference, namely to understand the causes of food price increases. The investigation commences with an analysis of the main trends in producer prices as well as a detailed investigation on how producer prices are determined through the SAFEX futures market. This is followed by an analysis of eight food value chains (See Section 4) with the purpose of gaining an understanding of pricing behaviour in each chain, and of the factors that contribute to movements in prices.

3.1 Investigating the agricultural futures market

The functioning of the futures market is explained in detail in Chapter 1 of Part 4 of the Report, drawing on the Vink and Kirsten (2002) report. The key aspects, namely the influence of import and export parity prices, the world price and the exchange rate, and the functioning of SAFEX are described in order to show how the farm gate pricing mechanism works. In their earlier analysis, Vink and Kirsten (2002) concluded that the domestic price of maize reacted in a predictable fashion to the change in the exchange rate and the international price of maize, to market perceptions of the relative scarcity of maize in Southern Africa, and to the food crisis in Zimbabwe at the end of 2001. According to their findings there was no evidence of price manipulation or of unfair price policies in determining the price of the basic commodity.

Nevertheless, suspicions about the functioning of the SAFEX market continued, and were amplified by a Financial Services Board investigation into alleged irregularities by a broker firm losing large sums of investor's money on the SAFEX market. In addition, the FPMC received a number of complaints regarding trader behaviour, as did the office of the Deputy Minister for Agriculture and Land Affairs. Role players in the market were therefore requested to provide the Committee with their understanding of price trends in the markets.

3.2 Summary of the 'evidence' presented to the FPMC during interviews

3.2.1 The opinion of SAFEX's CEO

The Chief Executive Officer accepts that there are gaps in the SAFEX rules for trading; for example, rough estimates of the price increasing effect of the lack of position limits (on the size of trades and their volume) range from 2% to 10%. SAFEX maintains that position limits will resolve this problem in much the same way that speed limits aim to control speeding.

The CEO believes that SAFEX prices have remained high for so long because of the predictions about the exchange rate and the reports of poor rains from GrainSA. By implication they feel that the lack of position limits did not play a substantial role. The CEO recommends that a greater investment needs to be made in the National Crop Estimates Committee (NCEC).

The CEO points out that if the State were to operate a strategic reserve on SAFEX, it would also be subject to position limits. He was not able to provide any guarantees that position limits would work effectively. SAFEX's CEO is aware of the risk that trading entities may be split up under the maximum ceilings, but would not make any commitments regarding the need for improved monitoring and reporting.

3.2.2 Large milling companies and their maize trading activities

According to traders acting on behalf of the grain millers, and according to general market gossip, millers instructed their traders to ‘buy at all costs’ during 2002 because they believed there was going to be a shortage of maize, and, consequently, they feared losing their brand-based market share. To some extent this appears to have led to a situation where large mills locked part of their overall maize grain purchases at high SAFEX prices compared to prices available to smaller millers who only entered the milling industry once prices dropped in early 2003.

Large millers aimed to save on margin costs, and therefore got involved in ‘exotic’ options (e.g. barrier options). Thus, prices may have overshot on the futures market because of what was happening on the options market. There is a lack of trader skill and expertise in using exotic options.

3.2.3 Big trader dominance during 2001/02

Several traders reported on aspects of the trading activity of one large trading house that was described as ‘the market leader’ in 2002. This particular firm was well known on the trading board and adopted a controversially large position in support of higher maize prices from May 2002 onwards, which most traders and market participants followed. The firm’s activities were supported by its ability to trade on behalf of the Joint Municipal Workers Pension Fund with backing from ABSA. The size of the position held by this firm led to a situation where it was improbable that other market participants would counter the position.

Certain trades by this firm may also have been in contravention of SAFEX trading rules, which, however, requires further independent verification and legal advice. Related to this, verbal complaints made to the SAFEX management do not appear to have been followed up effectively. It should be noted that the firm, WJ Morgan, was expelled and fined by the JSE for contravening certain trading rules in October 2003. It is not clear whether these contraventions led to an unrealistic increase in prices on the SAFEX market.

3.2.4 Supply and demand ‘fundamentals’ and the SAFEX market

During interviews, much use was made of the term ‘fundamentals’, with many traders indicating that they did not suspect foul play, rather that the market had reacted according to the ‘fundamentals’. The following demand and supply ‘fundamentals’ were identified:

Demand

- Although the domestic demand for white maize is understood by all market participants to be relatively stable from year to year. Previously it was thought that if grain prices broke above approximately R1000 per ton, consumers would switch to yellow maize. This assumption proved wrong as consumers continued to buy white maize, even though it was supplied at a higher price. Despite a substantial price differential between SAFEX yellow and white maize prices in South Africa at the time, the ‘market’ does not appear to have made yellow maize meal or blends of yellow and white available. Previous experience with blends sold by larger millers during the 1991/92 drought seems to have created the fear that supplying less than 100% white maize meal would result in a loss of brand-based market share.

- This brings the debate about the reliability of import and export parity figures into closer focus, since the tariff for white maize and most import-parity figures are calculated on the basis of a yellow maize price series reported on the Chicago Board of Trade. No similar price series exists for white maize, and market information on the international white maize market and, particularly, the premium on white maize is dominated by one company in the US, which has close ties to some trading houses based in South Africa. It is, therefore, conceivable that graphs could show SAFEX spot prices rising above the import parity price of yellow maize when there is a $20/30 premium for white maize. It is also conceivable that SAFEX prices could rise above import parity for short time-periods because of time lags in actualising import orders from distant markets.
- International trading houses estimated that demand volumes in the region were grossly overstated well before December 2002. Their suggestion is that anybody who knows anything about the process of international aid would have assumed that the actual aid demand was much lower than the volume reported by the international aid agencies. As soon as orders for regional maize began in May 2002, it became clear that the regional demand was for the cheapest maize available regardless of its colour.

Supply

- Some concerns were expressed about the uneven ability to estimate the maize crop accurately because of uneven access to information. Many of those interviewed felt that the NCEC was not investing enough to make the official estimates reliable.
- The reasons for the 1 million ton official 'underestimate' of the 2001/02 maize crop by the NCEC were not established during the interviews, and neither could the actual impact on prices be ascertained when the news of a revised crop size became available via SAGIS in August/October 2002[3].
- Crop estimates in the region are less reliable than crop estimates in South Africa.
- Traders involved in supplying to the region appeared to be more aware of the extent to which regional demand was being filled by overseas imports well before December 2002. Despite this information being freely available in May 2002, it was not widely communicated in the South African press. Some large imports also went unnoticed by those not involved in the monitoring activity at South African and regional ports.
- Some traders argued that imports of genetically modified white maize were not possible in early 2003. However, this is not borne out by SAGIS information or by the records of GMO permits granted during February 2002.

3.3 Potential problems regarding price formation on SAFEX

In interpreting this evidence, the Committee was of the opinion that the SAFEX maize price formation system could, in the abstract, lead to the following problems:

- SAFEX could potentially exaggerate price fluctuations (and prices could thus overshoot);
- In an environment where a credible and reliable public information service on the weather as well as on maize supply and demand does not exist, it is possible that

[3] The NCEC admitted to its error in 2003 as follows: "The committee (NCEC) last week acknowledged it had underestimated last season's maize crop by 1-million tonnes. The size of the crop for the 2001-02 season was 9,7-million tonnes compared to the Committee's prediction of 8,7-million tonnes." http://www.businessday.co.za/bday/content/direct/1,3523,1326874-6079-0,00.html

market participants exaggerate prices in a certain direction by releasing biased or misleading information, or by ignoring or underemphasizing information;

- Regardless of whether there is a credible and reliable public information service, there may still be serious information asymmetries between large market participants involved in input supply and grain trading, and others who are not in a position to collect detailed information from their maize producing clients or to influence their hedging behaviour through loan repayment conditions;
- In an environment where there are no restrictions on the size of trading positions, it may be possible for larger traders to 'corner' the SAFEX market through their access to pension funds and overseas hedge funds, etc.;
- In an environment where SAFEX does not spend sufficient resources on monitoring and enforcing its rules, trading professional or their clients could exaggerate prices by flouting SAFEX rules;
- SAFEX maize futures and options may contribute to financial and currency market volatility;
- Equitable participation on the SAFEX market could be problematic, as it could create barriers to entry for small-scale producers or millers of maize, thereby promoting concentration of ownership in the medium to long-term;
- In an environment where activities on the SAFEX market are not properly monitored and some self regulation is not implemented, and where, in addition, the normal surveillance procedures of the JSE are not implemented, problems could occur related to fair adjudication when a member of SAFEX lodges a complaint against another member; and
- SAFEX prices may give a misleading picture of actual average maize grain prices because of the existence of forward contracts entered into between larger farmers and millers.

3.4 Debating possible recommendations

The Committee discussed a number of options to improve the functioning of the market with traders, and addresses these in the final part of this Report. The main issues addressed include:

3.4.1 Strategic grain reserves

Some traders were in favour of a 'virtual' strategic grain reserve, as it would increase their turnover and profitability as trading houses. Several traders, however, expressed concern whether a virtual grain reserve would have a meaningful impact on SAFEX prices because of position limits. The Committee is of the opinion that, in light of the concerns about the costs of implementing a physical strategic grain reserve and the difficulties of administering it, it may be more strategic to introduce a limit on the volume of maize held in storage by any one party. This option, however, would have to be accompanied by strict reporting requirements.

3.4.2 Changing SAFEX rules

There was consensus on the need for SAFEX to introduce position limits. However, there appeared to be less comfort with SAFEX's ability/willingness to monitor its own rules at a decentralised level. There may also be a need for an independent body such as the JSE surveillance unit to monitor SAFEX traders more actively and to create a mechanism to provide for independent adjudication of complaints.

3.4.3 Improving information and access to information

There are several areas where improvements in information may result in less volatility on SAFEX:

- Some proposals, such as the timeous reporting of import and export orders, are already being implemented by SAGIS. Others related to the weather and rainfall patterns have not been addressed yet. For example, one way of preventing weather predictions from unduly influencing prices in the future would be to improve official reporting of **actual** rainfall in the grain producing areas. It is also important to ensure that weather reports specifically tailored to maize production are produced independently and are subject to greater scrutiny and technical criticism from a range of experts who are not funded by Maize Trust money. At present there is no reliable system to adjust rainfall predictions based on actual rainfall and soil moisture information;
- Given the confusion over who actually **owns** maize in storage, it is also necessary to require SAGIS to report information at a much more disaggregated level than it does at present; and
- As part of the PPI and CPI basket of prices, accurate millers' raw material costs (as opposed to wholesale maize-meal prices) and final retail/wholesale selling prices should also be collected and disseminated by StatsSA.

3.4.4 Expanding demand side support

Several traders were in favour of Government introducing a system of food stamps as a way to address high food prices by subsidising 'the poor'.

3.5 Concluding remarks

Although this investigation has highlighted some specific trader behaviour that potentially could have caused SAFEX prices to overshoot, it was not possible, and it is unlikely that it ever will be possible, to link specific price movements to specific actions by individual players in the market. The Committee is, however, satisfied that the new rules adopted by the JSE in response to broader social concerns and in response to the Committee's attention and that of the FSB will help to diminish the risk that the market could be cornered. The fines and suspension issued by the JSE and the FSB investigation are an indication that they are serious to deal with potentially opportunistic behaviour by traders which could result in 'unjust' price increases. Nevertheless, despite these reported irregularities, the Committee is of the opinion that lack of proper market information played a central role in creating a situation where manipulation was made possible. The Committee is satisfied that there is enough evidence that much of the producer price trends accurately reflected the market fundamentals, which suggests that manipulation had a minimal effect on broader price trends. The Committee is also satisfied that the necessary regulations are now in place to prevent the abuse of the futures market which might ultimately be to the detriment of society.

4. ANALYSIS OF SELECTED FOOD VALUE CHAINS

An in-depth analysis was completed for each of eight separate supply chains (maize-maize meal; wheat-bread; sunflower seed-cooking oil; sugar; red meat; milk; dried beans; and potatoes), incorporating a) a structure/conduct analysis; b) the analysis of farm-to-retail-price spreads; and c) an investigation of price transmission mechanisms and the role of market power.

4.1 Maize to maize meal

There have been many questions around who makes the 'super profits' in the maize value chain in the period since the end of 2001. In terms of value, maize is the single largest agricultural commodity in South Africa, and maize meal being a staple food, maize has high trading volumes.

Although many independent sources report on the level of concentration in the industry, no figures could be quoted to indicate this level of concentration. It is furthermore also difficult to determine exactly at what stage in the value chain the level of concentration influences the pricing of the final product. It was however determined that the maize milling industry exhibits the typical characteristics of an oligopolistic structure where monopolistic competition based on brands and market segmentation exists, which does have an impact on the retail price.

Calculation of the miller-to-retail margin has shown that profits, as well as some losses, were realised during the period under review. However, the results also suggest that fundamentals in the maize market will force the market to fluctuate around an equilibrium, which is established by demand and supply forces. It is not easy to determine how fast the market returns to equilibrium after an upward or downward shock in prices. A certain degree of "downward stickiness" in the retail price of maize meal during 2003 was identified while millers, interestingly, did increase the price of maize meal almost immediately and sharply followed the increases in maize producer prices in December 2001. The normal time lag of 4 months was, therefore, not observed in the upward phase. At the same time, since April 2003, the time lag effect of producer price trends was clearly noticeable in the downward trend in retail prices. Hence, it can be argued that some level of concentration might exist in the processing and retailing sector of the maize industry that could move the market in a certain direction for a period of time before market forces kick in and self-correct. Whether this structure must be seen as operating to the detriment of consumers' welfare is a point of contention. Yet, it is not absolutely clear that they have profiteered by means of inducing sharp increases in the price of maize meal during the period under review.

The calculations in this Report show that normal to low, but stable, profits are made in the maize-to-maize meal supply chain. The Committee is confident that no profiteering on these basic foodstuffs has occurred, as is evidenced by the fact that the retail price of maize meal has adjusted downwards, albeit after a considerable time lag.

However, subsequent analysis has shown three main trends in real wholesale-to-retail margins (*defined as the difference between the retail price of maize meal and the price at which millers purchase maize, after accounting for extraction rates and the value of by-products produced in the milling process*). The first analysis of a 'long-term' trend over the period 1976 – 2003 shows that the real margin has increased. The second trend (1991 – 2003) is stable and slightly negative. The third analysis for the immediate past (2000 – 2003) shows that real margins calculated on a monthly basis have increased. More detail analysis showed that during the period of exchange rate deprecation the real margins as defined above increased from R1 190 per ton of maize meal in June 2001 to R1805 per ton in March 2002. Since then real margins dropped to R1124 in April 2003 as millers absorbed most of the costs of expensive white maize bought in the previous 6 months. But when maize prices plummeted during early 2003 real margins increased to a high of R1733 per ton in July 2003. Since then margins declined and have stabilised around the R1500/ton mark.

The Committee is therefore, concerned about the level of competition and the oligopolistic structure of the maize meal industry. It is therefore important to maintain competition in the industry, especially from small-scale millers, as a means of countering the market power of the larger millers. Proposed measures such as the regulations on food fortification could, however, put many small-scale millers out of business and thus contrary to this objective.

4.2 Wheat to bread

The analysis of the wheat to bread chain raised the issue of the relative price of white vs. brown bread. Because of the different extraction rates, it costs less to produce a loaf of brown bread than it does to produce a loaf of white bread, a difference of approximately 13.66 c/loaf. Because it is cheaper to produce brown bread, and because brown bread is zero-rated for purposes of VAT, the retail price of brown bread should be lower, by at least 14%, which is, in fact, the case. The data clearly indicate, however, that this ‘gap’ between the two retail prices is getting smaller, from 22% in February 2000 to 10% in July 2003. At the same time the profit margin on brown bread has increased at a much faster rate than that of white bread, hence there is evidence that someone in the supply chain is pushing up the price of brown bread at a rate faster than that of white bread.

Although it was not possible to establish the profit margins at the various stages of the supply chain, it is clear from the Committee’s analysis that the profit shared from miller to retailer has increased over the past three years. This largely explained by the continuous increase in retail prices. Considering various confidential pieces of information, it is possible that a large share of the miller to retail margin goes to the retailer.

4.3 Red meat

The Committee came to the following conclusions in its analysis of the red meat supply chain:

- It is ironic that red meat reached the end of its last price cycle (which normally lasts from 6 to 7 years) at the end of 2002, to coincide with the high grain prices of that time. In this regard, 2002 was in all probability the end of the last true price cycle, i.e. real producer prices reached a cyclical high and hence real prices are expected to decline over the next couple of years before increasing to reach a high again in 2009.
- While the analysis showed a large degree of concentration in the feedlot industry, issues related to economies of scale and the biological nature of the production system make it difficult to manipulate market prices for beef. This is underpinned by the fact that feedlots in most cases experienced large losses in 2002, i.e. they were not able to cascade input cost pressures down to downstream role players.
- An analysis of the producer-retail price spread used a block test to estimate wholesale and retail prices, which were then compared with actual retail prices. This analysis showed that the producer and the retail price tended to move in tandem, although there was some downward stickiness in retail prices.

In summary, the Committee was satisfied that there was no evidence of price manipulation in the red meat supply chain.

4.4 The dairy supply chain

The study of the dairy supply chain clearly shows the dominant bargaining power of dairy companies buying from farmers. The fact that twelve factors, in varying combinations, are included in raw milk payment systems is indicative of the fact that raw milk producers are price takers. They are also more numerous (although declining) than milk buyers and milk processors and have no alternative markets. On the farmers' input side the power of suppliers is also dictating as the farmers are to a lesser or larger degree, continuously caught in a price-cost squeeze.

Rivalry amongst milk processors, between processors and retail buyers, and amongst retailers is high. However, milk processors and retailers operate in an oligopolistic market, meaning there are a few buyers and suppliers and, consequently, they can influence (negotiate) price levels. The net effect of this situation is that, in general, farmers and small retailers have to accept the prices they are offered. Usually the raw milk and list price of small to medium sized retailers price is a derivative of prices negotiated by processors and retailers. Processors and/or retailers are in a position to pass the effect of price increases on to the consumers. This entails that price formation in the latter two cases is on a cost plus basis. To explain: During periods of raw milk shortages and subsequent producer price increases, retail prices increase. During periods of raw milk price contraction, however, a ratchet effect operates in the retail market indicating a reluctance to follow the downward trend. Processors strong in the export market purport that the US$/Rand exchange rate plays a dominant role in raw milk pricing. Retail price increase of, for instance, UHT milk and cheese are exponential, while in the raw milk market it is not the case. This is characteristic of an oligopolistic market. It is also apparent that dairy processors succeed in transmitting at least some cost increases to retailers.

From the analysis of the dairy supply chain it has been deducted that the structure of the dairy supply chain is such that processors and retailers operating in an oligopoly situation can retain more of the increase in added value. The opposite is also true, namely when volume shrinks they are in a position to sustain their net income position from dairy products or at least protect their position more successfully.

The analysis of price trends and profit margins in the dairy industry show continuous increases in retail prices of all dairy products while producer prices for raw milk started to decline in recent months. At the same time the Committee found that the manufacturer-retail margin remained healthy and growing during the period under review. The analysis of the manufacturer-to-retail margin for cheapest UHT milk show some alarming trends. After accounting for all factory costs and extraction rates it was estimated that the margin between the factory gate and the end consumer has increased from 213,6 cents per litre in March 2003 to 303.8cents in October 2003 – a 142% increase in 7 months.

4.5 Sunflower seed to cooking oil

The key findings in this analysis are that:

- Only 65% of the local crushing capacity for sunflower oil in South Africa is being utilised at present;

- Local crushers have to compete in the international market, where crude oil is traded in high volumes, hence they have little pricing power;
- Most importantly, statistical tests show that retail prices of sunflower oil have been as flexible downwards as upwards in responding to shifts in raw material costs.

For these reasons, the Committee is confident that healthy competition exists between domestic producers and processors in the sunflower seed to cooking oil supply chain.

4.6 Sugar

Under the current regulatory regime, the domestic sugar price in South Africa can move as high as import parity. Because the South African Sugar Association (SASA) is able to practise price discrimination, sugar millers are protected behind a high tariff wall. Moreover, there is a local market proceeds-sharing agreement, which implies that millers would lose national market share to imports if they tried to raise the net miller selling sugar price above import parity. These mechanisms provide stability in terms of local market proceeds for growers and millers, and a regulated 'base' level from which the nominal domestic retail price of sugar is ultimately derived.

The main reason for recent retail price increases seems to be an increase in both the nominal and the real value of the transport, handling, wholesale and retail spread (the link from the point of final despatch of refined sugar from the millers to the customer), with the main cost drivers probably being rising transport and labour costs. It is not clear what, precisely, is driving these increases.

4.7 Potatoes

Two major shifts in the production and processing of potatoes will have a significant impact on the potato industry in the future. The first is the continuation of the shift from dry land production towards irrigation. Because over and under production during good and poor seasons will be eliminated, this will ensure a more constant supply and, therefore, greater price stability within the sector.

The second shift is the continuation of the present increase in production of processed potatoes at the cost of fresh potatoes. As their per capita income increases, consumers tend to prefer processed food. The movement towards processed potatoes might enable more producers to enter into forward contracts with processors. An increase in the number of contract farmers and irrigation cultivation will ensure a much more stable industry with less supply and price volatility than in the past.

The analysis of price trends in the potato industry indicates that the major price determinant is the normal supply and demand forces as expected in a marketing system that is relatively free of government intervention. Exogenous factors such as export prices or imports do not play a major role, nor does the exchange rate have any significant impact on potato prices at farm gate level and at the fresh produce markets. Thus, the steep increase in potato prices during the second half of 2002 was mainly due to an under supply of potatoes on the fresh produce markets during that period. It seems however, that processing costs and other factors contributed towards the increase in output prices in the processing industry. Information obtained thus far is not sufficient, however, to determine the variables that influenced the increase in producer prices for processed potatoes.

4.8 Dry beans

During 2002, when South Africa experienced large increases in the prices of most agricultural commodities, dry bean prices also showed an upward trend. However, this increase started well in advance of the general increase in agricultural product prices. The main reason for this is that farmers tend to substitute areas cultivated with dry beans for maize, i.e. an increase in the area planted with maize translates, on average, in lower plantings of dry beans, which in turn leads to lower supply of dry beans and hence to an upward pressure on prices. Thus, there was an entirely predictable surge in dry bean producer prices at the end of 2002 when farmers were reacting to the high maize prices, and bean prices had reached their seasonal peak in December.

5. INVESTIGATING OTHER ASPECTS OF THE FOOD CHAIN

Part 5 of the Report continues with issues related to the core aspect of the terms of reference, namely to understand the causes of food price increases. The Chapter 1 considers the influence of price increases of farm requisites, while Chapter 2 considers the role played by other exogenous factors in the cost of basic food, including transport costs and the perceived collusive behaviour of silo owners. The Committee was also of the opinion that certain practices and behaviour related to the relationships between food manufacturers and retail stores could potentially have led to extra costs for the consumer. This aspect is investigated in Chapter 3, while in Chapter 4 aspects are considered related to market structure and market power and how these influence the transmission of prices through the value chain.

5.1 Trends in agricultural input prices

It is often argued that rising farm input costs might be contributing to higher food prices. Strictly speaking, this is only possible if farmers can pass on cost increases to the next level in the supply chain, which they cannot do because they are price takers (it is only possible under contract farming arrangements). However, rising production costs affect farmers' decisions to plant or to invest in a particular farming activity. In other words, if the marginal cost of production increases above marginal revenue, farmers may decide to pull out of a particular industry, thereby reducing the domestic supply, which, in turn, will lead to higher prices.

Although production costs did increase during the second half of 2002 because of the weakening in the exchange rate, nevertheless, there is no evidence to suggest that the level of farm production costs influenced the 2002 food price crisis. When the exchange rate appreciated during late 2002 and 2003, farmers began to complain that the benefits of the appreciating exchange rate had not been passed on to them. Various farmer lobby groups then requested the FPMC to, also, monitor the prices of farm inputs, an aspect which the Committee then added to its terms of reference.

5.1.1 Fertiliser prices

The South African fertilizer market is relatively small in global terms. It has remained at roughly the same size for the last 20 years, and is not expected to grow significantly in the medium term. These factors, plus the high cost of capital, have already resulted in significant production capacity being permanently shut down over the past few years. These closures have resulted in new demands on the distribution infrastructure of the country of a particularly seasonal nature. The fertiliser market is considered to be highly competitive but at the same time concentrated.

The market is also characterised by ad-hoc imports of standard commodities by independent players. This is possible since no import duties or tariffs are levied on fertiliser products.

Given the potential of fertiliser imports, price levels are influenced by the landed price of international fertiliser commodities. This is mainly determined by the following: international 'free on board' (FOB) price, which is usually volatile; freight to a South African port (where maritime freight rates have increased dramatically over the last year); the exchange rate; and distribution costs from the port to the market within South Africa.

Fertiliser prices are generally determined through negotiation with the end user, thus list prices are more of an internal guideline than a reflection of actual selling prices, which are determined by factors such as competitive conditions in the market, the volume purchased and the level of value-added services used by the customer. The list prices also vary for different geographic areas and the sales mix differs from year to year and from season to season depending on agricultural conditions, with the sales mix influencing the 'average' list price.

Foskor is currently the sole supplier of phosphate rock, a key raw material for the production of phosphate fertilisers. In order to enhance low-cost production of fertilisers, a unique pricing formula is used which allows the local industry to purchase phosphate rock at about 30% below import cost levels.

5.1.2 Seed prices

At the request of the Committee, several seed suppliers provided information on seed price increases over the past few years. Most seed companies increased their prices in response to the changes in the exchange rate but also as a result of increased demand during the 2002 season.

5.1.3 Animal feed prices

Feed costs play an important role in the total input costs of the livestock sector. In the broiler and layer industries, for instance, the costs of feed constitute over 60% of total input costs. This section analyses the recent trends in the costs of feed and will determine how closely the trends in feed costs have traced the trends in the prices of grains and oilseeds over the past three years. The Animal Feed Manufacturing Association (AFMA) provided data on the costs of feed and the inclusion rates of the various grains and oilcakes in specific feed rations. AFMA members produce 97% of the total broiler feed in South Africa, 89% of all layer feed, 47% of all dairy feed, 39% of all pig feed, and 25% of all beef and sheep feed.

Yellow maize constitutes well over 50% of the total volume of feed produced, while oilcakes make up around 20% of the volume. There is, therefore, an expectation that feed costs should track changes in the prices of maize and of oilseeds. However, the analyses show that the prices of animal feeds have not responded to lower grain and oilseed prices. In the case of broiler mash, pig meal and cattle finisher, prices have even increased over the past year despite the fact that the average prices of yellow maize, sunflower oilcake and soybean oilcake have decreased by 33%, 16% and 17% respectively.

5.1.4 Packaging costs

The South African packaging industry grew by 3.2% during 2002 to a volume of 2.4 million tonnes, while the value of output increased by 14.1% to an estimated R21.2bn. Growth was primarily attributed to the positive performance of exports during 2002, particularly in the fruit and wine markets. The data show that packaging costs have increased for four products selected for analysis by the Committee (a 10kg bag of maize meal increased by 60% from the 2000/01 average; a 1kg bag of rice increased by 41% in the same period; while the packaging costs of 750ml of cooking oil and 1 litre sachets of milk increased by 31% and 39% respectively).

5.2 The effect of exchange rate volatility on input prices.

There are two main arguments to explain the sources of changes in the prices of agricultural commodities. The macroeconomic argument considers the exchange rate volatility as one of the major determinants of change in commodity prices, while the microeconomic argument takes large demand and supply mismatches and weather unpredictability as the main causes of volatility. The South African experience of the past few years lends credence to the macroeconomic argument, hence the Committee analysed the likely impact of the exchange rate volatility on input prices in the agricultural sector. To achieve this, trends in the prices of selected agricultural inputs that incorporate imported components in their cost of production, such as fertiliser, agricultural chemicals, and tractors, were analysed in relation to the exchange rate.

The results show that the prices of fertiliser, agricultural chemicals, and tractors have increased over the past decade, and that the rate of increase accelerated after the collapse in the value of the Rand at the end of 2001. Econometric tests confirm that this accelerating price trend was caused by the increased volatility in the exchange rate rather than by other factors.

5.3 The behaviour of silo owners

The owners of grain silos (generally co-operatives and other agribusinesses) have been accused of trying to influence the market price for agricultural commodities through hoarding.

According to the Grain Silo Industry (2002), the total grain silo storage capacity in South Africa is estimated at 17.5 million tonnes, comprising of 14.5 million tonnes in the northern provinces, 970 000 tonnes in the south and 2.1 million tonnes in the harbours and with private owners. There does exist a fair amount of concentration, with three silo owners owning 70.3% of all the domestic storage facilities.

These silo owners keep four different types of grain in their facilities: farmer's stocks; grain pools; back-to-back contracts; and hedge stocks:

- In the case of **farmer's stock**, the producer is the owner of the grain (e.g. maize). When the farmer delivers the maize, the silo owner does not know whether the maize has been sold or not since the sale of the grain takes place by means of a 'silo certificate'. When the maize is delivered to the silo, a silo certificate is issued and the producer can decide when to sell this certificate. The producer is exposed to the price risk and can hedge against this risk. The silo owner merely supplies the services of storage and handling at a specific cost per month. The delivery (i.e. movement out of the silo bin) of the physical stock of grain to a trader will only take place through an instruction from the owner of the silo certificate.

- **Grain pools** arise when a group of producers deliver their maize in a pool. A silo-owner can be appointed by the group of producers to administer the pool and provides services in terms of handling and storage, and, possibly, even to market the maize. The stock belongs to the producers participating in this pool. The pool is exposed to price risk and, therefore, has to hedge itself. All price risks and hedging costs are for the account of the specific pool.

- **Grain stocks related to 'back-to-back contracts'.** In this case the silo owner acts as the agent of the buyer of maize (usually millers/processors) and purchases the maize from the producer. The buyer determines the price and quality of the grain. The stock belongs to the buyer (the milling company/processor and NOT the silo-owner). The buyer will also determine where/when this stock will be utilized. After the maize has been purchased the silo owner acts as the supplier of storage and handling services.

- **Hedged stock** arises when the silo owner purchases maize from the producer. The silo owner is now exposed to price risk, which can/will be hedged on the futures market. As soon as this has been done, the silo owner is no longer exposed to price fluctuations.

The silo owner only has control over this latter category of grains. The Committee estimated that these 'hedged stocks' make up at most 3% of the total amount of all grains stored in silos in South Africa over the past three years, thus making it impossible for silo owners to influence the market.

5.4 Transport costs and food prices

Recent studies have shown that retail and transport margins have the largest impact on food prices in South Africa. There is also a view that South African transport policy, as currently implemented, is eroding the competitiveness of South African goods. The problem with transport costs seems to arise from a number of factors:

- The high maximum gross vehicle mass allowed: at above 55 tonnes, this is unusually high by international standards;
- The greater flexibility of road transport, and the economies of scale present when trucks are heavily loaded;
- Poor inspection by road traffic inspectors has resulted in systematic overloading by heavy vehicle users at the expense of other road users;
- Poor service delivery by Spoornet as a result of its ageing fleet;
- Increased prices by Spoornet to maintain its old fleet resulting in an increase of transport costs;
- The State's failure to recover the costs that heavy vehicles impose on the road system, with the result that lighter vehicles are cross-subsidising heavy vehicles.

The Committee believes that there is a need to recapitalise Spoornet. More importantly, there is a need to change legislation in order to remove the bias in favour of road transporters; and to change the macroeconomic policy to allow for direct subsidisation of Spoornet to enable it to keep rural transport networks alive. Also, the State has a responsibility to also ensure that food is accessible to all and that there is mobility to reach out to the poorest groups in society in times of food insecurity. Investment in rail transport will reduce the cost of transport, thus leading to more affordable food prices while revitalising rural networks; in doing so it will foster local economic development.

5.5 Relationships between food manufacturers and retailers

Following interviews with retailers and food manufacturers the Committee gained the impression (rightly or wrongly) that there are several practices within the supplier-retailer relationship that have the potential to contribute to inefficiencies and extra costs to the consumer, thus making food more expensive. These include:

- Confidential rebates;
- Returns on no sales and in-store breakage and losses;
- Poor management of the cold chain for perishables (temperature regulation in delivery areas, shelves, fridges);
- Poor management and care of supplier packaging material (such as crates) and thus losses to suppliers;
- Long periods before payment;
- Price being the only issue in the relationship – no quality, collaboration in product development and other soft issues are considered which could be important in establishing long term and sustainable supplier-retailer relationships.

Since suppliers usually factor such costs into their selling prices, it was hypothesised that these factors could well increase the costs of food. Submissions from various food manufacturers were requested by the Committee with the aim of developing a notion of how improved relationships and greater efficiency, and reduced losses and wastage could benefit consumers, suppliers, retailers and the South African economy as a whole. Manufacturers/suppliers were also invited to provide the Committee with their vision of the ideal and most beneficial supplier-retailer relationship.

Few manufacturers could provide an indication of how much would be saved if the factors listed above were not present in current transactions, although there was some agreement that there were potential cost savings.

From the many responses that were received from food manufacturers a clear dichotomy emerged. Relationships between the major food companies and the large chain stores have matured; they co-operate to achieve an efficient supply chain management, or effective consumer response. Negotiations are tough, still, but the relationships have matured. Smaller suppliers have a different view, however, with many complaining heavily about the practices of the retailers. Many of these smaller suppliers sent anonymous submissions to the Committee fearing ‘de-listing’ or ‘blacklisting’. This phenomenon clearly illustrates a relationship that is not build on partnership but on antagonism.

The Committee believes that such practices by retailers act as an entry barrier for smaller suppliers, and could result in a greater concentration in the food manufacturing and retail sector, which might become a serious concern for consumers and the State. This could well act against the Government's objectives of promoting small-scale business as well as obstruct achieving Black Economic Empowerment.

5.6 Market structure, asymmetry and price transmission in the food chains

Price is the primary mechanism through which various levels of the market are linked. The extent of adjustment and speed with which shocks are transmitted among producer, wholesale, and retail market prices is an important factor reflecting the actions of market participants at different levels. The transmission of changes in producer price to changes in consumer price depends greatly on the type of product. Products that are perishable and undergo minimal processing such as vegetables, fruit, and fresh milk are expected to have a relatively quick price transmission mechanism. This is particularly noticeable for commodities such as maize, wheat and sunflower seed that can be stored relatively easily and are traded on the futures market, so that processors can hedge against large price fluctuations. It is largely due to storability and hedging strategies that various time lags exist between changes in commodity prices and consumer prices.

In assessing food prices in the South African economy, the Committee conducted various econometric tests on aspects such as the lag structure of prices, price volatility, and price transmission. The following main conclusions are drawn from this analysis:

- The correlation between maize and maize meal prices, and of wheat and bread prices, is the highest when the SAFEX price is lagged 4 months. The correlation between sunflower seed and cooking oil prices is the highest when sunflower seed prices are lagged 3 months, i.e. it takes 4 months for a sudden change in the commodity price to be reflected in the price of the final product.

- An analysis of the prices of a wide range of foods shows that there has been an increase in the volatility of prices since the latter part of 1999. The volatility since 2001 can largely be explained by the volatility in the exchange rate.

- There is considerable econometric evidence of asymmetries in food prices resulting in a more rapid and a fuller transmission of price increases than of price declines. This happens because firms will react faster to decreases in profit margins than to increases. This is largely so because of the presence of search costs in locally imperfect markets, and because retailers (and manufacturers) have market power. The empirical tests conducted by the Committee confirm that price increases are more readily and more rapidly transmitted to the retail prices than price reductions.

6. MONITORING THE SADC FOOD SECURITY SITUATION

Point 6 of the terms of reference charged the Committee with the responsibility "To monitor the regional SADC food situation". In this regard, the Committee focused on the food security situation in SADC with respect to maize, sorghum and wheat. Data collection and analysis of the selected products were carried out for each of the SADC countries (excluding DRC and Seychelles) within three time-frames: trends over the last 3 years, the current situation and future estimates.

After a serious food crisis in 2001/02, the food supply situation in southern Africa eased somewhat, with harvests in 2002/03 being above the average for the period 1997/98 to 2001/02, with maize showing a 10% increase in volume produced. As a result, the regional maize deficit in 2003/04 is expected to be in the order of 1.1 million MT, compared to the 3.5 million MT deficit of 2002/03. Nevertheless, prevailing drought conditions in large parts of SADC remain a cause for concern.

According to the latest SADC Regional Early Warning Unit (REWU) cereal balance sheets, the 2003/04 cereal predictions are:

- Production (gross harvest): 22.934 million tonnes.
- Consumption (gross domestic requirements): 27.269 million tonnes.
- Total commercial imports: 3.477 million tonnes.
- Total food aid imports: 0.334 million tonnes.

Furthermore, the latest maize balance sheets show the following predictions for the 2003/04 maize season:

- Production (gross harvest): 18.4 million tonnes (increase from 16.265 million tonnes in 2002/03)
- Consumption (gross domestic requirements): 19.2 million tonnes (increase from 18.864 million tonnes in 2002/03).
- Total commercial imports: 1.2 million tonnes. (decrease from 2.579 million tonnes in 2002/03).
- Total food aid imports: 0.2 million tonnes. (decrease from 0.856 million tonnes in 2002/03).

Within the countries of the SADC region there are various levels of food emergencies. The countries with no food emergencies are Mauritius, Namibia and South Africa; those with some food supply problems are Botswana, Malawi and Zambia, while Angola, DRC, Lesotho, Mozambique, Swaziland, Tanzania and Zimbabwe are considered to have serious food supply problems.

In Part 6 of the Report a comprehensive list of resources is discussed where information could be obtained on the SADC food situation. It is important that this information is updated regularly in order to carefully monitor the SADC food supply and demand situation. It is important to note that extensive information is available on the subject, and that coordination with other institutions working on SADC food security will prove to be a valuable approach.

7. DEALING WITH HIGH FOOD PRICES

7.1 Strategic grain reserves

The Committee debated a number of issues regarding the establishment of a strategic grain reserve, which are set out in Chapter 2 of Part 7 of the Report. These include:

- The composition of the reserve: Should the Government hold physical grain or rather a cash or ‘virtual’ reserve?

- The size of the reserve, bearing in mind that storing maize and other grains is expensive.
- The costs and financing of the reserve: Establishing and maintaining a reserve is a costly exercise and needs to be determined with great care. A grain reserve is likely to be a continued cost burden to the State.

Given the international experience with (physical) strategic grain reserves, the maturity and openness of the South African economy, and especially the agro-food system, it is unlikely that setting up a grain reserve outweighs the stabilising effect of international trade in South Africa. The country has sufficient foreign exchange reserves, a sound financial system and a strong private sector, and can therefore rely on world markets to perform the storage duty if ever such reserve stocks were required.

However, given the strategic importance of white maize and the fact that limited quantities (not always of the desired quality) are traded internationally, there is potentially a justification for strategic grain reserves in the event that the country is hit by a devastating drought such as those of the early 1990s and 1982-83, when virtually the entire crop was wiped out. Yet the probability of such droughts has been estimated as occurring once every 10 years, which makes it difficult to justify the expense, and even more difficult to decide on the size and cost of the reserve. In addition, milling companies generally keep 4 months of stock, which is de facto, the equivalent of the size of a typical grain reserve.

According to the literature, grain reserves are typically established to counter food shortages and to stabilise prices, and not often to lower consumer prices. Given that stability of prices at retail level is the ultimate objective of a grain reserve, the Committee deemed it necessary to determine the extent of price instability. The Committee, through its monitoring duties, has established that retail prices are relatively stable (despite the sharp increase during 2002). These prices are more stable than commodity prices, which indicates that food manufacturers and retailers take a lot of volatility out of the system.

Nevertheless, sharp increases in prices of staple foods remain a concern. In the view of the Committee there remains the possibility for Government to use structured portfolios to hedge the inflationary risk of the price of raw materials, which they could use for relief programmes. Such a structured portfolio (or simple hedge position) could potentially generate profits that could also be used in government food programmes. The management of such a portfolio requires specific skills, however, and presents a number of potential dangers related to insider trading, etc. Thus, the implementation of such a proposal will require considerable preparation and will present relative large risks to Government.

It is the contention of the Committee that a strategic grain reserve (virtual or physical) will not be the best route to provide relief for the poorest households. More direct interventions, such as discussed in Part 7, Chapter 3, might be a better option to ensure affordable food for communities.

7.2 Options for direct government action

Food price increases have a devastating impact on the poor and affect their 'right to food' which 'entails an obligation of the State to respect, protect and fulfil the access to adequate food of all its people at all times'.

In this context, Government has a duty to act. This duty is further emphasised by the existence of mass poverty and unemployment in the country. In the spirit of building a strong and productive population and of fostering social cohesion, a reduction of crime, and encouragement of investment, it is important for Government to act and to ensure that all households do have access to food.

While a number of programmes are already in place to assist food insecure households, the Committee debated whether these and other potential measures were sufficient, or could be operated in a more efficient manner to ensure that the poorest people are protected from hunger. Examples of programmes discussed include:

- Price controls and rationing to ensure that sufficient quantities of staple foods are available at a reasonable cost. The Committee is aware that in the past most interventions of this nature collapsed when the subsidies were withdrawn, and that they were not necessarily successful in ensuring food security for the poor;
- Providing food to the needy through various means e.g. food for work, school feeding schemes, food parcels, and agricultural starter packs;
- Provision of social welfare grants to needy families; and
- Establishment of a comprehensive social security system e.g. food stamps, income grants, etc.

On the supply side the following programmes could address food security problems:

- Increase of the availability of land and other farming inputs such as water, fertiliser to small and emerging farmers. Improved agricultural support and agricultural research systems could also enhance agricultural output;
- Reinvestment in agriculture on a massive scale, i.e. investing in technology, irrigation infrastructure, human capacity and improved storage systems to reduce post harvest losses;
- Elimination of violent conflict and political instability in the Southern African region;
- Improvement of transport infrastructure between agricultural areas, large urban centres, and other areas of large population concentrations.
- Lobbying for a liberalised global trade, with a special focus on the levels of subsidisation enjoyed by farmers in the rich countries.

The Committee focussed its discussion on the merits of direct government interventions such as school nutrition programmes, food stamps and some form of income grant within the framework of a much stronger government commitment to agricultural development. The Committee concluded that such interventions would address the problem of food security and the affordability of food more effectively compared to what has been accomplished to date. Recommendations in this regard are made in the final section of the Report.

7.3 Improving information systems in the agricultural and food sector

Another aspect of the Committee's terms of reference was to look into the effectiveness of current government research and information systems re agricultural and food prices. The Committee's investigations into the various supply chains and the futures market clearly highlighted a general problem about reliable access to information. It became evident that market information and information about food processing costs is not readily available and not evenly distributed, creating the potential for opportunistic behaviour by role players in the food supply chain.

To this end, the Committee assessed current government systems in place to monitor food prices and the cost of food distribution in South Africa. The following discussion summarises the role of the main providers of statistics in this field.

7.3.1 StatsSA

Statistics on food prices are mostly grouped in the CPI or the production price index (PPI), with over 155 different CPI indices and over 116 different PPI indices for food, as well as major food groups. These results are published regularly. The CPI indices are available for different expenditure groups and according to metropolitan, metropolitan & urban, and rural areas. CPI indices are also calculated for specific food groups, including meat, milk products, grain products, and processed and unprocessed foods. PPI indices are further divided into production price indices for the manufacturing of food products as well as for the major food groups. StatsSA also provides information on the volume of retail trade in food and processed food products on a monthly basis.

Although these data sources are comprehensive, the Committee is aware of a number of shortcomings:

- There does not seem to be any information on actual food prices (as opposed to indices), making the calculation of farm-to-retail price spreads impossible;
- Although information is available for producer prices as well as consumer prices of food, there does not seem to be any information available on the distribution or marketing costs of food;
- PPI does include indices on manufacturing prices of food and food groups, but there is no breakdown of processing and distribution costs.

7.3.2 The National Department of Agriculture

The National Department of Agriculture is responsible for the dissemination of statistics on agriculture and agricultural output through its Directorate: Agricultural Statistics. The Directorate, through the Crop Estimates Committee (CEC), also provides information on all major grain crops in South Africa. The Directorate provides information on private consumption expenditure, the producer price index; agricultural imports and exports; the food basket of farm products; sales of fresh produce on markets; and the intake of agricultural products for processing.

All the above information is available from the Directorate upon request and is available free of charge. The Directorate also publishes the *Abstract of Agricultural Statistics; Crops and Markets;* and *Statistics on Fresh Produce Markets*. These publications are also available on the website of the Department.

The information produced by the Directorate mainly focuses on the producer price level, and little, if any, information is available on the cost of processing, distribution and marketing of food products. The food basket of agricultural products that the Directorate provides is only based on weights and it only expresses the farmers' share of the total consumer Rand.

7.3.3 South African Grain Information Service (SAGIS)[4]

The stakeholders in the grain industry have, through a collective effort, established a Section 21 Company, the South African Grain Information Service (SAGIS), which operates a well developed and co-ordinated market information system on all the grain markets. Information on deliveries at silos, export and import parity prices, tariffs, etc., is provided through the SAGIS website and through regular market bulletins. One major shortcoming is that actual export and import data on all grains are not available on a weekly basis. Such information is crucial for the effective functioning of the market, because this kind of information can prevent opportunistic behaviour on the commodity markets.

7.3.4 Establishing a permanent food price monitoring system

The Committee believes that its own output provides an important and useful foundation based upon which the State can introduce a permanent mechanism to monitor trends in food prices, food processing costs and farm to retail price spreads. In this regard, the Committee analysed the monitoring system established within the Economic Research Service (ERS) of the US Department of Agriculture.

The Committee is of the opinion that South Africa has all the machinery and systems in place to copy the system of the USDA to the letter. For example, the Committee has experienced good collaboration from AC Nielsen, which is a typical commercial data firm that collects and provides retail price data. This company processes all till-point data of all the major supermarkets and should be able to provide aggregate data on sales volumes and retail prices per month. With all systems moving increasingly to scanners, there should soon be a database in place that is free of enumerator or respondent bias, thus providing value-free and unbiased information. Forming an alliance with this company will provide the first step to ensuring sufficient and reliable data to set up such a monitoring mechanism. Government should, however, assess the cost of purchasing such data, as well as ensure the approval of the Consumer Goods Council of which the members supply the data to AC Nielsen.

7.3.5 Investments to improve crop estimates and agricultural information

The problems in the commodity market in 2002 were largely influenced by perceptions about the size of the harvest. This was caused by some discrepancies in the market between the actual deliveries as recorded by SAGIS and the estimated final crop size as issued by the Crop Estimates Committee. When it was finally confirmed that the total crop including retained stocks (on farms) was 1 million tonnes more than anticipated, the market corrected very quickly. This information only became known 6 months after the harvest, which resulted in the sharp drop in prices in December 2002/January 2003. Had this information been known earlier, and had the crop estimates not been so far off target, the market might have behaved differently during the period June to December 2002.

The Committee, therefore, concurs with the general sentiment in agricultural circles that a substantial investment in the system of crop estimates is required to avoid similar problems in future. In this regard, the Committee has specific recommendations on the methods of data

[4] The Committee is aware of similar information systems such as SAWIS in the wine industry and DFPT's system for the deciduous fruit industry. Since information regarding the grain market remains an important issue for stability in the protein and starch market we only discuss issues related to SAGIS here.

collection, the types of data to be collected, and the institutional responsibilities in the areas of:

- Crop estimates for grain products;
- Agricultural production statistics for all agricultural commodities;
- Information on retention of grain on farms;
- Information on grain imports and exports.

7.3.6 Increasing competition and reducing barriers to entry

The analyses of the Committee presented in Parts 4 and 5 of this Report provide substantial evidence of oligopolistic behaviour and monopolistic competition in the food sector. Increasing concentration in the food value chain is a global trend, caused by increasingly demanding consumers, concerns about food safety, etc. The competition is fierce, and based on economies of scale, small margins but high volumes, and fast turnover. This structure makes it very difficult for smaller players to enter the market, either as retailers, or as food processors and distributors. Smaller players do not have the scale of operation to compete effectively. Volatility in commodity prices and in the exchange rate also has a clear impact on smaller suppliers and manufacturers, who find it difficult to absorb such shocks. This has the potential to bring about further concentration in manufacturing and retailing. In this regard, the Committee has made recommendations on the following aspects:

- Monitoring of the competitive environment;
- Means of increasing competition/participation;
- Food fortification legislation: creating barriers to entry;
- Providing a measure of order in the agricultural futures market;
- Transport infrastructure as a key constraint to participation.

8. RECOMMENDATIONS

The Committee has been aware since its appointment that its terms of reference represent but one initial step in a long-term process that is aimed at the maintenance of fair competition in the food and agricultural sectors of the South African economy. In this respect, the Committee's recommendations will focus in the first instance on the institutionalisation of the key functions required to establish such a food pricing monitoring system.

8.1 A food price monitoring system

The Committee found that the monitoring process was a useful exercise in fostering the understanding of price trends for specific food items, and price determination at the different levels of the food supply chain. This promotes the protection of consumer rights; it provides valuable information for policy analysis and leads to better understanding of the causes of price variation for similar products in rural and urban settings. The advantage of this system of monitoring price trends is that it also allows qualitative observations of other factors that influence food prices in different social environments.

Recommendation 1
The Committee is of the opinion that the National Agricultural Marketing Council in collaboration with the Department of Agriculture should implement a reliable and consistent price monitoring network throughout the country, as this affords policy makers the opportunity to gain first hand qualitative and quantitative information on price trends, and will enable the Department to make better informed decisions regarding food policy in this country.

In light of shortcomings in the provision of data required for the monitoring of food prices, the Committee recommends that:

Recommendation 2
StatsSA join forces with the Department of Agriculture to find ways to make detailed information on average monthly food retail prices and margins more readily available to the public and to all government departments. An alliance with AC Nielsen and the Consumer Goods Council should also be considered to supply scanner data on retail food prices and volumes.

The Committee also concurs with the general sentiment in agricultural circles that a substantial investment in the system of crop estimates is required to avoid any similar problems in future. Although the government has already started to address this during 2002 there are still specific issues related to crop estimates that need to be addressed. This include:

Recommendation 3
- Increasing the sample of farmers should to approximately 3500 farmers that provide monthly inputs;
- Improving the analytical and modelling capacity to determine the impact of weather variables and trends (as well as soil moisture levels) on the size of the local crop needs to be improved.
- More objective inputs from experts in the industry such as traders, importers and exporters, seed and fertilizer sales should be obtained on a monthly basis.
- Although the crop estimation methodology has been improved through the appointment of the ARC Consortium, the continued funding and future continuation of the project is not guaranteed. As a result the project is increasingly treated from season to season and not as a long-term statistical process. This is of major concern to the Committee, and it is recommended that the Government ensure long-term commitment for this process to avoid the problems of 2002.
- The shortage of expertise on the new methodology of crop estimation also poses a problem. More investment in trained staff is needed, especially for enumerators collecting field data.
- The only “cross check” data for crop estimates is SAGIS’s delivery figures (obtained from the Grain Silo Industry, millers, processors, traders and exporters) and, although very helpful with the reconciliation of production data, these data remain insufficient for the purpose of calculating areas of production. An end of season survey remains necessary to determine the actual area harvested as opposed to area planted. Funding is currently insufficient to enable such a survey. Investment in the latest satellite technology could also help in obtaining accurate area data.

Apart from the positive moves to improve crop estimates through increased budgetary funding under the MTEF it is of concern to the Committee that there is still a lack of comprehensive and statistically correct data on general production statistics and prices for the agricultural sector in its totality. It is the view of the Committee that the development of a complete and accurate statistical system for the agricultural sector in general is crucial in the long term. It is therefore recommended that:

Recommendation 4
The Department of Agriculture should increase its budgetary allocation for agricultural information and statistics.

Although SAGIS provides an important, accurate and reliable information service to the grain industry, there are a number of ways in which information delivery can be improved. It is recommended that:

Recommendation 5
The State investigate ways to support SAGIS, which ultimately provides the key statistics on which many commodity brokers trade, and which ultimately influences commodity prices and so food retail prices.

The Committee received reports that there is currently roughly 600 000 tonnes of grain storage capacity on farms. Without proper knowledge of how much is actually stored on farms, it will be difficult to determine the true size of the crop. It is recommended that:

Recommendation 6
The Department of Agriculture investigates whether accurate information on on-farm storage is necessary and whether it can be obtained in a comprehensive but cost effective manner.

The Committee's investigations into the grain market highlighted concerns re the lack of accurate and real-time information on actual trade in whole grain and grain products at any specific point in time. Only the big role players know what quantity of grain is being exported, imported, or planned for export or import. This situation of asymmetric information is not healthy and can create opportunities to corner the market. Inaccurate information (rumours) create instability in the commodity market and it can be argued that it is Government's duty to ensure that more accurate and up-to-date information is available to prevent this from happening. It is therefore recommended that:

Recommendation 7
The State introduce a statutory measure compelling all grain traders to report on a weekly basis on realised and planned (i.e. a finalised contract) imports and exports of whole grain and grain products. The information can effectively be managed by the current SAGIS structures and disseminated on a weekly basis. The Committee is of the opinion that such a system, in combination with an accurate crop estimate, will contribute much to avoid unnecessary volatility in the agricultural commodity markets.

Although approached, SARS has not been able, for a variety of reasons, to provide up to date information to the Department of Agriculture or SAGIS. From this it is gleaned that information about cross border movements of grain (at border posts and via the harbours) is a general problem. In addition to the statutory measure listed above, the Committee also recommends that:

Recommendation 8
The State ensure that the following government agencies provide monthly information on cross border trade in grain:

- Portnet
- South African Revenue Services (SARS)
- Cross Border Road Transport Agency (CBRTA).

The purpose of these eight recommendations is to guarantee a system that will provide unbiased, reliable and up-to-date information on market fundamentals such as supply and demand factors, regional market information, and trade deals. Information on retail prices and the cost of food processing should be released at least every six months to act as an 'early warning' system. To this end, the Committee recommends that:

Recommendation 9
An annual publication, to be known as the '*South African Food Cost Review*" is published by the National Department of Agriculture to disseminate information on food costs and trends in retail prices and farm-retail price spreads, and distributed as widely as possible. Such a publication can also be used to inform the public about food safety issues, food regulations and minimum specifications for food items.

8.2 Poverty alleviation

The Committee has debated at length the establishment of a strategic grain reserve, but is, on balance, not convinced that this is necessary for the South African economy and that the funding for such an approach could more wisely be spend on direct interventions at household level. In this respect, the Committee debated the relative merits of direct State intervention to reduce poverty and improve food security, such as school feeding schemes, a food stamp programme, etc., and has the following three recommendations:

Recommendation 10
The Committee favours the expansion of school feeding programmes, and argues that:

- School feeding programmes should be targeted at areas with the highest poverty gap;
- Best Practice requires that all children in a school should be provided with food once the school has been targeted;
- School feeding should begin at the level of Early Childhood Learning Centres and should continue up to Grade 12;
- Responsibility for school feeding programmes should be transferred to the Department of Education;
- The financial resources for the school feeding programmes should be provided to the school governing body on a monthly basis, and should be based on enrolment numbers and feeding days per month; and
- Only those schools with the necessary infrastructure (kitchens, fenced land, water, secure storage etc.) should attempt to augment the feeding programme through food gardens.

Although food stamps and the basic income grant scheme have merit as potential mechanisms to address household food security, there are aspects related to the logistics and management of such programmes that argue against the implementation of these initiatives. It is for this reason that the Committee recommends that:

Recommendation 11
The State investigates a poverty alleviation grant based on a means test, which will enable households to access food. Such a grant will deal with problems of food security at a household level as well as with other income poverty issues, thus allowing families to take risks and acquire assets.

Recommendation 12
The implementation of such a grant should be accompanied by a deliberate effort to increase agricultural output in areas where the poor reside. Thus, households receiving these grants can buy food from local farmers, which will also promote local economic growth. This implies that small-scale agricultural production should be made a central strategy for production at local level for the various social development initiatives such as the school feeding programmes and any form of income grant.

8.3 Monitoring the competitive environment

The State seems to have 'its work cut out' to ensure effective policing of the competitive environment through the Competition Commission. Therefore, the Committee recommends that:

Recommendation 13
The Competition Commission is requested to annually conduct a thorough investigation into the market structure of one or two food value chains (including the agricultural input industry). The findings of the Committee reported here should provide a useful basis from which to start such an investigation. The results of these annual investigations, done in collaboration with the Department of Agriculture, should be published as part of the annual "South African Food Cost Review". This arrangement will put the Competition Commission in a position to monitor competitive behaviour in the food industry on a continuous basis.

An important intervention by the State would be to increase participation and competition in the market by reducing barriers to entry for smaller suppliers, manufacturers and retailers. Innovative programmes under the Black Economic Empowerment programme (BEE), such as preferential procurement systems, can be used effectively to promote increased participation. Government will, however, have to look at programmes to assist such new entrants with start-up capital.

Although the farming sector is exposed to market competition, there are entry barriers for previously disadvantaged farmers. Currently these are addressed by the State in partnership with the private sector through a range of strategic programmes. Accelerating land reform and improving government support structures are important to stimulate local production of food.

This should enhance the availability of food in remote rural areas and so create the potential for cheaper food for poor rural communities.

In the post-deregulation era, a large number of small-scale millers has entered the maize meal market, creating substantial competition for the five large milling groups. Recently, however, regulations on the fortification of basic foodstuffs have been announced, which, while noble in intention, will have the unintended consequence of reducing competition in the milling industry. When the competition created by the small millers is reduced, the price of maize meal will inevitably increase over time.

The new regulations on food fortification have potentially large negative consequences for the smaller operators who:

- Cannot afford the mixing equipment, which costs as much as the mill itself;
- Do not have the administrative or technical expertise to administer the fortification ingredients;
- Will be running illegal operations due to the regulations, which will make it possible to close them down when they interfere in competing markets.

It should be noted that small mills generally do not remove the germ from the maize meal, in so doing they dramatically improve the wholesomeness of the final product. Most vitamins, with the exception of vitamin A, are fat-soluble and are therefore concentrated in the germ. Highly refined super white maize meal was used as a benchmark to calculate the amount of fortification needed, and no consideration given to the much healthier product produced by smaller mills.

The Committee notes this with concern and recommends that:

Recommendation 14
The Government investigate whether the survival of small-scale millers are affected by the food fortification legislation. If this is the case it could negatively affect healthy competition, which the Committee argues is necessary to keep retail prices at bay. Government will thus have to consider measures to accommodate these millers.

The Committee's investigation into the agricultural derivatives market of the JSE (SAFEX) also pointed to the need for rules to prevent opportunistic behaviour by commodity traders. The potential for manipulation of this market lies in the large open positions of traders, which makes it possible for larger traders to corner the market and to lead the market (especially inexperienced traders) into a particular direction. As a result,

Recommendation 15
The Committee is of the opinion that rules to manage open positions of traders are needed. Fortunately, the JSE has also recognised this shortcoming and has, since the start of the Committee's investigation, announced the introduction of 'position limits'. The Committee welcomes this pro-active move.

It is hoped that this ruling, plus much stronger monitoring of the ethical conduct of traders, will ensure that competition is brought within bounds so that the 'wild west' character of this market will disappear.

Efficiently functioning transport networks are important to any competitive economy, and are the key to a successful food security strategy. The gradual movement to road transport of most grains because of poor efficiency (slow turn around time, limited number of trucks) of the rail network has contributed to increased costs of raw material at the mill door or factory gate. These costs are eventually recuperated from the consumer, implying higher food prices. It is in this context that the Committee recommends that:

Recommendation 16
The process to recapitalise Spoornet in terms of rolling stock and locomotives, as well as the revitalisation of rural rail sidings should get urgent attention and needs to gain momentum. The reopening of rail sidings in rural areas will also form an important component of increasing market participation by small farmers in disadvantaged communities. In this respect, the Committee argues that improving the rail network represents a national asset for economic development in the rural areas, which should not be subjected to the same standards of profitability as purely commercial ventures.

At the same time, strong enforcement of load per axle regulations will help to stem the large shift to relatively more expensive road transport. The social and economic costs of increased road transport in terms of accidents and damage to the road network are very high, which makes it even more important for Spoornet to be revitalised.

The Committee therefore supports the Government’s plans in this regard and argues that improvement of the railroad infrastructure should have positive food security as well as economic development impacts. An improved transport network can, thus, make an important contribution to more competitive environment, increased market participation by emerging farmers, and, perhaps, lower food distribution costs.

PART 2

INTRODUCTION:

THE GOVERNMENT RESPONDING TO THE FOOD PRICE CRISIS

CHAPTER 1

BACKGROUND TO THE APPOINTMENT OF THE FOOD PRICING MONITORING COMMITTEE

1.1 Introduction

The sharp depreciation of the Rand against all major currencies in the world at the end of 2001 as well as the rising commodity and food prices triggered a process, which sent inflation spiralling out of the targets of 6% set by the South African monetary and fiscal authorities. It seemed that rising agricultural commodity prices as well as rising food prices also fuelled an increase in the inflation rate during early 2002. It became apparent that the increase in the inflation rate was largely the result of an increase in food price inflation. This notion is confirmed by the data reflected in Figure 1.1, which show the difference between the consumer price index (CPI), and the consumer price index without food prices (CPI-ex Food).

It illustrates the important contribution of food price inflation to total inflation during the first few months of 2002. A longer-term view of food price inflation in South Africa is shown in Figure 1.2. These figures make it evident that when CPI-food was growing at a relatively constant rate (up to the end of 1999), the overall inflation rate was declining. It is clear that between the end of 1999 and the middle of 2000, and again from the middle of July 2001 the increase in CPI-food precedes an increase in the overall rate of inflation. This interpretation is emphasised by Figure 1.1.

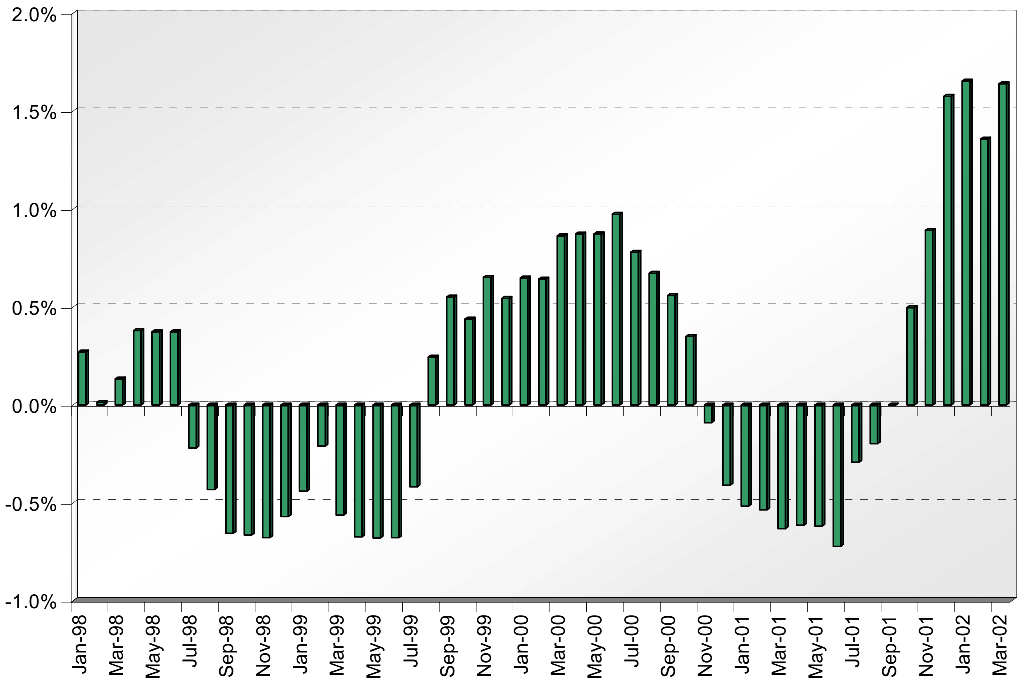

Figure 1.1: Difference between annual increase in CPI-all and CPI ex-food, 1998 – 2002 (percentage points)

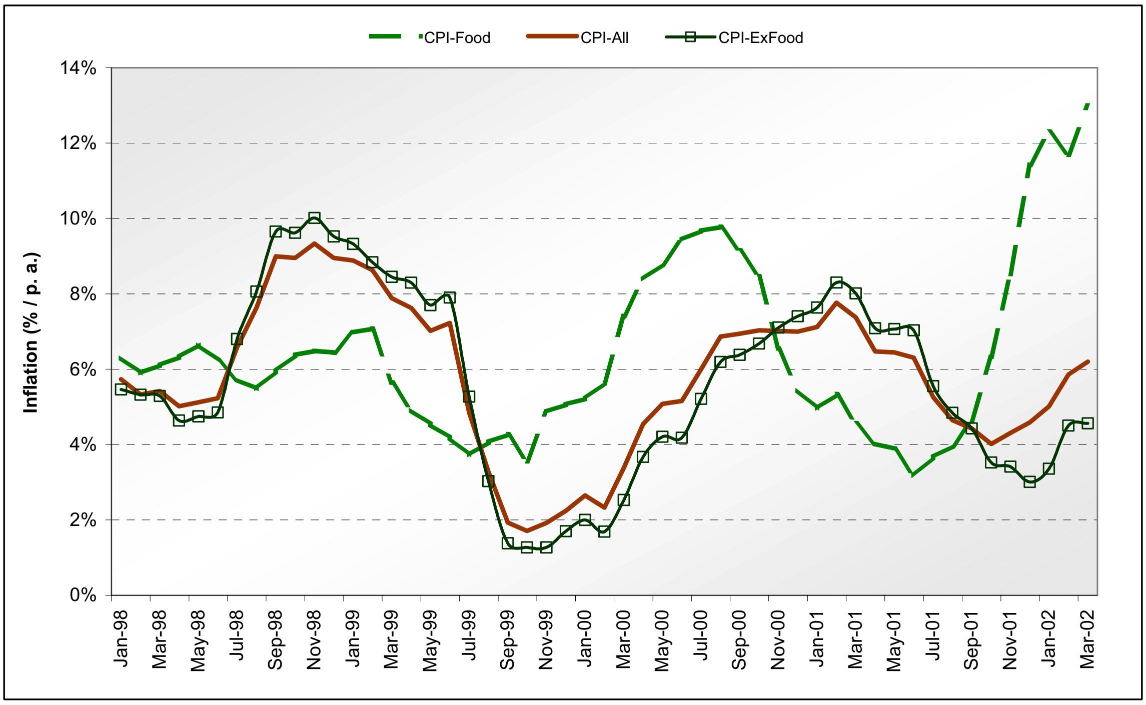

Figure 1.2: Annual increase in the CPI for food, Jan 1998 to April 2002

The effect of agricultural commodity prices and food prices on inflation, and the policy of inflation targets created an immediate response from the National Treasury. A team of experts was appointed to investigate the cause of the price increases in the agricultural and food sector. This process resulted in a report (Vink and Kirsten, 2002), which provided an explanation for the increase in commodity prices and also suggested policy proposals. The authors concluded that the increase in the farm gate price of basic food commodities came about as the result of a unique combination of five factors. These were (a) an increasing world price for these commodities, (b) a lack of competition in the supply chain beyond the farm gate, especially at the retail level, (c) a fast and severe depreciation in the value of the local currency, (d) a shortage of maize in the SADC region, and (e) a climate of uncertainty, created particularly by the unfortunate circumstances surrounding the land reform programme and elections in Zimbabwe, and also more generally by the perceived instability in parts of Central and Southern Africa.

Although the report was fairly clear on the explanation of the causes of the price increases, the concerns about the effect of these high food prices on food affordability, which directly relates to the human right of access to enough food, did not disappear during 2002. Concerns about increasing food prices were not only raised from a monetary policy perspective but also from a food security angle. As the prices of basic foodstuffs increased, (See Table 1.1 for the extent of the increases) many households found themselves in a situation where they could not afford the basket of basic foods required for a balanced diet. With large unemployment numbers and with 52% of the population living below the poverty line the negative impact of the high food prices on food security took on dramatic proportions.

Most of the concerns around the food security came as a result of the steep increase in the producer price of maize during 2001/2002. The public outcry was not surprising, as white maize is the staple food in the country, while yellow maize is the single most important feed input in the dairy, pig, beef, and poultry industries. An increase in the price of maize implies that the price of maize meal and that of all the major sources of proteins such as milk, milk powder, butter, cheese, eggs, poultry and pork will increase. This interaction is illustrated in Figure 1.3.

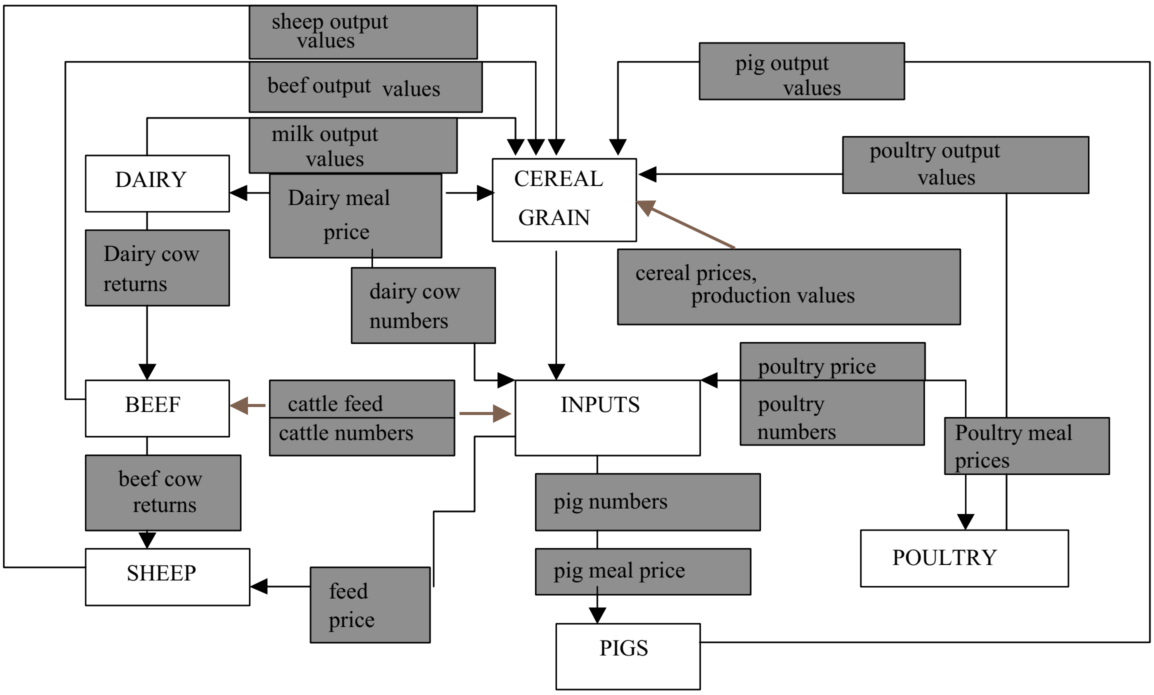

Figure 1.3: The interaction between maize and the animal sector

Table 1.1: An illustration of the extent of the food price crisis in 2001/2002: Year on year food price changes (Cape Town)

Item	September 2001	September 2002	% change
Skimmed milk powder (500g)	R12.95	R17.38	34.21
Milk (2%) (1 litre)	R3.29	R3.99	21.28
Eggs (1 doz.)	R6.38	R5.58	-12.54
Potatoes (1kg)	R2.84	R3.74	31.69
Margarine (250g)	R1.45	R1.85	27.59
Cooking oil (750ml)	R4.89	R6.69	36.81
Maize meal (12.5kg)	R22.44	R48.36	115.51
Dry beans (500g)	R2.80	R3.54	26.43
Brown bread (800g)	R3.19	R3.83	20.06
Sugar (2.5kg)	R10.89	R11.89	9.18

1.2 Cabinet statement on measures to address high food prices

The Cabinet Lekgotla in July 2002 endorsed the Integrated Food Security Strategy as priority of the Social Sector Cluster Action Plan with the specific instruction that an implementation programme be developed. The Integrated Food Security and Nutrition Programme was developed based on five programmes forming the pillars: food production and trade; food safety and nutrition; community asset development; social safety net and food emergencies; and food insecurity vulnerability information and mapping system.

At present, these programmes are at various stages of development and implementation with different departments.

As the food price crisis deepened and the impact on the poorer households became clearer the Government felt it necessary to introduce a number of short-term measures to address the crisis. At its meeting on 9 October 2002 the Cabinet examined various possible interventions to alleviate the impact of high food prices on the lives of all South Africans, but especially the poor. The Government then decided on a mix of interventions, ranging from immediate relief for the poor to instruments of a medium to long-term nature that would help improve food security, transparency in the food supply chain, and price stability. The Government adopted a two-pronged approach that deals with targeted social development interventions and market based initiatives. These measures took into account both the causal factors that are in Government's control and those that are not.

In order to improve the purchasing power of poor households, Cabinet decided to increase old age pensions by R20 from R620 to R640 and the Child Support Grant by R10 from R130 to R140. This complemented the intensified campaign to register all citizens who are eligible for social security grants.

In addition, Government also launched campaigns to provide food parcels to the most vulnerable households, particularly in disaster areas, and encouraged school, community and household food gardens through the supply of Food Garden Production Starter Packs. The distribution of food parcels is part of the Integrated Food Security Programme introduced late 2002 to protect the poor from food price increases. The National Treasury committed a total budget of R400 million to food aid relief in 2002/2003. R230 million went to food parcels in South Africa and R170 million for 100 000 tons of maize went to 6 SADC countries affected by the Southern African famine: Lesotho, Malawi, Mozambique, Swaziland, Zambia and Zimbabwe.

The impact of the increase in price of basic foodstuffs in South Africa at the time necessitated that some prioritisation be undertaken. For this purpose, vulnerable households were disaggregated according to their expenditure level into the four bands reflected below.

BAND	INCOME RANGE	NO OF HOUSEHOLDS
Band 'A"	-R200 and less	166 684
Band 'B'	-R200-R300	962 625
Band 'C"	-R300-R400	473 784
Band 'D'	-R400-R500	631 947

The initial allocation of R230 million for direct food relief covered mainly the Band 'A' households spread throughout the nine Provinces with a total of 245 000 households (1,4 million individuals), 97 % (R220.5 million) for direct costs of food parcels and the rest for indirect cost (R9, 5 million) of administration.

The short-term direct food relief measures also included private sector initiatives aiming at price relief for low-income groups, i.e. the distribution of sifted maize meal at reduced retail prices. Government reached an agreement with Premier Foods, Metcash SA and Afgri for the introduction of a targeted programme to provide a *Yiyo Lena* with 12.5 kg maize meal bags to be sold at the subsidized price of R25.99 (a reduction of 50% of the retail price per bag) to people in immediate need of the assistance.

The Food Security Programme aims at pushing back the frontiers of poverty by targeting the most destitute and impoverished households, especially in the nodal points of the Integrated Rural Development Programme.

Being conscious that food relief is a short–term response to save lives and does not stem chronic food insecurity in the long run, Government accepted the necessity of linking the food relief scheme to medium and long term measures to ensure long term self-sufficiency, sustainability and reduced dependency on food relief by vulnerable communities. Linked to the initial allocation of R400 million for 2002/2003, further allocations of R400 million for the following two years (2003/2004 and 2004/2005) will be administered throughout the Provinces as a conditional grant and will extend coverage to Bands 'B', 'C' and 'D' households over a three year period.

The Agricultural Starter-Pack Programme (ASP), as part of the Food Production and Trade pillar, is one of the medium-term measures that complement the Food Parcel Scheme. In a similar vein, the Department of Health coordinates an Integrated Nutrition Programme. The challenge remains, though, to repackage and target similar ongoing programmes into a single basket of services to vulnerable communities to ensure maximum and immediate impact. The present reality is such, however, that the programmes are scattered and isolated.

Geographically the ISRDP and URP nodes were prioritised but allowed for flexibility for Provincial poverty pockets. Coincidentally, most of Band 'A' and 'B' beneficiaries are located in the identified nodes.

The Cabinet also indicated in its 9 October 2002 meeting that it is considering the phased extension of the Child Support Grant to 14 years of age, as well as the enhancement of the School Feeding Programme.

In terms of medium to long-term measures, the Government also decided to evaluate the merit of re-establishing Strategic Grain Reserves, which would act as buffer stocks in times of food crises. It also envisaged that South Africa would cooperate with other SADC countries on strategies to reduce food shortages in the region. The Government committed itself to work towards encouraging the introduction of incentives for expanded food production in the region, as well as the lowering of food tariffs within SADC as part of its Free Trade Agreement. On the other hand, tariff regulations that are already in existence, which come into effect within particular domestic price ranges, will be applied more effectively and expeditiously. As in the past, this will be done in a manner that protects South African farmers from unfair competition.

The Cabinet meeting in October 2002 also approved the establishment of a food price monitoring mechanism (Food Pricing Monitoring Committee) in accordance with the Agricultural Marketing Act. It was envisaged that such a Committee would have the infrastructure and the authority to monitor the whole food production and supply chain, and ensure public awareness of, and appropriate publicity and debate around retail prices and their relation to actual costs and, thus, the mark-ups along the chain. In addition, the Competition Commission was encouraged to continue with its monitoring and censuring of acts of price collusion along the food supply chain.

Noting the current system of VAT zero-rating of some basic foods, Government also decided to investigate the impact of the system, that is, whether in fact the tax relief is passed on to consumers. It was expected that the outcomes of this investigation would inform any further action in this regard.

The Government, furthermore, encouraged communities to establish and/or strengthen consumer organisations with the purpose of monitoring food prices. It was felt that consumer activism within society would be critical to ensure that the benefits of government action and/or reductions in input and other costs are passed on the consumers.

1.3 Establishing the 'Food Pricing Monitoring Committee'

On 28 November 2002 the Minister for Agriculture and Land Affairs announced that Cabinet had approved the establishment of a Food Pricing Monitoring Committee as one of the strategies addressing the problem of high food prices. A public call for interested individuals with expert knowledge in economic analysis regarding the food chain was made to submit names and CVs for consideration as members of the Committee.

On 8 January 2003 the Minister for Agriculture and Land Affairs, Ms Thoko Didiza, announced the appointment of the following individuals to serve on the Food Pricing Monitoring Committee:

Prof. Johann Kirsten - Chairperson
Dr. Fikile Mazibuko - Deputy Chairperson
Prof. Johann Potgieter
Prof. Sibusiso Vil-Nkomo
Ms. Josephilda Nhlapo-Hlope
Prof. Herman van Schalkwyk
Mr. Lumkile Mondi
Ms. Nonia Rampomane[1]

The Committee was established in terms of Section 7 of the Marketing of Agricultural Products Act, No 47 of 1996 (as amended), and its work was overseen by the National Agricultural Marketing Council (NAMC), which advises the Minister for Agriculture and Land Affairs.

The following were the Committee's terms of reference:

- Monitor the pricing of basic foodstuffs;
- Investigate any sharp or unjustified price increases;
- Determine the competitiveness of production operations;
- Investigate price formation mechanisms within the value chain of basic food stuffs;
- Recommend required productivity improvements;
- Investigate collusive, discriminatory or any unfair business practice in the basic food value chain;
- Investigate and make recommendations on market inefficiencies and distortions; and
- Investigate incidents of predatory pricing and monopolistic tendencies.

[1] Unfortunately Ms Rampomane passed away on 16 August 2003.

CHAPTER 2

OPERATIONALISING THE COMMITTEE'S TERMS OF REFERENCE

2.1 Introduction

The Food Pricing Monitoring Committee held its inaugural meeting on 20 January 2003. Following an initial briefing by the Hon. Minister for Agriculture and Land Affairs, Ms. Thoko Didiza, the Committee deliberated on the terms of reference, the scope of its operations as well as its plan of action. The Committee then agreed on slightly adjusted terms of reference:

1. To monitor the prices of a basket of 26 basic food items (Results in Part 3).
2. To investigate any sharp or unjust price increases (Results in Part 3)
3. To investigate price formation mechanisms in selected supply chains. This would include the following: (Results in Part 4 and Part 5):
   - Determining the number of producers and processors and levels of concentration;
   - Determining the extent of vertical/horizontal integration and concentration in the food supply chain;
   - Gross margin analysis at each node of the food chain;
   - Establishing the magnitude of difference between urban and rural pricing structures;
   - Reporting on the pricing structure of certain food chains;
   - Determining the ratios of prices to costs and profits.
4. To review the effectiveness of government monitoring of and information dissemination on food prices (Discussed with recommendations in Part 7)
5. To establish and maintain a national food pricing monitoring database (Discussed with recommendations in Part 7)
6. To monitor the regional SADC food situation (Results in Part 6)
7. To investigate incidents of predatory and monopolistic tendencies in collaboration with the Competition Commission.

The Committee subsequently also decided that it would be necessary to review recent studies on food prices in order to collect information on what exists and what gaps there are.

The rest of this Chapter indicates how the Committee has interpreted the terms of reference and how it structured its activities to meet these terms of reference.

Table 2.1: List of 26 food products identified by the Committee

250g Margarine	1litre Milk
750ml Sunflower Oil	Chicken/kg
410g Peanut Butter	1 Doz Eggs
White Bread	425g Pilchards
Brown Bread	Potatoes/kg
250g Tea Leaves	Onions/kg
250g Instant Coffee	Tomatoes/kg
2.5kg and 12.5 kg Maize Meal	Cabbage/head
1kg Samp	Apples/1.5kg bag
Stewing Beef/kg	Oranges/kg
Bananas/kg	Sugar beans (500g)
2Kg Rice	Butter Beans (500g)
2,5 kg White Sugar	Sorghum meal

2.2 Price monitoring

In terms of point 1 and 2 of the terms of reference the monitoring of food prices started immediately and involved the following activities:

- The NAMC was requested to continue its process of monitoring the retail prices of the basket of food items on a monthly basis. This had already been happening since November 2002 in some Provinces.

- The Committee was very fortunate to be able to tap into an existing database on food price changes over the last 30 years. The results of the annual cost of living survey in September 2003 were also added to this database. This assisted in the comparison of the costs of food with earlier years, i.e. September 2001 and 2002.

- Observations by consumer groups (NCF, etc) and other forces in the civic society via Committee Members or via the already established communication channels were actively encouraged. To this end, the Committee established various channels of communication (email, fax, toll-free number) to enable the public to report sharp increases in food prices. The inputs were substantial during the first 2 months but dropped off as the prices of key products were reduced.

- Official data on retail food prices and time series on the consumer price index were been obtained from StatsSA.

- As another avenue of monitoring retail prices the Committee utilised the database of retail prices extracted from the pay point scanners in retail stores. This independent database managed by AC Nielsen on behalf of retailers and manufacturers provided valuable data for most of the major urban stores. The usefulness of this data lies in the fact that these are actual prices and exclude fieldworker bias, etc.

In essence, the Committee was able to monitor retail prices of the most important foodstuffs from at least 5 sources.

The SADC food security situation (Item 6) was monitored through the collaboration with the DoA and the various food security organisations in the SADC region.

2.3 Pricing behaviour

A central part of the terms of reference relates to the analyses of the price formation mechanism in supply chains of the basic foodstuffs. In this respect particular attention was given to:

- Market power as determined by the level of concentration and the extent of vertical and horizontal integration

- Price formation at different points in the supply chain

- Costs and margins at each stage of the value chain

In order to comply with the core (points 3 and 7) of the terms of reference the Committee addressed these aspects in a comprehensive manner. The research into the behaviour in the various supply chains has to be seen, however, against the background of the changing nature of the agricultural and food industry worldwide and in South Africa. This is discussed next.

The context and the issues

A variety of forces including urbanisation, changes in agricultural technology, and new consumer food requirements bringing about economies of scale, have resulted in a closer vertical co-ordination in the agri-food sector, which is accompanied by greater rationalisation and increasing concentration in input, processing and retail sectors. Supply chains of vertically related oligopolies have emerged either through ownership, strategic alliances, or contractual relationships. The challenge for governments is to ensure that social welfare losses and misallocation of resources as a result thereof and abuse of, market power are avoided.

In this new structure of the agri-food sector the transmission of prices between vertical stages of the supply chain are likely to be proprietary information. In other words, lack of information on market prices makes any investigation into anti-competitive behaviour difficult. It is in this respect that the impacts on prices and product availability resulting from such 'structures' – as experienced by consumers – are relevant policy considerations, which require a particular enquiry framework.

One should, however, not ignore the potential benefits of the new agri-food structure. These benefits include potential efficiency gains through the reduction of transaction costs, minimising wastage, etc. These aspects, too, should be taken into account to reach a balanced appraisal of the evaluation of anti-competitive behaviour in the agri-food sector.

The research framework for analysing pricing behaviour:

The supply chains that were analysed in great detail are the following:

- ü Maize – maize meal
- ü Wheat - Bread
- ü Sunflower seed - Cooking oil
- ü Sugar
- ü Red meat
- ü Milk
- ü Dry beans
- ü Potatoes

For each of these chains the following analyses were done as far as possible:

- ü Structure/conduct analysis
- ü Margins/farm-to-retail-price spreads
- ü Price transmission and the role of market power

The supply chain analyses were also extended to retail stores/spaza shops in remote rural areas in 4 provinces.

Step 1:
The starting point was to get an understanding of the structure (numbers, distribution concentration) at various stages of the main food supply chains.

Step 2:
The next important phase of the analysis was to determine price formation of the major commodity markets such as maize, wheat, sunflower seed, beef, rice and sugar. The factors influencing the price trends in these markets were unpacked and isolated. Earlier reports conducted some analysis to explain the major factors contributing to the sharp rice in certain commodity prices, with particular reference to the grains. Although the exchange rate depreciation was seen as having an important contributing effect to the increase of prices, more and more voices and complaints were raised suggesting that there might be other factors, especially related to trading practices on the grain markets, that might have played a role in setting prices at the high levels of early 2002. The sharp decrease in commodity prices, in a sense, exposed some of these practices. Not ignoring the role of the exchange rate, our analysis on the commodity markets focused on the following aspects:

- Trading practices and other factors that could have influenced the determination of SAFEX futures prices were determined for the period 2001 – 2003. The Committee decided to investigate these aspects by inviting grain traders, and agri-business to provide evidence to a sub-committee of the FPMC. The main purpose of these hearings was to identify certain trading practices (of millers, grain traders) and circumstances that could have contributed to the sharp rise in commodity prices and so identify the role of factors other than the exchange rate in the determination of prices. Aspects that were analysed included:
    - ü Block trading and dominance of certain role players;
    - ü Information sources, timeliness of information, reporting of information, crop estimates, and the general problem of information asymmetry;
    - ü Silo ownership, grain storage and silo certificates; and
    - ü Concentration along the food chain.

Step 3:
Moving beyond the farm gate and the commodity markets, the costs of value-adding (processing, packaging, distribution) become critical. These factors are often influenced by different commodity markets, exchange rates, and State created monopolies such as Sasol, Transnet, Eskom. It is for this reason that it was decided to determine the influence of these factors (exchange rate and the price of fuel) on the costs of processing and marketing in the food chain.

Given the proprietary nature of most information in the food manufacturing industry the Committee had to apply a range of innovative techniques to determine whether there had been an observed increase in the margin between the farm gate and retail prices. Calculating marketing margins and farm-to-retail price spreads for the major food items was one component of these innovative approaches. Through this, the Committee was able to determine how the consumer expenditure on farm-produced food is distributed between the costs of production, processing, packaging and marketing.

Step 4:
Knowing that the South African food manufacturing and retail industry is highly concentrated and that market power might play a role in price trends, it was also considered important to verify the role of market power/concentration in the increase of food prices. It was expected that merely interviewing role players would not yield the desired information. For this reason the Committee applied some objective/neutral modelling techniques. For the same reason a study on the role of market power in asymmetric price transmission was included.

Price is the primary mechanism through which various levels of the market are linked. The extent of adjustment and speed with which shocks are transmitted among producer, wholesale, and retail market prices is an important factor, which reflects the actions of market participants at different levels. Over the past several decades, producers, consumers, food industry interest groups and politicians have been concerned about the efficiency and equity of price transmission of agricultural and food products. Both casual and empirical research indicates that there are several asymmetries in price transmission in the food marketing chains:

(1) Changes in farm and wholesale prices are either not fully or more than fully transmitted to consumer prices.
(2) Changes in consumer prices are not related to short-term changes in farm prices and follow medium- and long-term changes with a time lag.
(3) Down stream changes in consumer prices, show a longer time lag than upstream changes do. Depending on the market structure and the nature of the product several possible explanations can be put forward to explain this asymmetry.

Of the three asymmetries, the one that appears to be of particular interest is the asymmetry in the adjustment process, namely whether retailers pass on price increases, while decreases in price are not completely passed on to the consumer. Evidence from studies done elsewhere show that this is in fact the case, and in particular with agricultural products. One of the reasons price increases are passed on to the consumer faster than decreases is that firms will react faster to decreases in profit margins than to increases. Another reason for the asymmetric price adjustments is the presence of search costs in locally imperfect markets. For example, grocery stores and other retailers may enjoy local market power due to a lack of similar firms in a given neighbourhood. Although customers may have a finite number of choices, they may not be able to gather full information about prices offered by other firms because of the cost of the search. In particular, consumers may observe a price increase at one local retail outlet but are uncertain if others have also increased their prices. Given this scenario, firms can quickly raise prices as upstream prices rise and they can slowly decrease prices as the upstream prices decline.

Firms do incur costs, however, when items need to be re-priced. Thus, they will only re-price items when the gains from changing the prices (up or down) exceed the costs. It is true that the utilisation of scanners has made this re-pricing process unnecessary; the reality is, however, that the majority of stores do not employ scanning systems yet. Thus, there is a range of food price changes, which retailers may choose not to re-price, resulting in less frequent adjustments both upward and downward. The implication of this is that pricing rigidity of retail goods during periods of falling farm prices – which draws more attention than rigidity in periods of rising farm prices - may be caused by the actual cost of re-pricing. Given the large number of possible variations between commodities, retailers, and consumers, it is impossible to conclusively determine the cause of observed price asymmetries within a commodity group.

In this component of the study, the Committee aimed to investigate whether the presence of market power in the agricultural sector (oligopsony power) or in the food industry compounds the dampening effects of market power in the retail sector (i.e., oligopoly power) with reference to the degree of price transmission. The Committee assumed that the industry exercises market power in both the upstream and downstream stages.

Supply chain and farm-to-retail price spread in remote rural areas

Since much of the supply chain analysis was related to the urban and formal markets, it was deemed necessary to get an indication of the supply chain and farm-to-retail price spread of selected commodities in spaza shops and general trading stores in rural areas. This was done in the following provinces:

- KwaZulu-Natal
- Eastern Cape
- Limpopo
- Free State
- Northern Cape

2.4 Data sources

Most of the role players in the food industry gave their full co-operation and supplied what is normally regarded as confidential and proprietary information. Generally, these data were provided by industry associations in the format of industry averages for processing, distribution costs, etc. For the analytical work of the Committee these data were crucial. It became apparent as the investigations progressed, however, that many of the detailed processing costs were not provided. In some cases industry organizations provided industry averages but, generally, companies were not too keen to provide detailed cost information. Nevertheless, sufficient data was obtained to present, for the first time in South Africa, a comprehensive database on various aspects of the food industry. This data base could well form the basis for an annual "South African Food Cost Review" which could be updated and monitored on a regular basis for any "unjust increases" in prices and/or marketing costs. This publication could become the 'early warning mechanism' for Government about rising food costs. In Part 7 where the Committee's recommendations are presented this will be discussed in more detail.

The main data sources used in the work of the Committee were the following:

- SAFEX spot prices for all grains up to date
- SAGIS records of stocks and grain deliveries
- Industry averages for milling costs of maize and wheat (Chamber of Milling)
- Industry averages for baking costs of bread (Chamber of Baking)
- A number of food companies and retailers provided valuable data on costs and processes in the food chain
- Prices of the major farm inputs
- National monthly averages of food retail prices: January 2000 to September 2003 (AC Nielsen)
- Milk producer prices and milk production costs (MilkSA and SAMPRO)
- Volumes and producer prices of beef, potatoes and dry beans (AMT, Potatoes SA, SAMIC, Dry Bean Producers' organisation)
- Various databases obtained from Statistics South Africa (StatSA)
- Time series of major packaging material including plastic, cardboard, glass, paper (Packaging Council of South Africa)
- Sugar Association of South Africa

2.5 Inputs from the public

The success of the Committee's activities also relied on the inputs from the public. This was necessary requirement to ensure ownership of the monitoring process by the public at large. Another reason was the need for the Committee to use consumers as the Committee's eyes and ears. For this purpose a number of channels were created through which the public could communicate with the Committee. Members of the public could contact the Committee through e-mail, fax and the toll free number. Within the first month a large number of inputs were received. The inputs then dropped gradually and virtually nothing was received after June 2003, as reflected in Table 2.2 below. An indication of the type of inputs received is reflected by the sample of inputs provided in Table 2.3.

Table 2.2: Record of inputs received from the public

Month	Email	Telephone	Fax
Jan 2003	32	12	3
Feb 2003	12	32	10
Mar 2003	8	1	1
Apr 2003	12	0	1
May 2003	13	5	0
Jun 2003	10	0	0
Aug 2003	0	1	0
Sep 2003	1	1	0
Oct 2003	1	0	0
Nov 2003	1	0	0
Total	**90**	**52**	**15**

Table 2.3: A summary of typical inputs received from the public

Product	Store	Area	Issue
All	Spar	GAUTENG	Prices on shelf are different from the prices (lower) that are scanned at the till point. Shop owners try to rob us with R1 on every product thinking we would not notice that.
Chunky Fat Cottage Cheese	Pick 'n Pay	Auckland Park GAUTENG	This food item was R8.79 on 15 Jan 2003, and increased to R10.00 on the 20 Jan 2003.
White Bread			Price displayed on the shelf is not the price we pay, white bread was priced at R4.89 and the till wanted R5.55. Consumers are taken for a ride because they don't have the time to check prices of all items in the grocery list.
All			The Committee must study the marketing chain. There are too many role players (from initial production to final consumer) making food products to be too expensive
All	Shoprite	Phoenix Plaza KZN	Every month the prices are different on the same product.
Golden Delicious Apples	Checkers Spar	Cascades, Howick,KZN	Few months ago the price was R8.99 and now it is R12.99 @ Checkers, and R15.99 @ Spar
Milk	Pick 'n Pay	Table view Cape Town W CAPE	The Price of no name brand increased from R7.45 (for 4x2 litres milk) to R9.00 in a period of two days. To date the same product sells for R9 to R10. We don't understand these price increases.
Oranges	Pick 'n Pay	Table view Cape Town W CAPE	Oranges selling for R19.99/Kg and R31.74 for six. That's a rip-off.
Maize Meal	Pick 'n Pay and Shoprite	Jo'burg CBD GAUTENG	The price is too high; something must be done about the price of this staple food for most South Africans.
Not specified	Pick n pay Milnerton	Cape Town W CAPE	Sometimes we experience an overnight increase of 20% in the cost of a particular food item. And old stock is re-priced as new stock. Suggestion: (1) Compel/force food supermarkets to display not only the bar code on a commodity (which is meaningless to the consumer), but also a sticky price label which displays both the price and the date on which the goods were priced.
Chicken	Checkers	Stellenbosch W CAPE	Prices of chicken increased with R3 to R5 in a month's time. Is this normal? Stellenbosch is a very expensive place in SA.

All			Government should introduce food stamps for the poor so that they can have access to basic food.
Milk and Bread	Shoprite Pick ‘n Pay		Prices are too high.
All			The marketing chain must be investigated.
Coffee			Inevitably, food items have risen with the devaluation of the Rand, but prices of coffee and coffee extracts continue to increase whereas the producing countries are suffering due to prices being low. Is there a logical explanation for this?
			In a modern economy food is produced as a product for the commercial market place. The market should be left free to find its own level; interference will result in food shortages.
All			Virtually 99% of food prices at supermarkets etc. are priced to end in 99cents. E.g. R7.99, R14.99 etc. It is surely obviously impossible for everything to end with 99cents, unless there is unnecessary manipulation in setting the prices. Not only food items are priced this way, items other than foodstuffs are also found to end similarly.
Milk			Milk is too expensive. The farmer gets R2.00/litre and retailer sells it for around R5.00/litre.
Milk, Cheese and Vegetables (lettuce)	Pick ‘n Pay		Making a lot of profit at the expense of the poor
Mangoes, Meat (Filet) and Vegetables	Pick ‘n Pay	Somerset West Cape Town W CAPE	Mangoes selling for R7.99 each and a box of six selling for R12.00 in Jo’burg. Fillet price R96.00/kg in Cape Town, but R65.00/kg in Jo’burg. Is it because it’s a tourist area? Tourists do not buy fillet steak to cook/roast/fry because most of them stay in hotels. These prices are exorbitant.
Tomatoes	Pick n Pay	Port Elizabeth E CAPE	He is a farmer; sells tomatoes to fresh produce market @ R1.60/kg and Pick n Pay sells the same tomatoes @ R5.99/kg. A difference of R4.39, not acceptable.
Maize Meal		LIMPOPO	Price of 80kg maize meal was R125 in 1999/2000 and R280 in 2001/2002. Price is too high.

2.6 Finding 'unjustified price increases': A major challenge to the Committee

The sudden rise in food prices created suspicion towards retailers and food manufacturers, and it was questioned whether they were acting in good faith. It was largely this concern shared by Government that led to the specific composition of the Committee's mandate, as discussed earlier. A large part of the mandate (terms of reference) focussed on issues relating to 'unjust increases'. This is illustrated by the following extract from the terms of reference:

- *Investigate any sharp or unjustified price increases.*
- *Investigate price formation mechanisms within the value chain of basic foodstuffs.*
- *Investigate collusive, discriminatory or any unfair business practices in the basic food value chain.*
- *Investigate incidents of predatory pricing and monopolistic tendencies.*

All of these aspects relate to the basic human rights issue of 'affordable food' as well as the issue of a 'just and fair price' for food. Questions emerging from an ethical point of view in this context are:

- What is a fair price for food?
- Were there any business practices or activities that created an 'unjust price'?

It is appropriate to debate this concept and indicate how the Committee dealt with this 'emotive' concept. On the one hand, this debate should be seen in the context of the market economy that we have in South Africa. On the other hand, it is important to qualify and illustrate that the working of the economy market does not automatically address all ethical and societal problems. This suggests that there are specific roles that Government could play.

Terreblanche (2003) explains the history of the concept of a 'just price' by referring to the 13th century Scholastic philosopher, Thomas of Aquino, who formulated the idea of a "just price" as "the price that will not give unfair advantage to either the seller or the buyer". This meant that if those involved cannot decide on such a price when guided by their Christian conscience, then the Roman Catholic Church would decide for them what the just price should be. Adam Smith was of the opinion that under certain ideal conditions the market price would be determined based on the level of the true value (or the Natural Price) of the good. In his thinking the Natural Price was not determined by market forces, but by public opinion (in a well-organised society) and therefore similar to Aquino's just price, albeit under a different name.

The argument about a 'just' or 'fair' price also goes back to Quesnay, the founder of the French Physiocrat School. When manufactured goods were exchanged, he argued, only equivalents were exchanged and no profits could arise in the exchange. In terms of his cost of production theory the 'natural price' of manufactured goods was explained by a number of other prices: those of the expenses of the producers and of the merchants who brought them to the market (Roll, 1978). Quesnay argued that under stable equilibrium conditions, business could not charge more than a price equal to the least cost of production in which a <u>normal</u> rate of profit determined by the opportunity cost of management is included. Only under such conditions is the price charged legitimate and does it represent a positive equilibrium value. Equilibrium prices satisfy not only the condition of a free open market but also the standards of social justice of equity, social peace and human solidarity in the community or nation as a whole. This, according to Rugina (1998) is what the French Physiocrats ultimately had in mind.

However, the idea of free open markets – a situation of *laissez-faire* or economic freedom – led to the perception that business should be free to charge any price that the market can take. It was argued by the Manchestarian School of Economic Thought in 19th century England that: 'a legitimate price is what the market can take without any other limitations' (Rugina, 1998:850). This argument stands central to the liberal capitalism of the UK, the USA and many other capitalist countries of today, an ideology which is currently under much scrutiny and debate (see also Kirsten, 2002), since it certainly does not satisfy the required standards of social equity (justice), social peace and human solidarity. It has become clear and accepted, however, that under disequilibrium conditions no fair equitable prices are possible. Although the liberal market philosophy is dominant amongst business in South Africa, it is a well-known fact that this society, that has experienced grave injustices for a long period, has not established conditions of stable equilibrium.

The question is how we can use these philosophical and ethical debates to inform the food price question in South Africa. On the left of the economic spectrum the labour unions, many NGO's and consumer activists hold the view that business and profit making is immoral (in line with the deontological ethical theory and based on the Marxist philosophy). They became ever more vocal when prices of food increased to meet the bottom line or profit targets of large food companies. On the right of the economic spectrum commodity traders, agribusiness and food companies, generally, support the merits of liberal market capitalism and argue for no intervention by Government in the market. In a free market economy the prices of food, according to them, are determined by supply and demand, and if raw material prices increase, the final product will most likely be more expensive. In other words, the price of food is considered to be 'fair' given that it is generated by market forces – 'it is not our fault – it is the market' would be a typical liberal statement. Little mention is made of concentration and monopolistic tendencies in certain industries, and few comments are made about the extreme inequalities in the South African economy. Given the general structural problem of the South African economy it can hardly be argued that there exists a competitive equilibrium and it can therefore not be claimed that all prices are 'fair' or 'just'.

The difficulty the Food Pricing Monitoring Committee has, is to determine and to prove whether there has been unethical behaviour by business in the food chain which has led to unjust price increases or 'profiteering' by business on basic foodstuffs. The question is, therefore, whether it is possible to find evidence of price manipulation or of unfair price policies.

One problem with the food price debate is that the time dimension is often ignored and that only short-term price shocks are considered. Often the truth is that retail prices are fairly stable over the long term. It is in this spirit that the Committee investigated how price shocks are transmitted along the value chain, and how the chain self-corrects without exploiting consumers and partners in the chain.

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CHAPTER 3

UNDERSTANDING THE NEED FOR GOVERNMENT INTERVENTION: THE IMPACT OF HIGH FOOD PRICES

3.1 Introduction

The South African food situation has been, and still is, characterised by a state of food self-sufficiency on a national scale. Despite food supply fluctuations occurring occasionally South Africa has been consistently self-sufficient and does not require food aid. Generally speaking, the combination of earlier socio-political policies and more recent macroeconomic, trade and agricultural developments have had a negative impact on the food security conditions of, especially, historically disadvantaged groups, and particularly those residing in the former homelands. The food security conditions of these vulnerable groups have been further worsened by natural disasters such as drought and floods, and the social disaster of HIV/AIDS.

Despite national food security, many South African households experience continued food insecurity, malnutrition and unemployment. According to figures of StatsSA, approximately 14.3 million South Africans are vulnerable to food insecurity. These vulnerable households include those headed by single women in lower income groups, elderly persons on state pensions who have assumed financial responsibility for the household (voluntarily or involuntarily), child-headed households, where the potential breadwinners have little or no opportunity to be employed, and the very susceptible poor households with barely any resources to even secure basic foods.

These are the households which seem to have been severely affected by the price increases of basic foods such as maize, bread, sugar, fruit and vegetables; they are also the households that do not share in the immediate benefits of price decreases. A number of other factors make it difficult for the vulnerable groups to enjoy and experience the benefit of low prices: lack of purchasing power, the inability to buy food in large quantities – for instance, buying in small quantities and irregularly is costly in transport cost – and an irregular income.

The reality of the food security problem is confirmed by the fact that one in four children under the age of six years (approximately 1.5 million) have stunted growth because of chronic malnutrition. Human development indicators measured at provincial level present a clear overview of provincial disparities in the socio-economic development for children; they highlight in particular the vulnerability of rural children to food insecurity.

The majority of agricultural producers in the former homelands cannot feed their households from their production base. They are deficit producers of agricultural produce and net consumers of purchased food. Many urban households that suffer low, irregular and unsustainable incomes are also very vulnerable.

Rising food prices from mid-2001 through 2002 for basic food items such as maize meal, bread, vegetables, meat, has been a major problem that adversely affected the subsistence levels of the poor in South Africa.

3.2 Geographical distribution of poverty

Figure 3.1 presents a map of South Africa depicting the percentage of people per district who live in poverty. According to this map, food insecurity and malnutrition are highest in provinces with large rural populations such as KwaZulu-Natal, Limpopo, Eastern Cape and the Free State. In addition, food insecurity is further among Black people, but also affects a significant number of Coloured households. The vulnerability of households to food insecurity is aggravated by the rapid spread of the HIV/AIDS pandemic among them.

The list of districts in the six provinces with high levels of poverty, which form part of the main target areas for Government interventions are the following:

Eastern Cape
Elliotdale; Willowvale; Tabankulu; Kentani; Port St Johns; Mqanduli; Engcobo; Flagstaff; Mt Fletcher; Ngqeleni; Cofimvaba; Libote Maluti; Lusikisiki; Mt Ayliff; Tsomo; Umzimkhulu; Idutywa; Tsolo; Mt Frere; Mpofu; Bizana; Qumbu; Cala; Nqamakwe; Keiskammahoek; Sterkspruit; Middledrift; Lady Frere; Pearston; Ntabethemba; Peddie; Komga; Barkly East; Umtata; Hofmeyr; Maclear; Lady Grey; Stutterheim; Bedford; Zwelitsha; Butterworth; Woodhouse; Tarkastad; Victoria East; Steytlerville; Elliot; Hewu; Steynsburg; Alexandria; Adelaide; Indwe; Kirkwood; Fort Beaufort; Sterkstroom; Hankey; Jansenville; Willowmore; Somerset East; Bathurst.

KwaZulu-Natal
Msinga; Kranskop; Weenen; Nkandla; Polela; Ingwavuma; Ixopo; Mapumulo; Port Alfred; Mtonjaneni; Ubombo; Underberg.

Limpopo
Mutali; Malamulele; Bochum; Giyani; Letaba; Vuwani; Sekhukhune land; Naphuno; Sekgosese; Hlanganani; Lulekani.

Free State
Witsieshoek; Fouriesburg; Hoopstad; Vredefort; Boshof; Wesselsbron; Lindley; Zastron; Wepener; Clocolan; Botshabelo; Excelsior; Marquard; Bultfontein; Smithfield; Koppies; Reitz; Theunissen; Viljoenskroon; Brandfort; Senekal; Heilbron; Ficksburg; Ventersburg; Winburg; Thaba'Nchu; Vrede; Jacobsdale; Rouxville; Bothaville; Frankfort; Dewetsdorp; Petrusburg; Harrismith; Ladybrand; Hennenman; Fauresmith; Parys; Philippolis; Trompsburg; Odendaalsrus; Jagersfontein; Bethulie; Edenburg; Virginia.

Northern Cape
Herbert; Hartswater; Barkly West; Hay; Sutherland; Victoria-West; Hanover; Britstown; Philipstown; Colesberg; Richmond; Fraserburg; Carnarvon; Warrenton; Calvinia and Williston.

North West
Huhudi; Ventersdorp; Delareyville; Kudumane; Phokwane; Schweizer-Reneke; Wolmaransstad; Madikwe.

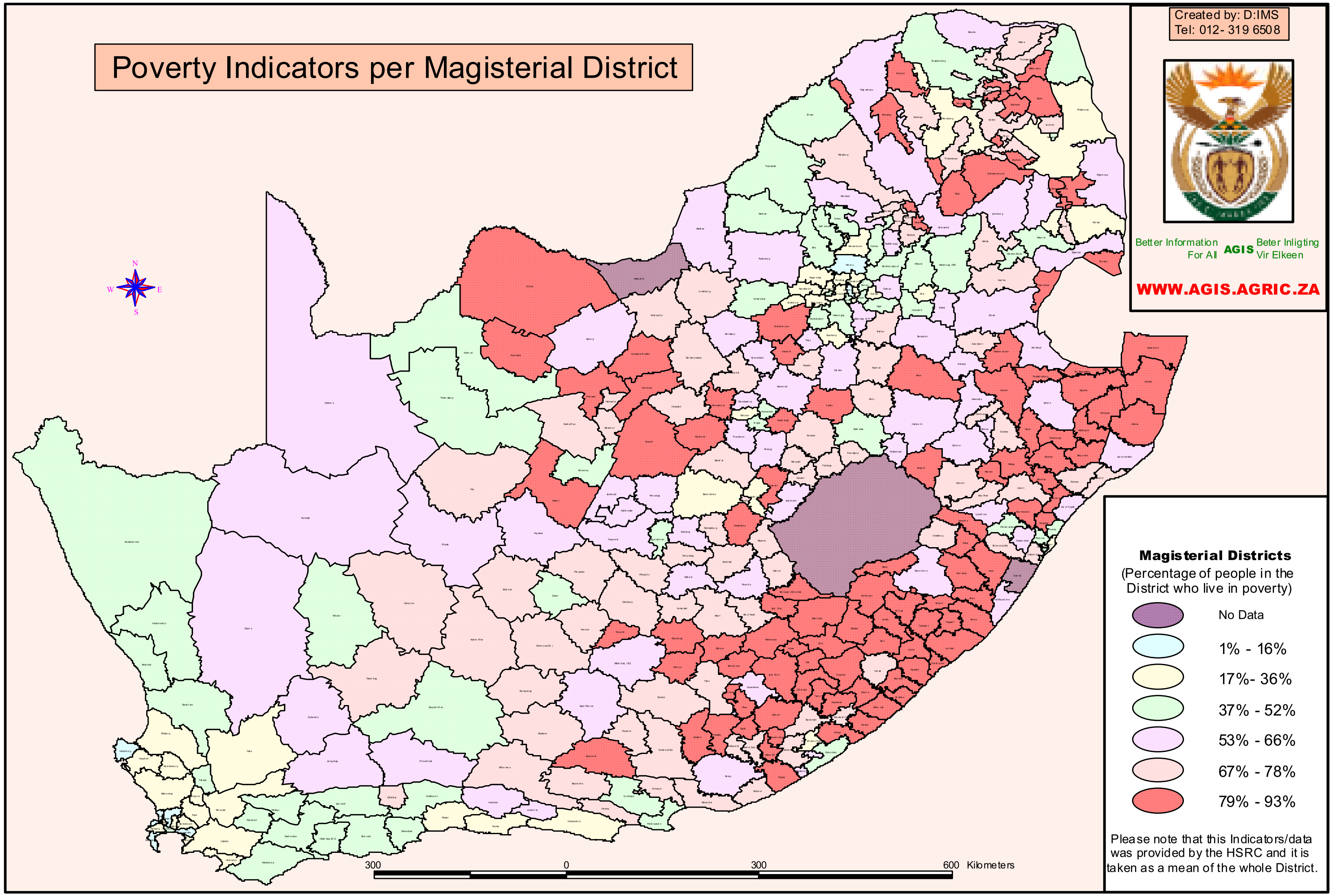

FIGURE 3.1: Percentage of people per district living in poverty in South Africa

3.3 The impact of high food prices on poor households

A pilot study on methods to monitor household-level food security was undertaken for the National Department of Agriculture in November 2002 by the Human Sciences Research Council. The study was done on six sites in three provinces (North West, Gauteng and KwaZulu-Natal), that is, two rural sites in North West, one urban site in Gauteng, and two rural sites and one urban site in KwaZulu-Natal. The study uncovered various effects that the increases in food prices have on poor households in the identified areas.

It should be stated, however, that detecting change over time in terms of prices and the impact caused by these proved to be a challenging task. For instance, households were tasked to remember what the prices of goods were six months prior to the study, and also the strategies they employed to cope with the situation then. Another challenge was to isolate possible confounding influences, that is those that are not related to the increase in food prices. The household survey specifically looked into three aspects:

(a) Household caloric acquisition: aiming to measure consumption of calories and nutrients over a finite period.

(b) Dietary diversity: Aiming to ascertain the relative quality of a household's diet by counting the number of different foods consumed by household members over a particular period of time. This included determining whether the food consumed had been grown or produced by the household or whether this was purchased.

(c) Household coping strategies: Aiming at determining what the strategies are adopted by households in reaction to an inability to acquire a satisfactory diet.

One or more focus group interviews were conducted at each of the six study sites. The focus group interviews were assisted in corroborating information collected through the household survey. Also, information from shops and general dealers was collected. The purpose of this was to establish a more objective basis for perceived food price change, which could then be compared to information collected in the household survey.

Results

An attempt was made at measuring the relative welfare of households, generated by other means than household income such as household possessions/assets. Better-off households tended to possess more assets in a good condition in comparison with worse-off households who owned fewer assets in a good condition and more assets in a poor condition.

Taken together, the results showed that a high proportion of respondent households experience food insecurity across a variety of dimensions (anxiety about future diet, dietary quality, dietary sufficiency, etc.), and that they to a limited extent engage in coping strategies such as relying on neighbours, buying food on credit and collecting wild plants.

Households of average and below-average welfare levels were more likely to cultivate crops compared to those at above-average level. The former group of households acknowledged that crop production and livestock keeping do contribute to household food security, and that subsistence agriculture was a crucial household survival strategy. As the reason that some households in this group were, presently, not cultivating crops, several households indicated that this was because of lack of fencing, which meant that livestock had access to their produce and would eat it. They also mentioned lack of water and high input prices like seed and feed as reasons for lack of farming activities.

The study found that price changes resulted in changes in the purchasing patterns in the households concerned. For instance, some quality substitutions took place to counteract price increases: approximately 15% of the households purchased lower-quality maize meal than before. Worse-off households were more likely to purchase food in smaller quantities, as a group they were under-represented among households that purchased in larger quantities, such as 50 and 80-kg bags of maize meal.

It was also established that there was an urban bias re the prices of food. For the same size maize-meal packaging, the prices in rural areas were higher than in urban areas. Taking into account liquidity constraints by households it was expected that households would change from larger to smaller packaging. Contrary to this expectation, it was found that only one household switched from larger to smaller packaging whereas three households switched from smaller to larger packaging. The presumption is that households considered the cost saving effects of bulk buying.

All participants during focus group interviews agreed that high food prices compelled them to reduce the number of meals per day, and that they had to change their food composition by opting for cheaper foods of a lower quality. There was a general feeling amongst households that government intervention was needed to curb the food price increases because the increase in food prices was making the poor even poorer.

Data collection from the shops was generally unsuccessful and resulted in incomplete data of dubious quality. Shopkeepers were felt to be very evasive in answering questions about the prices they were charging, and this particularly so with regard to previously charged prices. Shopkeepers corroborated the claims by households that credit purchases were only granted to households with regular incomes and pensioners.

3.4 The impact of food price increases on the CPI of various household groups, on the GDP, on labour and capital

The Department of Agriculture commissioned a macroeconomic impact study to determine the effect of the 2002 increases on food prices on the CPI of household groups, and the effect of these on income, GDP, labour and capital.

Two instruments were used for this analysis, namely a 2000 SAM and a 1996 I/O Table. Both instruments represent a database based on South Africa's national accounts. Considering the advantages and limitations of these instruments, it was decided to use both. In the case of the 2000 SAM, the spending patterns and income distribution of households had been disaggregated, which enabled the study to determine the total impact of food price increases on the CPI of low and high-income households, and an aggregate of all household groups. In the case of the 1996 I/O Table, the agricultural sector had been disaggregated into 17 sub-sectors. This made it possible for the study to improve on the original model's calculations.

Part 2

Results on the total impact of food price increases on the CPI for different household groups

Foods consumed consist of domestically unprocessed and processed foods, as well as imported unprocessed and processed foods. Price increases in domestically processed foods are captured automatically by the models and are not calculated *per se*, while price increases in imported processed foods are not captured by the models and are determined separately (outside the models).

Based on the structure of the SAM, the direct price change between 2001 and 2002 of unprocessed foods is 26.3% of which only the real price change of 15.72% is taken into account for purposes of this analysis. The price increase of 26.3% was deflated with the price increases of the PPI of 9.1%, before agricultural product price changes were taken into account, to a real price increase of 15.72% as mentioned above. As far as imported processed foods are concerned, a price increase of 14.8% was measured. This price increase was deflated by the price increases of the PPI, as provided above, and a real price increase of 5.21% for imported processed foods, was used for this analysis. The direct price change of unprocessed foods was run through the SAM in order to determine the total price change. An adjustment had to be made to exclude the effect of the direct price change on non-food sectors forming part of the agricultural sector. Finally, price changes in imported processed foods are weighed in at 15% (real changes).

Results are presented as price changes experienced by consumers and weighted according to their spending patterns. This, of course, is similar to the CPI. In so doing it was found that the total CPI had increased 2.80, 2.05 and 2.24 percentage points, due to food price increases between 2001 and 2002 for low-income, high-income and all household groups, respectively. As expected, food price increases have a greater effect on low-income household groups than on high-income household groups.

Based on the structure of the I/O Table, adjustments for non-foods had to be made in order to exclude their possible effect on price increases. The direct price change of unprocessed foods was run through the I/O Table in order to determine the total price change. The I/O Table based basic prices were adjusted to consumer prices by adding trade and transport margins. The impact of food price increases in unprocessed foods on the CPI was calculated at 2.55%. Finally, the impact of food price increases in imported processed foods was weighed in, and the CPI was re-calculated at 2.39%. On average, the inflation rate of approximately 9.2% for 2002 could have been only 6.9%, if food prices increases were in the same order than other products. The fact that the increase in the CPI determined from both the SAM and I/O Table based calculations are fairly close validates the structures on which they are built and confirms the validity of the results in Box 1.

Box 1: Increases in the Consumer Price Index (CPI)

Based on the structure of the 2000 SAM			**Based on the structure of the 1996 I/O Table**
Low income households	**High income households**	**All households**	**All households**
2.80	2.05	2.24	2.39

Introduction

Results on the income effect of changes in the CPI on the GDP, labour and capital

The same methods are applied for both the SAM and I/O Table based calculations, as presented above, except that the smaller version of the SAM is used in order to exclude the household sector (in other words the induced impact). The direct and indirect impact on the CPI according to the SAM based calculations is 1.37%, while it is 1.35% according to the I/O Table based calculations. The average of 1.36% is used to calculate the decline in disposable income of R10.8 billion. This loss in disposable income is used to determine new spending patterns for households from the SAM, which is expressed in terms of the GDP, labour and capital.

Box 2: Impact on the Gross Domestic Product, labour and capital requirements

	Direct	*Indirect*	*Induced*	*Total*
GDP (R million)	***-3,703***	***-1,800***	***-5,038***	***-10,541***
Labour (Numbers)	***-18,690***	***-13,460***	***-30,011***	***-62,160***
Capital (R million)	***-7,335***	***-4,092***	***-9,851***	***-21,277***

According to the SARB, South Africa's GDP for 2002 was R1 098.7 billion at current prices. In terms of Box 2, if food price increases had not occurred, it would have been up to R10.5 billion higher at R1 109.2 billion (1% higher). The financial & business services sectors were impacted the most, followed by the manufacturing and trade & accommodation sectors.

Employment in the non-agricultural sectors was 4.7 million in 2000 (SARB, 2003), while employment in agricultural sectors is estimated at 1 million, totalling a workforce of 5.7 million people. According to Box 2, it is expected that 62 160 of these people will lose their jobs. The impact of this will, however, take time to filter through the economy. It is, therefore, not possible to say that this already happened in 2002. In this case, the agricultural sector was impacted the most, followed by the manufacturing and trade & accommodation sectors.

South Africa's fixed capital stock for 2002 was R1,323 billion at constant 1995 prices (SARB, 2003). The results in Box 2 show that, if the disproportionate food price increases had not occurred, it would have been R21.3 billion higher at R1,344 billion (1.59% higher). The financial & business services sectors were impacted the most, followed by the transport & communication and manufacturing sectors.

3.5 The 'right to food' and the reality of South Africa's food security situation[2].

The stark reality is that many South Africans do simply not have enough to eat. More than 45% of the population in the rural areas and 26% in metropolitan areas reported in 1998 that they go hungry at least once a month; 17% of people living in the rural areas reported going hungry at least once a week; and 6% of those living in urban and semi-urban areas go hungry every day. This situation worsened during 2002/2003 because of the high food prices.

[2] Based on an input from Danie Brand, University of Pretoria

To place these figures in a socio-political context, hunger and malnutrition are also stratified along racial, class and gender lines:

- A higher percentage of black adult men are underweight than adult men in any other racial group;
- 30% of black children under the age of five suffer from stunted growth, while this rate is 5% among white children;
- 38% of rural black South Africans report going hungry at least once a month as opposed to almost no rural white South Africans;
- Stunted growth among young children is most prevalent in three of South Africa's poorest and most rural provinces: Limpopo (Northern Province) (34.2%), Eastern Cape (28.8%), and Free State (28.7%);
- 25% of adult women suffer from nutritional defects such as iron deficiencies.

Although telling in themselves, these statistics highlight two things. Firstly, they show that there is an obvious disconnection between South Africa's ability to produce and procure more than enough food for its people – something which it consistently succeeds in doing – and its ability to actually stave off malnutrition, under-nutrition and hunger among its people – something which it manifestly fails to do. Long ago Amartya Sen made the general point that such hunger, malnutrition and food insecurity as statistics indicate almost never result from an insufficient national food supply (what Sen calls the *availability* of food), but almost always from insufficient access to an existing sufficient food supply (depending on questions of what Sen calls *entitlement*).[3]

This observation also applies to South Africa. The figures cited clearly show that the crucial question in addressing issues of food insecurity and its effects in South Africa is not so much about how to maintain an adequate national supply of food, as it is about how to place an existing adequate supply of food at the disposal of those who need it, in other words, how to generate effective access to food.

This fact places the problem of food insecurity in South Africa squarely in the legal domain. A country's national food supply (food availability) is mostly determined by natural and macro-economic factors. These are issues that the law (and the Government) can do little about to control and shape. Actual access to food, on the other hand, is determined largely by entitlement – by social and political factors. Access depends on the ability "to establish command over food, using the entitlement relations operating in…society depending on its legal, economic, political and social characteristics…"[4] The law can do a great deal to control and shape these things. It can set parameters and determine priorities for social and economic policy formulation and it can shape and control the different legal and non-legal power relations that determine access to food. In this sense the law "stands between food availability and food entitlement"[5] – when used effectively, it can mediate between availability and entitlement.

[3] Sen 1981: 1. I dare, once again, to repeat his famous quote here: "Starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there not being enough food to eat". See also Drëze and Sen 1998; Eide 1995: 94 – 95; and Ravindran and Blyberg 2000: 222.
[4] Sen 1981: 165.
[5] Sen 1981: 166: "[T]he focus on entitlement has the effect of emphasising legal rights. Other relevant factors, for example market forces, can be seen as operating through a system of legal relations (ownership rights, contractual obligations, legal exchanges, etc). The law stands between food availability and food entitlement."

Introduction

The nutritional status of many people in South Africa is desperate, in the sense that they suffer the 'daily terrorism of hunger'. Both the food intake data and the anthropometric indicators presented above show that many South Africans do not even reach *basic essential* levels of access to food, let alone enjoy a fully adequate nutritional status. These situations will obviously be worsened when food becomes unaffordable

The desperate state of many South Africans' nutritional status amounts to a crisis situation that requires a crisis response: direct and immediate intervention rather than the indirect, longer-term policies that are intended to address a situation of less acute nutritional inadequacy over the longer-term. In other words, the food crisis facing many South Africans indicates a need for a policy focus on the **direct transfer of food** to people in need with the aim of improving their food entitlement immediately. In addition to this, a focus is needed on longer-term capacity building initiatives that will gradually improve food entitlement.

It is in this context and within the framework of the Constitutional right to food that the Committee debated the kind of potential actions Government can take to ensure its Constitutional obligation of ensuring that every citizen has access to food. In terms of its mandate, the Committee must be certain that the reason for the unaffordability of food is not related to unfair business practices, which would require different government interventions. Parts 3 to 6 that follow address the core mandate of the Committee with Part 7 debating the potential interventions.

3.6 Summary

The purpose of this Chapter was to specifically argue the case for Government to address the high cost of food. The Chapter highlighted the reality of poverty and food security in the country. The data provide sufficient argument for government engagement to address the plight of poor and vulnerable households affected by the sharp increases in the price of food. The following sections of the report (Parts 3 to 6) address the main terms of reference of the Committee but returns to the role for Government when making specific recommendations in Part 7.

PART 3

MONITORING FOOD PRICE TRENDS

Introduction to Part 3

One of the major tasks of the Food Pricing Monitoring Committee was to monitor food prices. This seemed to be a relatively simple task, but it soon became clear that recording and measurement errors could easily lead to erroneous conclusions. Consequently, great care was taken in the methodology and the approaches used. Given the potential for data inconsistency and in order to confirm specific trends it was decided to tackle the task of monitoring price trends from 5 different angles.

In the first place, the Committee utilised the various time series of aggregate data depicting food price inflation on a national scale. The trends in food price inflation as reflected by the data from Statistics South Africa (StatsSA) is presented in Chapter 1 and can be compared with the trends of the individual food products discussed in later Chapters.

In Chapter 2, the actual prices are compared for the month of September for individual products at different localities throughout the country. Prof Johann Potgieter has recorded these data for the last 30 years for the annual cost of living survey, done every September. Prof Potgieter travelled South Africa again in September 2003 and he was, therefore, able to compare food prices in September 2003 with prices in the month of September in previous years, especially those of 2000, 2001 and 2002.

The Committee in collaboration with the NAMC, also set-up 6 monitoring points: two in rural areas, two in peri-urban areas (township) and two in main cities/towns in each of the 9 provinces to monitor the prices of the basket of 26 food products identified by the Committee (See Table 1). The process of monitoring food prices had been put in place by the NAMC since May 2002 in the Gauteng province and the Committee was fortunate to link up to this ongoing activity. Chapter 3 deals with the results from this monitoring activity.

Table 1: List of 26 food products monitored

250g Margarine	1litre Milk
750ml Sunflower Oil	Chicken/kg
410g Peanut Butter	1 Doz Eggs
White Bread	425g Pilchards
Brown Bread	Potatoes/kg
250g Tea Leaves	Onions/kg
250g Instant Coffee	Tomatoes/kg
2.5kg and 12.5 kg Maize Meal	Cabbage per head
1kg Samp	Apples/kg
Stewing Beef/kg	Oranges/kg
Bananas/kg	Sugar beans (500g)
2Kg Rice	Butter Beans (500g)
2,5 kg White Sugar	Sorghum meal

As another avenue for monitoring retail prices, the Committee utilised the data extracted from the pay point scanners in retail stores. This database managed by AC

Nielsen on behalf of the retailers and manufacturers provides valuable data for most of the major urban stores. This data set presented the Committee with average monthly prices for a large number of branded food products. The usefulness of these data is that they are the actual prices recorded with no fieldworker bias, etc. The results from the trend analysis of these monthly data are presented in Chapter 3.

Since the majority of poor households resides in remote rural areas, and because the data sources listed above do have a relative strong urban bias, it was decided to also monitor the difference between prices in urban stores and those of spazas/general dealers in remote rural areas. This was done for a period of four months during 2003 in 5 provinces (Free State, Northern Cape, Eastern Cape, Limpopo and Kwazulu-Natal). Despite the short period of this exercise, it nevertheless provided the Committee with a good sense of differences between prices in these stores and those in the urban supermarkets or at wholesalers. The results of this analysis are reported in Chapter 4.

CHAPTER 1

INFLATION AND FOOD PRICE INFLATION IN SOUTH AFRICA: JANUARY 1991 – SEPTEMBER 2003

1.1 Introduction[1]

In this chapter, a broad overview is presented of general inflation trends in South Africa as measured by the Consumer Price Index (CPI). The CPI measures how the price level of consumer goods and services purchased by households have changed between two points in time.

Currently, Statistics South Africa (StatsSA) compiles and disseminates a number of different CPI aggregates, each serving a number of different analytical purposes. The various CPI's calculated for SA include:

- **Consumer Price Index**: This index is used to calculate the official or headline rate of inflation and consists of price increases for all goods and services in the main metropolitan areas of the country.

- **Core Index**: Certain items are excluded from the CPI basket on the basis that their prices are highly volatile, subject to temporary influences, or affected by government policies. These exclusions are fresh and frozen meat and fish, fresh and frozen vegetables, fresh fruit and nuts, interest rates on mortgage bonds and overdrafts/personal loans, and changes in VAT and assessment rates, and a few other items. The Core Index is used to calculate core inflation and is a reflection of the underlying inflationary pressures in the economy.

- **CPIX**: The CPI excluding interest rates on mortgage bonds (CPIX), a measure designed to assist with inflation targeting.

- **CPIF, or the Food Price Index**: Only the food items appearing in the CPI basket are included. The CPIF is regarded as useful to assess the impact of price increases on poor households since food is the single biggest item in the total basket for the CPI.

For the purpose of this Report, and in particular this Chapter, the CPIF is of relevance. Table 1.1 shows the share of food in the CPI in 13 countries of the world, selected to represent a spread of developed, developing, and middle-income food exporting countries (based on data availability). This shows that the weight of food in the CPI in South Africa is higher than that in developed economies such as Ireland, Australia, Canada and New Zealand, as could be expected. However, the share is lower than in countries such as Japan, Hong Kong and Chile, where the per capita income is higher than in South Africa.

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[1] Parts of this Section draw heavily from the Vink and Kirsten report to the National Treasury, June 2002.

Part of the reason why the share of food in the CPI in South Africa is lower than expected can be found in the last two columns of Table1.1, which shows that the South African CPIF excludes meals eaten away from the home. Food consumed away from home already represents more than 50% of food consumption in many developed countries. The example of Hong Kong in the Table is instructive in this regard, as food consumed at home represents only some 10 percentage points of the total contribution of food (26 percentage points) to the CPI. This is less than half in New Zealand (20% of the food sub-group) and Australia (a third of the food sub-group); in Ireland, it is allocated to an entirely different sub-group.

Table 1.1: The share of food in the CPI, selected countries

Country	Base year	Per capita income (USD)[2]	Share of food in CPI	Share of food away from home (%)	Basis of inclusion
Philippines	1994	1 040	51.00	Na	
Uganda	1997/98	300	45.20	Not included	
Malaysia	2000	3 380	33.80	Na	
Swaziland	1985	1 390	30.70	Not included	
Japan	2000	35 620	28.50	Na	The cost of a bowl of rice topped with seasoned beef is included in the food category of the CPI
South Korea	2000	8 910	27.12	Na	
Chile[1]	1997	4 590	27.00	Na	
Hong Kong	1999/00		26.67	16.67	Included, i.e. food at home makes up only 10.28% of the total for food.
South Africa	2000	3 020	25.44	Not included	
New Zealand	1999	12 990	18.50	19.71% of the food sub-group	Includes an item 'restaurant meals and ready-to-eat' in the food subgroup
Canada	1992		18.00		
Australia	1998/99	20 240	17.72	4.93% of the food sub-group	Includes an item 'Meals out and take away foods' in the food subgroup
Ireland	2001	22 660	12.75	17.76	Includes a separate item 'Restaurants and Hotels' (which includes take-away) in the CPI

[1] Includes beverages
[2] World Development Indicators database, World Bank, April 2002

Table 1.2: The weighting of food items in the CPI

Product	**Weight**
CPI	
CPI Excluding food	79,01
Food (total)	20,99
Grain products	3,81
Meat	5,66
Fish and other seafood	0,69
Milk, cheese and eggs	1,96
Fats and oils	0,76
Fruit and nuts	1,09
Vegetables	2,00
Sugar	0,50
Coffee, tea and cocoa	1,07
Other	3,45

Source: *Statistics South Africa*

In the remainder of the Chapter a long-term view is taken about trends in inflation and food price inflation in particular. This provides the background for the detailed discussions of retail price trends of the individual food products in the rest of the Chapters in this part of the Report.

1.2 Inflation trends

South Africa has been battling with double-digit inflation during most of the 1980s and early 1990s. Figure 1.1 shows that inflation remained below 10% after 1995 and even reached figures around 5% until it increased to high levels of 12% in 2002. The data in Figure 1.1 reflect the trend in the CPI-food with levels of 30% in 1991/92, then declining and stabilising gradually until the sudden surge to 20% in 2002. The September 2003 CPIF is only 3.8%, suggesting that food price inflation and total inflation (down to 3.7%) had recovered dramatically.

The data in Figure 1.1 show that when CPI-food was growing at a relatively constant rate (up to the end of 1999), the overall inflation rate was declining. However, it is clear that between the end of 1999 and the middle of 2000, and again from the middle of July 2001 onwards the increase in CPI-food has preceded an increase in the overall rate of inflation. This interpretation is emphasised by Figure 1.2, which shows the difference between the CPI and CPI ex-Food, and illustrates the important contribution of food price inflation to total inflation during the early part of 2002. Figure 1.2 also shows how the effect of food price inflation on total inflation decreased significantly over the last year. Whereas the difference was almost 2 percentage points in September 2002, there was virtually no difference in September 2003.

Another indication of the fast improving inflation picture in South Africa is reflected in Figure 1.3, which shows how the Producer Price Index (PPI) for food has dropped in recent months to negative figures.

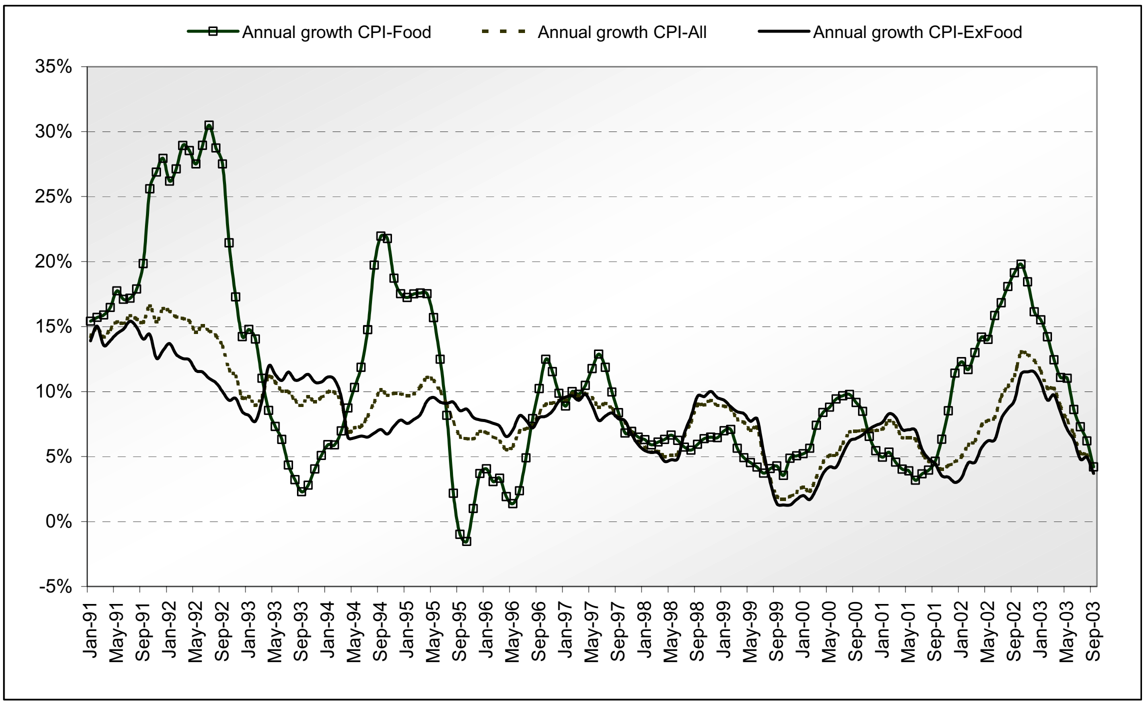

Figure 1.1: Change in CPI, CPI-food and CPI ex-food: Jan 1991 – Sept 2003

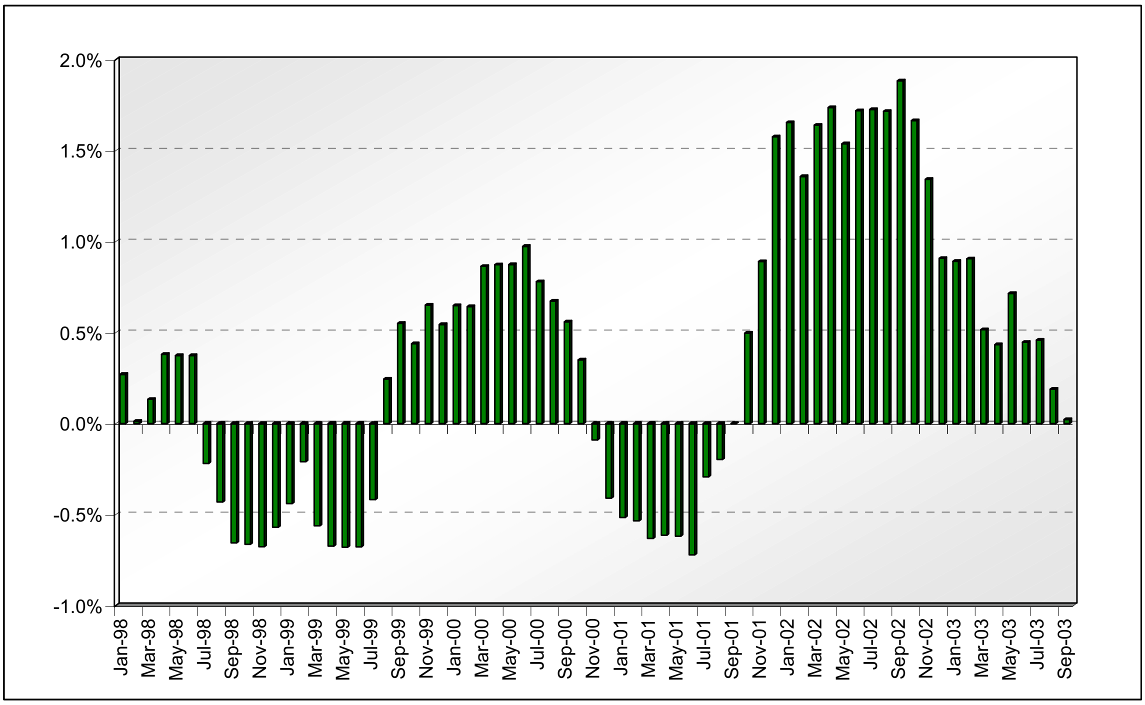

Figure 1.2: 'Food price inflation no longer the culprit': Difference between annual increase in CPI-all and CPI ex-food: Jan 1998-Sept 2003 (% points)

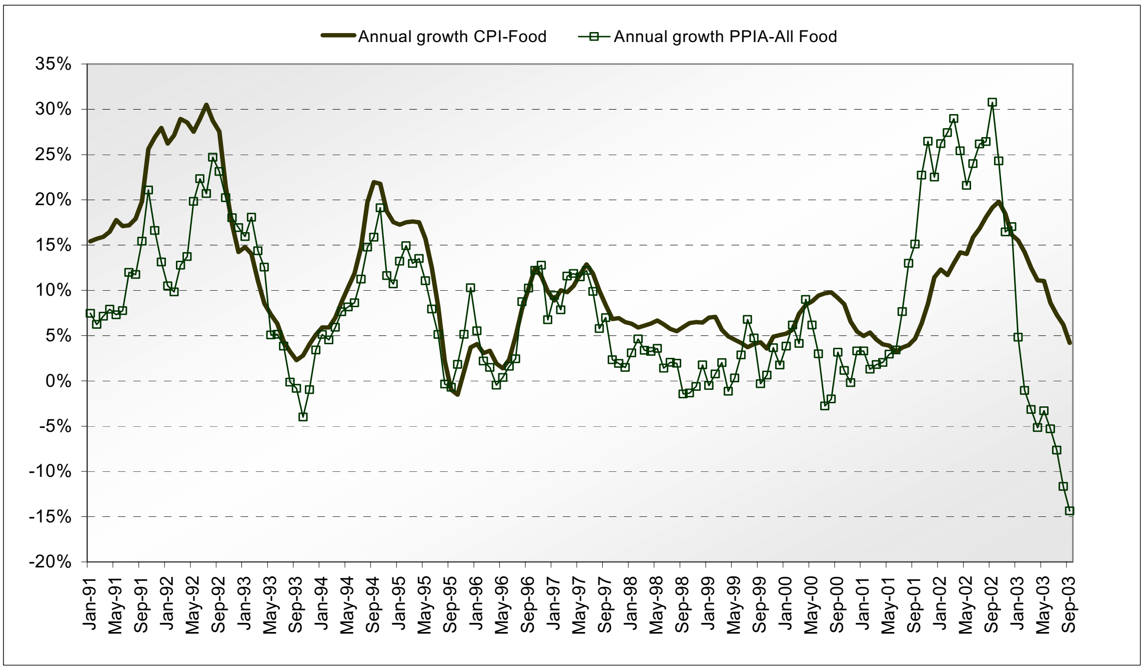

Figure 1.3: Annual change in CPI-food and PPI-food: January 1991 to September 2003

1.2.1 Unpacking food price inflation for different commodity groups

The next series of figures (Figures 1.4 to 1.7) are self-explanatory and provide more detailed analyses of the trends in the CPI and PPI for selected food groups, namely grain products, fruits and nuts, tea, coffee and sugar, and processed and unprocessed food products. Most of the commodities and food products show a similar trend with relatively stable and low inflation between July 1996 and November 2001. The high growth rates in the CPI and PPI series in 2002 are noticeable in all the commodities except for vegetables and fruits and nuts.

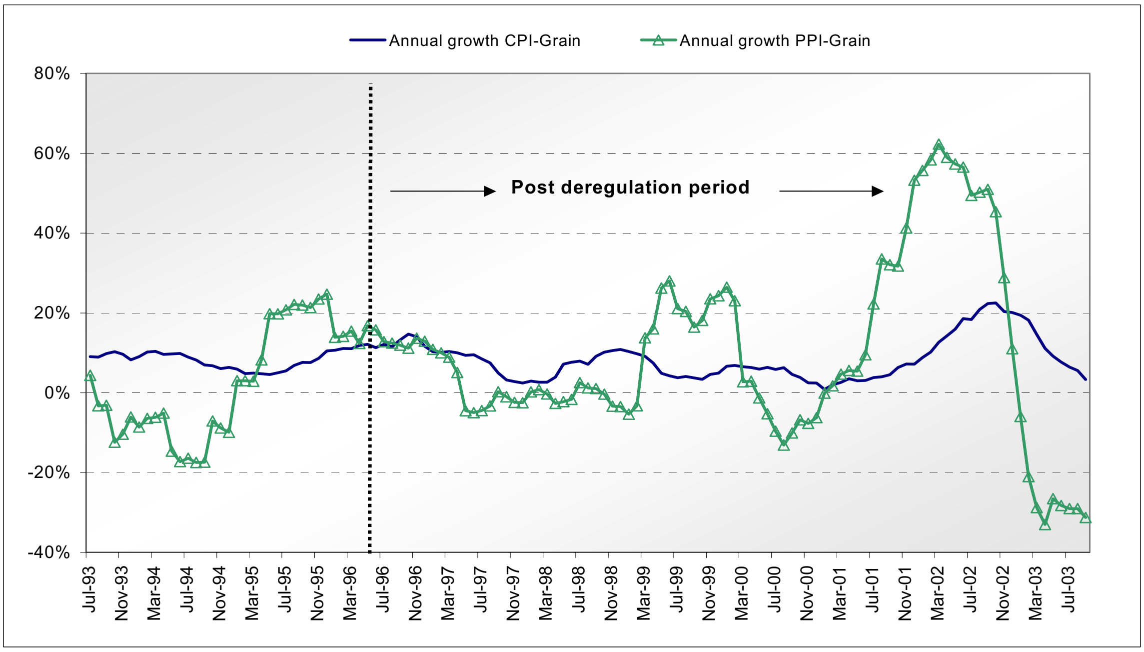

Figure 1.4: PPI and CPI for grain products: July 1993 to August 2003

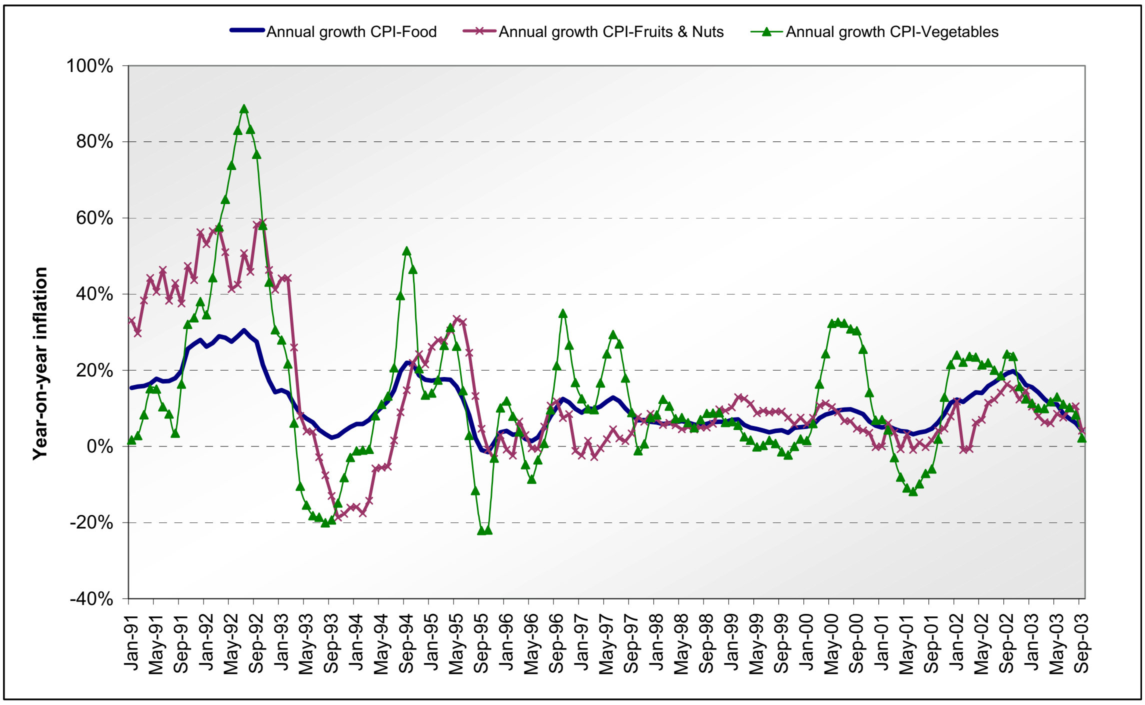

Figure 1.5: CPI for vegetables and fruits and nuts: January 1991 to September 2003

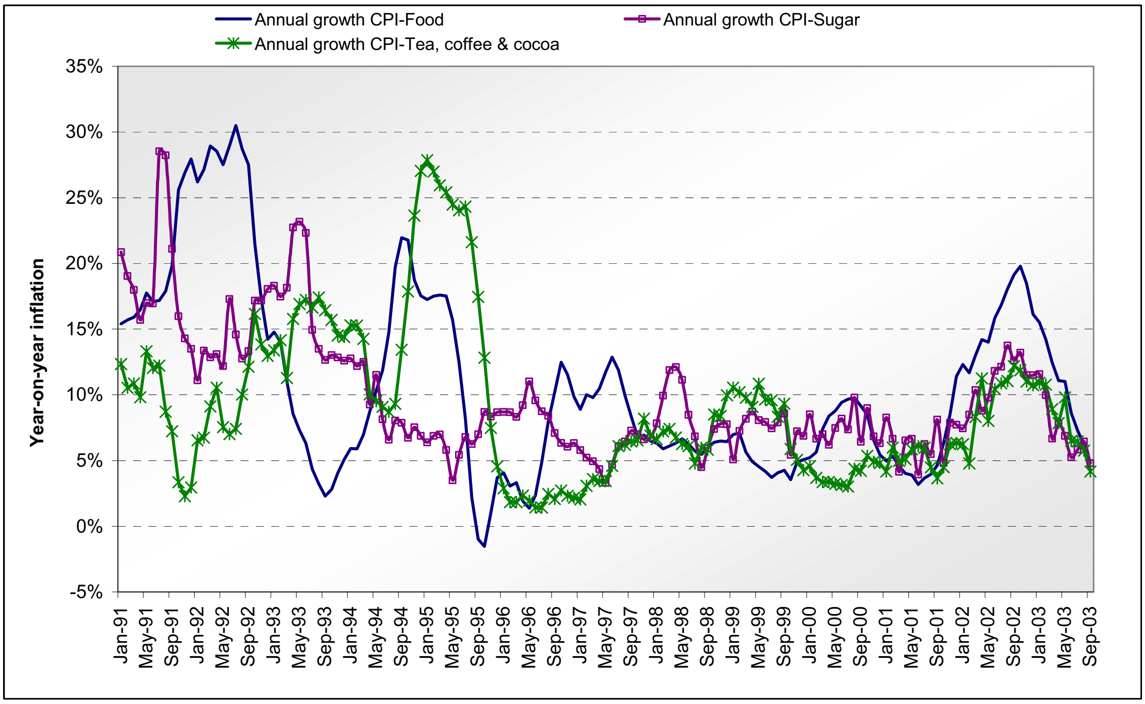

Figure 1.6: CPI for sugar and coffee, tea and cocoa: January 1991 – September 2003.

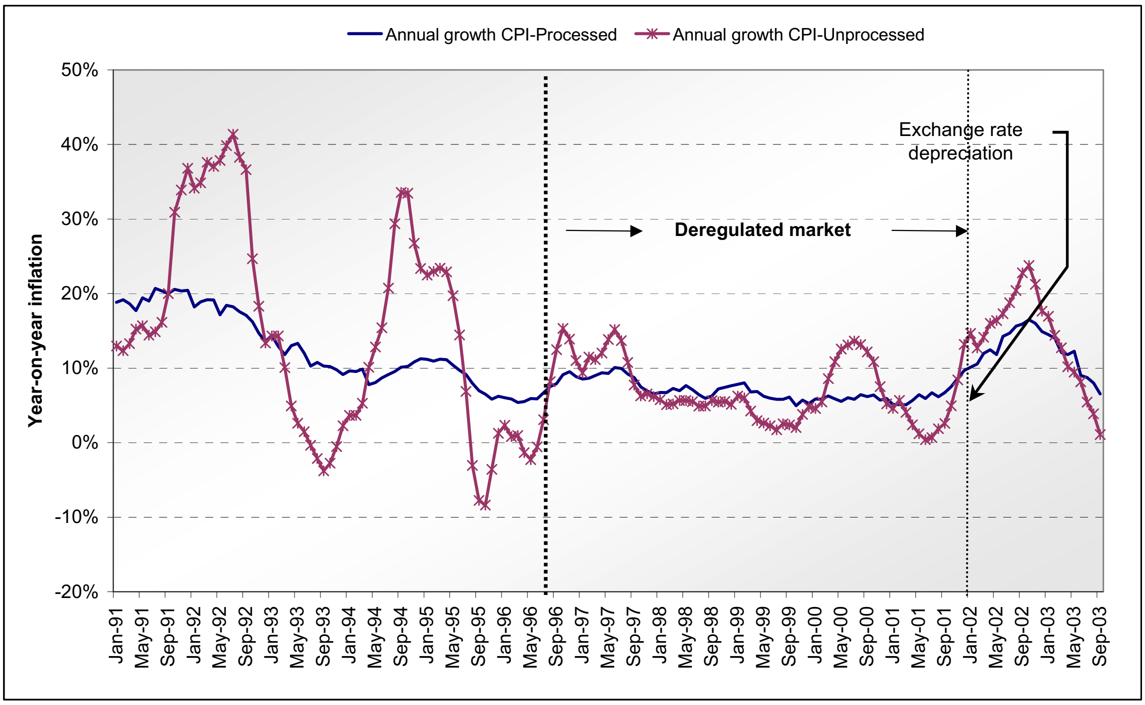

Figure 1.7: CPI for processed and unprocessed food products

1.2.2 Food price inflation and rural communities

When one unpacks the various CPI series in the StatsSA database, an interesting dichotomy between food price inflation in rural and urban areas emerges. The Consumer Price Index for food (for most commodities) in rural areas is generally higher, with inflation (year on year) being generally higher than in urban areas (except for September 2003). This is illustrated in Table 1.3 and Figures 1.8 to 1.11.

Table 1.3: The relationship between food price inflation in rural and urban areas

	January 2003		September 2003	
	Urban	**Rural**	**Urban**	**Rural**
CPI-food	129.7	137.5	131.7	138.3
Inflation: Total Food	15.1%	22.5%	4.2%	2.2%
Inflation: Grain Prod	19.0%	30.4%	3.3%	-3.2%

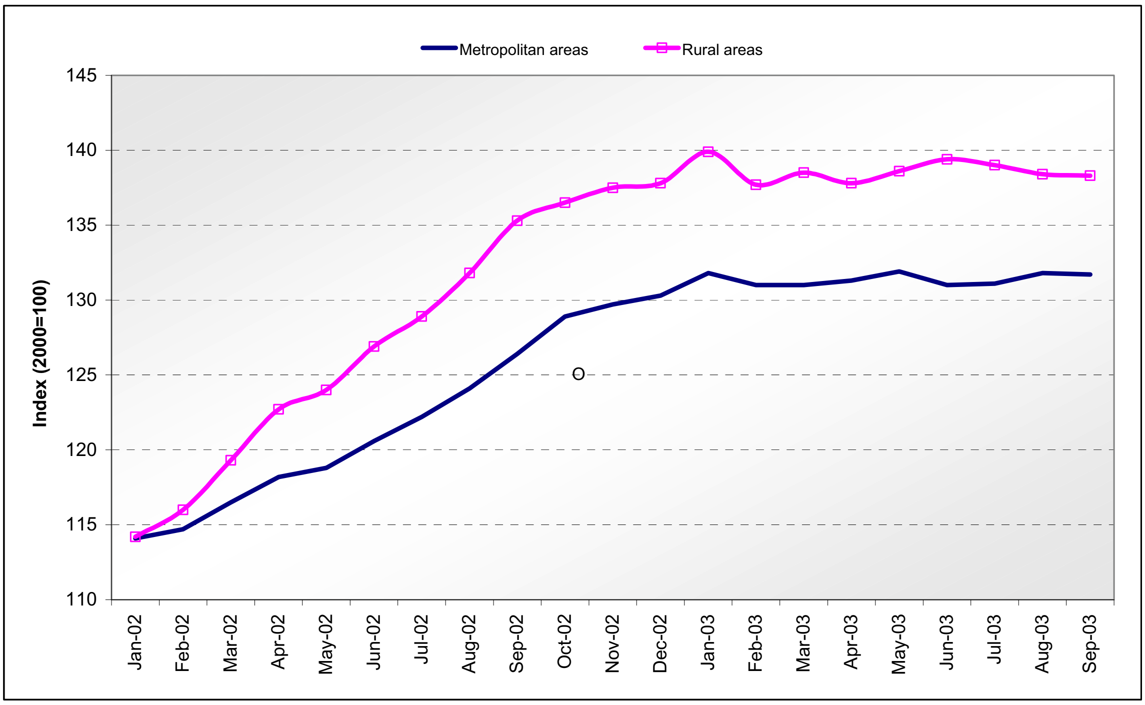

Figure 1.8: CPI food for rural and metropolitan areas: January 2002 to September 2003

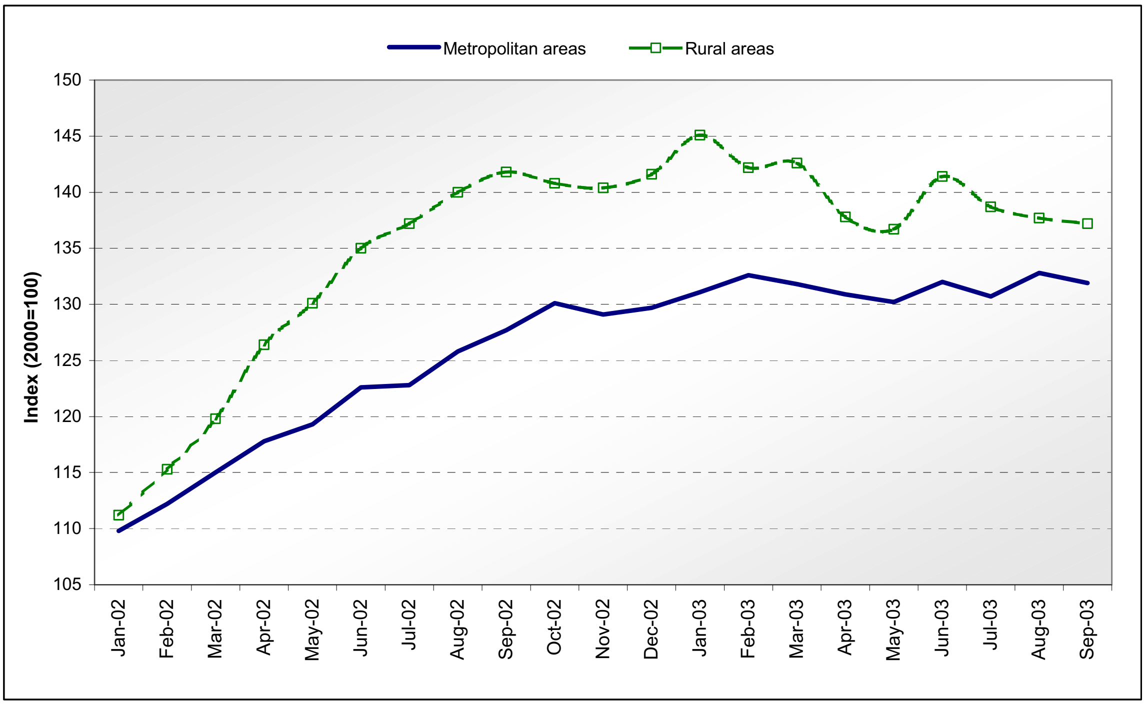

Figure 1.9: CPI for grain products for rural and metropolitan areas: January 2002 to September 2003

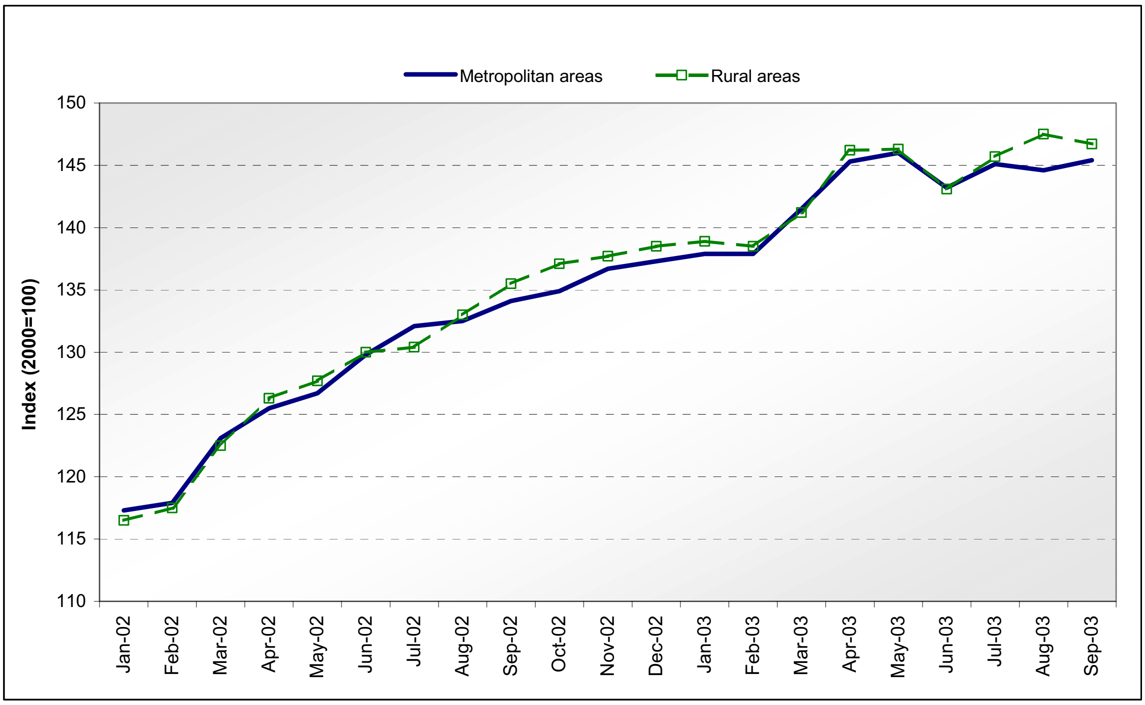

Figure 1.10: CPI for dairy products and eggs for rural and metropolitan areas: Jan 2002-Sept 2003

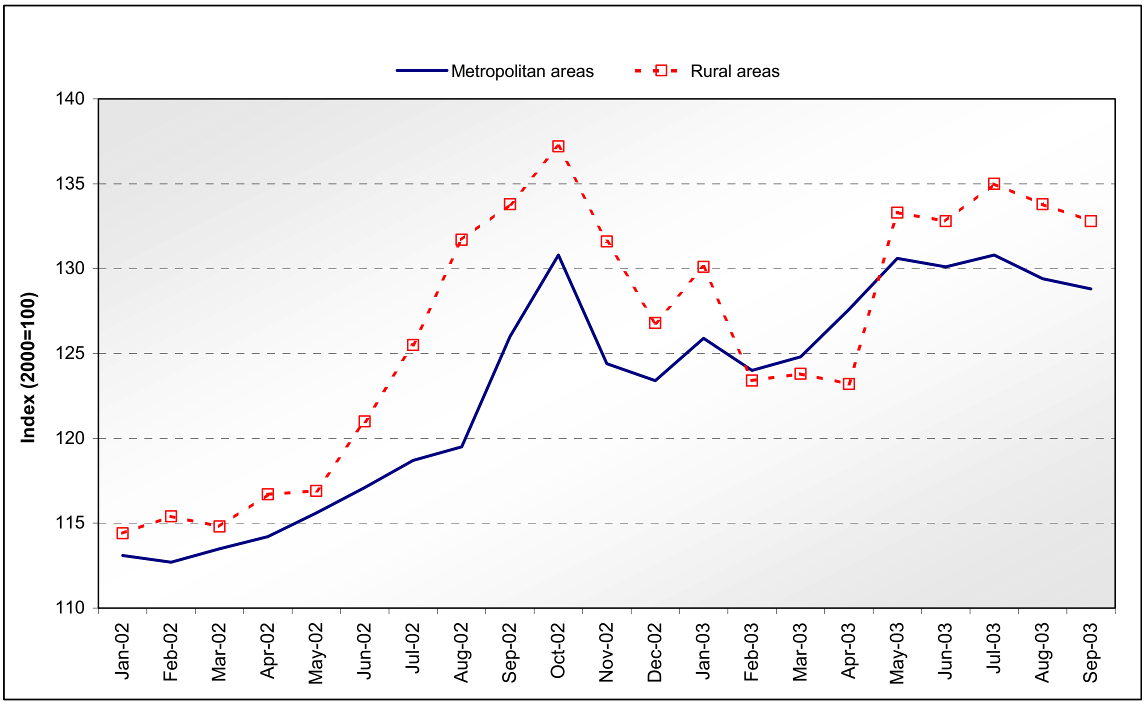

Figure 1.11: CPI for vegetables for rural and metropolitan areas: Jan 2002 to Sept 2003

Food purchasing patterns of rural households: A case study of households in Guqoka and Koloni, Eastern Cape[2]

Although the inflation trends look differently for rural households, it is imperative to make an important clarification. Do these households buy their food in urban markets or do they rely on the local store in the rural village for their food supplies? A recent study by a PhD student at the University of Fort Hare of 2 rural villages in the Eastern Cape attempts to answer this question.

Households in these two villages were asked to list all the strategies they employed to secure their food needs. These were found to consist of a combination of food acquisition strategies (i.e. ways of obtaining food) and entitlements. Food was acquired in five different ways, namely by purchasing food from urban markets, purchasing food from village markets, the household's own production of crops and livestock, bartering of food (food for food exchange) and claiming against relations (network of social relations). Table 1.4 shows these strategies as well as the proportion of households that employed these strategies.

Table 1.4: Food acquisition strategies employed by households at Guquka and Koloni in 1999 (n= 128)

	Guquka		Koloni	
Food acquisition strategy	**No**	**%**	**No**	**%**
Purchases on urban markets	63	93	60	100
Purchases on the village market	68	100	60	100
Own production of crops and livestock	61	90	52	87
Bartering of food (food for food exchange)	61	90	0	0
Claims against relations (network of social obligations)	68	100	60	100

Purchasing food from urban centres was the most important strategy employed by households in both villages. All households in Koloni and 93% of the households in Guquka acquired food in this way. Out of the five food acquisition strategies employed by households, purchasing food from urban centres can be regarded as the main strategy. Households in Koloni made use of supermarkets in King William's Town, about 60km from the village. They travelled by bus at R20.00 per return trip, and were not charged for loading their food parcels. Households in Guquka made use of supermarkets in Alice, which is about 30km away from the village. In Guquka, households travelled by combi-taxis to town as there was no bus passing the village. Apart from paying for the purchase of the goods, they also had to pay for transport and loading costs. The cost of transport was fixed at R12.00 per return trip, while loading costs varied from 50c to R5.00, depending on the weight and bulk of the food items. Groceries were purchased on a monthly basis and in bulk (10 – 50 kgs), which was particularly the case with staples. Most households purchased their groceries from supermarkets at month end.

[2] The information for this section was kindly provided by Prof Gavin Fraser and his PhD student Nomakhaya Monde at the University of Fort Hare

Buying food from local markets did not seem to be an important food acquisition strategy. The main reason for buying food in village shops was the occurrence of food shortages between the monthly grocery shopping trips in the urban centres. Buying bread when a household was running out of wheat flour is but one example. In other words, buying food from local markets appeared to be primarily a strategy for coping with temporary food shortages. Food products that were commonly bought locally included *amasi* and vegetables. All households in both villages bought some food items from local shops. Households who bought all their food from local suppliers appeared to lack the resources to buy in urban stores. They did not have a reliable source of income, and for their income they relied on doing piece jobs in the villages. The amounts they would earn at any one point in time were very small. The effect of this was that they did not even consider buying food from urban markets because the cost of transport was too high to warrant the trip.

Acquiring food through own production was mainly achieved through field cropping (very few households) and gardening (a majority of households). Very few people owned livestock, and the majority of these did not get much in terms of food from their animals. Exchanging food products for money or for other food products was an important food acquisition strategy in Guquka, but none of the respondents in Koloni acquired food this way. In Guquka, the products exchanged for other products were those obtained from home gardens, as there were no households amongst the respondents who cropped their fields.

Exchanges amongst and claiming against relations was another important food acquisition strategy. All households seemed to have social networks in their village. In most cases, the relationships were based on kinship. Gardens supplied a lot of the food that featured in this particular food acquisition strategy. When a household obtained produce from the garden, a portion of this was donated to relatives, friends or neighbours. The food that was donated this way strengthened the donor's right to claim food from the recipients. People said it was easy that way, regardless whether the donation happened in the form of borrowing or just by simply asking with no intention of returning what one asked for. A variation of this strategy was to give gifts in the form of money or live animals to friends, relatives or neighbours when they were organising social functions. These gifts were also a form of social capital building aimed at getting favours returned when needed. Such gifts, as mentioned by few respondents in Koloni, were given only to people who were likely to return them. For example, a sheep would be donated to a person who owned sheep. This means that those households who could not afford to return gifts were also not likely to receive them.

Households in Guquka and Koloni acquired food by combining different strategies. None relied on a single strategy. In Guquka, purchasing food from village markets and claiming food from relations were the strategies employed by all households. The same applied to Koloni, but to these two strategies was added the purchasing of food in urban markets as a food acquisition strategy employed by all households. Of the 68 households interviewed in Guquka, 7 did not have gardens on their sites. Since these households were not involved in field cropping either, they could not acquire food through own production.

1.2.3 Food price inflation for different income groups

The concern about rising food prices relates in many ways also to the impact the rising costs have on poorer households who spend a much greater share of their monthly budget on food. The effect of food price inflation on the poor is well illustrated by Figure 1.12 and Table 1.5 confirming that the poorer households were affected much more by the high food price inflation during 2002.

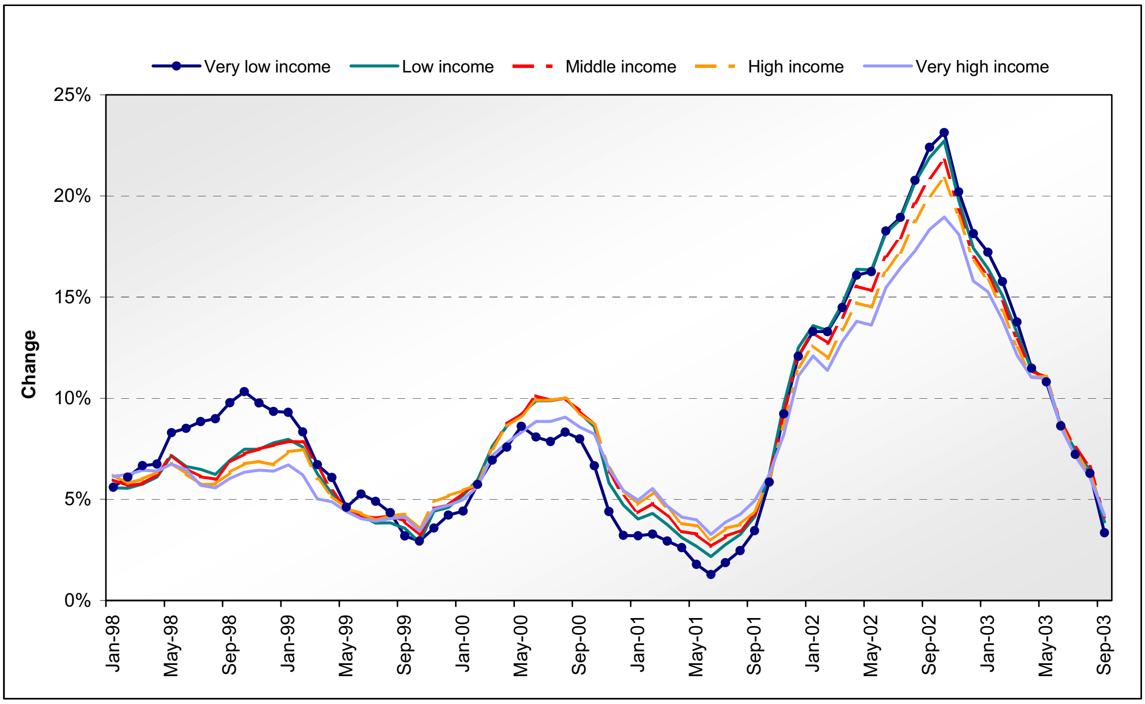

Figure 1.12: Food price inflation for different income groups: Jan 1998 to Sept 2003

Table 1.5: Year-on-year food price inflation for different income groups

Income group*	October 2002	January 2003	September 2003
Very low income (R8070)	23.13%	17.21%	3.35%
Low income (R8071 – R12263)	22.72%	16.42%	3.89%
Middle income (R12263 – R24365)	21.77%	16.07%	4.15%
High income (R24366 – R55159)	20.88%	15.84%	4.17%
Very high income (> R55160)	18.99%	15.26%	4.21%

** Classified on annual expenditure in 2000 values*
Source: Calculated from Statistics South Africa, CPI time series data

A study commissioned by the South African Reserve Bank to the Development Policy Research Unit at UCT provides another perspective on the impact of the rising prices on poor households. The study is based on the assumption that it is access to incomes, or lack thereof, which fundamentally characterises the inequality and poverty in society. It points out that although there may be a number of income related variables that can be combined to determine whether households are poor or not, output prices may have a significant impact on the welfare of indigent households and generally remains a critical factor in the understanding of poverty household traps. The study points out that inflation is one of the macro-economic channels through which poverty is impacted. Other channels are growth and employment.

The study constructed a price consumer index for poor households and compared it to that of richer households. Two data inputs were utilised for the study: household expenditure data and commodity data. To ensure possible maximum accuracy and allow for detailed impression of inflation in South Africa, the study worked at the highest disaggregation possible. It used monthly price data collected by StatsSA in their monthly survey of retail prices and expenditure data obtained from the Income and Expenditure (IES99) data set.

The sample used in the study is only from the urban and metropolitan households. Rural households were excluded because there were no rural price series available and, therefore, no firm evidence that price movement in rural areas would reflect that of urban areas. In matching expenditure and price data, the total expenditure was divided into seventeen main categories including food (grain products, meat, fish and other seafoods, milk, cheese and eggs, oil and fats, fruit and nuts, vegetables, sugar, coffee, tea and cocoa). Other variables used in the study were race and gender. Intra-racial expenditure inequality (described by Gini-coefficients), showed deepest poverty amongst urban and metropolitan African households while Asian and White households showed relatively less severe poverty.

The Plutocratic Gap for South Africa between December 1997 and May 2002 is negative during the first fourteen months, showing that the price of necessities, other goods and services consumed by the poor was higher than those of the luxuries, goods and services consumed by the relatively rich. Between February 1999 and July 2001 (with an interruption in April and May 2001), the Plutocratic Gap is positive, showing that higher income groups experienced higher rates of inflation than lower income groups. After July 2001, the situation reversed into negative ending the period below minus 1 (May 2002).

The Plutocratic Gap, therefore, fluctuates over a specific period, indicating that at different times, different groups may be worst hit by inflation. Data on the expenditure deciles, as in the Plutocratic Gap, suggest that inflation has a differentiated impact across income distribution over time, and that the poor are not always the worst off. However, where the relative inflation rate of the poor households rises dramatically this necessitates welfare interventions.

The inflation rates of male and white-headed households displayed the same patterns by the richer deciles. Female- Coloured- and African–headed households' inflation rates tend to be in the lower income groups. The inflation experiences of households grouped according to race and gender tend to reflect the demographic patterns as determined by apartheid. Like the decile and Plutocratic Gap estimates, race and gender suggest that the experiences of inflation are differential across income and social categories.

Overall food price inflation including grain products, showed a peak during the period 1998 and 2000, with a rapid increase in 2002. Among the poor the pattern is driven largely by the price of movements of maize meal, while for the richer households this is rice and white bread inflation. The study found that the period of rice deflation coincided with the 2000 peak in grain inflation. Poultry, beef and veal, lamb and goat were found to be responsible for the largest share of the total inflation, especially during the latter parts of 2000, 2001 and 2002. Beef and veal prices have contributed a relatively small amount to total inflation in 2001 across all expenditure groups.

In the first instance the study has attempted to insert one key element of the macro-economic environment, namely relative prices, into the analysis around household poverty and income distribution in South Africa. There are several lessons and important points emerging from this study. Firstly, that the official measure of inflation, while being an internationally accepted norm, is in fact not the best predictor of the average household's experience of inflation. The proxy for average product inflation rather than household inflation means that the official measures of the consumer price index for South Africa more closely proxy households that are White- and male-headed, and, therefore, by extension invariably are in the 8th, 9th and 10th deciles of the national income distribution.

Having illustrated this, though, the study makes a second important claim, namely that it is not always true *a priori* that the poor will be worse off relative to non-poor households, as a result of relative shifts in product prices. The data showed that for a substantial part of the period December 1997 to March 2002, households in the 1st and 2nd deciles were in fact less affected by the relative price shifts, than those in upper 2 deciles of the distribution. It is true, however, that when the poor are more affected by relative price shifts – and by a significant margin as was the case from September 2001 onwards - then welfare related interventions such as price control, food vouchers and the like need to be seriously considered for a group that obviously has very few resources at its disposal to counter the expenditure eroding effect of rising prices.

The analysis of the impact of inflation on the poor points to two critical methodological considerations, namely that the importance of the price-poverty chain relies on the particular product's price increasing sufficiently, but secondly, also, that this product be a significant component of the poor household's consumption basket. What is powerfully evident through the decomposition of the aggregate decile inflation rates according to product bands is that the key drivers of inflation over the period under analysis for the urban and metropolitan poor are in fact household services, namely water and electricity. The deleterious consequences of food price inflation (specifically maize meal) on the urban and metropolitan poor are evident, but over the sample period, it remains less damaging than the aforementioned services in addition to housing rentals and paraffin. Food therefore remains a key component of the impact of prices on the urbanised poor, but clearly, it is a factor less important in this particular period than other product categories. This does not discount the fact that for the rural poor, food price inflation remains the key driver.

1.3 Summary

The purpose of this Chapter was to provide a broad overview of food price inflation trends in South Africa over the last five years. This was necessary to set the background against which the individual food price trends are compared in later chapters. The Chapter also unpacked the food price inflation trends to indicate the differential impact of food price inflation on rural communities and poorer households. This again provides an important justification for Government to consider targeted assistance to these households.

CHAPTER 2

ANNUAL RETAIL FOOD PRICE MOVEMENTS

2.1 Introduction

The Institute for Planning Research, a research institute attached to the University of Port Elizabeth started a longitudinal research project in April 1973 to determine the cost of basic needs of low-income households. The survey was conducted in eleven centres in the Republic and two in Namibia. The cost of 18 food items formed part of the survey. Over time, the ration scale used earlier was adjusted in order to fulfil the need for higher standards, conforming them to the recommended allowances as laid down by the United Nations and the United States' Food and Nutrition Board (NRC). Since 1994 the ration scale, therefore, has consisted of 23 food items. Furthermore, over the years, more centres were added, and so 15 centres have now been surveyed for more than 18 years.

The surveys were originally carried out and updated during March/April and August/September of each year. Six years ago, this was changed to an annual survey for the August/September period. The information is directly comparable.

In the first section of this Chapter, the findings of the last four survey updates (2000 – 2003) have been selected for reporting purposes. This selection was made to illustrate price trends over these years, for it was during this period (specifically during 2002) that there was an extraordinarily high increase in food prices (especially of basic food items). The figures in this section refer to the average cost of 23 food items for 15 major urban centres[3] in South Africa over the years September 2000 to September 2003.

In the second section, the information for eleven centres is used to illustrate price trends during the period 1995 to 2003 (Pietermaritzburg, Polokwane, Potchefstroom and Umtata were excluded).

2.2 Year on year actual and percentage changes for 23 food items: (average for 15 centres)

In Table 2.1a below, the average price of 23 food items for fifteen cities and towns are given. The percentage movement from year to year is contained in the highlighted columns.

Table 2.1b presents the average price of the 23 food items together with the cumulative percentage increase over the three-year period. The table is followed by five graphs, in which price trends for 15 selected food items are depicted in order to make the interpretation more visual.

From the last column in Table 2.1b, it appears that skimmed milk powder had the highest percentage price increase over the period 2000 to 2003, namely 75.14%,

[3] Cape Town, Port Elizabeth, East London, Kimberley, Durban, Pretoria, Johannesburg, Bloemfontein, King William's Town, Uitenhage, George, Pietermaritzburg, Polokwane, Potchefstroom and Umtata.

followed by cooking oil (63.3%), eggs (58.4%) and 51.6% for peanut butter. At the other end of the scale, salt had the lowest increase of the 23 items, namely 15.6% (approximately 5% per year), followed by brown bread, sugar and condiments, just over 17% (around 6% per year). The conclusion is that there is a very wide variation of price movements for the different food items.

At the same time there is a wide variation of movements from year to year. From 2001 to 2002 the price of maize meal and samp increased by a staggering 103.2 and 53.8% respectively, while brown bread, jam, cheese amongst others, increased by a low 3 to 4%.

It appears that the second half of 2002 is characterised by an extremely high increase in the price of food items. The highest increase among 15 of the 23 items monitored over the three-year period is to be found during this period. Examples of such items are: skimmed milk powder (41.5%), fresh milk (23.6%), meat (34.6%), potatoes & sweet potatoes (42.1%), cooking oil (26.7%), maize meal (103.2%), samp (53.8%) and dry legumes such as dry beans (26.1%).

The high increase of some products already started during the 2000 – 2001 period, and continued in the 2001 – 2002 period: Fresh milk increased by 21.3% during 2000 to 2001, and by 23.6% during 2001 to 2002. The percentages for eggs are 21.8% and 18.8%, cooking oil 36.7% and 26.7%, and 10.8% and 11.3% for dry spices & condiments.

Table 2.1A
Year on Year Actual and Percentage Food Price Changes for 23 Items: 2000 - 2003
Average for 15 Centres

Items	Unit	Cost per Unit Sep-00	Cost per Unit Sep-01	**Percentage Change 2000 - 2001**	Cost per Unit Sep-02	**Percentage Change 2001 - 2002**	Cost per Unit Sep-03	**Percentage Change 2002 - 2003**
		Rand	Rand	**%**	Rand	**%**	Rand	**%**
Skimmed Milk Powder	/500g	12.59	13.6	**8.02**	19.24	**41.47**	22.05	**14.60**
Fresh Milk: 2%	/1 litre	2.58	3.13	**21.32**	3.87	**23.64**	4.17	**7.75**
Meat (red and chicken)	/1 kg	12.55	14.05	**11.95**	17.5	**24.56**	16.09	**-8.06**
Fish (pilchards)	/425g	4.25	4.61	**8.47**	5.62	**21.91**	6.16	**9.61**
Eggs (large)	/doz	4.9	5.97	**21.84**	7.09	**18.76**	7.76	**9.45**
Potatoes & Sweet Potatoes	/'1kg	3.2	3.25	**1.56**	4.62	**42.15**	4.76	**3.03**
Fresh Vegetables	/1kg	3.44	3.44	**0.00**	4.28	**24.42**	4.25	**-0.70**
Fresh Fruit	/1kg	2.64	2.54	**-3.79**	2.63	**3.54**	3.06	**16.35**
Margarine	/250g	1.46	1.5	**2.74**	1.79	**19.33**	1.84	**2.79**
Cooking Oil	/750ml	3.73	5.1	**36.73**	6.46	**26.67**	6.09	**-5.73**
Brown Bread	/800g	2.92	3.22	**10.27**	3.35	**4.04**	3.42	**2.09**
Maize Meal	/12.5kg	19.72	19.99	**1.37**	40.62	**103.20**	27.64	**-31.95**
Dry Grain Products (Samp)	/2.5kg	6.34	6.53	**3.00**	10.04	**53.75**	9.17	**-8.67**
Sugar	/2.5kg	10.02	10.42	**3.99**	11.33	**8.73**	11.77	**3.88**
Jam	/900g	6.87	7.02	**2.18**	7.36	**4.84**	9.61	**30.57**
Soya Mince	/200g	3.99	4.14	**3.76**	5.01	**21.01**	4.97	**-0.80**
Peanut Butter	/410g	5.14	5.92	**15.18**	6.4	**8.11**	7.79	**21.72**
Cheese	/1kg	26.74	30.44	**13.84**	31.92	**4.86**	35.29	**10.56**
Dry Legumes e.g. Beans	/500g	3.1	3.25	**4.84**	4.1	**26.15**	4.09	**-0.24**
Coffee & Tea	/1kg	24.76	25.21	**1.82**	28.22	**11.94**	29.59	**4.85**
Salt	/1kg	1.92	1.97	**2.60**	2.02	**2.54**	2.22	**9.90**
Spices & Condiments: Dry	/100g	7.4	8.2	**10.81**	9.13	**11.34**	10.22	**11.94**
Fluids e.g. Vinegar	/100ml	5.37	5.1	**-5.03**	5.89	**15.49**	6.3	**6.96**

Table 2.1B
Year on Year_Actual and cumulative percentage food price changes for 23 items, 2000 – 2003
Average for 15 centres

Items	Unit	Cost per Unit Sep-00	Cost per Unit Sep-01	**Percentage Change 2000 - 2001**	Cost per Unit Sep-02	**Percentage Change 2000 - 2002**	Cost per Unit Sep-03	**Percentage Change 2000 - 2003**
		Rand	Rand	**%**	Rand	**%**	Rand	
Skimmed Milk Powder	/500g	12.59	13.6	**8.02**	19.24	**52.82**	22.05	**75.14**
Fresh Milk: 2%	/1 litre	2.58	3.13	**21.32**	3.87	**50.00**	4.17	**61.63**
Meat (red and chicken)	/1 kg	12.55	14.05	**11.95**	17.5	**39.44**	16.09	**28.21**
Fish (pilchards)	/425g	4.25	4.61	**8.47**	5.62	**32.24**	6.16	**44.94**
Eggs (large)	/doz	4.9	5.97	**21.84**	7.09	**44.69**	7.76	**58.37**
Potatoes & Sweet Potatoes	/'1kg	3.2	3.25	**1.56**	4.62	**44.38**	4.76	**48.75**
Fresh Vegetables	/1kg	3.44	3.44	**0.00**	4.28	**24.42**	4.25	**23.55**
Fresh Fruit	/1kg	2.64	2.54	**-3.79**	2.63	**0.40**	3.06	**15.91**
Margarine	/250g	1.46	1.5	**2.74**	1.79	**19.33**	1.84	**26.03**
Cooking Oil	/750ml	3.73	5.1	**36.73**	6.46	**26.67**	6.09	**63.27**
Brown Bread	/800g	2.92	3.22	**10.27**	3.35	**14.73**	3.42	**17.12**
Maize Meal	/12.5kg	19.72	19.99	**1.37**	40.62	**105.98**	27.64	**40.16**
Dry Grain Products (Samp)	/2.5kg	6.34	6.53	**3.00**	10.04	**58.36**	9.17	**44.64**
Sugar	/2.5kg	10.02	10.42	**3.99**	11.33	**13.07**	11.77	**17.47**
Jam	/900g	6.87	7.02	**2.18**	7.36	**4.84**	9.61	**39.88**
Soya Mince	/200g	3.99	4.14	**3.76**	5.01	**21.01**	4.97	**24.56**
Peanut Butter	/410g	5.14	5.92	**15.18**	6.4	**24.51**	7.79	**51.56**
Cheese	/1kg	26.74	30.44	**13.84**	31.92	**4.86**	35.29	**31.97**
Dry Legumes e.g. Beans	/500g	3.1	3.25	**4.84**	4.1	**32.26**	4.09	**31.94**
Coffee & Tea	/1kg	24.76	25.21	**1.82**	28.22	**11.94**	29.59	**19.51**
Salt	/1kg	1.92	1.97	**2.60**	2.02	**2.54**	2.22	**15.63**
Spices & Condiments: Dry	/100g	7.4	8.2	**10.81**	9.13	**11.34**	10.22	**38.11**
Fluids e.g. Vinegar	/100ml	5.37	5.1	**-5.03**	5.89	**15.49**	6.3	**17.32**

Dairy

The trend for dairy products shows a high increase during the period up to 2002, after which there was a levelling off during the 2002-2003 period, both for skimmed milk and fresh milk. It is important to note that, although there was a levelling off during the period 2002 and 2003, the general trend is still upward – and hovers in the order of the inflation rate.

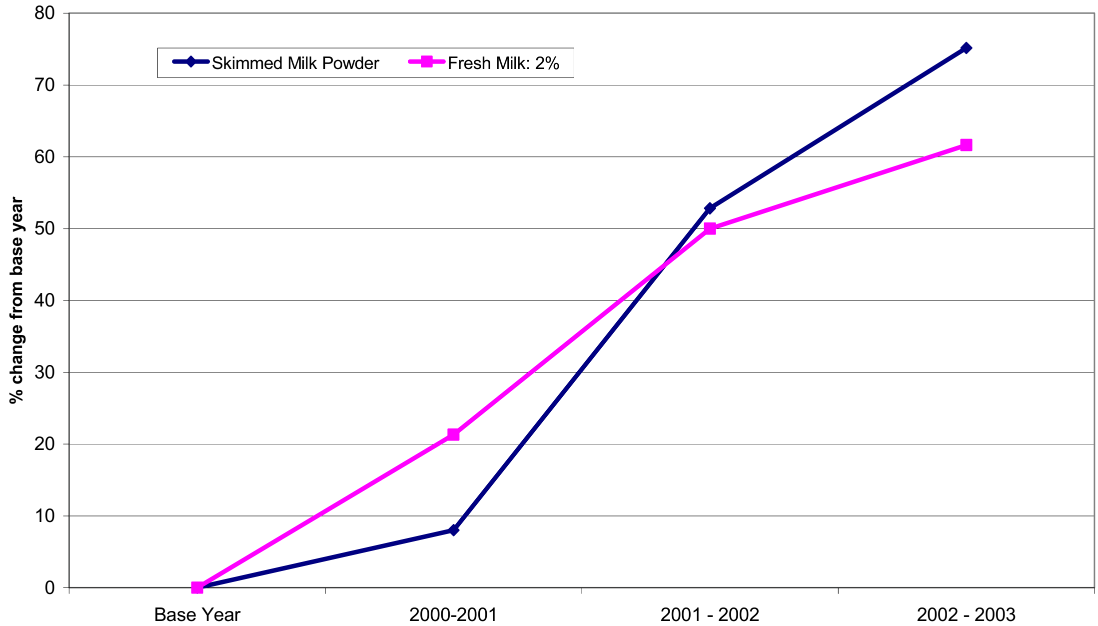

Figure 2.1: Changes in price for dairy products (cumulative %)

Meat, eggs and fish

The products show different trends: The price of eggs increased in the order of 20% per year for the first two years, reaching its peak in 2002 where after it slowed down up to September 2003. Fish (Pilchards) increased slower than the rate of inflation during 2000 to 2001 after which it shows the typical price spurt to 2002 and followed by a price slowdown in to 2003.

Beef shows an interesting price trend: starting off at an inflation rate increase of 12% (2000 – 2001), it increased significantly by 24.5% during the following year (the typical trend) and then the average price dropped by 8.6% during the next period (2003). Generally speaking, these products follow the same price trend, namely a moderate increase from 2000 to 2001 (more or less the rate of inflation), then a steep increase to 2002, followed by a levelling off in 2003.

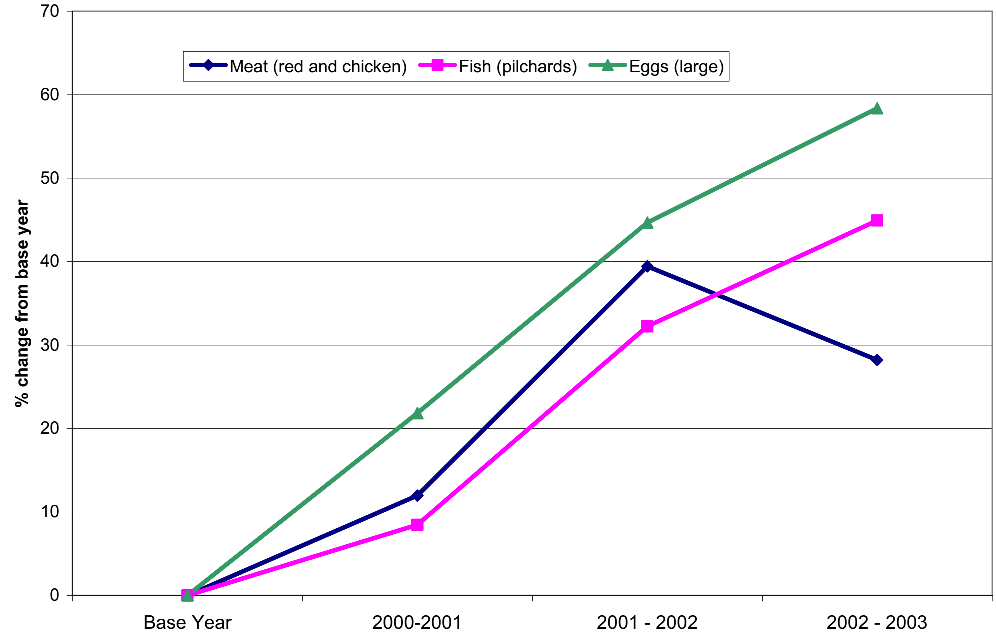

Figure 2.2: Changes in price for meats, eggs and fish products (cumulative %)

Fruit and vegetables

The price trend of potatoes and sweet potatoes again shows the same typical but remarkable pattern: hardly any increase during 2000 to 2001, then a sharp increase (42.15%) up to 2002 and then a levelling off in 2003. The 2002 trend is largely explained by the shift by irrigation farmers out of potatoes into maize production. Fresh fruit shows the same pattern, but at a lower level. Fresh vegetables show a rather different pattern: there was hardly any price change from 2000 to 2002 and then a significant 24.4% increase during the period ending September 2003.

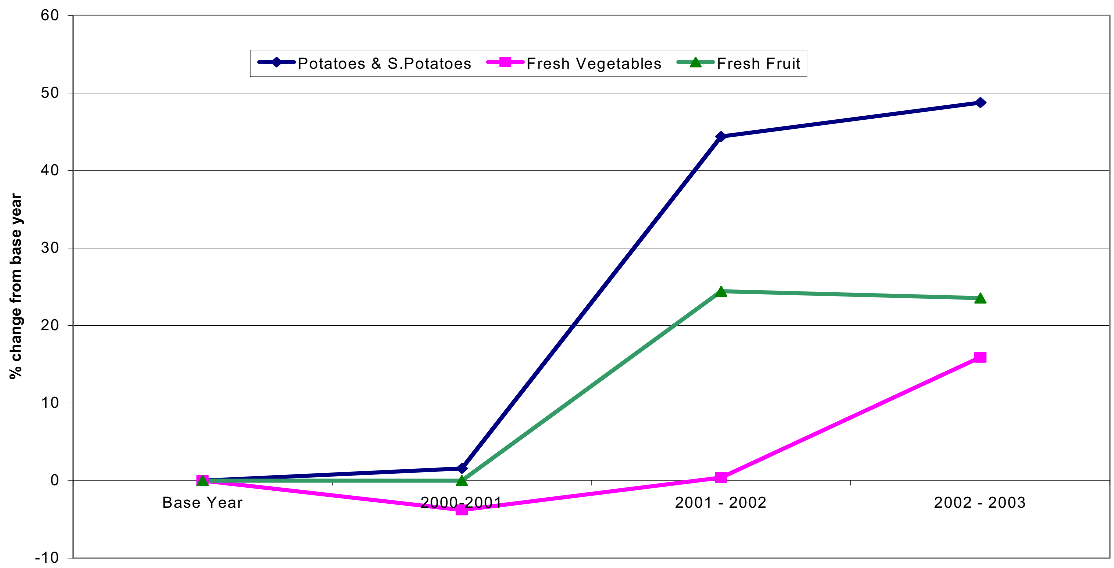

Figure 2.3: Changes in price for fruits and vegetables (cumulative %)

Grain milling products and sugar

Concerning the movement of the cost of maize meal, it is interesting to note that from September 2000 to September 2001, there was very little movement. Then in the following year up to September 2002, the price of maize meal doubled. An increase of 103% in one year on average was noted for the 15 centres. In the following year i.e. September 2002 to 2003, the price dropped by 32%, but was still 38% higher than in September 2001. Dry grain products (samp) followed the same pattern, but on a lower level, while brown bread and sugar showed a moderate increase over the whole three-year period. This increase was considerably lower than the Consumer Price Index for the same period indicated.

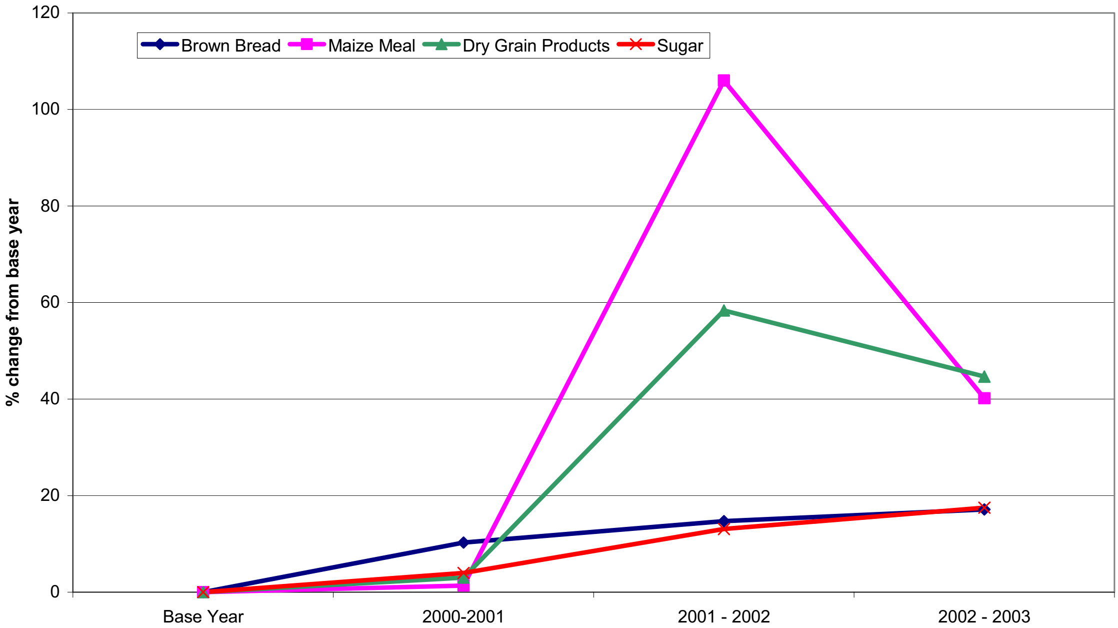

Figure 2.4: Changes in price for grain milling products and sugar (cumulative %)

Legumes, cheese and peanut butter

Dry legumes (Beans & Peas) followed the same pattern as most of the other monitored products – a high increase from 2001 to 2002 (26%) followed by hardly any change in 2003. In this case, the average price is the same as in 2002. The cost trend for peanut butter deviates from the general trend. A reasonably high increase was noted over the two years 2000 to 2002, and then a very high increase of 21,7% during the following year.

Conclusion

The prices of 23 food items for 15 cities and major towns in South Africa were monitored over a three-year period, in which 2000 was used as the base year. The data are presented in Tables 2.1a and b.

From the information presented, it appears that there is a very wide variation of price movements regarding different food items. Items like maize meal, samp, potatoes and eggs show very wide movements from year to year, while items such as brown bread and sugar had very low increases. It is, therefore, not possible to make an unequivocal general statement on food price movements.

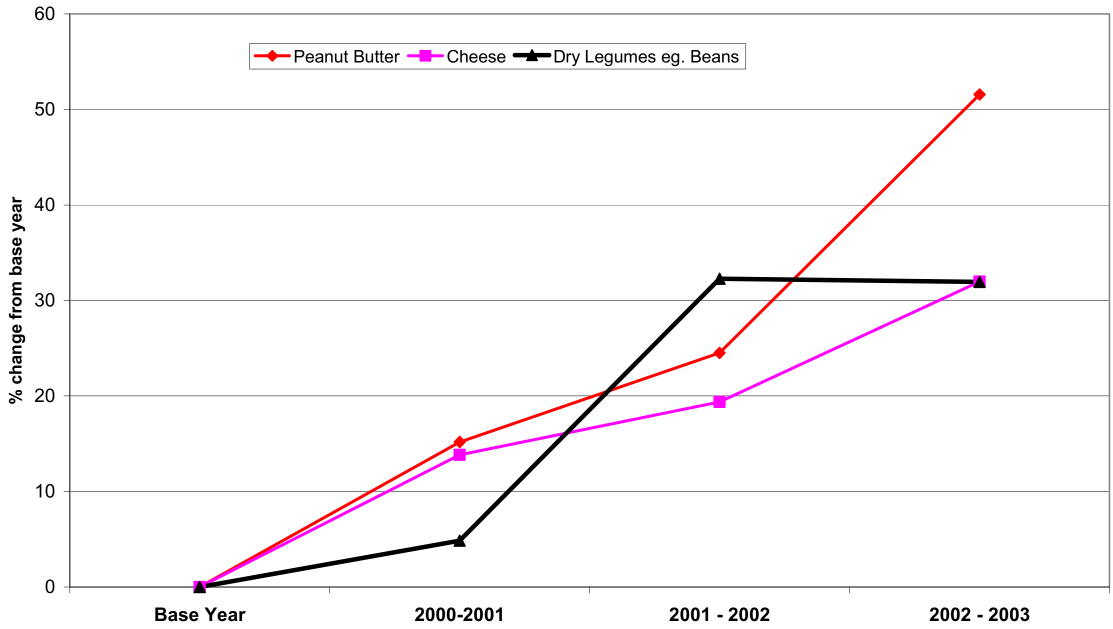

Figure 2.5: Changes in price for legumes, cheese and butter (cumulative %)

Furthermore, it is clear that for most food products, a high to exceptionally high cost increase during the second half of 2002 and the first quarter of 2003 were experienced. During the September 2003 survey, a definite slowdown of costs was noted when compared with previous years. However, it must be emphasised that the trend was still upward

Finally, although there was a slowdown trend of costs noted for most of the 23 food items during the 2003 survey, it must be emphasised that these products did not become cheaper (with few exceptions). Generally speaking, it would appear that prices are still escalating, at a level, which is mainly higher than the current rate of inflation.

2.3 The cost of a food basket and average food prices for 11 major urban centres: 1995 - 2003

In this section we analyse the total cost to purchase a basket of the 23 items as well as the average price of the individual items at different locations.

From Table 2.2 and Figure 2.6 it can be seen that between 1995 and 2001, the costs of the food basket increased gradually, after which there occurred a sharp increase to 2002, and then a subsequent slight decline in 2003 can be noted. This is confirmed in Table 2.3, depicting the average annual change in food price per item. From the annual year on year average percentage price increase per item (Table 2.4) it can be noted that the average food price increase remained below 8% up to 2002, after which an increase of approximately 25% occurred, followed by a decline of 1.4% in 2003. In general, though, the trend is upward, and it is too early to know whether the downward trend detected in 2003 might correct the big increases that occurred in 2002.

When comparing the annual average food prices for the eleven centres (Table 2.2 and Figure 2.7), it becomes apparent that although some variation can be found, prices moved within a narrow band from year to year. For this reason, it was decided that the average annual food prices for the 11 major urban centres would be sufficient to provide the general trends in food price fluctuations over the nine years that were studied.

While the total average cumulative percentage price increase per item between 1995 and 2003 was 56.4%, some items were far below and others far above this average. Food items that increased the least included coffee and tea (6.75%), margarine (21.29%), fresh fruit (22.63%), salt (24.10%) and red meat (25.73%), while skimmed milk powder (147.08%), fresh vegetables (127.95%), dry legumes (116.39%), potatoes and sweet potatoes (111.27%), milk (112.7%) all increased by over 110% over the nine year period. The trends in average prices (recorded every September) of individual food items over this period are depicted in Figures 2.8 through 2.14.

Table 2.2: Annual average cost of a food basket containing 23 items (Rand)

CITY	YEAR*								
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Cape Town	136.06	139.13	143.48	143.48	159.15	164.4	175.29	226.5	215.88
Port Elizabeth	118.19	133.62	143.53	143.53	158.39	161.53	168.82	213.03	210.76
East London	123.02	135.1	147.68	147.68	161.59	162.74	169.63	221.94	209.68
Kimberley	123.11	134.42	142.91	142.91	158.98	162.96	175.62	220.01	216.16
Durban	124.98	135.82	144.57	144.57	152.22	158.92	175.03	216.5	219.03
Pretoria	132.42	137.16	145.88	145.88	162.27	168.09	180.21	218.99	227.24
Johannesburg	128.04	135.26	149.45	149.45	161.25	166.32	180.16	226.84	224.01
Bloemfontein	129.58	134.83	141.29	141.29	157.65	162.81	170.74	215.4	209.43
King Williams Town	125.07	134.87	145.35	145.35	158.97	164.32	176.67	212.37	219.39
Uitenhage	118.05	132.1	140.93	140.93	155.67	160.61	175.37	220.36	213.97
George	138.21	138.53	145.26	145.26	159.41	161.73	177.49	220.04	212.44

* *Prices recorded every September*

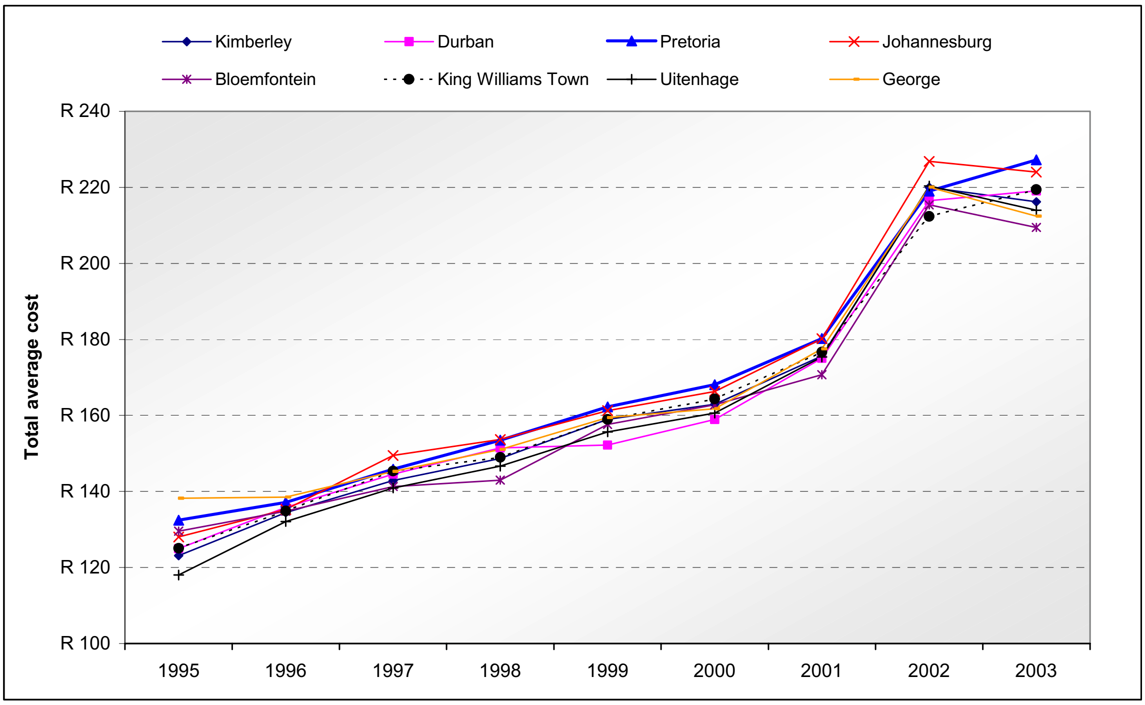

Figure 2.6: Annual average cost of a food basket of 23 items per centre

Table 2.3: Annual average food prices per item (Rand).

Item	**YEAR**								
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Skimmed Milk Powder	8.88	9.15	11.63	11.14	11.86	12.58	13.67	19.43	21.94
Milk :2%	1.94	2.15	2.19	2.28	2.47	2.58	3.13	3.90	4.13
Meat (red & chicken)	12.55	13.05	14.42	12.70	12.34	12.55	14.05	17.59	15.78
Fish (pilchards)	3.55	3.48	3.95	4.12	3.91	4.25	4.61	5.58	6.26
Eggs	3.95	4.36	4.78	5.37	5.17	4.90	5.97	6.98	7.55
Potatoes & S.Potatoes	2.25	2.24	2.34	2.58	3.07	3.20	3.25	4.74	4.75
Fresh Vegetables	1.89	2.98	2.67	2.73	2.85	3.44	3.44	4.28	4.31
Fresh Fruit	2.29	1.99	2.19	2.32	2.67	2.64	2.54	2.65	2.81
Margarine	1.55	1.15	1.29	1.38	1.42	1.46	1.50	1.78	1.88
Cooking Oil	3.28	3.28	3.49	4.32	4.34	3.73	5.10	6.36	6.06
Brown Bread	1.70	1.95	2.18	2.35	2.37	2.92	3.22	3.39	3.43
Maize Meal	18.95	19.90	17.85	19.55	20.89	19.72	19.99	40.95	28.33
Dry Grain Products	5.55	5.75	5.48	6.06	6.63	6.34	6.53	10.05	9.12
Sugar	7.28	7.75	8.22	8.73	9.05	10.02	10.42	11.40	11.81
Jam	5.28	4.95	5.49	5.80	6.15	6.87	7.02	7.50	9.69
Textured Plant Protein	2.95	3.25	3.68	3.93	3.98	3.99	4.14	4.95	4.99
Peanut Butter	3.75	3.85	4.18	4.28	4.62	5.14	5.92	6.40	7.87
Cheese	18.97	23.90	24.90	22.47	26.03	26.74	30.44	31.73	34.82
Dry Legumes e.g. Beans	1.88	2.47	2.59	2.65	2.96	3.10	3.25	4.07	4.07
Coffee & Tea	27.88	19.54	22.31	23.97	25.10	24.76	25.21	28.02	29.76
Salt	1.75	1.49	1.55	1.56	1.69	1.92	1.97	2.01	2.17
Spices & Condim: Dry	5.23	5.14	5.42	6.17	6.73	7.49	8.20	9.08	10.15
Fluids e.g. Vinegar	3.79	3.91	4.09	4.36	4.25	5.37	5.10	5.86	6.43
TOTAL (for basket)	**138.21**	**138.53**	**145.26**	**149.67**	**158.69**	**163.13**	**175.00**	**219.27**	**216.18**

Table 2.4: Total average year on year percentage price increase per item (%)

Item	YEAR								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Skimmed Milk Powder	NA	3.04	27.10	-4.25	6.53	6.06	8.63	42.17	12.91
Milk :2%	NA	10.82	1.86	4.07	8.30	4.60	21.16	24.70	5.78
Meat (red & chicken)	NA	3.98	10.50	-12.27	-2.49	1.76	11.93	25.23	-10.32
Fish (pilchards)	NA	-1.97	13.51	4.42	-5.18	8.74	8.34	21.17	12.05
Eggs	NA	10.38	9.63	12.25	-3.63	-5.19	21.81	16.87	8.25
Potatoes & S.Potatoes	NA	-0.44	4.46	10.22	18.96	4.15	1.68	45.75	0.38
Fresh Vegetables	NA	57.67	-10.40	2.11	4.43	20.82	-0.13	24.50	0.72
Fresh Fruit	NA	-13.10	10.05	6.14	14.82	-1.26	-3.45	4.29	5.82
Margarine	NA	-25.81	12.17	7.26	2.37	2.76	3.37	18.31	5.62
Cooking Oil	NA	0.00	6.40	23.68	0.51	-14.08	36.80	24.75	-4.66
Brown Bread	NA	14.71	11.79	7.96	0.89	22.82	10.54	5.25	1.05
Maize Meal	NA	5.01	-10.30	9.54	6.84	-5.58	1.36	104.83	-30.82
Dry Grain Products	NA	3.60	-4.70	10.50	9.49	-4.31	2.89	54.00	-9.26
Sugar	NA	6.46	6.06	6.17	3.68	10.76	4.00	9.39	3.61
Jam	NA	-6.25	10.91	5.70	5.98	11.78	2.05	6.89	29.17
Textured Plant Protein	NA	10.17	13.23	6.74	1.25	0.23	3.97	19.52	0.66
Peanut Butter	NA	2.67	8.57	2.44	7.92	11.21	15.16	8.11	23.07
Cheese	NA	25.99	4.18	-9.74	15.82	2.74	13.85	4.24	9.72
Dry Legumes e.g. Beans	NA	31.38	4.86	2.46	11.72	4.45	5.02	25.30	-0.16
Coffee & Tea	NA	-29.91	14.18	7.42	4.74	-1.37	1.82	11.15	6.22
Salt	NA	-14.86	4.03	1.41	7.75	13.58	2.17	2.04	8.30
Spices & Condim: Dry	NA	-1.72	5.45	13.77	9.16	11.35	9.38	10.72	11.85
Fluids e.g. Vinegar	NA	3.17	4.60	6.51	-2.40	26.19	-4.98	14.96	9.69
TOTAL (for basket)	NA	0.23	4.86	3.14	5.91	2.80	7.28	25.30	-1.41

Table 2.5: Total average annual growth in retail prices per item since 1995

Item	YEAR								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Skimmed Milk Powder	NA	3.04	14.44	7.84	7.51	7.22	7.45	11.84	11.97
Milk: 2%	NA	10.82	6.25	5.52	6.20	5.88	8.29	10.49	9.89
Meat (red & chicken)	NA	3.98	7.19	0.26	-0.43	0.00	1.90	4.95	2.90
Fish (pilchards)	NA	-1.97	5.48	5.13	2.45	3.68	4.44	6.68	7.34
Eggs	NA	10.38	10.01	10.75	6.97	4.42	7.13	8.47	8.44
Potatoes & S.Potatoes	NA	-0.44	1.98	4.66	8.06	7.27	6.32	11.22	9.80
Fresh Vegetables	NA	57.67	18.86	12.99	10.79	12.72	10.47	12.38	10.85
Fresh Fruit	NA	-13.10	-2.21	0.50	3.90	2.85	1.77	2.13	2.58
Margarine	NA	-25.81	-8.77	-3.71	-2.23	-1.25	-0.49	2.00	2.44
Cooking Oil	NA	0.00	3.15	9.58	7.24	2.59	7.63	9.92	7.99
Brown Bread	NA	14.71	13.24	11.45	8.71	11.40	11.25	10.38	9.16
Maize Meal	NA	5.01	-2.95	1.05	2.47	0.80	0.90	11.64	5.16
Dry Grain Products	NA	3.60	-0.63	2.95	4.55	2.71	2.74	8.86	6.41
Sugar	NA	6.46	6.26	6.23	5.59	6.60	6.16	6.62	6.24
Jam	NA	-6.25	1.97	3.20	3.89	5.42	4.85	5.14	7.88
Textured Plant Protein	NA	10.17	11.69	10.02	7.76	6.21	5.83	7.69	6.78
Peanut Butter	NA	2.67	5.58	4.52	5.36	6.51	7.90	7.93	9.72
Cheese	NA	25.99	14.57	5.81	8.23	7.11	8.20	7.63	7.89
Dry Legumes e.g. Beans	NA	31.38	17.37	12.17	12.06	10.49	9.56	11.68	10.13
Coffee & Tea	NA	-29.91	-10.55	-4.92	-2.59	-2.35	-1.66	0.07	0.82
Salt	NA	-14.86	-5.89	-3.52	-0.82	1.91	1.95	1.97	2.74
Spices & Condim: Dry	NA	-1.72	1.80	5.64	6.51	7.46	7.78	8.19	8.64
Fluids e.g. Vinegar	NA	3.17	3.88	4.75	2.92	7.20	5.07	6.43	6.83
TOTAL (for basket)	NA	0.23	2.52	2.73	3.51	3.37	4.01	6.82	5.75

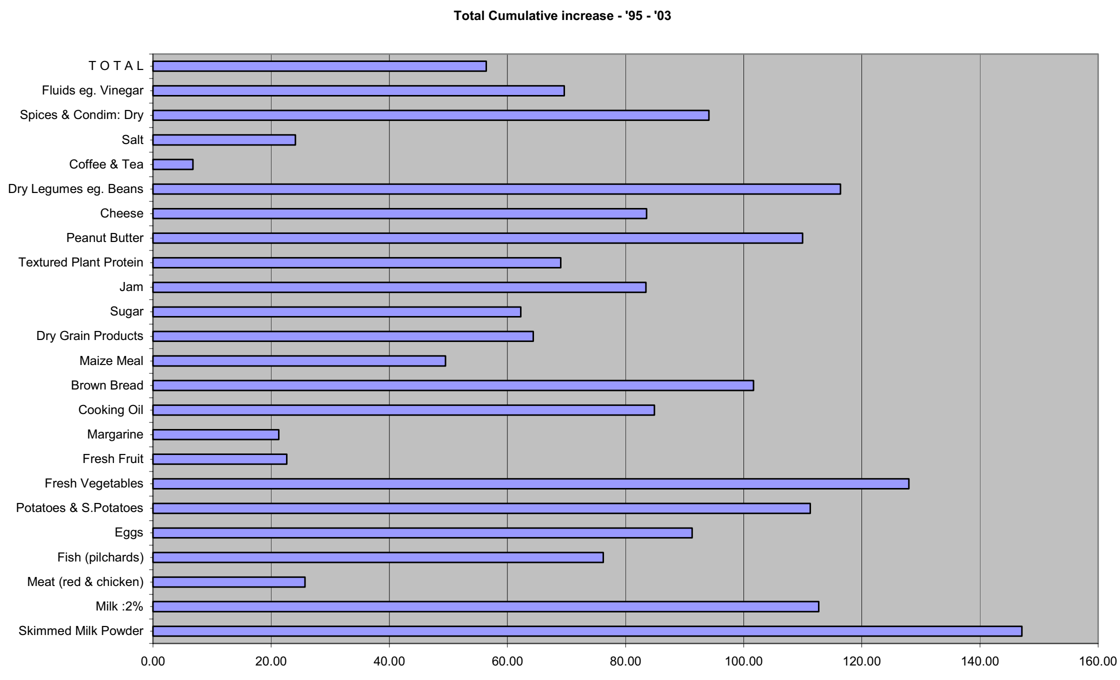

Figure 2.7: Total cumulative increase for different food items between 1995 and 2003

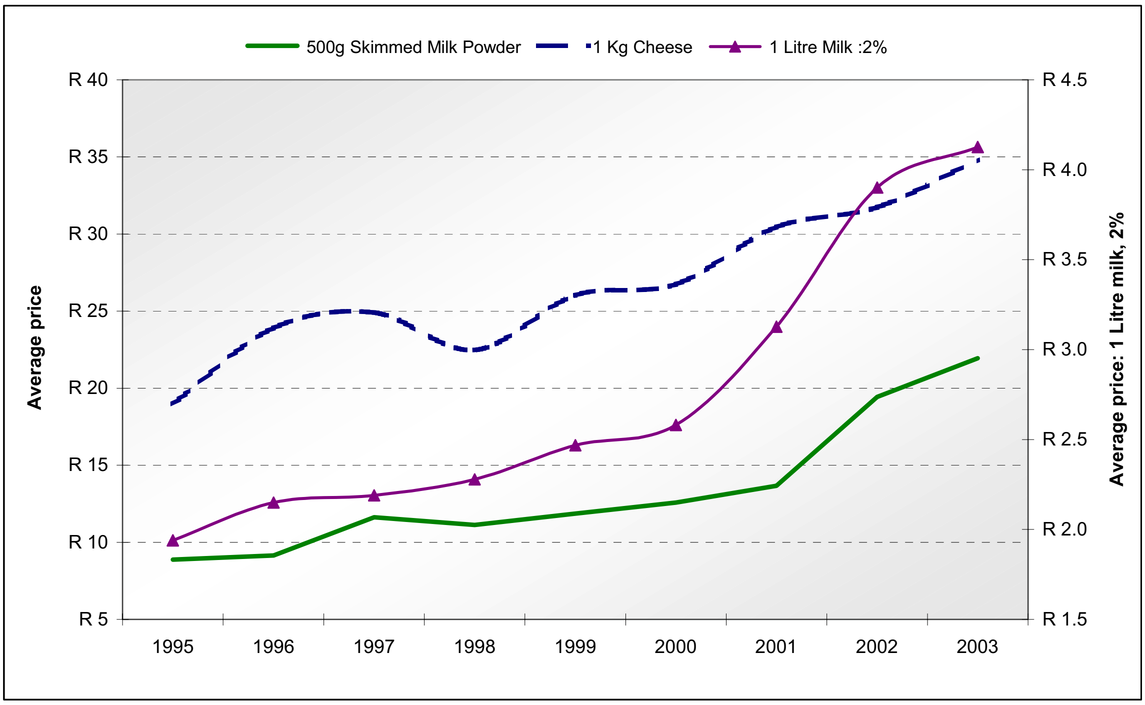

Figure 2.8: Average prices of skimmed milk powder, milk and cheese: 1995 – 2003

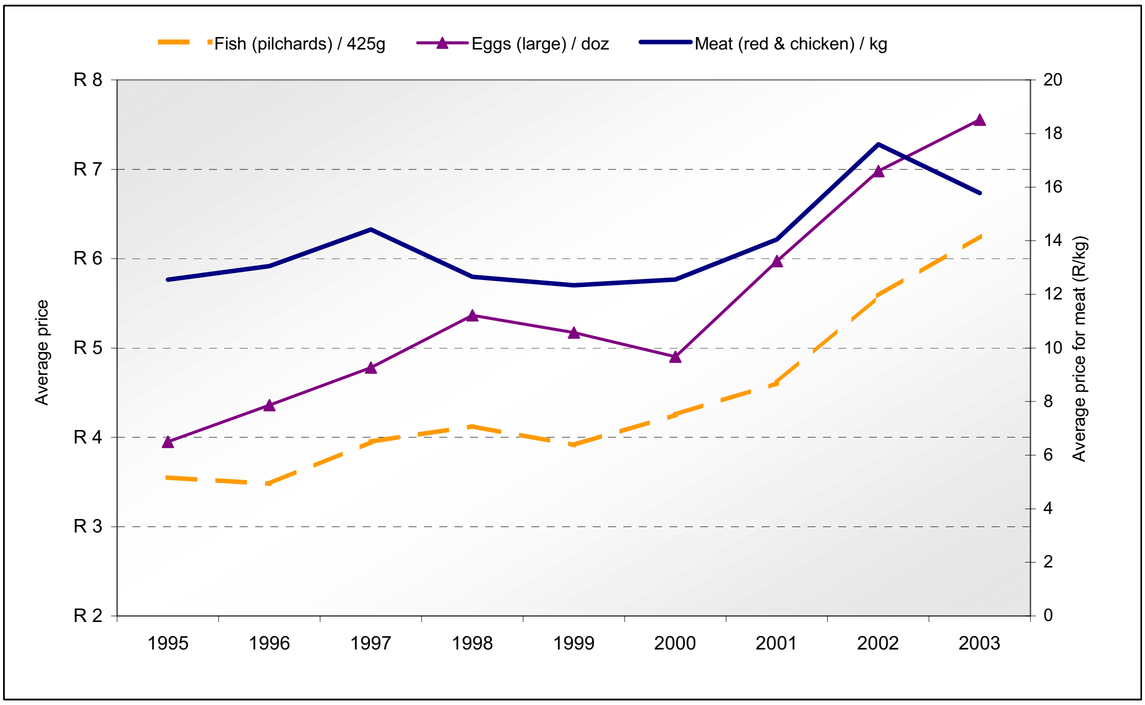

Figure 2.9: Average prices of meat, fish and eggs, 1995 – 2003

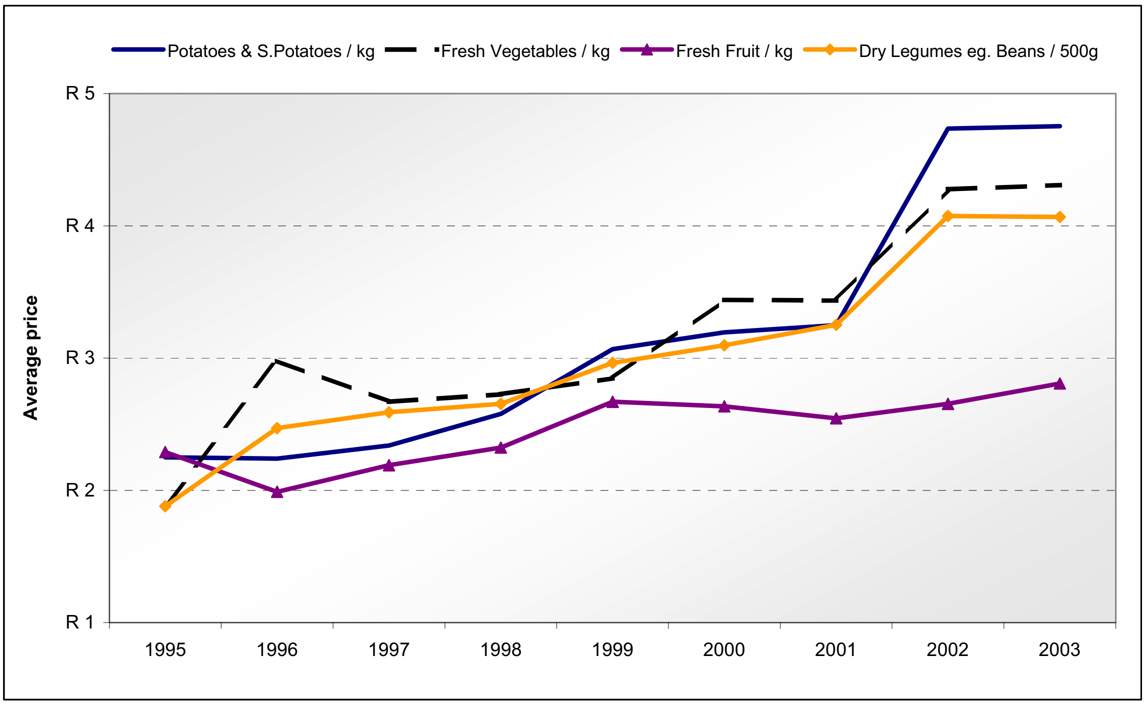

Figure 2.10: Average prices of potatoes & sweet potatoes, fresh vegetables, fresh fruit and dry legumes: 1995 - 2003

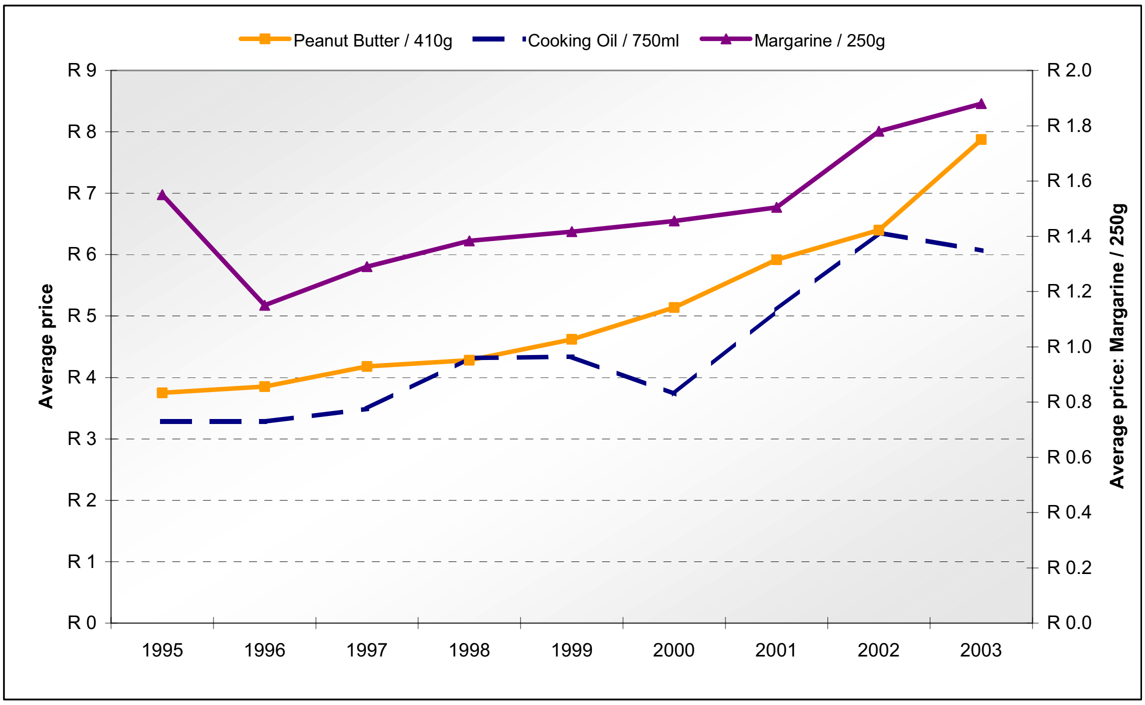

Figure 2.11: Average prices of margarine, cooking oil and peanut butter, 1995 – 2003

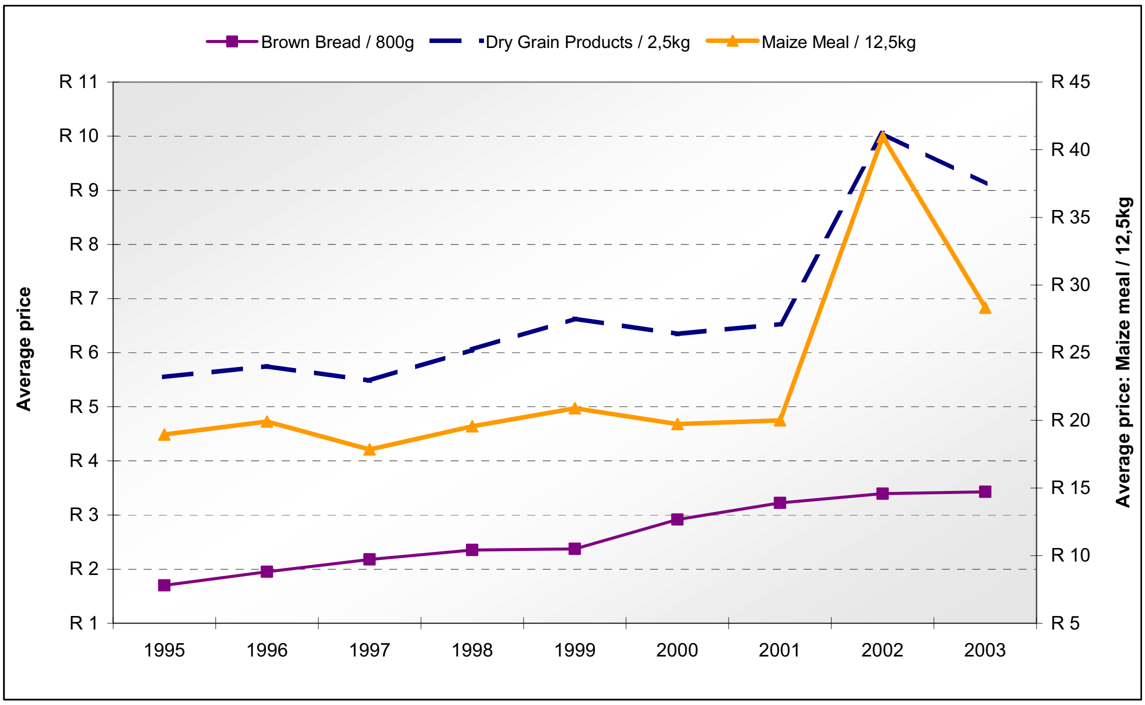

Figure 2.12: Average prices of brown bread, maize meal and dry grain products, 1995 - 2003

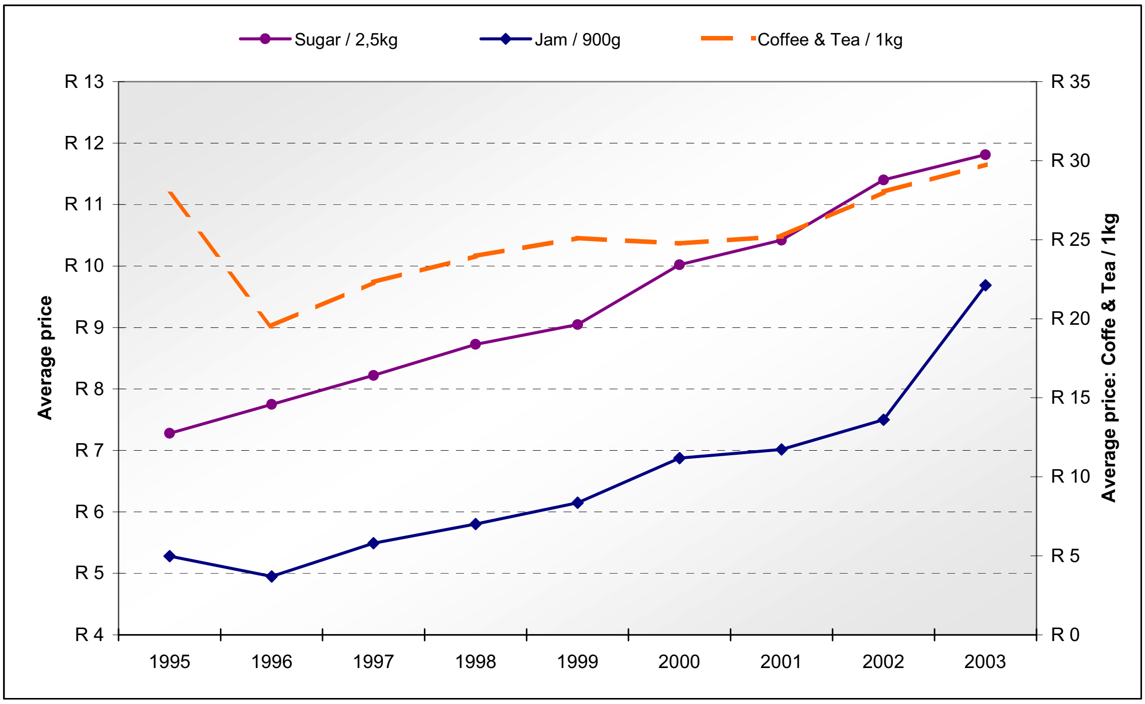

Figure 2.13: Average prices of sugar, jam and coffee & tea, 1995 - 2003

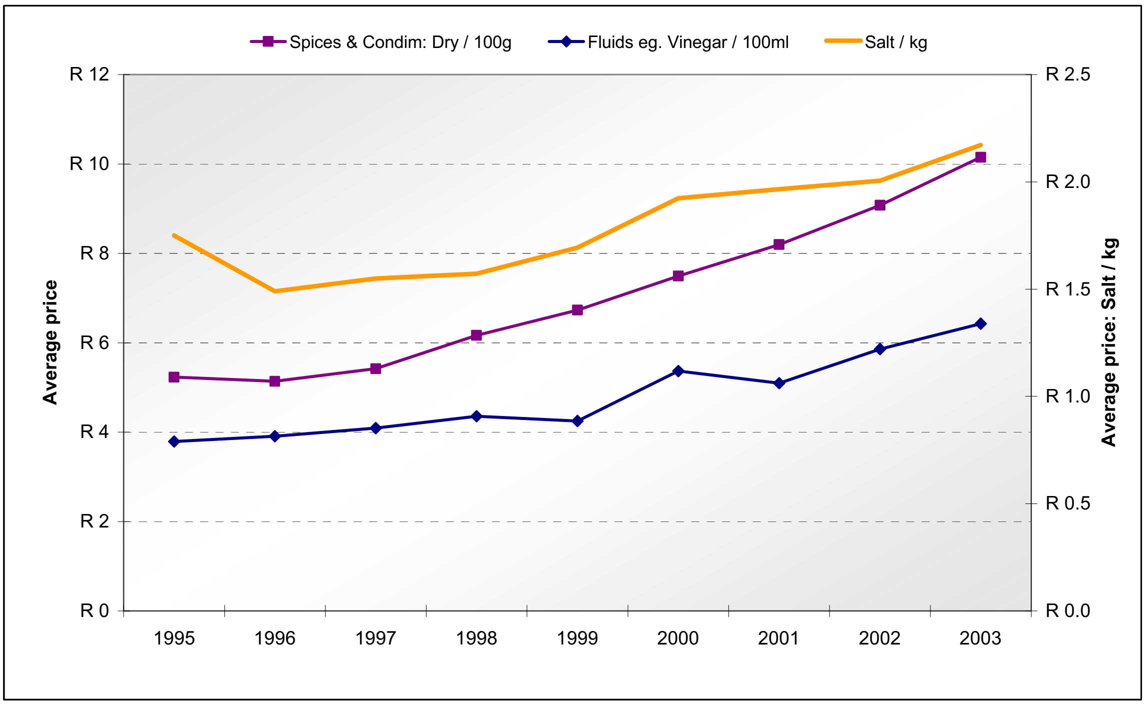

Figure 2.14: Average prices of salt, spices and fluids, 1995 - 2003

CHAPTER 3

NATIONAL AVERAGE MONTHLY RETAIL PRICES: JANUARY 2000 TO OCTOBER 2003

3.1 Introduction

The FPMC reached an agreement with the Consumer Goods Council of South Africa by which they facilitated access to an independent database on retail prices managed by AC Nielsen. These data originate from the retail scanner data as well as from a monthly audit of 7 000 stores across the country. The price series covers the period January 2000 up to October 2003 and provides lowest, highest and average prices for a large range of food products. In this Chapter, we review only the average monthly retail prices for all the products the Committee decided to monitor, plus a few additional products of interest. The trends reported in this analysis are at the end of the Chapter and are also compared with the data recorded at the individual monitoring points. This is done to verify and confirm the trends reported here.

3.2 Grain products

Maize meal

The updated figure of the trend in retail level maize meal prices has some positive attributes – a general stabilisation and an inclination to decline even further are observed. Given the normal time lag (of 3-4 months) in the milling chain, maize meal prices continue to decrease due to the large drop in the producer price for white maize.

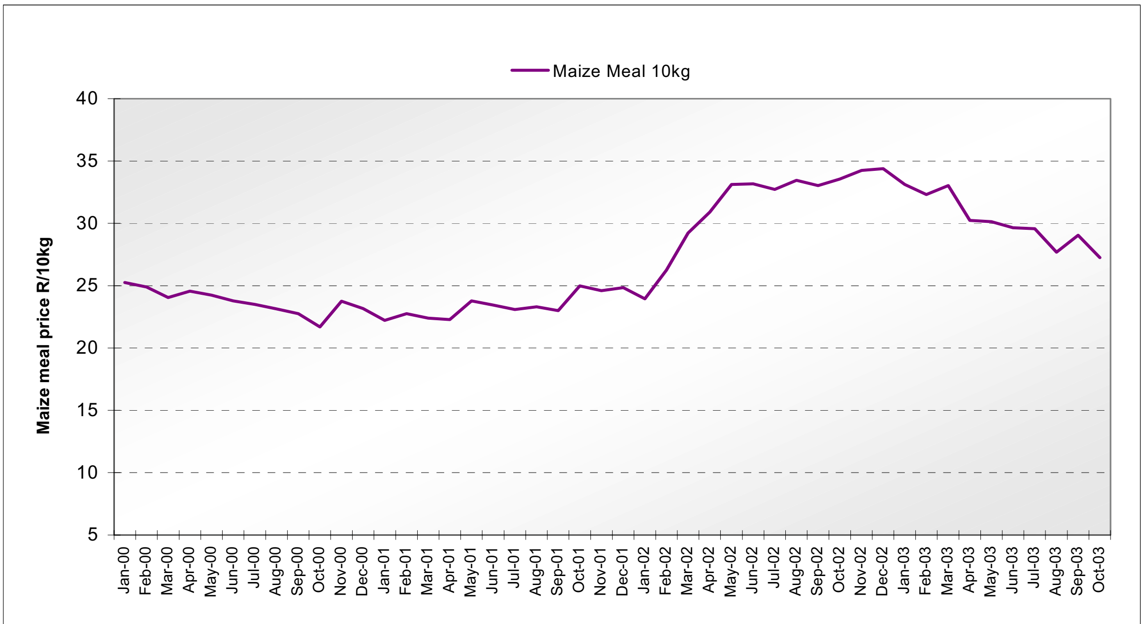

Figure 3.1: National average retail price for 10 kg maize meal: Jan 2000 to Oct 2003

The analysis of maize meal prices was expanded by also focusing on the trends of the major brands of super maize meal, namely: Ace, Iwisa, and Impala. Again, a very similar trend is noticed in Figure 3.2, showing consistently declining prices since its peak in November / December 2002. This declining trend has been observed for the last 10 months following a 12 - 14 month rally in maize meal prices since November/December 2001.

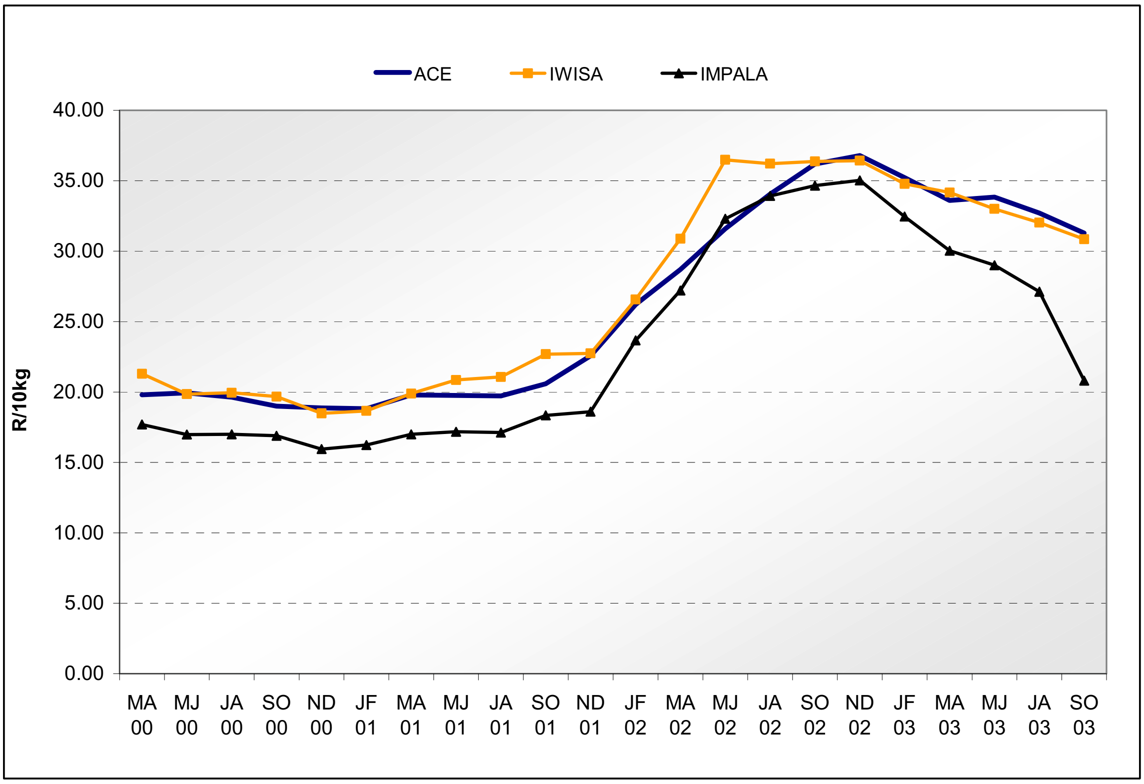

Figure 3.2: Bi-monthly average retail prices for different brands of super maize meal: March/April 2000 to Sept/Oct 2003

Bread and flour

Both white and brown bread prices follow a similar trend with the only difference in price being the VAT on white bread. The average price of brown bread for January 2000 to December 2001 was R2.68 per 700g standard loaf. Subsequently, prices increased steadily until December 2002 where prices peaked at R3.53 for standard brown bread loaves. Prices decreased in January, February, and March 2003, but returned to their highest levels in April 2003. Bread prices subsequently decreased in price again and have stabilized around R3.56/700g loaf.

Cake flour prices remained stable around R20 per 5kg for the period January 2000-December 2001 after which a five-month price rally increased prices by 35% to R27 per 5kg. Although prices appear to have a declining trend over the past 12 months they continue to remain high compared to the previous average.

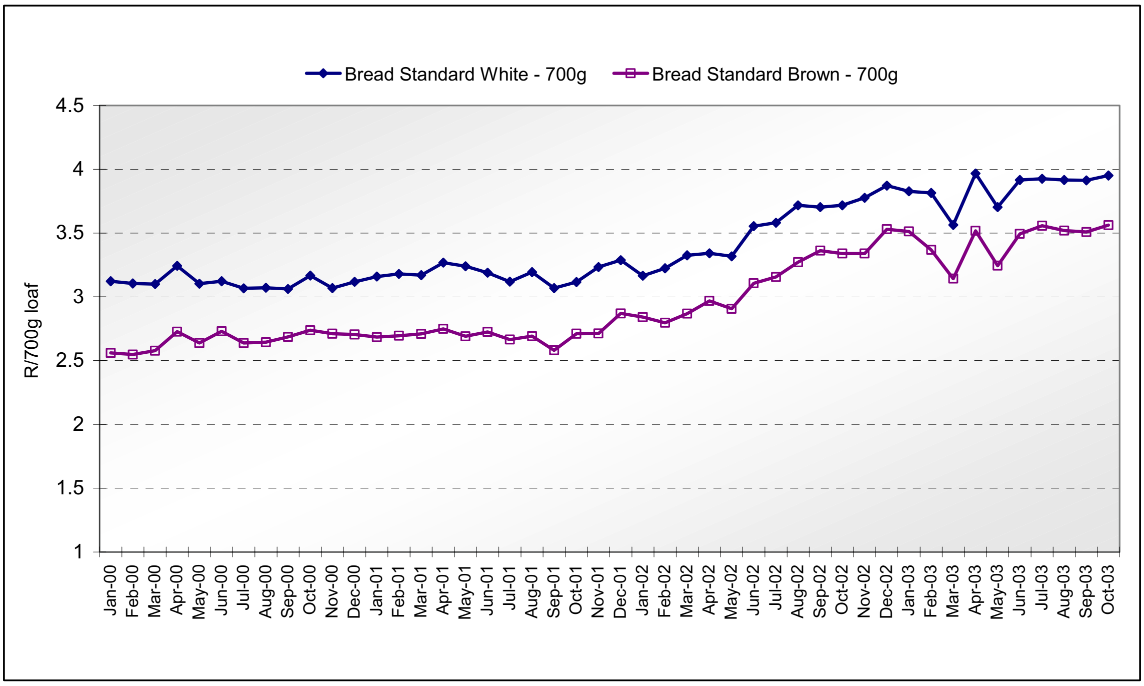

Figure 3.3: Brown and white bread (700g loaves) national average prices: Jan 2000 to Oct 2003

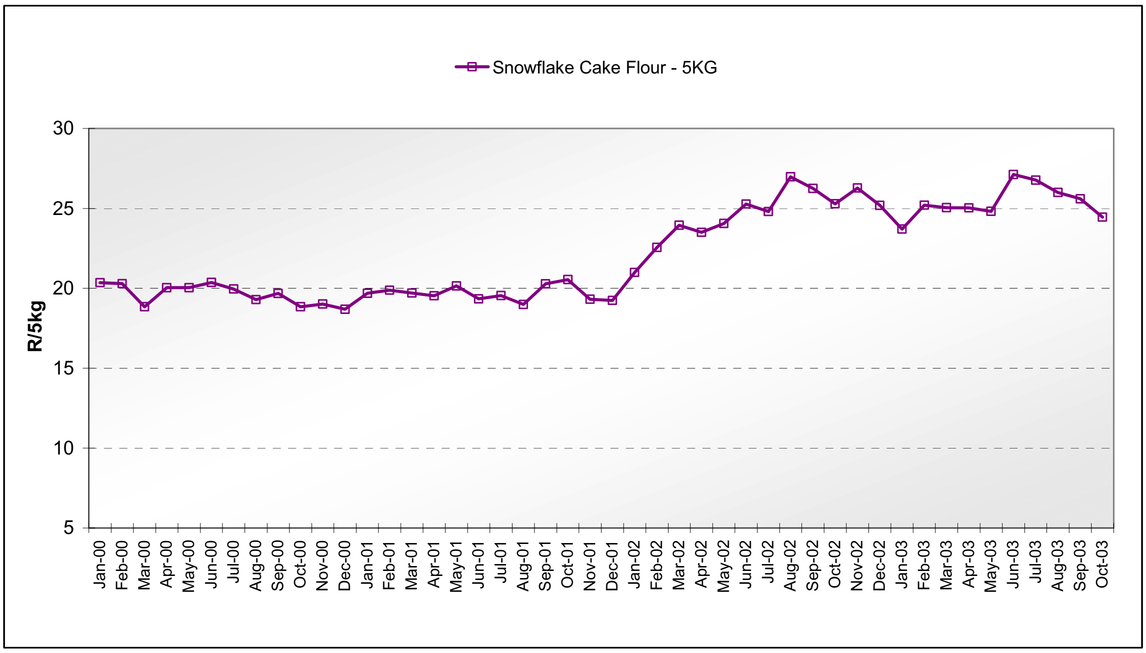

Figure 3.4: National average retail price of cake flour: Jan 2000 to Oct 2003

Rice

Until December 2001 the price of rice was fairly stable with an average of R6.70/kg. Between December 2001 and April 2002, the price of rice saw a price increase similar to maize. In fact, the price of rice increased by 16% in this period. Rice is mostly imported, thus the price increase is likely to be related to exchange rate fluctuations. The price of rice peaked in April 2002, after which it began to decrease again. The national average declining trend in the rice price continued until May 2003 where it returned to previous equilibrium levels where it has remained to date.

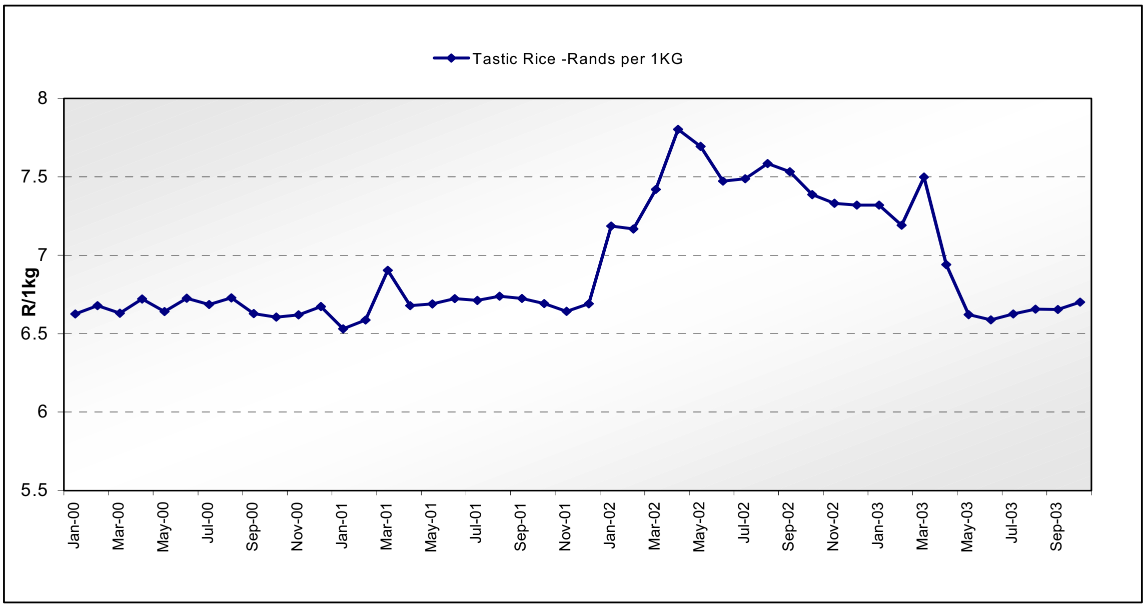

Figure 3.5: Tastic rice national average price: Jan 2000 to Oct 2003

3.3 Oilseeds

Sunflower oil and Margarine

Cooking oil and margarine prices are relatively stable with few fluctuations from the average price. The price of cooking oil however drastically increased by 59% between May 2001 and February 2002. The price then stabilized around R6.73 per 750ml. Although prices appear to have a decreasing trend they remain high compared to the average price of R3.86 in 2000.

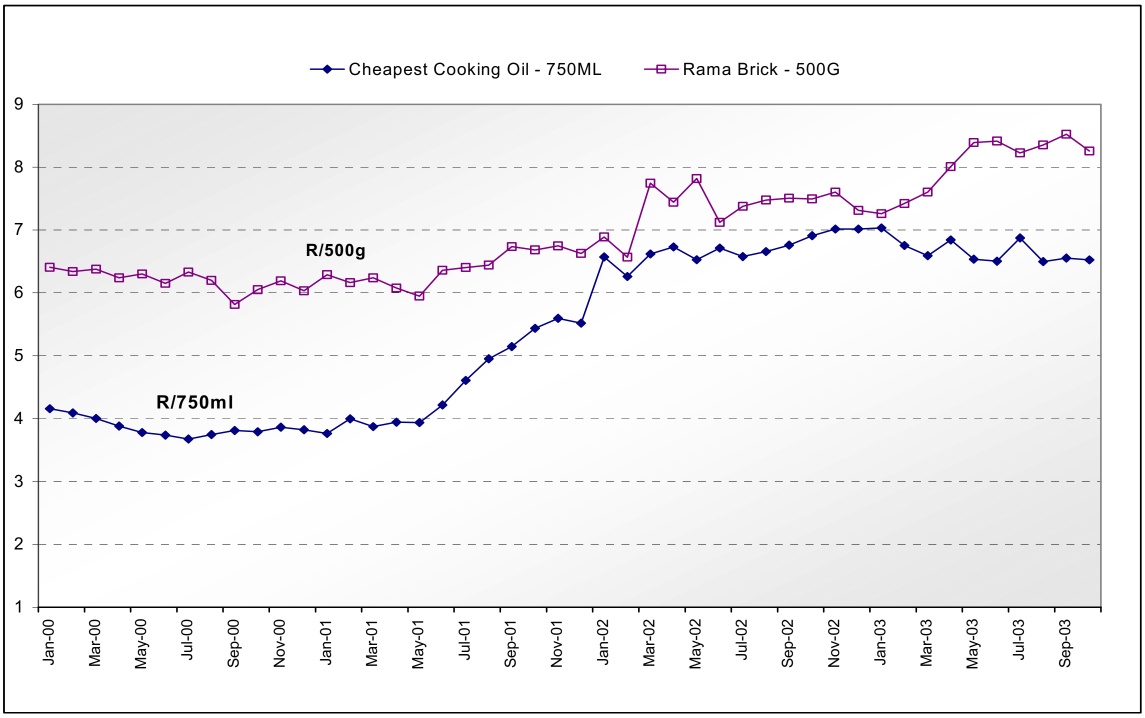

Figure 3.6: National average prices for 750 ml cooking oil and 500g margarine brick: Jan 2000 to Oct 2003

Margarine, although closely related to cooking oil in terms of inputs, did not follow the same trend in price increase. In fact the margarine price remained stable around R6.33/500g brick for the period January 2000 to February 2002. From February to March 2002 a 17.8% increase occurred in the margarine price. Prices remained high and have continued to increase until October 2003.

Peanut butter

Peanut butter prices remained stable around R6.55/ 410g until April 2002 after which they steadily rallied. The price is currently R9.58/ 410g. Peanut butter prices increased by 46% in the past 19 months.

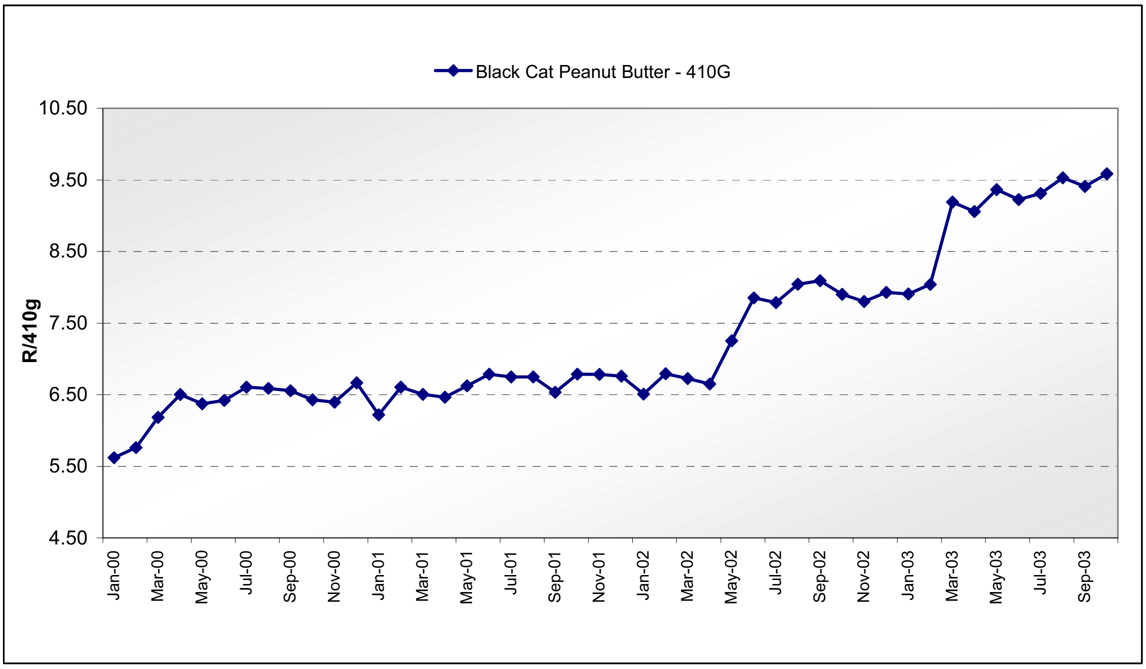

Figure 3.7: National average retail prices for peanut butter: Jan 2000-Oct 2003

3.4 Dairy products

Dairy prices, that is, fresh milk, powdered milk, cheese, and butter do not deviate much from the trend of the past three years. The various dairy products display very similar trends. The consumer price of fresh milk does, however, increase at a faster rate than that of powdered milk. It is interesting to note that the changes in the price of fresh milk precede those of evaporated milk by approximately 3 months. The prices of milk have not seen large increases over the past 3 years except for the period December 2001 to April 2002 when the price increased by 13% in 4 months. This can be attributed to the maize price increase, a major component in intensive milk production systems.

All the figures below (Fig 3.8 – 3.13) clearly indicate that dairy product prices have been consistently increasing over the past three years.

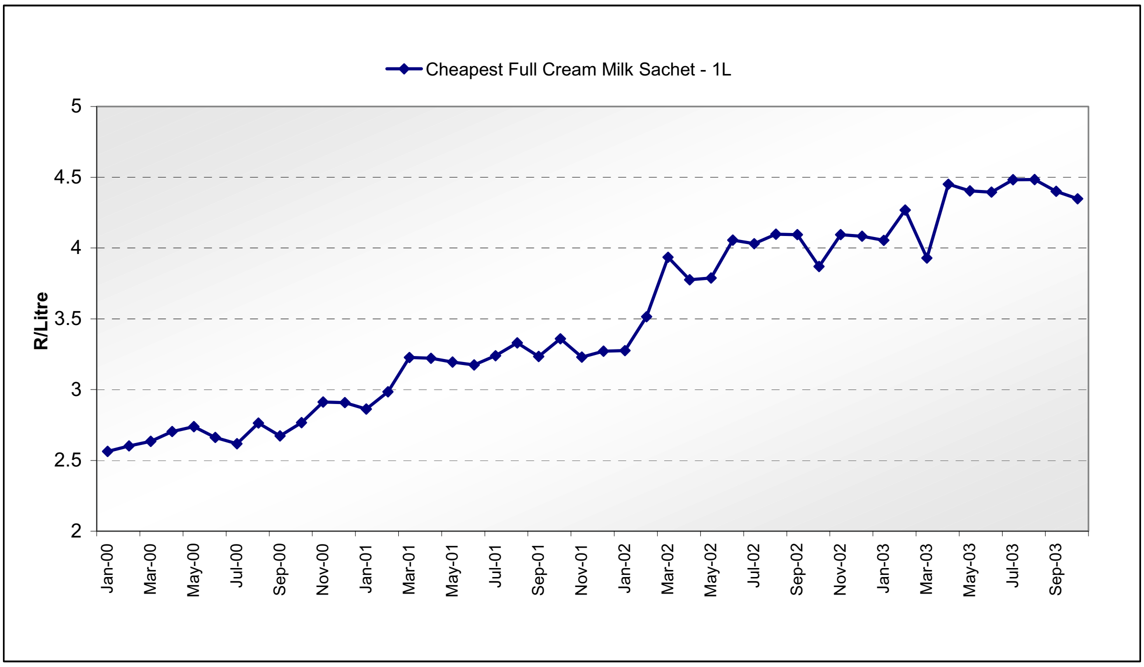

Figure 3.8: National average price for cheapest full cream milk sachet: Jan 2000 to Oct 2003

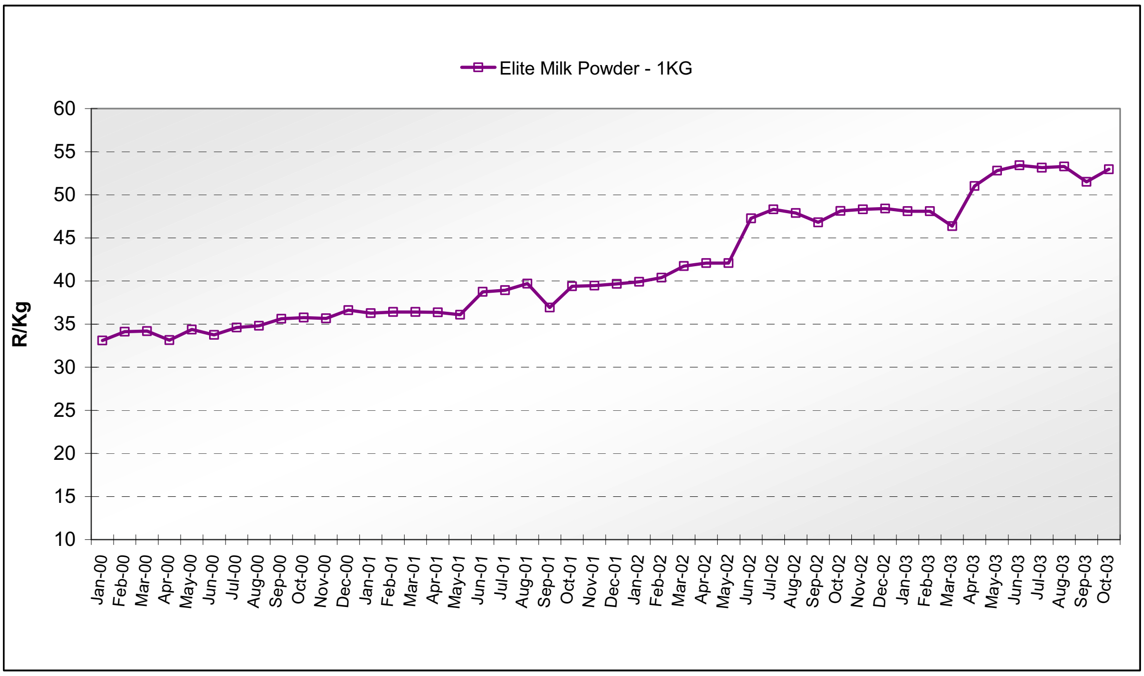

Figure 3.9: National average retail price for 1 kg Elite milk powder: Jan 2000-Oct 2003

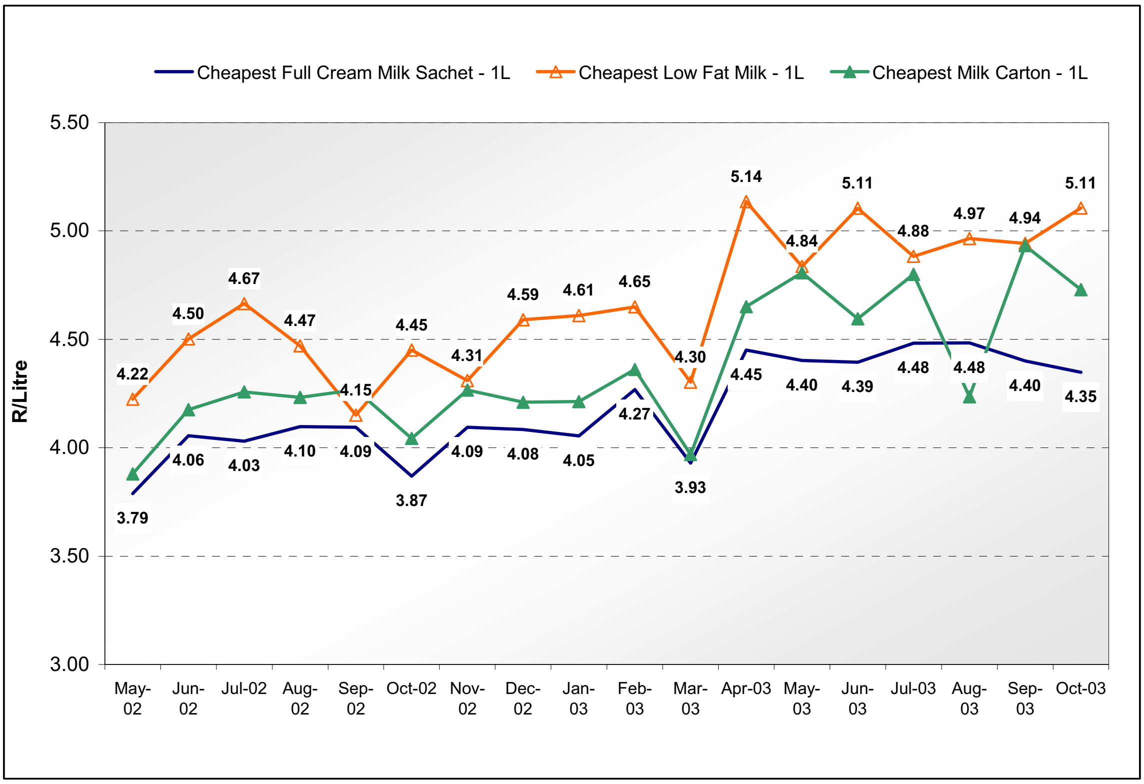

Figure 3.10: Average monthly retail prices of 'fresh milk': May 2002 to October 2003

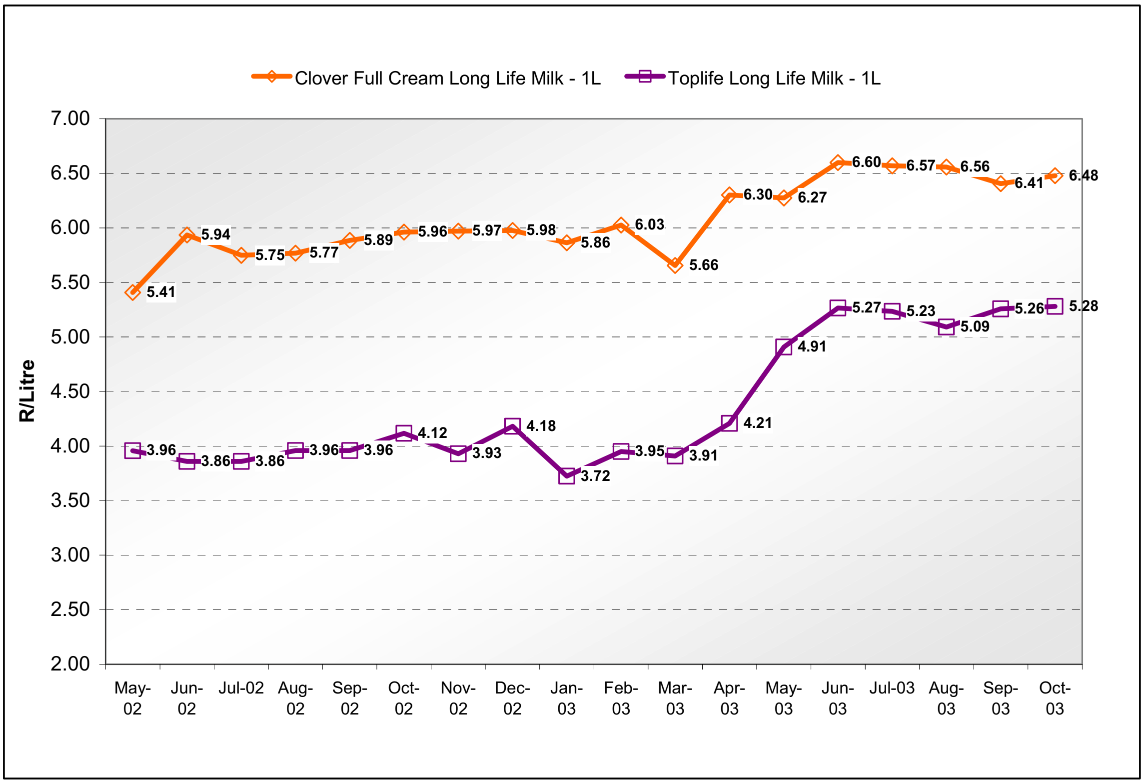

Figure 3.11: Average monthly retail prices of 'Long life milk': May 2002 to October 2003

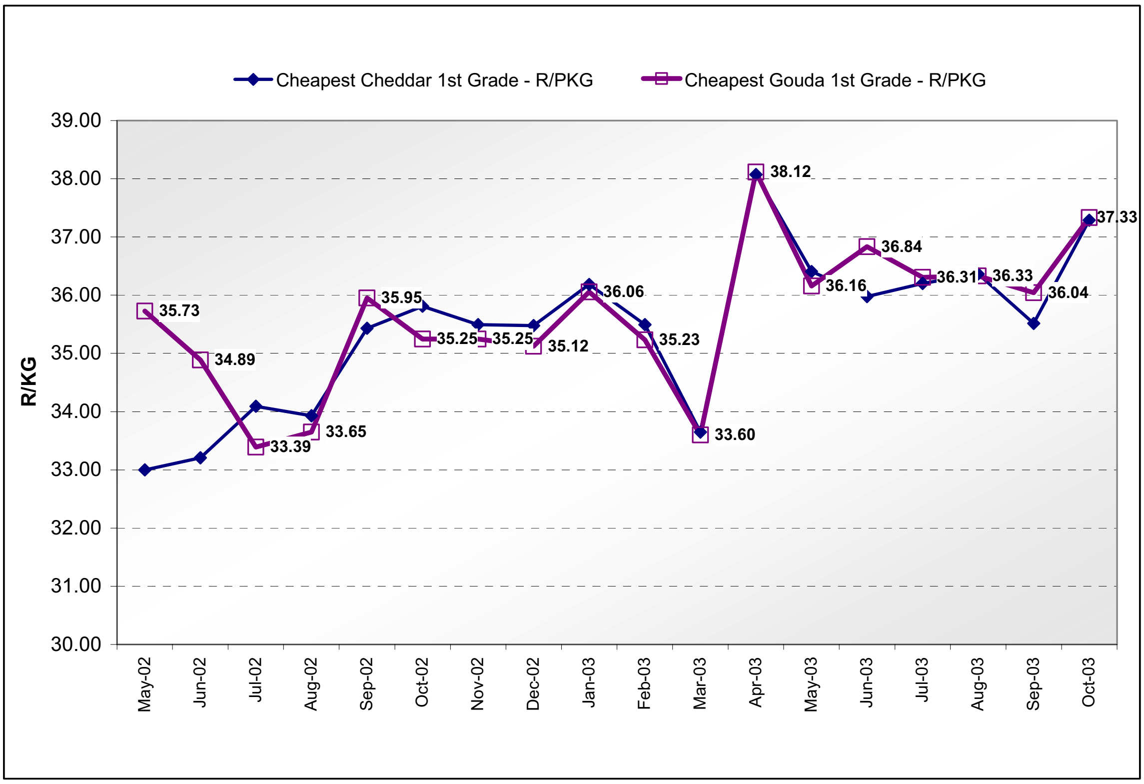

Figure 3.12: Average monthly retail prices of <u>cheese</u>: May 2002 to October 2003

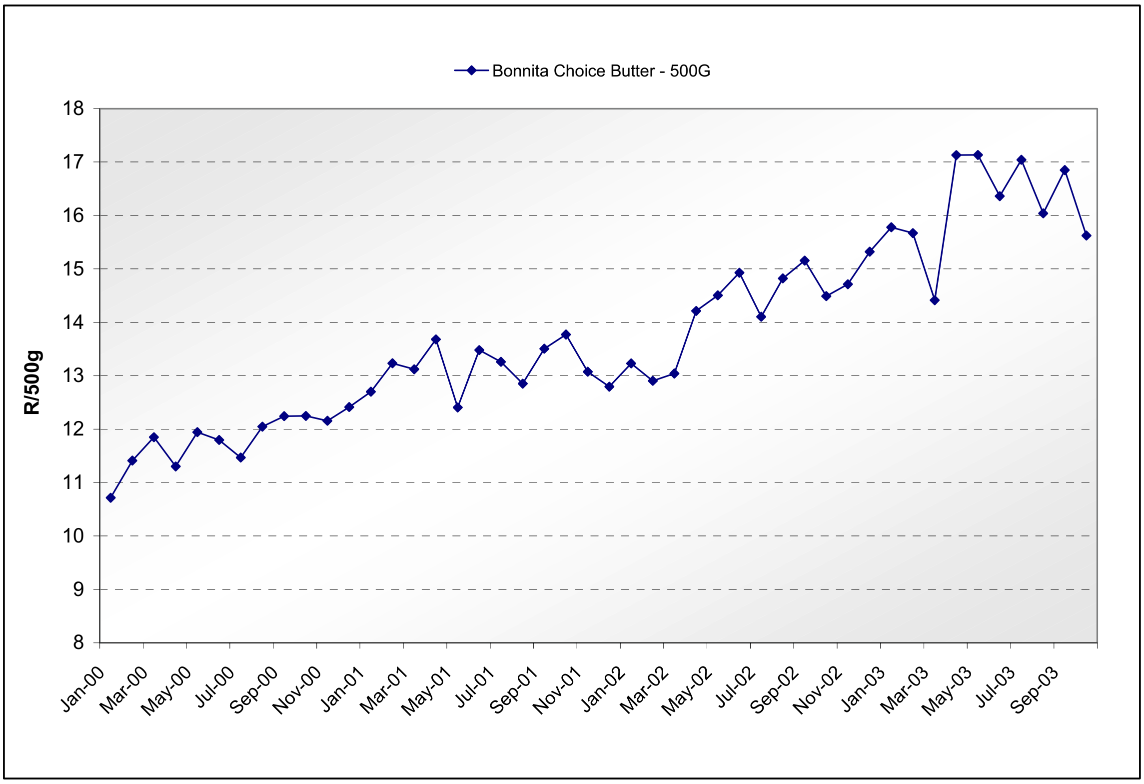

Figure 3.13: Average monthly retail prices of <u>butter</u>: May 2002 to October 2003

3.5 Red meat

Beef

The price of stewing beef remained stable around R18.30/kg for the period January 2000 to October 2001. After November 2001, beef prices began to increase, as did price volatility. Maize is an important input in the production of beef under the feedlot system. Consequently, when maize prices continued to increase, the beef price had to follow. In 2002 and 2003 the beef price followed the fluctuation of the maize price, even though not by the same extent, with a 1 to 2 months lag. Since September 2002 the maize price has been decreasing with the beef price following this trend from November 2002. Both prices are still decreasing to date.

Lean beef mince, and beef sausages follow a similar trend to that of stewing beef with the main difference being that prices peaked in different months. Beef prices have been decreasing since January 2003. Lean beef mince has returned to the price levels of 2000-2001 while beef sausages still remain above these levels.

Pork and lamb prices remained fairy constant until mid 2002. Lamb prices increased from May 2002 until September 2002 while pork prices increased from July 2002 until January 2003. It is interesting to note how the price of pork and lamb follow a similar trend despite the fact that their respective production systems are so different. One explanation for this could be that they are both substitutes for beef and are thus affected by similar demand fluctuations caused by changes in the beef price.

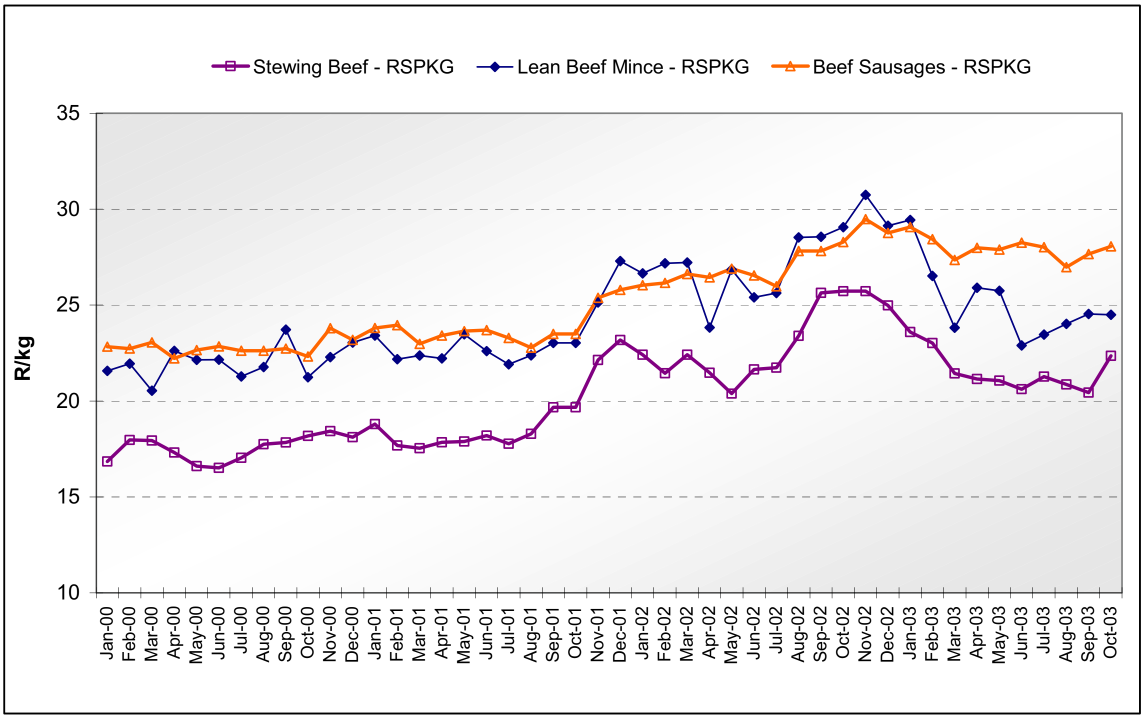

Figure 3.14: Average monthly retail prices for stewing beef, beef sausages, and lean beef mince prices: January 2000-October 2003

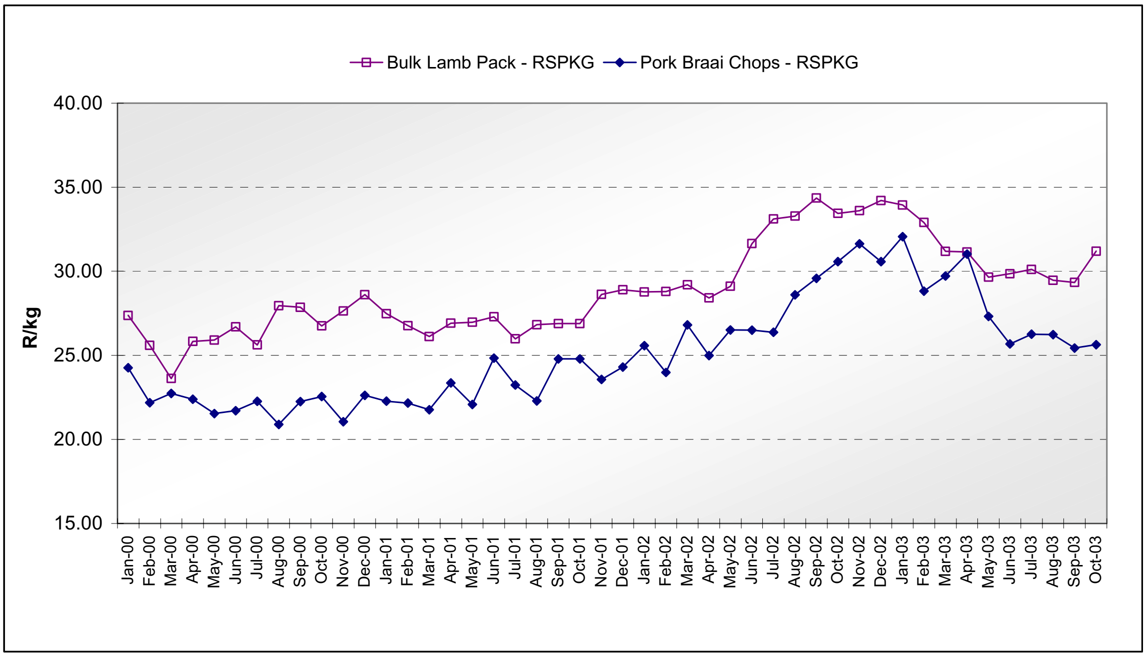

Figure 3.15: Average retail prices for pork braai chops and bulk lamb: January 2000-October 2003

3.6 Poultry products

Chicken

Frozen and fresh whole chicken prices seem to follow similar trends. Frozen chicken prices have however been increasing at a faster rate than those of fresh chicken. This can be seen by the decreasing "gap" that exists between the two prices. The "gap" has been decreasing to the point that the prices were the same in July 2003. There is no clear pattern in the changes in consumer prices of chicken. This is peculiar considering that maize is the main component of broiler feed, which constitutes 55% of the total production cost of chicken.

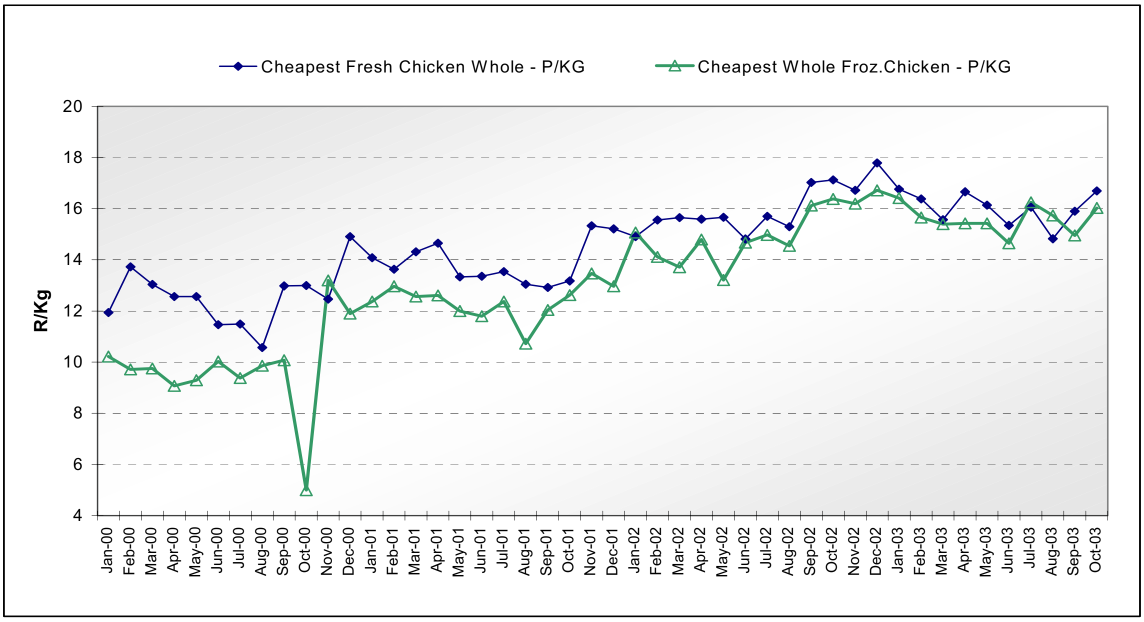

Figure 3.16: Cheapest frozen and fresh chicken prices: January 2000 to October 2003

Eggs

Similar to dairy, the price of eggs does not tend to deviate from it's the general trend. A general trend of increasing prices caused by general inflationary pressures is observed here. Egg prices however began to increase at a faster rate from May 2002 onwards. Egg prices appeared to return to their previous levels in March 2003, this was however short-lived as prices peaked at R9.28 per dozen in May 2003. Egg prices appear to be decreasing in the last 3 months of the series and might, therefore, return to the previous price level of below R7 per dozen.

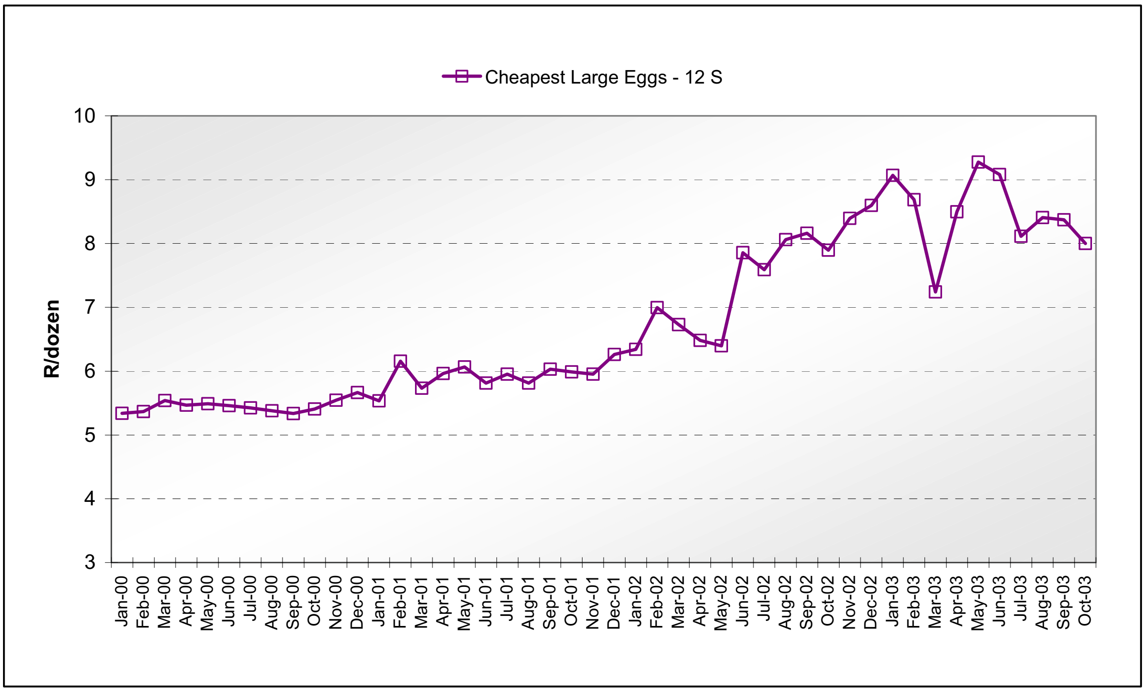

Figure 3.17: National average retail price for eggs (dozen): January 2000 to October 2003.

3.7 Fruit and Vegetables

The prices of fruit and vegetables are generally expected to be quite volatile due to seasonal supply shortages and surpluses. Of all the fruits and vegetables studied here the only one that displays a typical cycle caused by seasonal supply fluctuations are oranges. The prices for other fruits remained fairly stable during the period January 2000 and October 2003.

Tomatoes, onions, and cabbage, apart from seasonal fluctuations, remained on average fairly stable over the period January 2000 to July 2003. Potatoes, however, have quite different price trends. The potato price per pocket has seen large fluctuations over the past three years. The price of potatoes did see a sharp increase in January 2001 when the price went from R8.83 to R20.73 for a 10kg pocket. The price then remained fairly stable around R21.10/10kg pocket until April 2002, after which it increased almost linearly until October 2002 when it peaked at R46.79 per pocket. This high price is however unsustainable and has, in fact, been decreasing, presumably returning to the more stable price of R21.10/10kg pocket.

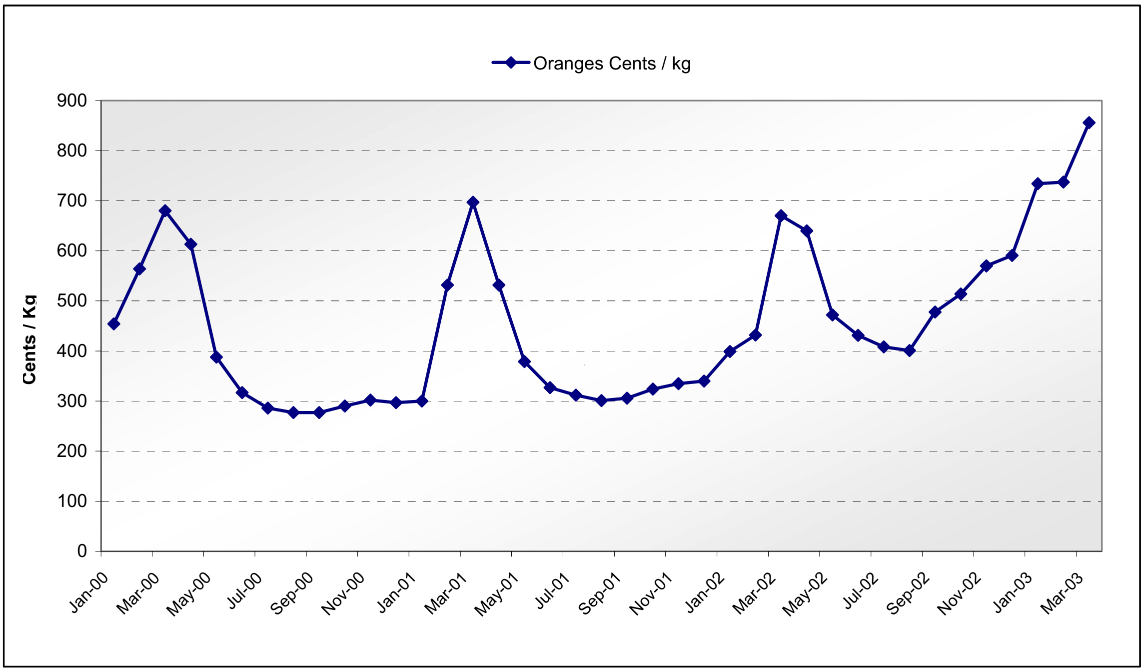

Figure 3.18: **National average retail price of oranges: January 2000 to March 2003**

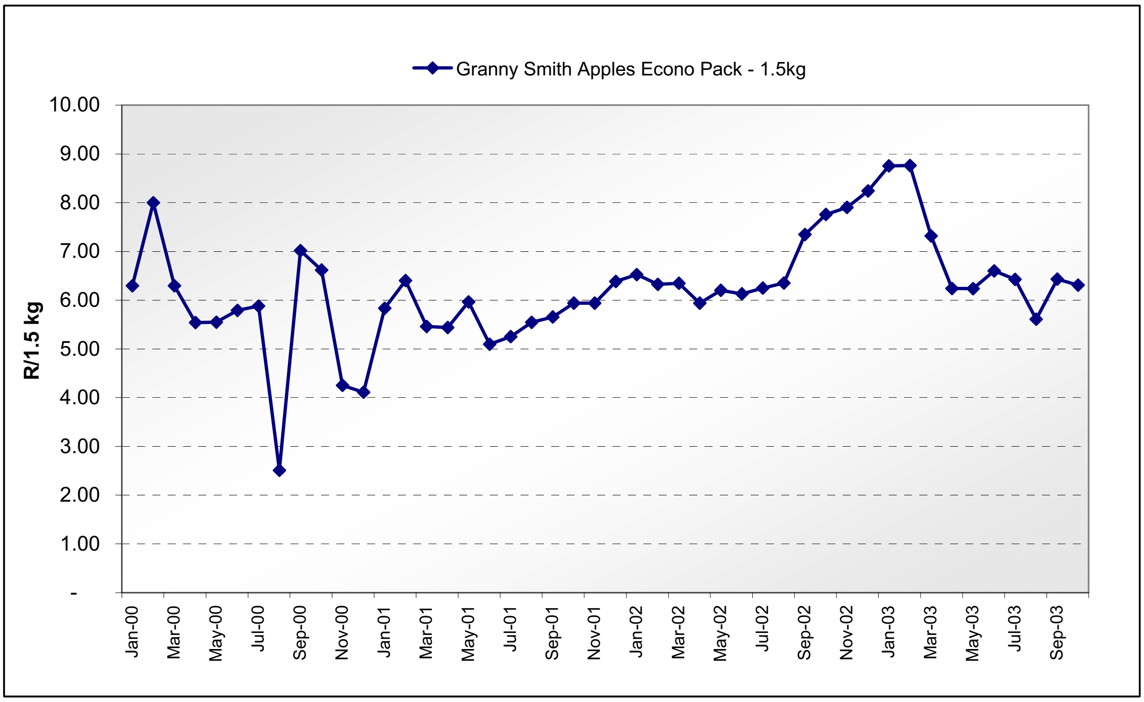

Figure 3.19: **National average retail price of Granny Smith apples (1.5kg): January 2000 to October 2003**

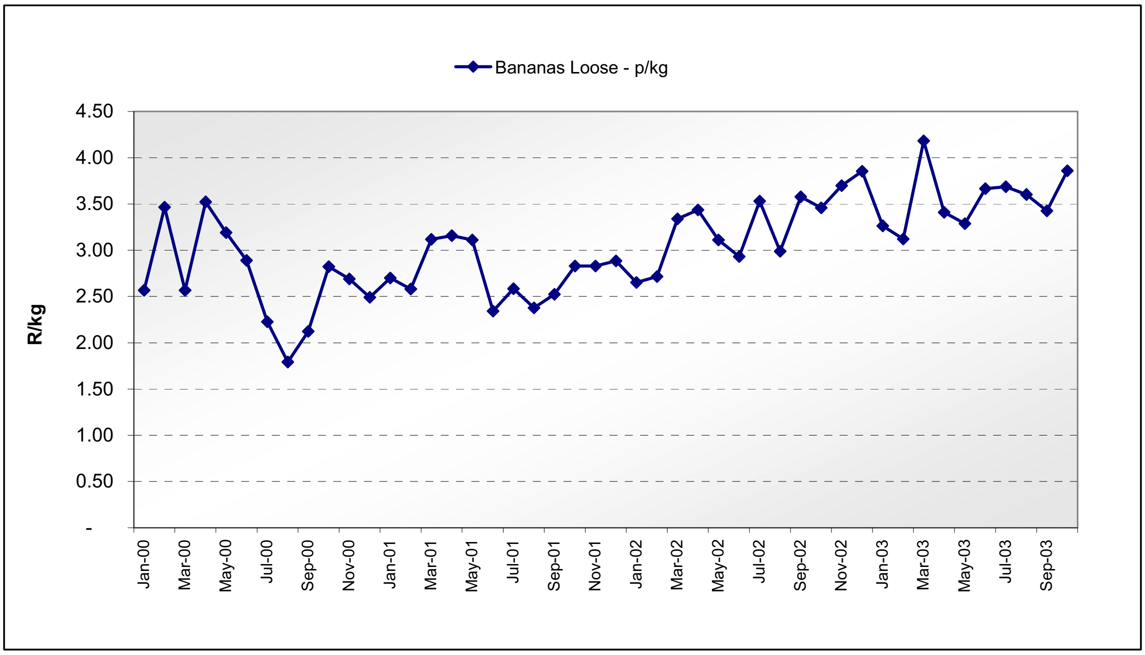

Figure 3.20: National average retail price of loose bananas (kg): January 2000 to October 2003

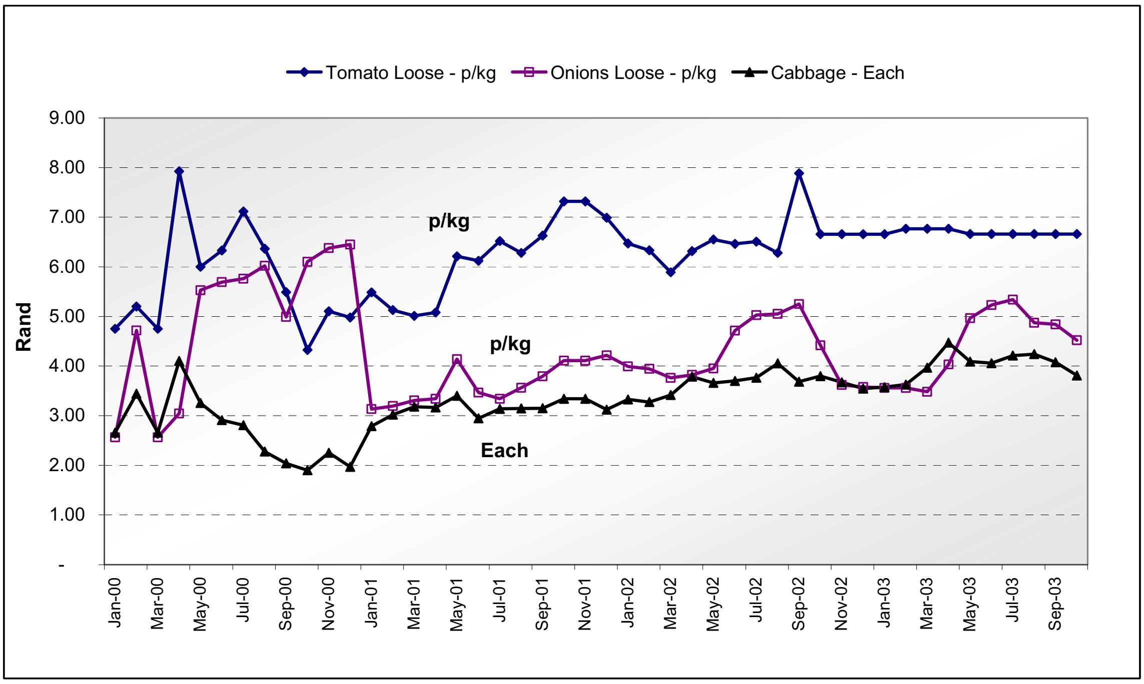

Figure 3.21: Average retail prices for tomatoes, onions, and cabbage: January 2000 to October 2003

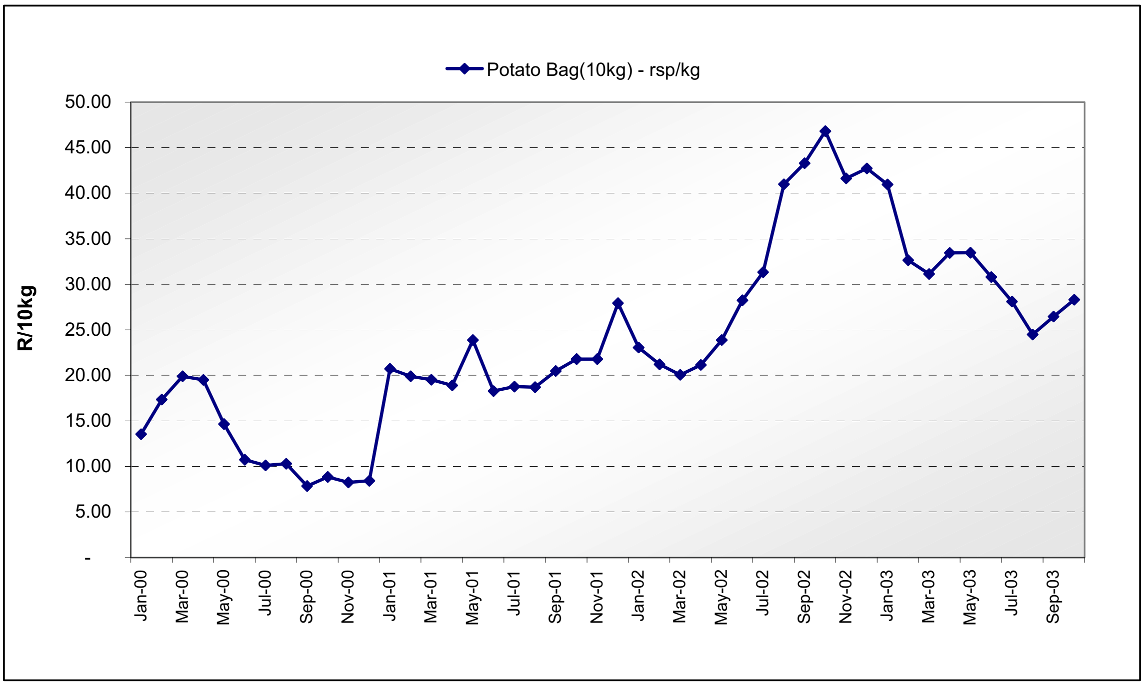

Figure 3.22: Average retail price for potatoes (10 kg bag): January 2000-October 2003

3.8 Sugar, Tea and Coffee

Sugar prices fluctuated around an average price of R9.83 per 2.5kg packet until October 2001. Thereafter prices increased until August 2002, peaking at R11.13/2.5kg packet, an increase of 13% in 10 months. Prices continued to remain high at an average of R10.85/2.5kg packet for the next few months and then showed a sharp increase to R11.70/2.5 kg in July 2003 after which it suddenly dropped back to levels around R11.20.

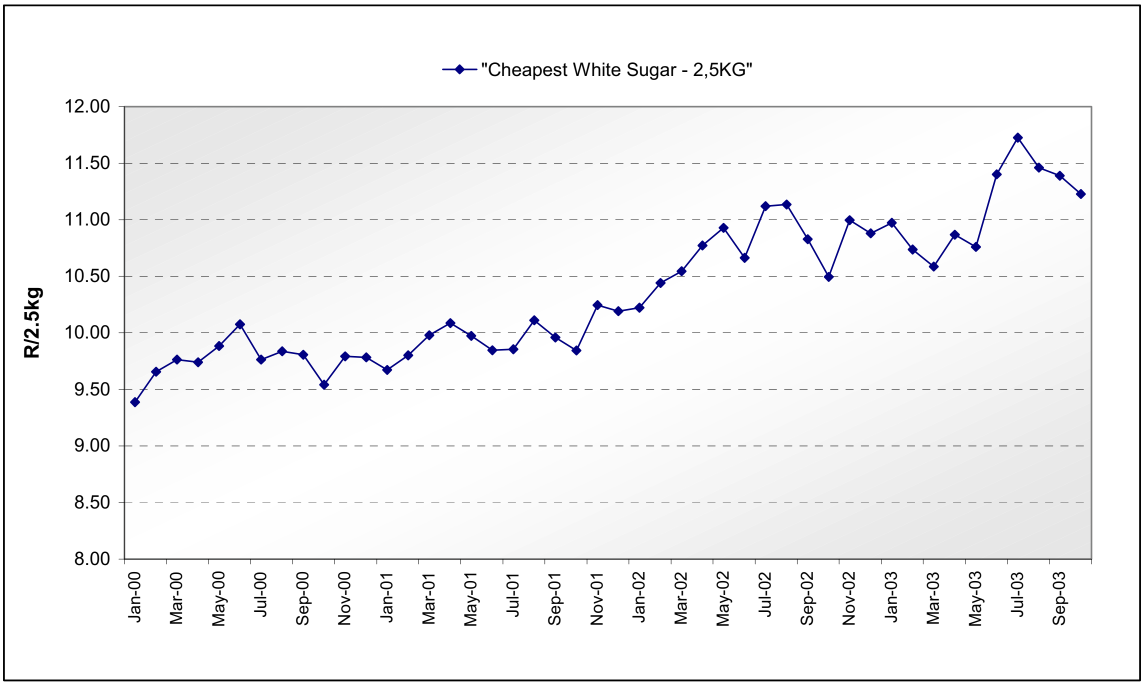

Figure 3.23: Average retail price for white sugar: January 2000 to October 2003

The retail price of tea steadily increased from January 2000 until June 2002 after which it levelled out and began to decrease in April 2003. This decreasing trend is still continuing to date. Tea is mainly an imported product and therefore is affected by exchange rate fluctuations. The strengthening of the exchange rate is the likely reason that prices are decreasing.

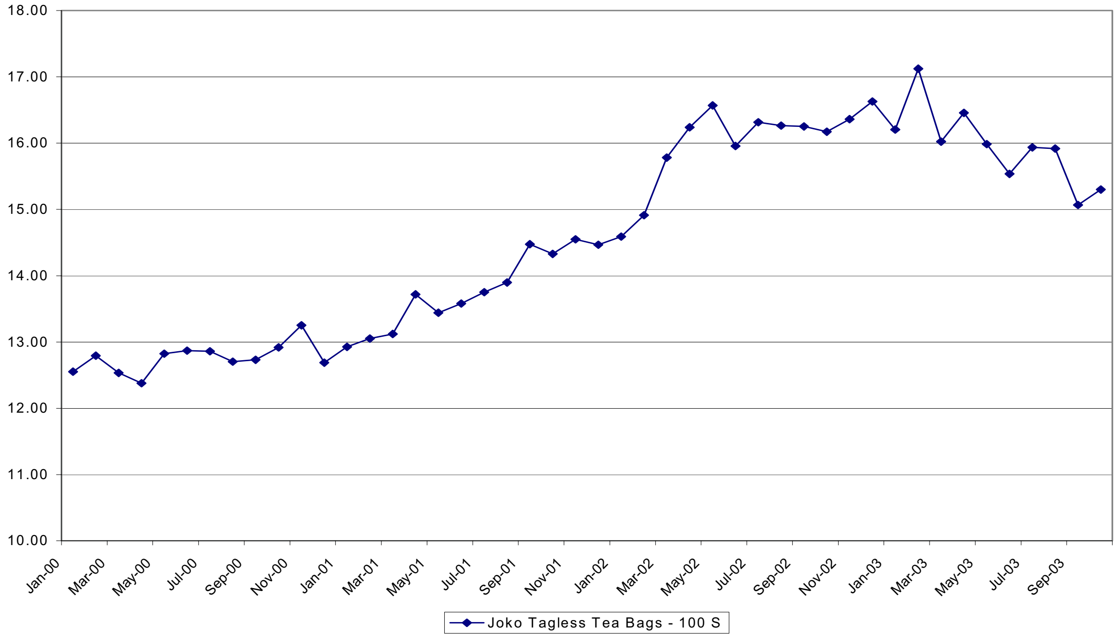

Figure 3.24: Average retail price for tagless teabags: January 2000-October 2003

Similar to tea, coffee is also a product that is mainly imported. The price of instant coffee remained fairly stable around R23/750g until March 2002 after which the price increased by approximately R5 in 3 months. Prices subsequently continue to remain high at an average price of R27.37/750g with little indication of prices returning to their previous levels. The increase in the local producer price for chicory (an important input in instant coffee) was partly to blame for the prices remaining high and came as a result of increased farm production costs.

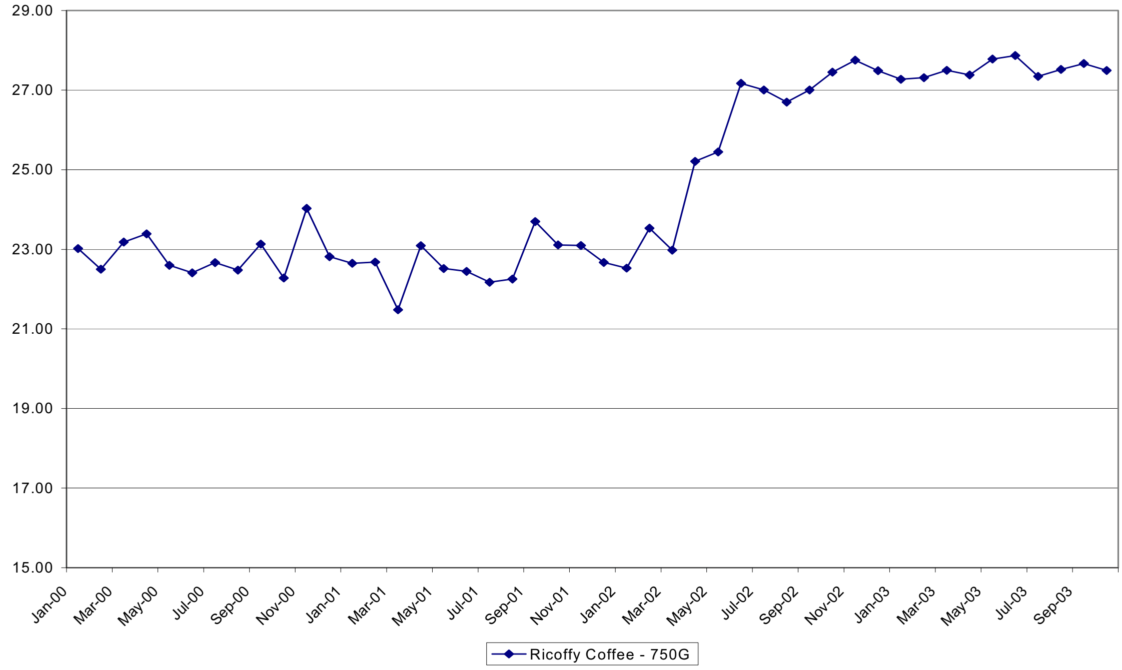

Figure 3.25: Average retail price for filter coffee: January 2000-October 2003

3.9 Summary

Table 3.1 provides a summary of the main trends in retail prices depicted in the various figures above. The table shows how difficult it is to generalise. Yet, all in all, there are some indications of a slowdown in food price inflation, and also in the rate at which food prices increased. In some cases, there were decreases on a year on year basis. However, there remain a few areas of concern where food does not seem to become cheaper.

Table 3.1: Changes in average retail price for selected food products

	Jan 00	Jan 01	Jan 02	Oct 02	Jan 03	Oct 03	Percentage change Jan-03 to Oct-03
Cheapest Maize Meal per 10kg	25.26	22.21	23.94	33.55	33.12	27.25	-17.70%
Bread Brown – 700g	2.56	2.68	2.84	3.34	3.51	3.56	1.41%
Bread White – 700g	3.12	3.16	3.16	3.72	3.83	3.95	3.24%
Snowflake Cake Flour – 5kg	20.35	19.68	20.99	25.29	23.71	24.45	3.12%
Tastic Rice -Rands per 1kg	6.63	6.53	7.19	7.39	7.32	6.7	-8.44%
Cooking Oil – 750ml	4.16	3.76	6.57	6.91	7.03	6.52	-7.25%
Rama Brick – 500g	6.41	6.29	6.89	7.49	7.26	8.26	13.75%
Peanut Butter – 410g	5.62	6.22	6.51	7.8	7.91	9.58	21.19%
Full Cream Milk Sachet – 1L	2.56	2.86	3.28	3.87	4.05	4.35	7.25%
Elite Milk Powder – 1kg	33.09	36.26	39.9	48.13	48.11	52.97	10.11%
Full Cream Long Life Milk – 1L	3.32	3.73	4.15	5.36	5.38	5.88	9.33%
Cheddar 1st Grade - R/kg	27.25	29.08	31.41	35.81	36.18	37.29	3.06%
Choice Butter – 500g	10.71	12.7	13.23	14.49	15.78	15.63	-0.99%
Stewing Beef – R/kg	16.84	18.8	22.41	25.73	23.6	22.36	-5.28%
Bulk Lamb Pack – R/kg	27.38	27.47	28.78	33.44	33.94	31.19	-8.10%
Pork Braai Chops – R/kg	24.26	22.27	25.58	30.57	32.06	25.63	-20.05%
Fresh Chicken Whole – R/kg	11.94	14.09	14.91	17.13	16.76	16.7	-0.36%
Cheapest Large Eggs - 12 S	5.34	5.54	6.34	7.89	9.07	8	-11.76%
Granny Smith Apples - 1.5kg	6.3	5.83	6.52	7.76	8.75	6.31	-27.95%
Tomato Loose – R/kg	4.75	5.49	6.47	6.66	6.66	6.66	0.00%
Onions Loose – R/kg	2.57	3.14	3.99	4.42	3.56	4.52	27.02%
Cabbage – Each	2.66	2.79	3.33	3.8	3.57	3.81	6.63%
Potatoes Bag (10kg) -	13.55	20.73	23.05	46.79	40.95	28.3	-30.89%
Cheapest White Sugar – 2,5kg	9.39	9.67	10.22	10.49	10.97	11.23	2.32%
Joko Tagless Tea Bags - 100 S	12.55	12.93	14.59	16.17	16.20	15.30	-5.6%
Ricoffy Coffee – 750g	23.02	22.65	22.53	27.45	27.27	27.45	0.7%

3.10 Results from individual monitoring points

The FPMC also employed fieldworkers to monitor retail prices at a number of individual monitoring points. In most provinces 6 localities were selected where the prices of the basket of food items were monitored on a monthly basis. A list of individual monitoring points is presented in Table 3.2 below.

Table 3.2: Individual monitoring points per province

Province	Town	Township / Peri-urban	Rural
Eastern Cape	East London Port Elizabeth	Umtata Queenstown	Viedesgville Kokstad
Free State	Bloemfontein Welkom	Qwaqwa Kroonstad	Bethlehem Koffiefontein
Gauteng	Rosslyn Vereeniging	Atteridgeville Sebokeng	Winterveldt Erasmus
KwaZulu-Natal	Scottsville Ulundi	Imbali Ulundi (Section C)	Sweetwaters Mbilane
Limpopo	Polokwane Louis Trichardt	Thohoyandou Giyani	Kgamphahlele Abbotspoort
Mpumalanga	Ermelo Nelspruit	Ekangala Siyabuswa	Nasi Elukwatini
Northern Cape	Upington Kimberley	Galeshiwe Springbok	Bersia
North-West	Rustenburg Mafikeng	Taung Makau	Setlagole Bodibe
Western Cape	Tygervalley George	Guguletu Thembalethu	Piketberg Beaufort West

The purpose of this exercise was to move the analysis of retail price trends more to the level of the local community and to identify any sharp increases in prices. Without going into too much detail, it is worth reporting that the analysis provided much of the same trends as reported earlier in this Chapter as well as in Chapter 2. Because much of the individual monitoring activity only started in March/April 2003, the Committee was not able to detect any unrealistic price movements. This might well have been a consequence of the fairly stable prices throughout 2003, although they seemed to be higher than in 2002. The confirmation of these trends is provided in the summarised figures below.

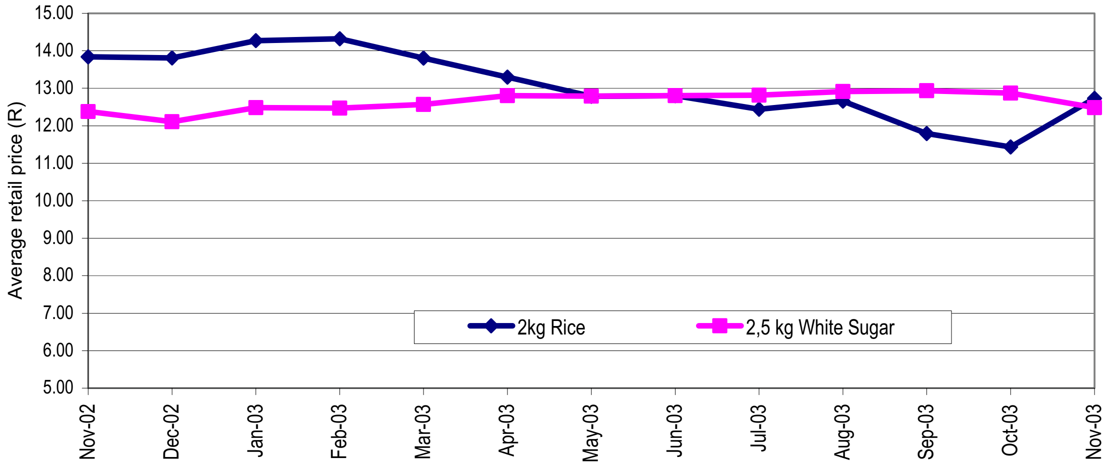

Figure 3.26: Average monthly retail prices of rice and sugar in monitoring points in towns: November 2002 – November 2003

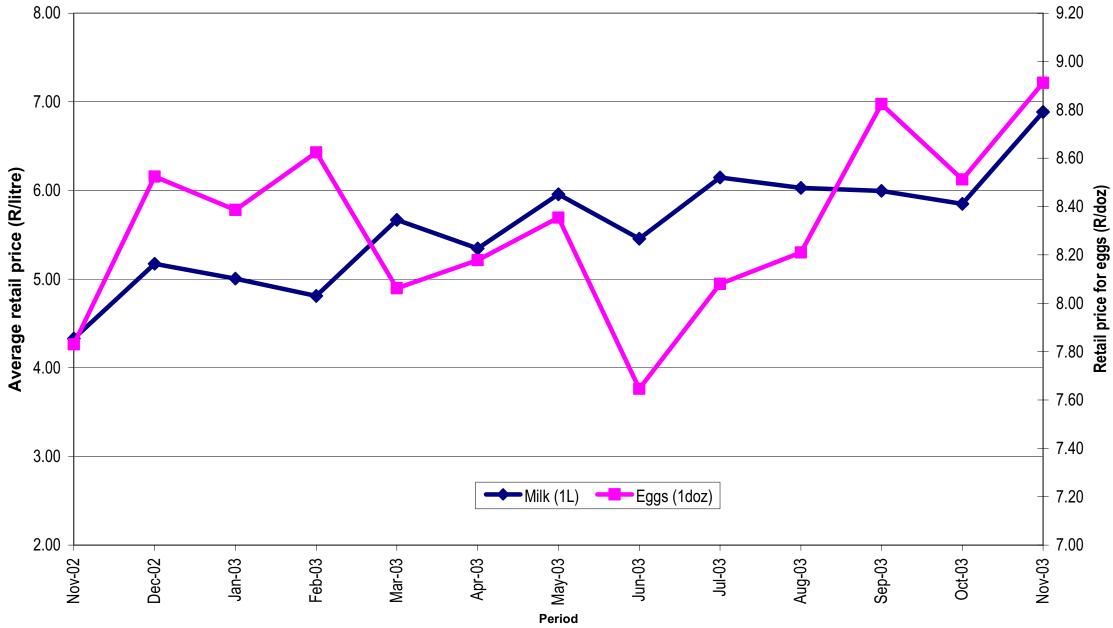

Figure 3.27: Average monthly retail prices of milk and eggs in monitoring points in peri-urban settlements: Nov 2002 – Nov 2003

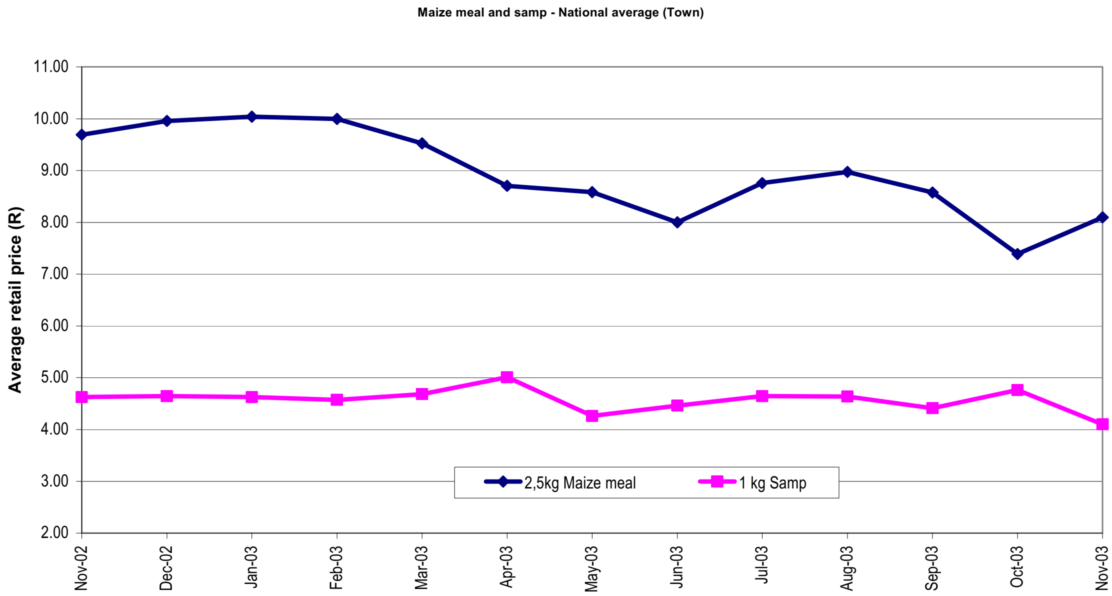

Figure 3.28: Average monthly retail prices of maize meal and samp in monitoring points in towns: Nov 2002 – Nov 2003

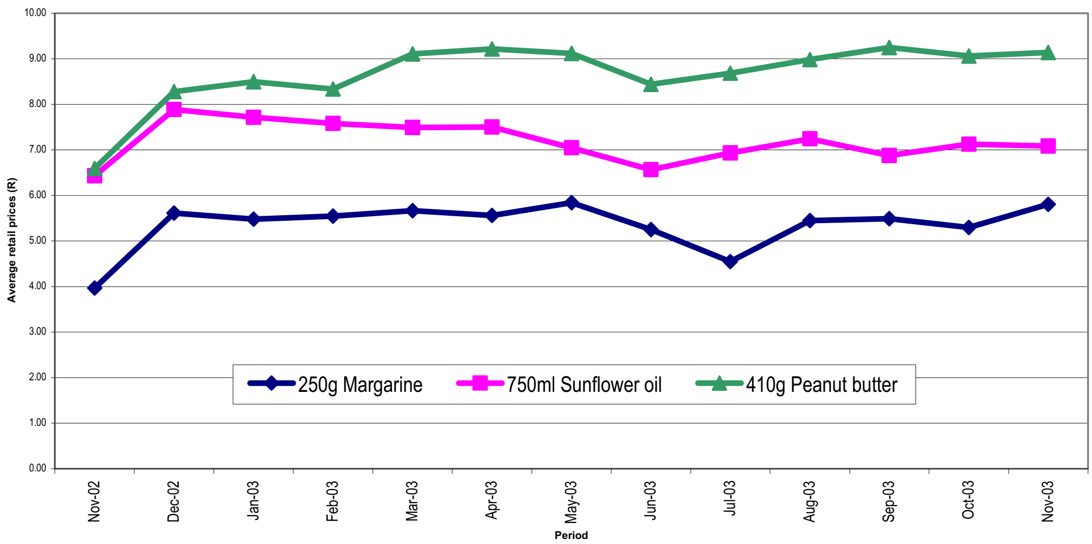

Figure 3.29: Average monthly retail prices of sunflower oil, margarine and peanut butter in monitoring points in peri-urban areas: Nov 2002 – Nov 2003

CHAPTER 4

PRICES OF SELECTED FOOD PRODUCTS AT RURAL STORES

4.1 Introduction

The aim of this Chapter is to trace and record the mark-up levels as food products move from wholesalers (or sometimes supermarkets) to small shops in rural areas of the Free State, Northern Cape, KwaZulu-Natal, Eastern Cape and Limpopo Provinces. The wholesale-to-retail price spread of these commodities was determined over a period of four months (April – July 2003). The following commodities were monitored:

- Maize meal
- White bread
- Milk (long life)
- Dry beans (speckled sugar)
- Potatoes
- Red meat
- Sugar

Prices were monitored at spaza shops in rural areas as well as wholesalers where spaza shop owners source these commodities. Most of the stores are located considerable distances away from major towns. Storeowners buy stock at wholesalers such as Metro Cash and Carry and usually use their own transport.

The major objective of this exercise is to determine how and by how much rural prices differ from the price of the same product in the nearby town or city. Already in Chapter 1 we have seen that the CPI-food for rural areas is considerably higher than the index for metropolitan areas. The Committee was also interested to know whether the difference between prices in rural stores and that of the wholesaler/supermarket in the town/city reflects true transport and distribution costs and a normal profit margin. This was necessary to determine whether rural storeowners are abusing their monopolistic position in rural communities to charge excessive prices to these often very poor communities.

The results of the individual provinces are not discussed here but it suffices to note that prices have shown stability and that some decreases took place during the 4-month period we monitored selected stores in the rural areas of the mentioned provinces.

4.2 How do rural prices differ from the national average?

To avoid getting into too much detail re the provincial data, it was decided to do a number of comparative analyses to highlight the broad trends in food prices at rural stores.

The first analysis compares the average prices of the stores monitored in each province with those of the national average retail prices for the specific product. The percentage differences between national average prices and prices at rural stores are illustrated in the graphs below.

Figure 4.1 illustrates that maize meal tend to be more expensive in all the provinces except in Eastern Cape (and Free State). Here the data could have been influenced by the availability of subsidised maize meal during the monitoring period. Since the survey was done during harvest time (June, July) it is possible that the increased availability of maize in the region resulted in lower prices.

The graphs clearly indicate that for most processed products, prices tend to be higher at rural stores than the national average. It was noted that products such as milk, dry beans and potatoes, which requires less processing are cheaper at rural stores than the national average. These products are, however, subject to seasonal availability and prices are higher than the national average in some months, as indicated in Figure 4.5.

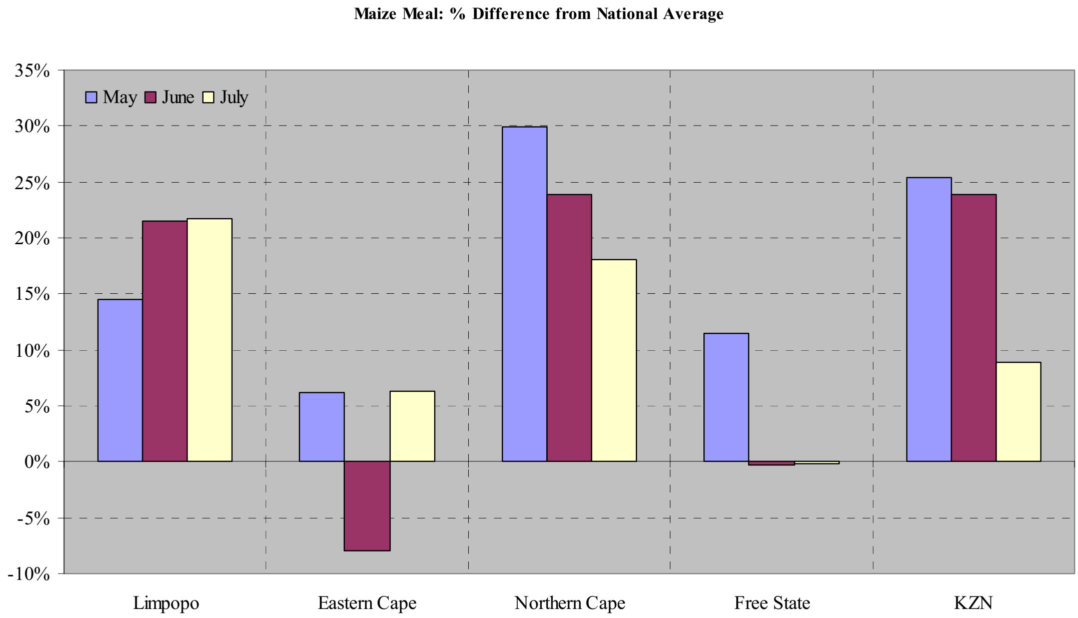

Figure 4.1: Prices for maize meal at rural stores: % difference from national average

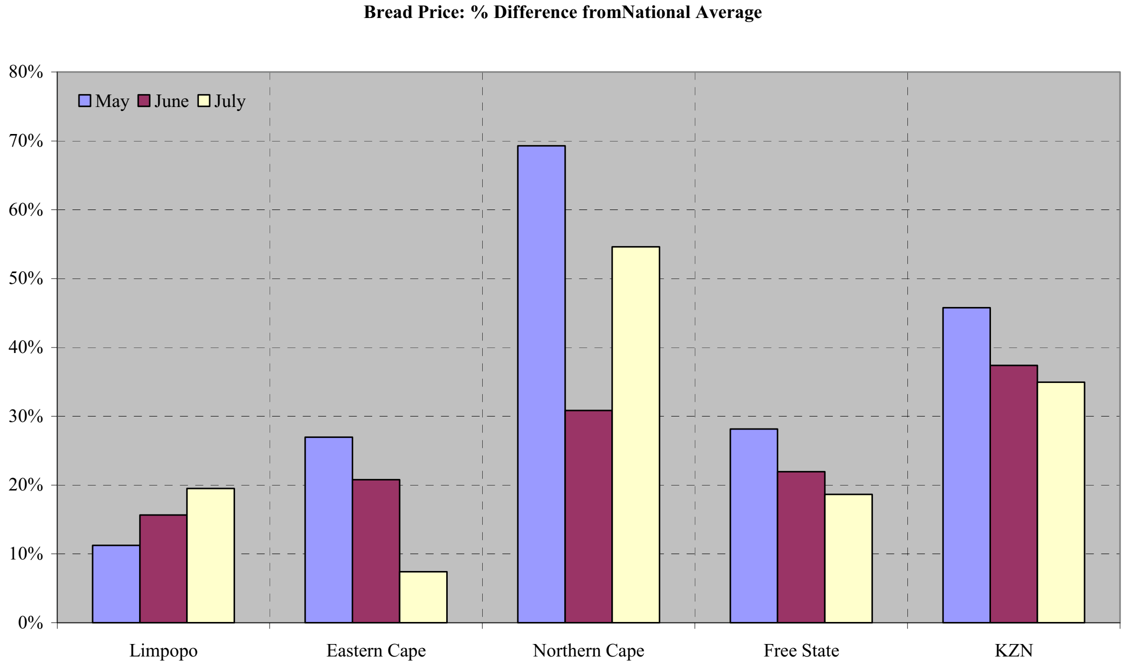

Figure 4.2: Bread prices at rural stores: % difference from national average

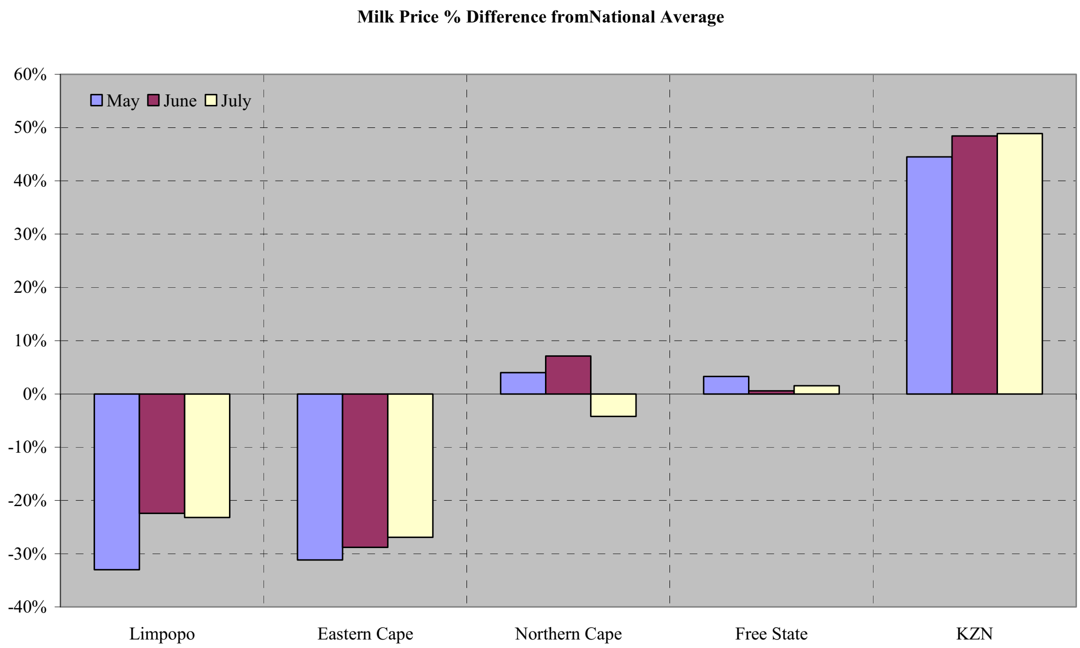

Figure 4.3: Milk prices at rural stores: % difference from national average

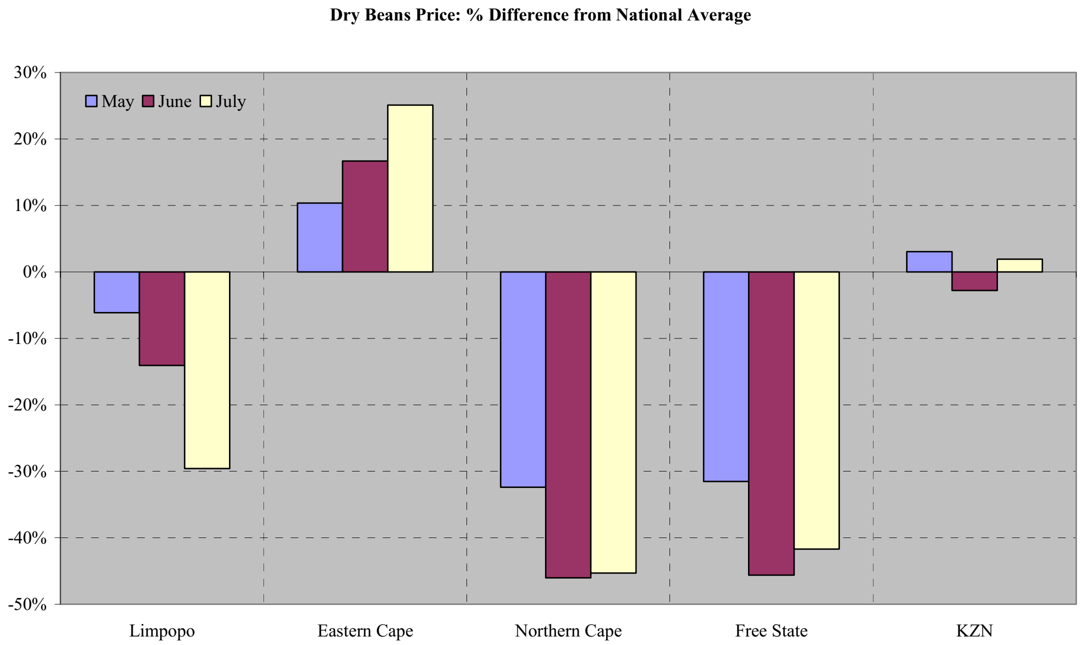

Figure 4.4: Prices of dry beans at rural stores: % difference from national average

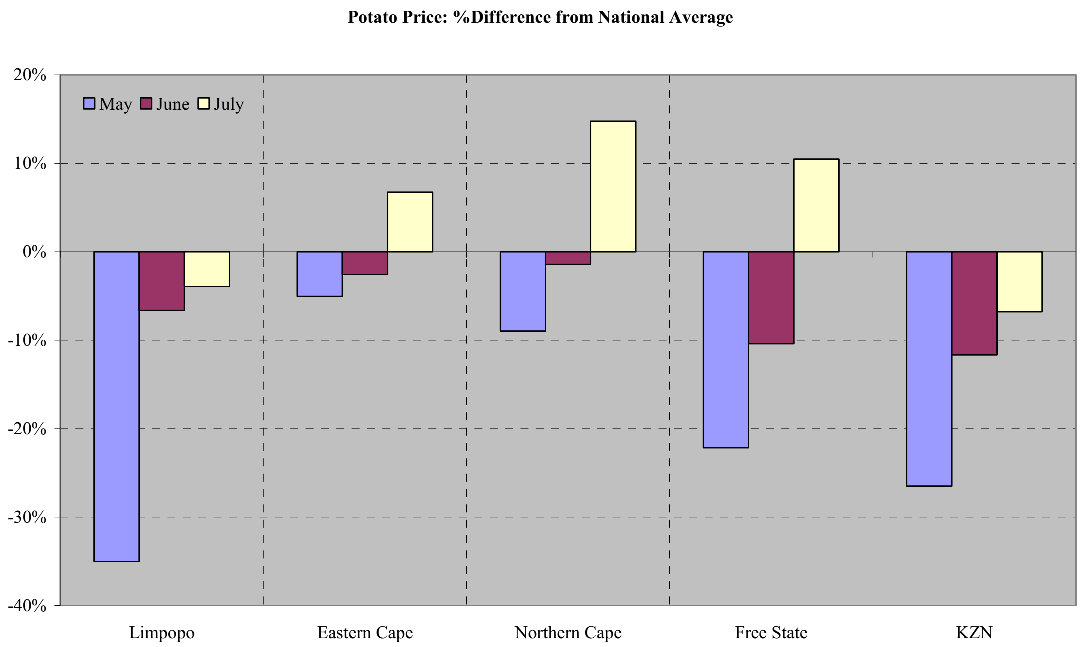

Figure 4.5: Potato prices at rural stores: % difference from national average

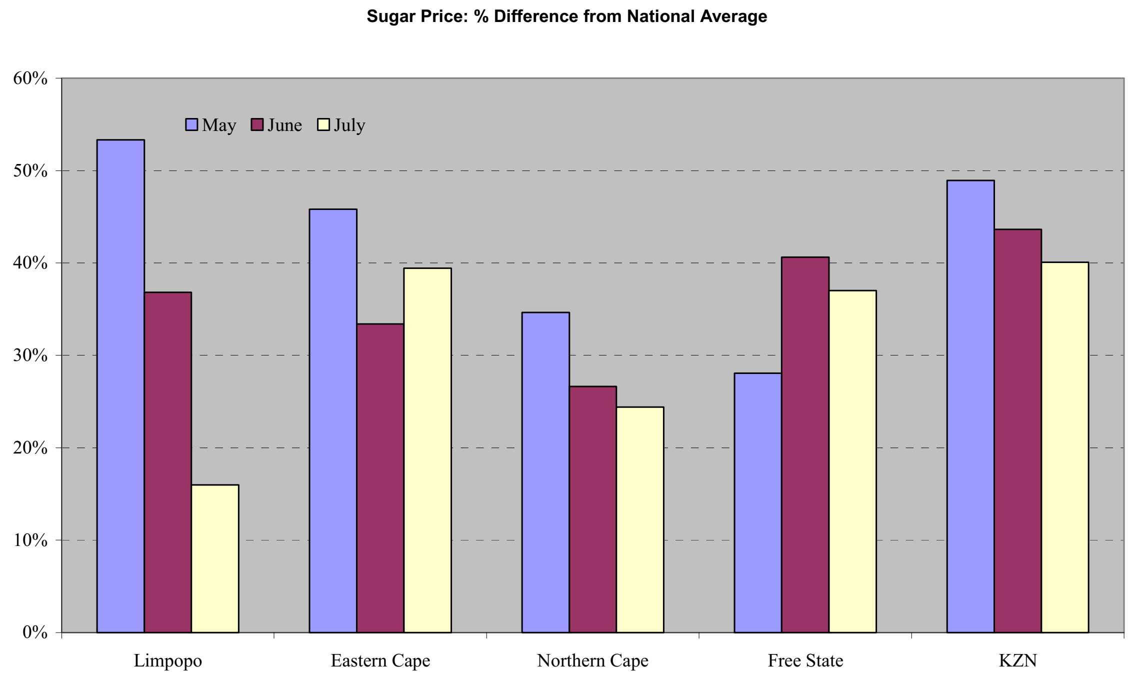

Figure 4.6: Sugar prices at rural stores: % difference from national average

4.3 Mark-up per product

The next analysis compares the mark-up for the different products. Mark-up is defined as the difference between the retail prices and the wholesale price and does include the costs of transporting goods to the store plus the owner's profit margin. Due to the difficulty in isolating the transport costs per product item from the total mark-up it was decided only to report the gross mark-up which basically reflects the margin between the wholesale price and the retail price in the rural spaza shop or general trading store. This was done for maize meal, bread, potatoes and sugar, and is graphically illustrated below.

Maize meal

The average mark-up from April to July 2003 for all 5 provinces is around 24%. Only the Northern Cape and the Free State have a mark-up of less than 20%. Rural stores in the Eastern Cape and Kwazulu-Natal enjoy the highest mark-up with an average of 39% and 31% respectively. The high transports costs due to the remoteness of communities in Limpopo and Northern Cape plus the relative poverty of these communities potentially results in very low net margins in these provinces.

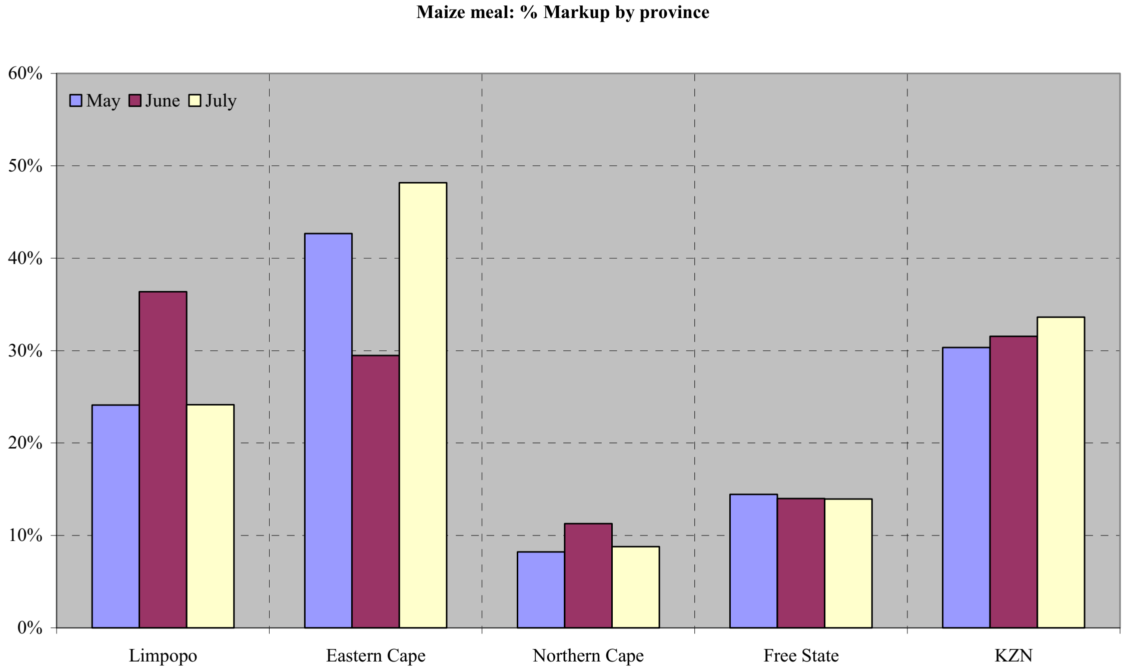

Figure 4.7: The percentage mark-up of maize meal per province

Bread

Figure 4.8 indicates that the mark-up on bread at rural stores is also fairly high. The average mark-up for bread from April to July 2003 at rural stores is 22%. Rural stores in Limpopo have the highest mark-up averaging 39% for the survey period. In most cases, - especially in Limpopo and Eastern Cape - bread is delivered by the suppliers/bakeries to these stores thus minimising transport costs for the shop owner.

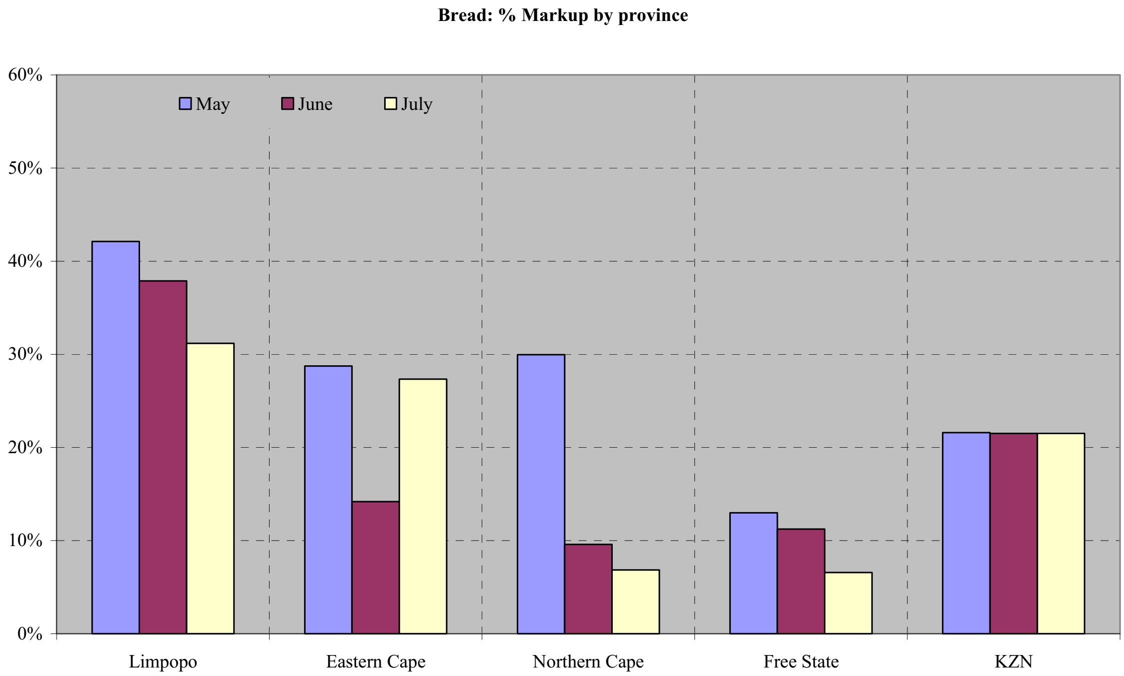

Figure 4.8: The percentage mark-up of bread per province

Potatoes
The mark-up differs considerably between provinces and is a function of the distance from the source; it also depends on local production of potatoes. The mark-up in Limpopo is high compared to other provinces.

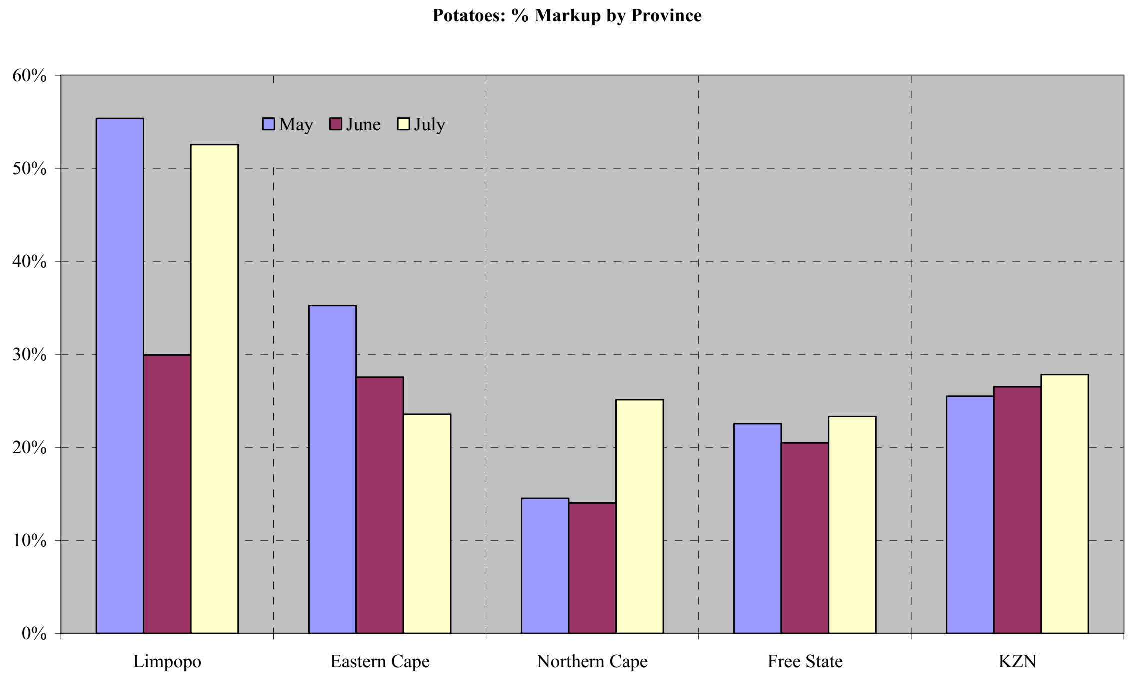

Figure 4.9: The percentage mark-up of potatoes per province

Sugar
The mark-up on sugar at rural stores is depicted in figure 4.10. Rural stores in Limpopo, again, have the highest mark-up, averaging 58% over the survey period. The average mark-up for all provinces from April to July 2003 was 31%.

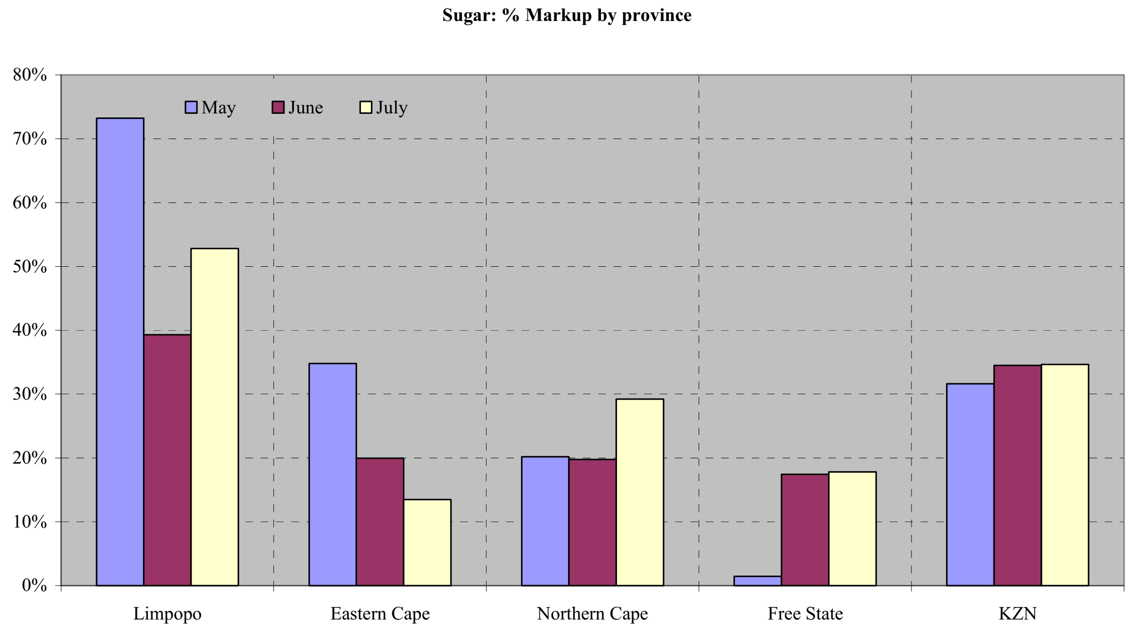

Figure 4.10: The percentage mark-up of sugar per province

4.9 Conclusions

The results from the analysis of prices at rural stores in 5 of South Africa's poorer and more rural provinces reveal a number of valuable concluding points:

- Some prices of food products in rural stores are considerably higher than in urban centres while others especially fresh produce and milk tend to be lower in these rural stores.
- In some commodities and in some provinces a decrease in prices was noted indicating that rural storeowners were passing on decreases at wholesale level to their customers.
- Mark-ups are very high but even more so in the rural areas of Limpopo and KwaZulu-Natal.

From the background data and the various anecdotes from the fieldwork it also became evident that in areas where there are more agricultural activities and a surplus production, prices tend to be lower than the national average. This provides a useful direction for potential policy interventions by Government, namely to encourage small-scale production and value-adding activities at the local level to supply local communities. This is an aspect to which we return in Part 7.

PART 4

ANALYSIS OF SELECTED FOOD VALUE CHAINS

Introduction

Parts 4 and 5 of the Report address a core aspect of the terms of reference namely to understand the causes of food price increases. The investigation commences by focusing on aspects at producer level and, then, considers the main trends in producer prices based on a detailed investigation on the way producer prices are determined through the SAFEX futures market. This approach is taken because aspects surrounding the SAFEX agricultural commodity market created much suspicion and concern during 2002. These are being addressed in detail in Chapter 1.

From Chapter 2 onwards eight food value chains is analysed in detail. This is done in order to understand the pricing behaviour in each chain and to understand the factors contributing to various movements in prices within each of the chains. This analysis is also done in order to determine whether there has been any unjust price increases over the past 24 months. The value chains that are analysed are:

- Maize-to-maize meal
- Wheat-to-bread
- Red Meat
- Dairy
- Sunflower seed-cooking oil
- Sugar
- Potatoes
- Dry Beans

In Part 5 other but related aspects of the supply chains are investigated that might have had an impact on food prices.

CHAPTER 1

AGRICULTURAL PRODUCER PRICES: INVESTIGATING THE AGRICULTURAL FUTURES MARKET

1.1 Introduction[1]

The analysis of pricing behaviour in the market for grains is the key focus of this Chapter. This follows from the argument raised in Part 2 that the sharp increase in the price of maize has been the most important driving force behind the increase in the food price inflation during 2002. In order to isolate the potential causes of the maize price increase in 2001/2002 it is, firstly, important to understand the working of the grain market. This will serve as a foundation for the remainder of the Chapter.

The working of the market for grains

The passing of the Marketing of Agricultural Products Act of 1996 paved the way for a new marketing order in the South African grain industry. Grain producers, traders and processors are now able to trade in a 'free' market; they can respond to the forces of supply and demand in setting prices. In practice, they all look to the prices generated through the formal commodities market that was established following the deregulation, namely the Agricultural Markets Division of the South African Futures Exchange (SAFEX) as the benchmark for the prices they will ask or offer in the 'spot' market of daily trading in maize.

SAFEX was formed in 1996/1997, and introduced the trading of derivatives (futures and options) for white maize, yellow maize, wheat, sunflower and beef (the contract for beef was later cancelled). The prices for future contracts and options are generated on the exchange market through 'bids' and 'offers' and reflect the views of market participants on the prices of the specific products at different dates in the future. These instruments are also used to hedge price risk. By using the SAFEX market effectively, market participants can minimize their price risk, which, in turn, lowers their cost of doing business.

SAFEX prices come about as a result of the views of different participants in the market about the direction that prices will take. Thus the market is driven by their assessment and interpretation of information regarding the future level of prices for the different agricultural commodities. The supply and demand factors (regional and international) that affect the prices of products in the future include weather conditions, consumer preferences, government policy, trade agreements, changes in living standards, and technology. In a free market, producers compete with each other and with foreign producers in order to maximise their own profits. Consequently, individual producers have no alternative but to take the best price possible – be it the local price or the international price.

[1] Parts of this Section draw heavily from the Vink and Kirsten report to National Treasury, June 2002.

The technique used to calculate the prices at which producers can sell their product locally or internationally is known as an import/export parity calculation. For example, if grain millers can buy imported maize (including the cost of transport, insurance, the tariff, the exchange rate, etc.) cheaper than locally produced maize, they will do so until local producers are able to supply maize as cheaply. This is called the import parity price. The reverse situation is also true: if South African maize producers can sell their maize to foreign millers at a better price than local millers are prepared to pay, South African maize will be exported until local prices have increased to the level of the export price. This is the export parity price.

The result is that, in theory, the price of maize on the domestic market can go no higher than the import parity price, as millers will merely increase imports at this point. Thus, the import parity price is a maximum price. In the same manner, the export parity price is the lowest possible price, i.e. it is a minimum price. It follows that the domestic price of maize will fluctuate between these two levels. This is illustrated in Figure 1.1.

The import and export parity prices form the upper and lower band. The SAFEX white maize spot price fluctuates between the upper and lower band. For example, if the exchange rate depreciates, South African maize producers will be able to sell at a higher price in foreign markets. If this price is high enough to cover the cost of exports, there will be an increase in exports of maize and a decrease in local supply, and, thus, an increase in the domestic price until the domestic price equals the price received from exports. The opposite result will arise if the local price rises above the ceiling price and the product can be imported for a lower price than it is produced locally. The actual level of the domestic price between this minimum and maximum level will depend on local (Southern African) supply as well as on demand in the local market, recognising that the latter is relatively stable in the short to medium term.

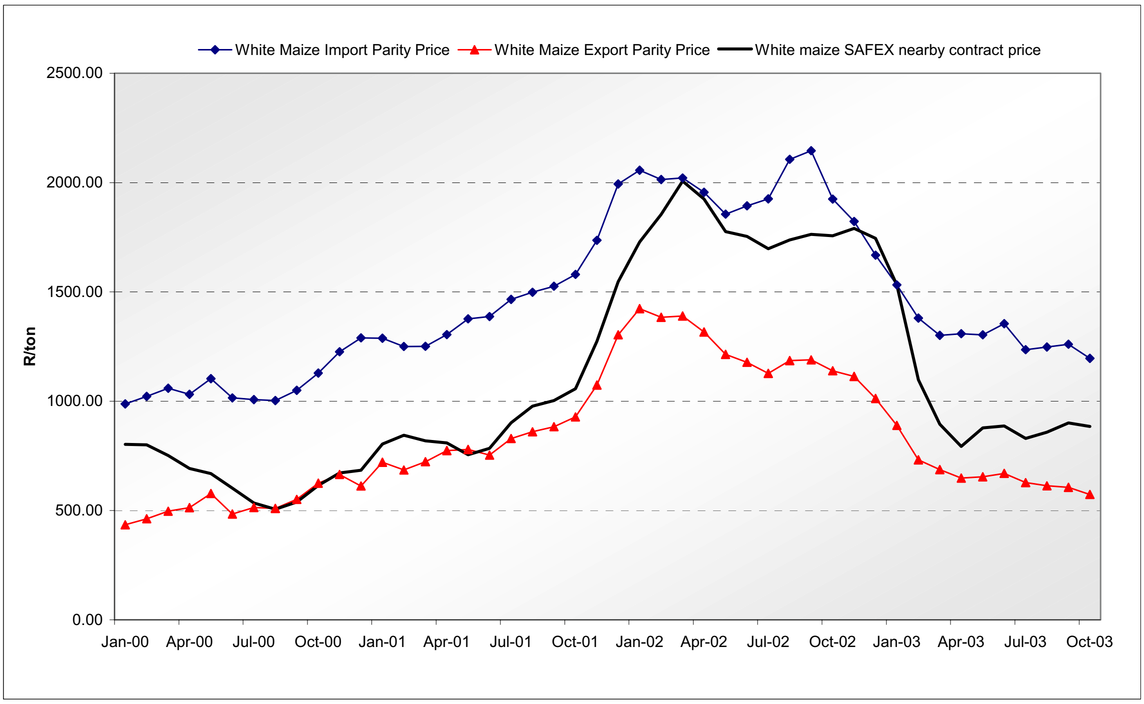

Figure 1.1: An illustration of how SAFEX spot prices fluctuate between import parity and export parity (Jan 2000 to Sept 2003)

Part 4

The determinants of the domestic price for maize

The illustration above shows that the main influences on the price of maize for a South African buyer is, normally, determined by the world price for maize, the exchange rate[2] and the relative size of the domestic maize crop. Maize that is physically located in the United States does not have the same value to a South African buyer, as does maize that is physically located in the EU or in South Africa. Hence, the price of maize on different markets must be adjusted to take account of the differences in transport costs, exchange rates, etc., in order to make comparisons possible. Such an adjusted price is called a reference price; it is calculated with respect to a reference point. In the case of grains in South Africa the commonly used reference point is Randfontein.

In order to adjust prices to this reference price, the international commodity price ('free on board' or FOB Gulf price[3]) has to be adjusted to take account of all the costs incurred in bringing the maize to Durban. This price, called the CIF price[4], is adjusted to local currency using the current exchange rate. Once this is done, all local Rand based costs (off-loading, losses, interest, local transport costs) can be added resulting in a final landed (local) price per tonne at the point of consumption, or the reference point.

During the 2001/2002 period the dollar price of white maize increased by $10.74/ton (from $79.98 to $90.72, or by 13.38%). During this time, the exchange rate also weakened, by 66.67% (from R6.96 to R11.61, or by R4.65). During August/September 2002 the dollar price for maize experienced a sudden surge from $99/ton in July to $113/ton in September. At the time, the exchange rate was still trading at R10.50 to the US dollar, which explains the peak in import parity prices for white maize in August to October 2003. The net result of an increase in world prices will be an increase in the domestic price of maize. Maize buyers in South Africa, e.g. millers, will have to buy maize from producers who can sell their produce overseas at the higher world price and with a more favourable exchange rate. Hence, they will bid up the domestic price of maize.

Whether the domestic price of maize, as a result, goes up to the maximum level of the import parity price depends on the relative scarcity of maize in the domestic market. If there is a domestic shortage, for example caused by drought, prices will move to import parity, but if there is an excess of produce, supply prices will go down, no lower, however, than the export parity price. To illustrate, in 2000 the import parity price of white maize was R1239/ton but producers only received R519/ton, largely due to the good harvests in South Africa and in the neighbouring countries. This caused a drop in the area planted with white maize (from 3.227m ha in 2000 to 2.708m ha in 2001) as producers switched to more profitable agri-enterprises. This caused a decline in output (from 8.97m tons in 2000 to 7.225m ton in 2001).

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[2] The other costs (foreign currency costs of freight, insurance, etc, as well as the domestic costs) are important, too. Evidence shows, however, that they are more stable than the world price and the exchange rate.

[3] This means that the supplier delivers the maize at a price that is equivalent to loading the maize onto a ship in the Gulf, i.e. the buyer will pay for the transport, insurance, etc. to get it to where they need it. The world price for maize is conventionally quoted as fob Gulf.

[4] Cost, insurance, freight.

An additional factor that has to be taken into account in that period is the effect of the political turmoil in Zimbabwe, which resulted in a large drop in area planted with food grains such as maize there. Within two years, Zimbabwe changed from a surplus producer and exporter of maize to a deficit producer and importer. The combination of these two factors plus reports of crop failures in Zambia and Malawi changed the market sentiments from the surplus in 2000 to a predicted deficit in the whole SADC region in 2001/2002 (It should be noted that this shortage did not materialise mainly due to food aid from non-African sources). The predictable result was that the domestic price increased to the level of the import parity price within a year. Parallel to this, import parity prices increased by 73% for white maize and 75% for yellow maize from September 2000 to February 2002.

Thus, the rapid increase in the price of maize was the result of the effect that the weakening in the exchange rate and the increase in the world price had on the price band within which the domestic price moves. Because of the perceived shortage on the domestic market, fuelled by negative perceptions about Zimbabwe,, the domestic price then increased within this band.

In Figures 1.2, 1.3 and 1.4 the recent trends in the SAFEX spot prices of maize, wheat and sunflower are compared with the trends in the exchange rate and the world prices. Figure 1.2 shows how white and yellow maize prices have decreased sharply since December 2002 despite the fact that the Chicago Board of Trade (CBOT) price only decreased marginally. The main contributing factors for this sharp decline in prices was the appreciation of the exchange rate as well as regional demand and supply factors. The anticipated exports to neighbouring countries did not realise and suddenly the domestic market had to cope with very high stocks levels of maize, that is, more than 2.5 million tonnes.

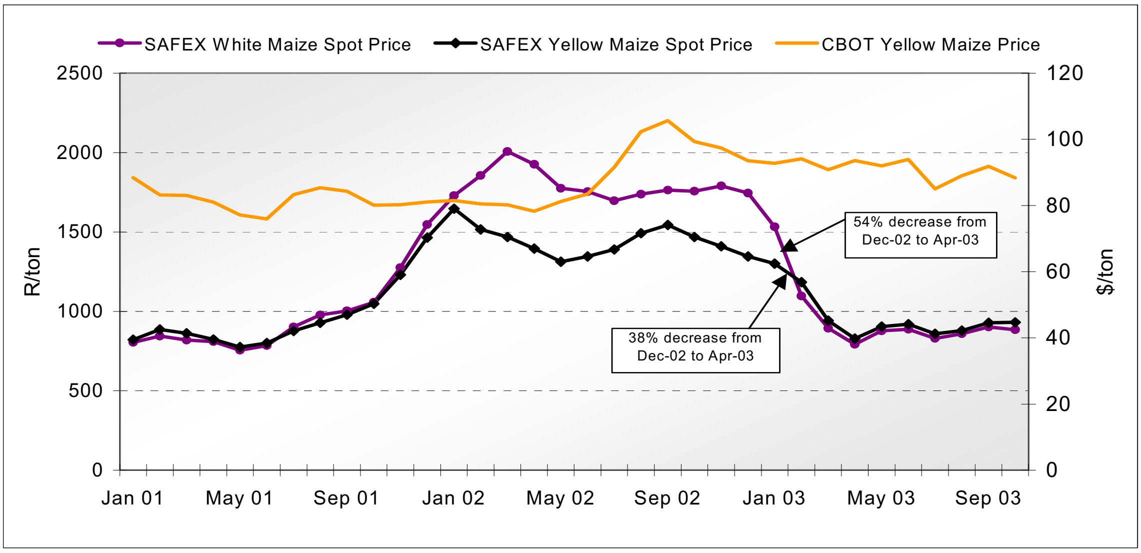

Figure 1.2: Recent trends in white and yellow maize spot prices and the world price of maize *(Source: SAFEX, 2003)*

Similar to the trends in maize prices, the price of sunflower seed also decreased by 48% in the period December 2002 to April 2003. Only in the past two months, the sunflower prices have increased. The high level of world crude oil prices was the main driving force for the extremely high sunflower spot prices in 2002. South Africa is a net importer of sunflower oil and, therefore, international prices have a direct impact on local price levels.

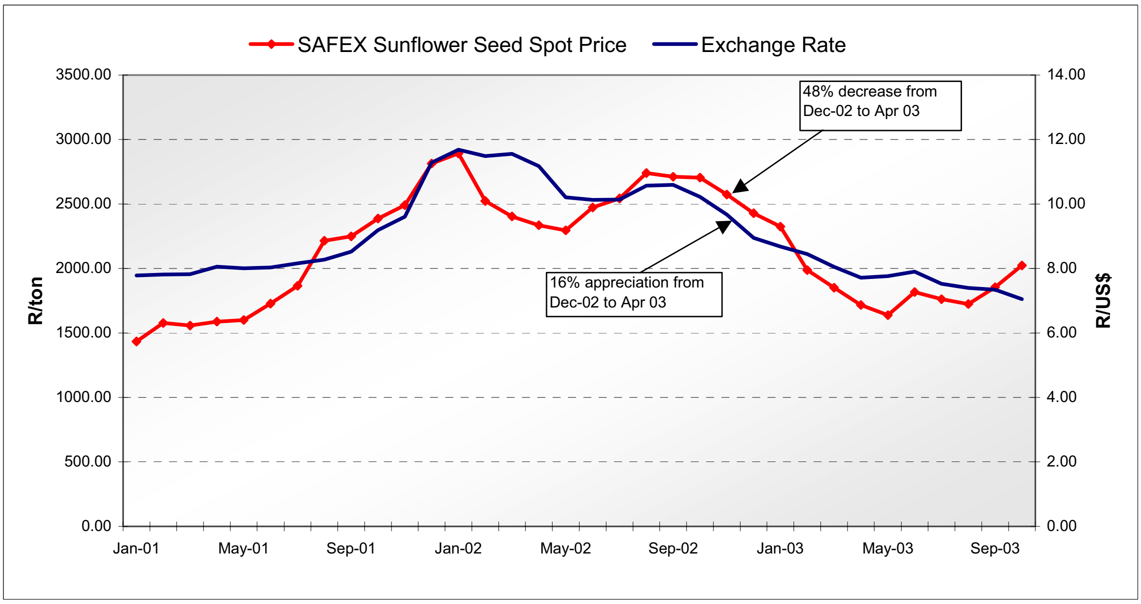

Figure 1.3: Recent trends in sunflower seed spot prices and the exchange rate
(Source: SAFEX, 2003)

Wheat prices also decreased sharply during the period December 2002 to April 2003. Recent unfavourable weather conditions influenced the views of participants in the market, however, who started trading on anticipated shortages due to a small crop. Therefore, the latest recovery in the prices of wheat was not only fuelled by a slightly higher international price but also by anticipated local demand and supply factors.

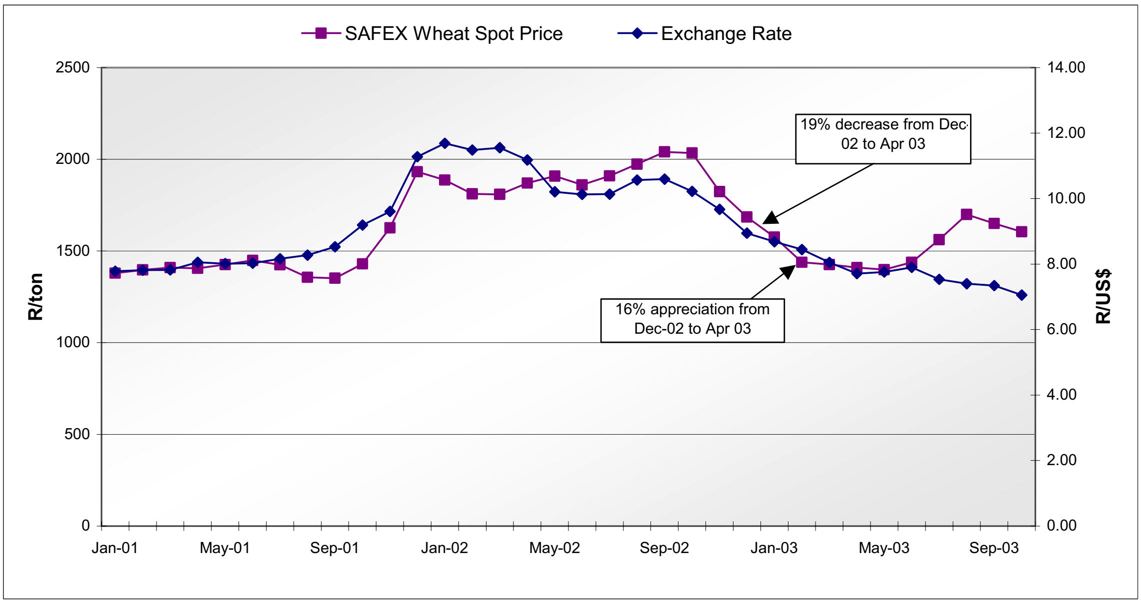

Figure 1.4: Recent trends in sunflower seed spot prices and the exchange rate
Source: SAFEX, 2003

The argument thus far has been based on a comparison of the international price with the SAFEX price. However, the latter is a price based on a promise of future delivery. Hence, the next logical issue is to determine the extent to which the SAFEX price is an indication of the actual market price or spot price for a particular commodity.

Futures prices and spot prices

At any given point in time there will be more than one contract listed on SAFEX for the same commodity. The only difference between the various contracts is the date of expiry. For example, an April 2002 contract expires on 20 April 2002 and a March 2003 contract expires on 20 March 2003. The contracts will trade at different price levels with the contract with the latest expiry date trading at the highest price. It must be noted that this applies only to the current crops. With the new season commencing, contract prices for the new season crop might differ completely.

The difference in the price levels will equate to all costs (storing and financing costs) from one period to the next. For example, the September 2002 contract will trade at R1900/ton and the December 2002 at R1950/ton, the difference being R50 per tonne. The amount of R50/ton will roughly be equal to the costs involved in storing maize from September to December 2002.

One of the contracts being traded on SAFEX will always have an expiry date equal to the current month. For example, if the present month is September 2003 there will be a contract with an expiry date of 20 September 2003. This continued existence of a contract about to expire creates the constant delivery month contract. In other words, there will always be a contract that is ready for delivery, which implies that a producer can always find a contract on SAFEX against which he can deliver immediately. If producers happen to have maize ready for delivery in September 2003 they can take a September 2003 contract position on SAFEX, and delivery can proceed within a matter of days. For all practical purposes, the price of the deliverable contract (or delivery month contract) thus represents the current market price or spot price for SAFEX.

Contrary to the past days of the Marketing Boards, there is no longer any pan-seasonal or pan-territorial pricing[5], or one single spot (producer) price for the country as a whole. There are as many different spot prices as there are points of delivery. An adjustment for transport cost is, therefore, done for each delivery point. Since all SAFEX prices are Randfontein-based, this means that if a producer can deliver or a miller can accept delivery at Randfontein, they will receive or pay the SAFEX price for the delivery month contract (the spot price). Since delivery usually takes place at points across the various producing regions, all spot prices will be a SAFEX adjusted price. For example if the transport costs between Randfontein and the silo where a producer chooses to deliver is R80/ton, the delivery price for the producer will be equal to the Randfontein price (the delivery month contract price) minus the R80/ton transport cost. The buyer will now collect the maize from the relevant silo at the

[5] The Maize and Wheat Boards set a buying price for the product regardless of when or where it was delivered. The result was that the transport cost of farmers further away from the market was subsidized by those closer to the market, while no producer had an incentive to store the product. This had an enormous impact on liquidity management by the monetary authorities when the entire crop was purchased within a couple of weeks every year.

SAFEX price minus the R80/ton. These transport cost differentials are calculated every year and are available from SAFEX. Thus, the SAFEX futures prices are indeed the true market or spot prices for every delivery month.

The discussion so far suggests strong arguments and evidence for showing that there is a close correlation between farm gate prices and the R/$ exchange rate in the case of every commodity analysed.

Based on various econometric analyses, Vink and Kirsten (2002) concluded in their report to the National Treasury that the domestic price of maize reacted in a predictable fashion to the change in the exchange rate and the international price of maize, also to market perceptions of the relative scarcity of maize in Southern Africa and to the food crisis in Zimbabwe at the end of 2001. According to their findings, there was no evidence of price manipulation or of unfair price policies in determining the price of the basic commodity.

Prevailing concerns about SAFEX

Despite these conclusions, the suspicions about the SAFEX market continued and were even amplified by a Financial Service Board investigation into alleged irregularities by a broker firm losing large sums of investors' money on the SAFEX market.

In addition, the Food Pricing Monitoring Committee received a number of complaints regarding trader behaviour on the agricultural derivatives market of the JSE. Complaints to the office of the Deputy-Minister also came to the Committee's attention. The tremendous fluctuations and volatility in the agricultural commodity markets have had a major impact on many individuals, and on the South African economy as a whole. It was, therefore, seen as an important duty of the Committee to determine what actually took place in the commodity markets between December 2001 and April 2003. Role players in the market were therefore requested to provide the Committee with their understanding of price trends in the markets for white and yellow maize, wheat and sunflower. Comments were invited on the following issues:

- An assessment of the main reasons (excepting commonly known factors such as world prices and the exchange rate) which led to the rapid increase in commodity prices during 2002 and the rapid decrease in prices during early 2003 (pinpointing any trader behaviour or practices that contributed to these extraordinary runs).
- An explanation of the factors (events, information) that determined trading positions in the aforementioned period.
- An indication of price trends and trades (mentioning of specific days) that were not in line with the fundamentals. (For example: all fundamentals indicated that prices should go up but prices went down!).
- Any information on import and export deals that were reported but never were realised.
- An interpretation of the effect that the monthly crop estimates and the information on stock holding in silos and on farms had on the price trends in the markets.

- Suggestions on regulations that should be put into place by the JSE to reduce unnecessary speculation and adverse trader behaviour on the agricultural derivatives market.
- Opinions on portfolio managers using the agricultural derivatives market as a way of balancing their portfolio and spreading their risk.

By the deadline of 30 May 2003, only 6 written submissions had been received in addition to a response from the CEO of the Agricultural Products Division of SAFEX. This response is included in Box 1; it provides useful information about the events in the agricultural commodity market during the period in question. A subcommittee of the FPMC reviewed these submissions and then decided to invite certain traders to provide oral evidence in camera during the week of 17 – 20 June 2003. Fifteen representatives from institutions trading on SAFEX, or trading physical grain were interviewed.

In this Chapter, we provide a comprehensive assessment of the SAFEX price formation system and its consequences as highlighted by the traders during the interviews. This will be done in three parts:

a) A summary of evidence from trader interviews on whether theoretically possible problems also exist in reality.
b) Supply and demand 'fundamentals' based on available information.
c) Theoretically possible problems with the futures and options trading price formation system.

1.2 Summary of the 'evidence' presented to the FPMC during the Interviews

SAFEX opinion

The CEO of the agricultural derivates division of the JSE (SAFEX) accepts that there are gaps in the SAFEX rules for trading. Rough estimates of the price increasing effect of the lack of position limits on the size of trades and their volume range from 2% to 10%. SAFEX maintains that position limits will resolve this problem in much the same way that speed limits aim to control speeding.

The CEO believes that SAFEX prices remained high for a long period because of predictions about the exchange rate and the reports of poor rains from GrainSA. By implication, they feel that the lack of position limits did not play a substantial role. The CEO recommends that greater investment needs to be made into the National Crop Estimates Committee (NCEC).

The CEO points out that if the State were to operate a strategic reserve on SAFEX, it would also be subject to position limits. He was not able to provide any guarantees that position limits would work effectively. SAFEX is aware of the risk that trading entities may be split up under the maximum ceilings, but the CEO would not make any commitments to improved monitoring and reporting.

Part 4

Large milling companies and their maize trading activities

According to traders acting on behalf of the grain millers, and also based on the normal market gossip, the concern was that millers instructed their traders to 'buy at all costs' during 2002 because they believed there was going to be a shortage of maize and, consequently, they feared losing their brand-based market share. To some extent this appears to have led to a situation where large mills locked part of their overall maize grain purchases at high SAFEX prices compared to prices available to smaller millers who only entered the milling industry once prices dropped in early 2003.

Large millers aimed to save on margin costs and therefore got involved in 'exotic' options (e.g. Barrier options). Prices may have overshot on the futures market because of what was happening on the options market. There is a lack of trader skill and expertise in using exotic options.

Big trader dominance during 2001/2

Several traders reported on aspects of the trading activity of one large trading house that was described as 'the market leader' in 2002. This particular firm was well-known to the trading board and had adopted a controversially large position in support of the higher maize prices from May 2002 onwards, a position that most traders and market participants believed and followed. The firm's activities were supported by its ability to trade on behalf of the Joint Municipal Workers Pension Fund with backing from ABSA. The size of the position held by this firm led to a situation where it was improbable that other market participants would counter their position.

Certain trades by this firm may also have been in contravention of the SAFEX trading rules. This, however, requires further independent verification and legal advice. Related to this, verbal complaints made to the SAFEX management do not appear to have been followed up effectively. *[It should be noted that the firm, WJ Morgan, was expelled and fined by the JSE for contravening certain trading rules, in October 2003.]*

Box 1: Submission to the Food Price Monitoring Committee by the Agricultural Products Division, JSE Securities Exchange South Africa

Background

The fundamental objective of a commodity derivatives market is to provide participants in the market with an effective price determination mechanism and an efficient price risk management facility. In the absence of a derivatives market within a deregulated commodity market (where price is not controlled), participants in the market are subject to unscrupulous pricing behaviour and to massive price risk. A derivatives market sends out clear and transparent price signals to the whole market and enables market participants to hedge the risk inherent in commodities. The prices on a commodity derivatives market are determined by the interpretation of the information available to the market at any given point in time and are based on the principle of willing buyer, willing seller.

The price of grain, particularly that of white maize, on the South African commodity derivatives market is determined by the interpretation of the information related to the following factors:

- the domestic supply and demand situation;
- the regional supply and demand situation;
- the international supply and demand situation and international prices;
- the exchange rate.

Based on the information available at the time, and the interpretation thereof, the price of grains, particularly that of white maize, started to increase around June/July 2001. A brief synopsis of the most pertinent of the above noted fundamental factors would serve to substantiate price movements in the period mid 2001 to date.

Factor	June 2001 – Mar 2002: Price rise to maximum levels	April 2002 – Dec 2002: Continued high price off maximum levels	Jan 2003 to date: Fall off in prices
Domestic Supply	Reasonable supply	Crop estimate figures underestimated by 1mt. Reports of poor crop perspectives	Realisation that carry over stocks are in the region of 2m tons (SAGIS figures). Indications of 17% greater plantings of white maize and follow up increased NCEC crop estimates
Domestic Demand	Largely unchanged	Largely unchanged	Largely unchanged
Regional Supply	Reports of shortages as a result of drought and political unrest in Zimbabwe	Shortages as a result of poor harvests	Crop prospects looking better in certain countries
Regional Demand	Reports of extensive demand requirements in the upcoming season as a result of crop failures and political unrest	Continued reports of extensive demand requirements	Realization that regional demand was probably exaggerated and that “aid” maize had taken the place of potential commercial exports
International prices	Largely unchanged, Ranged between 200 and 205 c/bushel	Increased from around 200 to 240c/bushel	Largely unchanged in the region of 240c/bushel
Exchange Rate	Rand weakened significantly to the US$ from 8.00 to 12.60 (in Dec) and then strengthened to 11.60	Rand strengthened from 11.50 to 9.10, but most media reports suggested the strengthening would be short-lived	Rand strengthened significantly from 9.10 to 7.20

It must also be noted that a market does not only trade on fundamental factors, but on perceptions and sometimes emotions. The situations during the specific time periods, as indicated above, created an atmosphere in which participants in the market took decisions which could easily have been motivated by the perceptions of those fundamental factors pertaining in the market.

Box 1 (continued): Specific questions

1. Do the rules of trading remain the same year in, year out? What is the role of position limits on speculators?

Answer

The answer to this question depends on what is meant and understood as "rules of trading". If rules of trading mean willing buyer, willing seller and how the market works fundamentally, the answer is no. However, any market is dynamic and the exchange will modify the contracts and specifications to reflect what transpires on the underlying market with the aim of making the market more efficient. To this end, contract sizes can change, daily price limits can change, product specifications can change, margin requirements can change and if necessary, limits can be put in place. Position limits are used by certain exchanges primarily to ensure that no one participant "corners" the market with a view to squeeze the market (price) in a certain direction. Commodity exchanges generally use a system of subjective limits (whereby the exchange decides on limits for different participants) or a system of objective limits (whereby specific limits are in force across the market.) The JSE has approved the introduction of specific position limits for speculators in principle and will be introducing it shortly. It should be noted that a broking member or a clearing member of the exchange can introduce limits or raise margins for a particular client at any time should there be a need to manage risk.

2. Some similar futures exchange facilities worldwide have many other checks and balances to minimise abuse of the system, many of which are not applied in South Africa. For example: Why are false reports (like the export order of a million tonnes which came from international trading houses) not classified as manipulation.

Answer

The statement that "similar futures exchange worldwide have many other checks and balances so as to minimise abuse of the system, many of which are not applied in South Africa" is very broad and needs to be clarified. As regards the example noted, there is no doubt that decisions to buy and sell (and hence price impacting decisions) are influenced by information relating to the fundamental factors indicated above. The very fact that the overwhelming opinion among most economists was that the Rand would remain weak led to maize prices remaining high – can this be construed as manipulation? The overstating of food needs in the region impacted on the price of maize in South Africa – another case of manipulation? Certainly deliberate reports by market participants who would benefit from the price movement directly related to such reports could be construed as manipulation and possibly insider trading, but this could be difficult to prove. Perhaps the Insider Trading Directorate of the Financial Services Board could be approached in this regard. The Agricultural Products Division of the JSE Securities Exchange is not aware of the actual incident mentioned as an example in the question.

3. Why is there no central register of commodities in storage to guard against hoarding or any other form of market manipulation? The related question is – do you think traders use grain in storage to manipulate the market?

Answer

The JSE Securities Exchange cannot answer the question as to why no central register of commodities in storage exists. This is not an exchange issue as such and should perhaps be addressed by the National Department of Agriculture. SAGIS does register stocks as a global figure, but does not break this down to individual holdings. As to whether the JSE thinks that traders use grain in storage to manipulate the market, obviously "cornering" of a market takes place when a participant holds both large physical stocks and has an extensive long position on the derivatives market. As indicated above, The Agricultural Products Division of the JSE will be introducing position limits to limit the possibility of cornering the market from the exchange side (this does not cover physical stocks.)

It is certainly not the view of the exchange that the high maize prices experienced during the latter part of 2001 and during 2002 were the result of traders using grain in storage to manipulate the market, but rather the direct consequence of fundamental factors prevailing in the market.

4. What safeguards/corrections does the JSE/SAFEX believe are necessary, why and how would they be applied, through legislation/policy review, etc. How urgent are they?

Answer

The introduction of an operational system of position limits for speculators on agricultural commodity markets should be introduced (and will be) shortly by the JSE Securities Exchange. Obviously, a system whereby intentionally misleading reports can be dealt with should be looked into. Perfect markets do not exist and information will never be 100% accurate or 100% available, particularly as regards the future and derivative markets - markets must be allowed to work. Even with identical information, different people can have different interpretations thereof. The drive towards better and greater information should be supported, but on the way, caution should be taken to release information that is not 100% correct.

The correct understanding and use of a commodity derivatives market is hugely beneficial to a country's economy. It provides the agricultural sector with a transparent price determination mechanism and an efficient price risk management facility on an economic basis. Price intervention by the state to achieve similar objectives is hugely costly and can easily create political difficulties. The National Department of Agriculture should be actively involved in educational and training campaigns to ensure a better and wider understanding of the operation of agricultural derivative markets.

Box 2: An extract from the written response from one SAFEX trader

"There are essentially two points of departure when drafting a response to the request for submissions. One is to comment on the issues / questions from the perspective of each being a question simply asked to elicit a response and gain insight into the workings of the market. The other is a background which I do believe is relevant in this case, being that this is somewhat of a fishing expedition in the hope that a party (be it a market participant or an exchange member) will, or will not, be found holding a "smoking gun", enabling much of the blame for spiralling food price inflation to be laid before the door of an identified, or identifiable party, or parties.

I will to some extent comment from these perspectives separately as each has some value. Certainly there is certain activity that possibly resulted in **short term** price moves, which would otherwise not have resulted – but whether or not these moves were not justifiable is another question altogether. Ultimately the market both dictates and indicates whether a price move is justifiable and sustainable.

To a point the rallies of late 2001 / early 2002 were justifiable – after all the market continued to fuel the move. At a point, however the market move became unsustainable and the market "fell of its own weight" so to speak.

As with any "bubble" (boom or bust type activity) as evidenced throughout market histories (The South Sea Bubble, Tulip mania and even the Tech Stock Boom), moves become exaggerated as the market moves too far. Euphoria or gloom (greed or fear) sees exaggerated moves based on human emotion, which determines how far prices move. This may not be what a purist fundamentalist would be hoping to hear, but it is my firm view that price action is primarily a function of the emotional response of people (market participants, or representatives and decision makers working at market participants). Human involvement is the only constant factor of markets and is therefore the only determinable factor – one is assured of human nature, always. Accordingly, prices will always overshoot to both the upside and the downside.

Market activity is the end result of all factors <u>influencing all market participants</u> and their views at that time, such factors acting in concert to translate to certain price action / price levels. Accordingly, it is important to realise that any attempt to single out individual factors as the "cause" of a specific price move is in reality an exercise in futility. Various factors may have contrary effects and the price is a function of all of these factors. Nevertheless, and for fear of creating the impression that I view this information gathering exercise of the FPMC as "futile", I believe that this process is necessary and desirable, even if only to confirm what many actively involved in this market have known all along. It is necessary to determine that markets will run their course – and that it is necessary and desirable to permit the operation of free markets to achieve this. To realise also that the benefits involved in such activity are in balance with the negatives and in fact outweigh them.

The very existence of a market assumes that there are participants with opposing views – if all participants at any time expect prices to increase there will be no sellers and hence no trade, and similarly if a decline is expected, there will be no buyers. It is the opposing views that make trade possible. I will embellish upon this later.

It should also be realised that commodity markets are notoriously volatile and prone to extreme moves. This is readily verified by an examination of the international grain exchanges. That being said there are certain factors worthy of mentioning although an objective quantification of the effect of these factors on prices may be impossible. Rather there should be a realisation of the fact that these factors **MAY** have had an effect on prices and, **IF** deemed appropriate, regulation or action with regards thereto becomes possible, although the benefits of such regulation and their implications as a whole would require careful consideration. I will not delve deeper into this aspect herein.

The Food Pricing Monitoring Committee should not - it is respectfully submitted – be too concerned with the exact effect of each market factor historically, but rather in ensuring that market efficiency is not compromised by certain structural, or market issues and that potential for undesirable practices by market participants is avoided. **It should also be considered that regulations already exist to limit and control the behaviour of members and market participants"**

1.3 Supply and Demand 'Fundamentals' and the SAFEX Market

During interviews, a lot of use was made of the term 'fundamentals' with many traders indicating that they do not expect any foul play and that the market reacted according to the 'fundamentals'. They were clearly in the one camp while other traders were in the other camp suspecting that the large and shrewd trader with strong financial backing cornered the market and used the fear and inexperience of the market participants to create a 'buffalo run' up, as well as down. For the sake of clarity, the section that follows provides a description of supply and demand fundamentals and their sources of information as presented by the interviewees and interpreted by the committee.

Domestic Demand

The volume of domestic demand for white maize is understood by all market participants to be relatively level from year to year. Previously it was thought that if grain prices broke above approximately R1000 per tonne consumers would switch to yellow maize. This assumption proved wrong as consumers continued to buy white maize even though it was supplied to them at higher prices.

Despite a substantial price differential between SAFEX yellow and white maize prices in South Africa at the time, the 'market' does not appear to have made yellow maize meal or 10% blends of yellow and white available in a sufficient quantity to test the assumption that consumers are only buy white maize despite an increasing price. Previous experience with blends of yellow and white maize sold by larger millers during the 1991/1992 drought seems to have created the fear that supplying less than 100% white maize meal would result in a loss of brand-based market share.

This brings the debate about the reliability of import and export parity figures into closer focus, since the tariff for white maize and most import parity figures are calculated on the basis of a yellow maize price series reported on the Chicago Board of Trade. No similar price series exists for white maize and market information on the international white maize market and specifically the premium on white maize is dominated by one company in the US, which has close ties to some trading houses based in South Africa.

It is therefore conceivable that graphs could show SAFEX spot prices rising above the import parity price of yellow maize when there is a $20/30 premium for white maize. It is also conceivable that SAFEX prices could rise above import parity for short time-periods because of time lags in actualising import orders from distant markets.

Regional Demand

International trading houses estimated that demand volumes in the region were grossly overstated well before December 2002. Their suggestion is that anybody who knew anything about the process of international aid would have assumed that the actual aid demand was much less than the volume reported by international aid agencies (for example some applied a 50% rule of thumb). As soon as orders for regional maize began in May 2002, it was clear that regional demand was for the cheapest maize regardless of its colour (see Box 3 below).

Domestic Supply

Some concerns were expressed during interviews about the uneven ability to estimate the maize crop accurately because of uneven access to information. This applied specifically to the agricultural insurance industry and the agricultural input distributors, who mostly also advance loans and keep detailed GIS records about clients' farms. Reference was also made to companies involved in the supply of maize seed. Many of those interviewed felt that the National Crop Estimates Committee (NCEC) was not investing enough to make reliable official estimates possible.

BOX 3: "HOW WILL THE MAIZE GAP BE FILLED?

Source: USAID Famine Early Warning System Network
Date: 17 May 2002

While maize production in South Africa is expected to increase by some 17% from last year, opening maize stocks this year are less than one-third of last year's level. Estimates of export potential this season vary, but are likely to be in the vicinity of one million MT for maize. Approximately half of this amount is normally earmarked for Botswana, Namibia, Lesotho and Swaziland, leaving perhaps half a million MT for other countries in the region. Securing price and availability for South Africa maize is possible using options on the South African Futures Exchange.

South Africa however, is not the only supplier of maize to SADC countries. East Africa is reporting availability of 180-220,000MT of white maize, which can be delivered to the SADC region competitively. Zimbabwe reports recent purchases of 30,000MT of white maize from Kenya, with a landed cost in Harare slightly below the landed cost of maize imports from South Africa. Uganda has recently provided Zambia with some 30,000MT of maize, although delivery rates have been slow.

Outside of Africa, the United States could have as much as one million metric tonnes of white maize to export this year. As the US planting season begins, prices are expected to remain low. At current parities, white maize from the US is competitively priced for the SADC region. South African traders have already begun importing some 80,000MT of US white maize, while there are reports that Swaziland and Botswana may also be importing maize directly from the US.

Elsewhere, maize prices in Argentina, where harvesting is underway, are also low despite a recent increase in export taxes to 20%, which could lead to higher prices over the short-term as farmers hold back supplies. South Africa is expected to import 280,000MT of yellow maize from Brazil and Argentina this season, while Zimbabwe has reportedly placed an order for an additional 20,000MT from Brazil. Zimbabwe has also reported purchasing 25,000MT of yellow maize from China, where prices are even lower than in the US."

The reasons for the 1 million tonnes official 'underestimate' by the NCEC were not established during the interviews, and neither was the actual impact on prices when the news of a revised crop size became available via SAGIS in August / October 2002.[6]

[6] The NCEC admitted to its error in 2003 as follows: "The committee (NCEC) last week acknowledged it had underestimated last season's maize crop by 1-million tons. The size of the crop for the 2001-02 season was 9,7-million tons compared to the committee's prediction of 8,7-million tons." http://www.businessday.co.za/bday/content/direct/1,3523,1326874-6079-0,00.html

Part 4

Regional Supply

Crop estimates in the region are far more unreliable than crop estimates in South Africa.

International supply

Well before December 2002, traders involved in supplying to the region appeared to be more aware of the extent to which regional demand was being filled by overseas imports. Despite this information being freely available in May 2002, it was not widely communicated in the South African press. Some large imports also went unnoticed by those not involved in monitoring activity at South African and regional ports.

News released in May 2002 that 1 million tonnes of US white maize, normally destined for Mexico, was to be diverted to Southern Africa does not appear to have had the impact on SAFEX prices in South Africa that it should have had (also see Box 3).

Some traders argued that GMO imports of white maize were not possible in early 2003. This view on import constraint, however, is not borne out by SAGIS information or statements available at the time neither by the records of GMO permits granted during February 2002 (see Box 4 and 5). It has to be acknowledged, however, that, generally, there is a time lag between the time when import permits are granted and when they are implemented.

Summary of supply and demand from the 2000/2001 season onwards

The 2000/2001 marketing year saw a large harvest for white maize with producer prices close to export parity and with a large carry-over of stock into the 2001/2002 season. Prior to planting, producer prices were about R700 per tonne, but when it came to the actual harvest, producer prices went as low as R500 per tone. Maize farmers were not pleased by this development because they argued that this was below their costs of production.

Upon entering the 2001/2002 marketing year, maize farmers were deliberately more conservative in their maize plantings. In their organised attempts to avoid a repeat of the previous year's low producer prices and in combination with early warnings of inclement weather in parts of the country, the crop that was eventually harvested in 2001/2002 was significantly smaller (4.6 million tonnes).

In addition to reduced plantings as a result of low prices on SAFEX, the perception was also created that South Africa might export a large quantity (1 million tonnes) of white maize to the SADC countries over and above the normal export volume of about 800 000 tonnes. This perception played havoc with the domestic white maize price on the SA Futures Exchange and pushed prices to import parity in November 2001. Rapid exchange rate depreciation followed shortly thereafter. This encouraged millers to make bookings for white maize imports overseas as early as December 2001.

Supply and demand as it was interpreted from May 2002 onwards, centres on the fact that SAFEX did not respond to available information that exports to the region would be satisfied by cheaper maize from the US, China and Eastern Africa, and that domestic production levels were higher than initially projected in the media by Grain South Africa.

Box 4: South Africa imports US white maize, maybe more
SOURCE: Reuters, by Allan Seccombe
DATE: February 13, 2002 Ref: http://www.gene.ch/genet/2002/Feb/msg00022.html

South Africa traditionally imported maize from Argentina and the U.S., but the presence of genetically modified organisms (GMOs) in maize from those two countries put a stop to shipments, AFMA's Hansie Bekker said. The NDA should speed up the approval of applications to import GM maize to help push down local prices, he said. An application was submitted in 1999 to the NDA to import BT11 GM maize from Argentina, but approval had not yet been received.

JOHANNESBURG - South Africa will receive a shipment of about 30,000 tonnes of white maize from the United States in March as local buyers look for cheaper grain, stabilising maize meal price hikes, a trader said on Wednesday. "The deal is done. One cargo has been done of 25,000 to 30,000 tonnes of white maize from the States. It should arrive here in March," said a trader who declined to be named. "There may be one or two more cargoes but it depends on what Safex (South African Futures Exchange) prices do," the trader told Reuters.

Coastal millers buying U.S. white maize would save about 150-200 Rand a tonne. "If a lot of mills exporting flour claim a rebate on import duty then inland millers could also save that kind of money," he said. According to the South Africa Grain Information Service website, the current maize import tariff is 137.40 Rand a tonne.

The price of maize meal has been pushed sharply higher by soaring maize prices and the imports would hopefully stabilise price increases passed onto consumers, said Hilton Zunckel, the assistant executive director at the National Chamber of Millers. "Maize supplies are fairly tight and we will cross into the new season (marketing year) with very limited stock," Zunckel told Reuters. "Local maize prices are high and we are following the rules of the market and going where prices are lower."

U.S. BEST OPTION

Millers had looked closer to home for maize, he said, but the U.S. offered the best option. Kenya was reported to have white maize for export, but the logistics to bring it to harbours were too expensive, Zunckel said. Mexico was also considered, but there was doubt whether maize export permits would be granted by authorities, who were trying to balance their domestic supply and demand, he added. South Africa's National Department of Agriculture (NDA) was approached to get clearance for the import of white U.S. maize. White maize is a human staple for millions of South Africans. Yellow maize is predominantly used for animal feed.

The trader said he was confident the U.S. product would not contravene South Africa's tight controls on imports of genetically modified (GM) commodities. "The white maize from the U.S. is GM free. It is not a GM product. The product will be tested to be less than one percent GM. Preliminary tests show the product to be a lot less than one percent," he added.

South African maize prices have soared because of a perceived shortage going into the new marketing year with uncomfortably low stocks after heavy demand for the country's maize from southern African states where crops have failed because of adverse weather and political turmoil. Near-month white maize futures contracts spiked above 2,000 Rand ($174.2) a tonne at the start of February, but have come down to around 1,860 Rand a tonne. South Africa produced 7.2 million tonnes of maize for the 2001/02 (May to April) marketing year compared to a bumper 10 million tonnes before. The latest crop planting data indicates South Africa may produce around eight million tonnes of maize in the current growing season.

The Animal Feed Manufacturers Association (AFMA) has said its members are also considering importing yellow maize because of high domestic prices. South Africa traditionally imported maize from Argentina and the U.S., but the presence of genetically modified organisms (GMOs) in maize from those two countries put a stop to shipments, AFMA's Hansie Bekker said. The NDA should speed up the approval of applications to import GM maize to help push down local prices, he said. An application was submitted in 1999 to the NDA to import BT11 GM maize from Argentina, but approval had not yet been received.

Box 5: GMO maize commodity import permitted in February 2002

Permit Number	*Organism*	*Trait*	*Gene*	*Marker Gene*	*Origin*	*Volume*	*Purpose*	*Status*
Cargill-003	MaizeMON810, T25, Bt11, Bt176	Insect & Herb R	Cry1AbPat	NptII	Argentina	200 000MT	Commodity import	Import permit issued
Seaboard-006	Maize< 1% GMOs	-	-	-	USA	959 4 18MT	Commodity import	Import permit issued
L Dreyfus-003	Maize< 1% GMOs	-	-	-	USA	300 000MT	Commodity import	Import permit issued
L Dreyfus-004	MaizeMON810, T25, Bt11, Bt176	Insect & Herb R	Cry1AbPat	NptII	Argentina	600 000MT	Commodity import	Import permit issued

Imports of maize into South do appear to have had some impact on prices when a total of 321000 tons were delivered between April 2002 and October 2002. Some traders argue that prices remained high thereafter because they were still trading with a domestic shortage mindset on the back of dry weather during planting time (October – December) and comparatively low carry-over stocks into 2002/2003. Not all traders share this view. Some argue that SAFEX prices did not accurately reflect underlying supply and demand fundamentals after May 2002 because of the influence of one large trading house.

Table 1.1: Crop estimates compared to SAGIS supply and demand information

	May 2001 to April 2002			*May 2002 to April 2003*		
	White	Yellow	Both	White	Yellow	Both
First crop estimate (20 February)	3,719	2,816	6,535	5,343	3,836	9,178
Final crop estimate (20 August)	4,299	3,184	7,483	5,311	3,787	9,099
(a) Opening stock	1,273	842	2,115	559	643	1,202
(b) Acquisition	4,683	3,648	8,331	5,850	4,385	10,235
Deliveries directly from farms	4,636	3,300	7,936	5,576	3,734	9,310
Imports destined for RSA	47	348	395	274	651	925
(c) Utilisation	4,430	3,260	7,690	3,863	3,627	7,490
Human consumption	3,630	247	3,877	3,459	249	3,708
Animal feed/Industrial	446	2,700	3,146	105	3,050	3,155
(d) RSA Exports	812	523	1,335	817	371	1,188
(g) Stock stored at:	559	643	1,202	1,718	992	2,710
Storers, traders	453	524	977	1,555	854	2,409
Processors	106	119	225	163	138	301

Source: SAGIS and National Crop Estimate Committee

Notes: Crop estimates include figures for 'developing agriculture' in all cases except 20 February 2001

1.4 Potential problems regarding price formation on SAFEX

Interpreting the evidence and comments from the various traders it seems to the Committee that the SAFEX maize price formation system could, in the abstract, combine the following problems:

SAFEX potentially exaggerates price fluctuations (prices could potentially overshoot)

- In an environment where a credible and reliable public information service on the weather as well as maize supply and demand do not exist, it is possible that market participants can:
    - exaggerate prices in a certain direction by releasing biased or misleading information;
    - exaggerate prices in a particular direction by ignoring or underemphasizing information.

- Regardless of whether there is a credible and reliable public information service on maize supply and demand and on the weather, there may still exist serious information asymmetries between large market participants involved in input supply (seeds, chemicals and loans)/grain trading (import/export orders) and others who are not in a position to collect detailed information from their maize producing clients or who influence their hedging behaviour through loan repayment conditions.

- In an environment where there are no restrictions on the size of trading positions, it may be possible for larger traders to 'corner' the SAFEX market and lead/herd it in a particular direction by making use of access to massive funds (in particular pension funds and overseas hedge funds).

- Trading professionals or clients of traders might exaggerate prices through being greedy or possessing insufficient skills/knowledge.

- In an environment where SAFEX does not spend sufficient resources on monitoring and enforcing its rules, it is possible for trading professionals or their clients to exaggerate prices by flouting SAFEX rules.

Exaggerating prices on SAFEX has knock-on effects

SAFEX maize futures and options may contribute to financial and currency market volatility.[7]

Equitable participation on the SAFEX market could be problematic

- It could create entry barriers for small-scale producers or millers of maize, thereby promoting concentration of ownership in the medium to long-term.

- In an environment where activities on the SAFEX market are not properly monitored and some self-regulation is not implemented in addition to the normal surveillance procedures of the JSE not being implemented, problems of fair adjudication could occur when a member of SAFEX lodges a complaint against another member.

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[7] Perhaps see Edward Chancellor – '*Mania, panics and crashes*' where the collapse of equity markets in 1987 was linked to futures trading, or Roger Lowenstein – '*When genius fails*' on liquidity gaps or Edwards – *Financial Analysts Journal* for info on futures markets and stock market volatility.

Box 6: Why could prices on SAFEX overshoot or fluctuations be exaggerated? A trader's perspective

Price overshooting is usually created when arbitrage is not possible – i.e. if trade is constrained. Factors, which inhibit the functioning of the principles of arbitrage, could, theoretically, contribute to unusual, extreme, or extraordinary price moves – either up or down. Structural issues in both government regulation and SAFEX rules **MAY** have had the effect of limiting arbitrage opportunities during the price run of early 2002, with the former (government regulation) more so than the latter.

During this period, domestic prices on the SAFEX derivatives exchange traded above theoretical import parity prices and accordingly the local grain prices in the physical market (as an alternative to the prices on the board) followed. This was because imports were not feasible due to the non-approval of the importation of genetically modified grain (this immediately moves one to GM free markets which generally carry a premium). Levels of BT11 "contamination" permitted, together with the certification required for imported corn was originally a limiting factor and saw many argue that importation of white corn would never be possible.

In theory, arbitrage opportunities mean that domestic consumers (or traders) who are long of physical stock will sell this grain into the domestic (or another market) and replace these stocks with cheaper grain from elsewhere. The above situation hampered the free application of the principles of arbitrage by market participants who were unable to import cheaper grain, and sell domestic grain, thereby forcing domestic prices down. Arbitrage opportunities would therefore operate (and eventually did so) via the physical grains market irrespective of the SAFEX Rules.

The SAFEX rules (recently revised with effect from the September 2003 Futures Contract) initially permitted delivery of only 100 mt (or multiples thereof) of grain, as reflected on a silo receipt issued by a recognised silo-operator in respect of stocks of **AFRICAN ORIGIN held at a SAFEX registered silo** on a SAFEX short position. This meant that utilisation of the principle of arbitrage in this regard (i.e. on SAFEX positions) was also removed – i.e. you could not for example purchase US white corn and deliver this on a SAFEX position.

In fact, even with the current revision of the SAFEX Rules one would in all probability struggle to deliver US corn (particularly white corn) to a SAFEX registered silo and have the silo operator segregate this stock as required (i.e. separate storage from other origins). Limited storage capacity and the very limited demand for such segregation would in theory make such storage prohibitively expensive to operate and detrimental to capacity. **In theory**, however, **arbitrage of international origins against local origins in the SAFEX market is now possible** and larger market participants with storage capacity, such as larger silo operators (e.g. Senwes, Afgri, etc.), are likely to make use of these opportunities in the future.

Another factor, which has an effect on price moves, and always will, is a given in derivatives markets. The gearing present in derivative instruments tends to result in an "overshoot" in price activity. Unlike markets where the instrument / subject matter is purchased and paid for in full, the purchaser of a March 2002 white maize futures contract during March 2002 would have obtained exposure to a commodity valued at as much as R 2000 / mt, by simply putting up a margin of R 100 / mt. Accordingly, positions **MAY** be taken far in excess of the financial means of the party compared to the situation were the party required to pay for the commodity in full. As a result, the market is capable of moving below the full value of the client's monetary investment (without the price of the commodity in the case of a purchase, for example, going below zero).

SAFEX prices are not an accurate reflection of average grain prices

SAFEX prices may give a misleading picture of actual average maize grain prices because of the existence of forward contracts entered into between larger farmers and millers. This is substantiated by millers' comments that their raw material prices could be substantially below the SAFEX maize spot price (~R200).

1.5 Debating possible recommendations

The following options for improving the food security situation were discussed with traders but they require more detailed consideration (see the final part of the Report):

Strategic grain reserves

Some traders were in favour of a virtual strategic grain reserve since it would increase their turnover and profitability as trading houses. Several traders expressed the concern whether a virtual grain reserve would have a meaningful impact on SAFEX prices because of the position limits.

In light of the concerns about the costs of implementing a physical strategic grain reserve and the difficulties of administering it, it may be more strategic to introduce a limit on the volume of maize held in storage. However, this option may involve problems with under-reporting or a lack of reporting.

Changing SAFEX rules

There was a consensus on the need for SAFEX to introduce position limits. However, there appeared to be less comfort with SAFEX's ability/willingness to monitor its own rules at a decentralised level. Thus, there may be a need for an independent body such as the JSE surveillance unit to monitor SAFEX traders more actively, and for a mechanism to provide for independent adjudication of complaints.

In this regard, the committee is planning to arrange a joint meeting with the JSE Executive, the SAFEX Agricultural Products Division of SAFEX and the Financial Services Board concerning alleged malpractices by traders

Improving information and access to information

There are several areas where improvements in information may result in a lower volatility on SAFEX. Some information strategies, such as reporting on import and export orders are already being implemented by SAGIS. Others information needs, however, for example, relating to the weather and rainfall patterns are not being addressed.

One way to prevent weather predictions from Grain South Africa or other organisations from unduly influencing prices in the future would be to improve official regular reporting on **actual** rainfall in the grain producing areas. It is also important to ensure that weather reports specifically tailored to maize production are produced independently and are subject to greater scrutiny and technical criticism from a range of independent experts. At present, there is no reliable system to adjust rainfall predictions by using actual rainfall and soil moisture information.

Given the confusion over who actually **owns** maize in storage, it is also necessary to require SAGIS to report information at a much more disaggregated level than it does at present.

As part of the PPI and CPI basket of prices, accurate millers' raw material costs (as opposed to wholesale maize-meal prices) and final retail/wholesale selling prices must also be collected by StatsSA.

Expanding demand side support

Several traders were in favour of Government introducing a system of food stamps as a way to subsidise 'the poor' and in so doing address the impact of high food prices..

1.6 Concluding remarks

Although this investigation has highlighted some specific trader behaviour that potentially could have caused SAFEX prices to overshoot, it was not possible and probably never will be possible to link specific price trends to specific actions by individual companies in the market. There was enough evidence, however, that points towards the market or the market sentiment being manipulated, which caused the market to overshoot or to overreact. It is, however, also likely that the initial underestimation of the June 2002 harvest, and the various statements by industry leaders about a negative outlook for the coming 2002/2003 season created a negative market sentiment. Apart from this, there was much disinformation about the extent of imports, exports and the situation in Zimbabwe and rest of the SADC region. Clearly, the conditions were such that the 'stage' was literally set for somebody to 'orchestrate' the direction of the market and cause what somebody called a 'buffalo run'.

The Committee is however satisfied that the broader concern by society, Government, in conjunction with the attention given by the Committee as well as the Financial Services Board (FSB) did convince the JSE to introduce new rules to prevent the possibility that traders hoard the market. The fines and suspension issued by the JSE, and the investigation by the FSB is an indication that they are serious about dealing with traders behaving badly, which could result in 'unjust' price increases.

Despite these reported irregularities, the Committee is of the opinion that lack of proper market information played a much greater role in creating the situation where manipulation was possible. To allow the proper functioning of this market, this aspect needs to be addressed. The Committee is also satisfied that there is sufficient evidence that much of the producer price trends accurately reflected the market fundamentals for most of the period under review, which suggests that, apart from certain periods, manipulation had minimal effect on the broader price trends. The Committee is also satisfied that the necessary regulations are now in place to prevent abuse of the futures market.

CHAPTER 2

THE MAIZE-TO-MAIZE MEAL VALUE CHAIN

2.1 Industry Overview

Maize is the most important grain crop in South Africa, being both the major feed grain and the staple food for the majority of the South African population. Figure 1 illustrates that for the 2002/03 marketing year, maize was responsible for the largest contribution (13.78%) to the total gross value of the agricultural production with a gross value of R9.5 billion. Poultry slaughtered followed closely with a contribution of R8.6 billion (12.5%). The South African maize industry is also the largest maize industry in Africa by far. In 1997, the industry was deregulated and the Maize Board was abolished. Since 1997, product prices have been determined under a free market condition and are formally traded on SAFEX. The major production areas are situated in the Free State, North- West and Mpumalanga Provinces.

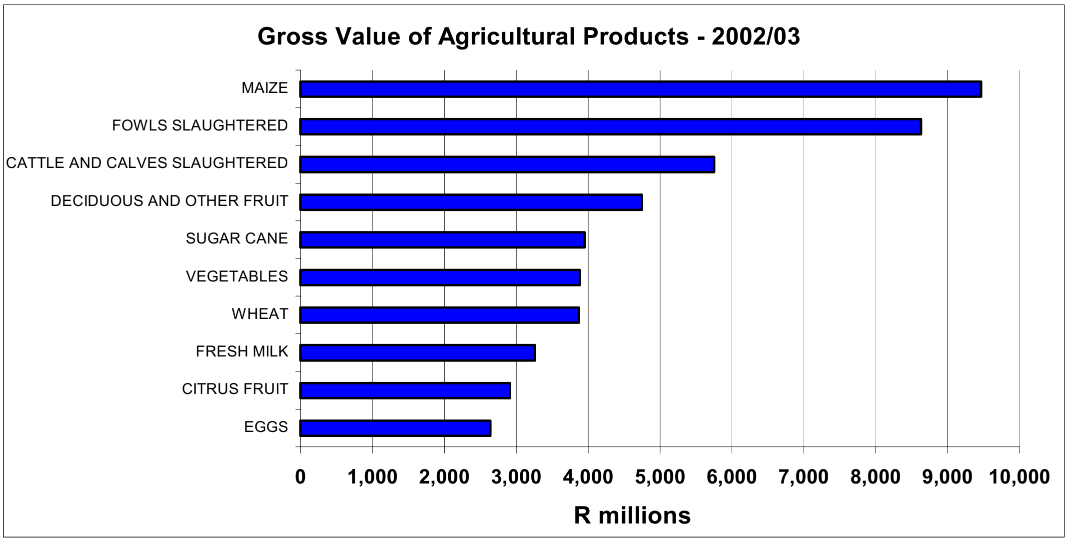

Figure 2.1: Gross value for the top ten agricultural products for 2002/03

From Table 2.1 and Figure 2.2, it is clear that although the total area planted under maize has decreased over the past decade, South Africa still meets its annual maize requirements almost entirely from domestic production. Apart from the past two seasons, there has been a general decline in the area planted under maize. Yet, the production has not decreased drastically. This proves that the marginal production areas have been taken out of production and that the average yields have improved. In the past two production seasons, however, producers responded to a sharp increase in the real producer prices of white and yellow maize and have increased their harvested area. This sharp increase in the producer prices was mainly caused by a strong depreciation in the exchange rate and erroneous market signals of a possible crop failure in the SADC region. The increase in the area harvested (and consequently the production) for the 2002/03-production period, together with a strong appreciation of the exchange rate resulted in a drastic decline in the real producer prices. It is important to note that the producer prices have been expressed in real terms so that prices can be compared at the same level over a longer period.

Table 2.1: Total maize area harvested, production, consumption and prices

	Maize area harvested	Maize production	Maize feed consumption	Maize human consumption	Real white maize producer price	Real Yellow maize producer price
	' 000 ha	' 000 tons	' 000 tons	' 000 tons	R/ton	R/ton
1994	3904.0	13275.0	3601.0	3449.0	376.3	376.3
1995	2952.0	4866.0	3440.0	3705.0	304.0	304.0
1996	3307.0	10180.2	3315.0	3416.0	459.6	459.6
1997	3361.0	9732.0	2973.0	3410.0	512.8	512.8
1998	2956.0	7256.0	2960.0	3381.0	509.5	533.5
1999	2904.7	7311.0	3137.0	3648.0	575.7	672.0
2000	3230.4	10409.0	3239.0	3685.0	521.7	541.7
2001	2707.9	7936.0	3457.0	4105.0	671.5	675.9
2002	3016.8	9110.0	3471.0	3877.0	1158.2	934.9
2003	3277.2	9279.5	3472.9	4092.0	482.0	488.3

Source: Abstract of Agricultural Statistics, SAFEX

The average local consumption requirements are estimated at 7.5 million tonnes. This can be split up into 4.2 million tonnes of white maize and 3.2 million tonnes of yellow maize. The maize industry is also an important earner of foreign revenue for South Africa through the export of maize and maize products. In years when surpluses are produced South Africa exports maize mainly to Zimbabwe, Japan, Zambia, Malawi, Mauritius, Kenya and Mozambique. White maize is the staple food of a large section of the African population and this accounts for 94% of white maize meal consumption.

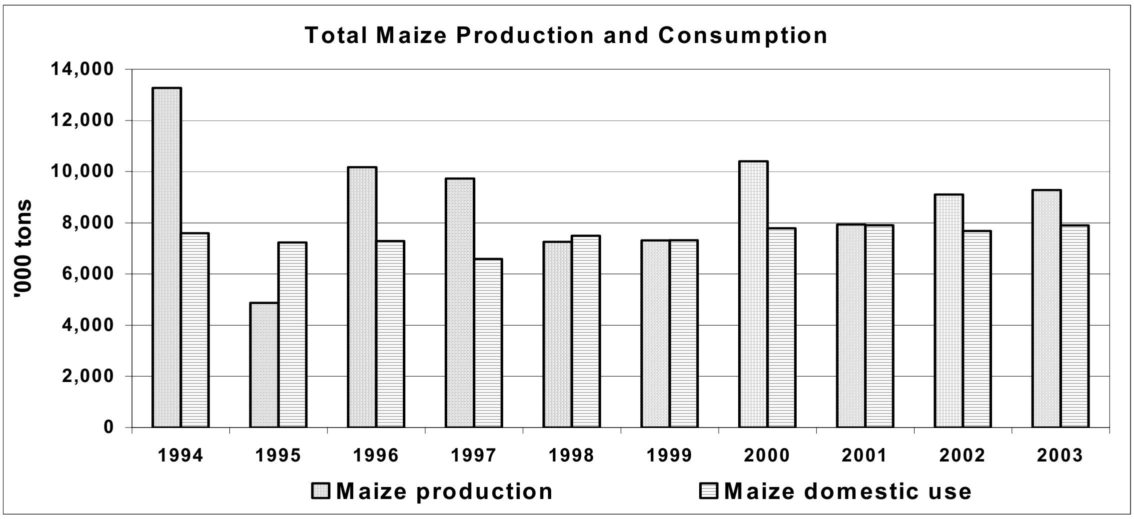

Figure 2.2: Total production and consumption of maize, 1994-2003.
(Source: Abstract of Agricultural Statistics, 2003)

2.2 Market structure

A clear understanding of the market structure of the white and yellow maize industry is essential in order to analyse the supply chain. This section of the report focuses on the primary and secondary industry of the maize sector with respect to the role-players, the market concentration and price formation at different levels of the supply chain, which also includes a practical illustration of the functioning of a trading book. This section draws on the report on the competitiveness of the maize industry, which was prepared for the Competition Commission.

2.2.1 Primary Industry

Farmers

The number of commercial maize farmers is estimated at 9,000. Together they are cultivating nearly 3.4 million hectares and employing about 150,000 farm workers.

Deregulation in the agricultural sector has caused some shifts in the geographic patterns of white and yellow maize production. Most noteworthy is the increase in maize production in the Northern Cape. In this area mainly irrigation farmers have opted to plant white maize as a response to the high prices in the previous production season. It seems there has been a shift to the eastern part of the country, away from the western parts where maize was traditionally grown. The North West Province may find it, for instance, more profitable to shift from white maize to yellow maize in order to expand their livestock industries.

Table 2.2: White and yellow maize: Geographical distribution of production (%)

Province	Area ('000 ha)				Production			
	1994/95	%	2002/03	%	1994/95	%	2002/03	%
Western Cape	3.0	0.1	3.1	0.1	5.6	0.0	21.3	0.2
Northern Cape	25.0	0.6	53.8	1.7	177.8	1.5	532.6	5.8
Free State	1319.4	33.8	1095.0	35.3	4333.7	36.0	3173.0	34.8
Eastern Cape	31.4	0.8	12.0	0.4	74.0	0.6	53.8	0.6
KwaZulu-Natal	92.3	2.4	81.5	2.6	321.4	2.7	364.6	4.0
Mpumalanga	744.5	19.1	555.0	17.9	2684.2	22.3	1883.5	20.7
Limpopo	44.2	1.1	47.0	1.5	94.8	0.8	115.6	1.3
Gauteng	154.4	4.0	128.0	4.1	715.6	6.0	431.2	4.7
North West	1489.9	38.2	1125.0	36.3	3618.5	30.1	2543.2	27.9
Total	**3901.1**	**100**	**3100.4**	**100**	**12025.6**	**100**	**9118.8**	**100**

Source: Crop Estimates Committee, 2003

Silo owners

Most of the grain silo capacity in South Africa is situated with agricultural co-operatives or former co-operatives, which now have converted into agri-businesses. According to the Grain Silo Industry (2002), the total grain silo storage capacity in South Africa is estimated at 17.5 million tonnes, 85% of which is owned by 22 silo owners. Most of this storage capacity is also located in the provinces in the northern parts of the country, as shown in Table 2.3.

Table 2.3: SA silo capacity

Silo owner group:	Storage capacity:
Co-operatives (north)	14.5 million tonnes
Co-operatives (south)	0.97 million tonnes
Harbours and private owners	2.1 million tonnes

Source: Grain Silo Industry

Table 2.4 presents the concentration of ownership in the silo industry where a mere three co-operatives/companies own 70.3% of all the domestic storage facilities. The possible impact of this concentration on the chain will be further debated in the section that deals with the ownership of stocks and the practical functioning of a trading book.

Table 2.4: Relative share of bulk storage capacity

Silo owner group:	Relative share:
Senwes	31.2%
Afgri	21%
Noordwes	18.1%

Source: Grain Silo Industry

2.2.2 Secondary Industry

The secondary industry consists of dry and wet milling industry and the animal feed industry. The concentration in the milling industry has arisen naturally from the many years of the controlled marketing system. At the same time, unlicensed or "informal" traders and millers were typically restricted from procuring maize from the Maize Board. The combination of movement controls and selective access to the Board's maize stocks effectively reserved the bulk of the white maize for industrial millers, distributors, and retailers in the official marketing channels, and, consequently, assured their oligopolistic position in the maize-meal market. Thus, before 1995, marketing in South Africa was dominated by a single-channel flow of grain from rural areas into the urban milling system, which provided preferential access to buyers and impeded the development of a more decentralised and lower-cost system.

Since deregulation and the abolishment of the Marketing Board, the number of informal millers has increased sharply. According to the South African Grain Information Services (SAGIS), there are more than 190 maize millers in South Africa, and the industry currently employs approximately 5,300 people. The average milling capacity utilisation is 3.7 million tonnes or 79.5% of the available capacity. The potential capacity is in the order of 5 million tonnes. According to the National Association of Maize Millers, large-scale maize millers number around 22 and account for 85% of all maize meal produced in the country. The top 4 companies in this group of 22 millers produce the majority (73%) of the market share as reflected in Table 2.5.

Table 2.5: Market share of white maize millers

Maize Millers	Market share (%)
Premier Foods	27.0
Tiger Milling Company	20.0
Pioneer Foods - (SASKO)	18.0
OTK/AFGRI	10.0

Source: Competition Commission, unpublished information

The secondary industry converts maize to either maize-meal for human consumption, for animal feed or for maize starch. Table 2.6 presents the total tonnage of maize milled for human consumption over the past seven years.

Table 2.6: Monthly total of maize milled for human consumption (tonnes)

Month	2002/2003	2001/2002	2000/2001	1999/2000	1998/99	1997/98	1996/97
May	284 386	293 247	298 946	290 757	276 501	285 989	281 150
June	244 462	265 772	279 145	248 864	262 478	260 429	248 850
July	252 755	257 745	266 443	271 837	275 477	279 873	259 668
August	242 616	285 889	287 041	259 147	255 495	265 551	261 285
September	248 765	272 744	256 143	249 410	244 279	238 266	240 994
October	260 408	279 733	301 311	288 858	276 715	317 000	318 876
November	250 548	288 083	282 372	284 894	270 654	270 436	287 247
December	229 411	253 610	250 944	255 603	245 806	255 480	266 592
January	215 584	296 631	284 617	232 005	239 168	284 063	276 264
February	204 128	268 412	264 689	254 602	240 378	284 792	248 693
March	249 727	268 001	306 941	278 388	258 503	301 062	251 166
April	n.a	274 659	262 182	240 511	252 652	278 112	254 140
TOTAL	**2 682 790**	**3 304 527**	**3 340 773**	**3 154 876**	**3 098 106**	**3 313 015**	**3 194 926**

Source: National Association of Maize Millers

The feed industry uses primarily yellow maize for the purposes of animal feed manufacturing. According to the Animal Feed Manufacturing Association (AFMA), maize constitutes approximately 46% of the 3.9 million tonnes of feed produced by its members. According to the SA Feedlot Association, maize products represent 65% of the approximately 1.3 million tonnes of feed used in the feedlots annually.

White maize can substitute yellow maize in the animal feed market. Maize products used in feedlots consist of what is known as hominy chop, i.e. a white maize waste product. Although yellow maize is used, it comprises a small portion of the total feedlot requirement as yellow maize is much more expensive than hominy chop. Yellow maize is mainly used in broiler and layer feed rations.

2.3 Unpacking the maize-to-maize meal value chain

A sound understanding of the dynamic functioning of the maize-to-maize meal supply chain requires the unpacking of the supply chain into four main nodes or levels, which can be identified in this food chain. This section of the chapter is organised into two sub-sections. It begins with the methodology, definitions and general discussions of the results. The second sub-section provides a specific review and analyses of the trends of the marketing margins, price spreads and farm values within the maize supply chain.

Methodology, definitions and results

The prices of the four main nodes in the food chain are the average producer price, the mill door price, the list price, and the consumer price. The SAFEX white maize monthly average nearby contract prices and the consumer prices for maize meal are actual prices that are captured and reported by SAFEX and the AC Nielsen database, respectively. The mill door prices and the list prices are calculated 'on the table' by making use of available information re the costs of processing and distribution, as well as various assumptions facilitate the representation of a possible breakdown of the maize-to-maize meal supply chain. The main assumptions are:

- The producer price (also know as the farm gate price) is derived from the SAFEX spot price minus the average transport differential and the handling costs.
- The transport costs from the farm gate to the silo are calculated as the average SAFEX transport differential to all the major maize silos. It is important to note that these differentials are, still, based on railway costs, despite the fact that there has been a gradual shift away from railway towards road transport. Therefore, these costs might not be a true reflection of the actual costs. The transport/distribution costs might be higher.
- The handling costs are based on responses from millers about the estimated average handling costs and the storage day tariffs per ton
- It is assumed that the millers are located closer by the silos than the farmers are.
- The income from the sales of chop is calculated as follows:
    - =[0.99ton-(extraction rate*0.99ton)+(screenings of 0.1ton)] * [0.7*yellow maize price]
    - =[Amount of chop per ton] * [price of chop]
- There is a 4-month time lag between the average monthly SAFEX spot price and the average monthly retail price. This assumption is supported by statistical tests, as well as the general opinion of the industry (See Chapter 4 in Part 5).
- Specific mill site costs are only available on an annual base. Therefore, the monthly mill site costs are kept constant for every year.

Table 2.8 represents the supply chain from maize to super maize meal for the month of June 2003. Table 2.7 below, provides a summary of the extraction rates of the various types of maize meal. It is necessary to make a distinction between the various types of maize meal due to their different extraction rates, which influence the margins and spreads of the millers significantly. More than 40% of all the maize meal sold in the SA market is super maize meal and this percentage is increasing. Special maize meal sales make up 30% of total sales.

Table 2.7: Extraction rate of various maize meal types

Type	Extraction rate (%)
Super	62.5
Special	78.7
Sifted	88.7
Unsifted	98.7

Source: Chamber of milling

Although an extraction rate of 62.5% is reported for super maize meal, some industry specialists regard this figure as “conservative”. The best selling super maize meal brands, IWISA and ACE, only have a 55% extraction rate.

Table 2.8: The maize-to-maize meal (Super maize meal) supply chain in June 2003

	Units	Jun-03
1. Farm gate price (4-month lag)	R/ton grain	**996.65**
Transport cost: Farm gate to silo	R/ton grain	76.00
Handling & Storage cost: Costs of farmer	R/ton grain	25.00
SAFEX White maize average nearby contract price (4-month lag)	R/ton grain	**1097.65**
Transport cost: Silo to Mill door	R/ton grain	56.00
Handling & Storage cost: Costs of miller	R/ton grain	25.00
Income from sales of chop	R/ton chop	**303.01**
2. Mill door price	R/ton grain	**875.64**
MANUFACTURERS		
Production cost (milling costs)	R/ton grain	70.84
Packing cost	R/ton grain	16.67
Packing material costs and losses	R/ton grain	88.00
Administration, Warehouse and selling	R/ton grain	157.62
Mill site costs	R/ton grain	**333.13**
Distribution costs	R/ton grain	137.96
Total mill site costs	R/ton grain	**471.09**
Fixed Capital cost	R/ton grain	151.23
Floating Capital costs	R/ton grain	38.84
Total costs	R/ton grain	**661.16**
Cost of production of super maize meal		
Conversion cost	R/ton grain	661.16
Average cost of maize (mill door price)	R/ton grain	875.64
Total super maize meal cost	R/ton grain	**1536.80**
Divided by average extraction for super maize meal		0.625
Average cost of super maize meal	R/ton meal	**2458.89**
Miller-to-retail margin	**R/ton meal**	**505.11**
3. Average Monthly Retail Price (actual retail price)	R/ton meal	**2964.00**

Statistical testing proved that the level of correlation between the producer price and the consumer price is the highest when the producer price is lagged by four months. This implies that it takes four months from the moment the miller buys the maize until it appears on the shelf of the retailer. The introduction of lagged producer prices in these calculations decides the outcome of the supply chain analysis; therefore, it was decided to discuss this important issue with a number of role players in the market.

It was determined that a four-month hedging (or sourcing) strategy is, in fact, common practice among the major milling companies. Although, some of the smaller mills indicated that they make use of shorter hedging strategies, it was decided for the calculations to make use of the four-month lagged producer prices in the analysis.

The farm value, farm-to-retail price spread, farm value share of the retail price of maize, and the miller-to-retail margin appear in Table 2.9. The farm value is a measure of the return (payment) farmers receive for the farm-product equivalent of the retail food sold to consumers. The farm value for one tonne of 'super' maize meal is calculated by dividing the farm gate price (R996.65/ton) by the average extraction rate (62.5% for super maize meal). This implies that one tonne of super maize meal requires 1.6 tonnes of raw white maize. The farm gate price is derived from the SAFEX average nearby contract price, which was lagged by four months. The price of R1097.65/ton reflected in Table 2.8 as the SAFEX price is actually the traded average SAFEX price for the month of February 2003. The actual cost of raw maize at the mill door has to reflect transport and handling costs as well as the income that would be generated from the sale of 'chop'. Hence, a tonne of maize that entered the milling process in June 2003 cost R875.64/ton after the income from chop sales have been taken into consideration. In the month of June, a tonne of maize meal sold for R2964/ton for which grain sold (1.6t) by the maize farmers to the value of R1594.64/ton was used.

Table 2.9: Summary statistics of value chain calculations

Item	Units	Jun-03
Farm Value	R/ton grain	1594.64
Farm to Retail Price Spread of Maize (Super Maize Meal)	R/ton meal	1369.36
Farm Value Share of Retail Price of Maize Meal (%)	%	53.80%
Miller-to-retail margin (include miller and retailer profits)	R/ton meal	505.11
Conversion costs as percentage of Retail price	%	35.69%
Maize price (mill door) as percentage of Retail price	%	47.27%

The farm-to-retail price spread is the difference between the farm value and the retail price. It represents payments for all assembling, processing, transporting, and retailing charges added to the value of farm products after they leave the farm. Price spreads are sometimes confused with marketing margins. There is often a time lag between the receipt and final sale of merchandise involved in the calculation of this value. Spreads represent the difference between retail price and the farm value of a specific product at a given point in time. The farm-to-retail price spread for maize in June 2003 was R1369.36/ton (R2964 – R1594.64).

The farm value share is the proportion farmers get from the amount consumers spend on the market basket of food purchased in retail grocery stores. The farm value share is calculated by dividing the farm value of maize by the retail price of maize. The results suggest that in June 2003 farmers received 53% of the amount consumers spend on the purchases of maize meal. For special maize meal the farm value share was estimated to be in the order of 44 %. As the extraction rate of the various types of maize meal declines, the farm value share declines as well.

The miller-to-retail margin is calculated by deducting the total costs of maize meal (the costs of maize plus the conversion costs) from the retail price of maize. Table 2.9 reports a miller-to-retail margin of R505.11/ton (R2964 – R2458.89) for June 2003. Within this 'price gap' lies the profit of the miller and the retailer, as well as the costs of the retailer. The miller-to-retail margin is a very important measurement because *not many* assumptions need to be made to calculate this number. The fact that costs of general sales and administration of wholesalers and retailers are not readily available puts an even greater emphasis on the importance of the miller-to-retail margin. Within this margin also lies enclosed a range of different distribution systems with completely different costs structures and components. As previously mentioned, the list prices may not be an accurate reflection of the true prices at which commodities entered the food chain because most of the larger transactions are based on a range of rebates and conditions. The total costs of maize meal consist of the SAFEX nearby contract price, transport costs, and processing costs, which are all reported data. Retail prices were taken from the AC Nielsen database. The reader is, however, cautioned to keep in mind that the calculations depend on the one very important assumption that was discussed before, namely that the producer price is lagged by four months. The trend in the miller-to-retail margin over the past three years is graphically depicted and discussed in the following section.

Figure 2.3 compares the conversion costs as a percentage of the retail price to the mill door price as a percentage of the retail price. The mill door price can be regarded as the most accurate price of raw material entering the food chain. Only in 2002 and during the first nine months of 2003 did the mill door price make up a larger percentage of the retail price of super maize meal than the conversion costs.

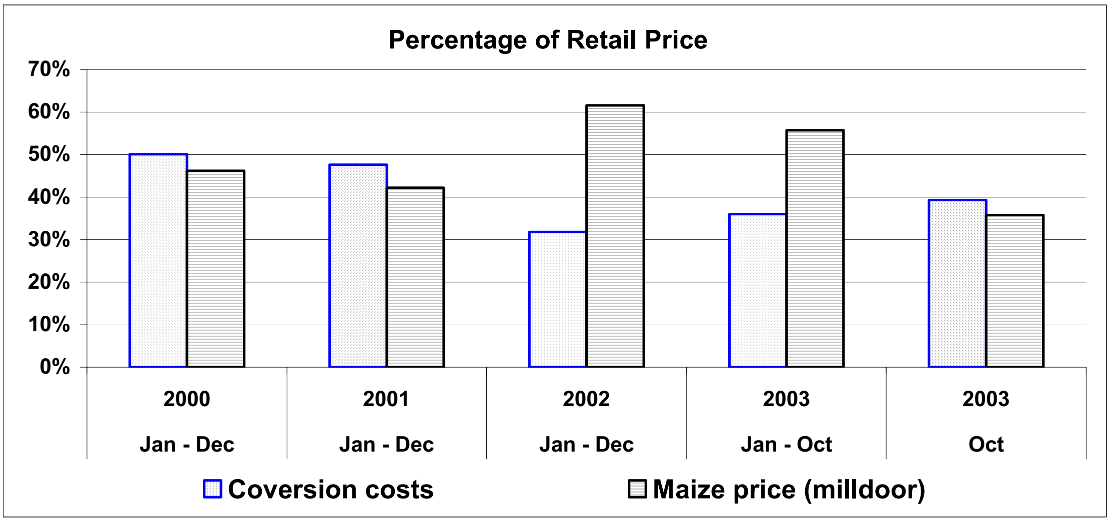

Figure 2.3: Conversion costs and raw material price (maize at mill door) as percentage of retail price

Trends in margins, and spreads

Figure 2.4 below, depicts the trends in miller-to-retail margins, SAFEX spot prices and the average monthly retail price. The results show how dependent the miller-to-retail margins are at the level of spot prices and retail prices. With the drastic depreciation in the exchange rate in December 2001, SAFEX spot prices increased sharply and, at the same time, consumer prices started to increase as well. This resulted in the higher millers margin because millers hedged their prices 4 months in advance. It is well possible that during this period “cheap maize” was still being milled and sold at a higher price. The effect of the expensive maize bought during the first part of 2002 impacted on the industry towards the middle of 2002, as the spread between retailer and miller became negative. This suggests that the millers could not increase retail prices any further yet they had high costs for raw material. This meant large losses in the maize milling industry. This corresponds with recently released financial statements of the major milling companies. Volumes of maize milled declined rapidly as consumers responded to high maize meal prices. This had a serious impact on the per unit overheads, and it meant that milling companies had expensive maize in stock for a longer period, and this, eventually, affected the 'bottom line'.

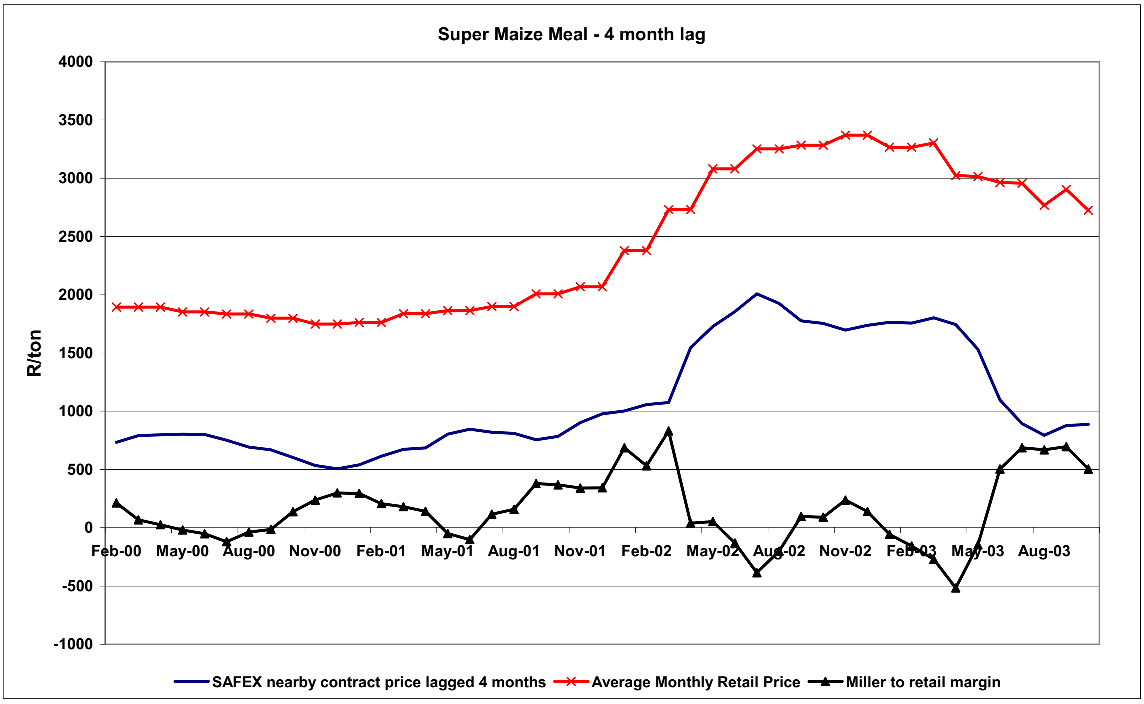

Figure 2.4: The white maize spot price, the super maize meal retail price and the miller-to-retail margin

Source: SAFEX, AC Nielsen, Committee calculations

Over a number of months millers can turn around what seems to be a loss into a profit when the chop (by-product of the milling process) is sold in the market. For the month of June 2003, the miller's profit on 1 tonne of maize meal, without the income from the sales of chop, equals R204.64/ton. Yet, if one adds the income from chop (R303.01/ton), the miller's net realisation equals R507.64/ton. The periods of potential losses were in June-July 2000, May-June 2000, June - August 2002 and January-May 2003. These periods were characterised by exceptionally high raw material prices. It is interesting to note, however, that the retail prices did not respond in the same way to the upward shift in raw material prices (maize prices) as they did to the downward shifts. This fact is illustrated graphically in Figure 2.4 and statistically tested in Part 5 of the Report. The sharp increase in raw material prices in the period December 2001 up to June 2002 was closely followed by an increase in the retail price of maize meal. Yet, from April 2003 onwards, raw material prices decreased at a much higher rate than the retail prices did. This immediately opened up a gap for the miller-to-retail margin to increase.

One more margin calculation, namely the wholesale – to- retail margin, can be added to the range of margin analysis. The wholesale-to-retail margin is defined as the difference between the retail price of maize meal and the price at which millers purchase maize, after accounting for extraction rates and the value of by-products produced in the milling process. Therefore, in order to calculate the wholesale – to-retail margin even fewer assumptions have to be made and we also do not have to rely on the figures for processing costs provided by the maize millers. It is thus an objective assessment after taking inflationary increases in production costs into account estimating the actual increase/decrease in productive costs and profits. Any increase in the *real* margin can therefore lead to various interpretations and explanations. Just arguing that inflation is the reason is therefore not founded since this has already been taken into account.

Although this report mainly focuses on the events over the past three years, Figure 2.5 presents the wholesale-to-retail margin for the period 1976 – 2003. It is important to note is that these numbers are presented in *real terms*. Figure 2.5 shows two main trends. Firstly the wholesale-to-retail margin has increased in real terms over the period 1976 – 2003. The second trend (1991 – 2003) is stable and **slightly negative.**

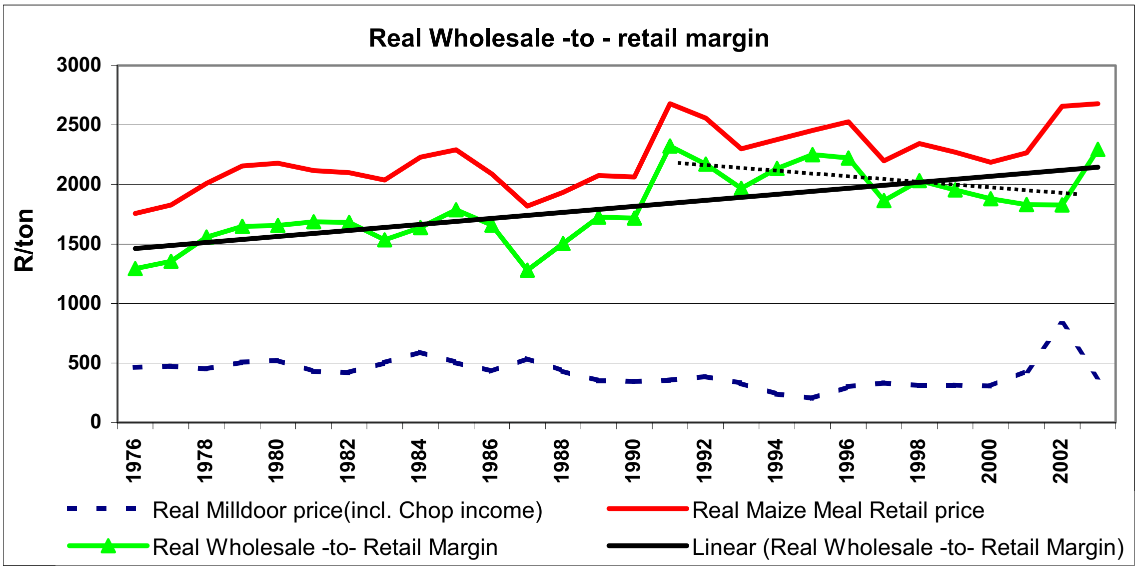

Figure 2.5: The real wholesale – to – retail margin
Source: Abstract of Agricultural Statistics, SAFEX, AC Nielsen, Committee calculations

A different picture emerges when the trends in real margins are analysed between 2002 and 2003 as illustrated by Figure 2.6. It shows that real margins calculated on a monthly basis **have increased since 2000.** More detail analysis showed that during the period of exchange rate deprecation the real margins increased from R1 190 per ton of maize meal in June 2001 to R1 805 per ton in March 2002. Since then real margins dropped to R1 124 in April 2003 as millers absorbed most of the costs of expensive white maize bought in the previous 6 months. But when maize prices plummeted during early 2003 real margins increased to a high of R1 733 per ton in July 2003. Since then margins declined and have stabilised around the R1500/ton mark.

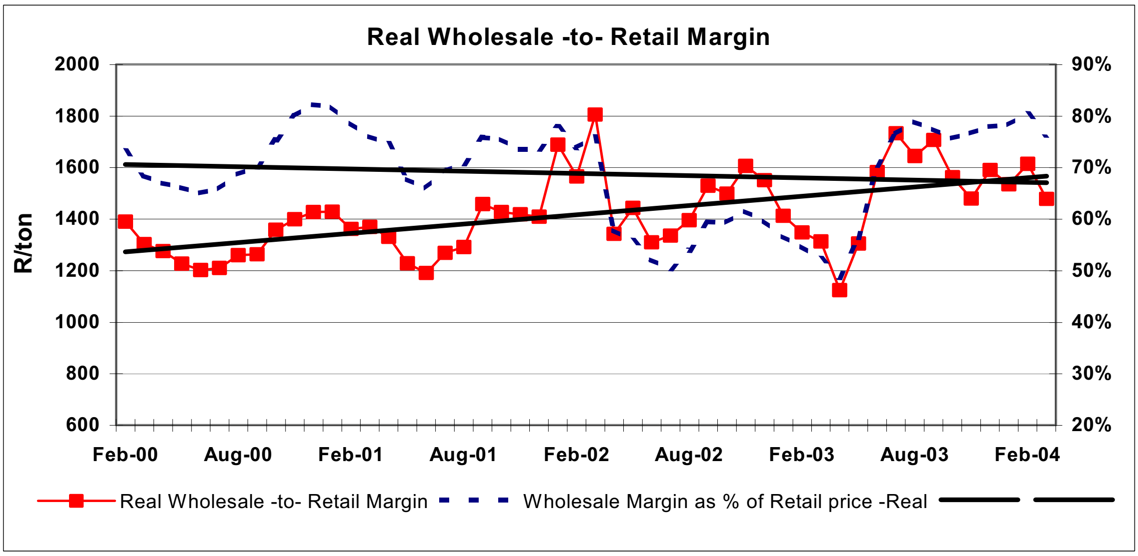

Figure 2.6: Real Wholesale – to- Retail margin, February 2000 – February 2004
Source: Abstract of Agricultural Statistics, SAFEX, AC Nielsen, Committee calculations

Figure 2.7 presents the annual average conversion costs of one tonne of maize. Conversion costs include milling, packaging, administration, distribution and capital costs. Included in the conversion costs are the costs of labour and fuel. Alternatively, the distribution costs can be referred to as the 'total mill site costs'.

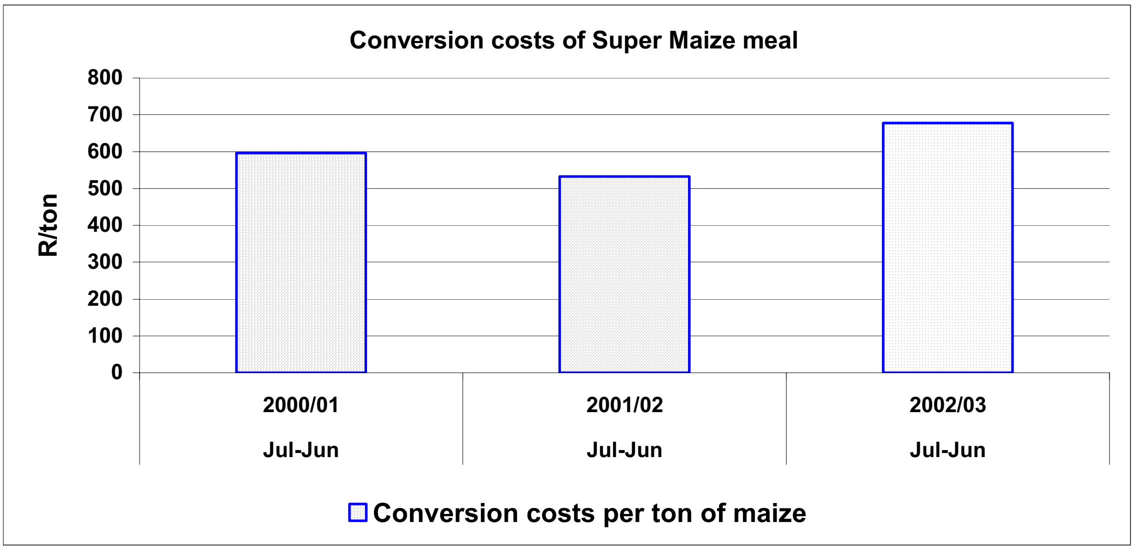

Figure 2.7: Total conversion costs of 1 tonne of maize
Source: The National Chamber of Maize Millers, own calculations.

Average annual conversion costs decreased from R595/ton in 2000/01 to R532/ton in 2001/02. The sharp increase only came in 2002/03 when conversion costs increased to R666/ton. The main contributing factors to this sharp increase in conversion costs were the costs of capital and the distribution costs.

2.4 Conclusion

The critical question of 'who makes the super profits in the value chain' has been raised many times. Maize meal is a staple food and high volumes are traded monthly. The calculations in this Chapter show that normal but fairly stable profits are present in the maize meal supply chain. Although many independent sources report on the level of concentration in the industry, no figures could be quoted to indicate this level of concentration. It is furthermore also difficult to determine exactly at what stage in the value chain the level of concentration influences the pricing of the final product. It was however determined that the maize milling industry exhibits the typical characteristics of an oligopolistic structure where monopolistic competition based on brands and market segmentation exists, which does have an impact on the retail price.

Calculation of the miller-to-retail margin in this Chapter has shown that profits, as well as some losses, were realised during the period under review. However, the results also suggest that fundamentals in the maize market will force the market to fluctuate around an equilibrium, which is established by demand and supply forces. It is not easy to determine how fast the market returns to equilibrium after an upward or downward shock in prices. A certain degree of "downward stickiness" in the retail price of maize meal during 2003 was identified while millers, interestingly, did increase the price of maize meal almost immediately and sharply followed the increases in maize producer prices in December 2001. The normal time lag of 4 months was, therefore, not observed in the upward phase. At the same time, since April 2003, the time lag effect of producer price trends was clearly noticeable in the downward trend in retail prices. Hence, it can be argued that some level of concentration might exist in the processing and retailing sector of the maize industry that could move the market in a certain direction for a period of time before market forces kick in and self-correct. Whether this structure must be seen as operating to the detriment of consumers' welfare is a point of contention. Yet, given the poor financial performance of the milling companies during 2003, it is unlikely that they have profiteered by means of inducing sharp increases in the price of maize meal during the period under review.

CHAPTER 3

THE WHEAT-TO-BREAD VALUE CHAIN

3.1 Industry Overview

Wheat is produced mainly for human consumption with only small quantities of poorer quality wheat marketed as stock feed. Originally, wheat was only produced in the winter rainfall area in the Cape but was since the 1970s also cultivated in the Free State region and increasingly under irrigation in many other production regions.

The Wheat Board controlled wheat marketing until 1997, after which market forces prevailed to determine prices. This has left producers with more opportunities but also with more risks. Prices, overall, are more volatile since they fluctuate between export and import parity prices depending on whether there is a surplus or a shortfall. Wheat consumption in the past decade has remained fairly stable around 2.3 million tonnes per annum. As can be seen in figure 3.1, the domestic demand for wheat often outstrips the supply. Wheat shortfalls need to be imported, which makes the exchange rate an important factor in price determination.

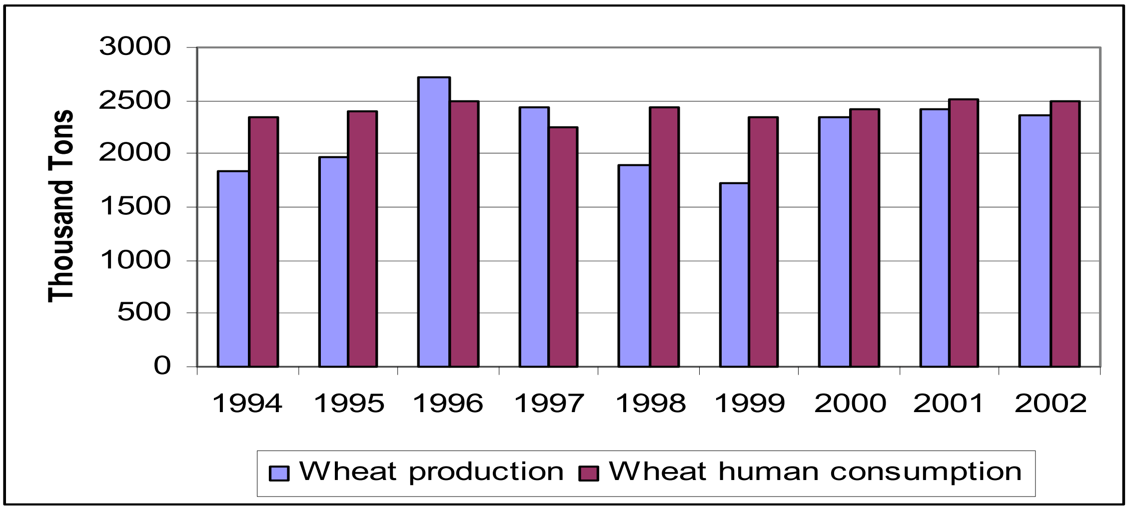

Figure 3.1: Wheat production and consumption between 1994 and 2002
Source: Abstract of Agricultural Statistics, 2003.

The demand for wheat as a staple crop is largely determined by the size, composition, distribution and market behaviour of the population. The composition of the population and the variety of its needs have a major impact on the consumption of the product. A large section of the population of South Africa is poor, and is urbanising at a rapid rate. Urbanisation causes consumers to require more ready-to-eat food. Bread is such a product and as staple food, it is a substitute for maize-meal. Wheaten flour and meal consumption by the processors at provincial levels indicate the effects of demographics. For instance, although Gauteng is smaller than the other provinces in terms of surface area, it has the largest flour and wheaten meal consumption, which correlates strongly with its high population density.

3.2 Market structure

Figure 3.2 illustrates the structure of the wheat-to-flour and bread supply chain.

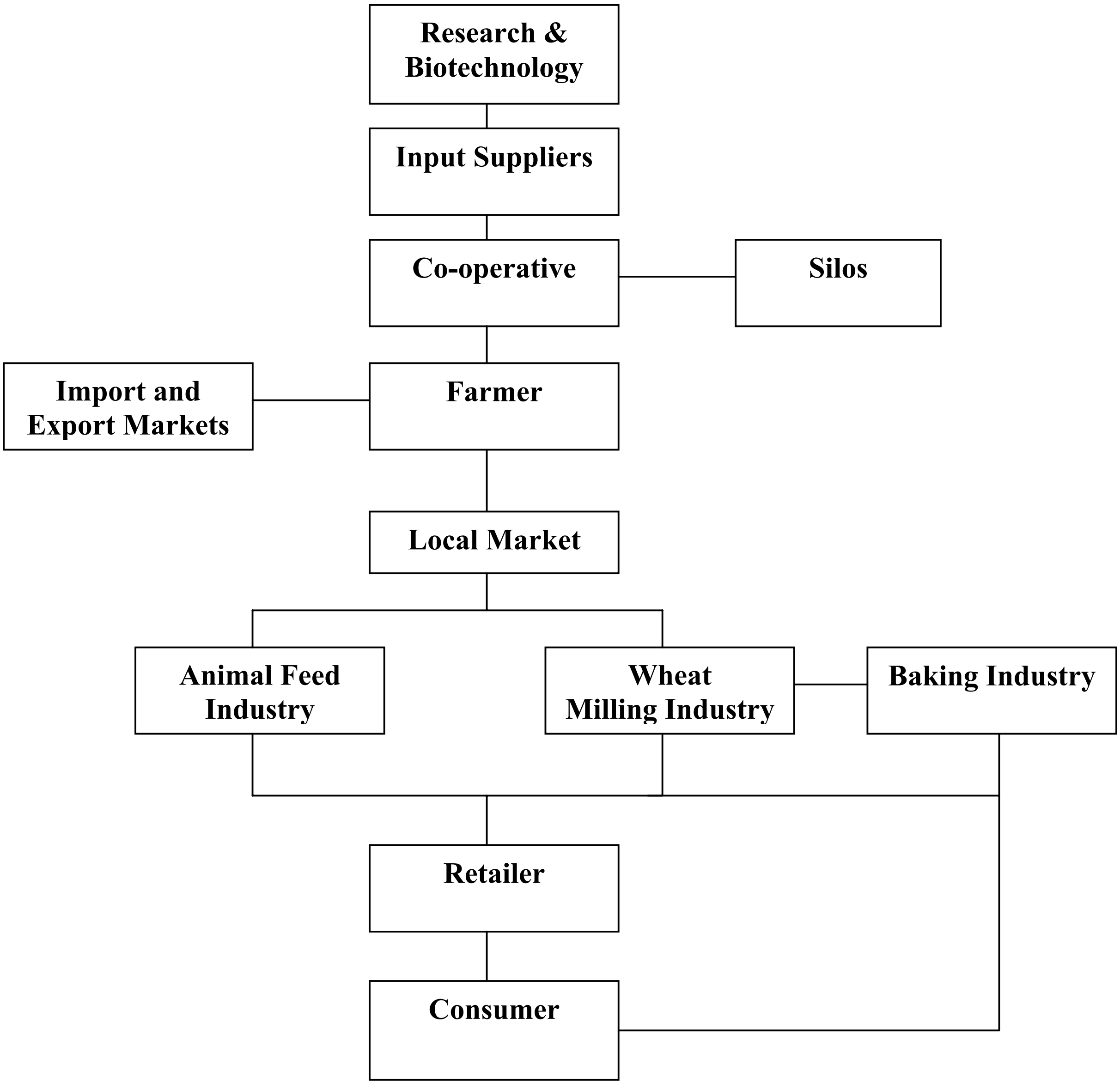

Figure 3.2: The wheat industry structure (Value chain)
Source: Adopted from a report completed for the Competition Commission

3.2.1 Primary Industry

Farmers
The number of commercial farmers involved in wheat production in South Africa ranges currently between 5000 and 6000. The eastern Free State and Western Cape are the main wheat production areas. Deregulation has caused some shifts in production areas. The Western Cape, although a fairly stable production area, is far away from markets, a factor that increases transport costs. The Free State is closer to the major markets but production is more erratic because it is a summer rainfall region

in which a larger variety of crops can be planted. It should also be noted that more and more wheat is grown under irrigation.

3.2.2 Secondary Industry

The secondary industry consists of the wheat milling and baking industries. The animal feed sector does not play a major role in the demand for wheat as only poorer quality wheat that is unsuitable for baking goes to this sector.

Market structure and concentration in the milling industry

After many years of single channel marketing, the grain industry exhibits a large degree of concentration, the result of rationalization and improved capacity utilisation as well as the restrictive registration of millers and bakers during the period of controlled marketing. With the entry into market of small millers deregulation competition within the milling industry has grown. This, in turn, has increased costs as capacity utilization within the industry has decreased from 92% to 78%. The number of large industrial millers declined from 6 in 1996/97 to 4 in 1998/99, with the number of milling units declining from 137 to 109 in the same periods. Currently, the four main milling companies are Genfoods, Pioneer, Tiger and Ruto. Their approximate market shares are 30% for Genfoods, 27% for Pioneer, 20% for Tiger and 10% for Ruto. The remaining 13% of the market share is attributable to the small millers. Aside from increased competition, deregulation has also increased a procurement risk and has forced the milling divisions into a more important role, since price risk management strategies needed to be implemented to minimise the risk.

Most of the major millers have vertically integrated with the plant bakeries. The milling of wheat is a more expensive process than that of maize. Because of the minimum tonnage specified on SAFEX contracts, small-scale millers might find the financing needed to purchase raw material a problem. In addition, imports might also be difficult to finance and small-scale millers might lack bargaining power. Due to the high costs involved in milling wheat, small millers find vertical integration with bakeries too difficult, as it might be impossible to compete with large-scale millers in controlling procurement costs and economies of scale.

In theory, if mills run at full capacity South African mills should, generally, be able to take advantage of economies of scale. This is however not happening, as South African mills do not use their full capacity. Another difficulty is that South African mills will have to compete with subsidised products being imported from the US and EU.

Milled wheat

The milling industry converts wheat to flour for various baking purposes. The main products are cake flour, brown bread flour and white bread flour. Cake flour and white bread flour constitute approximately 70% of the total sales.

As can be seen from figure 3.3, very little growth in the sale of flour has occurred over the past 8 years. On average imported wheat constitutes 23% of the wheat milled for human consumption (SAGIS 2003). Sales to plant bakeries that are linked to mills have also gone down since gradually more chain stores and other retailers have opened their own in-house bakeries.

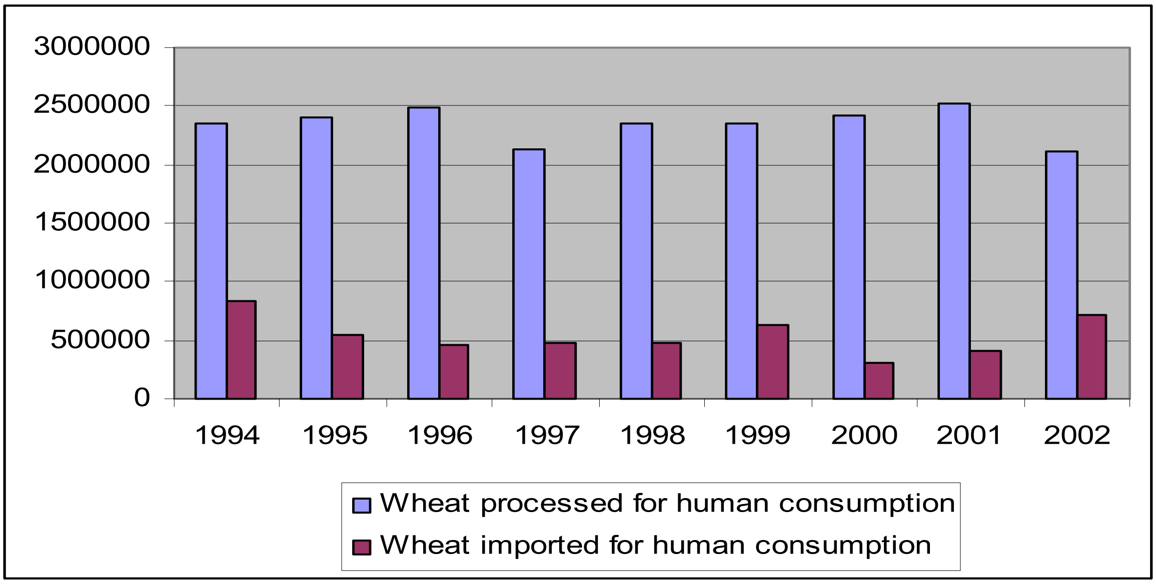

Figure 3.3: Wheat imported for human consumption, and wheat processed for human consumption (tons)

The baking industry market structure and concentration

The baking industry is the major client of the milling industry. According to the South African Chamber of Baking, bakers can be defined as: wholesale bakers who operate industrial bakeries, independent bakers who operate stand-alone bakeries, retail bakers who operate in-store bakeries, and emerging bakers originating from previously disadvantaged groups using less than 1000 kg of flour per week.

Clearly, deregulation also had an impact on the baking industry, with the main effect being an explosion of the number of bakeries. At time of deregulation, approximately 3000 bakers were registered with the Wheat Board with approximately 80% of the bread production in the hands of 6 large baking groups. Currently, the number of baking units is estimated at 7900, of these 85 are wholesale bakeries, 600 are in-store corporate bakeries, 3700 are independent bakers, and 3500 are franchise bakers (this includes franchise in-store bakeries, biscuit, pie and pizza outlets). The main growth in the number of bakeries arose from the franchise in-store bakeries. It is estimated that 53,200 informal bakers operate in non-licensed premises (note: this includes people baking for home industries and cake decorators).

According to the National Chamber of Milling, bread flour sales decreased by 3% for the period 1990-92 to 1999-2001, while in the same period the cake flour sales increased by 87%, the increase of which was caused by the rapid growth of baking outlets. This is an interesting phenomenon, particularly when it has also been noted that the sale of white and brown bread loaves grew by 5.2% and 25%, respectively. The main reason for this is the decrease in the statutory bread mass from 800g to 700g per loaf.

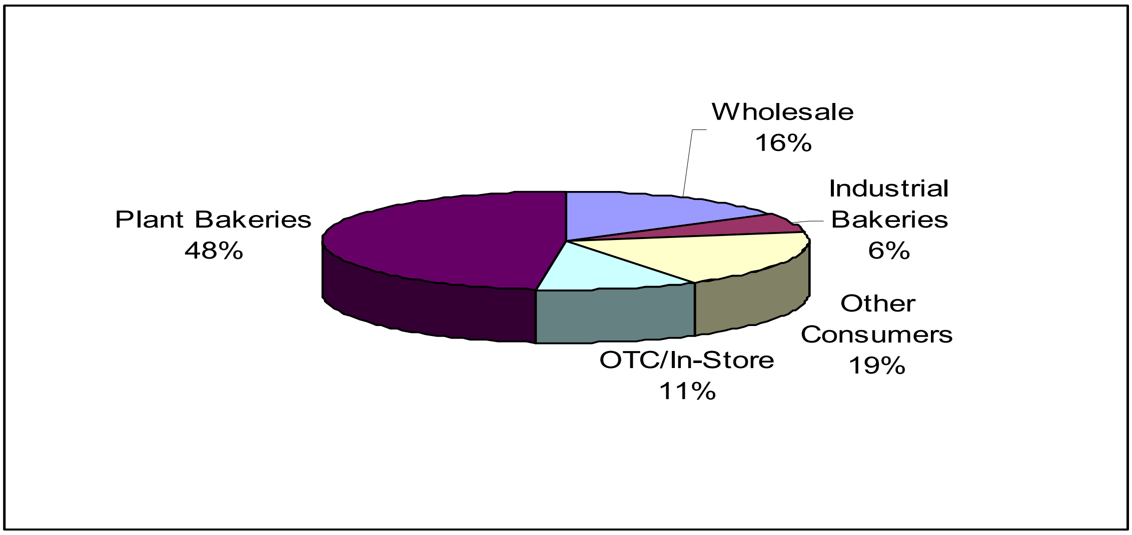

Figure 3.4: Domestic share of flour consumption by baker category, 1995/96
Source: BTT 1999

3.3 Price formation at various levels in the supply chain

Similarly to maize, the South African market for wheat and wheat products was until recently, controlled in a single channel system, with producer and consumer prices set by Government. In those days, there were no price risks and there was no need for traders. These days, the producer price of wheat is determined in a way similar to that of maize through the SAFEX futures market, as discussed in Chapter 1.

3.4 Unpacking the wheat-to-bread value chain

A sound understanding of the dynamic functioning of the wheat-to-bread supply chain requires the unpacking of the supply chain into five main levels through which value adding occurs. The five main levels are the farmers, the millers, the bakers, the retailers, and the consumers.

3.4.1 The methodology, the definitions and the results

The different prices in the five main levels in the value chain are: the average producer price that the farmer receives as reported by SAFEX; the mill door price; the bakers' wholesale price; and the consumer price as reported in the AC Nielsen database. As previously stated, the number of role players in the milling and baking industry has expanded, although the industrial large-scale millers and bakers still have the largest portion of the market share in the production and sales of bread. It is for this reason that calculations of the mill door and bakers wholesale prices are based on information supplied by both the Chamber of Milling and the South African Chamber of Baking. The information supplied to the Committee included costs of production and distribution. As with the maize-to-maize meal supply chain, certain assumptions needed to be made. These assumptions were:

- The producer price (also know as the farm gate price) is derived from the SAFEX spot price minus the average transport differential and the handling costs. This will be considered as the price between the farmer and the miller.
- The transport costs from the farm gate to the silo are calculated as the average SAFEX transport differential to all the major maize silos.
- The handling costs are based on responses from millers re their estimated average handling costs and the storage day tariffs per tonne.
- It is assumed that the millers are closer to the silos than the farmers.
- The calculation of the income from the sales of bran is based on calculations provided by the Chamber of Milling re realizations from various extraction rates. The price of bran is 90% of the price of chop which is calculated as follows:
  - =[0.99ton-(extraction rate*0.99ton)+(screenings of 0.1ton)] * [0.7*yellow maize price]
  - =[amount of chop per tonne] * [price of chop]
- There is a 4-month time lag between the monthly average SAFEX spot price and the average monthly retail price.
- Specific mill site costs are only available on an annual basis. Therefore, the monthly mill site costs are kept constant for every year. These costs run from July to June.
- Baking costs are also annual but run from January to December.
- The cost of bread flour between the milling and baking divisions can be neglected, as this is an internal transfer within the group and not determined by market forces. Thus, to determine the cost of production of bread there is no separate margin for the milling and baking divisions.
- The Committee has no information on the retailers' costs for selling bread.

Similarly to maize, statistical tests showed that the level of correlation between the producer price and the consumer price is highest when the producer price is lagged by four months. This implies that it takes four months from the time when the miller buys the wheat until the loaf of bread appears on the shelf of the retailer. The introduction of lagged producer prices in these calculations would have a marked influence on the outcome of the supply chain analysis. It was decided, therefore, to discuss this important issue with a number of role players in the market. Through these discussions, it was determined that a four-month hedging strategy is in fact common practice among the major milling companies. Although some of the smaller mills indicated that they make use of shorter hedging strategies, it was, nevertheless, decided to make use of the four-month lagged producer prices in the analysis.

The extraction rates between brown and white bread differ and, therefore, separate supply chains were calculated. The extraction rate from 1 tonne of wheat is 0.81 tonnes of brown bread flour or 0.76 tonnes of white bread flour. Similarly, 1 tonne of brown bread flour can produce 2275 loaves of brown bread while 1 tonne of white bread flour produces 2135 loaves (standard 700g loaves). Thus from 1 tonne of wheat, 1842 loaves of brown bread or 1622 loaves of white bread can be produced.

Table 3.1 shows the average wheat–to-brown-bread supply chain for the period February 2000 to December 2002. Table 3.2 shows the average wheat–to- white-bread supply chain for the same period. The average wheat producer price is calculated by taking the SAFEX price and subtracting the farmers' transport to the silo, as well as the handling and storage costs. This is the price that farmers actually get for their wheat. The mill door price, or the cost to the millers of actually getting the wheat to the mill is calculated in a similar way. It is the SAFEX price plus transport, handling and storage costs from the silo to the mill, less the income from bran. From the mill door price it is possible to calculate the cost of milling which in this case is on average R633/ton. Adding the cost of milling to the cost of wheat and dividing this by the extraction rate of brown bread flour, the cost of producing 1 tonne of brown bread flour is on average R2525.73. The cost of baking includes the cost of flour (47%), packaging (4%), other raw materials (11%), production labour (9%), distribution costs (19%), and overheads (9%). Overall, the cost of producing one loaf of brown bread is on average 234.64 c/loaf. The average retail price for the period is 283.76 c/loaf, thus the average profit margin for the period was 49.12 c/loaf. The profit of 49.12 c/loaf is divided amongst the miller, the baker and the retailer. Because the Committee does not have information regarding the price for which bread flour is sold to the baker and the price for which bread is sold to the retailer, it is not possible to establish the respective shares in this profit.

Table 3.1: Average wheat to brown bread supply chain for the period February 2000 to December 2002

	Source	Units	
1. Wheat avg. producer price lagged 4 months	calculated	R/ton	**1356.43**
1a)Transport cost: Farm gate to silo	estimated	R/ton	96.57
1b) Handling & storage cost: Costs of farmer	estimated	R/ton	16.40
2. Wheat avg. nearby contract lagged 4 months	SAFEX	R/ton	1469.40
2a)Transport cost: Silo to Mill door	estimated	R/ton	76.57
2b) Handling & storage cost: Costs of miller	estimated	R/ton	20.40
Income from sales of bran	calculated (no lag)	R/ton bran	154.16
3. **Mill door price (1+ 1a + 1b +...)**	calculated	R/ton grain	**1412.21**
Wheat millers cost: conversion from wheat to wheat flour			
Production cost (milling cost)	NAMM	R/ton grain	86.83
Packing cost	NAMM	R/ton grain	13.66
Administration, Warehouse and selling	NAMM	R/ton grain	148.60
4. **Mill site costs**		R/ton grain	249.10
Distribution costs	NAMM	R/ton grain	126.10
Total mill site costs	NAMM	R/ton grain	375.20
Fixed Capital cost	NAMM	R/ton grain	54.82
Floating Capital costs	NAMM	R/ton grain	203.61
Total Millers Costs	Calculated	R/ton grain	633.63
5. Cost of production of wheat flour for brown bread			
Conversion cost	Calculated	R/ton grain	633.63
Average cost of wheat (Mill door price)	Calculated	R/ton grain	1412.21
Total wheat flour cost for brown bread	calculated	R/ton grain	2045.84
Average extraction rate for brown bread flour	NAMM		0.81
6. Brown bread bakers cost of production			
Average cost of brown bread flour	calculated	R/ton meal	2525.73
Extraction rate of brown bread from 1 ton flour	SACB	loaves/ton	2275.00
Cost of flour per loaf	calculated	c/loaf	111.02
Packaging	SACB	c/loaf	10.30
Other Raw Materials	SACB	c/loaf	26.74
Production Labour	SACB	c/loaf	21.59
Distribution	SACB	c/loaf	44.84
Overheads	SACB	c/loaf	20.14
7. Cost of producing brown bread	calculated	c/loaf	**234.64**
8. Brown bread retail price	AC Nielsen	c/loaf	**283.76**
Brown bread profit margin from miller to retailer			49.12

Table 3.2: Average wheat-to-white-bread supply chain for the period February 2000 to December 2002.

	Source	Units	

1. Wheat avg. producer price lagged 4 months	**Calculated**	R/ton	**1356.43**
1a)Transport cost: Farm gate to silo	Estimated	R/ton	96.57
1b) Handling & storage cost: Costs of farmer	Estimated	R/ton	16.40
2. Wheat avg. nearby contract lagged 4 months	SAFEX	R/ton	1469.40
2a)Transport cost: Silo to Mill door	Estimated	R/ton	76.57
2b) Handling & storage cost: Costs of miller	Estimated	R/ton	20.40
Income from sales of bran	Calculated (no lag)	R/ton bran	176.83
3. Mill door price (1+ 1a + 1b +...)	Calculated	R/ton grain	1389.54
Wheat millers cost of conversion from wheat to wheat flour			
Production cost (milling cost)	NAMM	R/ton grain	86.83
Packing cost	NAMM	R/ton grain	13.66
Administration, Warehouse and selling	NAMM	R/ton grain	148.60
4. Mill site costs		R/ton grain	249.10
Distribution costs	NAMM	R/ton grain	126.10
Total mill site costs	NAMM	R/ton grain	375.20
Fixed Capital cost	NAMM	R/ton grain	54.82
Floating Capital costs	NAMM	R/ton grain	203.61
Total millers costs		R/ton grain	633.63
5. Cost of production of wheat flour for white bread			
Conversion cost	Calculated	R/ton grain	633.63
Average cost of wheat (mill door price)	Calculated	R/ton grain	1389.54
Total wheat flour cost for white bread	Calculated	R/ton grain	2023.17
divided by average extraction for white bread	NAMM		0.76
6. White bread bakers cost of production			
Average cost of white bread flour	Calculated	R/ton meal	2662.07
Extraction rate of brown bread from 1 ton flour	SACB	loaves/ton	2135.00
Cost of flour per loaf	Calculated	c/loaf	124.69
Packaging	SACB	c/loaf	10.30
Other Raw Materials	SACB	c/loaf	26.74
Production Labour	SACB	c/loaf	21.59
Distribution	SACB	c/loaf	44.84
Overheads	SACB	c/loaf	20.14
7. Cost of producing white bread	Calculated	c/loaf	248.30
8. White bread retail price	AC Nielsen	c/loaf	327.84
White bread profit margin from miller to retailer	Calculated	c/loaf	79.54

The calculations performed above were duplicated for white bread production, the main differences being the extraction rates. Due to the different extraction rate the cost of producing a loaf of white bread is on average 248.17 c/loaf, 13.66 c/loaf more than the cost of producing brown bread. The average retail price of white bread is 327.84 c/loaf, thus the profit margin for the miller, baker and retailer combined is 79.54 c/loaf, 32.42 cents more per loaf compared to a loaf of brown bread. Although this may seem high the reader is reminded that VAT is paid on white bread and not on brown bread. Thus if VAT is removed from the average retail price of white bread the profit margin is 39.27 cents per loaf, 9.85 c/loaf less than the profit on brown bread.

The higher cost of producing white bread is mainly attributable to the different extraction rate.

3.4.2 Trends in margins and spreads

Although it is not possible at this time to differentiate the various profit margins within the supply chain, it is possible to look at how the profit margin has changed over time. Figure 3.5 shows how the profit margin on brown bread (based on the calculations above) has changed between February 2000 and December 2002 (data not available for 2003). On the graph a line was drawn indicating the average profit margin for the period Feb 00-Feb02. February 2002 was chosen because it is here (with the 4 month time lag) that the SAFEX wheat prices increased rapidly. The average profit margin for the period was 43.60 c/loaf. As can be seen in the figure the profit margin increased to a maximum value of 88.47 c/loaf, a 102.9% increase in profit margin.

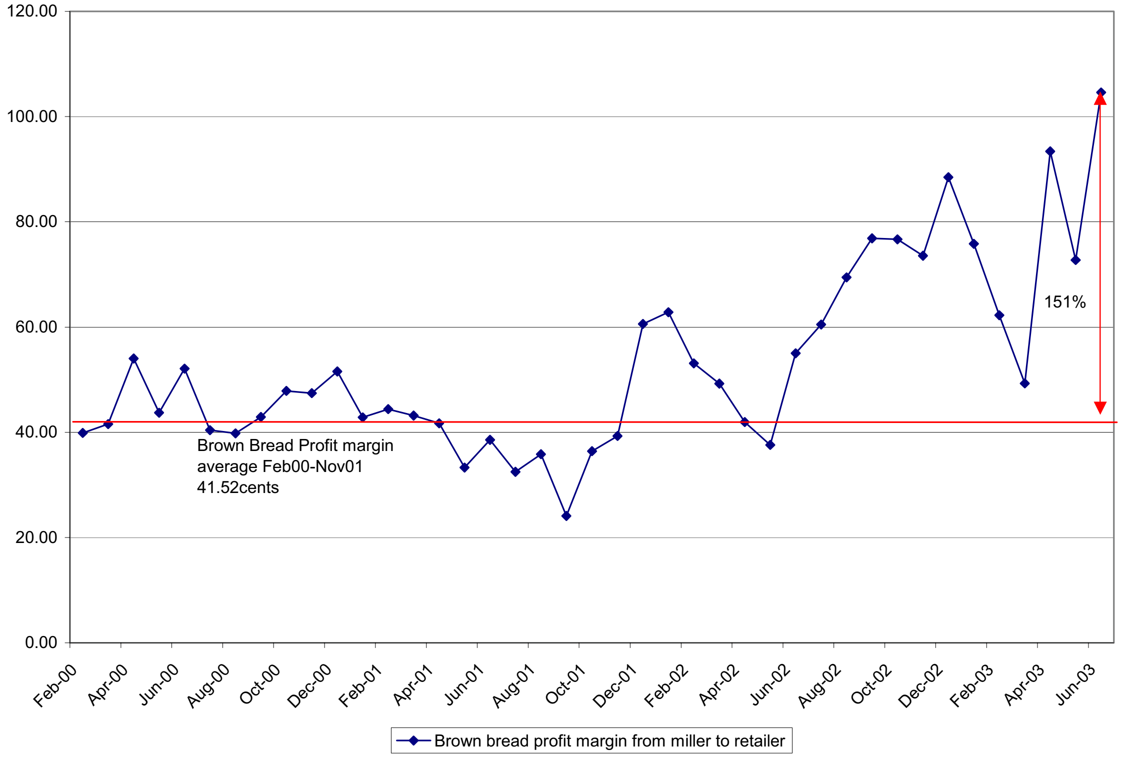

Figure 3.5: Brown bread profit margin from miller to retailer: Feb 2000-June 2003

Similarly to brown bread, the calculation was done for white bread with the results presented in figure 3.6 below.

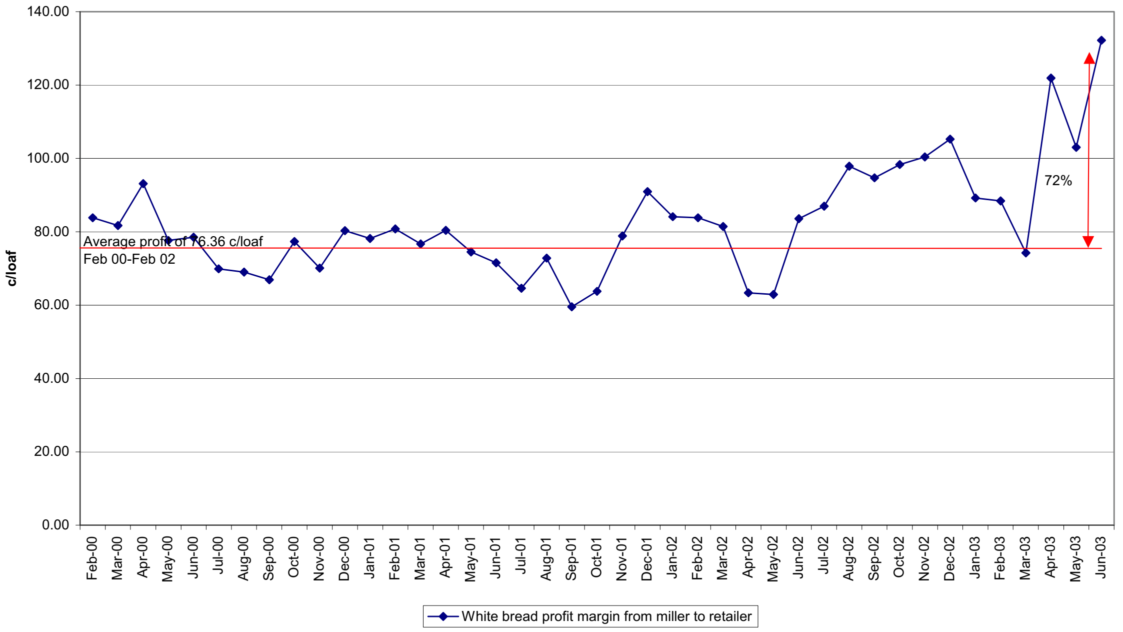

Figure 3.6: White Bread profit margin from miller to retailer: Feb 2000-June 2003

Figures 3.5 and 3.6 clearly indicate that the profit margins for both brown bread and white bread have increased, with the profit margin on brown bread increasing at a faster rate. Figure 3.7 (below) shows how the profit on brown bread as a share of the costs has increased over time.

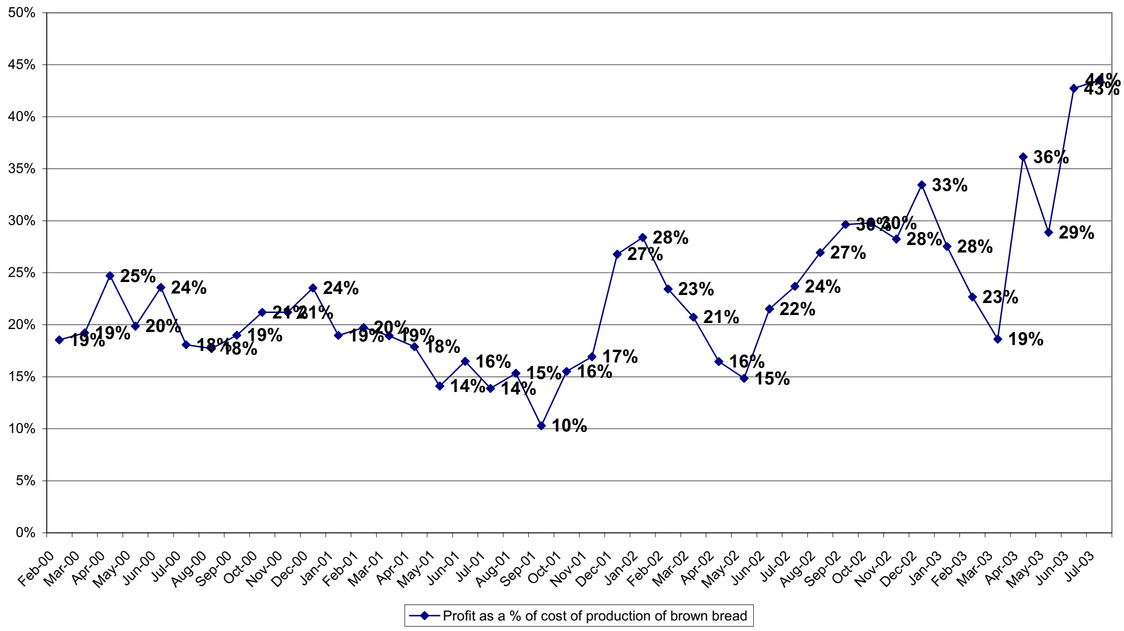

Figure 3.7: Profit on brown bread as % of production costs

Generally speaking, the main reasons for increases in profit margins are when increases in the output prices or decreases in the costs occur. The milling and baking costs for white and brown bread are the same. Figures 3.8 and 3.9 give an indication of how these have changed over the past three years.

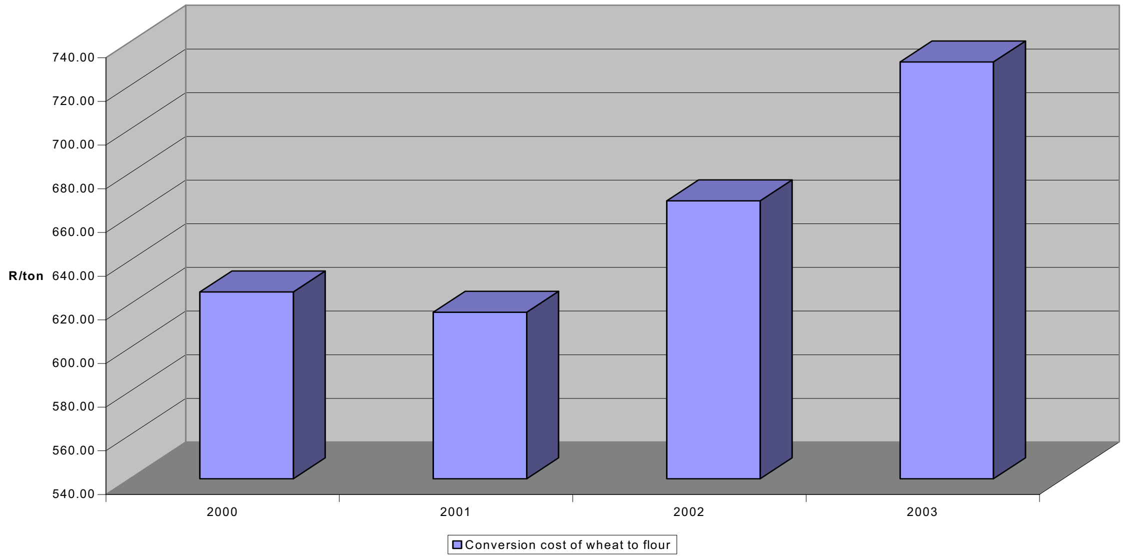

Figure 3.8: Conversion costs of wheat to flour 2000 - 2003

The conversion costs of wheat to flour have increased mainly due to increases in the cost of floating and fixed costs.

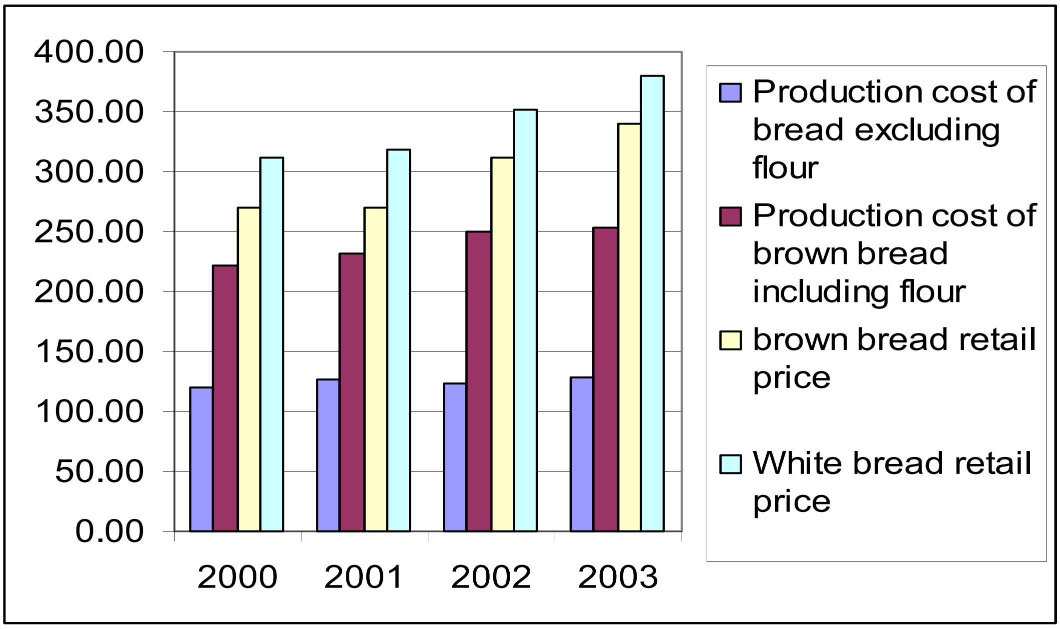

Figure 3.9: Bread production costs and bread prices in comparison

The bread production costs - not including flour - increased in 2001 mainly due to a growing cost of packaging, other raw materials and overheads. In 2002 costs decreased slightly but did not return to the previous 2000 levels as overhead costs together with other costs continued to increase.

The milling and baking processes for white and brown bread are the same, the only differences in costs being that of wheat due to the different extraction rates. Because of the different extraction rates it costs less to produce a loaf of brown bread than it does to produce a loaf of white bread. The difference is approximately 13.66 c/loaf. Based on the fact that it is cheaper to produce a loaf of brown bread than white, and that no VAT is paid on brown bread, it is expected that brown bread is cheaper for the consumer than white bread. This is in fact the case. Because of the VAT issue, it is expected that the difference in price would be at least 14%. Figure 3.10 shows the percentage difference in retail price between white and brown bread for the period February 2000 to October 2003.

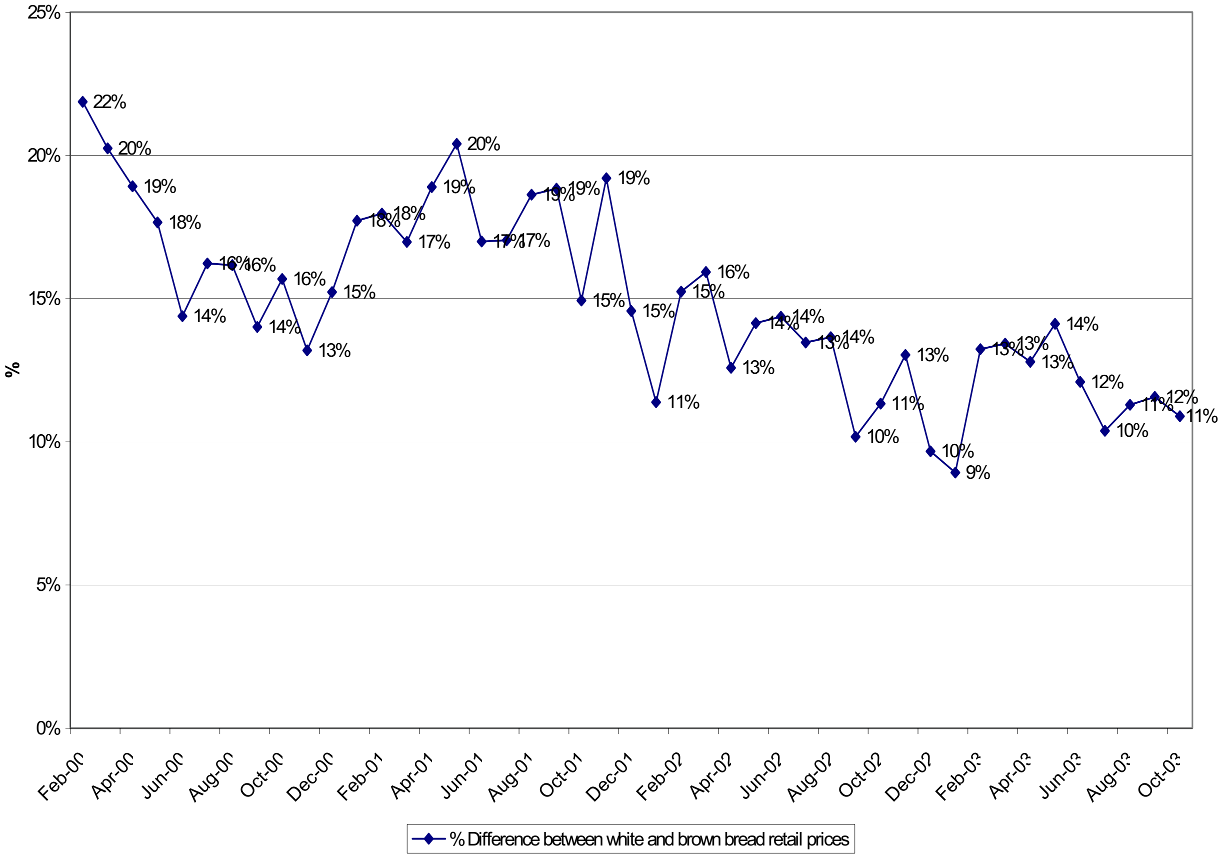

Figure 3.10: The percentage difference between brown and white bread retail prices

The figure indicates that the "gap" between the two retail prices is getting smaller. The percentage difference in retail prices in February 2000 was 22% but in July 2003 only 10%. The first time the price difference went below 14% was in November 2000, then again in January 2002 and again in April 2002, after which it consistently remained below 14%. Thus, the two prices are converging below the 14% VAT difference. The retail price of brown bread (although cheaper to produce and not carrying VAT) appears to get closer to the more expensive white bread. One explanation for this can be derived from what was stated previously, namely that the profit margin on brown bread has increased at a much faster rate than that of white bread. Could it be that someone in the supply chain is pushing up the price of brown bread faster than that of white bread in the hope that the consumer will not notice because the goods are so similar?

3.5 Summary

Although it is not possible to establish the profit margins at the various stages of the supply chain, it is clear that the profit shared from miller to retailer has increased over the past three years. This largely explained by the continuous increase in retail prices. Considering various confidential pieces of information, it is possible that a large share of the miller to retail margin goes to the retailer. Previous estimates by the National Agricultural Marketing Council show that retailers take a 20% margin on bread sales.

It is also clear that the margin on brown bread has increased faster than that of white bread. This is borne out by the fact that the differences between white and brown bread retail prices are moving closer together. The difference between the two bread prices should be at least 14% due to the VAT exemption on brown bread. This, however, has not been the case for most of 2003, and the consumer has thus not fully benefited from this exemption from VAT. Of the role players in the wheat-to-bread supply chain, the only players that can alter the price of the final product are the bakers and the retailers.

CHAPTER 4

THE VALUE CHAIN FOR RED MEAT

4.1 Introduction

In South Africa, stock farming is the only viable agricultural activity in a large part of the country. Of the 122.3 million hectares of land surface of South Africa, 68.61% is suitable for raising livestock, particularly cattle, sheep and goats.

The red meat industry evolved from a highly regulated environment to one that is totally deregulated today. Various policies, such as the distinction between controlled and uncontrolled areas, compulsory levies payable by producers, restrictions on the establishment of abattoirs, the compulsory auctioning of carcasses according to grade and mass in controlled areas, the supply control via permits and quotas, the setting of floor prices, removal scheme, etc., characterised the red meat industry before deregulation commenced in the early 1990s (Jooste, 1996). Since the deregulation of the agricultural marketing dispensation in 1997, the prices in the red meat industry are determined by demand and supply forces.

Also, the meat industry experienced dramatic price increases during 2002. In this Chapter, the focus is on the beef sub-sector to determine whether these price hikes were due to normal market forces, to exchange rate fluctuations, or to some other forces not characteristic of a totally deregulated industry.

In order to source the data required for the analysis of margins and the food-to-retail price spreads, interviews were conducted with all major role players in the beef industry, i.e. the South African Feedlot Association, the Red Meat Abattoir Association, the Red Meat Producers Organisation, and retailers.

Information regarding enterprise budgets was sourced from the Provincial Departments of Agriculture, different co-operatives and selected feedlots.

The information sourced was used to describe the beef cost chain from farm level to retail level. In addition, those factors that might have had an influence on the different cost components were to be investigated with the aim of gaining a better understanding of those factors that have an influence on the profit levels of the different role players in the supply chain.

4.2 Structure of the red meat industry

Figure 4.1 shows the structure of the red meat supply chain. Important developments in recent years in the beef industry are the following:

∉# The beef supply chain has become increasingly vertically integrated. This integration is mainly fuelled by the feedlot industry where most of the large feedlots own their own abattoirs, or at least have some business interest in certain abattoirs (This issue will be discussed in more detail in a subsequent section). In addition, some feedlots have integrated further down the value chain and sell directly to consumers through their own retail outlets. Some abattoirs have also started to integrate vertically towards the wholesale level.

- Under the previous marketing regime, wholesalers mostly bought carcasses through the auction system. Currently, many wholesalers source live slaughter animals (not weaners) directly from farmers or feedlots on a bid and offer basis, i.e. they take ownership of the animal before the animal is slaughtered. The animal is then slaughtered at an abattoir of the wholesaler's choice, where after the carcass is distributed to retailers. In some instances, the public can also buy carcasses directly from wholesalers.

- The abattoir industry has expanded tremendously in number and in capacity. In this regard, it is important to note that this industry can be divided into those abattoirs that (i) are linked to the feedlot sector and the wholesale sector, or are owned by municipalities and (ii) those that are mainly owned by farmers and SMME's. The former abattoirs are mainly class A and B abattoirs, whereas the latter are usually classified as C, D and E class abattoirs. According to Davidson (2003) the A and B class abattoirs, in most cases, comply with all statutory measures, whilst it is questionable whether this is the case for the majority of C, D and E class abattoirs. This, obviously, has a cost implication, which affects profit taking at abattoir level. This issue, however, is not the subject of this Chapter and will, therefore, not be discussed in further detail.

4.2.1 Number of primary producers and concentration

It is estimated that there are approximately 20,000 to 25,000 commercial farmers currently farming with livestock (Schutte, 2003). This includes producers that keep livestock as their main enterprise and those that keep livestock as a secondary enterprise. Numbers for small-scale or subsistence farmers are not available, but in the case of cattle it is estimated that between 30 and 40% of the total herd is owned by these farmers.

Due to typical production cycles, the fact that producers have to contend with extreme climatic variances and the biological nature of beef production, they are not in a position to manipulate the market in any way. Producers in the red meat industry, as is the case in any other industry, are rational decision-makers reacting to market and climate conditions.

Determining whether economies of scale are present in the red meat industry is nearly impossible since farmers usually have mixed enterprises. Nevertheless, it is generally accepted that large producers have better economies of scale than small producers do. The reason for this is that large producers have better bargaining power when it comes to the sale of animals or to the purchasing of inputs, whilst their throughput is also higher. This will, however, also depend on the production system in use, e.g. the weaner production system vs. the slaughter steer production system[1].

[1] A producer using weaner systems is focused on selling offspring at weaning age to mainly feedlots. Producers using oxen systems raise their cattle on the farm until they are ready to be marked for the consumer market.

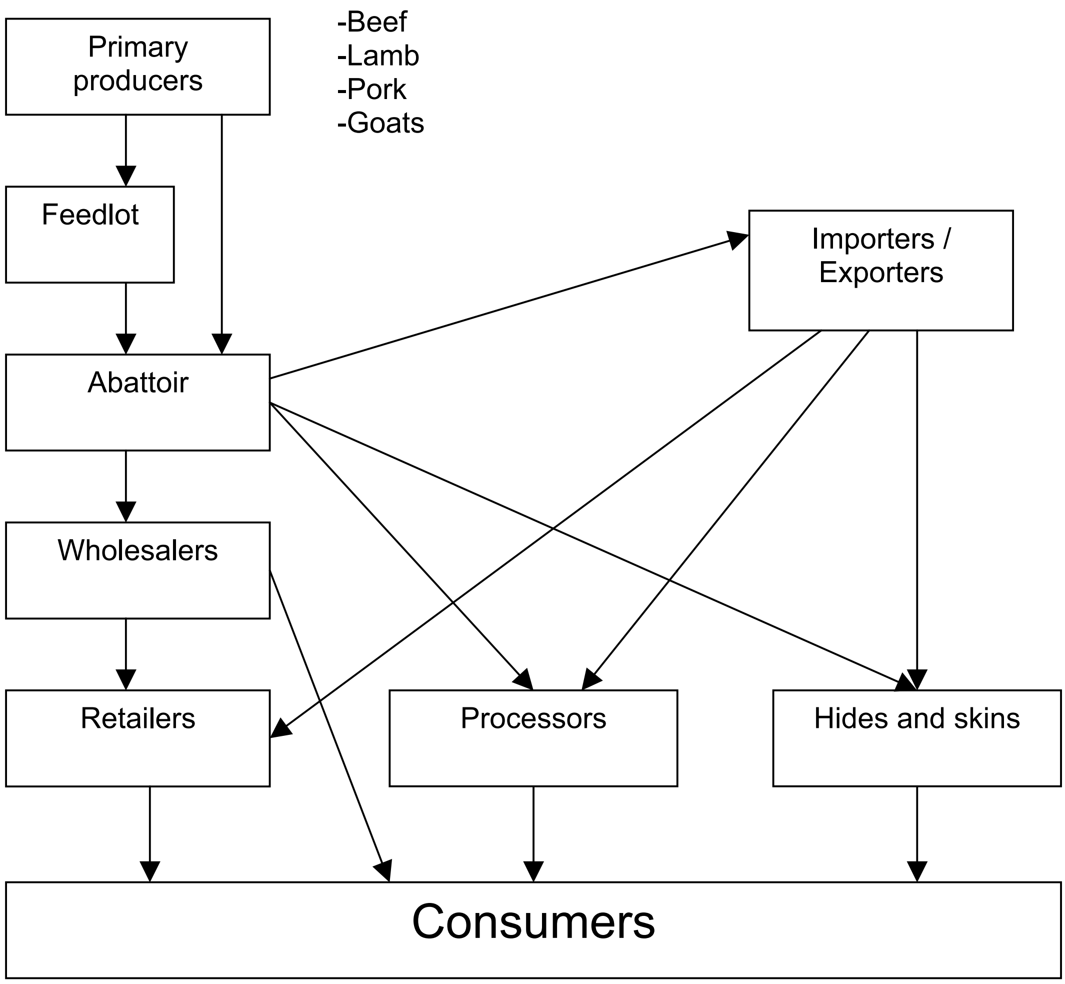

Figure 4.1: The red meat industry structure (Value chain)
Source: Adopted from SAFA, 2003.

4.2.2 Feedlots

The feedlot industry produces approximately 70 to 80% of beef in the formal sector in South Africa. At any point in time, it is estimated that this sub-sector has a standing capacity of 420,000 heads of cattle. This entails that this industry has a potential throughput of 1,512 million animals annually. Animals normally enter the feedlot system at a mass of between 200 and 220kg and remain in the feedlot for approximately 100 days. During the time in the feedlot, the animal adds approximately 100kg to its original weight, which realises a carcass weighing between 220 to 225 kg. The amount of beef produced annually by feedlots amounts to approximately 340,000 tonnes and the total amount of feed used by the feedlot industry annually amounts approximately 1,5 million tonnes (SAFA, 2003).

As mentioned above, the deregulation of the South African meat industry caused a number of the larger feedlots to vertically integrate into the slaughtering of their own cattle, and into wholesaling. A few even branched out into retailing their own branded quality beef products.

At present, there are approximately 70 feedlots in South Africa. The main players in the feedlot industry are Karan Beef, Kolosus, Sparta Beef, SIS, Beefcor, EAC, Crafcor, Chalmar Beef and Beefmaster (Ford, 2003). These feedlots account for approximately 70 to 80% of the cattle in the feedlot industry, depending on the number of animals standing in the feedlot at a specific point in time (see Table 4.1). This is between 50 and 60% of the total number of animals slaughtered annually.

Table 4.1: Main players in the feedlot industry*

Name	Location	Number of animals at any specific time
Karan Beef	Heidelberg	70 000
Kolosus/Vleissentraal	Potchefstroom Magaliesburg	40 000
EAC Group	Sasolburg Harrismith Bethlehem	35 000
Beefcor	Bronkhorstspruit	25 000
Chalmar Beef	Bapsfontein	15 000
Sparta Beef	Marquard	40 000
Beefmaster	Christiana	20 000
Crafcor	Cato Ridge	30 000
SIS	Bethal	22 000
Total		**297 000**

* *The figures represented in this table do not necessarily reflect the capacity of the respective feedlots. The figures approximate the average numbers standing at the respective feedlots at a specific point in time. It is common for these figures to show large variations, depending on market conditions.*

The feedlot industry is also characterised by farmer feeders or seasonal feeders that enter or exit the market when it suits them, usually at the end of the year when meat prices are higher. The majority of feedlots are located in the grain producing areas or where access to grain by-products is possible.

Economies of scale

The feedlot industry in South Africa is struggling to realise economies of scale. The total cost of the final carcass comprises the purchasing price of the weaner (53%), the price of feed (37.4%), overheads (5.3%), mortality and morbidity (0.5%) and marketing (3.8%) (SAFA, 2003).

One of the reasons for this state of affairs is that the feedlot industry is a biological production system supported by a relatively high degree of capital layouts[2]. For example, market-ready animals cannot be withheld from the market when prices are low. The market discriminates against both over-fat and heavy carcasses, and thus, cattle have to be slaughtered when they are ready regardless of the ruling market price. Also, in order to realise the best positive feeding margin, feedlots aim to operate at optimal capacity. Thus, when a feedlot requires feeder calves to fill the vacant pens, it has to purchase calves at the going market price even though this price may be unfavourable.

[2] Feedlots must keep animals in the feedlot for approximately 90 to 100 days, during which time they are fed intensively. This entails high initial capital cost (purchasing of weaners) and continuous capital (purchasing of feed) layouts before the feedlot realises any profit.

The location of a feedlot also influences its ability to maintain or improve economies of scale. For example, as feedlots attempt to reach standing capacity, the further afield they source animals from producers, the more they have to contend with competitors (other feedlots and private feeders). This results in higher capital outlays. The same applies to the procurement of feed, i.e. the more feed that is required, the further afield the feed must be bought, the greater the cost of procurement will be.

Cognisance should also be taken of the fact that profits are very sensitive to production and marketing inefficiencies. If an animal is classified wrongly and slaughtered, it could reduce the income from that animal by as much as R200 to R220. This is a significant amount if one considers the size of the big feedlots. It is for this reason that large amounts of money are invested in human capital to overcome inefficiencies within the feedlot industry.

Barriers to entry and exit

Any farmer, however big or small, can feed cattle intensively in a feedlot and enter the market at his/her own discretion. Establishing a feedlot as a going concern is, however, highly capital intensive, and feedlot operators are highly dependent on a proper cash flow. Commercial enterprises that have investments in fixed assets would find exit difficult, as there is no market for second-hand feedlot material. Hence, the only real avenue for exit is to sell the feedlot as a going concern.

4.2.3 Abattoirs

Official numbers of registered abattoirs at the Red Meat Abattoir Association (RMAA) are shown in Table 4.2. It is clear that only 40% of all slaughterings are performed by abattoirs that may slaughter an unlimited number of animals. Adding to this the number of Class B abattoirs means that approximately 60% of cattle are slaughtered by highly regulated abattoirs.

Table 4.2: An overview of the abattoir industry

Class	**Slaughter units***	**Number of abattoirs**	**Estimated slaughtering per Class (%)**
A	100+	33	40
B	50-100	38	20
C	15-50	38	15
D	8-15	70	15
E	< 8	162	10

* *1 cattle = 1 horse = 3 weaners = 5 pigs = 15 sheep*

** *It should also be noted that there could be at least 80 Class E abattoirs more than official statistics suggest.*

Source: RMAA, 2002.

As mentioned previously, most of the Class A and B abattoirs have some linkages with feedlots. It is estimated that 60% of the 80% of animals going through feedlots are slaughtered by vertically integrated abattoirs. Table 4.3 gives an indication of the level of vertical integration up to abattoir level.

Table 4.3: Vertical integration up to abattoir level by selected feedlots

Feedlot	Abattoir
Karan Beef	Balfour
Crafcor	Cato Ridge
SIS	Witbank
EAC	Vereeniging, Wolwehoek and Harrismith
Beefmaster	Kimberley
Sparta Beef	Welkom
Beefcor	Krugersdorp
Chalmar Beef	Bapsfontein
Kolosus	Bullbrand

Over the years, the so-called "service" abattoirs have reduced substantially (Neethling, 2003). This type of abattoir mainly provides a slaughter service to other role players that have ownership of cattle, for example, wholesalers may buy cattle directly from farmers and use 'service abattoir' of their choice to perform the slaughter service at a specified fee. Currently, only two of these abattoirs are in operation, namely in Maitland and Waterberg. This does not mean that other abattoirs no longer provide the service, but that the extent of this service has reduced substantially. It is estimated that between 5 and 10% of cattle are slaughtered on a "service" basis.

Economies of scale

Before the deregulation of the red meat market the distinction between controlled and uncontrolled areas contributed largely towards asymmetric slaughtering of animals, in favour of large contract abattoirs in the controlled areas. In other words, producers could only sell their animals in controlled areas if they were slaughtered there. The large contract abattoirs benefited very much from this. The distinction between controlled and uncontrolled areas was discontinued during the deregulation process, however, resulting in many new and smaller abattoirs in traditional beef producing areas. Thus, producers could now slaughter their animals where they saw fit, and transport the meat to previously controlled areas.

This resulted in substantial financial losses for the previously advantaged abattoirs, and caused many of them to close down, for instance, City Deep in Johannesburg. The overhead costs of the smaller abattoirs are substantially lower than those of the large contract abattoirs. This means that the former reach economies of scale in a relatively short time. Maintaining such economies of scale is also much easier, in the sense that smaller abattoirs can respond much faster to changing market conditions, particularly with respect to slaughter tariffs offered to producers.

4.3 Trends in production, consumption and trade

Beef production

Figure 4.2 shows the South African cattle herd and the number of animals slaughtered annually since 1973. The commercial cattle herd comprises approximately 65% of the total cattle herd. This means that approximately 35% of all cattle in South Africa are owned by non-commercial farmers. Sixty-eight% of the commercial herd comprises female animals, of which the majority is for meat production. The composition of the national herd is not expected to change significantly in the near future. The main feature depicted in Figure 4.2 is the cyclical trend in herd numbers. Lubbe (1990) states that the cyclical behaviour of beef supply is attributable largely to the cyclical behaviour of female slaughterings.

The main contributor to this phenomenon is climatic conditions. The Sunnyside Group (1991) estimated the correlation between national herd numbers and the three-year moving average of rainfall at 0,62.

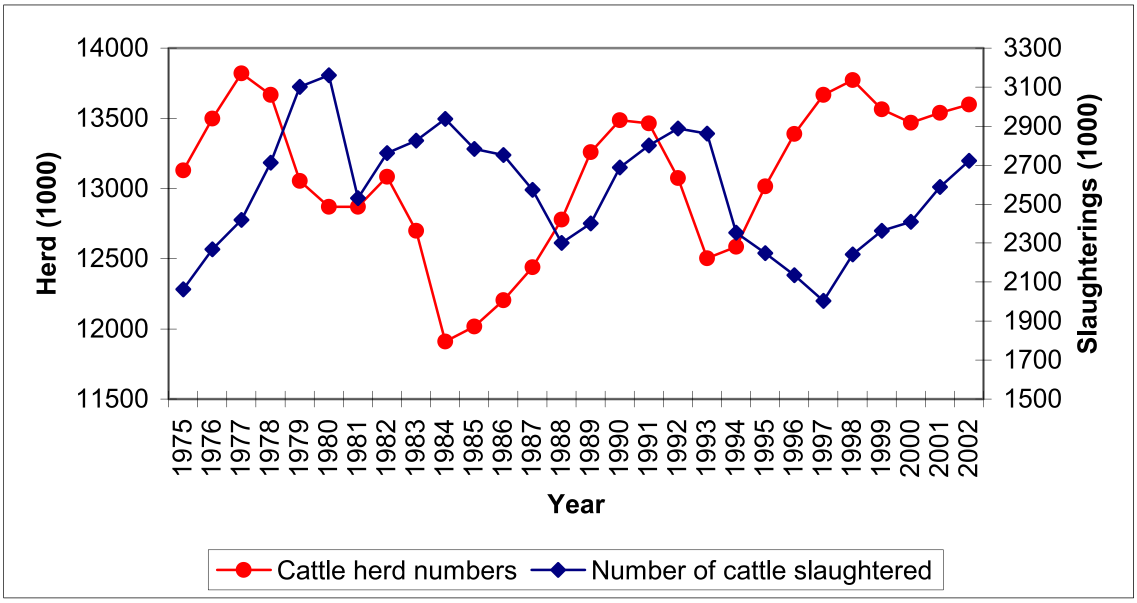

Figure 4.2: The South African cattle herd and slaughtering (1975 - 2002)
Source: AMT, 2003; NDA, 2003.

Availability of beef in the formal sector amounts to an average of 475,000 tonnes, per annum. This is based on an estimated annual slaughter of 1,95 million cattle. It is further estimated that slaughtering in the informal sector could amount to a further 20 to 25% for cattle.

Consumption

The per capita consumption of beef has been under increasing pressure since the early 1980's (See Figure 4.3). This is mainly attributed to the decrease or stagnation of the per capita disposable income, the price advantage of poultry over beef, and the influence of non-economic factors such as product consistency and quality, food safety, health and nutrition concerns, and convenience (Jooste, 2001). The per capita disposable income and beef consumption are very closely linked. This is emphasised by the fact that beef has a high income-elasticity of demand (Nieuwoudt, 1998).

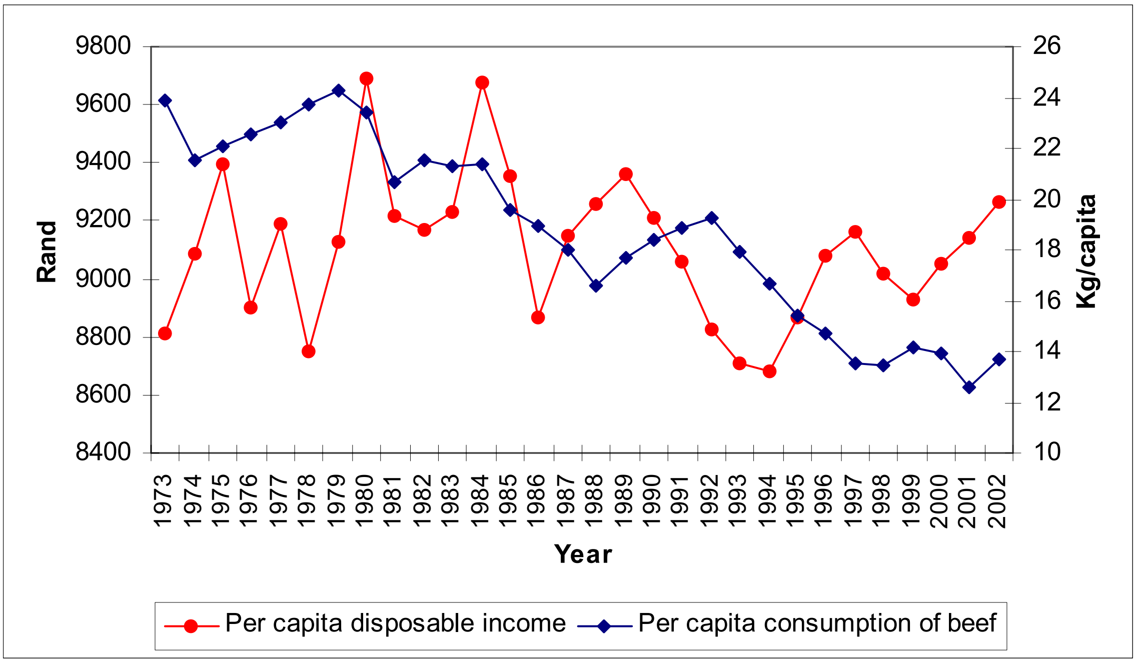

Figure 4.3: Relation between real per capita disposable income and the per capita consumption of beef (1973 - 2002)
Source: SARB, 2003; NDA, 2003; own calculations.

A review of the total expenditure shares of four animal protein sources (beef, chicken, pork and mutton) for South Africa from 1970 to 2000 has indicated that the total expenditure on beef and mutton showed the largest decrease. Total expenditure on pork decreased slightly over the last 30 years, whereas the total expenditure on chicken experienced the largest increase.

Table 4 shows the real per capita expenditure on red meats by different population groups for 1993 and 1999. The methodology used to calculate the real per capita expenditure on red meats is similar to that used by Nieuwoudt (1998). Nieuwoudt used a system of two equations to estimate rural and urban per capita expenditure per population group (see Nieuwoudt 1998 for the methodology used).

Table 4.4 shows that real per capita expenditure for beef, pork and sheep meat has declined since 1993. Beef, followed by sheep meat and then pork experienced the largest decline in per capita expenditure. In terms of the total population, per capita expenditure on beef is still the highest. Whites spend the most on beef, followed by Blacks in urban areas, but it is important to note that the real per capita expenditure by both declined considerably between 1993 and 1999. In the case of sheep meat, Asians spend the most, followed by Whites and then Coloureds. Also, note the decline in real per capita expenditure by especially Whites and Asians. Real per capita expenditure on pork is dominated by Whites, followed distantly by the other population groups. It is interesting to note the increase in the per capita expenditure of Blacks in rural areas for all three red meats. This could probably be attributed to increases in real income from a very low base.

Table 4.4: Real per capita expenditure on red meat in South Africa

Population group	Beef		Sheep meat		Pork	
	Rand per capita (1993 = base period)					
	1993	1999	1993	1999	1993	1999
Asians	179.73	115.47	396.20	280.80	17.81	25.14
Blacks (urban)	223.00	136.45	65.48	53.12	18.25	19.95
Blacks (rural)	53.57	71.85	15.73	27.97	4.38	10.51
Coloureds	203.55	105.58	158.19	144.69	33.45	29.23
Whites	540.30	325.34	303.56	245.00	139.91	120.04
Total population	187.53	127.38	91.29	77.33	29.35	27.74

Source: Jooste, 2001

Trade

South Africa is a net importer of beef. Beef imports from overseas underwent a substantial increase since 1994, averaging more than 40,000 tonnes annually up to 1998. Since 1998, beef imports have been between 15,000 and 20,000 tonnes, annually. The decline in beef imports since 1998 is probably attributed to:

- Clamping down on fraud by exporters together with a new tariff dispensation for beef.

- The advent of BSE in Europe in 1998 resulted in a ban on all exports of beef. This ban resulted in international shortages of red meat. Countries, such as Australia and New Zealand, experienced a huge increase in demand for their safe meat, resulting in price increases for these commodities. In addition, Foot and Mouth Disease broke out, not just in South Africa, but also in most countries in South America. Consequently, the imports of beef came virtually to a stop. Also, Namibia and Botswana achieved record prices in the EU for their safe beef and reduced the volumes to South Africa.

- A substantial depreciation of the Rand against the US Dollar since 1998. Figure 4.4 shows the producer price for beef and the exchange rate.

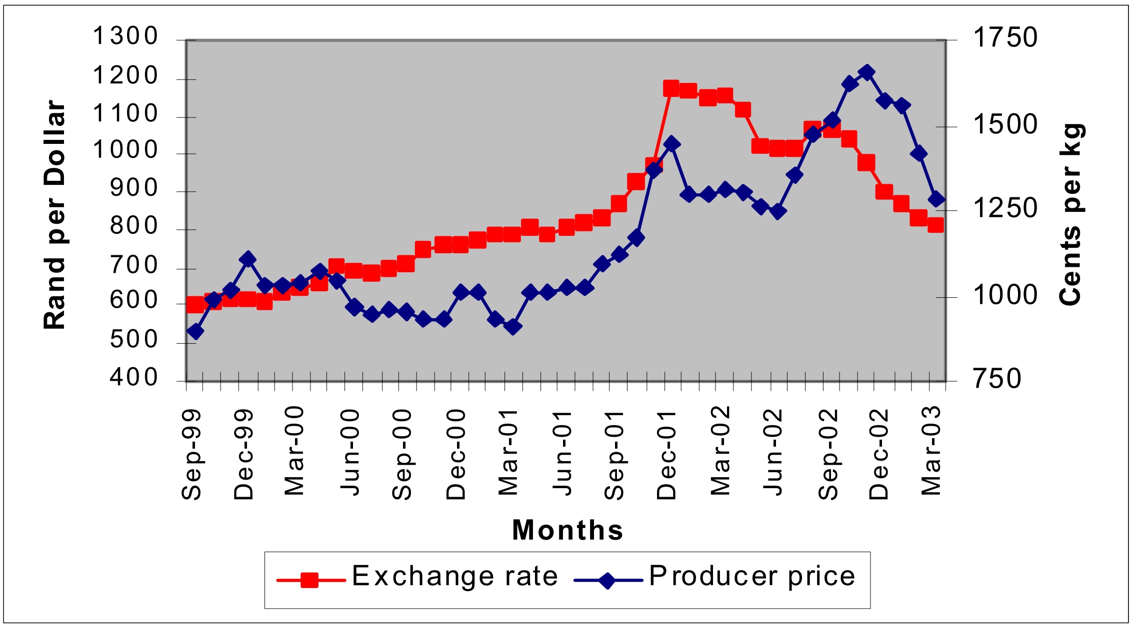

Figure 4.4: The producer price for beef and the exchange rate
Source: AMT, 2003; SARB, 2003.

It is clear from Figure 4.4 that there is a strong correlation between the producer price of beef and the exchange rate. Cognisance should be taken of the fact that prices of beef usually peak during the festive season, i.e. from November to December, after which they decline, bottom out and reach a peak again the following season. These peaks coincided largely with the peaks of the R/$ exchange rate in 2001 and 2002. This meant that imports were relatively expensive during periods of high seasonal demand because of the low value of the Rand against the US Dollar, and this further supported local beef prices.

All these factors led to imported meat either not being available, due to disease problems, or not being affordable. For example, during 2002 the total meat imports dropped to about 50 000mt compared to 144 000mt in 2001.

During October and November 2002, the OIE approved the Foot and Mouth Disease measures taken by most of the South American countries. South Africa soon followed suit, and in late December 2002, imported beef arrived in South Africa from Brazil and Argentina. More containers arrived in January and February 2003. At present, there is too much stock available and this not only has forced down the prices of local production but also the prices of imported meat. The strengthening of the Rand has also stimulated imports (Papendorf, 2003) as reflected in Figure 4.5, which shows the volatility in total imports. It is clear that volatility in imports increase substantially from the latter part of 2001 onwards.

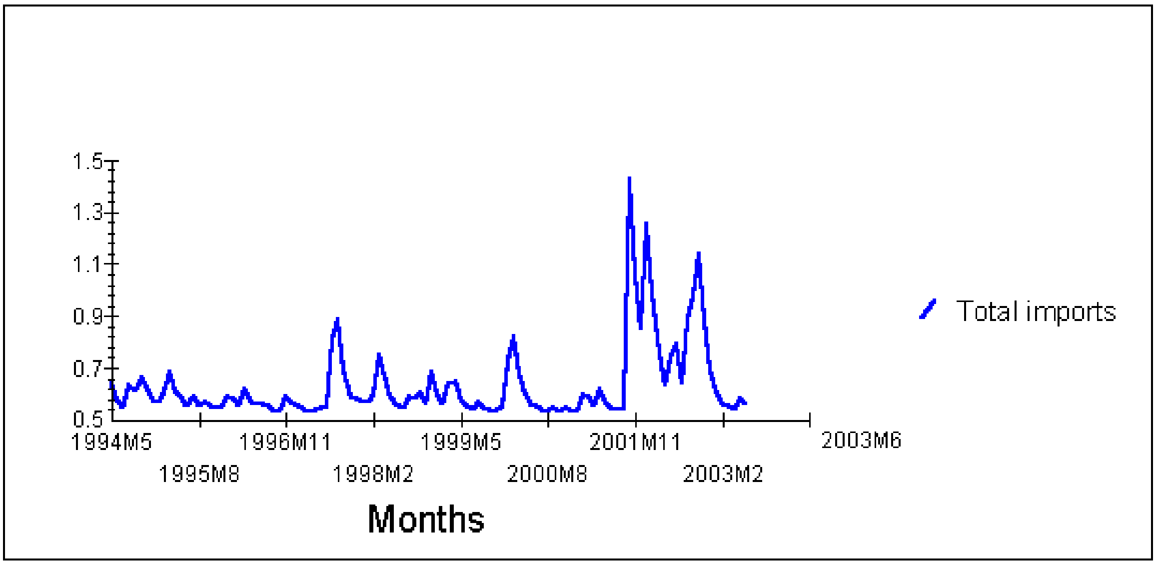

Figure 4.5: Conditional standard deviation of total beef imports (1994 – 2003)

4.4 Price trends

Producer price trends

Lubbe (1990) investigated the decomposition of the components of producer price time series in the red meat industry. He states that the combined effect of rainfall, the variation in production capacity and the price expectations produce an environment for relatively unstable prices.

Figure 4.6 shows the real and nominal beef producer prices, as well as the per capita consumption of beef. It is important to note that real producer prices and per capita consumption of beef are, too a large degree, mirror images (see the previous section for other reasons for the drop in per capita consumption). This is indicative of the sensitivity of consumers to price changes of beef. Taljaard (2003) estimated compensated and uncompensated own price elasticities for beef. The compensated[3] own price elasticity for beef was estimated at -0.16, whilst the uncompensated[4] own price elasticity for beef was estimated at -0.96. Own price elasticities are interpreted as the change in the quantity demanded due to a 1% change in the price of the product, with all other factors remaining constant. In other words, in the case of the compensated own price elasticity, it would mean that a 1% increase (decrease) in price would result in a 0.16% decrease (increase) in the quantity of beef demanded, all other factors remaining constant. The interpretation of the uncompensated own price elasticity is done in the same manner. Also important to note is that it appears that the income effect in this regard is much stronger than the price effect.

Another important feature of Figure 4.6 is the real producer price cycle that ranges between 6 to 7 years (the troughs in the real prices are associated with periods of sideways moving nominal prices). It is depicted that 2002 was in all probability the end of the last price cycle, which coincided with overall increases in prices of most agricultural products. Hence, it could be expected that real prices are to decline over the next couple of years before they increase again to reach a high in 2009.

[3] Compensated means that the own price elasticity only accounts for the effect of price changes.
[4] Uncompensated means that the own price elasticity accounts for changes in both income and prices.

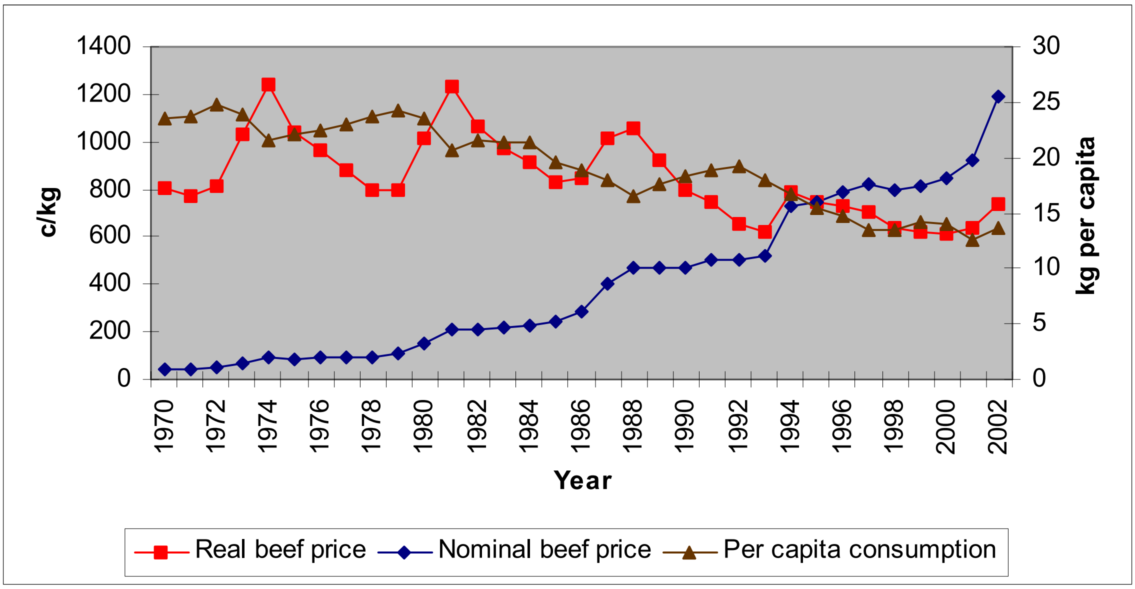

Figure 4.6: Real and nominal producer prices of beef and the per capita consumption of beef (1970 - 2002)

Source: NDA, 2003; AMT, 2003.

Consumer price trends

Meat retail prices generally remained stable throughout 2000. Prices began to increase during the second half of 2001. Depending on the meat product, prices peaked at different stages between September 2002 and January 2003. All the above meat prices appear to be decreasing and returning to new equilibrium levels. Maize is an important input in the production of beef under the feedlot system. It is for this reason that as maize prices continued to increase, the beef price had to follow. In 2002 and 2003, the beef price followed the fluctuation of the maize price, although not by the same extent, with a 1 to 2 month time lag. Since September 2002, the maize price has been decreasing with the beef price following this trend from November 2002 onwards. Both prices are still decreasing to date. If, however, prices are deflated using the average wage rate index, prices will remain more stable throughout the period.

4.5 Producer-retail price spreads

In this section, we measure the producer-retail price spread (difference between the auction price and the retail price for different cuts of beef). The various figures that follow show the estimated wholesale and retail prices for different cuts using the block test. The block test is a measure that was developed during the time of the Meat Board for wholesalers and retailers to price different cuts given a certain producer price. Table 4.5 shows the block test factors used for different cuts. The calculation involves multiplying the producer price at a given time with the respected block test factors to get an estimated wholesale and retail price, excluding VAT and profit. In order words, the block test provides an indication of what the price of different beef products should be, excluding VAT and profits. For a more comprehensive discussion on the block test, see SAMIC (2003).

Table 4.5: Block test factors applicable to selected cuts

Selected beef cuts	Wholesale level	Retail level
Rump	1.97	2.84
Sirloin	1.72	2.05
Topside	1.32	2.13
Brisket	1.01	1.42
Chuck	1.10	1.49
Stewing Steak	1.29	2.13

Source: SAMIC, 2003; Botes, 2003.

The figures compare the actual average monthly price for different cuts with what the retail price should be, given the normal application of the 'block test'.

The information depicted in Figure 4.7 can be summarised as follows:

- The producer price and the retail price for rump tend to move in tandem.
- The margins between the producer price and estimated wholesale price for rump are in the region of 49%.
- Over the whole period, the differences between the producer price and the retail price range between 64 and 73%.
- There appears to be some downward stickiness in retail prices for rump since November 2002, i.e. the producer price already started to decline in November 2002 whereas the retail price for rump only started to drop in January 2003.
- The difference between the estimated retail price and the actual retail price of rump is very small. In fact, in some cases the estimated retail price exceeded the observed retail price for rump. The difference ranges from -2 to 23%, with an average of 11%. This difference does not account for operational costs nor does it include VAT, and, hence, it can be concluded that profits for retailers on rump are very low.

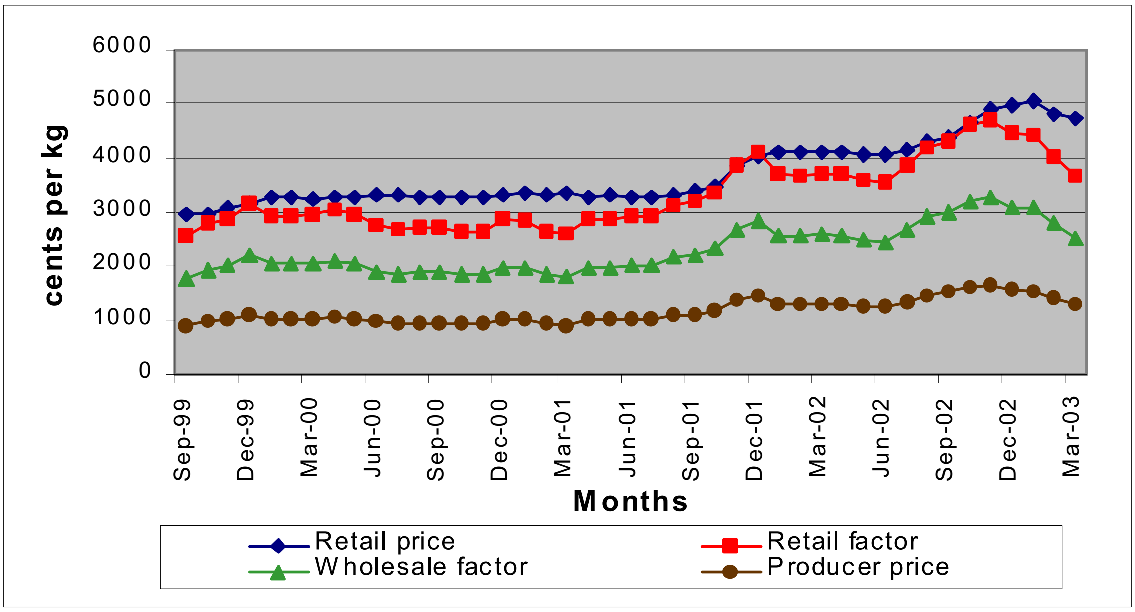

Figure 4.7: Comparison between estimated and actual retail sales prices for rump
Source: StatsSA, 2003; AMT, 2003; own calculations

The information depicted in Figure 4.8 can be summarised as follows:

- The producer prices and the retail price for sirloin tend to move in tandem.
- The margins between the producer price and wholesale price for sirloin are in the region of 42%.
- Over the whole period, the differences between the producer price and the retail price range between 63 and 72%.
- There appears to be some downward stickiness in retail prices for sirloin since November 2002, i.e. the producer price already started to decline in November 2002 whereas the retail price for sirloin only started to drop in January 2003.
- The differences between the estimated retail price and the actual retail price of sirloin range from 24 to 43%, with an average of 35%. Note that operational costs and VAT are not included in the estimated retail price; hence the difference does not portray actual profit taking by retailers.

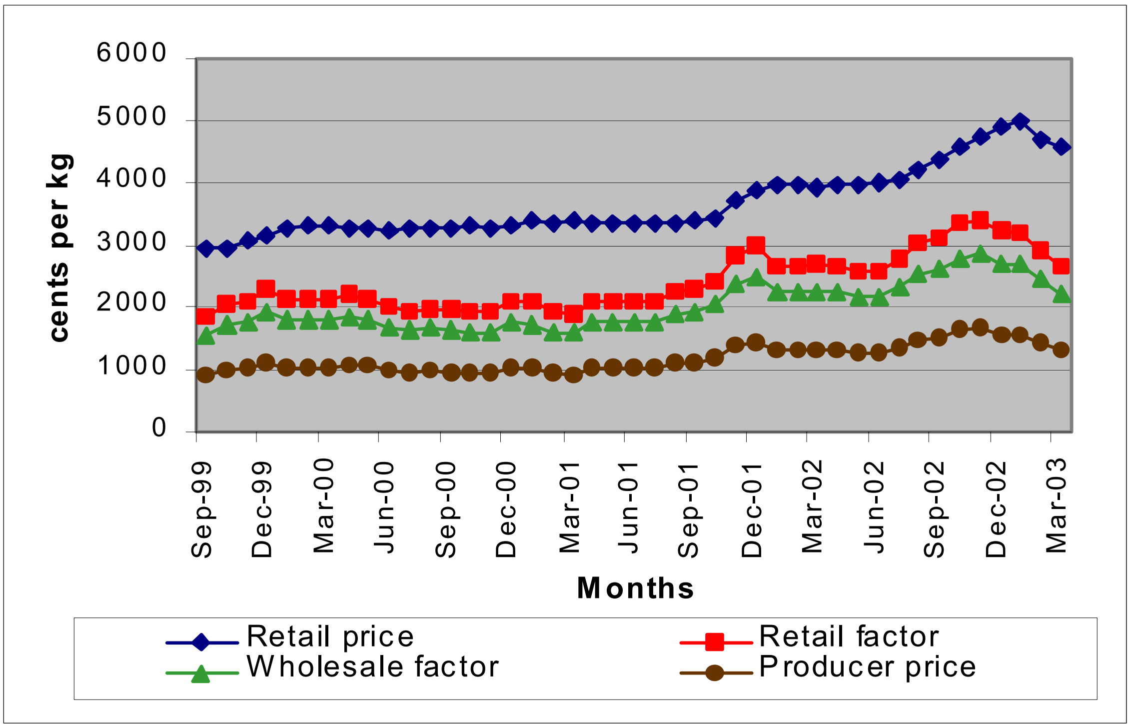

Figure 4.8: Comparison between estimated and actual retail sales prices for <u>sirloin</u>
Source: StatsSA, 2003; AMT, 2003; own calculations

The information depicted in Figure 4.9 can be summarised as follows:

- The producer price and the retail price for topside tend to move in tandem.
- The margins between the producer price and wholesale price for topside are in the region of 24%.
- Over the whole period, the differences between the producer price and the retail price range between 52 and 62%.

- The effect of downward stickiness is less evident.
- The differences between the estimated retail price and the actual retail price of topside range from -1 to 19%, with an average of 10%. Note that operational costs and VAT are not included in the estimated retail price; hence the difference does not portray actual profit taking by retailers.

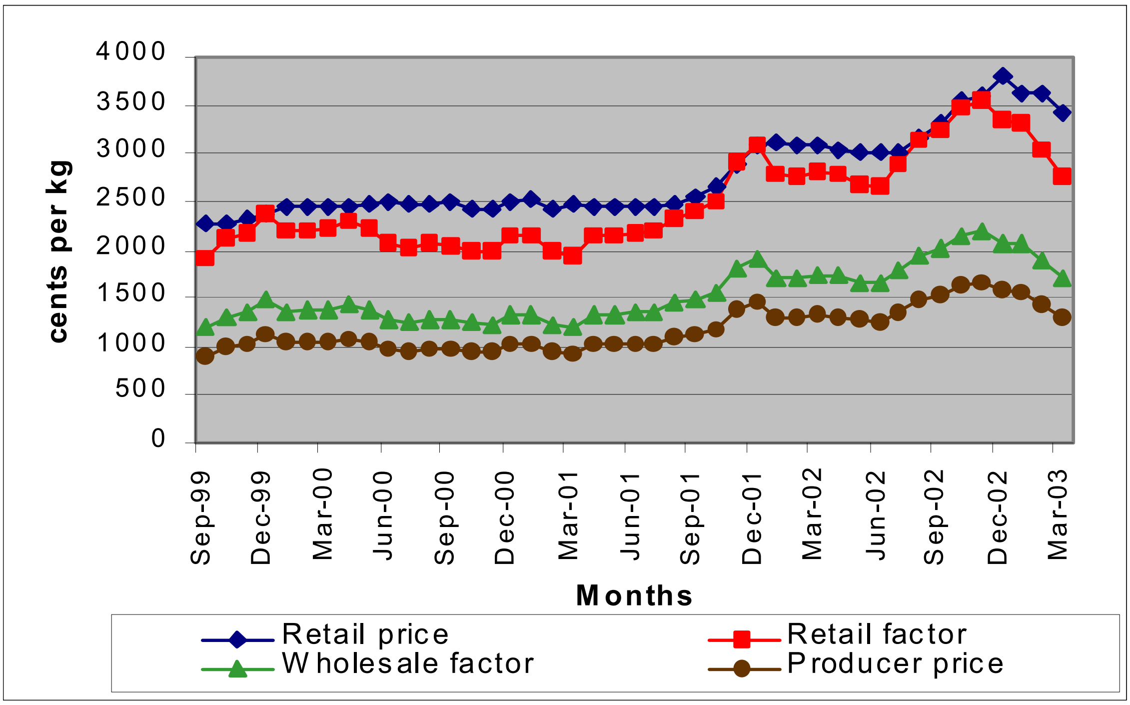

Figure 4.9: Comparison between estimated and actual retail sales prices for topside
Source: StatsSA, 2003; AMT, 2003; own calculations

The information depicted in Figure 4.10 can be summarised as follows:

- The producer price and the retail price for brisket tend to move in tandem.
- The margins between the producer price and wholesale price for sirloin are in the region of 11%.
- Over the whole period, the differences between the producer price and the retail price range between 34 and 50%.
- There appears to be some downward stickiness in retail prices for sirloin since November 2002, i.e. the producer price already started to decline in November 2002 whereas the retail price for sirloin only started to drop in January 2003.
- The differences between the estimated retail price and the actual retail price of brisket range from 6 to 29%, with an average of 19%. Note that operational costs and VAT are not included in the estimated retail price; hence the difference does not portray actual profit taking by retailers.

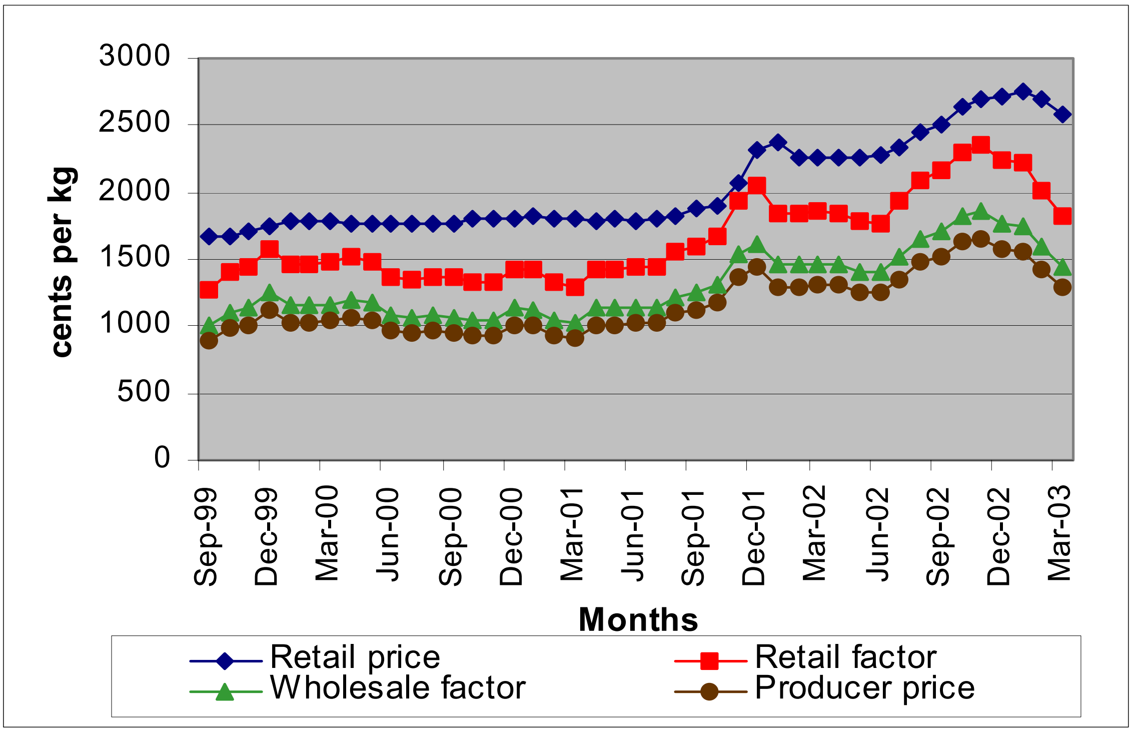

Figure 4.10: Comparison between estimated and actual retail sales prices for brisket
Source: StatsSA, 2003; AMT, 2003; own calculations

The information depicted in Figure 4.11 can be summarised as follows:

- The producer price and the retail price for chuck tend to move in tandem.
- The margins between the producer price and wholesale price for chuck are in the region of 9%.
- Over the whole period, the differences between the producer price and the retail price range between 38 and 52%.
- There appears to be some downward stickiness in retail prices for sirloin since November 2002, i.e. the producer price already started to decline in November 2002 whereas the retail price for sirloin only started to drop in February 2003.
- The differences between the estimated retail price and the actual retail price of sirloin range from 7 to 29%, with an average of 18%. Note that operational costs and VAT are not included in the estimated retail price; hence the difference does not portray actual profit taking by retailers.

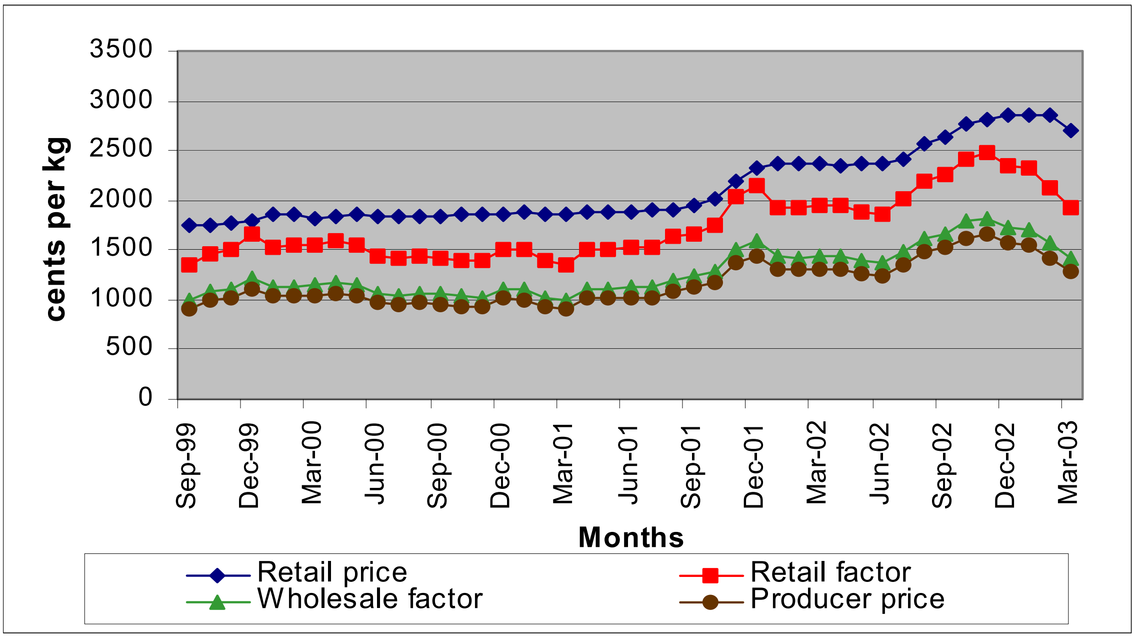

Figure 4.11: Comparison between estimated and actual retail sales prices for <u>chuck</u>
Source: StatsSA, 2003; AMT, 2003; own calculations

The information depicted in Figure 4.12 can be summarised as follows:

- The producer price and the retail price for stewing steak tend to move in tandem.
- The margins between the producer price and wholesale price for stewing steak are in the region of 22%.
- Over the whole period the differences between the producer price and the retail price ranges between 36 and 44%.
- There appears to be no downward stickiness in retail prices for stewing steak.
- The differences between the estimated retail price and the actual retail price of stewing steak ranges from -8 to -45%, with an average of -25%. Note that operational costs and VAT are not included in the estimated retail price. It would appear that retailers make a loss on stewing steak in general.

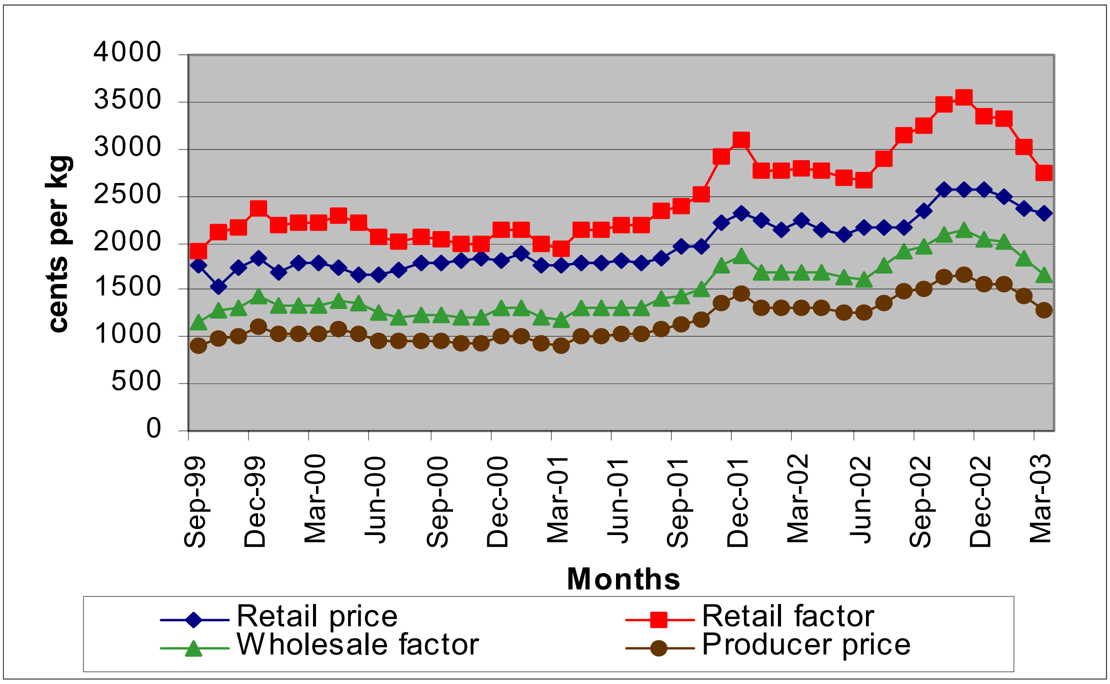

Figure 4.12: Comparison between estimated and actual retail sales prices for stewing steak
Source: StatsSA, 2003; AMT, 2003; own calculation.

4.6 Costing and pricing by feedlots

Supply and demand forces generally determine the purchase prices of weaners. Feedlots can purchase weaners on auctions or at the farm gate. With respect to "farm gate purchasing", feedlots source weaners directly from the producers on their farms. This is either done by farmers offering their animals to a particular feedlot or by the representatives of the feedlot approaching the farmer. In other words, producers and farmers will "shop around" for prices to realise the best price. It should also be noted that feedlots are prepared to pay for quality. This entails that farmers producing the right type of animal will receive a premium from the feedlot. It is also known that feedlots are willing to buy animals from producers further away if they produce the required quality. The track record of a producer also influences the price a feedlot is willing to offer.

Carcasses and the fifth quarter[5] are sold by feedlots to wholesalers and retailers according to supply and demand conditions. An industry source stated that there is no such thing as "loyalty" in this industry. Wholesalers and retailers will buy where price and the associated quality is the best. Feed procurement takes place on the same basis.

A general characteristic of the industry is negative buying margins and positive feeding margins. The concept of a negative buying margin can be explained by the following example: Suppose a feedlot purchases a weaner of 200kg at a price of R9 per kg in 2002. At a dressing percentage[6] of 48%, it would mean that the feedlot is actually paying R18.75 per kilogram carcass whilst the market price per kilogram carcass ranges between R13 and R16.60 (average of R14.11/kg). Hence, there would be a negative buying margin of on average R4.64/kg.

[5] Hides and offal
[6] This percentage refers to weight of the carcass after the animal has been slaughtered, i.e. an animal with a weight of 230kg will have a carcass weight of 110 kilogram (Ford, 2003).

A positive feeding margin refers to the fact that the value per kilogram carcass weight gained is higher than the cost of feeding the animal to gain a kilogram of carcass weight. Note: feedlots aim to double the carcass weight of an animal. In other words, if a typical feedlot feed ration costs R0.80 per kilogram and an animal eats 9 kilogram to gain 1.5 kilogram in live weight per day the feed cost amounts to R7.20 per day. Added to this are the overhead costs of R1.50 a day, which brings feeding cost per day to R8.70. In order to get the feeding cost per kilogram per day, R8.70 is divided by 1.5. This gives a feeding cost of R5.80 per kilogram live weight gained per day. In order to get the feeding cost per day per kilogram carcass weight gained, the latter is divided by 0.65. Hence, the result is a feeding cost of R8.92 to produce 1 kilogram of carcass weight. In 2002, the average cost of a feed ration amounted to R1.17 per kilogram (Ford, 2003). Thus, by following the procedure mentioned, the feeding cost to get a kilogram of carcass weight is R12.34. This translates into a positive feeding margin of R1.77 per kilogram.

In respect of the 2002 season two important issues must be noted from the above:

- Given a negative buying margin of R4.64 per kilogram and a positive feeding margin of R1.77 per kilogram, feedlots made a loss of R2.87 per kilogram carcass weight. Taking a carcass of 200 kilogram, this loss would then translate into R574. (Note that the figures reported may deviate from feedlot to feedlot, but on average losses between R200 and R600 per carcass were mentioned).
- If the feedlot industry were in a position to manipulate prices, they would not have taken such large losses. In other words, it can be concluded that, although this industry is characterized by a high degree of concentration, it is not able to affect the market in any meaningful way.

As is clear from the above, the viability of feeding cattle is based on the beef : grain price ratio. Since grain prices are relatively high in South Africa, the feedlot industry has been relegated to the use of grain by-products. In this respect, it is important to note that the main feed source in the feedlot industry is hominy chop. In 2002, the hominy chop prices were, on average, 98% of the maize price, which is much higher that the usual ratio on 82%. The question raised in the feedlot industry is to what extent hominy chop prices have subsidized the maize meal prices during 2002.

Cognisance should also be taken of the fact that the South African feedlot industry is the only feedlot industry in the world that does not have a final carcass realisation price before the feeder calf is purchased, i.e. feedlot owners do not know the price for which they will be able to sell the carcass at the time they purchase the weaner. This contributes to the feedlot industry being a high-risk industry.

Pricing at abattoir level

The payment for slaughtering of animals by producers, feedlots and wholesalers normally takes three forms, namely (i) the abattoir retains the offal and the hide, (ii) they only retain the offal or (iii) a slaughter fee is negotiated. Hides and skins are sold to tanneries whereas offal enters the so-called 'black market' or informal market that reaches its peak in the winter and slows down in the summer months[7].

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[7] The majority of offal consumers do not have facilities for storing offal for longer than one day in summer, whereas during the winter they can keep offal for as long as three days. Hence, consumers tend to purchase smaller quantities during summer. Furthermore, it is also known that slaughtering of livestock increases

Cognisance should be taken of the fact that between 70 and 80% of cattle slaughtered come from the feedlot industry. Hence, the contact between abattoirs and beef producers is much less than previously, which underpins the notion that carcass auctions have lost their prominence in the South African red meat industry.

4.7 The effect of exchange rate shocks on beef prices and imports

A trivariate Vector Autoregressive Model (VAR) was estimated to determine the effect on real producer prices and beef imports from overseas in relation to the effect of unit shocks (equal to one standard error) on the exchange rate. This analysis is underpinned by tests for statistical properties of variables, decisions on lag length and tests for contemporaneous correlation of shocks. Contemporaneous correlation of shocks in the VAR was tested using the log-likelihood ratio statistic. The impact of an exchange rate shock on real producer prices of beef and beef imports from overseas is shown in Figure 4.13. In respect of producer prices, a shock in the exchange rate will influence producer prices for at least 5 months after such a shock has occurred. The effect on imports from overseas is more severe and carries for at least 10 months.

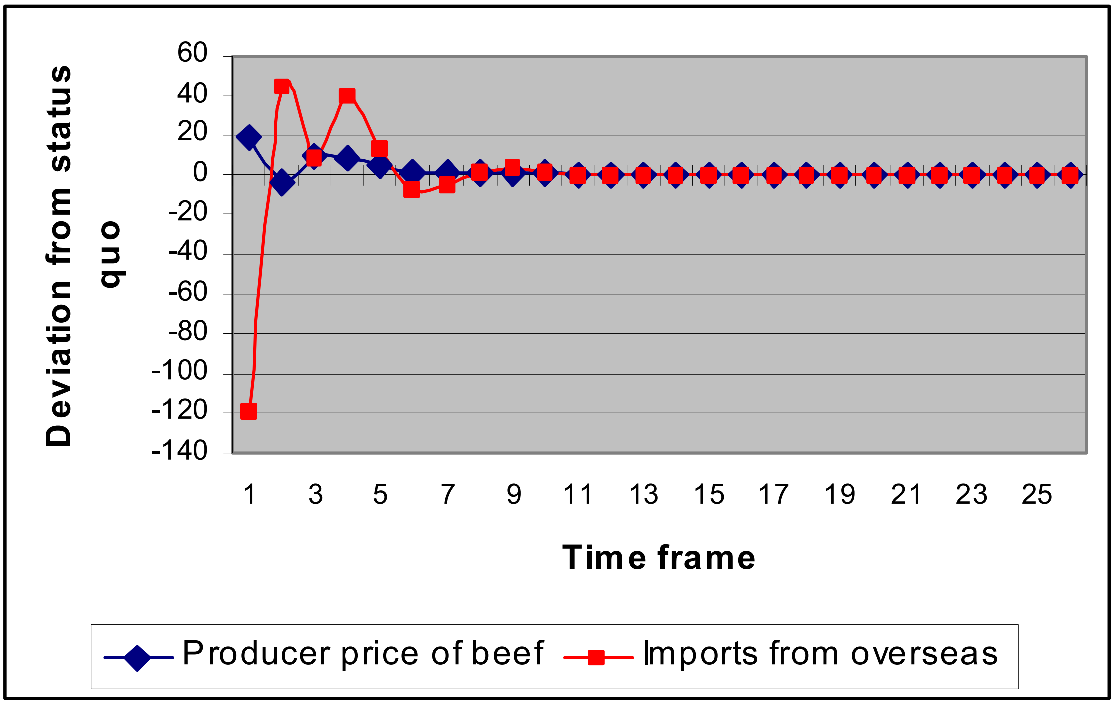

Figure 4.13: The effect of exchange rate shocks on producer prices and imports over a period of 25 months

A test for cointegration using Johansen's (1988, 1991) maximum likelihood approach based on maxim and trace eigenvalue statistics was also done. It was found that one cointegration relation exists between the mentioned variables (i.e. r=1). In other words, a long run relation does exist between the exchange rate, producer prices for beef and imports from overseas. The implication of this is that significant shocks in the exchange rate will affect producer prices and imports over the long run. Moreover, high volatility in the exchange rate will also be reflected in beef prices and imports. Figure 4.14 shows

especially the festive season, resulting in an oversupply of offal. Hence, the peak season refers to good demand and prices during the winter months.

the level of volatility in the exchange rate. The methodology used is similar to that used for beef prices and imports. Note the level of volatility since the end of 2001 and how it corresponds to the volatility in beef prices and total imports over the same period.

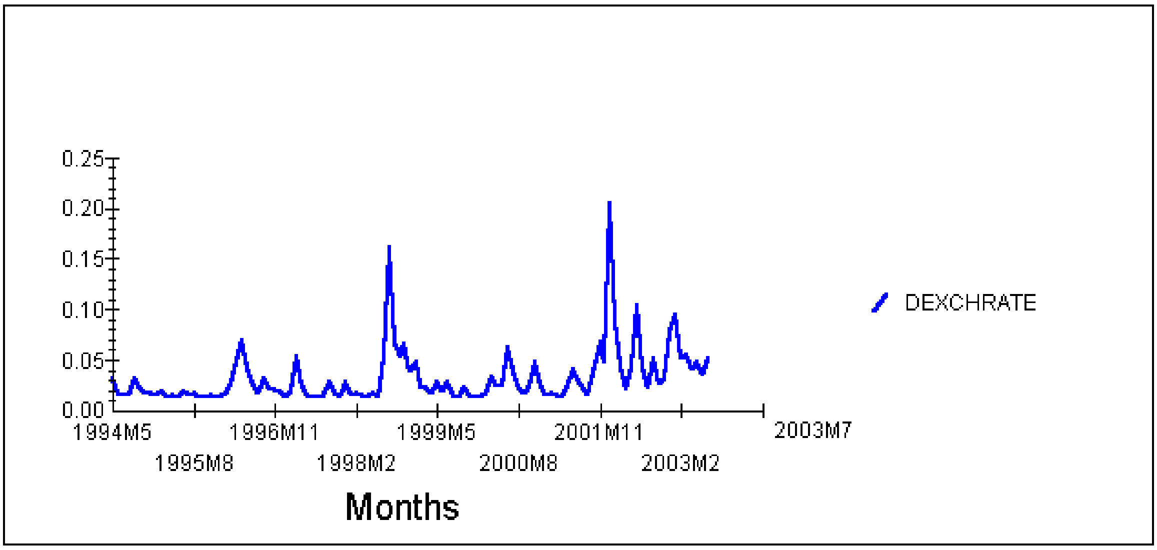

Figure 4.14: Conditional standard deviation of the exchange rate (1994 – 2003)

4.8 Conclusions

It appears that price volatility has increased substantially since the latter part of 1999. The volatility in prices since 2001 is largely a result of the exchange rate volatility from 2001 onwards.

The real producer price cycle ranges between 6 to 7 years. In this regard, 2002 was in all probability the end of the last price cycle, i.e. real producer prices reached a cyclical high and it can be expected that real prices will decline over the next couple of years before they increase to reach another high in 2009. This cyclical high coincided with overall increases in prices of most agricultural products in 2002.

There is a large degree of concentration in the feedlot industry, but due to issues related to economies of scale and the biological nature of the production system, it is extremely difficult to manipulate market prices for beef. This is underpinned by the fact that in most cases feedlots experienced large losses in 2002, i.e. they were not able to cascade input cost pressures down to downstream role players.

The producer-retail price spread: A comparison was made between producer prices and retail prices for the following cuts: rump, sirloin, topside, brisket, chuck and stewing beef. The analysis used the block test to estimate wholesale and retail prices, which were then compared with actual retail prices. The producer price and the retail price for all cuts tend to move in tandem. There was downward stickiness in retail prices over December 2002 and January 2003, except for stewing beef.

The margin between the estimated retail price and the actual retail price for the mentioned cuts were on average:

Rump	11%
Sirloin	35%
Topside	10%
Brisket	19%
Chuck	18%
Stewing beef	25%

Note that operational costs and VAT are not included in the estimated retail price. It can, therefore, be concluded that profits margins at retail level for most of the mentioned cuts are very thin. In fact, it appears that retailers make an outright loss on stewing beef.

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CHAPTER 5

THE DAIRY SUPPLY CHAIN

5.1 Introduction

The dairy supply chain, as all other agri-businesses, is complex. Technically the dairy chain starts at raw milk production and ends when other processors, institutions and consumers utilize products that were created in the value chain (Diagram 5.1(a) and 5.1(b) and Table 5.1). In this Report, a partial dairy value chain will be discussed as no attention is paid to business relationships in the supply of inputs on farm and factory level.

The estimated direct input costs (R3,017 million), plus expenditure on farm development and maintenance of infrastructure (R9,248 million) applied in the production of raw milk plus the raw milk value (R3,899 million) totalled R15,342 million. Private expenditure on dairy products totalled an estimated R8,374 million, which include purchasing imported dairy products, which are either directly consumed or processed (R315 million) (Table 5.1 and 5.2).

Raw milk as well as processed milk and by-products are also ingredients in other processing chains. Processors of confectionary, for instance, used as raw material during 1998, R80 million worth of milk powder, R65 million worth of fresh milk and R5 million worth of other dairy inputs (LHA Management Consultants, 1999). The confectionary and other users of dairy inputs, as well as dairy produce for final consumption imported different dairy products totalling on average, for 2000 to 2002, R10 million.

What the diagrams presenting the dairy supply chain do not capture is that from the moment a farmer decides to produce milk until the product reaches the consumer, people and the environment are involved. It is people who decide to farm in, work in, supply to, buy from and be a processor in the dairy supply chain. In the final instance, it is the consumer who decides to buy and consume the end products flowing from this chain at a suitable outlet and at an acceptable price. As such, dairy products compete with a vast variety of other food products for a share of the consumer's Rand.

As consumers' habits and decisions are not static, they impose urgency for change in the supply chain in order to have their ever-changing needs met. However, this ever-changing demand has a direct effect on the people within the supply chain since they will have to change or adapt accordingly. In most instances, change is accompanied by a cost factor, induced by research, retraining, relocation, etc.

These changes take place within a diverse and changing environment, which is both the cause and consequence of changing human needs and nature. Tension exists between the real environment which is subjected to pollution, in many instances because of change, demands from the people in the chain to minimize the contamination of, on the one hand, the environment, and on the other hand, of the production process.

Table 5.1: Dairy supply chain: Values attached to different activities in the chain, 2001/2002

Category	Rand million	Source
Production of raw milk:		
Direct inputs	3017	SAMFED, 2001: Adjusted for 2002
Infrastructure (Development and maintenance)	9249	SAMFED, 2001: Adjusted for 2002
Raw milk sold	3899	NDA, 2002
Secondary market:		
Imports	315	NDA. Average 2000 -2002
Exports	302	NDA. Average 2000 -2002
Major expenditures on intermediate goods and services (Processors)	6278	SAMFED, 2001: Adjusted for 2002
Expenditure on infrastructure	Not available[1)]	
Private expenditure	8374	NDA, 2002

1) On the basis that development and maintenance of infrastructure is approximately 3,5 times the cost of direct inputs, this value can be R21973 million, which is according to industry sources reasonable

Table 5.2: Average value of dairy exports and imports for the period 2000 – 2002

Dairy products	Average value for 2002-2003	
	Imports	Exports
	Rand	
Milk and cream	756	34861808
Milk and cream, concentrated or containing sweetening matter.	10141741	148924310
Buttermilk, curdled milk and cream, yogurt, kephir and cream.	35863	10847825
Whey, products consisting of natural milk constituents	0	1804311
Butter and other fats and oils derived from milk, dairy spreads	357	17636347
Cheese and curd.	723	16347792
Total	10179439	230422393

Source: National Department of Agriculture

The remainder of the environment includes technology, demography, economic growth, policy and so on. The influence of policy changes and economic development on the dairy industry is multi-dimensional. Combined with for instance the natural resource base and conditions, it determines production and consumption trends and farming systems.

5.2 Policy changes

As is the case with many other agricultural products, the dairy supply chain went a full circle from absolute control to a free market.

The dairy supply chain was historically controlled and regulated by means of the Dairy Industry Act of 1961, the Marketing Act of 1968, Dairy Boards and Milk Boards, as well as national, provincial and local health legislation, plus a variety of other acts and regulations. A plethora of control measures existed that regulated the chain. It included amongst others, health issues in production and processing of raw milk and the margins during the different processing phases until it landed as an end product with fixed prices or fixed margins in the retail outlets (NAMC, Section 7 Committee, 2001: The impact of deregulation on the dairy industry.)

A few of the more dramatic changes will be highlighted, as this will shed light on structural changes in the dairy supply chain effecting its costs and the end price. In 1971 Government allowed margarine to be coloured yellow. This step led to a drop in the annual butter sales from more than 54,000 tons in 1971 to 16,000 tons in 1979 (SAMO 2001, NAMC, 2001: p 22). See Figure 5.1.

Diagram 5.1(a): Flow diagram of dairy supply chain

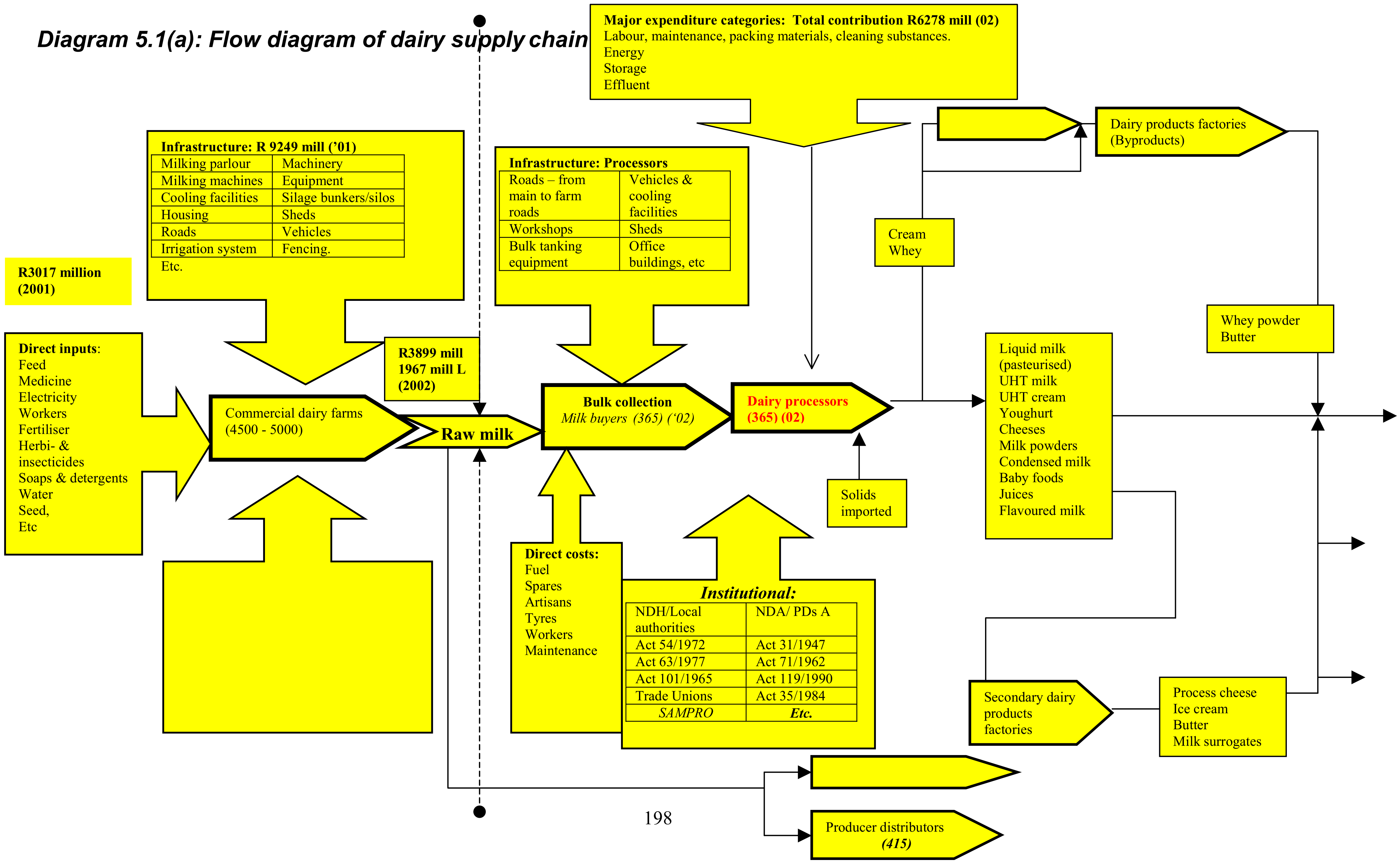
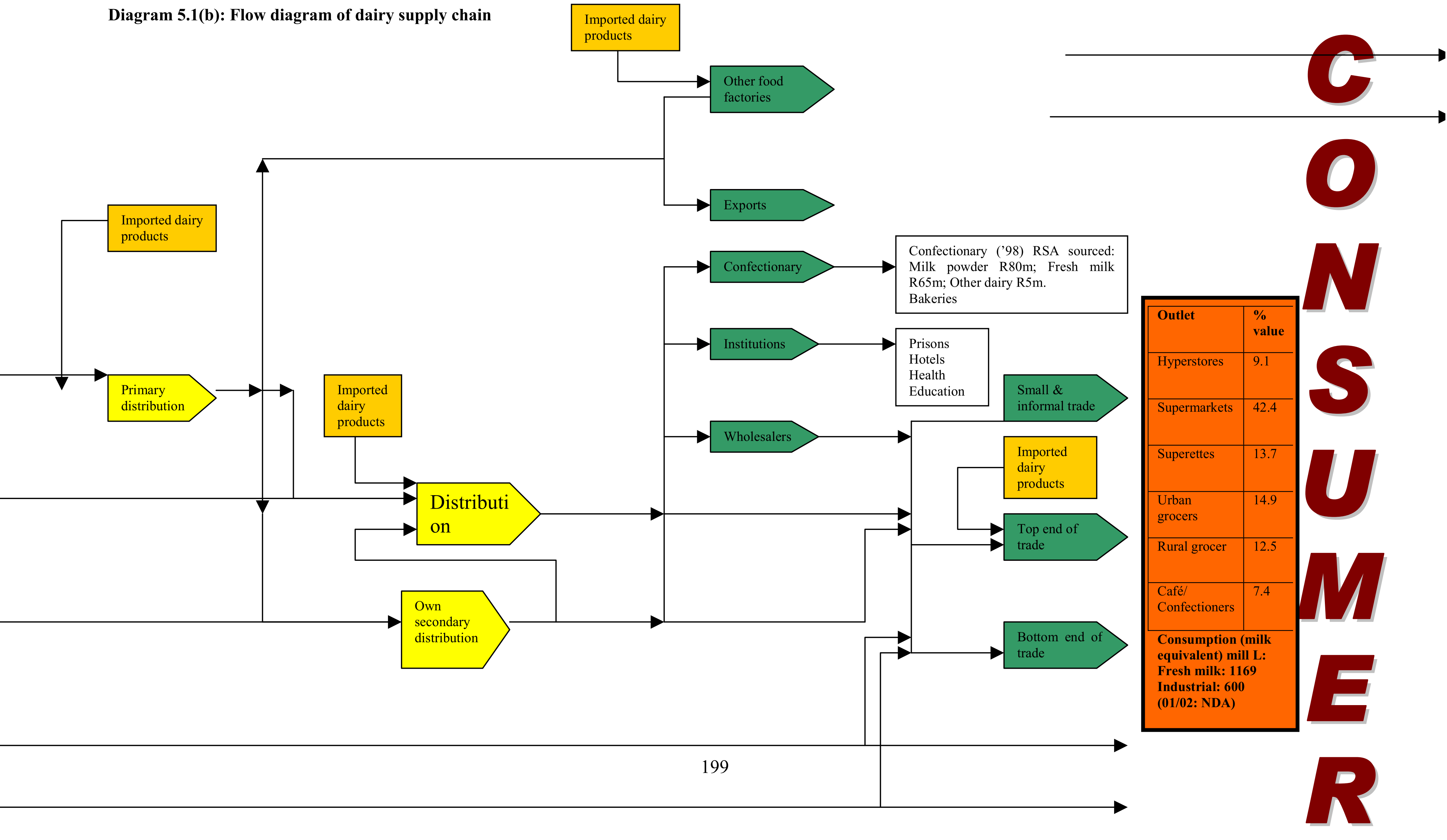


Diagram 5.1(b): Flow diagram of dairy supply chain



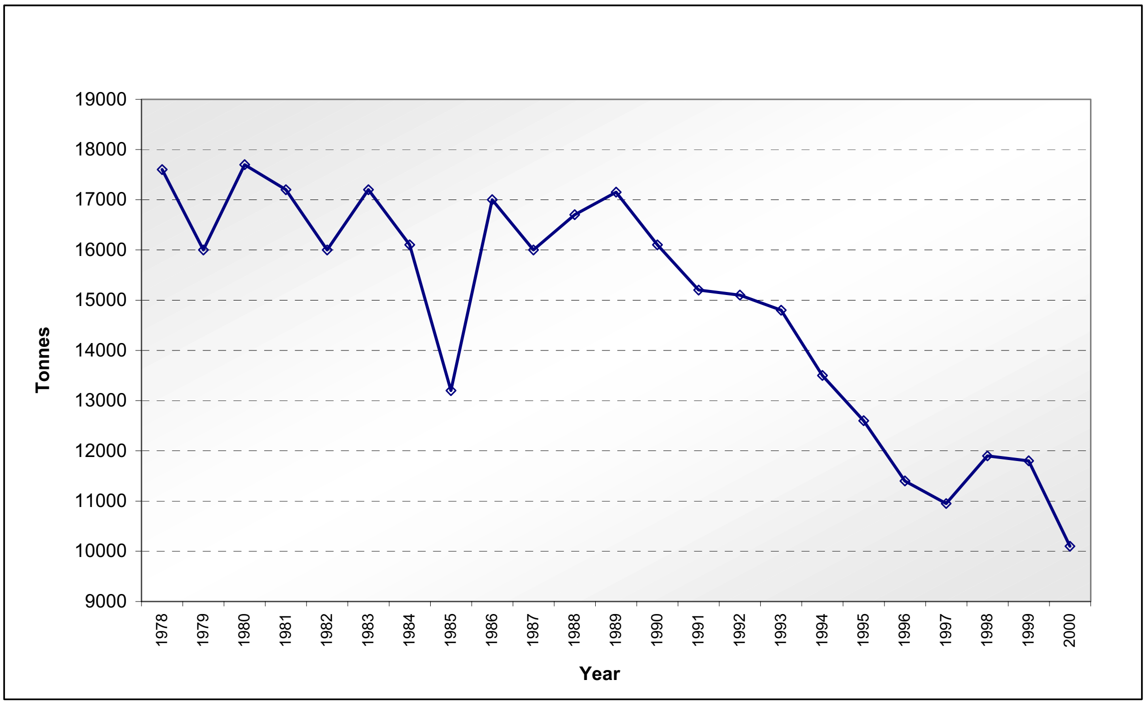


Figure 5.1: Butter sales in tonnes, 1978 – 2000
Source: SAMO

Consequently, a large number of butter factories closed, cream production was phased out and partly converted to the production of industrial milk. In the wake of this followed the disappearance of thousands of small and extensive farming milk farmers for whom cream was an important cash flow generator. From 1988 to 2000, the yearly turnover of the dairy industry was reduced by approximately R700 million.

The publication of uniform milk regulations in 1986 paved the way for the "milk-is-milk" era and a uniform minimum price for all milk was published on 16 February 1987. Cheese and butter margins and price control were abolished in 1986 and 1988,respectively.

The Dairy Industry Control Act was repealed in 1987. The final deregulation steps followed during the Uruguay Round of the World Trade Agreement in 1994 when quantitative import control was abolished and replaced by import levies. This had a drastic and new effect on the dairy industry, namely an increase in legal and illegal imports (NAMC: 2001: pp 26, 27).

The abolishment of the 1968 Marketing Act in 1997 was the last step in the deregulation process of the dairy industry. Since then, the dairy industry functions with minimum government intervention and no statutory levies. The regulations and controls prior 1997 gave milk farmers and processors a safe haven against production cost increases and certain changes in the market. Export losses could, for instance, be recouped by a statutory levy. Based on this protection, farmers and processors took major investment decisions that allowed the dairy industry to grow. The removal of this protective shield opened the supply chain to domestic and global changes and from then on all costs had to be met. A major consequence was that the supply chain had to adjust structurally to this new policy environment.[1]

[1] However, government should account for many of the changes, the costs of which form a burden for the supply chain.

5.3 Changes in industry structure

Structural changes in a supply chain cause changes in demand and supply in an industry. In the following sections changes in the structure of the supply chain and their effect on the costs of the final product are discussed.

5.3.1 Primary level

To the left of the broken lines in Diagram 5.1(a) is the primary section of the supply chain. Input suppliers to dairy producers and production results of primary production are captured in this section.

Before the late fifties dairy farms were mainly found in the Witwatersrand, Durban and Cape Peninsula regions, and other large consumer areas. This was an economic proposition as farmland around these densely populated areas was relatively cheap. The cash flow of farmers during the period before the mid-fifties depended heavily on the monthly "cream cheque". In those days cream production was a low cost complementary farming activity based on crop residues and natural veld with minimal, if any, supplementary feeding.

With economic growth and an increase in alternative uses for land, pressure grew with respect to the relatively extensive dairy farm use of land in urban environments. The urban environment not only restricted the economic scale enlargement of dairy farms and herds, but it also became a good financial proposition to sell dairy farms and move further away from the urban environment. The overall improvement of the infrastructure such as road and electricity distribution network supported this development.

From 1997–2003 the total number of commercial milk producers decreased by 31% (Table 5.3 and left of broken line in Diagram 5.1(a)). Around 5000 dairy farmers (MPO, 2003) produced nearly 2 000 million litres of milk annually.

Table 5.3: Number of commercial milk producers per province, 1997 and 2003

Province	Number of producers		%
	Dec 1997	June 2003	Change
Western Cape	1577	973	-38
Eastern Cape	717	481	-33
KwaZulu-Natal	648	449	-31
Northern Cape	133	67	-50
Free State	1204	1250	+3.8
North West	1502	819	-45
Gauteng	356	282	-21
Mpumalanga	866	477	-45
Limpopo	74	58	-22
Coastal areas	2942	1903	-35
Inland areas	4135	2953	-29
Total	7077	4856	-31

Source: Lacto Data, 2003

Numerous statutory laws face the incumbents in the value chain. Some are national, others the responsibility of Provincial Governments. At present lack of co-ordination exists between different government departments responsible for legislation influencing the dairy value chain.[2].

The National Department of Health and local authorities plus various Directorates in the National as well as the Provincial Departments of Agriculture administer laws, by-laws and regulations for milk production. These laws vary from animal and human health to production processes and quality standards relating to domestic consumption and exports. Notwithstanding these laws and regulations, their effective application was and is sometimes wanting (SAMFED, 2001: EU Commission, 2000). A lack of co-ordination among the different government role-players makes the implementation of the regulations problematic. Farmers and processors are accountable to officers from different government offices responsible for the implementing of regulations that could have been vested in one authority.

Over time the milk production regions gradually shifted from inland to coastal areas (Table 5.4 and Map 5.1). Based on climate and natural resources, the coastal regions of KwaZulu-Natal, Western and Eastern Cape are suitable for lower cost milk production systems on natural and irrigated pastures (Table 5.4). The ratio inland : coastal milk production has reversed between 1994 and 2002 (Table 5.4).

Table 5.4: RSA: Geographical distribution of milk production per province, 1994 - 2002

Province	Production			
	1994 %	1995 %	1998 %	2002 %
Western Cape	23,1	22,9	25,1	24,3
Eastern Cape	10,0	13,8	14,3	20,1
Kwazulu-Natal	7,7	15,7	18,9	17,5
Free State	24,2	18,0	16,3	13,6
Northwest	18,4	12,6	12,5	10,6
Mpumalanga	10,2	11,0	7,5	9,3
Gauteng	3,8	4,4	4,4	3,5
Northern Cape	1,6	1,2	0,7	0,8
Limpopo	0,9	0,4	0,3	0,3
Coastal areas	40,8	52,4	58,3	61,9
Inland areas	59,2	47,6	41,7	38,1
Total	100,0	100,0	100,0	100,0

Source: Lacto Data, 2003

[2] The National Department of Health is responsible for the following Acts:
- Foodstuffs, Cosmetic and Disinfectants Act of 1972 (Act 54 of 1972)
- Health Act of 1977 (Act 63 of 1977)
- Medicines and Related Substances Control Act of 1965 (Act 101 of 1965)

The National Department of Agriculture is responsible for:
- Fertilisers, Farm Feeds, Agricultural Remedies Act of 1947 (Act 31 of 1947)
- Animal Protection Act of 1962 (Act 71 of 1962
- Agricultural Products Standards Act of 1990 (Act 119 of 1990)
- Animal Diseases Act of 1984 (Act 35 of 1984).

Map 5.1: Dominant milk producing areas in the RSA, 2001

The inland production areas are, in generally, climatically less favourable for milk production. They suffer from harsh, dry winters, but because of their favourable market location for Total Mixed Rations (TMR) and other conventional feeding systems, as well as the concentration of milk buyers/processors in these provinces (Map 5.2) a large number of intensive primary dairy operations are, nevertheless, present. Dairy farming in these areas necessitates intensive and high cost feedlot production systems. (Table 5.5.)

Table 5.5: Comparative profit analysis for intensive and pasture based milk production, 2002 – 2003 (Figures in Rand/litre)

Item	Pasture based 1)	Grain based 2)	Grain based 3) Lowering of feed
Total income	1,92	2,15	1,79
Feed cost	0,94	1,54	1,35
Other costs	0,60	0,46	0,46
Total cost	1,54	2,04	1,81
Net farm income	0,38	0,11	-0,02
Financing	0,09	0,08	0,08
Farm profit	0,29	0,03	-0,1

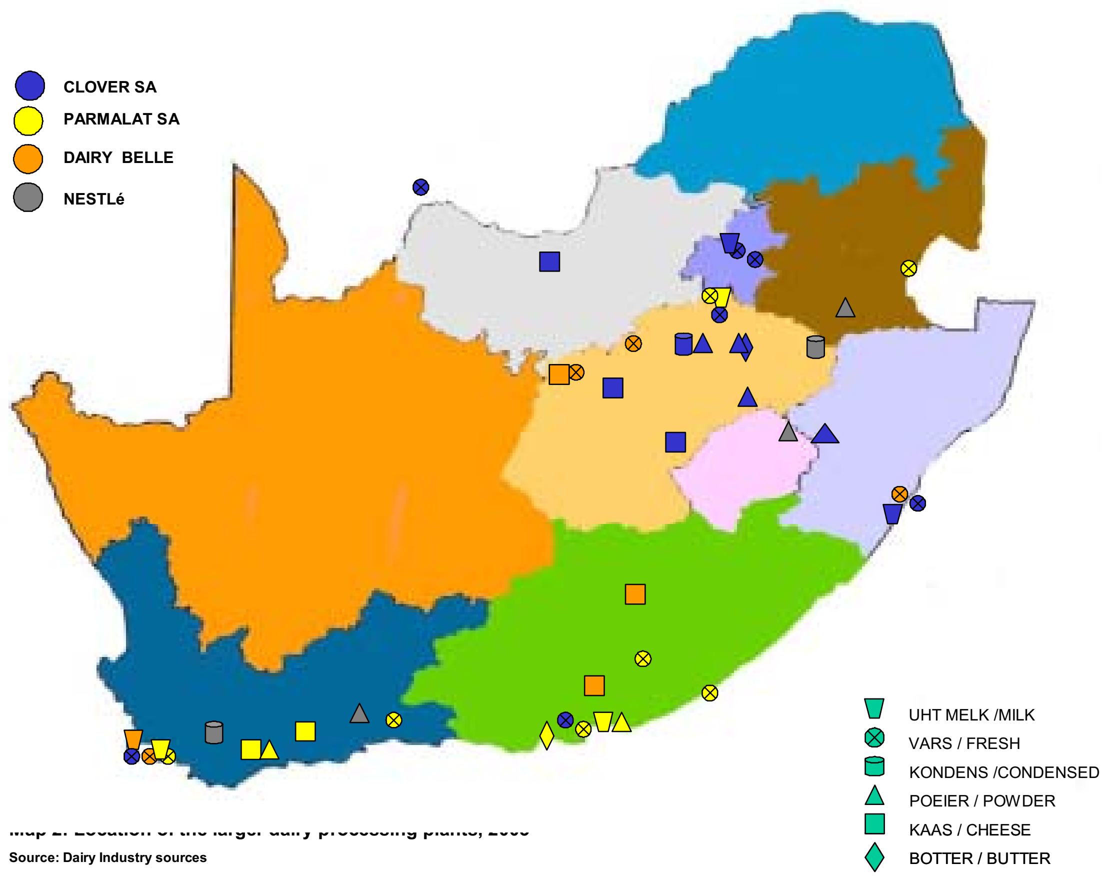
1) KwaZulu-Natal study group; 2) Highveld study group
3) Calculated from Highveld group results
Source: Coetzee, 2003

Due to drastic price increases in farm requisites for intensive milk production (Table 5.6), the profitability of pasture based milk production improved during the period 2002 – 2003 (Coetzee, 2003: 88-92). A cut in feed costs is not the answer for producing at lower costs, as it can be catastrophically for grain based milk producers. This implies that the shift in milk production to coastal areas will continue. It is, nevertheless, an absolute fact that the market concentration lies inland**:** 53% of the total population resides in the six inland provinces – of the total population, this is 30% in urban and 23% in rural areas. Although the main markets for dairy products are in the interior of the country, a mere 40% of the total milk is produced in these regions.

Table 5.6: Change in prices of selected farm requisites for intensive milk production, 2001 – 2002

Item	**February 2001**	**January 2002**	**January 2003**	**% Change 2001 – 2003**
Dairy meal (Lucerne-based ration) R/ton	1 120	1 670	1 880	68
Dairy-meal (silage-based ration) R/ton	1 200	1 770	1 950	63
Lucerne Highveld R/ton	600	900	1 250	108
Diesel Gauteng R/litre	2,47	3,41	3,55	44
Prime interest rate %	14,5	14,5	17	17
Producer price R/litre	1,35	1,42	1,95	44

Source: MPO survey; Dairymail, March, 2003



Map 5.2: Location of the larger dairy processing plants, 2003
Source: Dairy industry sources

The milk production in the interior will be under input cost pressure, being it through variable inputs or lack of sufficient natural resource base. Consequently, milk production will, for instance, vary with price fluctuations in the basic feeding materials, as illustrated in Figure 5.2. The volume of milk produced is strongly determined by the milk **:** maize price ratio (Coetzee, 2003: 88 – 90). An increase in this ratio, meaning that milk price in relation to maize price is increasing, induces an increase in the raw milk production.

A strong Rand has recently resulted in a decline in the maize import parity price, i.e. the maize price came down. Based on the break-even ratio of 1,6 **:** 1, this implies that a producer price of more than R2,16 will result in an increase in milk production, specially in grain-based production systems in the interior of South Africa. See Figure 5.3 for an illustration of this cause-effect relationship between maize import parity price and the producer price for milk that is necessary to increase production. Comparing to other major dairy producing countries, South African dairy producers receive the lowest producer prices (Table 5.7).

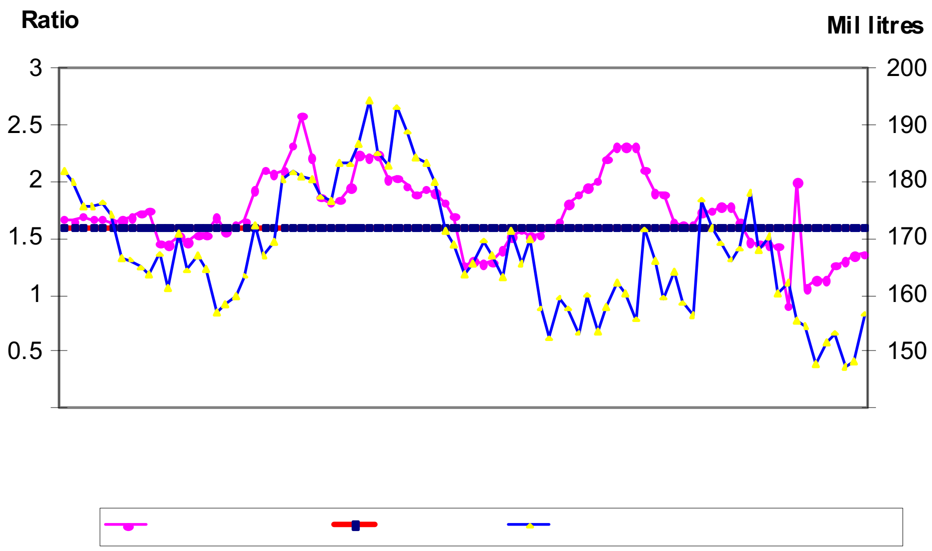


Figure 5.2: Monthly milk production and milk: price ratio, 1995 - 2002
Source: MPO survey.

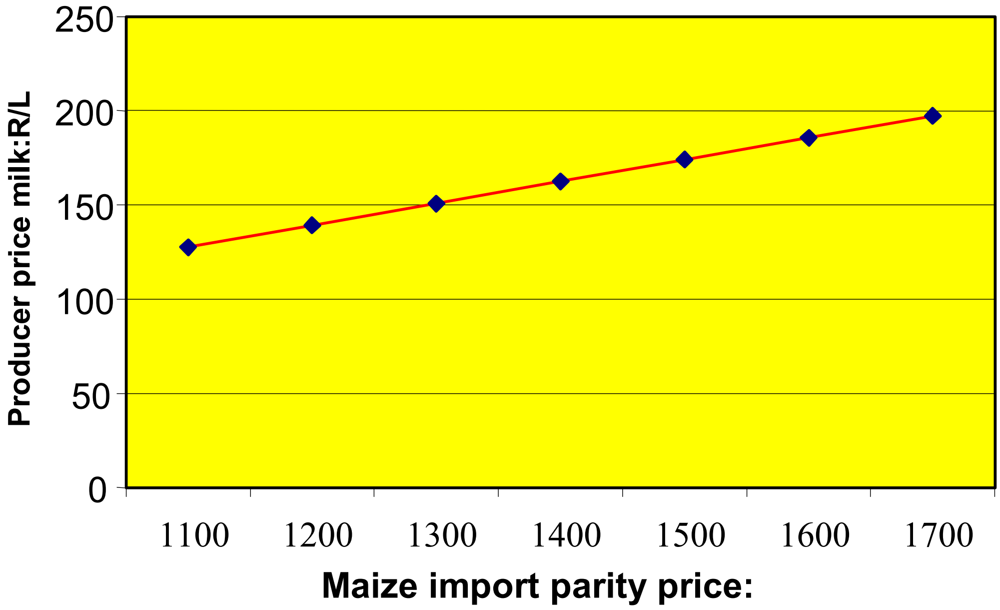


Figure 5.3: Relationship between producer price of milk and maize import parity price

In response to the increase in production costs per litre of milk, farmers increased their herd size (Table 5.9), and also made use of genetic improvement, which is reflected in the higher milk production per cow per lactation, as illustrated in Figure 5.4.

Table 5.7: International milk producer prices (R/litre), 2000 and 2001

Country	Price* R/litre		Change	Country	Price R/litre		Change
	2000	**2001**	**%**		**2000**	**2001**	**%**
Italy	2,25	2,88	12,9	Denmark	1,98	2,45	23,7
USA	1,64	2,74	67,1	France	1,96	2,45	25,0
Finland	2,11	2,64	25,1	Belgium	1,95	2,41	23,6
Netherlands	1,89	2,51	32,8	Ireland	1,91	2,36	23,5
Germany	1,89	2,48	31,2	Sweden	2,15	2,30	6,9
England	1,66	2,26	36,1				
New Zealand	1,03	1,38	33,9	South Africa**	1,33	1,44	8,2

** Based on standard composition of 4,2% butterfat, 3,5% protein, 1 000 litre/day*
*** MPO average adjusted for solids*
Source: LTO Netherlands, 2002

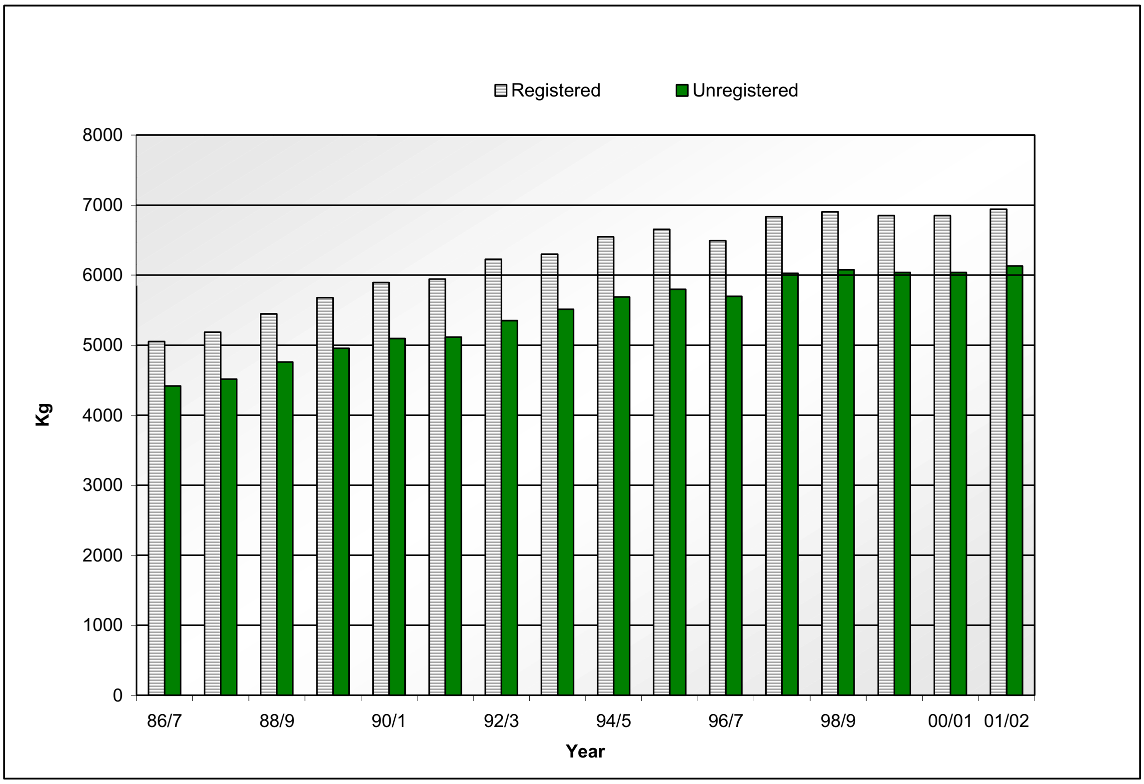


Figure 5.4: Milk production per lactation, milk recorded cows: 1986/87 to 2000/01

The impact of increase in herd size on milk production is evident from the fact that in 1995 the producers producing more than 4000 litres milk per day contributed 15% to the total milk production; in 2001 their contribution increased to 39%. The largest drop in producer numbers took place amongst producers producing less than 2000 litres per day. It seems that the price-cost squeeze pushed them out (Tables 5.5 and 5.6 and Figure 5.5). The average milk producer produced 1049 litres per day in 2002, which is 43% higher than in 1997 (Coetzee, 2003:87).

A further increase in herd size, reflected in more litres milk per collection point, can improve South Africa's low milk density per km^2 per day (Table 5.9), and lower the collection cost.

Table 5.8: Size distribution of milk producers, 1995 and 2001

Daily production Litres/day	Producers (%)				Production (%)			
	1995	1995 Cum*	2001	2001 Cum*	1995	1995 Cum*	2001	2001 Cum*
> 501	58	58	45	45	19	19	9	9
501 – 1 000	21	79	17	62	20	39	9	18
1 001 – 2 000	13	92	17	79	24	63	19	37
2 001 – 4 000	6	98	11	90	22	85	24	61
4 001 – 6 000	2	100	5	95	5	90	15	76
> 6 000	0		5	100	10	100	24	100

** Cumulative percentage*
Source: MPO statistics

Table 5.9: International comparison of milk production per km² per day

Country	L/km²/day
France	125
Germany	308
Netherlands	892
UK	257
New Zealand	94
South Africa:	
– Total area	5
– Production areas	25
– Coastal area 1	103
– Coastal area 2	96

Source: Hermann, 1996

It is generally assumed that herds included in the National Milk Recording Scheme are genetically superior to those not participating in the Scheme. This is borne out by over time higher and increasing milk production per lactation of registered cows (Figure 5.4). Although only 20% of RSA commercial herds participate in this Scheme, the impact on the total chain is high. Unfortunately, this improvement in total production resulted in a decline in milk solids (Coetzee, 2003: 87). Below it will be discussed that producer price formation is based on milk volume and/or milk solids. The solids are the resource milk on which processors of long life products rely.

As competition between urban sprawl and farmland intensifies – especially as Act 70 of 1970 was repealed – less land area for farming in "population dense areas" will be available. This will result in lower total production in, especially, the Gauteng area where the competition for land is very intense.

According to the Law of One Market Price (Kohls, 1979:176-178), the inland producers producing for the fresh milk market should be remunerated with a price premium that is at least equal to the transport cost from the coastal areas into the interior. Should availability of land for dairy in, for instance, Gauteng lead to a reduction in production, an additional producer price premium can be expected.

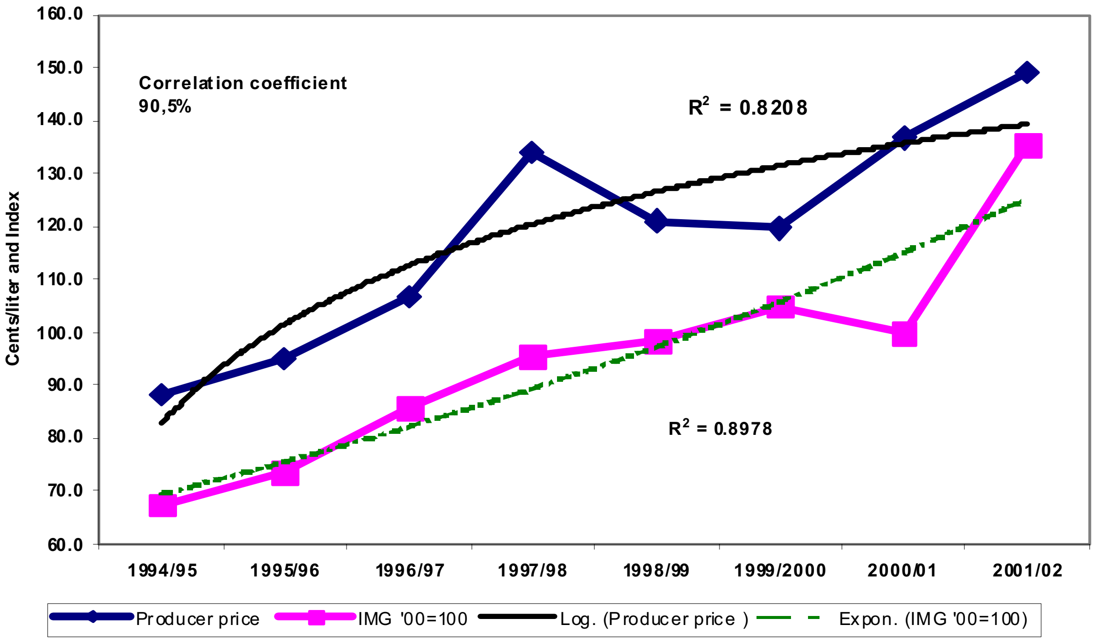


Figure 5.5: RSA average nominal producer milk price and price index of intermediate goods and services, 1994/95 – 2001/02 (2000=100)

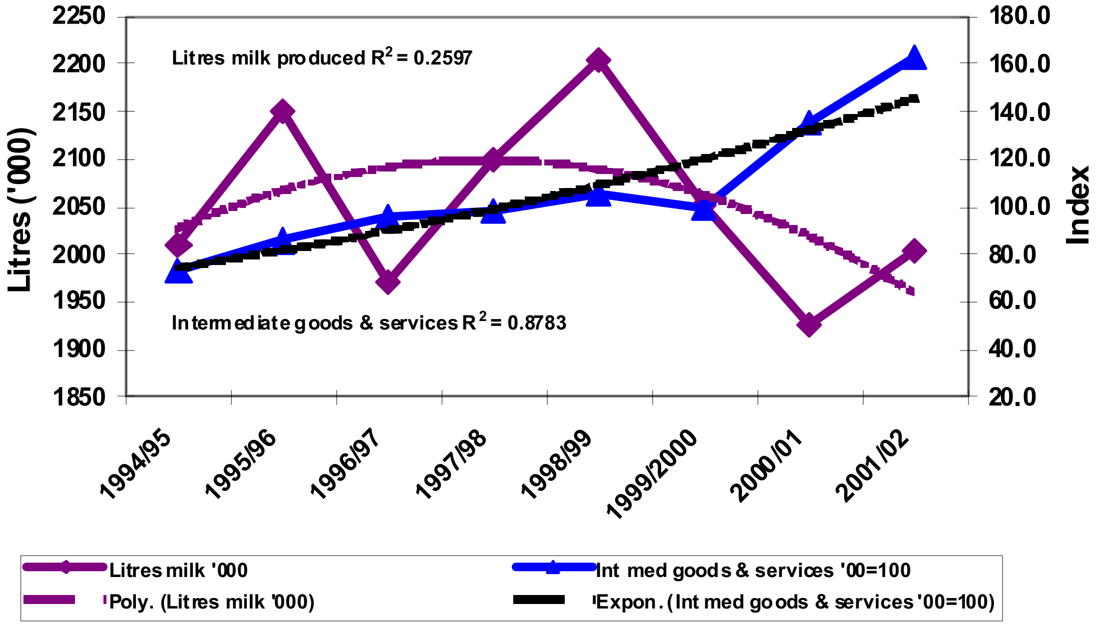


Figure 5.6: RSA milk production and price index of intermediate goods and services, 1994/95 – 2001/02 (2000=100)

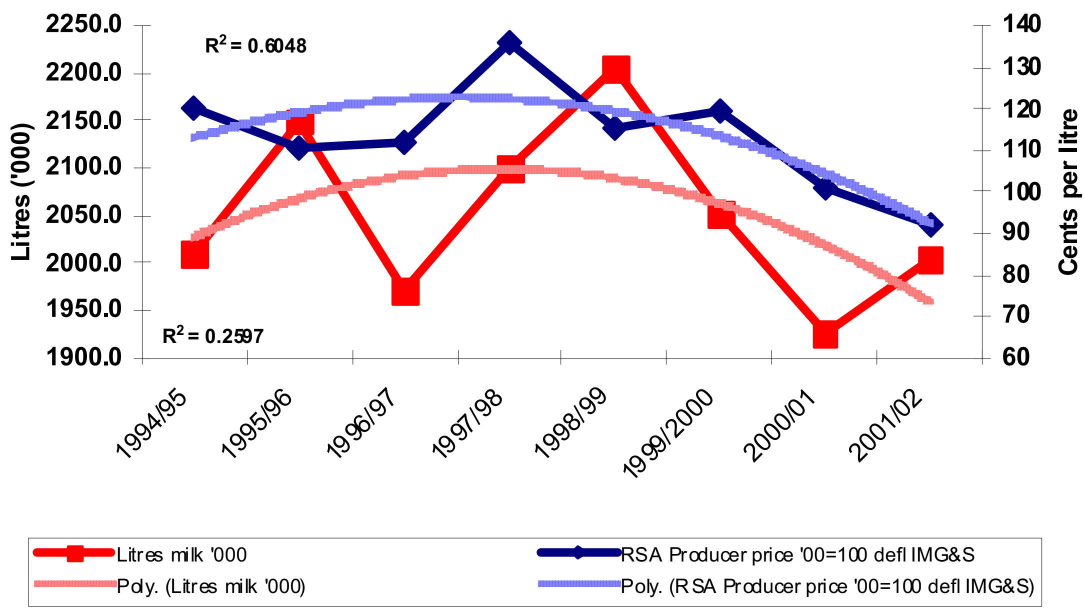


Figure 5.7: RSA milk production and real producer price in cents per litre, 1994/95 – 2001/02 (2000=100)

The cost of raw milk production plays an important role in price payment systems associated with the larger buyers and with those buyers who are price followers (Table 5.11, Case 1, 2 and 5). This is substantiated by the strong correlation between the prices of intermediate goods used in agriculture and the nominal producer price of milk (e.g. Figure 5.5). The correlation coefficient between RSA milk volume and IMG price index is, as expected, negative and relatively low (Figure 5.6)[3].

Farm income

The relationships between production costs and farmers' incomes are illustrated by a series of annual NCD production cost surveys for the period 1994-2002. The following relationships of an average dairy farm based on NCD's[4] surveys follow those on the national level closely. In real terms (2000=100) there is a correlation between gross farm income (GFI), net farm income (NFI), and milk price in cents per litre (Figure 5.8).

The effect of the exceptionally good conditions during 1998 for milk producers when milk prices increased in real terms (Figure 5.7) can be seen in the following ways: the national intake of milk peaked (Figure 5.10) and, on a farm level, real average gross and net farm income increased (Figure 5.8). The milk flow in the sample (Figure 5.9) echoes the increase in national milk flow.

On the one hand, the substantial increase in the sample's average dairy herd size since 1998 was responsible for the noted acceleration in GFI, but this was also responsible for the slower decline in NFI in the face of a sharp decline in real milk price (Figure 5.8). Apart from the obvious, that is, that more cows per herd produce more milk, the effect of

[3] Other conditions such as the weather also play a significant role in milk production
[4] NCD conducts yearly a production cost survey on a statistical representative sample of its members

economies of scale is responsible for the slower decline in NFI (-44%: period 1998 – 2002) than in the GFI (-94%: period 1998 - 2002) (Figure 5.8).

The same tendencies as in Figure 5.8 exist between the GFI, NFI and litres milk produced (Figure 5.9). Note that real milk price declined from 1998 onwards while at the same time, from 1998-1999, the milk production increased sharply. This phenomenon can be explained by referring to the genetic improvement (Figure 5.4) and the rising percentage of farmers producing greater volumes milk per day (Table 5.9), which earlier were mentioned as means for increasing the efficiency in the milk production and of the milk collection. As "volume per farmer" in payment systems (Table 5.11) is important the advantage of a larger herd size per dairy farmer works both ways, namely for the individual dairy farmer, who receives a bonus for volume, and for the dairy processor, for whom an increased volume per collection point lowers collection costs (see Table 5.10).

The obvious time lag in increase/decline in gross and net farm income (Figures 5.8 and 5.9) is caused, for instance, by the fact that the number of litres of milk produced is growing while, at the same time, the real price per litre has already decreased. It is assumed that farmers expanded their herds in response to the increase in the milk price, or for that same reason intensified their operations resulting in higher milk volume. It must be realised, however, that on a dairy farm the milk flow cannot be closed or opened like a water tap.

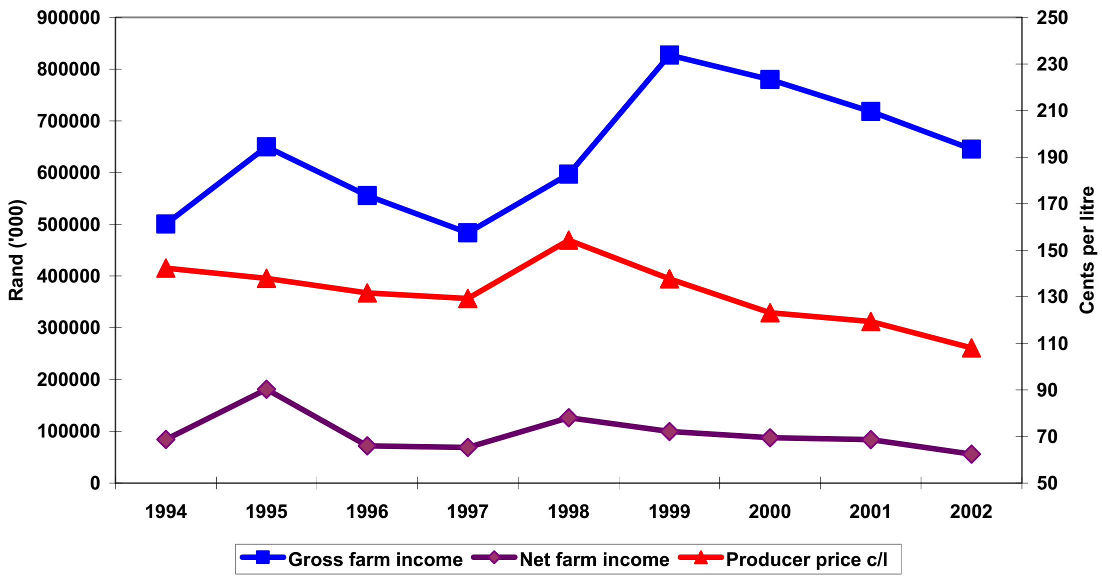


Figure 5.8: NCD sample: Average real gross farm income, net farm income and milk price, 1994 – 2002 (2000=100)

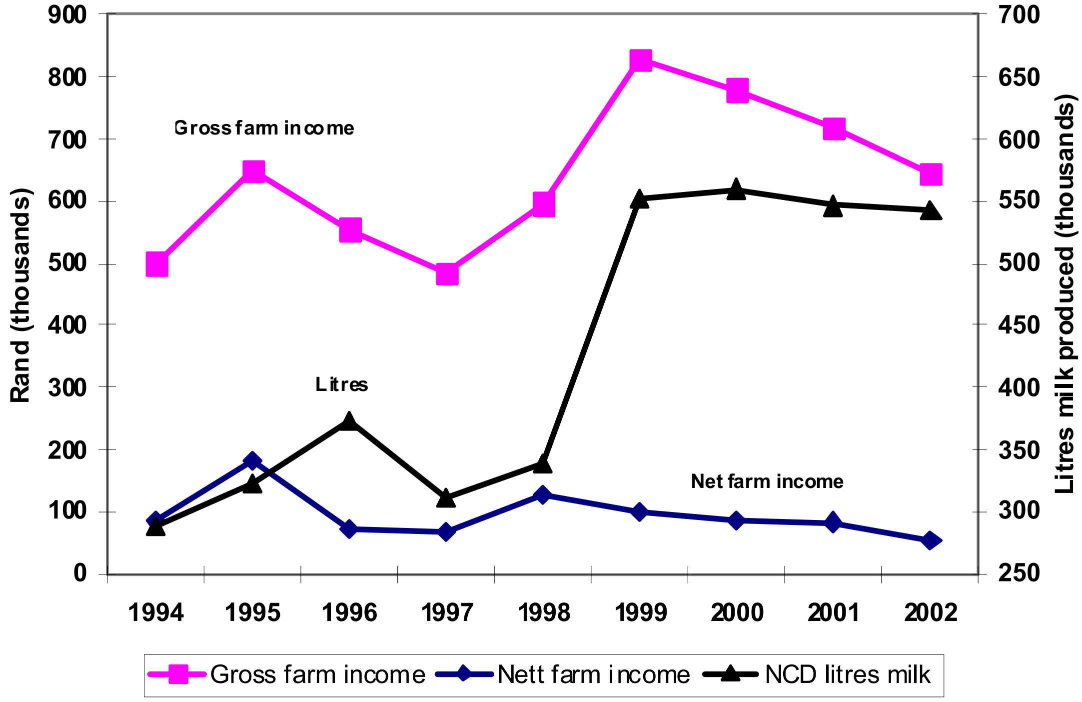


Figure 5.9: NCD sample: Average real gross farm income, net farm income and litres milk produced, 1994 – 2002 (2000=100)

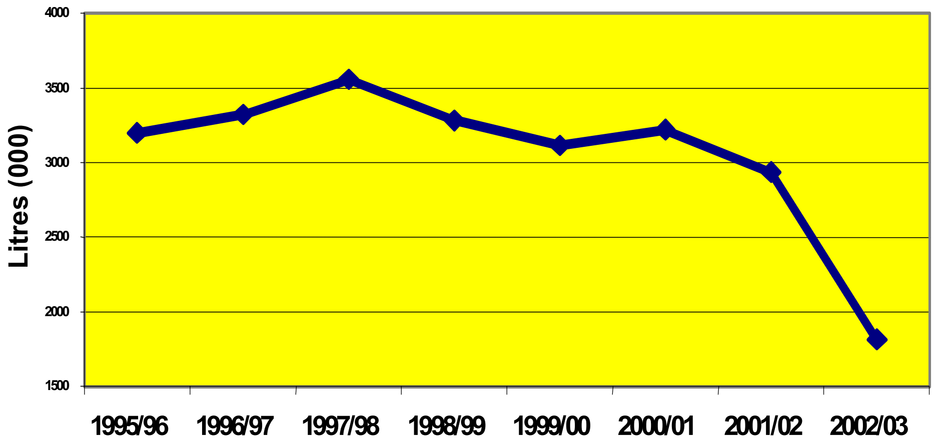


Figure 5.10: National milk production delivered to milk buyers, 1995/96 – 2002/03

5.3.2 Milk distributors and buyers

Changes in the secondary section of the supply chain may have resonating effects on the primary sections (Diagram 5.1(a) and 5.1(b)) as farmers are price takers. The geographical distribution of dairy processing installations (Map 5.2) is to some extent an indication of the geographical distribution of consumption and urbanisation. The bulk of dairy products are consumed in the urban areas of Gauteng, KwaZulu-Natal and the Western Cape. The total number of milk buyers increased from December 1997-December 2002 with 13, while the producer-distributors (PD's) declined from 522 to the present 421. In the more rural Limpopo and Northwest Provinces the PD's and milk buyers are important distribution points for low milk volumes that are produced extensively (compare Tables 5.3 and 5.4), and play an important role in food security in those provinces. In general, the PD's and milk buyers' main criterion when sourcing milk for fresh milk consumption is volume[5], and the pricing is based on this.

Table 5.10: Number of producer-distributors and milk buyers per province, Dec. 2002

Province	Number of PD's*	PD's as % of producers	Number of milk buyers
Western Cape	40	4	48
Eastern cape	40	8	25
Northern Cape	25	33	34
KwaZulu-Natal	39	9	34
Free State	62	5	56
Northwest	47	5	44
Gauteng	71	24	99
Mpumalanga	58	11	37
Limpopo	39	60	9
Total	**421**	**8**	**362**

Source: MPO data
** Producer-distributors*

5.4 Price formation in the supply chain

In the supply chain, price formation happens in various ways. The negotiations to establish the raw milk price are important in this. Further down the supply chain, price negotiations between processors and retailers are of major importance. It is there that the guiding question must be "what can the consumer afford?"

5.4.1 Price formation at farm level

In the supply chain different forms of competition are present: At farm level there exists a near-perfect situation for competition – farmers are numerous (Table 5.3): they largely price-takers from input suppliers and milk buyers, they sell a homogenous product[6], and they are, consequently, subject to a perpetual cost-price squeeze situation (Figure 5.5). On the input and output side, farmers are faced with companies operating under conditions of oligopolistic competition. This means that farmers can, to a limited extent, transmit price increases to either input suppliers or to milk buyers. Their only alternative is to adapt the level of intensification of the farming practices because the price-cost relationship varies and by improving productivity, they will place themselves in a stronger position. It can well be argued that it is less so for milk buyers and retailers.

Rounds of negotiations between milk producers and milk buyers precede the formal notification of the buyers' final price decision. Milk producers prefer to negotiate prices during autumn when the milk flow is low. The wide range of dairy products that are processed from milk, have different demands for milk solids and volume. These variables

[5] MPO has it that per volume 85% of milk is bought on a per volume basis.
[6] A tendency, encouraged by the increasing demand for traceability of food produce, is raw milk differentiation on basis of species, e.g. Ayrshire's milk specially produced and packed for Woolworth, which then earns them a differentiated price.

are included in the negotiations. Thus, the emphasis of the variables varies according to the specific market segment(s) the buyer represents. For example, a milk buyer whose business lies within the fresh milk market segment will primarily concentrate on aspects of milk volume and hygiene conditions.

In order to realise how diverse and difficult price formation at producer level is, factors such as the large number of primary milk producers (Table 5.3) and the relatively small number of PDs and milk buyers (Table 5.10) must be taken into account together with the rest factors that play a role in price negotiations (Table 5.11) According to MPO sources 85% of raw milk is bought on the basis of milk content and 15% is bought on a volume basis (MPO, 2003).

As said, milk buyers operate in an oligopolistic market. During 2000, the four largest dairy companies processed between 74% and 78% of the total of commercial milk delivered to dairies (Theron J, SA Dairy Foundation, March 2000). The CR4 and CR10 values calculated for 96 and 113 dairy product firms have decreased from 0,76 to 0,68 (CR4) and from 0,89 to 0,80 (CR10), and the HHI from 1763 to 1598. All these concentration indicators are lower than their critical levels and still decreasing[7].

These decreasing values are indicative of the growing competition in the dairy processing industry (Board on Tariffs and Trade, 200:1). More recent information (Industry sources, 2003) indicates a decline in the relative position of the traditional "big four", from between 74% and 78% to the present estimation, which is between approximately 65% to 70% of the total commercial milk delivered to buyers.

Table 5.11: Factors included in payment systems determining raw milk producer price, 2002

Factor	Payment system											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Price/litre	+	+	+	+	+			+			+	+
Production cost	(+)	(+)	(+)	(+)	+		+	+	+		+	
Butter fat	+		+	+	+	+	+	+	+	+	+	+
Protein					+	+	+		+	+	+	
Lactose					+		+					
Minerals							+					
Volume				+	+	+	+	+	+	+		
Market realisation				+	+				+			
Locality					+		+		+			
Semantic cell count (SCC)			+	+	+	+	+	+	+	+	+	+
Tuberculosis Brucelosis test (TBT)			+	+	+	+	+	+	+	+	+	+
Quotas							+			+		
Case	5	5	2	2	4		1	3	1		1	5

Source: Industry sources
(+) Indirectly as price followers

[7] This runs counter to international trends in the dairy industry, where fewer and larger firms are responsible for the manufacture of dairy products (Baas *et al*: 1998).

The number of dominant buyers and their relative positions is such that each firm, in making price decisions, must consider the effect of its actions on the market price and how rival firms will react. The weight of medium-sized processors of especially long life dairy products has increased significantly. The effect of this development is that consideration of the expected price reactions has increased substantially. The continuous development of such changes in a traditionally oligopolistic market can improve the ability of primary producers to transmit cost increases onto milk buyers, particularly in a situation where, in terms of volume, a relatively constant sized resource pool is shared by a growing number of competitors who want an increasing share of raw milk volumes..

The Law of One Market Price has existence of market transparency as a precondition. This precondition is then enhanced by market information. The Milk Producers' Organisation (MPO) and South African Milk Processors Organisation (SAMPRO) are collecting supportive data for their respective members, the milk producers and milk buyers, respectively. Lately, these two organisations joined forces to form MilkSA. Amongst other things, they are developing a common database, which their members can use in price and other negotiations such as with government departments, and users of dairy products such as the confectionary industry. In such a database data series such as dairy farmer production costs, imports and exports of dairy products, domestic and world stock of different traded dairy products, etc, could find a place. Such a general database will also have to be diverse so as to promote transparency re price transmission in the dairy supply chain.

The following cases summarise the negotiation content between farmers and milk buyers.

<u>Case 1</u>*: Milk buyers processing short and long shelf life dairy products, e.g. Clover, Parmalat, DairyBelle.*

For such buyers, factors in payment systems G, K and I are relevant (Table 5.11).

Formal negotiating committees consisting of milk producers and buyers meet more than once a year to discuss changes in the primary and secondary dairy industry. They negotiate possible changes in the milk price. In some instances, a base "litre" for price formation serves as the point of departure or as a reference point during the discussions. Factors that receive attention, although in a varying degree between the different negotiating groups are:

- Butterfat, protein and other milk solids
- Volume and a locality factor
- An average regional price
- Raw milk production costs
- Milk quality w.r.t. SCC, TBT counts and antibiotics in milk
- Import – and export parity prices and factors determining it
- Domestic prices at wholesale and retail levels
- Producer and consumer price indices
- Overall consumer demand conditions

NCD[8] and Clover are integrated vertically. Clover buys approximately 30% of all milk sold in the commercial market and operates nationally, but with low raw milk volumes in the Cape coastal areas. It manages a quota system and pays less for over-quota milk

[8] NCD is the sole shareholder in Clover Holdings Ltd.

during months of surplus raw milk. An Advisory Committee consisting of NCD directors forms the link between the NCD's Management Committee and Clover, and prepares formal price submissions to Clover.

Parmalat is dominant in the southern and western Cape and has a formal contractual agreement regulating milk flow and price formation with members of SAMILCO[9]. Based on the prevailing pricing systems (Table 5.12) Parmalat divides producers into two broad groups. In region A, which is near large consumer or urban centres in the Eastern and Western Cape the basis for pricing is cents per litre (i.e. volume basis). In region B, cents per kilogram milk solids form the basis. A standard litre raw milk is defined as containing at least 3,5% butterfat and 3,2% protein. Price adjustments are made for an in- or decrease per 0,1% divergence from the minimum.

NCD is conducting a yearly production cost survey amongst its members, while Parmalat/SAMILCO uses MilkSA's[10] database to calculate the average value per kilogram milk solids.

Case 2. *Milk buyers that are processing predominantly short shelf life dairy products.*

Factors in payment systems C and D are relevant with this group (Table 5.12).

Usually, the large milk processors (e.g. Clover, Parmalat) serve as price leaders for Case 2 buyers such as Gobbler Dairies, Mantic and Transom. Price formation between buyers and raw milk producers is sometimes rather haphazard. Once the buyer's price negotiations with retail outlets produces a price, 50% of the increase is then passed on to the producers, that is, in many cases. Milk quality and hygiene play an important role in the net price farmers receive, and the larger buyers in this group usually have milk test laboratories. Presence of antibiotics in raw milk is heavily penalised. In some instances, even milk is collected from relatively small milk producers, which prevent other smaller buyers entering the milk sourcing area.

Case 3: *Pooling of milk and collective bargaining*

Factors in payment systems H are relevant (Table 5.12).

Milk producers pool their production under management of Middelburg Milk Producers' Consortium, which negotiates simultaneously with all their buyers. Dairy producer input costs plus a profit percentage are the most important factors on which the Consortium concentrates. Penalties are charged if SCC and/or TBT counts are outside the legal prescripts. Volume per farmer, calculated on a sliding scale, is a producer price variable.

Case 4: *Milk buyers producing predominantly long shelf live products*

These buyers apply a Type E payment system (Table 5.12), which has a base price per litre consisting of kilograms butterfat and protein. In addition producers receive a quality premium if SCC and TBT count is lower more than the legal prescripts. Processors such as Woodlands and Lancewood use this payment system. Volume per farmer is remunerated on a sliding scale with the factory proximity carrying the largest weight; this

[9] SAMILCO is a Stellenbosch based co-operative negotiating on behalf of its members with Parmalat
[10] On a provincial bases MilkSA accumulates its members total volume milk bought and the total farm gate value thereof.

is, thus, a price variable. Producers and processor(s) meet regularly exchanging views on production and marketing conditions on the farm, in the factory and at retail level.

Case 5: *Producer distributor that sources its own production, that of other farmers or from larger buyers*

PD's are small operators that can be categorised as using payment systems A or B or L (Table 5.12). They are usually in the fresh milk market. Those PD's utilising system M tend to blend raw milk with whey powder, which is contravening the Agriculture Products Standards Law (119/90), regulation number 2581 of 20 November 1987 as amended. They commonly buy at the price leaders' price. PDs operating under payment system M who add whey powder tend to pay higher prices[11].

5.4.2 Price formation at retail level

At retail level, the competitive situation is very much similar to that of the milk buyers. Most dairy products are distributed through hypermarkets and supermarkets, which negotiate prices on a central and/or regional basis (Table 5.12). Retailers are the primary outlets for dairy products to the consumer. This puts them in a position of strength. This, in turn, accounts for the struggle in which both retailer and processor are engaged to secure custom, margins and authority. This struggle echoes the general trend in the international food sector (Baas et al, 1998).

Table 5.12: The division of the formal trade in dairy products, 1996

Store types	No. of stores	% Outlets	Turnover (Rm)	% Value
Hyperstores	26	0.1	2 174	9.1
Supermarkets	765	2.3	10 115	42.4
Subtotal	**791**	**2.4**	**12 289**	**51.5**
Superettes	1 107	3.4	3 258	13.7
Subtotal	**1 898**	**5.8**	**15 547**	**65.2**
Urban Grocers	11 418	34.8	3 545	14.9
Rural Grocers	10 916	33.3	2 946	12.5
Café/Confectioners	8 572	26.1	1 798	7.4
Total	**32 804**	**100.0**	**23 836**	**100.0**

Source: Hermann, 1997

Buyers of processed dairy products can roughly be divided into:

- Wholesalers, such as Metro, Macro and Trade Centre
- Hyper – and supermarkets, such as Spar, Hyperama, Pick 'n Pay, Woolworths, etc.
- Superettes, such as Seven Eleven, Eight Till Late
- Cafes and spaza shops
- Confectionaries
- Institutional buyers such as Correctional Services, Defence Force, Education, etc.

Seen from the dairy processors' point of view, the three main ex-factory door costs are:

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[11] Compare footnote 3 and discussions relating to it.

- merchandising (packers and other in-store services),
- distribution
- transaction costs

It is obvious that the larger the volume of a product is that is delivered from factory to warehouse/store, the lower the costs per unit delivered will be. Dairy products' nature and unit size also play a role in the delivery cost. Examples are: maintaining the cold chain; cheese is processed in 9-kilogram blocks while milk is packed in one to two litre containers. Wholesalers buy full containers bulk cheese and other dairy products, which comes with a cost decreasing effect. As dairy processors move down the category of buyers, their ex-factory costs per unit delivered increases.

The nature of the ex-factory services differs amongst the four largest dairy processors. Clover has its own distribution network and its own merchandisers servicing the largest retailers. Parmalat has agents handling its products range and has outsourced its merchandising functions to Smullins. Dairy Belle contracted Cold Chain to deliver their dairy products to the various stores. Wholesalers sell the dairy products to relatively small individual buyers. The latter are often located in rural areas or they are not conveniently situated in dairy processors' delivery channels.

It is apparent that the shelf price of dairy products in differently sized retail outlets vary, since this is affected by the ex-factory costs, which is a function of merchandising, distribution, transaction costs and location. A survey done by the SA Consumers' Union showed that prices in shops in the lower income areas are lower than in shops in more affluent suburbs. Pilfering during merchandising and distribution is a major cause of stock shrinkage. Merchandising and distribution are labour and transport intensive, hence labour costs and reliability, new vehicle prices and maintenance cost, as well as fuel prices will have a major bearing on the costs of merchandising and distribution. These are all discounted in the dairy processors' cost structure.

Given the above, the price at which the different categories of retail outlets buy from processors is a negotiated price. Prices at the lower end of the retail chain are derivatives of those negotiated at the upper end.

In the price negotiation process, a common denominator amongst processors is that a good and open relationship with retail buyers is essential. In some instances, retailers are seen as business people who negotiate hard but realistically; others are of the opinion that retailers are not honest towards the consumers and add high profit margins or do not let them share in rebates. Consumer organisations are of opinion that price advantages of cheap and often subsidised imported dairy products are not passed on to consumers. Consumer organisations mentioned that many retailers, irrespective of size, would keep on their shelves dairy products of relative small processors at low prices as a way of "encouraging" the rest to "toe the line". In some instances, retailers will knowingly stock fresh milk from suppliers who add whey powder to milk, which is an illegal practise.

In-store costs, which processors and retailers tolerate, are well known and accepted as part of the negotiation process. In most cases dairy processors must "buy" shelve space from the large hyper- and supermarkets at an average of 3% of the gross price. Merchandising in these shops is for the dairy companies' cost and they hire packers for this purpose. The large retailers levy an 8% rebate on gross in-store sales per dairy company. This money is used to fund the retailers' marketing and other costs[12]. Based on in-store turnover the processors are charged specific amounts for specialised campaigns, such as large consumer price discounts on selected (participating) products (e.g. "Haydays"). Generally speaking, processors are positive about contributing to such campaigns. Processors will contribute a percentage to the 8%, usually 2%, to promote in-store promotional campaigns of dairy products. This can also take the format of a price discount on the processors' price for a specific period. Often a chain will pocket the discount for a certain length of time, after which it will, for instance, sell for a short time span dairy products at below cost prices.

Processors supplying hyper- and supermarkets as well as wholesalers with a wide range of dairy products are for instance Clover, Parmalat, Nestlé, DairyBelle, Grobler Dairies, Woodlands, Fair Cape and others. The price leaders are Clover in the interior and Parmalat in the coastal areas of the southern and western Cape. Processors will have to face hyperstores, supermarkets and superettes as the main price negotiators (Table 5.12).

Participants are of opinion that negotiations based on mutual trust, openness and honesty results in a "fair" price. Retail buyers respect submissions that include an analysis and understanding of the effect of supply and demand on their respective positions.

Processors negotiate, as tenets, that both the raw milk price and the cost increase. Cost factors are i.a. packaging, distribution, labour and other costs, which processors cannot control, but will have to be recovered. Definite negotiation margins are developed below which processors do not want to venture. The PPIM[13] milk products serve as a cost indicator for processed milk products (Figure 5.11). The correlation between this index and the CPI indexes for milk, cheese and eggs substantiates the statement of cost recovery as well as the degree in which these cost increases are passed (transmitted) on to consumers (Figure 5.11). In this regard, it must be noted that since July/August 2000, the monthly average increase of CPI food was less than that of the other two indexes (Figure 5.11 and Table 5.13).

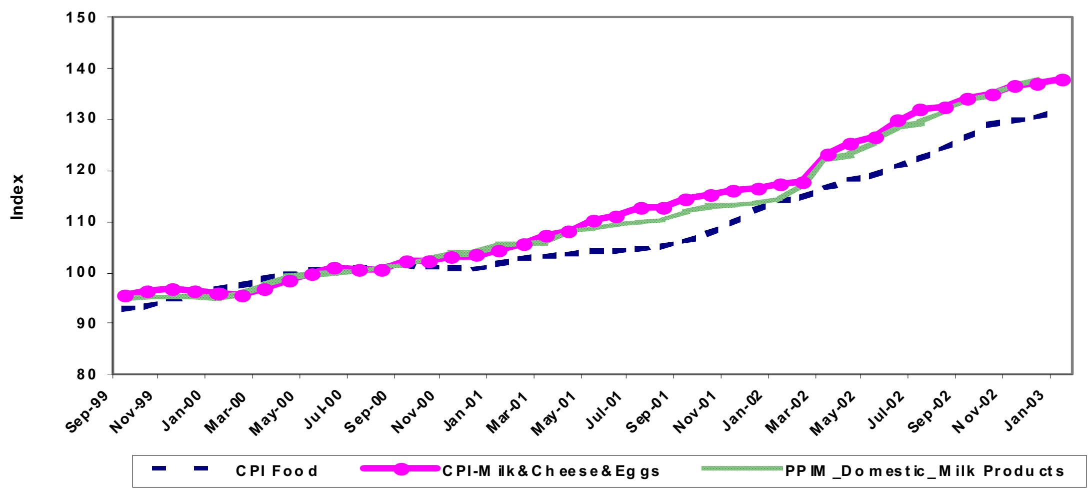

Figure 5.11: Indexes of CPI food, CPI milk, cheese and eggs and PPIM milk products, September 1999 – September 2003 (2000=100)

[12] Opinions were expressed that these rebates protect retailers against their own ineffectiveness.
[13] PPIM: Production Price Index Manufacturing.

Notwithstanding this ability, the downward-sloped demand curves for processed dairy products (Meyer, 2002)[14] compel processors to utilise measures other than merely price in order to protect the market share and maximise income. On national as well as regional levels package deals are negotiated which involve more than "end product price". Included are assurances of product quality, packaging, reliable logistics, superior in-store services, etc. Although cost recovery is an important aspect in price negotiations, dairy processors allege that competitors' and product substitutes' prices and what is affordable for the consumer are paramount in the negotiations (Sources in dairy processing industry). In general, processors indicated that during 2002–2003, many large retail outlets decreased their margins on dairy products. The slower increase in CPI milk, cheese and eggs compared to PPIM milk products during the January 2002–December 2002 (Table 5.13 and Figure 5.11), as well as the UHT retail price tendencies (Figures 5.16.1 and 5.16.2), partially support this opinion.

Table 5.13: Average monthly growth rates of CPI food, CPI milk, cheese & eggs and PPIM domestic milk products for different periods, September 1999 – July 2003 (CPI food 2000=100)

Periods	CPI food	CPI milk cheese & eggs	PPIM domestic milk products
	Average monthly growth rates %		
Sept 99 – Jul 00	0.83	0.50	0.51
Aug 00 – Jan 02	0.71	0.89	0.73
Feb 02 – Feb 03	1.11	1.32	1.42
Mar 03 – Jul 03	0.02	0.63	0.58

Source: Basic data StatsSA

The marketing margin for dairy products

However, the growing difference in the marketing margin between producers and retailers in nominal terms, as indicated by the downward sloping ratio retail prices:producer prices (Figure 5.12), reflects, inter alia, the retailers' dominant position over processors. This difference in margin is then transmitted to primary producer prices.

[14] Elasticities for real consumer prices are as follows: Fresh milk = -0,578; Butter = -0,287; Cheese = -0,355; Skim milk powder = -0,28; Condensed milk = -0,98.

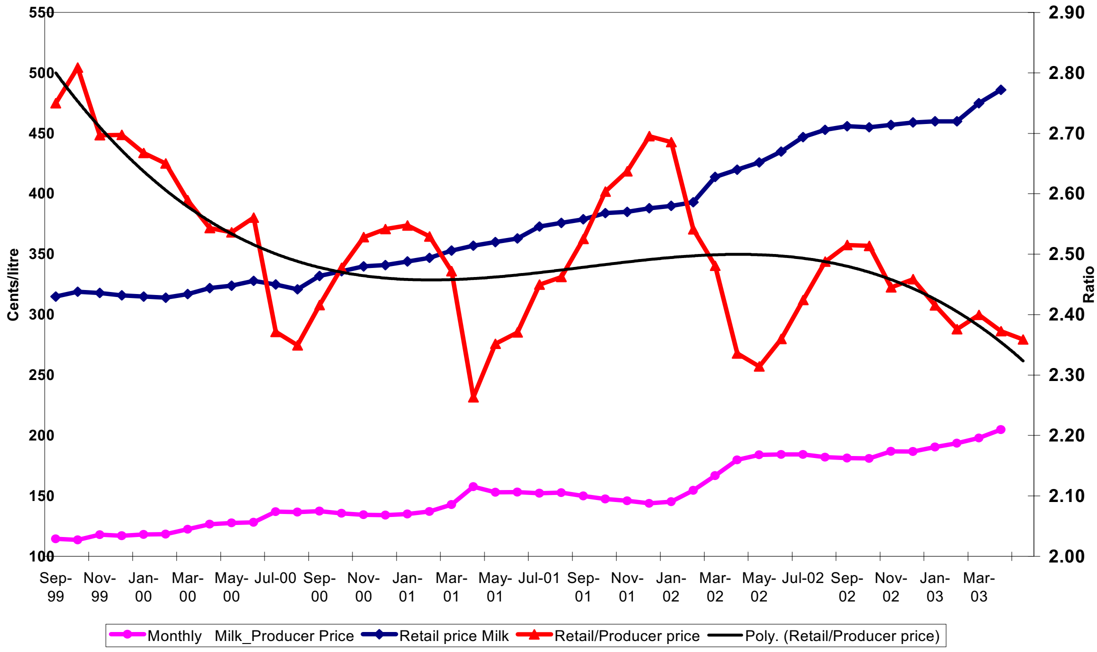

Figure 5.12: Producer and retail price of fresh milk and the ratio retail: producer price, September 1999 – April 2003.

Processors and retailers contend that this increased margin can largely be attributed to value adding costs via long life milk (UHT) and consumer preference for more expensive plastic containers and sachets, which have largely replaced carton containers (Vink and Kirsten, 2002). Increased costs associated with long life milk production can have a similar effect as UHT milk consumption increased from 18% to 28% of total fresh milk consumption from 1991 to 1999, while milk sold in carton containers declined from approximately 38% (1992) to 23% (1999) of all fresh milk sold (Tetra Pak, 2000). On average, the packaging cost as percentage of long life milk's retail price of one and two litre units varies between 10% and 12% (Sources in Dairy Processing Industry).

High and low density polyethylene (HDPE and LDPE) are used for different containers and wrapping material in the dairy processing industry. The international price (Rand/ton) of these materials declined during the period October 1999-December 2001. It seems that the increase in price since this period was again arrested during February 2003 (Figure 5.13). With the down turn of the Rand/US$ exchange rate in January/February 2002, SA domestic prices followed the increase in international prices. It seems that for the increase of packaging prices of materials based on HDPE and LDPE there was, in fact, no justification; nor was there for them to remain high, because both materials' domestic prices, although fluctuating, have had downward tendencies since March 2002.

This decline is echoed in the price of primary packaging as a percentage of fresh milk retail price[15]. However, during this period the retail price of milk was increasing (Figure 5.12) at the same that that the indexed selling price of primary packaging was increasing in relation to its principal raw materials. Therefore, it cannot be stated with certainty if

[15] Similar data were not obtainable for UHT milk. According to the source (BMI Foodpack cc), the packaging price, on index basis, has escalated at a rate consistently below the increase in retail selling prices.

the decline was due to the increase in the retail price of milk or a decline in packaging prices.

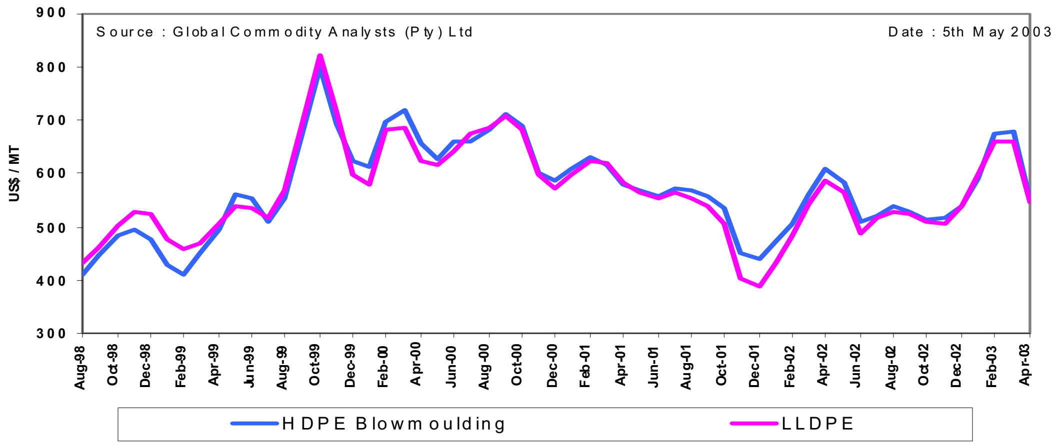

Figure 5.13: Monthly international prices (FOB Far East) of high and low density polyethylene, 1998 – 2003

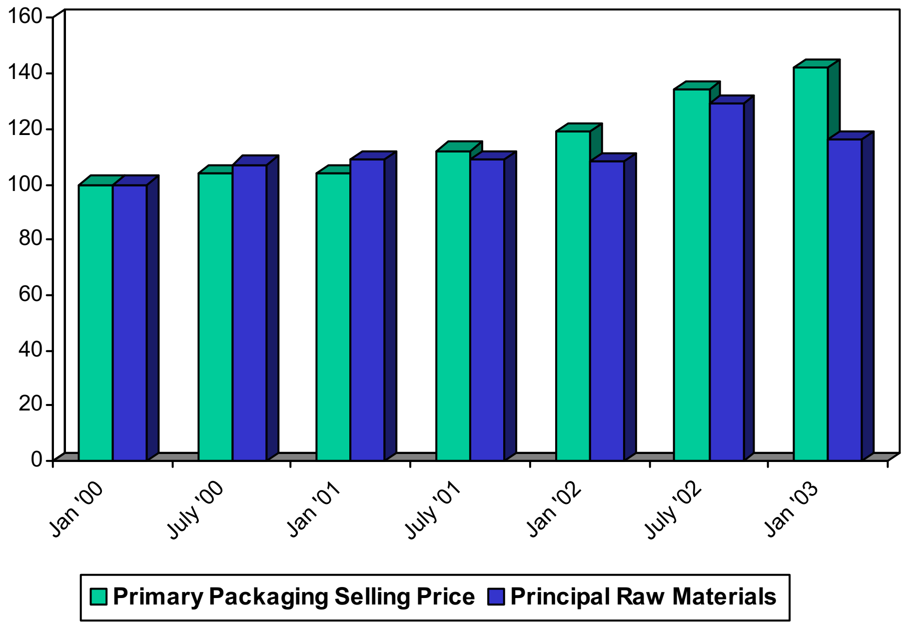

Figure 5.14: Indexed selling price of packaging material, defined as HDPE bottle and cap, for fresh milk, January 2000 – January 2003.

Source: Packaging Council of SA

SAMPRO and one of the large dairy processors made available average ex-factory cost data for certain products (Table 5.14.1, 5.14.2 and 5.14.3). The similarity between the UHT data of SAMPRO (Table 5.14.1) and those of the individual processor (Table 5.14.2) validates the industry averages. The individual processor did not include fixed costs, which explains the differences of approximately 50 cents in 2001 and 2002's total costs (Table 5.14.1 and 5.14.2). The general tendency of 2001 and 2002 (Figure 5.16.1 and 5.16.3) is also similar. Enough proof, although not statistically tested, exists to use these two sets of data in the present analysis.

It appears that the fixed and variable average costs for the four largest processors increased over the full years 2001, 2002 and the first quarter 2003. With the exception of skimmed milk powder, their return on fixed investments in UHT, cheese and butter production also increased over these periods. This might be indicative of their ability to negotiate prices to cover increasing costs (Table 5.14.1).

The Committee's analysis of the manufacturer to retail margin for cheapest UHT milk show some alarming trends as reflect in Figure 5.16.1. After accounting for all factory costs and extraction rates it was estimated that the margin between the factory gate and the end consumer has increased 149 cents per litre in January 2001 to 303.8 cents per litre in October 2003 – an increase of 203% in almost 3 years. What is more concerning – although not exposed visually in Figure 5.16.1 - is the fact that the margin increased from 213,6 cents per litre in March 2003 to 303.8cents in October 2003 – a 142% increase in 7 months. The increasing gap between producer price and UHT retail prices as well as between ex-factory cost and retail prices, are also echoed in Figure 5.16.2.

For the period 1995-2002, the retail price of expensive UHT increased with 8,5% and the price of the cheapest UHT with 6,9% per annum (Table 5.14.2). Applying the same CPI food periods as in Table 5.13, the "price increasing ability" of retail in comparison with producer price is obvious (Table 5.15). It is impossible to make distribution costs into a scapegoat as for UHT these decreased by -6,2% per annum (Table 5.14.2) while in the case of fresh milk the increase was on average 5,2% per annum (Table 5.14.3).

Table 5.14.1: Weighted ex-factory cost for four dairy products, 2001 -2002 and first quarter 2003

Product	2001	2002	2003	2001	2002	2003
	UHT			**Cheddar**		
	c/lt			***c/kg***		
Milk	196	210	235	2004	2021	2093
Fixed costs	46	51	55	234	270	320
Variable costs	71	76	94	68	98	122
Head office	5	5	5	23	27	32
Return on fixed investment	9	15	16	59	59	63
Total ex-factory cost	327	357	405	2388	2475	2630
	Skimmed milk powder			**Butter**		
	c/kg			***c/kg***		
Milk	1616	1858	1905	1335	1364	1393
Fixed costs	274	323	332	94	257	268
Variable costs	23	21	22	31	30	33
Head office	27	32	33	12	25	27
Return on fixed investment	131	107	93	19	20	21
Total ex-factory cost	2071	2341	2385	1491	1696	1742

Source: SAMPRO

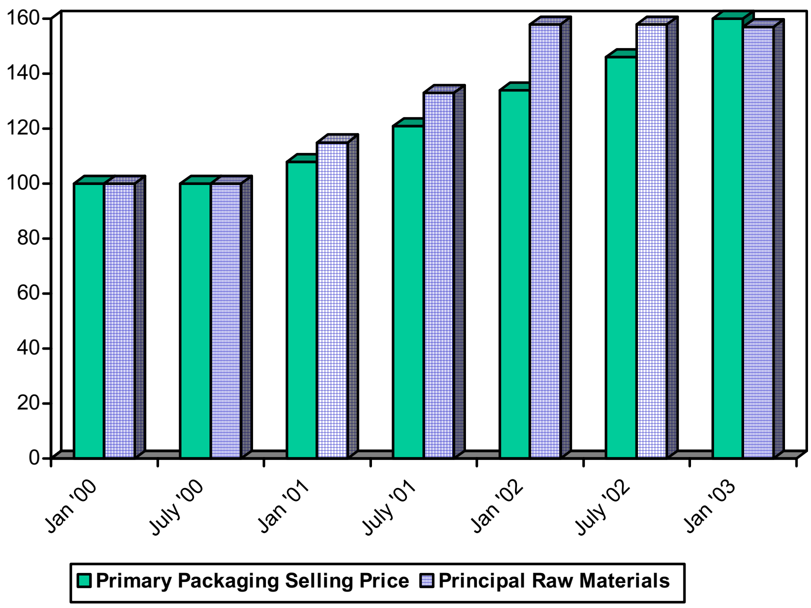

Figure 5.15: Indexed selling price of primary packaging, used in UHT packaging, and principle raw materials, January 2000- January 2003

Table 5.14.2:Individual dairy processor: Ex-factory cost of UHT milk: 1995 – 2002

Year	Raw material & transport in		Packaging		Labour		Overhead		Total cost		Distribution cost
	R/L	%	R/L	%	R/L	%	R/L	%	R/L	%	R/L
1995	1,03	52,0	0.53	26,8	0,14	7,1	0,29	14,7	1,98	100	0,30
1996	1,05	51,7	0.53	26,1	0,14	6,9	0,32	15,8	2,03	100	0,12
1997	1,30	59,9	0.56	25,8	0,10	4,6	0,22	10,1	2,17	100	0,17
1998	1,31	59,0	0.61	27,5	0,09	4,1	0,20	9,0	2,22	100	0,22
1999	1,26	55,5	0.69	30,4	0,08	3,5	0,24	10,6	2,27	100	0,21
2000	1,37	54,2	0.75	29,6	0,11	4,4	0,30	11,9	2,53	100	0,18
2001	1,64	59,9	0.75	27,4	0,11	4,0	0,24	8,8	2,74	100	0,19
2002	1,89	62,2	0.81	26,6	0,10	3,3	0,24	7,9	3,04	100	0,18
	Growth rates for various costs items and retail prices										
											-6,2%
Factory no.1		7,9%		5,5%		-4,1%		-2,3%		5,5%	
Retail price (expensive)										8,5%	
Retail price (cheap)										6,9%	
Producer price										4,7%	

Source: Data supplied by a large dairy processor

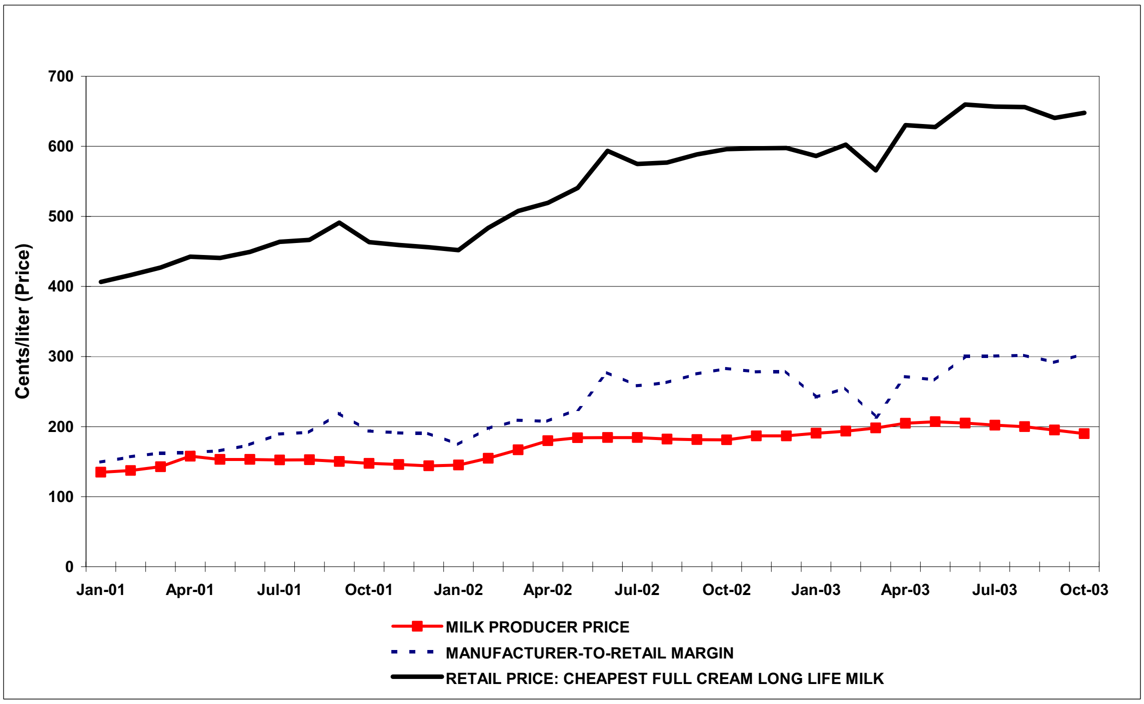

Figure 5.16.1: Monthly milk producer price, cheapest retail UHT price/litre and marketing margin: January 2001 – October 2003

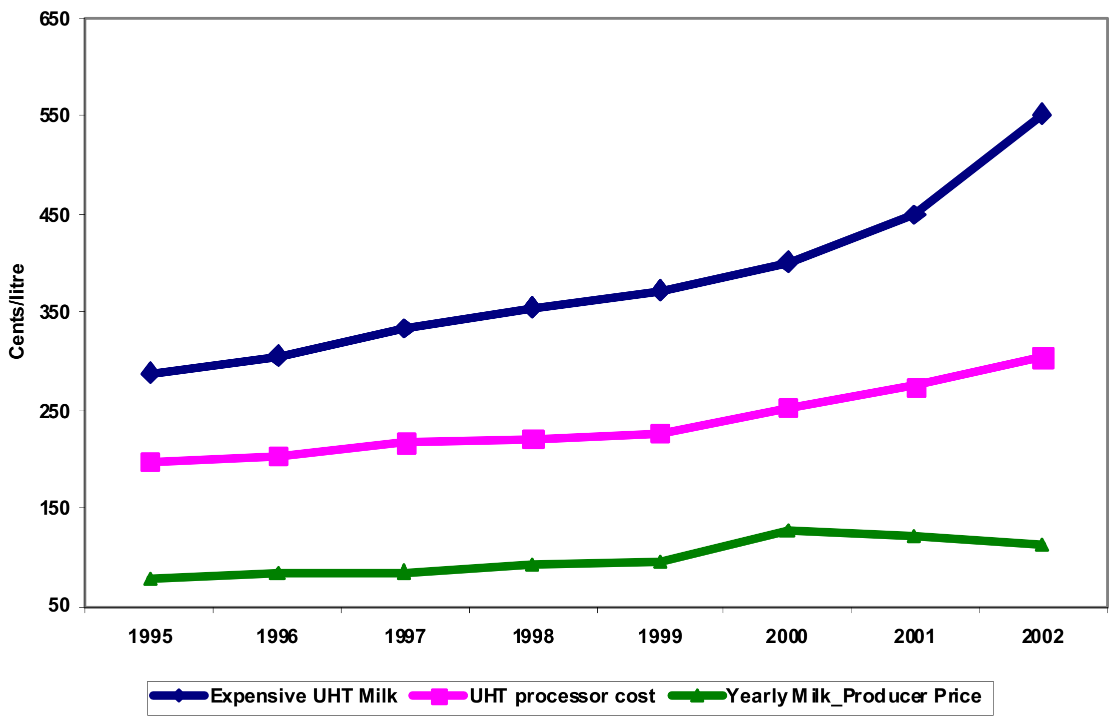

Figure 5.16.2: Annual milk producer price, UHT average ex-factory cost and cheapest retail UHT price in cents/litre, 1995 – 2002

Table 5.14.3: Individual dairy processor: Ex-factory cost of fresh milk, 1995 – 2002

Year	Raw material & transport in		Packaging		Labour		Overhead		Total cost		Distribution cost
	R/L	%	R/L	%	R/L	%	R/L	%	R/L	%	R/L
1995	1,03	74,1	0,21	15,1	0,06	4,3	0,09	6,5	1,39	100	0,48
1996	1,05	72,4	0,24	16,6	0,06	4,1	0,10	6,9	1,45	100	0,49
1997	1,30	71,0	0,31	16,9	0,08	4,4	0,14	7,7	1,83	100	0,62
1998	1,31	72,0	0,28	15,4	0,08	4,4	0,15	8,2	1,82	100	0,62
1999	1,26	68,9	0,31	16,9	0,11	6,0	0,15	8,2	1,83	100	0,63
2000	1,37	69,5	0,32	16,2	0,07	3,6	0,21	10,7	1,97	100	0,61
2001	1,64	71,0	0,34	14,7	0,07	3,0	0,26	11,3	2,31	100	0,57
2002	1,89	71,1	0,40	15,0	0,09	3,4	0,28	10,5	2,66	100	0,72
P.a.[1]		7,9		8,4		5,2		15,2		8.5	5,2%

1. Growth rate per annum

Source: Data supplied by a large dairy processor

Table 5.15: Average monthly growth rates for expensive and cheapest retail prices for UHT milk, ex-factory cost UHT and producer price of milk all in cents/litre, September 1999 – December 2002

Period	Expensive UHT milk retail – 1 L[1]	Cheapest UHT milk retail – 1 L[1]	UHT milk ex-factory cost – 1 L[2]	Milk producer price[3]
	Average monthly growth rates %			
Sept 99 – Jul 00	0,76	0,79	0,50	1,64
Aug 00 – Jan 02	0,52	0,82	0,94	0,34
Feb 02 – Feb 03	1,70	2,27	0,98	1,75
Mar 03 – Jul 03	3,04	4,10	-	0,49

Source: 1 AC Nielsen data; 2 SAMPRO data; 3 NDA

Rivalry among existing supply chain competitors takes the familiar form of jockeying for position, using tactics such as price competition, advertising, new product introductions and increased customer service or warranties (e.g. 'use by' dates). These are typical oligopolistic marketing strategies. In the short run, consumers might benefit from such competition, but over the long run, companies will recoup 'losses' by increasing wholesale prices or offering primary producers less. Both these actions increase the gap between producer and retail prices over time, although not very rapidly (Figure 5.17).

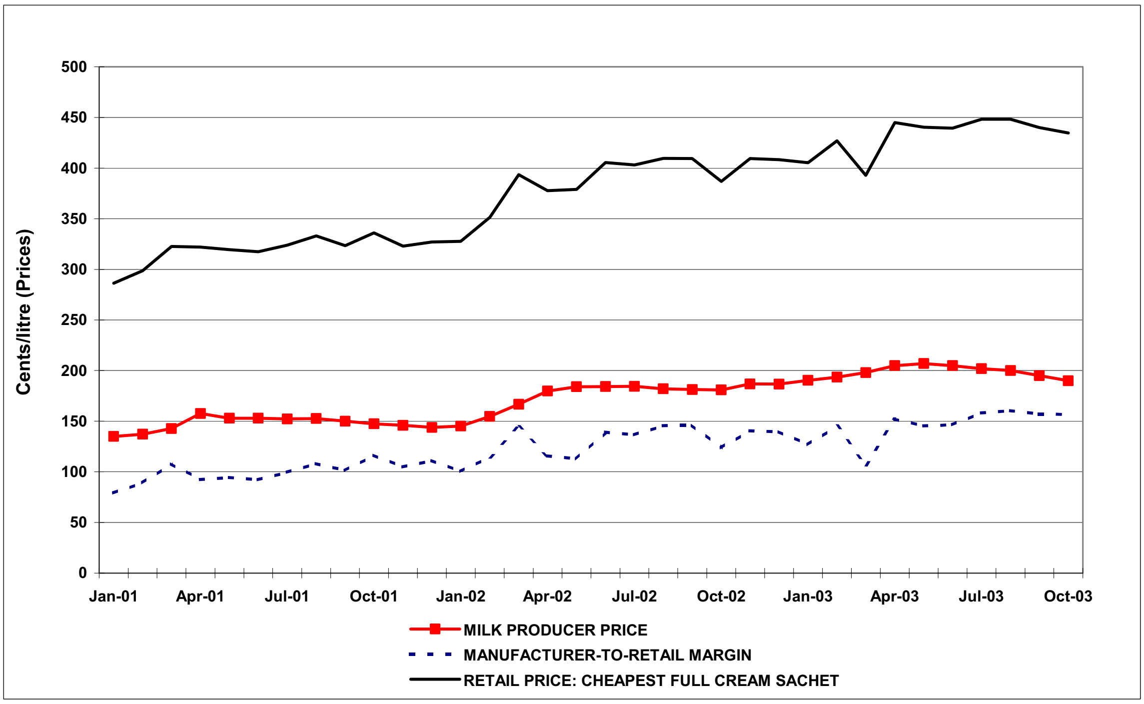

Figure 5.17: Retail and producer price of fresh milk and marketing margin, January 2001-October 2003

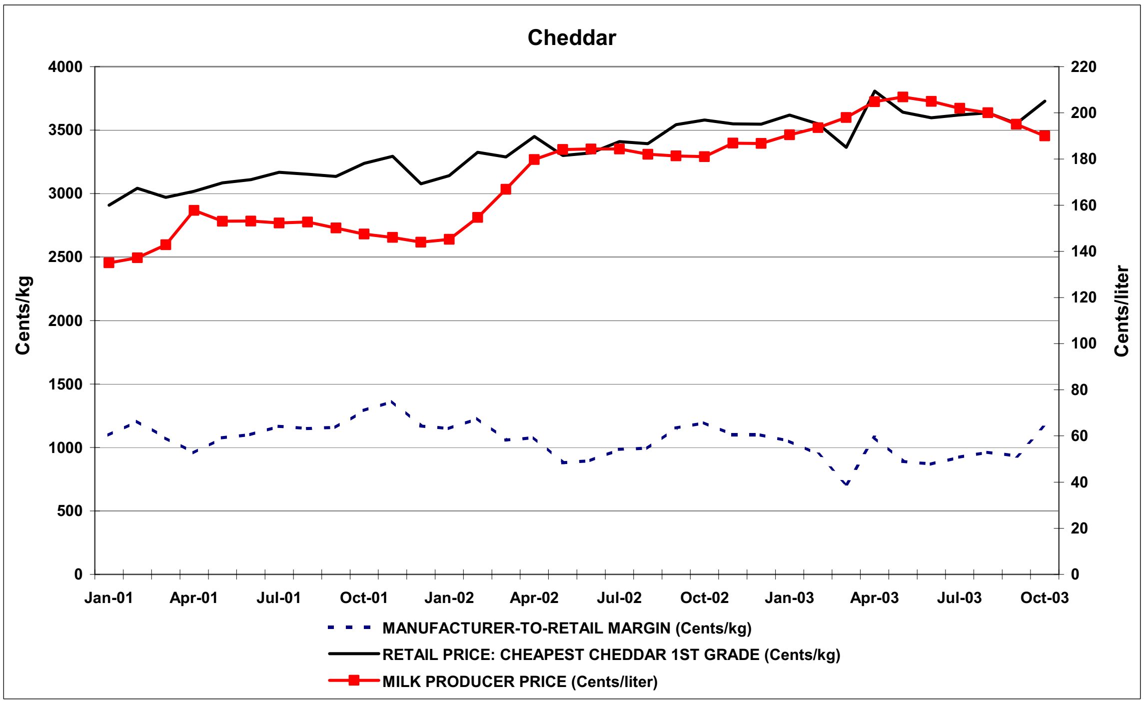

Figure 5.18: Monthly milk producer price, cheapest retail cheddar price and manufacturer to retail margin, January 2001 – October 2003

As cheese is a balancing product, one would expect that the production thereof will vary with a shortage or surplus of fresh milk, and thus a variability in AMM as cheese supply varies. Yet, it is clear from Figure 5.18 that the gap between producer milk price and the retail price of cheese has been oscillating around the R10/kg mark suggesting no extraordinary movements.

An indication of the margin between the ex-factory costs and the retail prices of fresh milk and UHT milk is provided in Table 5.16 and suggest a healthy to fairly high profit for retailer and manufacturer in these supply chains. It remains, however, difficult to determine who gets the lion's share of the margin.

Table 5.16: Manufacturer-to-retail margin for fresh milk and UHT milk: 2001-2003

Year	**Fresh Milk**		**UHT milk**	
	Margin	% on production costs	Margin (R)	% on production costs
2001	R0.79	27%	R1.04	35%
2002	R0.95	28%	R1.71	53%
2003	R1.17	33%	R1.74	48%

5.6 Summary

Urbanisation, policy/institutional and technological changes have been the dominant drivers of structural transformation over time in the dairy supply chain. Not only was the geographical origin of raw milk influenced, but also the location of processors and consumers.. Where consumers congregated in the inland provinces, the milk production moved to the coastal areas creating "shortages" in the inland urban areas. Coastal milk production is less costly than that in the non-coastal areas.

Processing plants are found in the interior and along the coast. It is to be expected that with a view to catering for the export market, processors will develop plants accordingly, that is, near the harbours as in the Western and Eastern Cape.

The structure of the supply chain determines the "fairness" of distribution of value added in the chain. This structure also decides the capability of the different role players in the supply chain to influence their share of the value added.

The actual structure of an industry determines its ability to cope with the following five competitive forces (Porter, 1998):

(2) the entry of new competitors
(3) the bargaining power of suppliers
(4) the bargaining power of buyers
(5) the threat of substitutes
(6) rivalry among the existing competitors

Not all of these factors were analysed in this chapter. It has become apparent, however, that the bargaining power of dairy companies buying from farmers is dominant. The fact that twelve factors, in varying combinations, are included in raw milk payment systems is indicative of the fact that raw milk producers are price takers. These producers are also more numerous than milk buyers and processors, and they have no alternative markets. On the farmers' input side the power of suppliers is also dictating their situation as the farmers are to a lesser or larger degree, continuously caught in a price-cost squeeze.

Rivalry between milk processors per se, between processors and retail buyers and between retailers is high. However, milk processors and retailers operate in an oligopolistic market, which means that there are few buyers and suppliers and that these can influence (negotiate) price levels. The net effect of this situation is that, in general, farmers and small retailers have to accept the prices they are offered. Usually the raw milk and the list price of small to medium sized retailers is a derivative of the prices processors and larger retailers negotiated. Processors and/or retailers are in a position to pass the effect of price increases on to the consumers. This means that price formation in the latter two cases is on a cost plus basis. This entails that during periods of raw milk shortages and subsequent producer price increases, also the retail price increases. During periods of raw milk price contraction, however, a ratchet effect operates in the retail market showing a reluctance to follow the downward trend. Processors strong in the export market purport that the US$/Rand exchange rate plays a dominant role in raw milk pricing. The retail price increase of, for instance UHT milk and cheese, are exponential, while in the raw milk market this is not so. This is characteristic of an oligopolistic market. It is also apparent that dairy processors succeed in transmitting at least some cost increases to retailers.

From the analysis included in this Chapter, it was also deducted that the structure of the dairy supply chain is such that those processors and retailers operating in a situation of oligopoly can retain more of the increase of value added. The opposite is also true, namely, when the volume shrinks processors and retailers are in a position to sustain their net income position from dairy products, or at the very least protect their position more successfully.

Internationally, dairy farms, processors and retailers are increasing in size in order to capitalise on economies of scale. This same tendency is present in South Africa. Competition from new small to medium size processors and unconventional dairy retail outlets can dilute the strong market position oligopolies have. The four biggest dairy processors' share of the dairy market has decreased from a high seventy percent to a mid-sixty percent over a ten year period (up to 2003). Unconventional retail outlets trade approximately 20% of the milk volume and some home made cheese.

Small and medium processors and dairy retail outlets are making inroads, but dairy products are temperature sensitive and this creates extra cost. Extension on and improved policing of milk hygiene regulations amongst beginner and commercial farmers will upgrade the quality and milk volume that are tendered to be processed. Research on maintaining the cold chain in an economical way in the case of small and medium producers, distributors and small processors can strengthen their competitiveness and market growth.

CHAPTER 6

THE SUNFLOWER SEED-COOKING OIL SUPPLY CHAIN

6.1 Background and industry overview

After maize and wheat, sunflower seed is the most important field crop in South Africa. During the period of regulated marketing the Oilseeds Board controlled most aspects of the industry. Prices were determined by domestic demand and supply, as well as by export pool prices derived by the Oilseeds Board. Prices were fixed for a season and producers were faced with a single-channel marketing scheme (NAMC, 1998). However, this situation changed with the introduction of the Marketing of Agricultural Products Act (No 47 of 1996 as amended), which led to the deregulation of the industry and the abolishment of the Marketing Board. Since deregulation, prices are determined under free market conditions and formally traded on the Agricultural Markets Division of the South African Futures Exchange (SAFEX).

Over the past ten years, the area planted under sunflower has fluctuated drastically. An important relationship exists between the area planted under maize and the area planted under sunflowers due to the nature of their substitutability. Sunflowers are well adapted to the South African hot and dry climate and can be produced economically even when there is not enough moisture to produce most of the other summer crops. Figure 6.1 below, shows the area planted and the production of sunflower seed. In 1999, the highest level of production ever was reach when 1.1 million tonnes of sunflower seed were produced. In the past season (2002/03) 736 000 tonnes were produced on a total area harvested of 634 000 ha.

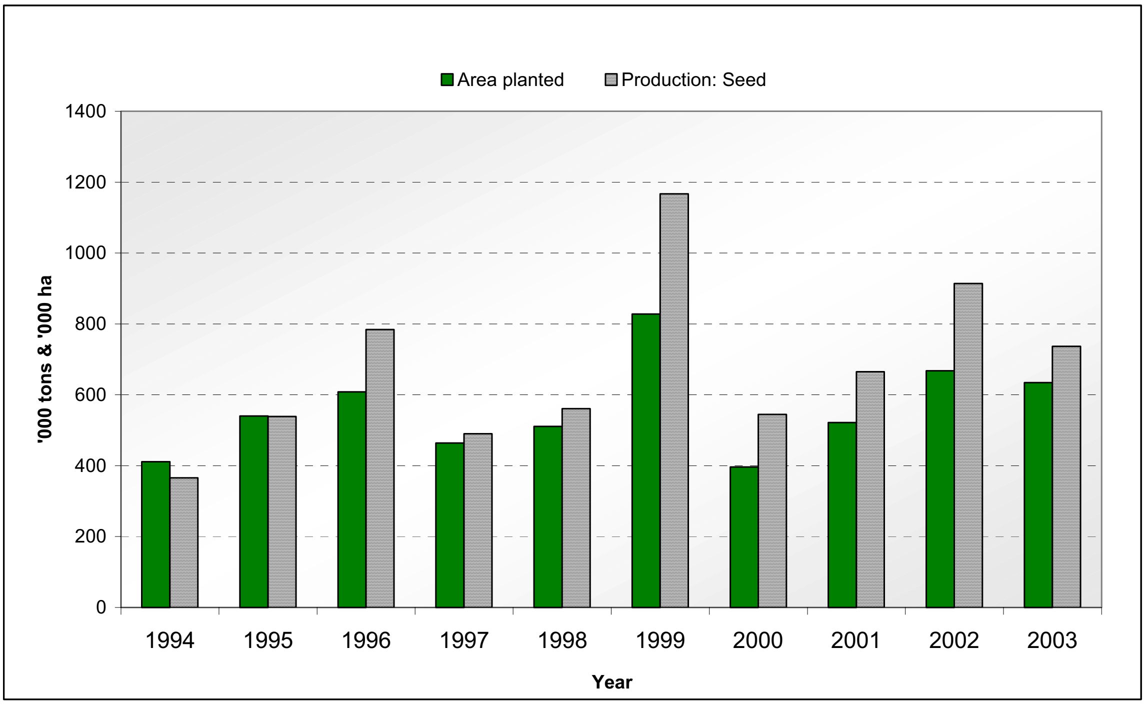

Figure 6.1: Area planted and production of sunflower seed
Source: DoA, Crop Estimates Committee, 2003

Approximately 95% of all sunflower seed produced in South Africa is destined for the processing industry for the production of sunflower oil. Sunflower oilcake - also referred to as meal -, a by-product of the oil extraction process, is sold to feed manufacturers domestically. It is generally regarded as a low-value product that does not compare well to soybean oilcake in terms of nutritional value. Therefore, the dilemma of the sunflower market is that not enough sunflower seed is produced locally for the oil industry, yet once the seed has been crushed the by-product is regarded as a low-valued product. Over the past decade, the total demand for sunflower seed, derived from the total demand of sunflower oil, has increased to over 1 million tonnes, which makes South Africa a net importer. Important to note is that it is not the seed or the cake that is imported, but the sunflower crude oil. Table 6.7 (section 6.4) presents the sunflower oil imports over the past three years.

Table 6.1 shows that the total consumption of sunflower oil in South Africa (including the exports to SADC countries) is estimated at 451 781 tonnes, of which 321 530 tonnes were produced locally and 130 251 tonnes were imported. Although no formal data are available on the consumption of sunflower oil for the period 2001/02, it is estimated that the total consumption (including exports to neighbouring states) decreased because imports of sunflower crude oil[1] decreased by 97% (Table 6.7) as a result of the drastic increase in sunflower crude oil prices and the depreciation of the exchange rate.

Table 6.1: Consumption of sunflower oil by segment

Total sunflower oil market volume by segment - 2000	
	Tons
Retail	83 781
General Trade	53 000
Wholesale	110 000
Industrial	52 000
Bulk	40 000
Exports of refined oil (mainly SADC)	113 000
Total consumption	**451 781**

Source: Own calculations

It is important to take the usage spread of sunflower oil into consideration. It is interesting to note that, despite the fact that the Indian population makes up only 2.5% of the total SA population, its expenditure on sunflower oil is estimated at a massive 33% of the total SA expenditure on sunflower oil. It is estimated that the white population is responsible for 25% of all expenditure on sunflower oil.

Table 6.2: Usage spread of South African Population

	% Population	**% Expenditure**
African	76.79%	14.08%
White	10.86%	24.88%
Coloured	8.89%	16.67%
Indian	2.47%	33.10%
Other	0.99%	11.27%

Source: Own calculations

[1] Note: crude oil is imported and refined oil is exported

It is well known that South Africa is a net importer of oilcake products. Table 6.3 below shows the availability of the total oilcake in South Africa. Interestingly, the import of sunflower cake shows a decreasing trend compared to the total available oilcakes, whereas the usage of soybean cake increased substantially over the same period.

Table 6.3: Oilcake usage by AFMA members, 1 April 1999 to 31 March 2002

OILCAKE (tons)	1999/2000	% Inc	2000/2001	% Inc	2001/2002	% Inc
Soya	402 190	9.77%	406 677	10.32%	495 546	12.27%
Sunflower	304 970	7.41%	286 078	7.26%	232 460	5.76%
Cottonseed	54 165	1.32%	43 758	1.11%	53 741	1.33%
Groundnuts	5 699	0.14%	3 845	0.10%	5 164	0.13%
Canola	12 420	0.30%	8 683	0.22%	8 347	0.21%
Copra & Palm					1 719	0.04%
TOTAL	**779 444**	**18.94%**	**749 041**	**19.01%**	**796 977**	**19.73**

Source: AFMA chairman's report, 2003

Figure 6.2 illustrates that over the past five years the total production of sunflower cake has exceeded the total consumption. This has created an increased downward pressure on the price of sunflower cake. The price of sunflower cake is derived from its relative nutritional value compared to other oil cakes. The calculation of this derived cake price is illustrated in section 6.3.

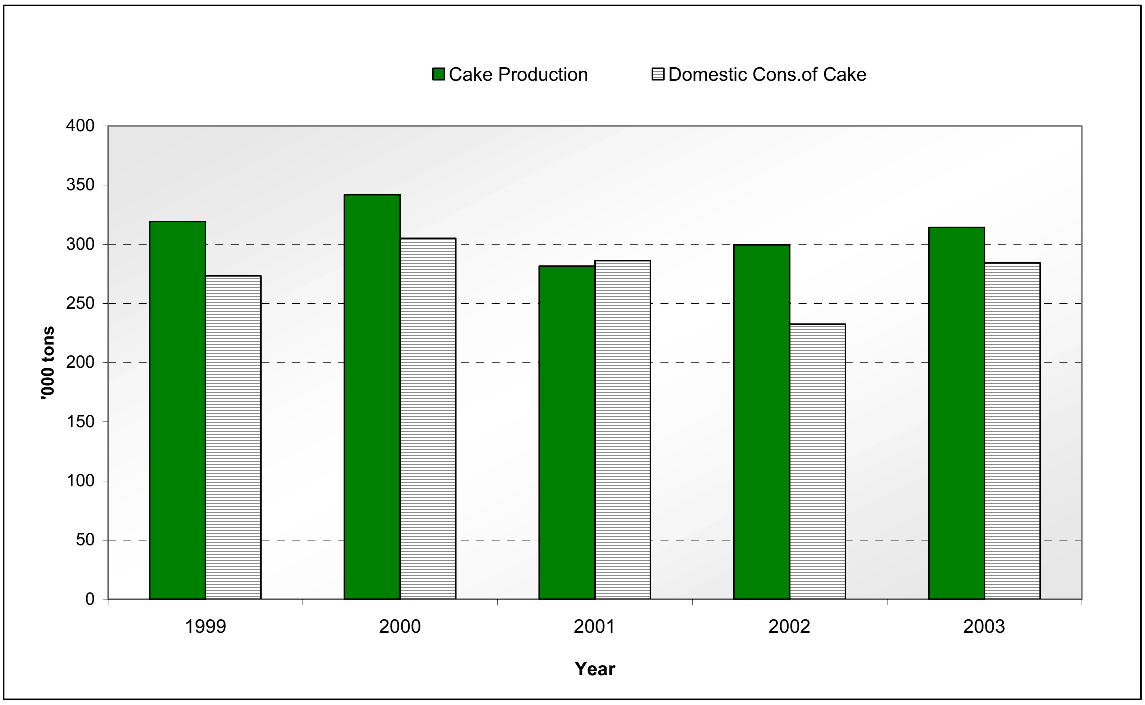

Figure 6.2: Production and consumption of oilcake (Source: AFMA, 2003)
Estimated figures for 2003

According to members of AFMA, the South African feed industry is capable of utilizing more than 300 000 tonnes of sunflower seed meal per annum. According to the members, usage is restricted by the following criteria: (i) the ratio of soy-bean meal to sunflower seed meal prices, (ii) high transport costs to coastal regions, (iii) inconsistent quality of sunflower seed meal from crushers (high fibre, low protein) and (iv) the low availability of sunflower seed meal as a result of low oil prices and thus reduced crushing. Table 6.4 presents the nutrient composition of meals of selected oilseeds.

Table 6.4: Comparative nutrient composition

Item	Sunflower seed meal with hulls	Sunflower seed meal without hulls	Soybean meal with hulls	Soybean meal with hulls	Peanut meal
Nutrient					
Crude protein (%)	28.34	43.00	44.00	49.00	42.00
Crude fibre (%)	23.00	13.00	6.00	3.00	12.00
Energy (ME/Kcal/kg)	1760	2320	2320	2530	2200
Amino acids					
Lysine	1.18	1.70 (84)	2.70 (90)	3.07(92)	1.70(83)
Methionine	0.72	1.65 (93)	0.63(91)	0.68(94)	0.50(93)
Cystine	0.55	0.40 (78)	0.70(82)	0.69(92)	0.62(78)
Threonine	1.21	1.70 (85)	1.70(87)	1.94(92)	1.28(85)

Note: Figures in parentheses indicate percentage digestion coefficients of respective amino acids.
Source: Reddy, 2000. (Competition Commission)

6.2 Market Structure

6.2.1 Primary Industry

Information on the number of sunflower seed producers is not available, but industry sources believe the number of producers is just slightly lower than the number of maize producers. This is due to the fact that farmers plant both crops simultaneously as part of their diversification strategy. Table 6.5 shows the regional distribution of sunflower seed in South Africa in 2001/02 and 2002/03. The regional distribution remained approximately the same over the two seasons. The Free State is the leading producer with a share of 49% of the total area planted and 52% of the total production, followed by the North-West Province with 36% and 35% respectively.

Table 6.5: Regional distribution of area planted and production of sunflower seed

	Area planted (ha)	Area planted (ha)	% Share (02/03)	Production (tons)	Production (tons)	% Share (02/03)
	2002/03	2001/02		2002/03	2001/02	
Western Cape	500	-	0.08%	500	-	0.07%
Northern Cape	300	250	0.05%	720	500	0.10%
Free State	310 000	305 000	49.36%	372 000	443 000	52.63%
Eastern Cape	200	200	0.03%	240	200	0.03%
KwaZulu-Natal	100	60	0.02%	100	90	0.01%
Mpumalanga	40 000	30 000	6.37%	46 000	52 500	6.51%
Limpopo	37 000	40 000	5.89%	22 200	50 000	3.14%
Gauteng	10 000	12 000	1.59%	12 000	18 000	1.70%
North-West	230 000	280 000	36.62%	253 000	364 000	35.80%
Total	**628 100**	**667 510**		**706 760**	**928 290**	

Source: Crop Estimates Committee, 2003

6.2.2 Secondary Industry

The top eight seed-crushing plants yield more than 300,000 tonnes of sunflower meal annually, with a total crushing capacity of over 1 million tonnes of sunflower seed (Table 6.6). This implies that, given the current total production of sunflower seed of 706,760 tonnes, only 65% of the total local crushing capacity are utilised. This opens a window for what is in the industry referred to as “toll crushing”. Due to the surplus crushing capacity, there is an opportunity for any role player in the industry to crush seed, sell the crude oil at a lower price than the import parity price and still manage to realise some profit. This phenomenon makes the crushing industry highly competitive since the utilisation of crushing capacity is readily available to anyone in the business. The fact that there exists excess capacity in South Africa with respect to the processing of oilseeds is exerting more and more pressure on the ability of large and small processors’ to reach and maintain an optimum level of economies of scale.

Table 6.6: Largest crushing plants in South Africa

Location	Processor	Crushing Capacity (tons)
Boksburg & Randburg	Nola Industries	400 000
Southdale	Epic	200 000
Lichtenburg	Epko	170 000
Isando	Willowton Oil Mills	100 000
Viljoenskroon	Senwesko	100 000
Pietermaritzburg	Capital Oil Mills	50 000
Isithebe	Elangeni Oil & Cake Mills	30 000
Pietermaritzburg	Sealake Industries	25 000
Total		**1 075 000**

Source: Industry specialists, 2003

The South African Oil Processors Association (SAOPA) represents the oil processing industry’s interests. Table 6.7 presents a list of oil refineries, which are currently members of the Association. It is interesting to note that not all crushers have a refining capacity and not all refiners have crushing capacity. Eight of the thirteen refineries are relatively close to Durban harbour from where sunflower crude oil is imported.

6.2.3 Other relevant aspects

Oilseed processing is highly capital-intensive, and requires specialised knowledge and state-of-the-art technology. The fact that large quantities of crude oil are entering South African harbours for refining makes it very difficult for large and small processors to survive. Oil mills near the respective harbours have a big advantage in this regard, as their transport costs are very low (e.g. only from Durban harbour to Pietermaritzburg). In other words, location of processing facilities and transport cost can be regarded as very important.

Table 6.7: South African Oil Refineries

Location	Refiners
Pietermaritzburg	Capital Oil Mills
Randfontein	Continental Oil Mills
Isithebe	Elangeni Oil & Cake Mills
Southdale	Epic Foods
Lichtenburg	Epko Oil Seed Crushing
Cumberwood	Hentiq 1320
Rivonia	Nedan Oil Mills
Randfontein	Nola Industries
Pietermaritzburg	Sealake Industries
Isipingo Beach	Sun Oil Refineries
Port Shepstone	Sunola Oil Mills
Durban	UBR
Isando	Willowton Oil Mills

Source: The South African Oil Processors Association

Processors, especially large ones, must keep themselves up-to-date with technological innovations in the oilseed processing industry in order to be compete with large overseas processors. This, in fact, hampers the ability of the industry to maintain, or reach, economies of scale. Most of the local crushing plants were established in the mid-eighties and have not been revamped since. The distance from crushing plant to the market also influences role players' ability to achieve economies of scale. For example, a number of small processors have the disadvantage of being far from the market, in contrast to the larger ones who built their factories closer to the markets of Gauteng and KwaZulu-Natal, or those that are situated near harbours. The issue here is the relative difference in transport costs of transporting the primary commodity to the processing plant and transporting the processed product to the market, which affects, particularly, the smaller processors.

A concern shared by the entire industry is the utilisation of used oils. Used oils comprise between 50,000 and 100,000 tonnes annually that are being recycled back into the economy. Used oils have alarming health risks, a topic that is currently under researched by Professor Kock at the University of the Free State. Used oils are substantially cheaper than virgin oils, and they offer unscrupulous operators the opportunity to exploit consumers (Stromnes, 2001, Competition Commission, 2002).

As with the other agricultural sub-sectors, also the oilseeds industry must adhere to several regulations pertaining to food safety. These regulations include, amongst others, the following:

- Foodstuffs, Cosmetic and Disinfectants Act of 1972 (Act 54 of 1972)
- Health Act of 1977 (Act 63 of 1977)
- Fertilisers, Farm Feeds, Agricultural Remedies Act of 1947 (Act 31 of 1947)
- Agricultural Products Standards Act of 1990 (Act 119 of 1990)

6.3 Price formation in the sunflower seed market

As with all other field crops, prices of oilseeds vary substantially from one season to the next. Although sunflower seed is also traded on SAFEX like maize and wheat, the local price of sunflower seed is not only influenced by the supply and demand factors of sunflower seed but also by the supply and demand factors of the local and international sunflower oil market. The international oil prices act as a guideline for domestic seed and oil prices. In particular, the situation of the Argentinean oil market has a significant impact on the local market since the Argentinean oil market has the same marketing period of sunflower seed as SA producers. Hence (see Figure 6.3 below), the sunflower crude oil price at the Reef is derived from the Argentinean free on board (fob) price for sunflower crude oil. The crude oil price, as illustrated in the figure below, can be regarded as an import parity price of crude oil at the Reef (in Rand terms) seen that the costs of transport, discharge and insurance are taken into account. The calculation of this import parity price is illustrated in section B1 of Table 6.9.

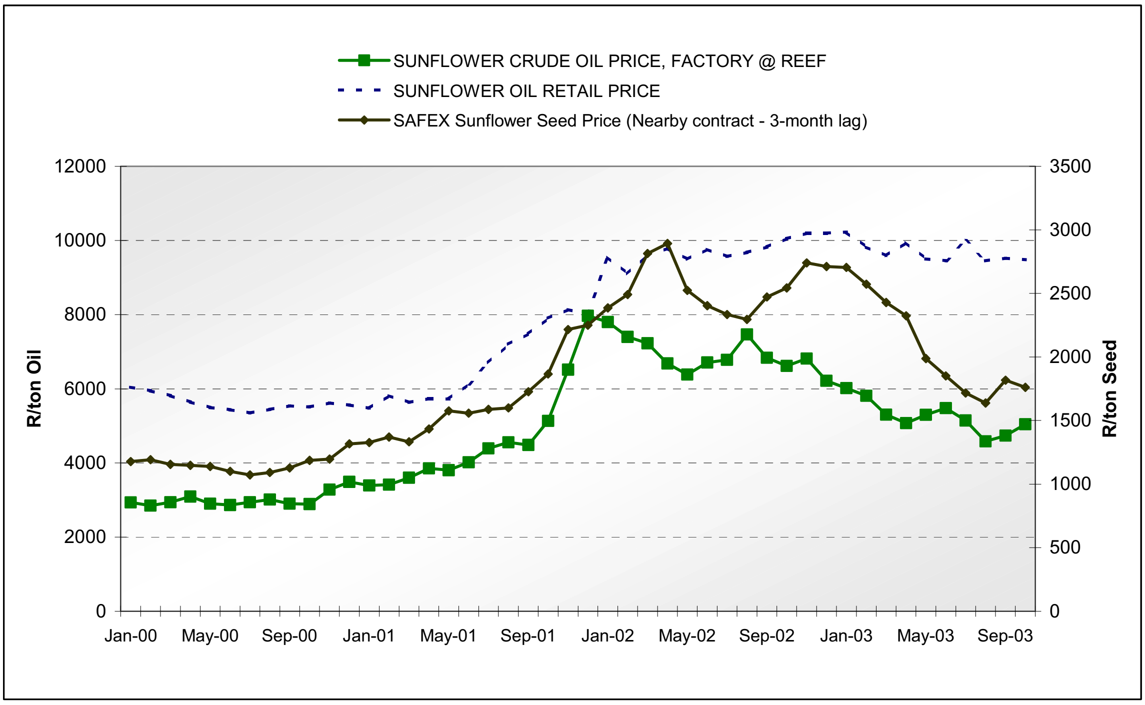

Figure 6.3: Sunflower oil and seed prices
Source: Reuters, SAFEX & AC Nielsen, 2003

Figure 6.3 shows the relationship between the retail price of sunflower oil, the crude oil price at the Reef and the sunflower seed price traded on SAFEX. As previously mentioned, South Africa is a net importer of oil, which implies that the local price is normally traded close to import parity levels. If a refinery can import crude oil from Argentina at a lower price than that of the locally produced oil supplied by the crushers, the refineries will simply decide to import the oil. This is the reason why more than 60% of all the sunflower oil refineries are close to Durban harbour. South Africa is not a significant role player when it comes to international oilseed production and trade, and, therefore, South Africa is regarded as a price taker.

The sharp increase in the price of sunflower crude oil during November and December 2001 not only was caused by the depreciation in the exchange rate, but it also coincided with a drastic increase in the fob price of Argentinean sunflower oil, which resulted in the opening of a gap between soybean oil and sunflower oil prices (Figure 6.4).

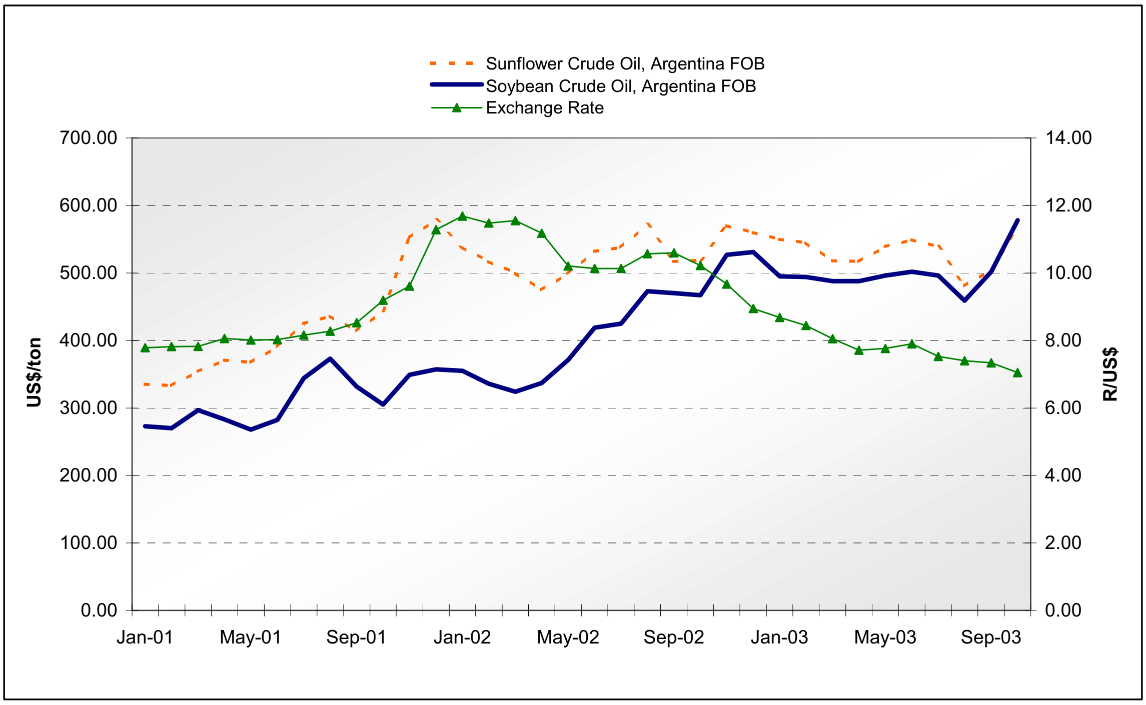

Figure 6.4: World sunflower and soybean crude oil prices and exchange rate
Source: Reuters and SAFEX, 2003

Historically, sunflower oil world prices have traded at an approximate premium of US$20/ton over the world prices of soybean oil. Hence, the fact that the gap between sunflower oil and soybean oil was as high as US$222/ton, during the period December 2001 to January 2002, influenced the behaviour of crushers and refineries significantly. This issue will be further discussed in section 6.4.

When considering the international market, it becomes clear that not sunflower seed is imported but sunflower crude oil. The price that an oilseed processor is willing to pay for sunflower seed should therefore be derived from the import parity price of sunflower crude oil, as well as from the prices of other oils that can serve as substitutes for sunflower oil, such as soybean oil. Despite the fact that more than 300,000 tonnes of sunflower cake are produced locally, cake is regarded as a by-product and prices are very volatile. The local price of cake is influenced by demand and supply factors on the cake market. Figure 6.5 presents the derived prices in Rand terms for sunflower oil and cake at the Reef.

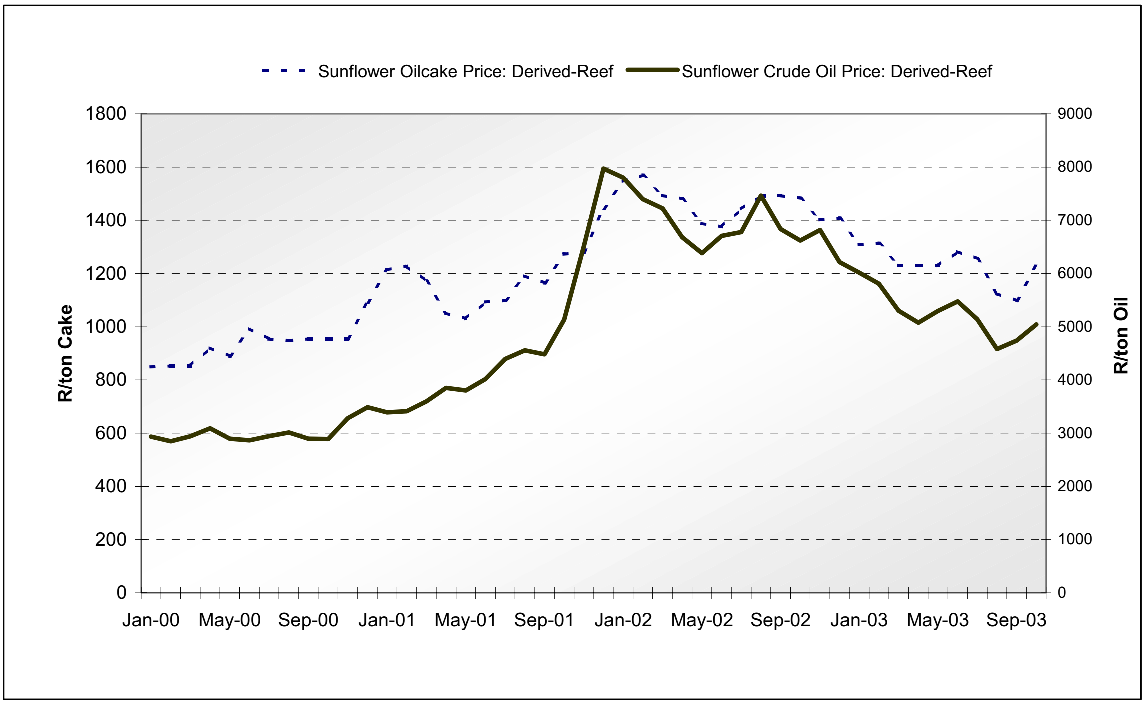

Figure 6.5: Derived sunflower oil and cake prices at the Reef
Source: Reuters, AFMA & own calculations, 2003

The sunflower crude oil price in Figure 6.5 is exactly the same price as used in Figure 6.4, that is, the crude sunflower oil price at import parity levels at the Reef. The sunflower cake price is derived from the soybean cake price after the relative protein content and the final consumption value of the cake is taken into consideration. The prices of both oilcakes are calculated at import parity levels and in Rand terms. Firstly, the soybean cake price has to be adjusted to take into account the different protein contents of sunflower cake (38% protein) and soybean cake (47% protein). Therefore, the soybean cake price has to be divided by 0.47 and multiplied by 0.38. The second step is to multiply this adjusted cake price by 0.65. The reason for this is that industry specialists regard the final consumption value of sunflower cake to be 65% of the value of soybean cake. Factors like the high fibre content of sunflower cake reduce the digestibility of the cake, which reduces the final consumption value of the product. Due to the lack of a formally traded sunflower cake price, this formula can serve as a guideline in the determination of a local sunflower cake price. However, the level of cake prices in the first quarter of 2003 proved that this formula does not always provide an accurate estimation of what the local price of cake ought to be. For the first three months of 2003 sunflower cake traded at an average price of R800/ton, whereas the formula rather suggests an average level of R1270/ton. It was purely local demand and supply conditions of cake that dictated this low price.

South Africa is a net importer of sunflower and soybean oil and, therefore, import tariffs have a direct effect on the level of local prices. A few years ago, the import tariffs on oils and cakes were revised and the new tariffs are shown in Table 6.5. Sunflower and soybean oil are both imported at a fixed import duty of 10% of the free on board price (fob) of crude oil.

Table 6.8: Applied import tariff duties on different oilseeds and oils

Tariff line	Product description	Standard duty rate (%)	EU applied tariff rate (%)
12.0100	Soya beans, whether or not broken	10	0
12.0210	Groundnuts, not roasted or otherwise cooked, in shell	0	0
12.0600	Sunflower seeds, whether or not broken	9.4	7.5
15.0710	Soya oil and its fractions	10	0
15.0810	Groundnut oil and its fractions	9.8	0
15.1211	Sunflower seed oil and its fractions	10	0

Source: Cargoinfo, 2003

6.4 Unpacking the sunflower seed–to-sunflower oil value chain

Similar to the maize-to-maize meal value chain analysis, various assumptions had to be made to construct the framework for the unpacking of the sunflower seed–to–sunflower oil supply chain as presented in Table 6.9. The basic assumptions used in the calculation of this value chain are based on the same principles as the assumptions used in the calculation of the maize-to-maize meal value chain (Chapter 2). For this value chain the following five main nodes or levels were identified: the sunflower seed producers (farm level), the crushers of seed, the refineries of crude oil, the wholesalers and retailers and, finally, the consumers. Table 6.9 represents the supply chain from sunflower seed to sunflower oil for the month of July 2003.

The farm gate price is derived from the SAFEX average nearby contract price, which is lagged by three months. Statistical tests proved that the level of correlation between the SAFEX price of sunflower seed and the consumer price of sunflower oil is the highest when the SAFEX price is lagged by three months. This implies that it takes three months from when the crushers buy the sunflower seed until the oil appears on the shelf. A number of role players also argued in favour of the inclusion of a 3-month lag period between the SAFEX price and the consumer price simply because of the period of time required for processing the oil as well as the need for basic hedging strategies. Therefore, the price of R1717/ton reflected in Table 6.9 since the SAFEX price is actually the average monthly nearby contract price traded on SAFEX for the month of April 2003.

The price of R9 996.25/ton reflected in Table 6.9 as the sunflower oil retail price is derived from the price of a 750ml bottle of “cheapest cooking oil”. After taking into account factors such as the density of the product, it was calculated that 1 454 bottles (750ml) of cooking oil represent one tonne of oil.

Table 6.9: The Sunflower seed –to- sunflower oil supply chain

		Units	Jul-03
A) FARMERS			
	FARMGATE PRICE	**R/ton seed**	**1576.00**
	Transport cost: Farm gate to silo	R/ton seed	106.00
	Handling & Storage cost: Costs of farmer	R/ton seed	35.00
	SAFEX (nearby contract)	**R/ton seed**	**1717.00**
B) SUPPLY OF CRUDE OIL			
1) Imports of Crude Oil			
	Sunflower Crude Oil, Argentina FOB	US$/ton oil	539.00
	Freight	US$/ton oil	40.00
	Insurance	US$/ton oil	6.47
	Duty	US$/ton oil	53.90
	Discharge and clearing transport	US$/ton oil	27.00
	Exchange Rate	R/US$	7.53
	Sunflower Crude Oil, factory @ Durban	R/ton oil	5017.75
	Transport: Durban to Reef	R/ton oil	120.00
	SUNFLOWER CRUDE OIL PRICE, FACTORY @ REEF	**R/ton oil**	**5137.75**
2) Local supply of Crude Oil: Crushing activity			
	Transport cost: Silo to crushing plant	R/ton seed	86.00
	Handling cost: Costs of crusher	R/ton seed	35.00
	Storage costs: Costs of crusher	R/ton seed	100.00
	Interests paid on investment	R/ton seed	140.00
	PRICE CRUSHERS PAY FOR SEED	R/ton seed	2078.00
	Fixed costs	R/ton seed	65.00
	Variable costs	R/ton seed	120.00
	Total costs of crushing	R/ton seed	185.00
	CAKE PRICE	**R/ton cake**	**900.00**
	Crude oil contribution (39% extraction from 1ton of seed*Oil price)	R/ton oil	2003.72
	Cake contribution (42% cake from 1ton of seed*Seed price)	R/ton cake	378.00
	Costs of seed	R/ton seed	2078.00
	CRUSHING MARGIN	R/ton seed	303.72
	TOTAL CRUSHING COSTS	R/ton seed	185.00
	MANUFACTURERS REALISATION (CRUSHING)	R/ton seed	118.72
C) REFINEMENT ACTIVITY			
	SUNFLOWER CRUDE OIL PRICE, FACTORY @ REEF	R/ton oil	5137.75
	Interests paid on investment	R/ton oil	58.00
	Fixed costs	R/ton oil	188.00
	Variable costs	R/ton oil	180.00
	Total costs of refinement	R/ton oil	426.00
	Total costs before refinement loss		5563.75
	TOTAL COSTS OF REFINED SUNFLOWER OIL(exl. packaging)	**R/ton**	**5918.88**
D) PACKAGING ACTIVITY			
	Interests paid on investment	R/ton oil	65.00
	Fixed costs	R/ton oil	120.00
	Variable costs	R/ton oil	270.00
	Total costs of packaging	R/ton oil	455.00
	Distribution costs	R/ton oil	250.00
	TOTAL COSTS OF SUNFLOWER OIL (incl. packaging)		**6623.88**
	MANUFACTURER-TO-RETAIL MARGIN (Pure sunflower oil)		**3372.37**
	SUNFLOWER OIL RETAIL PRICE	**R/ton oil**	**9996.25**

It is important to note is that two possible sources for the supply of crude oil to the local refineries are included in the framework. The first source of supply of crude oil is imports. Table 6.9 clearly illustrates the calculation of the import parity price of sunflower crude oil of R5 137.75/ton. The second source of supply is the local crushers. Estimates for local crushing costs, the possible crushing margin, and the crushers' realisation are presented in section B2 of Table 6.9. The crushing margin of R303.72/ton of seed is calculated by deducting the costs of seed at the crusher's door (R2078/ton) from the income generated by the sales of the oil (R2003.72 = 0.39*R5137.75) as well as the sales of the cake (R378 = 0.42*R900/ton) that were extracted from a tonne of seed. For the purpose of these calculations, an average extraction rate of 39% is used for oil and 42% is used for cake. Thus, one tonne of raw sunflower seed produces on average 390 kg of crude oil and 420 kg of cake. The total crushing costs are estimated at R185/ton, which implies that the crushers' realisation is estimated at R118.72/ton (R303.72 – R185) of seed.

It is important to keep in mind that the value of the crude oil is derived from the import parity price of crude oil. Industry specialists feel that at specific periods in the year the local price of crude oil trades below the import parity price levels. However, it was decided that for the purposes of these calculations a higher price of crude oil will reflect the "worse case" scenario because crude oil is regarded as the raw material and the higher the price of the raw material that enters the value chain, the slighter are the possibilities of making profit if the retail prices are kept at a constant level. Thus, the calculations in Table 6.9 reflect the worst-case scenario for the value chain.

Total costs of refinement are estimated at R426/ton oil and the total packaging costs (including distribution costs) are estimated at R655/ton oil. The total costs of refined sunflower oil (excluding packaging) including refinement losses of 6% are estimated at R5918.88/ton. If packaging costs and distribution costs are added to this value, the total cost of sunflower oil, before it enters the wholesale and retail sector, is R6623.88/ton oil.

Table 6.10: Summary statistics of sunflower value chain calculations

	Units	July 2003
Manufacturer-to-Retail margin	R/ton	3372.37
Raw material as percentage of retail price (Crude Oil)	%	51.40%
Conversion costs as a percentage of retail price	%	13.56%
Packaging as percentage of retail price	%	4.55%

Source: Own calculations

The manufacturer-to-retail margin (Table 6.10) is calculated by deducting the total costs of sunflower oil from the retail price of sunflower oil. Table 6.10 reports a manufacturer-to-retail margin of R3 372.37/ton (R9 996.25-R6 623.88). Within this margin, or "price gap", lie the total costs of administration and marketing of the retailers and wholesalers as well as the profits of the wholesalers, retailers and refineries. Similar to the miller-to-retail margin, not many assumptions are made to obtain the manufacturer-to-retail margin and, therefore, a great deal of emphasis is placed on this measure.

Figure 6.6 below, depicts the trends in the manufacturer-to-retail margin, and the imports of sunflower oil and soybean oil. As previously mentioned, during November and December 2001 the price gap between the world price of sunflower and soybean oil increased significantly as a result of the sharp increase in the price of sunflower crude oil. The impact of this sharp increase in the price of crude oil on the manufacturer-top-retail margin is illustrated graphically in Figure 6.6. The manufacturer-to-retail margin became negative in this period. With the soybean crude oil price more than US$ 200/ton cheaper than the crude oil price of sunflower, refineries started substituting sunflower oil with soybean oil and imports of soybean oil increased sharply. The fact that the retail price, which was used for the purpose of these calculations, reflects the price of "cheapest cooking oil" on the shelf, and not pure sunflower oil, implies that it reflects the price of blended oil. Pure sunflower oil is always sold at a premium. This premium can in some stores be as high as 30%.

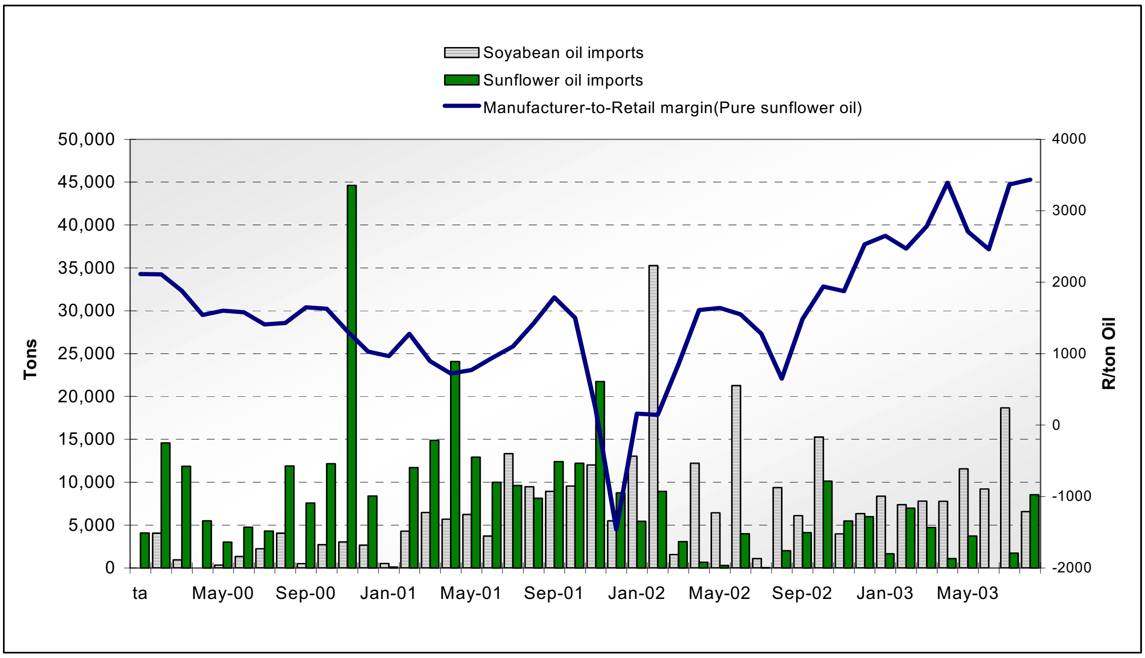

Figure 6.6: Manufacturer-to-retail margin versus oil imports
Source: Department of Trade and Industry & own calculations, 2003

An inverse relationship between the manufacturer-to-retail margin and the level of soybean imports can be identified in the figure above. Whenever the margin decreases the level of soybean crude oil imports increase. From 2001 to 2002 sunflower crude oil imports decreased by 97.2%, while the imports of soybean oil increased by 54.9%. Table 6.11 shows that, apart from sunflower oil, the imports of all the crude oils have increased.

Table 6.11: Oil imports 2000 - 2002

	Quantity Imports (tons): Jan – Dec			% Change	
	2000	2001	2002	00- 01	01- 02
Sunflower Oil	130,251	105,979	2,949	-18.6%	-97.2%
Soybean Oil	19,003	85,217	131,960	348.4%	54.9%
Peanut Oil	560	14	18	-97.5%	24.3%
Olive Oil	2,565	2,620	2,837	2.2%	8.3%
Palm Oil	168,174	216,695	236,846	28.9%	9.3%
Cotton Seed Oil	0	19,651	29,522		50.2%
Total	**320,553**	**430,177**	**404,131**	**34.2%**	**-6.1%**

Source: Department of Trade and Industry, 2003

The results suggest that the refineries had to blend different oils into the final product to maintain a positive manufacturer-to-retail margin. Regulations on food safety and product standards require that sunflower oil, which is labelled as "pure sunflower oil", must contain no less than 90% of pure sunflower oil.

Figure 6.7 depicts the increase in the percentage share of raw material costs and the conversion costs of the value of the final product (retail price of sunflower oil). The price of crude oil entering the value chain is regarded as the "cost of raw material". In July 2003, the cost of raw material was R5 137.75/ton, which resulted in a percentage share of the final product of 51% (R5 137.75/R9 996.25 = 0.51). The share of raw material costs increased from 53% in 2000 to 71% in 2002. Over the past nine months, this share has decreased again to an average of 54%. The main contributing factor to this decrease in the share of the final good was the appreciation of the exchange rate, which led to lower import parity prices. Conversion costs as a percentage of the final value of the product have remained fairly constant over the past four years (14% to18%).

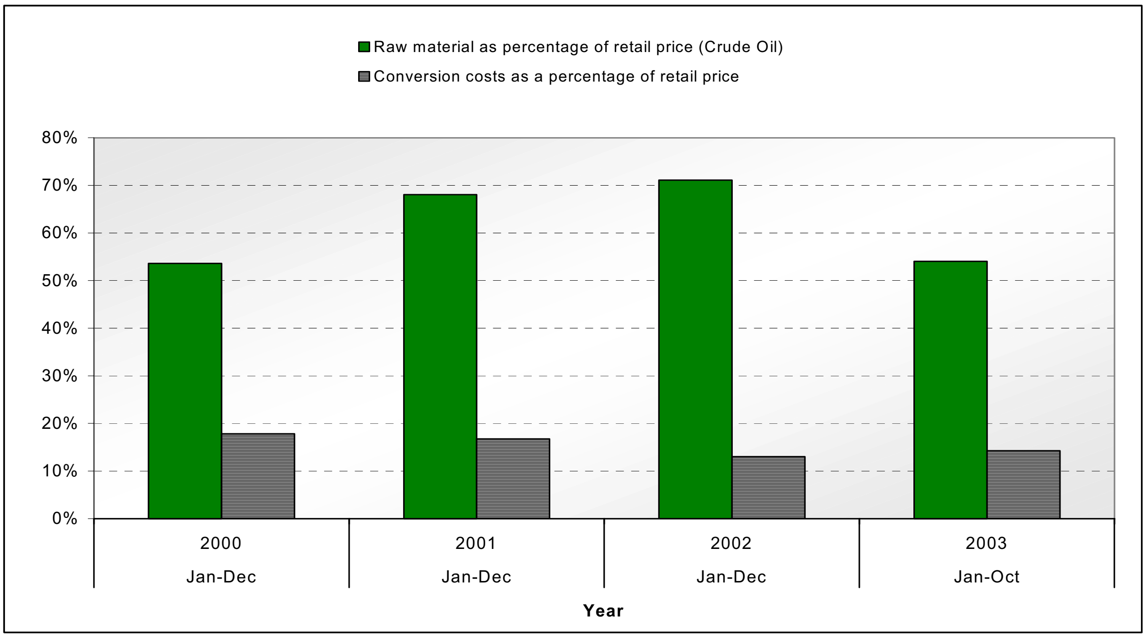

Figure 6.7: Raw material and conversion costs
Source: Industry specialists & own calculations

6.5 Conclusion

There are many factors to be taken into consideration in addressing the critical question of who is capturing profits in this value chain. Firstly, in section 6.2.2 it was mentioned that only 65% of the local crushing capacity is utilised. Secondly, the local crushers have to compete with the international market because crude oil is highly tradable and is therefore traded in high volumes. Finally, and most importantly, opposed to the trends in other value chains, statistical tests in Part Five of the Report show that retail prices of sunflower oil have responded in the same way to upward shifts in raw material costs as to the downward shifts.

Barriers to entry in this market are limited since there is the possibility of 'toll' or contract crushing (R298/ton) which carries the implication that anybody can enter the sunflower oil market. It is for this reason that the Committee is confident that healthy competition exists between domestic producers and processors, as well as importers.

CHAPTER 7

THE SUGAR SUPPLY CHAIN

7.1 Introduction

The aim of this Chapter is to report on trends in the components of the sugar supply chain in South Africa (SA) over the period 1998/99-2002/03. This entails estimating how the farm value (what farmers get for the sugarcane that they sell), the processing and refining spread, and the transport, handling and wholesale spread for sugar changed from year to year. Before analysing these trends, the chapter briefly describes pricing in, and the structure of, the market for refined sugar in SA. Some policy implications of the results are considered in the conclusion.

7.2 Pricing in, and structure of, the market for refined sugar in South Africa

The Sugar Act of 1978 (as amended) and the Sugar Industry Agreement (SIA 2000) provide for three main regulatory provisions within which the pricing of refined sugar in SA takes place: (a) an import tariff that is set relative to a US dollar-based reference price; (b) a single channel export mechanism, and (c) a local market proceeds-sharing agreement whereby proceeds earned by the SA sugar industry are divided amongst growers and millers according to a set formula (about 64% of the proceeds are allocated to growers). The combination of these regulatory provisions allows the SA sugar industry to maintain a domestic refined sugar price that is at or near the import parity price (including the tariff). The Department of Trade and Industry (DTI) and the Board on Tariffs and Trade (BOTT) remain committed to the imposition of an import tariff due to the distorted nature of the world sugar market. Numerous studies estimate that the long-term world price of refined sugar would be 20% higher without market intervention (Board on Tariffs and Trade, 2000).

Refined sugar prices in SA currently reflect price discrimination, whereby the SA sugar industry earns revenue from a domestic market and an export market, which have different prices for sugar. Until 2000, the South African Sugar Association (SASA) had the authority to determine the maximum domestic industrial price of sugar, and, in terms of the single channel mechanism, to determine the quantity of sugar released onto the SA national market and the quantities released for the export market. SASA could, therefore, increase the total revenue for the industry, because:

- The domestic and export markets have different price elasticities of demand for sugar. The demand for sugar in the SA national market is price inelastic, with estimated price elasticities of demand ranging from –0.18 to –0.47 (Cleasby, 1990; Oosthuizen, 1980). The export demand for sugar facing SASA is price elastic, since SASA cannot influence the world sugar price. Cleasby (1990) estimates a price elasticity of export demand of –7.90.

- Via the single channel export mechanism (implemented by SASA) the national SA and export markets were effectively separated. This mechanism controls supply on the national market and prevents sugar that is sold on the export market from returning onto the national market.

By controlling domestic supply at the maximum industrial price via the single channel mechanism, SASA could earn a higher price on the South African domestic market where there existed a more price inelastic demand. Sugar in excess of domestic needs and storage could then be exported at a lower price on the export market that has a more price elastic demand. Overall, this led to higher total revenue than if all sugar was sold on the domestic market (see Tomek and Robinson, 1981 for the relevant economic principles).

With the introduction of the revised Sugar Industry Agreement in 2000 (SIA 2000), SASA now has no statutory authority to set the industrial sugar price, and the millers' pricing decisions (reflected by the miller net selling price) are now influenced by the import tariff and the structure of the local market for refined sugar. This market is an oligopoly, in which two main players - Tongaat-Hulett Sugar Limited and Illovo Sugar Limited - dominate as they produce about 35% and 48%, respectively, of total sugar output (Board on Tariffs and Trade, 2000). Industry representatives indicate, however, that supplies of sugar from neighbouring countries, particularly Swaziland, in recent years have put downward pressure on the local prices of refined sugar.

Although SASA can no longer set the domestic industrial sugar price, current import tariff protection, the benefits of price discrimination (higher total revenue), and the single channel export mechanism still give millers the incentive to sell less sugar on the domestic market, and to allow the domestic net miller price to rise to import parity. In making their pricing decisions, firms in an oligopoly must take account of the potential reactions of their rivals. SA millers currently have a tacit local market proceeds-sharing agreement (millers that sell more than their allotted local market share compensate millers that sell less than their allotted share). This suggests that local millers are more likely to avoid open price competition.

The status quo enables the domestic miller net selling price of sugar to be raised at least up to import parity. The single channel export mechanism then diverts supply in excess of domestic sugar consumption and storage into the export market. Domestic sugar prices, therefore, can approach import parity, since millers have a local market proceeds-sharing agreement, and they would lose national market share to sugar imports if they tried to raise the net miller price above import parity. The availability of domestic sugar stocks would have a slight dampening effect on domestic sugar prices.

It is not in the millers' interest to aggressively cut the miller net selling price to try and increase their domestic market shares: there may be a threat of retaliation by rivals (price wars), or cutting prices would reduce the total sugar revenue (domestic demand for sugar is price inelastic). Rather they compete for sales by using advertising, special promotions, sales rebates, and discounts, or they informally collude and agree on market share allocations (Tomek and Robinson, 1981). Domestic stocks of sugar would again have a slight dampening effect on domestic sugar prices.

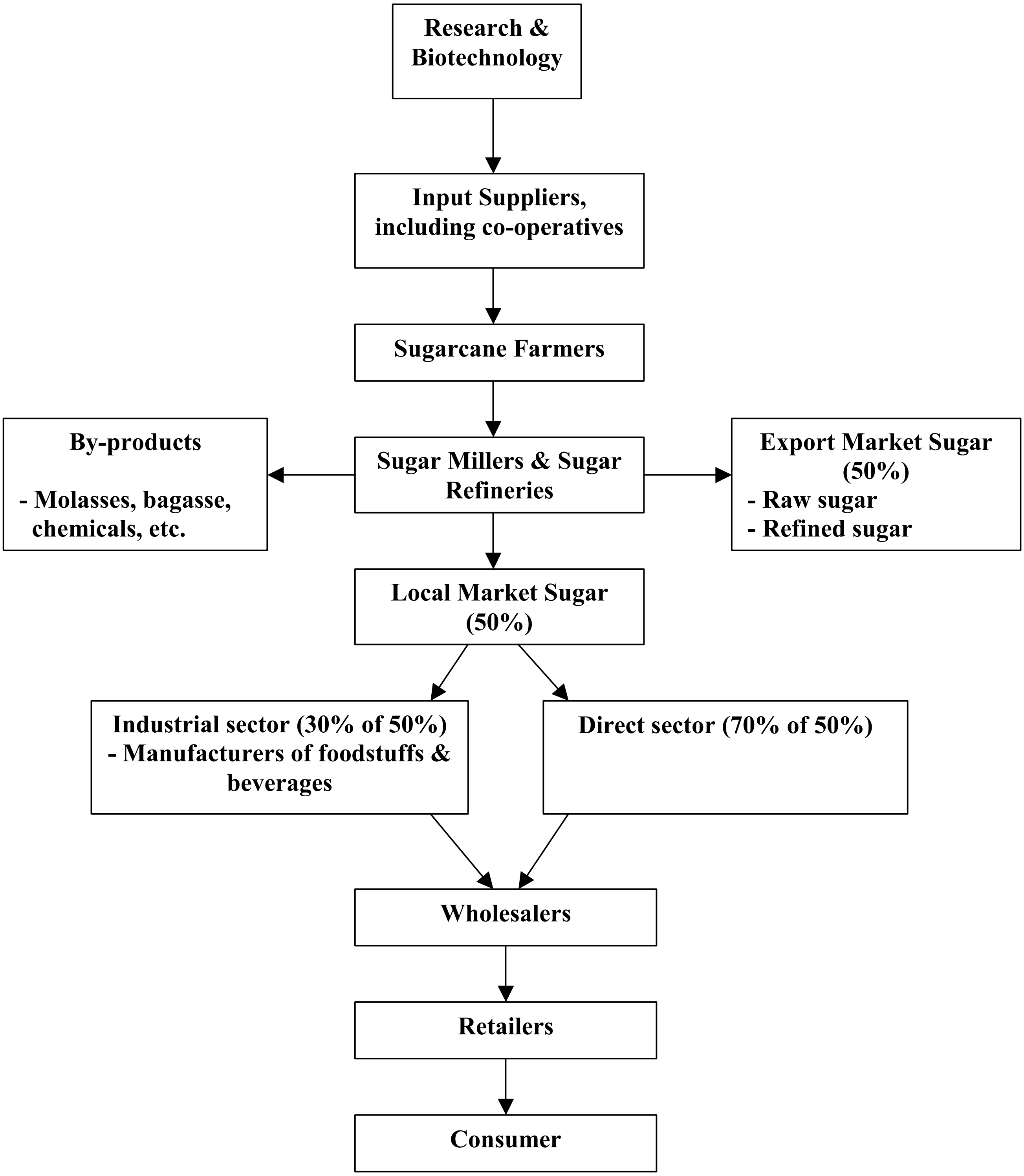

Figure 7.1: The South African sugar industry supply chain

7.3 Trends in farm value and the farm-retail price spread for refined sugar in South Africa, 1998/99-2002/03

The farm-retail price spread for sugar is the difference between what consumers pay for sugar (retail price) and what farmers receive for an equivalent amount of sugarcane at the farm level (farm value). It shows the price of all utility-adding activities and functions performed by middlemen such as sugar millers, transporters, wholesalers and retailers. This price includes the costs of performing marketing functions; it also includes the profits earned by these middlemen (see Kohls and Uhl, 1998). Trends in the nominal values of these components of the SA sugar industry supply chain are presented in Figure 7.2.

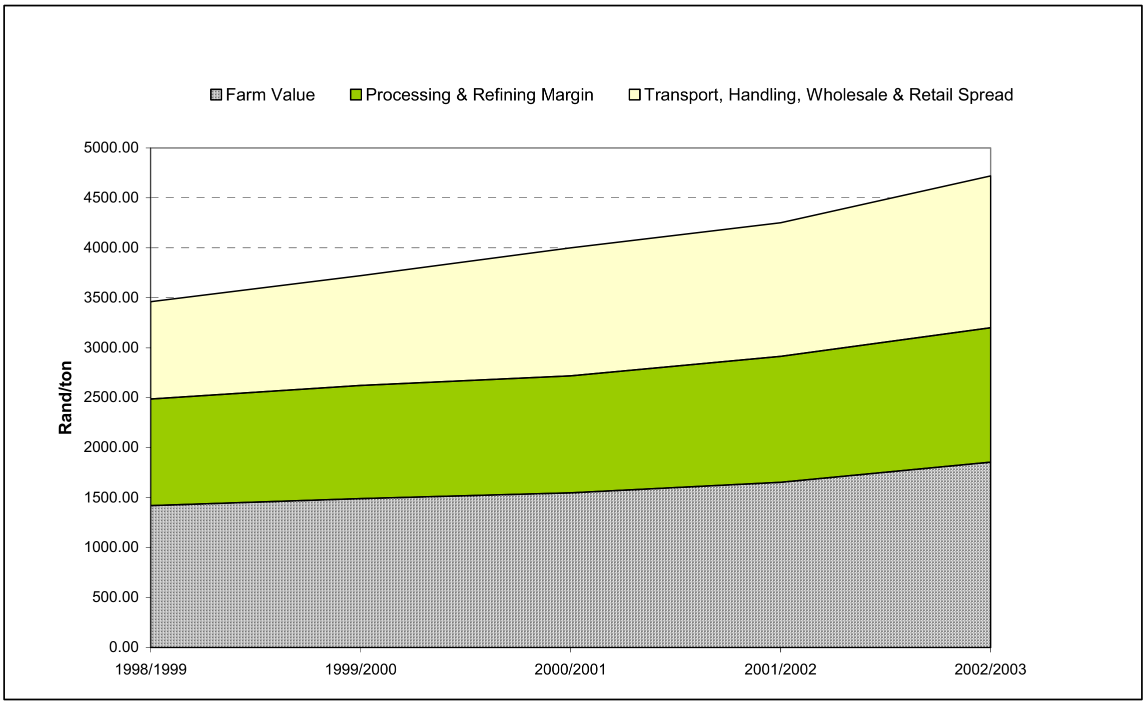

Figure 7.2: Nominal values of marketing costs in the sugar supply chain: 1998 - 2003

Against a background of import tariff protection and proceed sharing between millers, and between millers and growers, Table 7.1 shows that during 1998/99-2002/03, the nominal farm value (cost of material from growers) rose from about R1,421/ton to about R1,856/ton (average annual rate of 6.90%), the nominal processing and refining spread increased from about R1,067/ton to R1346/ton (average annual rate of 5.99%), the nominal transport, handling, wholesale and retail spread rose from about R973/ton to about R1,518/ton (average annual rate of 11.75%), and the nominal retail price of sugar rose from R3,460/ton to R4,720/ton (average annual rate of 8.07%). The estimated average annual rate of increase in all consumer prices (reflected by the Consumer Price Index (CPI) with 2000=100) over this period was about 6.36%.

Table 7.1 Nominal farm-retail price spread for sugar in SA, 1998/99-2002/03

Item	Year				
	1998/99	1999/2000	2000/01	2001/02	2002/03
	R/mt				
Farm value[1]	1420.49	1491.03	1549.19	1654.50	1855.56
Processing & refining spread[2]	1066.65	1130.98	1168.93	1260.08	1346.06
Transport, handling, wholesale & retail spread[3]	972.86	1097.99	1281.88	1335.42	1518.38
Retail price[4]	3460.00	3720.00	4000.00	4250.00	4720.00

Note: [1] *Data supplied by the SA Sugar Millers' Association Limited (2003)*
[2] *Difference between the miller net selling price and the farm value. Data supplied by the SA Sugar Millers' Association Limited (2003).*
[3] *Difference between the retail price and the miller net selling price.*
[4] *Based on data supplied by Statistics South Africa (StatsSA) (2003) and South African Statistics (2002) for the sugar component of the CPI and retail prices of a 2.5 kg bag of sugar collected by StatsSA in 12 principal urban areas.*

The main source of the *increase* in the nominal farm-retail price spread for sugar over this period - except during 2000/01 when farm value and the processing and refining spread rose - seems to be the rising transport, handling, wholesale and retail spread. This represents the costs and profits incurred by middlemen conducting activities from the point of final despatch from the sugar millers through to delivery to the consumer. Increases in nominal transport costs (fuel and equipment) up to 27%, nominal labour costs up to 18%, (South African Reserve Bank, 2003) and imported inputs up to 57% over this period are the likely cost items driving this change. Note: there is no readily accessible source of data to assess whether or not increases in profit margins - if any - for players in this link in the SA sugar supply chain could have contributed to this increase.

Table 7.2 shows the real (inflation-adjusted with 2000=100) farm-retail price spread for sugar in SA during 1998/99 to 2002/03. The real farm value fell from 1998/99 to 2000/01, before rising in 2001/02 and in 2002/03. The real processing and refining spread fluctuated over this period, while the real transport, handling, wholesale and retail spread has consistently risen, except in 2001/02. The net result was a real increase in the retail price of sugar during 1998/99 to 2002/03.

Table 7.2 Real farm-retail price spread for sugar in SA, 1998/99 to 2002/03 (2000=100)

Item	Year				
	1998/99	1999/2000	2000/01	2001/02	2002/03
	R/mt				
Farm value[1]	1574.82	1571.16	1549.19	1565.28	1607.94
Processing & refining spread[2]	1182.54	1191.76	1168.93	1192.13	1166.43
Transport, handling, wholesale & retail spread[3]	1078.56	1157.00	1281.88	1263.41	1315.75
Retail price[4]	3835.92	3919.92	4000.00	4020.81	4090.12

Note: [1] *Data supplied by the SA Sugar Millers' Association Limited (2003).*
[2] *Difference between the miller net selling price and the farm value. Data supplied by the SA Sugar Millers' Association Limited (2003).*
[3] *Difference between the retail price and the miller net selling price.*
[4] *Based on data supplied by Statistics South Africa (StatsSA) (2003) and South African Statistics (2002) for the sugar component of the Consumer Price Index (CPI) and retail prices of a 2.5 kg bag of sugar collected by StatsSA in 12 principal urban areas.*

7.3.1 Trends in margins and spreads

As stated previously, thanks to tariff protection, an oligopolistic market, and an inelastic price elasticity of demand, sugar prices are pushed up close to import parity price so that the industry can maximise profit. The import parity price is greatly effected by the exchange rate, that is, the stronger the local currency the lower the import parity. Needless to say that the opposite also holds. Thus, if the import parity prices increase due to the exchange rate devaluation, and prices are kept just below import parity, local sugar prices should increase when the exchange rate weakens. This, however, does not appear to be entirely true. Figure 7.3 reports the average monthly R/$ exchange rate and the average retail price for 2.5 kg of sugar. The R/$ exchange rate reached its weakest levels in January 2002 while the price of sugar remained close to the 2000-2001 average. From the graph it appears that the sugar price followed a similar increasing trend as the devaluation of the R/$ exchange rate, albeit with a few months time lag. If companies, however, were to make extra profits from higher import parity prices due to a weaker exchange rate, this time lag could not exist. Figure 7.3 also indicates that in comparison with the average price of 2000/01, the retail price of sugar increased by 19.2% in July 2003.

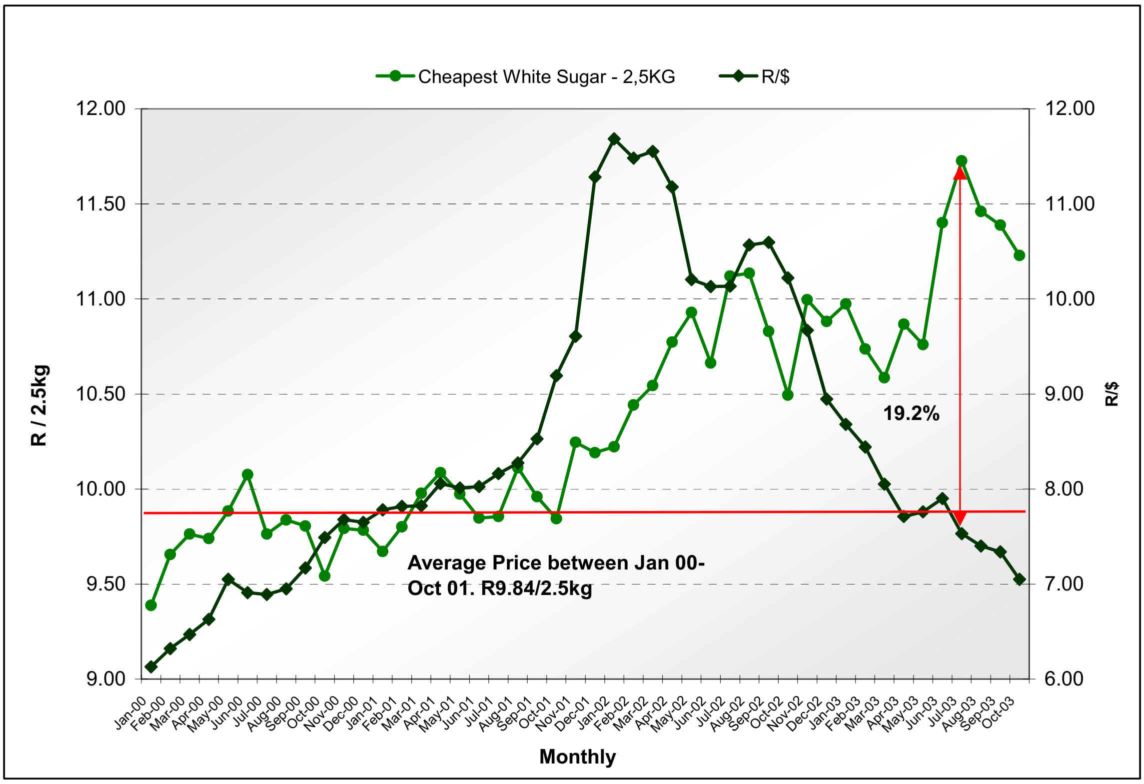

Figure 7.3: Sugar average national retail price and R/$ exchange rate: Jan 2000 to Oct 2003

Prices generally increase for two reasons, that is, increased costs of production and increased margins (assuming that the product is homogeneous and no additional value has been added). Table 7.3 reports the various costs of production for sugar along the supply chain, annually, from 1998/99 to 2002/03. From this supply chain, it is possible to calculate miller and retail profit margins (see points 15 and 17 in the Table). The reader should note, however, that retail costs are not available. From the table it is clear that almost all costs of production have increased over the five year period under investigation.

Sugar miller profit in R/ton decreased in 1999/00 and again in 2001/02 compared to the previous year. Profit in terms of percentage of total cost, however, only decreased in 2001/02 to 5% from an average of 8%. Retailer margin, however, increased throughout the period in question in terms of R/ton, but remained the same in terms of percentage of total cost. Thus, both millers and retailers have not increased their profit margin percentages during the period in question.

Table 7.3: Sugar supply chain components

Year	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003
	R/mt	R/mt	R/mt	R/mt	R/mt
1. Farm Value	1420.49	1491.03	1549.19	1654.50	1855.56
2. Milling Cost	411.54	428.50	435.34	502.35	504.79
3. Refining Cost	124.84	164.95	158.32	192.63	211.10
4. SASA Levy	81.74	100.25	95.24	133.52	87.38
5. Ex Refinery Bulk Cost (1+2+3+4)	2038.61	2184.73	2238.09	2483.00	2658.83
6. Warehousing/Handling	52.10	49.58	48.23	60.52	72.60
7. Marketing & Distribution	52.20	61.04	73.06	91.76	96.17
8. Packing Cost	64.17	65.93	80.44	79.15	88.90
9. Working Capital Cost	92.94	77.41	60.06	57.37	77.96
10. Packed Cost at Point of Supply (5+6+7+8+9)	2300.02	2438.69	2499.88	2771.80	2994.46
11. Miller Gross Selling Price	2579.71	2746.86	2889.98	3074.92	3421.92
12. Discounts	19.47	24.99	28.42	36.81	52.01
13. Rebates	73.10	99.86	143.44	123.53	168.29
14. Miller Net Selling Price (11-12-13)	2487.14	2622.01	2718.12	2914.58	3201.62
15. Miller Net Profit (14-10)	187.12	183.32	218.24	142.78	207.16
16. Retail Price	3460.00	3720.00	4000.00	4250.00	4720.00
17. Retail Gross Profit	972.86	1097.99	1281.88	1335.42	1518.38

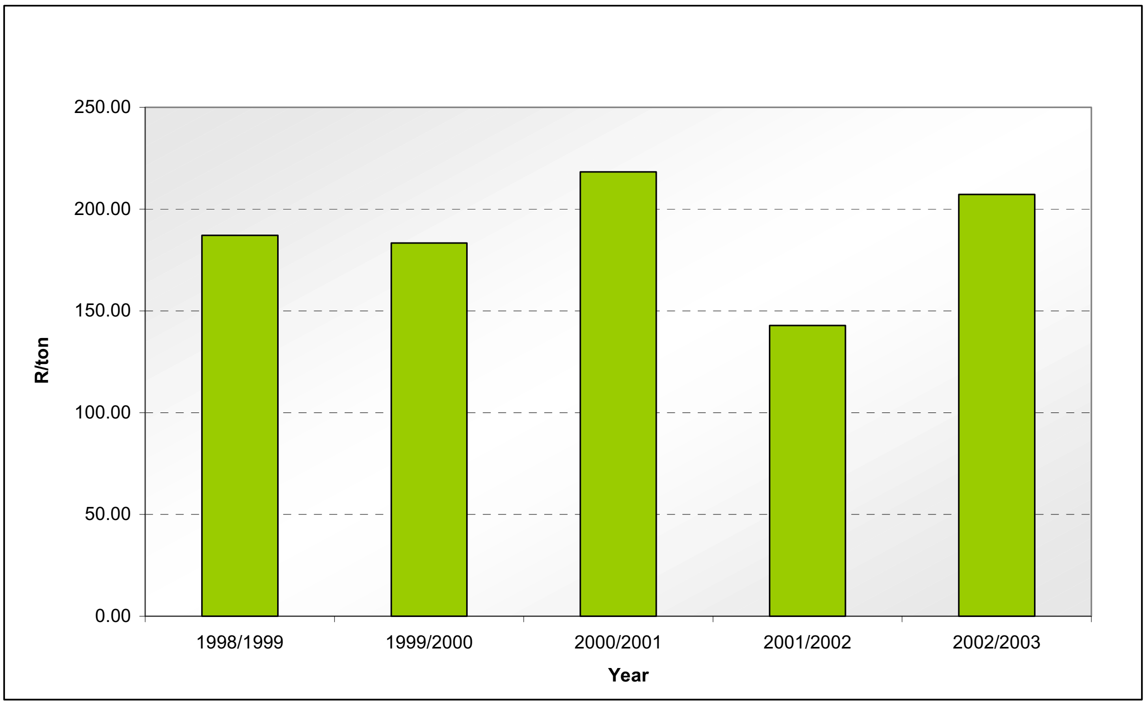

Figure 7.4: Sugar miller net profit: 1998/99-2002/03

7.4 Conclusion

Current regulatory mechanisms mean that the *domestic sugar price in SA can approach import parity*, as SASA can practise price discrimination, and SA sugar millers have import tariff protection, a local market proceeds-sharing agreement. Moreover, they would lose the national market share to sugar imports if they tried to raise the net miller selling sugar price above import parity. The policy implication is that these mechanisms provide stability in terms of local market proceeds for growers and millers, and a regulated 'base' level from which the nominal domestic retail price of sugar in SA is ultimately derived. Depending on world prices, and in the absence of these regulations, sugar processors (e.g. drinks and confectionary manufacturers), wholesalers, retailers and consumers could import sugar at lower prices than determined by this base level, but the DTI and BOTT remain committed to the imposition of an import tariff due to the distorted nature of the world sugar market.

Given these determinants of the base level of the domestic sugar price in South Africa, the retail price of sugar in SA rose in both nominal and real terms during 1998/99 to 2002/03. The main reason for these *increases* – except in 2001/02 - seems to be an increase in both the nominal and the real value of the transport, handling, wholesale and retail spread (the link from the point of final despatch of refined sugar from the millers to the customer). The main cost drivers were rising transport and labour costs. Policy makers need to research further the reasons for increases in nominal transport costs and nominal imported input costs (other than the Rand:Dollar exchange rate), and nominal labour costs, and whether or not there were any increases in the profit margins of the players in this link of the sugar supply chain.

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CHAPTER 8

THE POTATO SUPPLY CHAIN

8.1 Introduction

Potatoes are the single most important vegetable product in South Africa with a total production of 1,655,000 tonnes. The estimated gross value for the 2001 potato crop was R2 billion (Statistics SA, 2002). On average, potatoes contributed over 2% to the gross value of all agricultural products in South Africa in 2001, despite the fact that they were cultivated on approximately 0,03% of the arable land. Considering the effectiveness of land use by potatoes and the indisputable value of the product, namely that it is one of the affordable staple foods in a country, it is essential to determine if potato prices are influenced by normal supply and demand forces, and to determine what the impact of the exchange rate is on the industry.

This Chapter focuses on the supply chain of potatoes, and takes into consideration the following steps: (i) production costs and farm–gate prices for potatoes; (ii) transport and marketing costs; (iii) processing costs and margins and prices paid by the consumers. Finally, the net effect of the exchange rate on potato prices is highlighted.

8.2 The Potato supply chain in perspective

The potato industry has operated under free market conditions for many years. As a result, the deregulation process of the agricultural sector during the 1990's did not have a great impact on the potato industry. The South African potato crop is marketed as seed potatoes, table potatoes and potatoes earmarked for processing. Table potatoes sold on fresh markets and directly to consumers comprise the bulk of the produce, as indicated in Table 8.1.

Table 8.1: Utilisation of the South African potato crop

Utilisation	1995		2001	
	Production (Ton)	Percentage	Production (Ton)	Percentage
Table (Local consumption)	1,065,960	71.8	1, 017,114	63.5
Seed	180,139	12.1	208,477	13.0
Processing	152,770	10.3	270,445	16.9
Exports	86,000	5.8	106,000	6.6
Total	1,484,869	100	1,602,036	100

Source: Potato SA (2002)

Figure 8.1 is an illustration of the different marketing channels for table potatoes in South Africa. A summary of volumes of different potato products and marketing channels is presented in Table 8.2

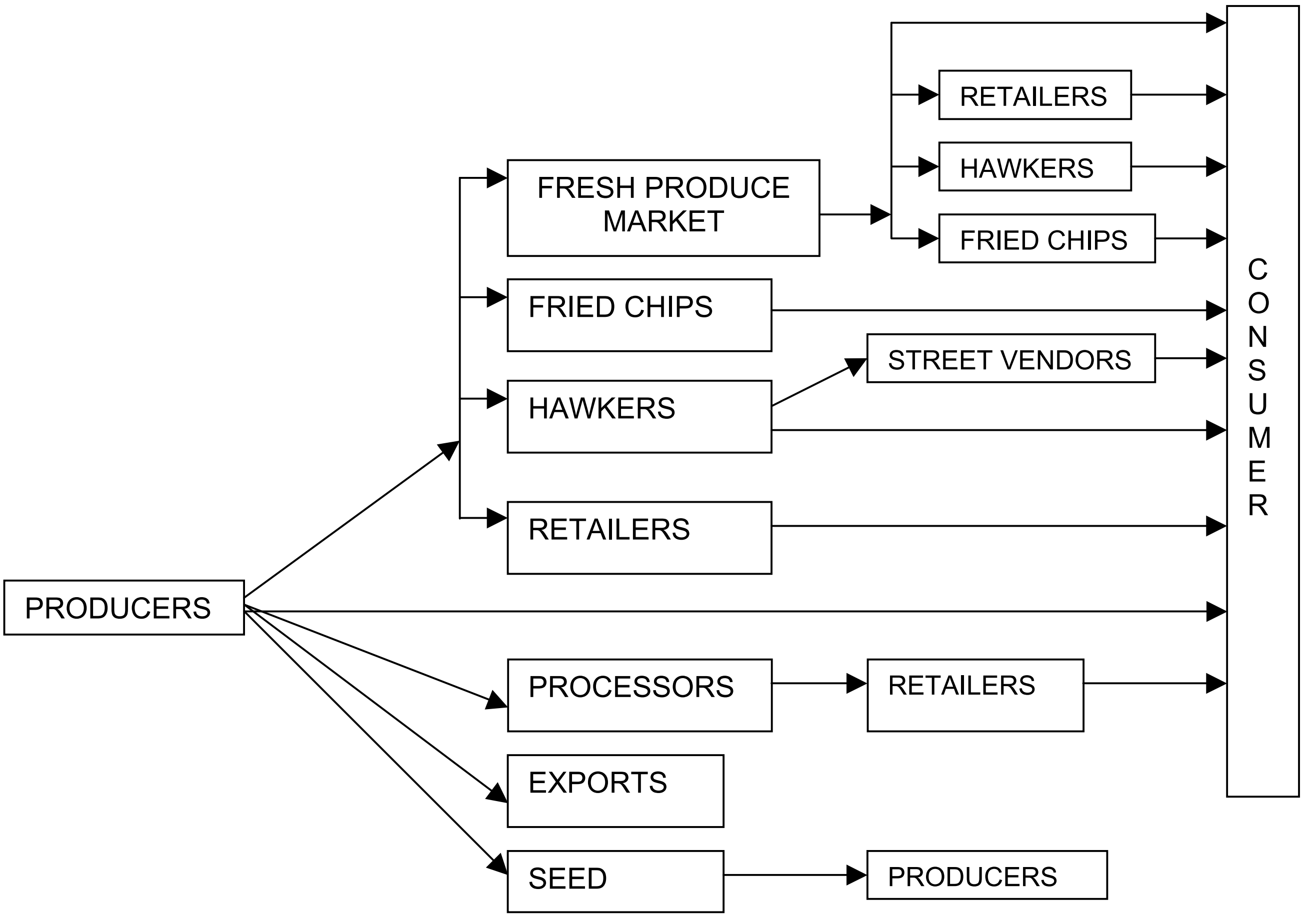

Figure 8.1: Marketing channels for table potatoes

Table 8.2: Marketing statistics

	1995	1996	1998	1999	2000	2001	2002
Fresh produce markets							
Processed	3 498 000	5 100 000	8 500 000	8 401 740	7 768 600	9 249 200	5 250 000
Exports	3 000 000	4 000 000	4 345 000	4 680 000	4 500 000	4 800 000	3 800 000
Formal	58 000 088	58 170 000	50 076 460	53 033 768	50 148 450	51 510 804	39 516 120
Informal	20 000 000	24 999 884	26 000 000	28 000 000	25 604 404	25 716 171	27 800 000
Direct							
Processed	11 779 900	16 800 000	16 576 100	19 410 020	17 850 000	17 795 300	23 210 200
Exports	5 600 000	6 000 000	6 790 200	7 320 000	5 500 000	5 800 000	8 240 000
Urban	14 700 000	15 200 000	8 859 000	9 941 000	8 000 000	7 457 000	7 554 234
Farm	4 000 000	4 200 000	6 927 877	2 861 915	2 500 000	2 000 000	1 648 000
Rural	9 900 000	8 803 688	13 553 408	18 659 645	17 432 693	16 027 456	10 692 600
Seed							
Certified	13 522 298	19 195 206	16 361 038	15 026 226	14 510 619	15 683 786	10 562 538
Uncertified	4 491 402	4 141 708	5 999 478	7 049 531	5 089 749	5 163 908	6 690 871
Total	**148 491 688**	**166 610 486**	**163 988 561**	**174 383 845**	**158 904 515**	**161 203 625**	**144 964 563**

At present 64,8% of table potatoes is marketed on the 18 fresh produce markets and, from there, between 35% and 40% is channelled through the informal sector. Informal trading creates an enormous welfare effect, because the bulk of these potatoes are pre-packed and distributed further in city centres and townships. The 35,2% potatoes not marketed on the fresh produce markets are designated either for export, processing or direct trade.

Table potatoes

Table 8.3 indicates the various fresh produce markets and the volume of table potatoes traded on these markets for the 2001/2 and 2002/3 seasons. It is significant that the turnover increased with an average of 42% and the supply decreased with an average of 16% between the two seasons.

Seed potatoes

There are approximately 400 seed growers in South Africa, who produce seed potatoes throughout the year. The certified yield per hectare has increased constantly over the past few years.

Table 8.3: Sales volumes of the different fresh produce markets for the 2001/2 and 2002/3 seasons (Potato SA, 2003)

	Turnover (Rand)			Mass (Ton)			R/ton		
	2001/2	2002/3	% change	2001/2	2002/3	% change	2001/2	2002/3	% change
Johannesburg	33245147	481002347	44.7	235793	207064	-1.2	1409.05	2322.96	65
Pretoria	157629550	226785437	45.14	116697	100652	-14	1350.76	2273.04	68
Cape Town	160768525	226786	41.45	120821	98557	-18	1330.63	2307.4	73
Durban	138077927	193194182	39.92	104058	88318	-15	1326.93	2187.48	65
East London	35530270	48555247	36.66	26200	20438	-22	1356.117	2375.734	75
Pietermaritz-burg	44143694	64272821	45.6	38511	32668	-15	1146.262	1967.455	72
Springs	64168295	96172362	49.88	49169	43338	-12	1305.056	2219.123	70
Port Elizabeth	50824118	64845046	27.59	35736	27237	-24	1422.211	2380.77	67
Klerksdorp	45413996	63643890	27.59	35736	28629	-19	1270.819	2223.057	75
Bloemfontein	32756913	45622152	39.27	25814	19676	-24	1268.959	2318.67	83
Vereeniging	25993901	35626287	37.06	19865	16051	-19	1308.528	2219.568	70
Welkom	20609420	29517690	43.22	1663	13659	-18	12392.92	2161.043	17
Witbank	5856310	8031584	37.14	4684	3616	-22	1250.28	2221.124	78
Kimberley	13166835	19439918	47.64	10698	8705	-19	1230.775	2233.19	81
Uitenhage	12499462	20069877	18.2	24794	15815	-36	504.1325	1269.041	52
Nelspruit	30653232	36231401	18.2	24794	15815	-36	1236.317	2290.952	85
Total	**1170337802**	**1662421307**	**42.05**	**873982**	**733173**	**-16**	**1339.087**	**2267.434**	**69**

Table 8.4: Seed potato production

Season	Registered plantings (Hectares)	Certified yield (25 kg bags)
1999/2000	9 637,89	5 162 691
2000/2001	9 505,16	4 977 970
2001/2002	8 398,81	4 230 954
2002/2003	8 437,05	3 931 849

Registered seed potato production is executed on 8,000 to 10,000 ha, annually, in six main areas. The annual certified yield amounts from 4,000,000 to 5,200,000 x 25 kg bags. Seed potato production, therefore, comprises approximately 13% of the total potato production. During 2001, approximately 82% of the total potato crop was planted with certified seed in comparison to 74% during 1995 and 50% during 1985.

The import into the country of conventional seed potatoes is not allowed due to the high risk of importing tuber-borne diseases, which will place the local industry at risk. *In vitro* materials as well as mini-tubers from approved institutions are imported, however, to establish new varieties in South Africa.

Processed potatoes

The South African potato processing industry grew by more than 100% from 1991 to 1995. This growth took place primarily in the three main disciplines in the processing industry, namely frozen fries, fresh fries and crisps. During the past five years, this growth slowed down, mainly for economic reasons, and also because there was a shortage of good quality potatoes for processing. The growth that took place since 1991 can be ascribed largely to the following factors:

- the changes in economic circumstances
- the expansion of the fast-food industry
- the higher average income of the population
- the rapid rate of urbanisation
- the influx of international processing companies

The potato processing industry can be divided into the areas shown in Figure 8.2.

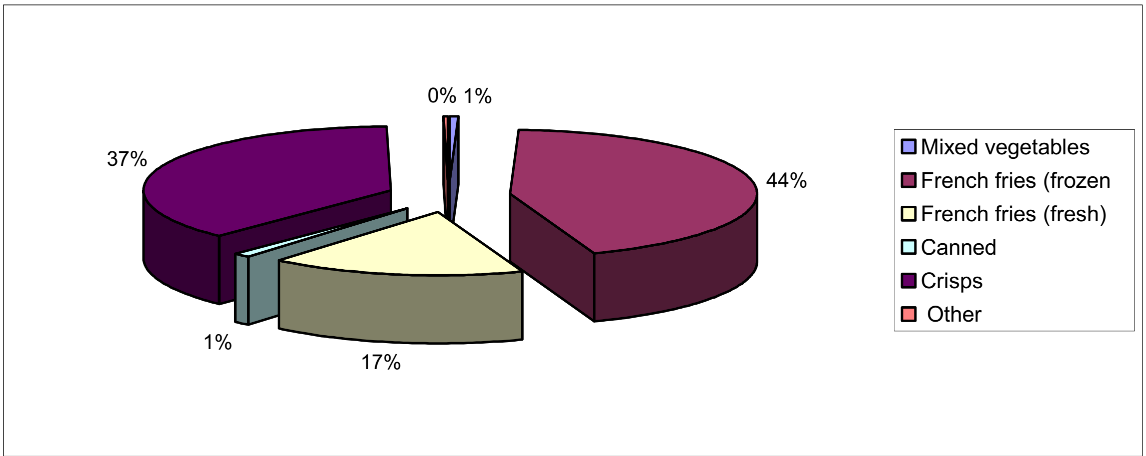

Figure 8.2: Products from the potato processing industry.
Source: Potato SA, 2002

Mixed vegetables represent approximately 0,78% of the total processing industry in South Africa, and have shown a decline in production since 1997. The cultivars most commonly used for mixed vegetables are Vanderplank, Buffelspoort and BP1.

Frozen French fries represent 43,9% of the total processed potato products in South Africa. There has been a large increase in the manufacturing of this product over the last couple of years. The expansion is mainly caused by today's fast-paced life-style. The growth in production is also the result of expansion of the existing facilities.

Fresh French fries represent approximately 16,5% of the total processed potato products in South Africa. The manufacturing of fresh French fries has shown a decrease over the last couple of years. This decrease in production is the result of a decrease in the number of companies involved in the industry, and the strong increase in frozen French fries production, which took over a large part of the market. A number of small processors contribute mainly to the above production.

Only limited quantities of potatoes are canned in South Africa. This canned food is mainly in the form of mixed vegetables, to which potatoes can contribute up to 20% of the mixture. These days skinned baby potatoes are also canned. The above industry is not very big and represents approximately 1,2% of the total volume of potatoes for processing.

Crisps

Crisps represent approximately 37,4% of the total processed potato production in South Africa. The steady growth in production over the past five years is the result of an expansion of the existing factories, and an increase in the number of companies involved in the industry, although certain factories and smaller companies closed down during 2000 and 2001. The cultivars most commonly used for crisps are Hertha, Pimpernel, Lady Rosetta, Fiana, Crebella and Ernstestoltz.

Other processed products include *inter alia* hash browns, potato bites, dehydrated products, baby food, etc. They represent approximately 0,4% of the total processed potato production in South Africa.

8.3 Production

Potato production in South Africa is a high yield, high-risk enterprise with good income potential for producers, yet it is an affordable food available to most people (rich and poor). The most significant changes in the production patterns in potatoes during the past two decades can be attributed to the implementation of irrigation technology and a major shift from dry land production towards irrigation production, as indicated in Table 8.5. High production costs compelled the introduction of irrigation technology by farmers to manage high risks and price fluctuations characteristic of dry land potato production.

Dry land production decreased from 33,543 ha in 1991 to an all-time low of 12,915 ha in 2000, whereas irrigation production increased from 32,251 ha in 1991 to 38,000 ha in 2002/3. In 2002/2003 there was a decline in irrigated hectares planted with potatoes as farmers shifted to maize because of the higher prices of maize. One of the major risk factors associated with dry land production is “over production” in good years with market prices below production costs, while, “under production” in dry years would result in very good market prices. The resultant fluctuation in quantity and price places a heavy burden on the infrastructure at fresh produce markets and impacts negatively on consumer preferences.

Table 8.5: Potato production trends in South Africa since 1991

Year	Production (1 000 tons)	Hectares planted			Percentage	
		Dry land	Irrigation	Total	Dry land	Irrigation
1991	1 215	33 543	32 251	66 064	50,77	49,23
1992	1 134	27 224	32 642	59 866	45,47	54,53
1993	1 316	20 262	35 649	55 911	36,24	63,76
1994	1 321	18 421	36 776	55 197	33,37	66,63
1995	1 552	15 302	40 444	55 746	27,45	72,55
1996	1 571	16 175	42 473	58 648	27,58	72,42
1997	1 605	15 074	40 073	55 147	27,33	72,67
1998	1 586	13 761	40 111	53 872	25,54	74,46
1999	1 631	14 935	41 747	56 680	26,35	73,65
2000	1 655	12 915	40 278	53 193	24,28	75,72
2001	1 602	14 101	39 685	53 786	26,22	73,78
2002/3	1 449	10 811	38 488	49 299	21.93	78.07

Production regions

Potatoes are produced all over South Africa in different climatic regions as indicated in figure 8.3. This results in a continuous supply of potatoes throughout the year. Consequently, domestic consumers have almost continuous access to fresh potatoes.

1	Northern Province
2	North West
3	Gauteng
4	Mpumalanga
5	Northern Cape
6	Western Free State
7	Eastern Free State
8	KwaZulu-Natal
9	Sandveld
10	Ceres
11	South Western Cape
12	South Cape
13	Eastern Cape
14	North Eastern Cape

Figure 8.3: Production regions of South Africa
Source: Potato SA, 2003

Table 8.6 clearly illustrates the Eastern Free State as the major dry land producing area with 9,094 ha of dry land potatoes and 1,506 ha potatoes under irrigation. Limpopo with 6,973 ha under irrigation is the region with the most potatoes under irrigation. The region with the most producers is the western Free State with 174, followed by the Sandveld and the eastern Free State with 151 and 132 producers, respectively.

Production costs

Production costs of potatoes vary between R20,915 per ha for dry land production to more than R42,000 for both seed production and the production of table potatoes under irrigation. A summary of average production costs for the 2002/2003 season is provided in Table 8.7.

Table 8.6: South African potato production in the 16 regions during 2001

Region	Hectares			Producers	
	Dry land	Irrigation	Total	On list	Planted
Sandveld	-	7 558	7 558	151	143
Ceres	-	1 285	1 285	53	43
South Western Cape	-	589	589	79	34
Southern Cape	-	472	472	34	20
Northern Cape	-	1 786	1 786	56	22
Eastern Cape	-	2 640	2 640	77	60
North Eastern Cape	1 378	823	2 201	94	60
Western Free State	2 722	3 884	6 606	174	117
South Western Free State	85	1 786	1 871	80	51
Eastern Free State	9 094	1 506	10 600	132	117
KwaZulu-Natal	-	3 483	3 483	103	53
Mpumalanga	822	3 789	4 611	75	73
Marble Hall	-	1 591	1 591	27	24
Limpopo	-	6 973	6 973	95	95
Northwest	-	925	925	67	20
Gauteng	-	595	595	17	15
Total	**14 101**	**39 685**	**53 786**	**1 314**	**947**

Source: Potato SA, 2000

A breakdown of the average production costs needed for the production of potatoes shows that seed is the largest input component (18,2% of total input costs), followed by transport (10,9%), fertiliser (10,5%), chemicals (10,4%) and packaging (10,3%). An index of the different inputs was used to calculate the respective contributions of the various inputs to the increase in production costs since 1995. Figure 8.4 indicates the contributions of the different inputs since 1995.

Table 8.7: Average production costs for potatoes in South Africa (per ha)

Costs	Seed production (R)	Commercial production		Processing (R)
		Dry land (R)	Irrigation (R)	
Soil preparation, spraying and harvesting	1 420	1 050	1 420	1 420
Seed	8 802	3 815	7 725	7 800
Fuel & lubricants	2 500	1 200	2 500	2 500
Fertilizer	4 500	2 150	4 500	4 590
Water & electricity	1 700		1 700	1 700
Disease-, pest- and weed control	4 500	2 600	4 000	4 200
Repair & maintenance	3 750	1 900	3 750	3 750
Packaging	3 000	1 500	5 000	
Marketing	2 700	2 000	3 200	
Transport	4900	2 000	4 900	
Certification & laboratory fees	1 090			
Other	3 700	2 700	3 700	3 700
Total Costs	**42 562**	**20 915**	**42 395**	**29 660**

Source: Potato SA

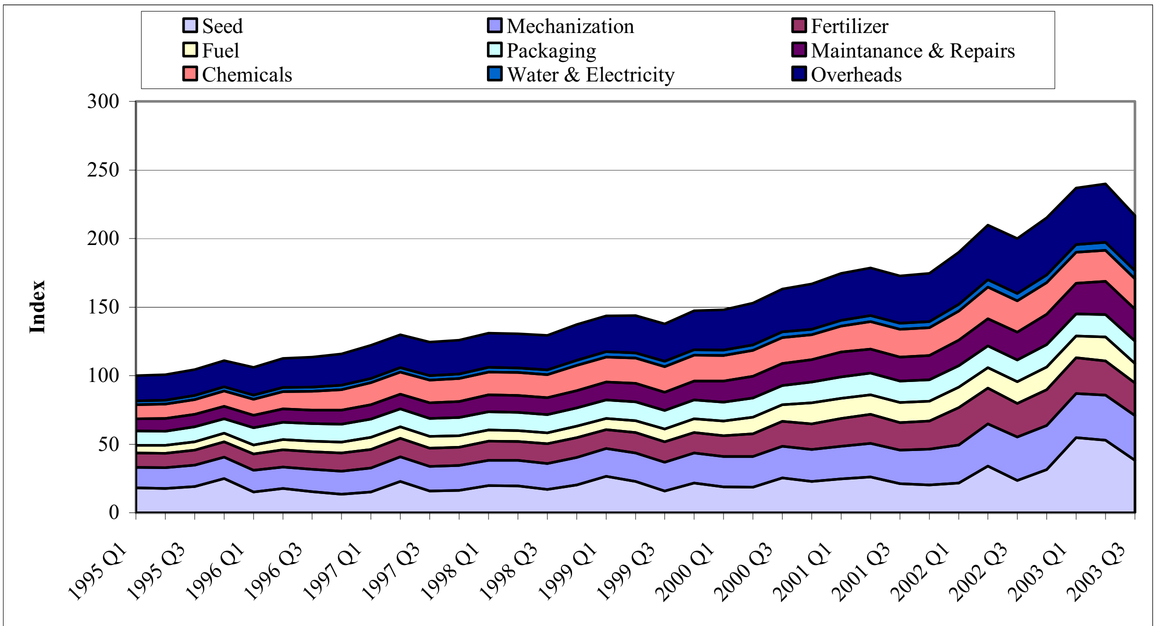

Figure 8.4: An index of relative contributions of different inputs to the production cost for potatoes since 1995

The comparison of the index for potato prices and production costs is indicated in Figure 8.5, which shows that potato prices "caught up" with production costs during the 2002 season. The prices received for potatoes during the third quarter of 2002 exceeded the index prices for inputs during the same period. Average potato prices during that period varied from R27-00 to R31-50 per 10 kg but they decreased to less than R20-00 per 10 kg from January 2003 onwards.

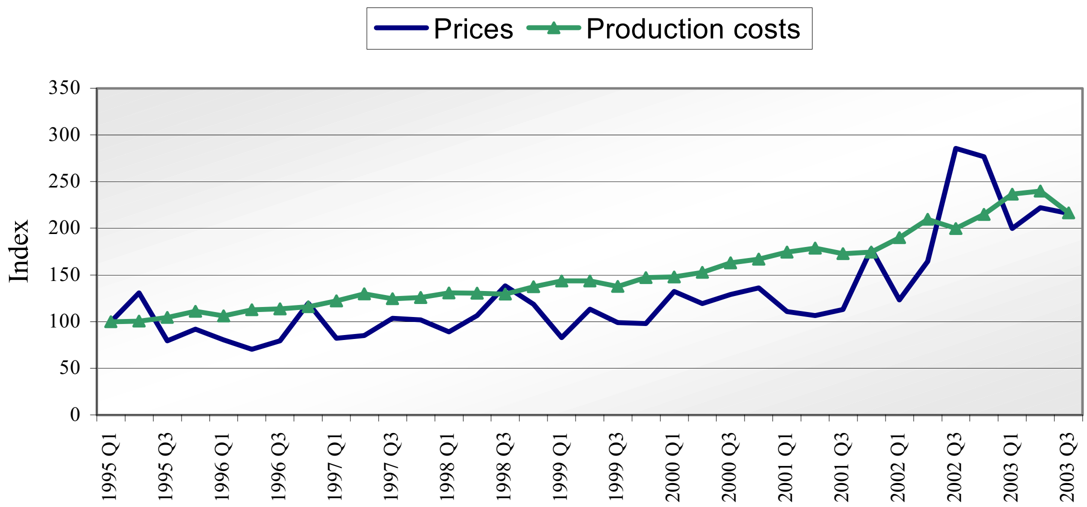

Figure 8.5: Comparison of the index of potato prices against the index for production costs

8.4 Price trends for fresh potatoes

It is believed that potato prices are driven by supply and demand with distinctive seasonal trends. According to Potato South Africa, 63% of the potato crop is delivered on the fresh produce markets, and market prices therefore act as a barometer for producer prices in other sectors of the potato industry. Processors entering into contracts with producers confirmed that market prices serve as a major barometer when contract prices with producers are negotiated. It is evident from Table 8.7 and Figure 8.6 that potato prices and the supply of potatoes on fresh produce markets are negatively correlated.

Potato prices decline with increase in supply, and vice versa. An *a priori* observation of supply and price trends, as indicated in figure 8.6, indicates a decline in supply and an increase in price during the period January 2000 until July 2003. The main reason for the dramatic increase in price during the third quarter of 2002 was a decline in supply during the months August (4,9 million x 10 kg), September (4,8 million x 10kg) and October 2002 with 5 million x 10 kg. The total supply of potatoes on the fresh produce markets during those three months adds up to 14,8 million x 10 kg pockets, compared to 21,3 million x 10kg during the same period in 2001 and 19,2 million x 10 kg pockets during that period in 2000. This represents a decline of 30% in supply in the third quarter of 2002 compared to the same period in the previous year.

Table 8.7: Number of 10 kg potatoes sold on all fresh produce markets and prices in cents per 10 kg received from Jan 2000 to July 2003

Month	Number (10 kg)	Price (c/10 kg)	Month	Number (10 kg)	Price (c/10kg)
Jan-00	7467279	1324.251	Oct-01	6871046	1375.482
Feb-00	6050465	1314.986	Nov-01	7881758	1767.109
Mar-00	6633031	1093.921	Dec-01	6079257	1872.044
Apr-00	6416453	1184.99	Jan-02	7715441	1352.657
May-00	8556859	1205.743	Feb-02	6591308	1131.168
Jun-00	7282310	973.986	Mar-02	7264869	990.3464
Jul-00	9191980	976.7952	Apr-02	6657229	1205.968
Aug-00	6377551	1272.187	May-02	7999653	1497.728
Sep-00	6380368	1395.115	Jun-02	5751305	1940.724
Oct-00	6440101	1471.047	Jul-02	7076656	2150.526
Nov-00	9327862	1117.567	Aug-02	4979832	2717.245
Dec-00	6700784	1245.649	Sep-02	4895905	3188.858
Jan-01	7861172	1123.359	Oct-02	5012983	3171.388
Feb-01	6630400	1018.974	Nov-02	7435127	2247.744
Mar-01	6899330	977.6518	Dec-02	5770603	2384.029
Apr-01	6904152	1060.756	Jan-03	6523037	1927.426
May-01	9171791	1030.983	Feb-03	5555961	1787.075
Jun-01	7698324	906.6085	Mar-03	5764176	1915.232
Jul-01	9675261	983.2467	Apr-03	5534517	2017.84
Aug-01	7427170	1004.177	May-03	7079028	2181.157
Sep-01	7020636	1196.733	Jun-03	5612483	2069.261
Oct-01	6871046	1375.482	Jul-03	6253923	1833.752

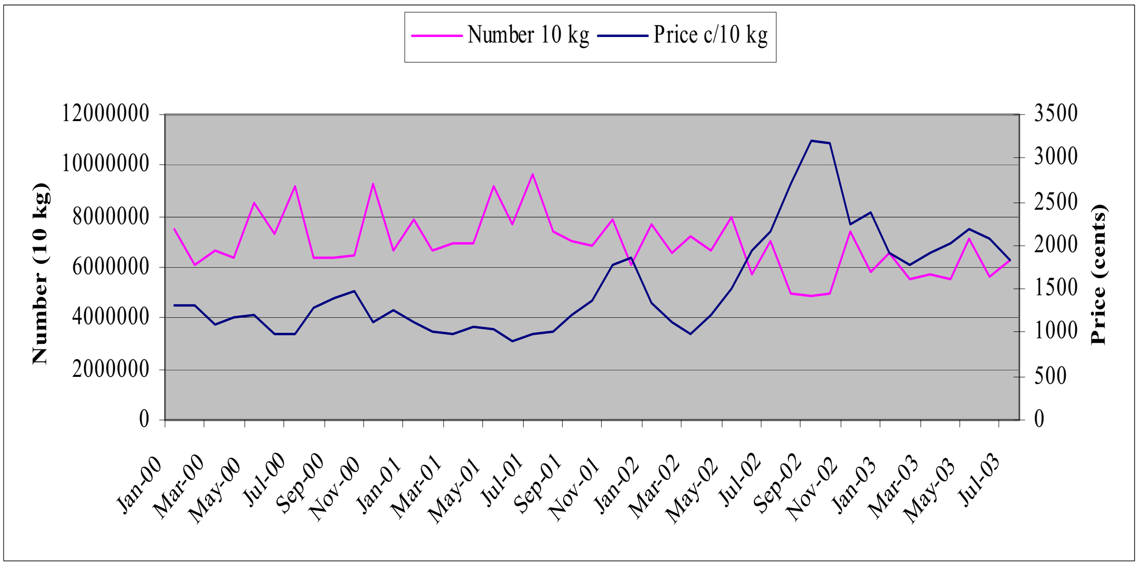

Figure 8.6: Comparison of number sold on fresh produce markets and prices received

The seasonal supply and price trends in potatoes are evident from the graph in figure 8.6. It can also hypothesised, however, that the exchange rate had an impact on the price of potatoes. To test this hypothesis both a log-log regression as well as a correlation test were run, both with the same result, namely that the impact of the exchange rate on potato prices was insignificant and that the potato prices were mainly determined by the supply on fresh produce markets.

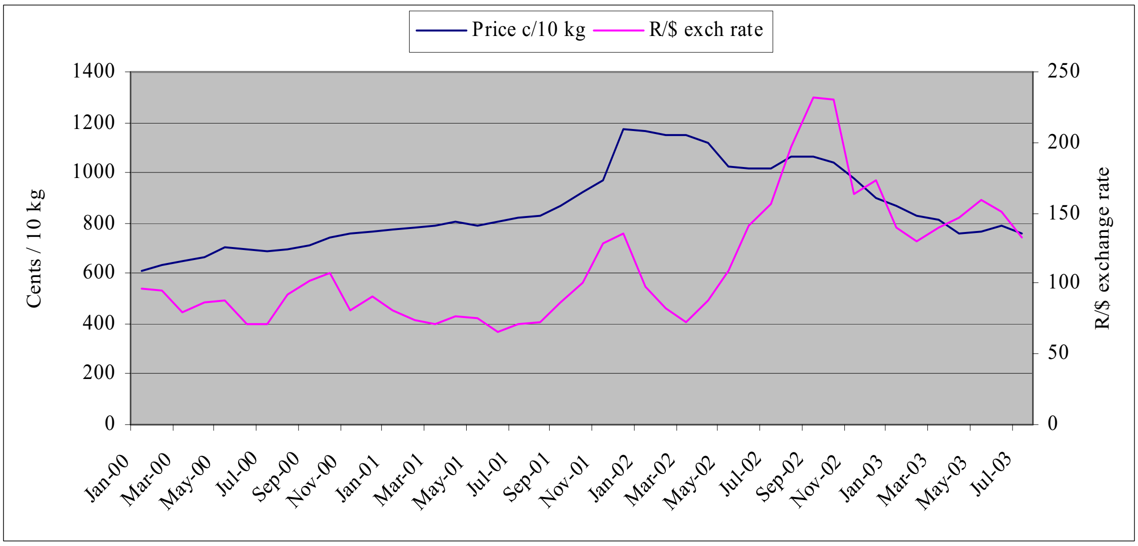

Figure 8.7: Exchange rate and potato price trends on fresh produce markets for the period January 2000 until July 2003

Figure 8.7 illustrates the trends in the exchange rate as well as the potato prices for the period January 2000 until July 2003. However, no *a priori* conclusion can be drawn merely from this graph. Further tests were run, therefore, to confirm the above results. A measuring and comparison of volatility of real potato prices and the exchange rate was done. By comparing volatility calculations for the exchange rate and potato prices, which is time varying, it was concluded that the real price of fresh potatoes was not affected by the exchange rate[1].

Another important aspect in determining the price trends in the market for fresh potatoes is tracking the margin between the price at the fresh produce market and the average retail price for a 10kg bag of potatoes. This is reflected in Figure 8.8 and shows some interesting trends. Despite the fact that the margin peaked at R20 per bag in January 2003, for the rest of 2003 the margin stayed at a normal R10 per bag. To an outsider it may seem that the January 2003 appointment of the Food Pricing Monitoring Committee had a dramatic impact because retail margins suddenly dropped back to normal levels of R10 per bag.

[1] Volatility in the exchange rate is already calculated in the study titled "Investigation into the supply chain of beef' which is to be submitted together with this report to the Food Price Monitoring Committee.

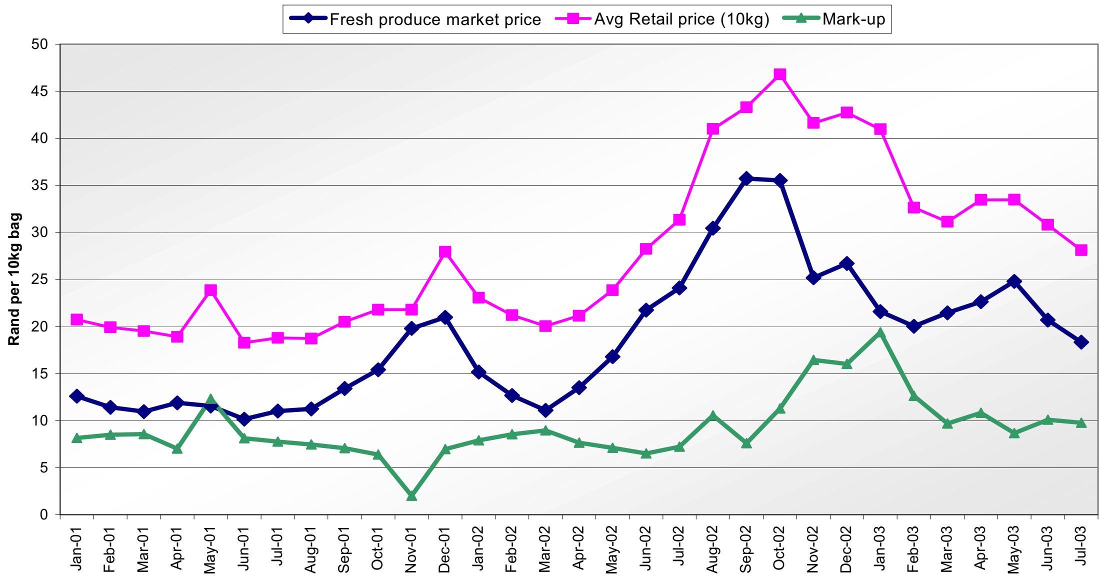

Figure 8.8: Producer and retail prices and mark-up for fresh potatoes (10kg bag): January 2001 – July 2003

8.5 Price trends for processed potatoes

The processing industry mainly makes use of forward contracts with potato producers. The processors negotiate product prices with producers and in some instances they supply and support producers to obtain the necessary inputs. Long–term relationships are normally established between the processors and their suppliers. It is, therefore, imperative that both parties experience a win-win situation in contract production. The prices on the fresh produce markets, therefore, serve as an important determinant of contract prices. For many years the gross margin figures for contract farmers have been below the earnings of producers focusing on fresh potato markets, but contracting protects them from the volatility of the prices on the fresh produce markets.

Figure 8.9 shows that input contract prices (prices received by the potato producers) were less volatile than prices received on the fresh produce markets. Contract prices during the same period were 25% lower than prices received on the fresh produce markets. Output prices for the processed produce, however, increased steeply since July 2002. The gap between the input and output prices is illustrated in figure 8.10. The reason for the increase in the margins can be contributed to a combination of increased production costs and a time lag effect on contract prices. Processors were very hesitant to supply a breakdown of their production costs for fear that their competitors might obtain this information. A breakdown of detailed production costs, however, might shed light on the real reasons for the increase in consumer prices for processed potatoes.

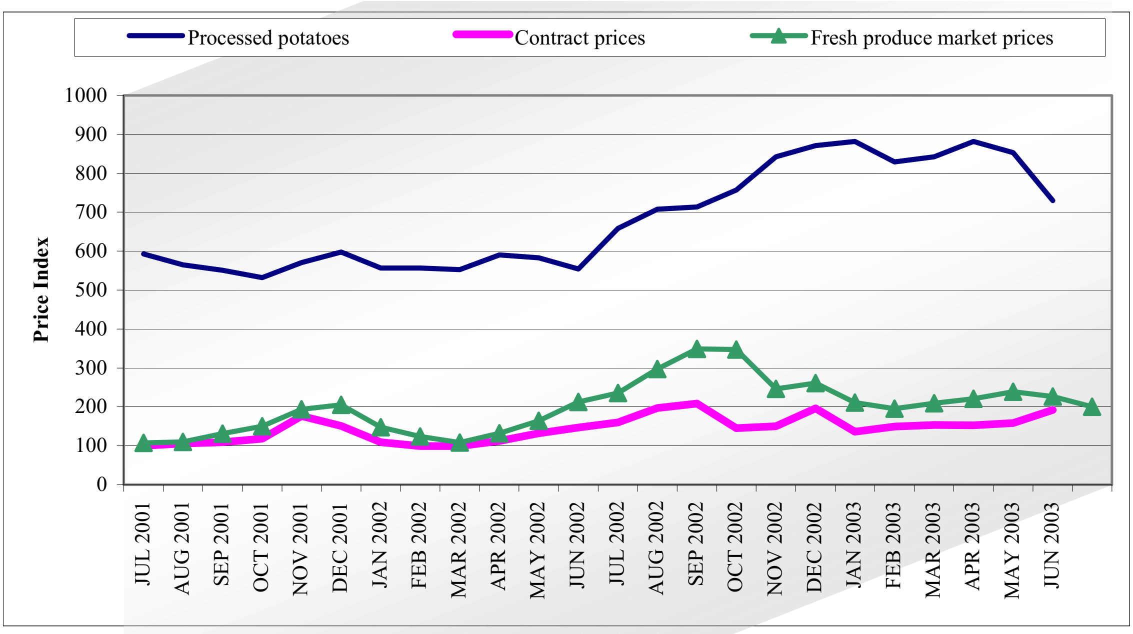

Figure 8.9: Index of input and output prices for contract (processing) potatoes in comparison to fresh produce market prices for the period July 2001 to June 2003

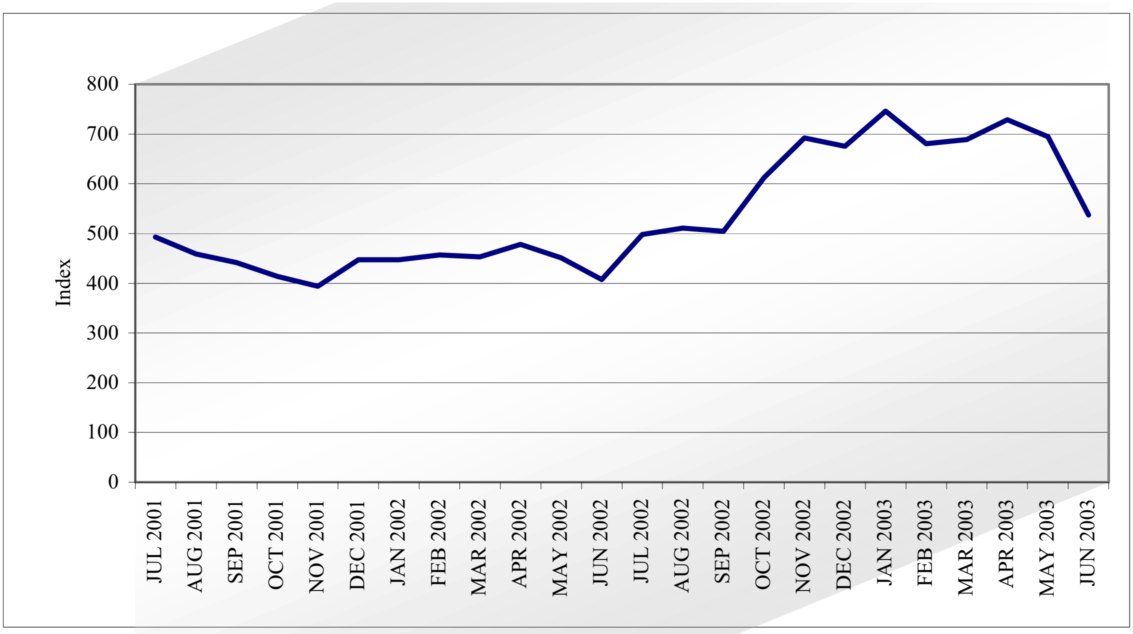

Figure 8.10: Difference in input and output prices in the processing industry for the period July 2001 to June 2003

It is clear from figure 8.10 that the gap between the input and output prices increased from July 2002, but began to decline steeply from May 2003 onwards. The reason for the sudden decline in margins might be attributed to either the impact of the time lag effect on potato producer prices or on processing costs.

8.6 Conclusion

Two major shifts in the production and processing of potatoes will have a significant impact on the potato industry in the future. The first is the continuation of the shift from dry land production towards irrigation. Because over and under production during good and poor seasons will be eliminated, this will ensure a more constant supply and, therefore, greater price stability within the sector.

The second shift is the continuation of the present increase in production of processed potatoes at the cost of fresh potatoes. As their per capita income increases, consumers tend to prefer processed food. The movement towards processed potatoes might enable more producers to enter into forward contracts with processors. An increase in the number of contract farmers and irrigation cultivation will ensure a much more stable industry with less supply and price volatility than in the past.

The results obtained in this study indicate that the major price determinants in the potato industry are the normal supply and demand forces as expected in a free market system. Exogenous factors such as export prices or imports do not play a major role. From the results it can be concluded that the exchange rate does not have a significant impact on potato prices at farm gate level, neither is this the case on the fresh produce markets. The steep increase in potato prices during the second half of 2002 was mainly due to an under supply of potatoes on the fresh produce markets during this period. It seems, however, that output prices in the processing industry did follow the exchange rate of the previous season. Information obtained thus far is not sufficient to determine the key variables that influenced the increase in consumer prices for processed potatoes. The profits of the processing industry increased during the months November 2002 to May 2003, and it seems that they were guilty of making larger profits than normal during this period of the year.

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CHAPTER 9

THE DRY BEAN SUPPLY CHAIN

9.1 Introduction

The market for dry beans in South Africa is a relatively small market; nevertheless, it plays an important role. The production and marketing of dry beans in South Africa fills an important market niche, which would otherwise have been filled by imports. It also affords the producer the benefit of planting something different from the traditional field crops, such as maize, sunflower, sorghum and other grains, and oilseeds. Based on the average of the last five seasons it was found that the area planted with beans amounts to less than 2% of the area planted with maize.

The fact that meat and other protein products have become comparatively expensive has resulted in market opportunities for non-traditional protein products; the value of dry beans is to be found here. It is a product high in protein and important in the consumers' daily diet. In terms of combating malnutrition, it has a very important role to play, and in view of the fact that it is a vegetable protein, its value is even greater.

During 2002, South Africa experienced large increases in the prices of most agricultural commodities. Dry bean prices showed an upward trend well in advance to the general increase in most agricultural product prices (see the subsequent discussion on price). The purpose of this Chapter is to provide insight into the increase in dry bean prices, particularly over the last few seasons.

9.2 An overview of the structure of the dry bean industry

The dry bean industry was formerly regulated by means of a Surplus Removal Scheme instituted in terms of the former Agricultural Marketing Act. Prices were fixed in years of surpluses under the auspices of this scheme. Bean producers were, however, free to trade their product in a free market environment. The Scheme was discontinued and the Board abolished in 1993. Several of the tasks performed by the Board were taken over by the Dry Bean Producers' Organisation (DPO) that was instituted shortly after the demise of the Board. These tasks include the provision of relevant production and marketing information, and the facilitation of bean production and marketing in general.

Figure 9.1 shows the supply chain for dry beans in South Africa. Of the total dry beans crop almost 90% goes to the pre-pack side of the market. The remaining dry beans are absorbed in the food-processing sector for various canning products. The remainder of this section will discuss the production and processing side of the supply chain.

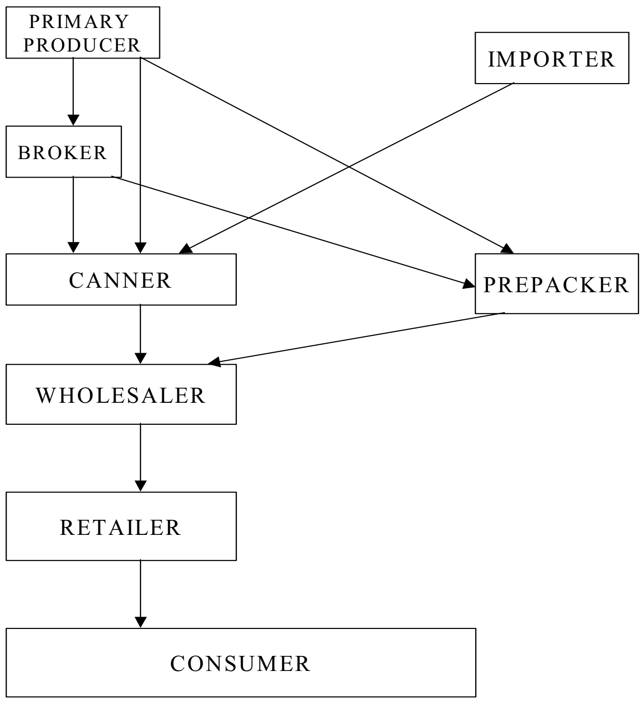

Figure 9.1: The dry bean supply chain
Source: DPO

Number of primary producers and concentration

The Dry Bean Producers' Organisation (DPO) estimate that there are roughly 1,200 dry bean producers in South Africa, but DPO only has 588 recorded members. In addition to dry beans, all producers plant other commodities, mostly maize. Table 9.1 shows the distribution of producers in South Africa.

Table 9.1: Distribution of the number of dry bean farmers

Area	*Producers*
Free State	273
Mpumalanga	199
KwaZulu-Natal	22
Limpopo	15
Northwest	47
Northern Cape	17
Western Cape	15
Total	**588**

Source: DPO

From the data summarised in Table 9.2 it is clear that Mpumalanga is the largest bean production area followed at a distance by the Free State (mainly the eastern parts), and even more at a distance by the rest of the country. Note that even though the Free State has more dry bean farmers, they are not matching the production in Mpumalanga. Also noteworthy is the fact that yields differ significantly between provinces, e.g. in certain areas the yield is more than 2 tonnes per hectare, but in other provinces it is fractionally higher than 1 tonne per hectare. The average for the country is very low at 1,15 tonnes per hectare.

Table 9.2: Estimated area planted for the 2002/03 season

Province	Area planted 2002/03 Ha	7th estimate 2002/03 Tonnes	Average of previous 3 seasons (Tonnes)
Western Cape	100	150	333
Northern Cape	250	575	700
Free State	12 000	14 400	18133
Eastern Cape	100	150	-
KwaZulu-Natal	1 450	2 175	2259
Mpumalanga	30 000	33 000	35310
Limpopo	1 100	1 320	1000
Gauteng	3 000	3 300	-
North-West	2 800	3 220	4425
Total	**50 800**	**58 290**	**62 160**

Source: NCEC

South African dry bean canning and pre-packing markets

In South Africa, dry beans are either canned or sold in pre-packed quantities, the latter dominates the market. According to industry experts, the canning side of the market is in the region of 15,000 to 17,000 tonnes per annum. This implies that pre-packers use around 100,000 tonnes of beans per annum.

A small percentage (±15%) of the local bean crop is used for the canning of beans. The canners try to buy their requirements locally, but have, in the past, bought relatively large quantities on the international market. The largest canner in South Africa, which cans more than 50% of the beans destined for canning, is situated in Gauteng. Other canners are found in the Western Cape, KwaZulu-Natal and Mpumalanga. Information available at the time of writing this report indicates that there are 13 large canners in South Africa (See Table 9.3).

Approximately 85% of the dry bean crop is marketed by pre-packers, with the Red Speckled variety being the most popular. There are more than 30 large pre-packers of beans in South Africa. These pre-packers are found in most of the provinces, with the largest number located in KwaZulu-Natal (See Table 9.3).

The large concentration of pre-packers in Kwazulu-Natal could probably be explained by the fact that large quantities of dry beans are imported each year to satisfy the domestic demand in a general sense, as well as the particular nature of demand.

Table 9.3: Location and number of canners and pre-packers of dry beans

Province	Canners	Pre-packers	Traders
Free State		1	
Mpumalanga	4	4	
KwaZulu-Natal	2	13	6
Limpopo			1
North-West		2	2
Northern Cape			1
Western Cape	6	4	3
Gauteng	1	5	14
Eastern Cape		1	2

Source: DPO

9.3 Production and consumption

Production

Figure 9.1 shows the hectares planted with dry beans since 1980/81. On average the area planted is approximately 60,000 hectares with a standard deviation of nearly 12,000 hectares. The large standard deviation confirms what is depicted in Figure 9.1, namely, large variations over time in the area planted. There might be a number of reasons for this. The main reason is probably the favourable prices received for other grain crops, which are also easier to produce and are subject to lower input costs.

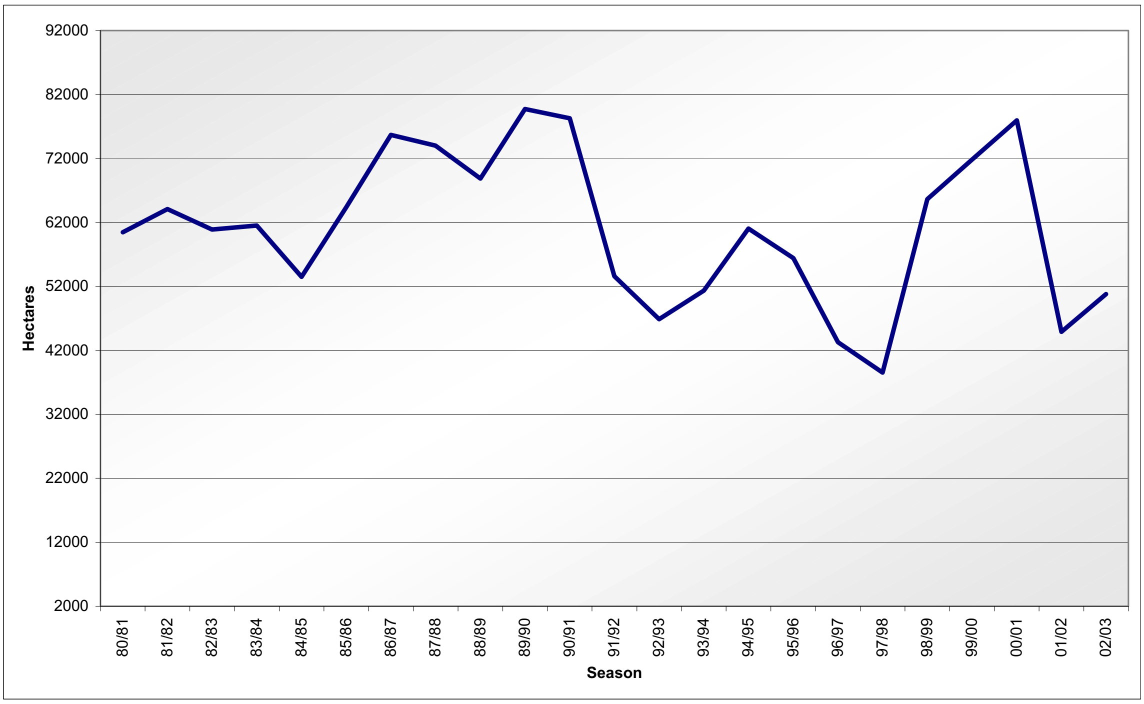

Figure 9.1: Number of hectares planted (1980/81 to 2002/2003)

Source: NCEC

Figure 9.2 shows the production of dry beans. Production averaged approximately 64,000 tonnes per annum, but this varies considerably per annum as depicted in Figure 9.2.

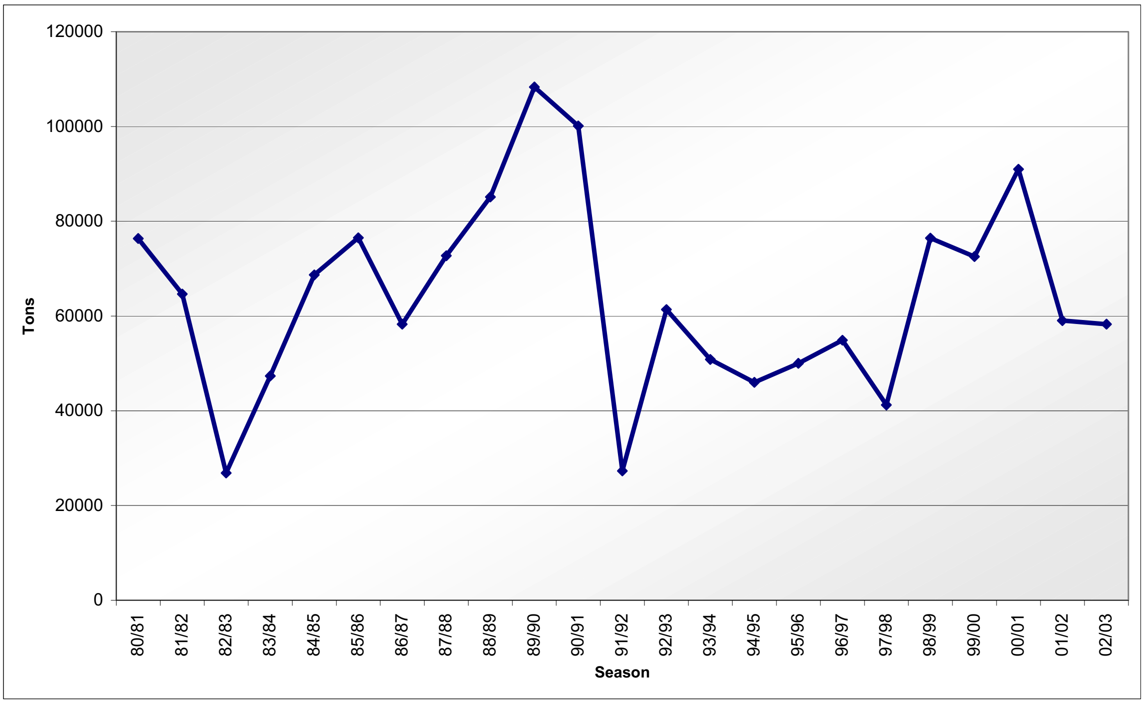

Figure 9.2: Production of dry beans (1980/81 to 2002/03)
Source: NCEC

Table 9.4 and 9.5 show the areas planted and the production for the different varieties of dry beans in South Africa. Red Speckled beans are by far the most important variety. Over the last couple of seasons, it made up between 66 and 85% of plantings. The total production followed the same trend, with figures of between 67 and 87%.

Table 9.4: Area planted per variety (1998/99 to 2002/03)

Type	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003
	Hectares				
Red Speckled	51029	53222	60546	27988	43380
Small White Canning	6678	7628	9954	6637	3920
Large White Kidney	4000	5095	5000	5998	2314
Carioca and other	3928	2816	2500	1462	1425
Total	65635	68761	78000	42085	51039
Red Speckle as % total	**77.7**	**77.4**	**77.6**	**66.5**	**84.9**

Source: DPO

Table 9.5: Production per variety (1998/99 to 2002/03)

Type	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003
	Tonnes				
Red Speckled	59636	57315	72051	34985	52056
Small White	7746	8880	10949	8628	4312
Kidney	4480	3000	5000	6697	2000
Carioca and other	4556	3343	3000	1754	1710
Total	76418	72538	91000	52064	60078
Red Speckle as % total	**78.0**	**79.0**	**79.2**	**67.2**	**86.76**

Source: DPO

Consumption of dry beans

In general, it appears that the per capita consumption of dry beans has stabilised around 2.5 to 2.6 kg per head since 1996. The total dry bean consumption ranges between 105,000 and 110,000 tonnes per annum and has been fairly stable over the last four years.

9.4 Price trends

Figure 9.3 shows a comparison of prices, expressed as indices, of different grains (summer grains, winter grains and dry beans). In general, prices have moved in the same direction since 1995, probably because most of the factors that influence grain prices have had a similar impact on all grains, such as the climate and the exchange rate. Nevertheless, it is also important to take into account that prices of dry beans, and specifically maize, may move in the opposite direction during a particular season. For example, high maize prices in a previous season may result in large plantings of maize in the current season, which together with favourable climatic conditions, may, in turn, result in surpluses and, hence, low prices.

As mentioned earlier, farmers tend to alternate the areas cultivated between maize and dry beans; this is particularly true for those farmers that plant both crops in a particular season. Thus, an increase in the area planted with maize translates, on average, in lower plantings of dry beans, which in turn leads to a lower supply of dry beans and, hence, an upward pressure on the price for dry beans. Naturally, the opposite is also true. Due to the level of aggregation of prices, the aforementioned relationships may not be that clear in Figure 9.3.

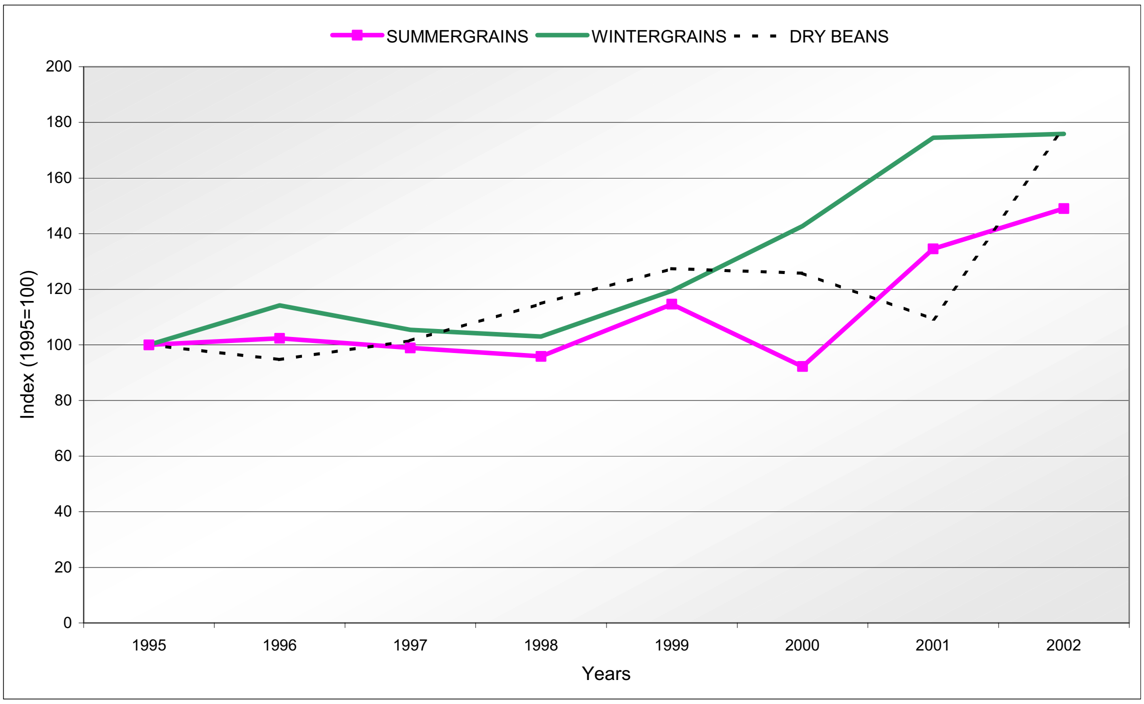

Figure 9.3: Producer prices of different grains versus that of dry beans (1995 – 2002)
Source: AMT

Figure 9.4 depicts the average monthly price of Red Speckled Beans over the past three seasons; it indicates the seasonal trend in dry beans in terms of the prices of Red

Speckled Beans. The graph shows the same seasonal trends that are normally observed for most summer grains and oilseeds. The months March to June usually exhibit low prices for reason that the crop is harvested, and, hence, availability is not a problem. As the season progresses towards planting for the next season, prices tend to increase and will reach a peak in December, after which prices tend to slide again as more information becomes available on the expected availability of the crop.

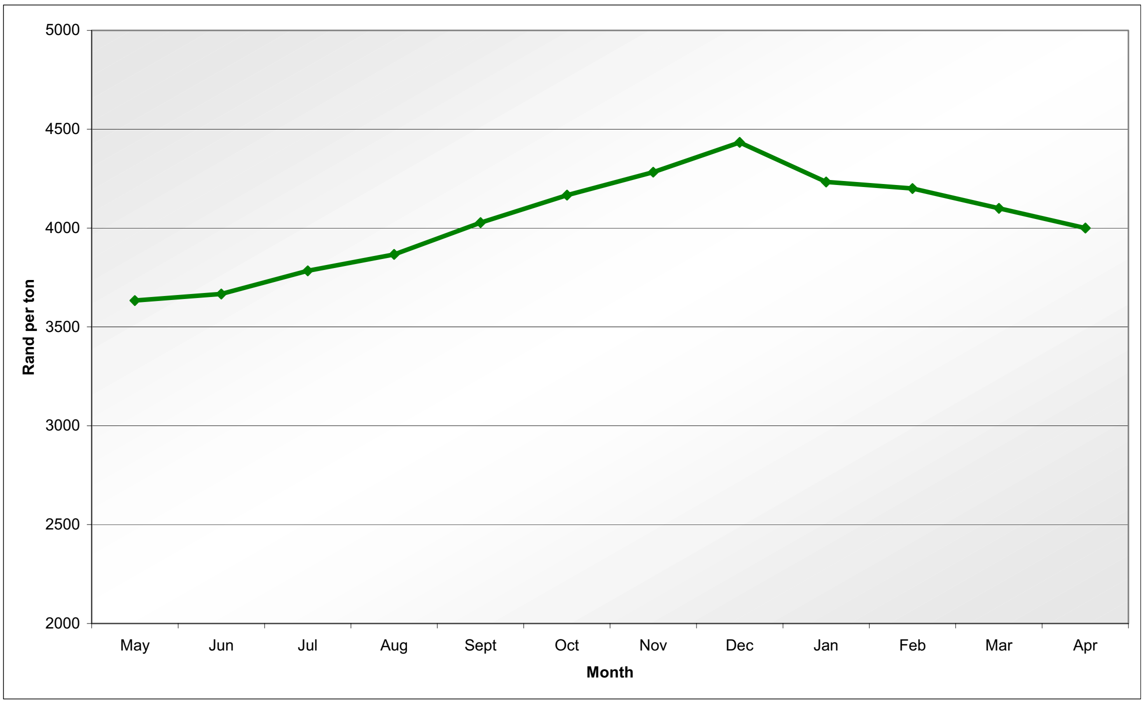

Figure 9.4: The average monthly price of Red Speckled Beans over the last three seasons
Source: DPO

The nominal and real weighted average dry bean producer prices are reflected in Figure 9.5. The nominal prices show a steady increase over the period with the most notable increase occurring from 2001 to 2002. Real prices on the other hand, on average, moved sideways; at the same time, they showed a significant increase from 2001 to 2002. This increase in nominal and real prices from 2001 to 2002 can probably be explained by the significant depreciation of the Rand exchange rate against all major currencies. The higher maize prices also resulted in fewer hectares planted with dry beans, which created short supply in the domestic market in 2002.

The relation between the producer and import parity price of Red Speckled Dry Beans and the exchange rate is depicted in Figure 9.6. It is clear that the domestic prices followed the import parity price closely, but during the latter part of 2001 up to June 2002 the import parity price was significantly higher. The producer price experienced a significant correction at the end of 2002. Since the exchange rate is holding its ground against the major currencies, prices may decline further in the current season. Cognisance should be taken, however, that international prices are expected to increase in the next couple of months as result of shortages in Canada and the USA, which in turn may support prices on the local market.

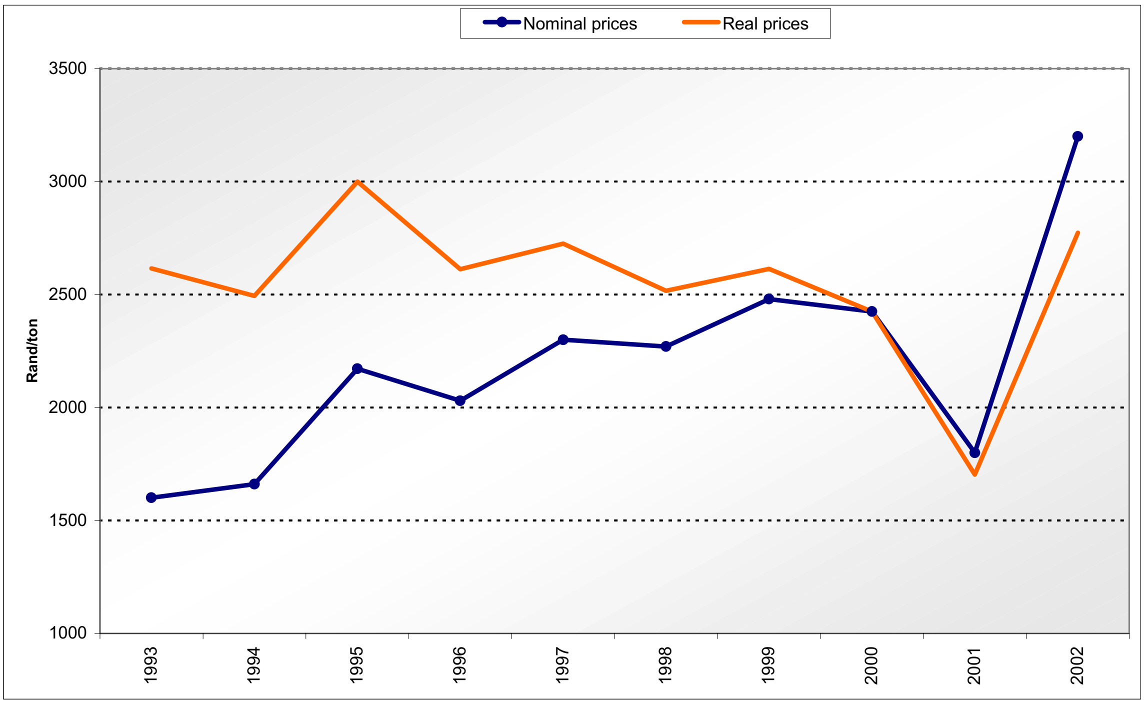

Figure 9.5: Nominal and real weighted average dry bean price (1993 – 2002)

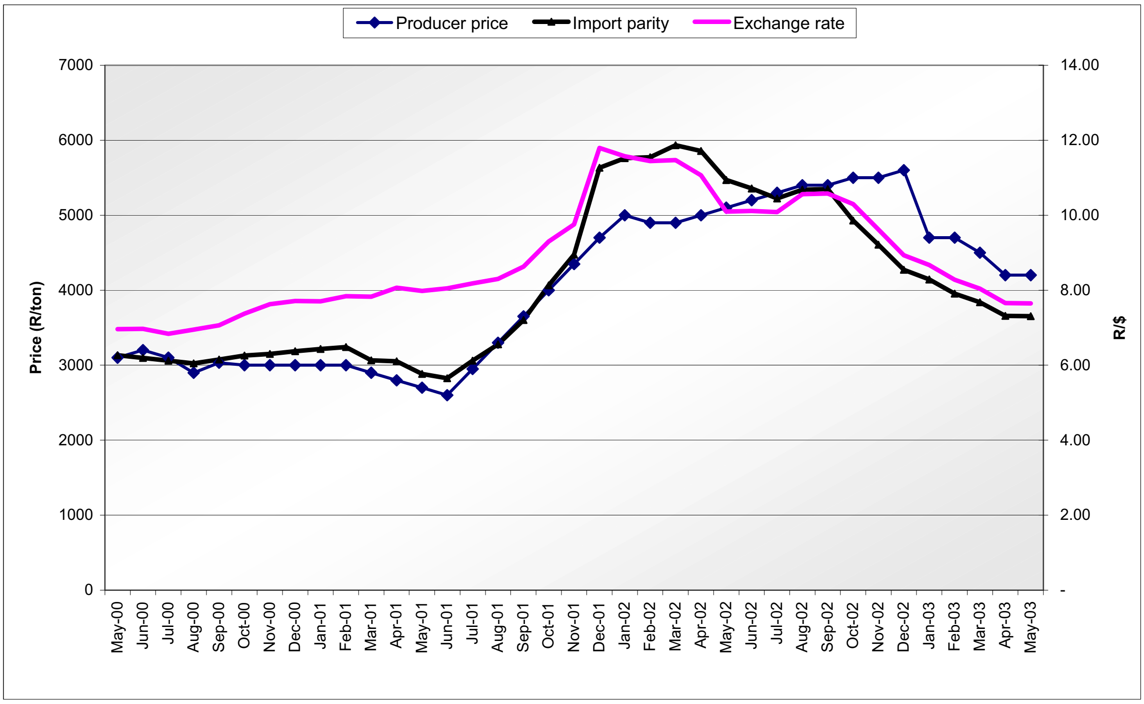

Figure 9.6: The producer and import parity price of red speckled beans versus the exchange rate

Source: AMT

Figure 9.7 shows the exchange rate and the shelf price of dry beans. There is no clear correlation between the shelf prices of dry beans and the exchange rate, but they appear to respond with a time lag. This may have been caused by the fact that retailers took a 'wait and see approach' in respect of producer prices, which, as it turns out, continued to increase for several months. The sharp increase in shelf prices after February 2003 needs further investigation, since producer prices continued to decline after December 2002, and the exchange rate held its ground against major currencies.

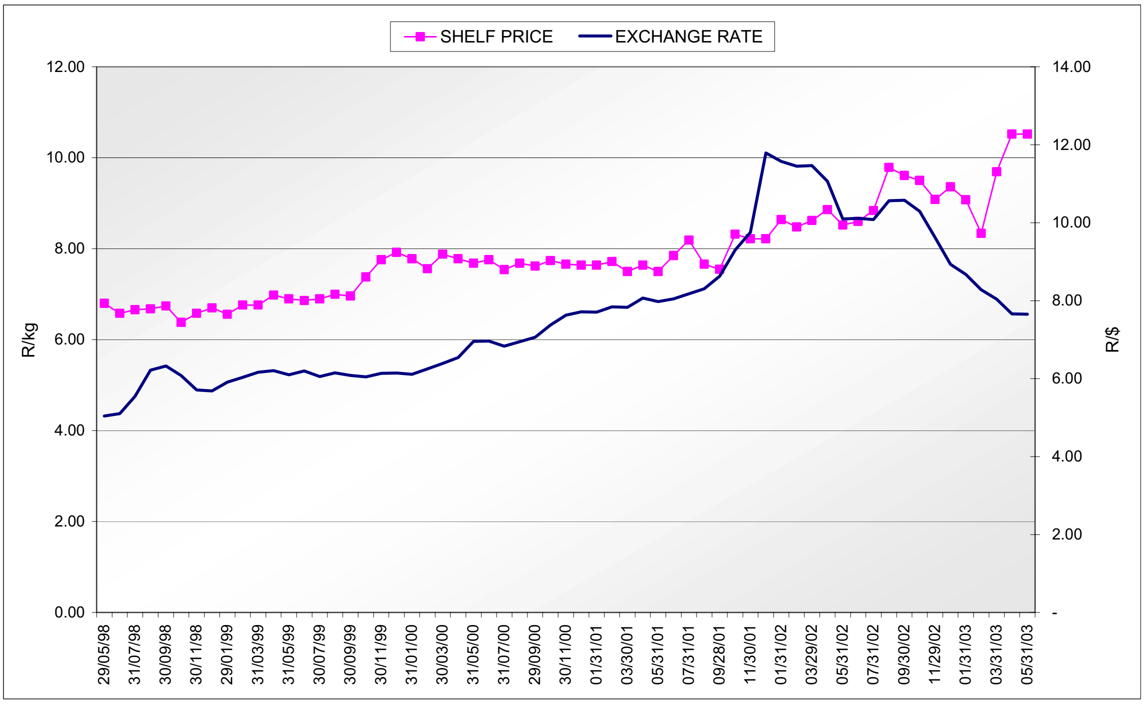

Figure 9.7: A comparison between the shelf price of dry beans and fluctuations in the exchange rate
Source: DPO & AMT

Figure 9.8 shows a comparison between the shelf and producer price of Red Speckled Beans. The calculated average annual growth rates for shelf and producer prices are respectively 1.04% and 2.23%. On average, the Red Speckled Beans shelf prices are 109.8% higher than the producer prices. The standard deviation amounts to 43.4%, which is relatively high. This is an indication of poor consistency in terms of the average difference between shelf and producer prices.

The two lines on this graph (figure 9.8) illustrate the shelf price of dry Speckled Beans and the producer price of the same product. The producer price of Red Speckled Dry Beans as a percentage of the shelf price increased since 2001 at a much faster pace than the shelf price. The producer price of dry beans increased quite smoothly until the end of 2002 but moved sideways and has decreased since then. The shelf price, on the other hand, increased in line with that of the producer price, but made quite an upward leap in the first months of 2003. The widening gap between the producer and retail prices is a concern. The drop in the producer prices is largely a consequence of cheaper imports from China in combination with the normal seasonal trend in the early part of the year. The increase in retail prices of dry beans can partly be explained by a time lag effect as manufacturers and distributors still pass on the previous higher prices of December 2002. Since May 2003, retail prices have been flattening off, which indicates some improvement in price levels.

The producer price of speckled dry beans increased with 86,66% when the price of January 2001 is compared with that of December 2002. The shelf price shows a totally different picture with an increase of only 22,55% for the same period. The price of the two products (producer price and shelf price) is more in line with each other when January 2001 is compared with May 2003 and the increases are 28,5 and 27,4%, respectively.

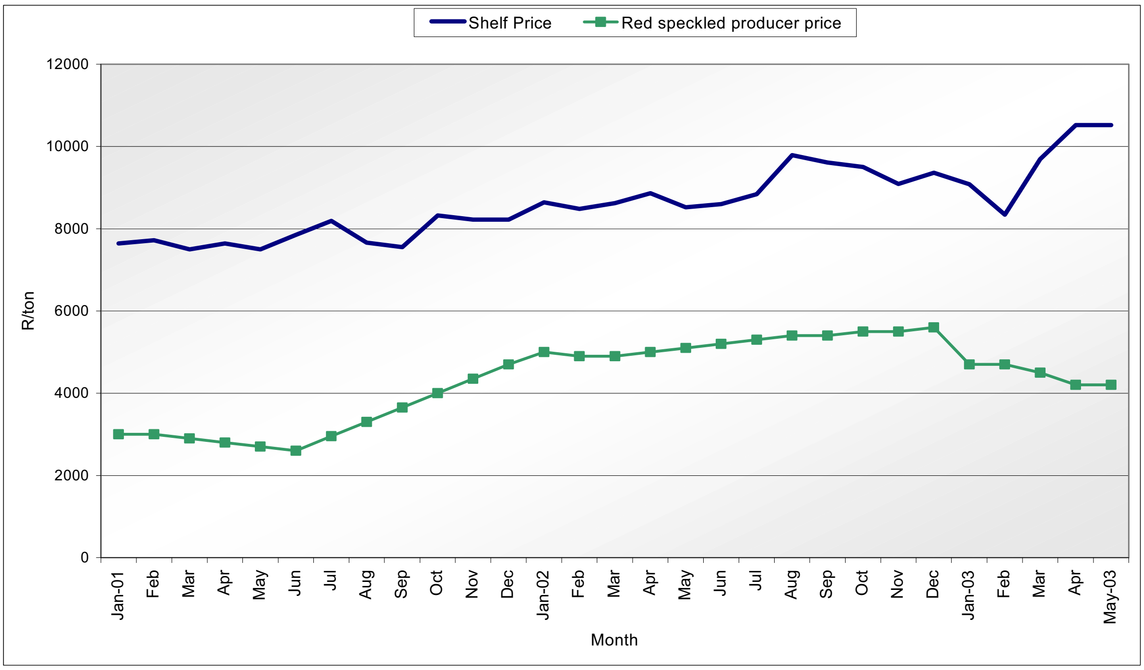

Figure 9.8: The retail (shelf) and producer price of red speckled beans
Source: DPO, A C Nielsen & AMT

9.5 Imports of dry beans

Figure 9.9 shows the relation between production and imports. It is clear that there exists a negative cyclical trend between the two variables.

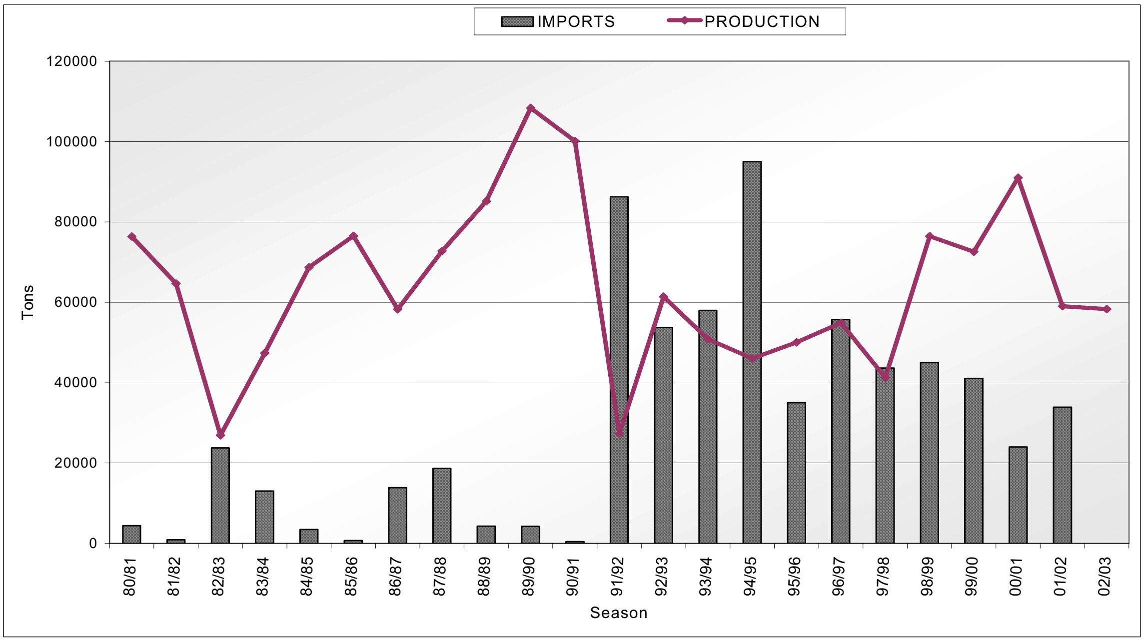

Figure 9.9: The relation between imports and the production of dry beans
Source: AMT

9.6 Unpacking the dry bean supply chain

Table 9.6 shows a typical farm-retail price spread for dry beans. This breakdown of the cost within the supply chain is based on a number of assumptions. For example, the scale economies may differ substantially between different processors, which will affect the cost of value adding. The distances travelled will also differ widely depending how far the different role players are located from each other.

Table 9.6: A typical farm-retail price spread for dry beans

PRODUCER	**Unit cost (R/ton)**	**Accumulated cost (R/ton)**
Price of the product	5 600	5 600
Transport cost to buyer	200	5 800
BUYER/BROKER	5 800	5 800
Bank costs (statements/overdrafts, etc)	35	5 835
Cleaning	200	6 038
Waste (3% of the gross price)	174	6 212
Packaging (50 kg @ R2/bag)	40	6 252
Marketing costs (5% of gross price)	290	6 542
Investment costs	400	6 942
Terms to buyer (1 month interest)	175	7 117
Margin/profit (5%)	116	7 233
WHOLESALER	7 233	7 233
Transport cost	150	7 383
Packaging (1 kg @ R0.20/bag)	200	7 583
Cleaning	100	7 683
Storage /handling	30	7 713
Marketing costs (4% of gross price)	289	8 002
Margin/profit (7%)	506	8 508
RETAILER	8 508	8 508
Packaging (500gr @ R0.05/bag)	100	8 608
Marketing costs (2,5% of gross price)	209	8 817
Margin/profit	543	9 360
Average monthly retail price		9 360
Average monthly producer price		5 600
Producer share of retail price of dry beans		59.8%

Source: Different role-players

The prices of the four main levels within the supply chain have been listed as the average producer price, the buyer/broker's price, the wholesale price, and the consumer price. Only the producer price and the consumer price are actual prices that were obtained from the DPO and the AC Nielsen database, respectively. The remaining information was obtained from various different industry experts.

9.7 Conclusions

The price trends in the previous graphs illustrate the trends very clearly. The price of both the producer as well as shelf price showed the same trend with a slight upward movement. The strong upward trend of the shelf price in late 2003 is a worrying factor. As was the case with other commodities, the price of dry beans is derived from the international price as the markets opened up, and producers are now in competition with their counterparts in other countries.

Different graphs in this Chapter have illustrated the prices of dry beans on a monthly and yearly basis. Based on the data, the conclusion is that dry bean prices are not as volatile as the prices of maize and some of the other commodities. Now that the price is determined by supply and demand, it tends to be more volatile, as was mentioned above. Availability is an important issue and most buyers and processors tend to buy their requirements on the domestic market before exploring elsewhere. Because the price is fixed in a free market environment, a definite cycle is clear, and, as in the case of most other commodities, the price of dry beans is normally at its lowest level during planting time and can be expected to peak towards December of each year, depending on import quantities and landed costs as seen in relation to the Rand/Dollar exchange rates applicable.

The South African domestic market produced between 42,000 (lowest) and 92,000 tonnes (highest) of beans in the last eight years with an annual average of ±60 000 tonnes. The average imports for the same period were in the region of 50,000 tonnes. This means that local production supplied just over 50% of the local requirements. The total domestic demand varied in the last couple of seasons between 110,000 and 114,000 tonnes. In other words, the domestic market is very dependent on imports and the international price of dry beans plus the exchange rate, thus, plays an important role in the determination of prices on the domestic market.

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PART 5

INVESTIGATING OTHER ASPECTS OF THE FOOD VALUE CHAINS

Investigating other aspects of the food value chains

Introduction

Part 5 of the Report continues with issues related to the core aspects of the Committee's Terms of Reference, namely, to understand the causes of food price increases. Chapter 1 considers the influence of price increases of farm requisites. Here the focus is on the broad trends in order to verify whether, during 2002, farmers were put under similar pressure as the consumers in that they had not yet received the benefit of a stronger Rand. In this context, also the effect of packaging costs on the cost of food at retail level is considered.

Chapter 2 considers the role played by other exogenous factors in the cost of basic food. Here transport costs are investigated, and the perceived collusive behaviour of silo owners. Much was said in the media and in labour union circles about the alleged collusive behaviour of silo-owners in that they should be held responsible for high producer prices by holding back grain stocks and not offering these for sale.

The Committee was of the opinion that certain practices and behaviour related to the relationships between food manufacturers and retail stores might have led to extra costs for the consumer. This aspect is investigated in Chapter 3.

In Chapter 4, aspects related to market structure and market power are considered, and how these influence the transmission of prices through the value chain.

Part 5

CHAPTER 1

TRENDS IN AGRICULTURAL INPUT PRICES

1.1 Introduction

It is often argued that rising farm input costs might contribute to higher food prices. This is not really possible since farmers in the free market dispensation of today are price takers (if they are not selling on contract). This means that they have to accept the price that is generated in the market through the interaction between domestic supply and demand factors, world commodity prices, exchange rates, and import tariffs. It is also true, however, that rising on-farm production costs do affect farmers' decisions to plant or invest in a particular farming activity. If costs and this is particularly true for marginal costs, increase above marginal revenue, farmers might decide to pull out of a particular industry, which then might reduce the domestic supply and so create a shortage thus leading to higher prices. This trend can, however, well be reversed in the next cycle as farmers respond to these higher prices.

It is, however, true that the 2002 food price crisis was not influenced by the high level of farm production costs. As farmers purchased inputs during the second half of 2002, they experienced higher prices for most agricultural inputs since the price of most of these inputs had been affected by the Rand exchange rate depreciation as is shown in a later section of this Chapter. When the exchange rate appreciated during late 2002 and continued in 2003, farmers – in the same manner as consumers – began to complain that the benefits of the appreciating exchange rate had not been passed through to them. Various farmer lobby groups then requested the FPMC to, also, monitor the price of farm inputs. The Committee agreed to add this to its activities as a service to the agricultural industry in the broader terms.

In this Chapter, we, therefore, provide a brief summary of the trends in the major farm inputs and we will analyse the effect of exchange rate movements on the price of these inputs.

1.2 Fertiliser Prices

The structure of the South African fertiliser industry

The South African fertiliser market is relatively small in world terms (2 million tonnes per year compared to, for instance, 20 million tonnes per year in Brazil). The market has been at roughly the same size for the past 20 years, and is not expected to grow significantly in the medium term. These factors, plus the high cost of capital have resulted in significant production capacity being permanently shut down over the last few years: Ammonia, Urea and limestone ammonium nitrate plants at Modderfontein in Gauteng; Ammonia, nitric acid and limestone ammonium nitrate plants at Milnerton in the Cape. These closures have resulted in new demands on the distribution infrastructure of the country and are of a particularly seasonal nature. The fertiliser market is considered very competitive, but at the same time concentrated and because of the factors mentioned earlier, it could become even more concentrated.

The main players in the South African fertiliser market are:

- Kynoch: 100% owned by Norsk Hydro, the largest fertiliser company in the world, selling about 22 million tonnes of fertiliser globally
- Omnia: selling about 0.6 million tonnes of fertiliser in South Africa and about 0.2 million tonnes in the rest of Africa
- Sasol Nitro, part of the Sasol Group
- Various smaller players

The market is characterised by ad-hoc imports of standard commodities by independent players. This is possible since no import duties or tariffs are levied on fertiliser products.

Factors influencing fertiliser prices

Given the potential of fertiliser imports, the general price levels of fertiliser in South Africa are influenced by the landed price of international fertiliser commodities. This is mainly determined by:

1 The international FOB ("free on board") price. Of the three main plant nutrients (nitrogen, phosphorous and potassium), nitrogen represents about 60% of the value of the sales mix. International prices for nitrogen commodities are the most volatile of the major nutrients. For instance, the FOB cost of Black Sea Urea prill in September 2003 was $153/ton, compared to $90/ton a year ago (See Figure 1.1). Likewise, the Black Sea price of Ammonia (a major raw material for the fertiliser industry) was $205/ton, compared to $125/ton a year ago (See Figure 1.2).

2 Freight to a South African port. Maritime freight rates have increased dramatically over the last year. The benchmark JE Hyde Handimax shipping index has increased from around 900 (a year ago), to about 1400 (currently).

3 The Rand/US Dollar exchange rate has strengthened significantly since January 2002. This had a lowering effect on the fertiliser price levels, counteracting the increases in FOB values and maritime freight rates.

4 South African distribution costs from the port to the market. These costs have increased because of high domestic producer inflation, added to a deteriorating service from ports and railways.

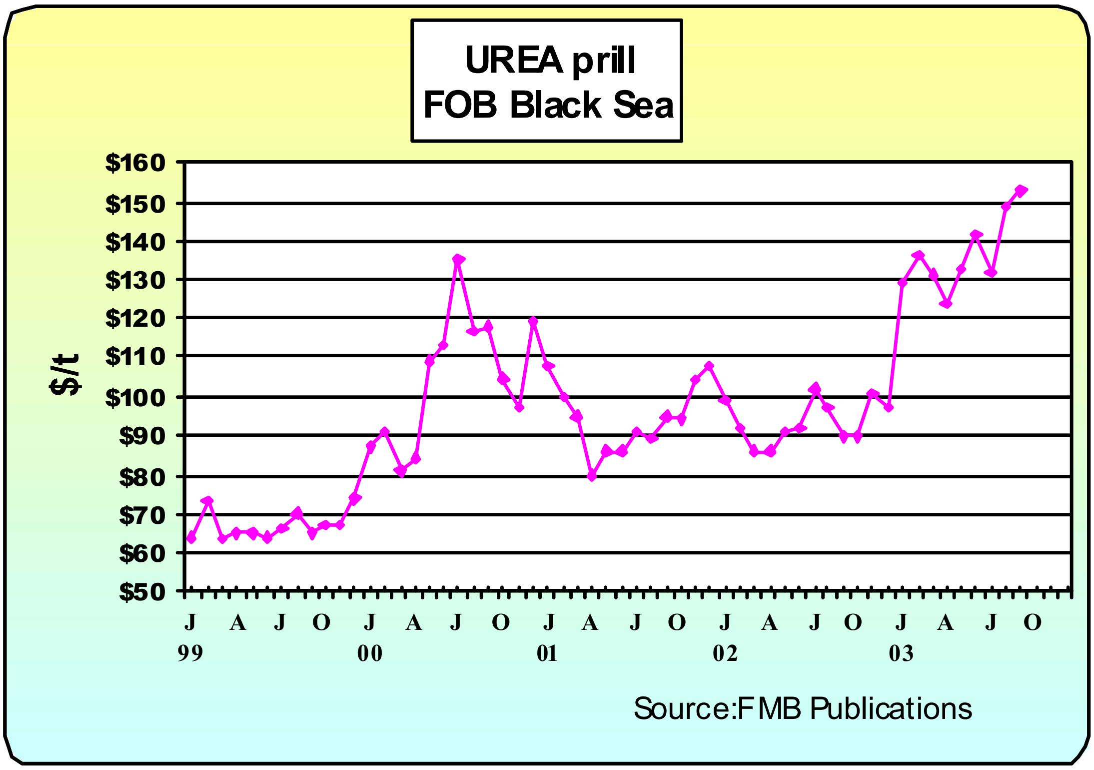

Figure 1.1: International Price trends for UREA prill, FOB Black Sea

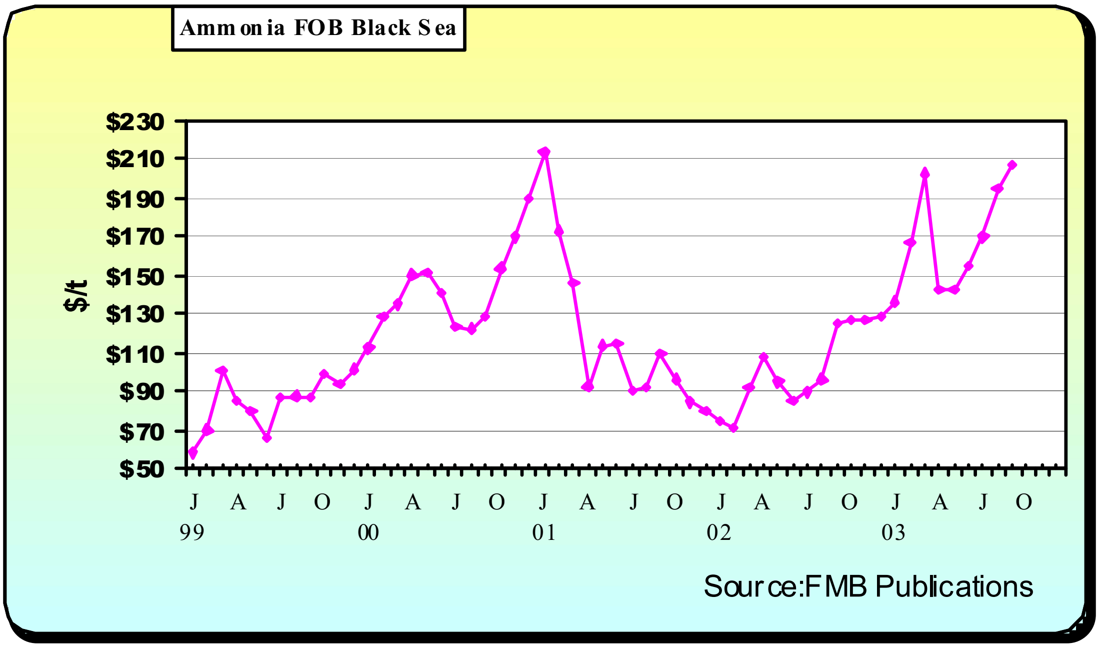

Figure 1.2: Black Sea price of Ammonia: July 1999 to October 2003

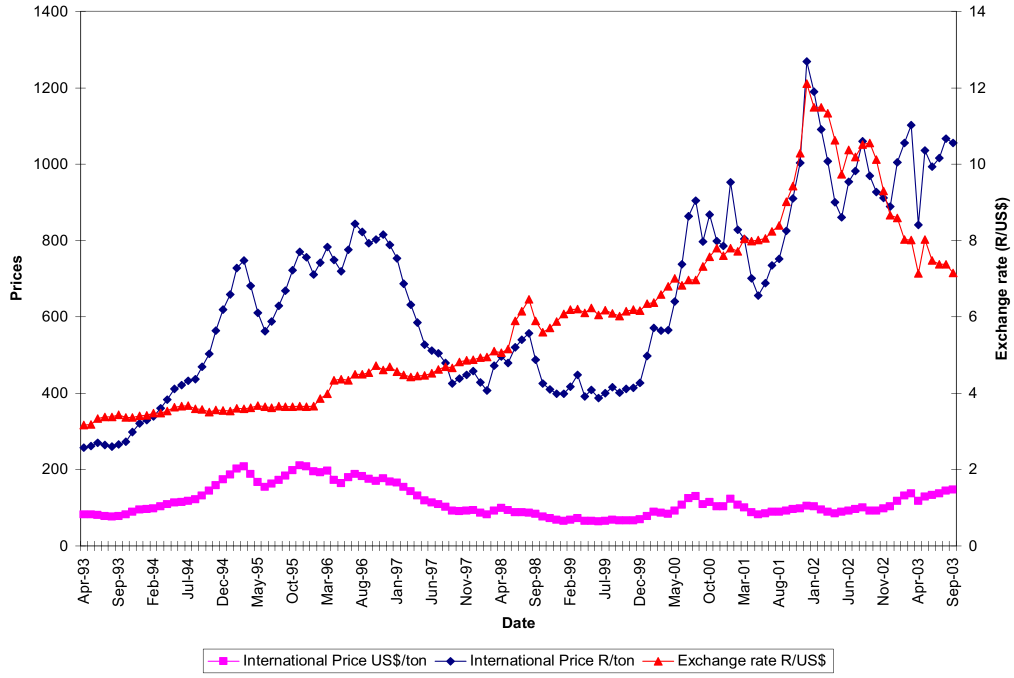

Figure 1.3: Monthly price of Urea and the Exchange Rate

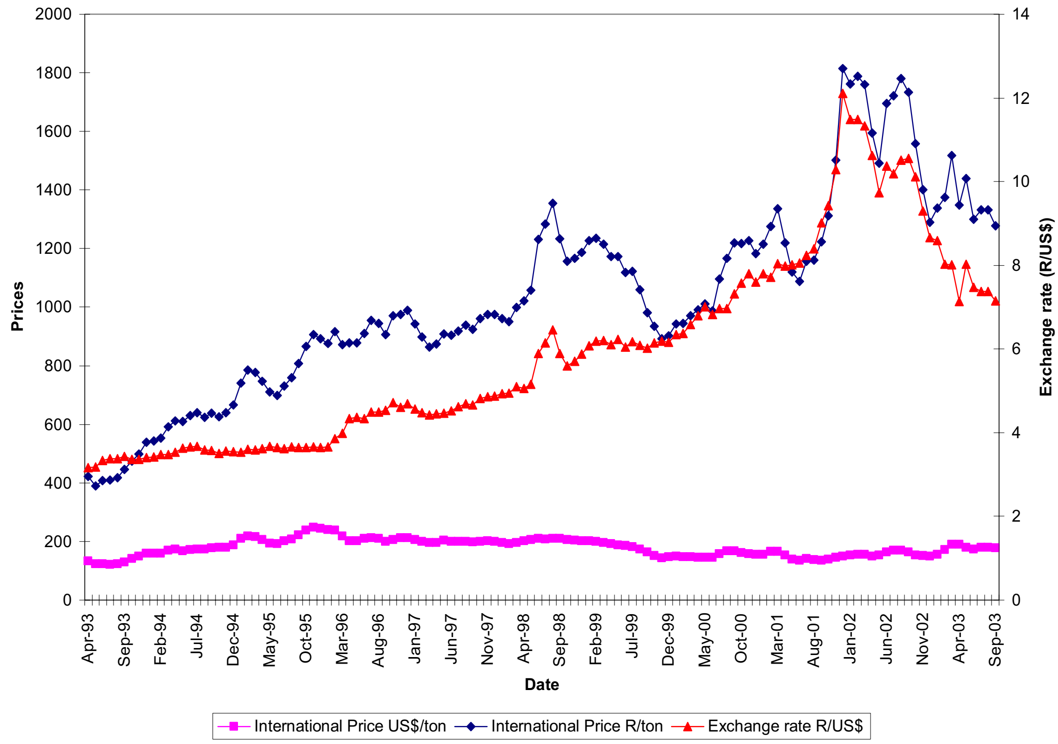

Figure 1.4: Monthly price of Dap and the Exchange Rate

An attempt was also made, using monthly data, to study the relationships between fertiliser ingredients and the exchange rate as described above. According to the results, summarised in Table 1.1 below, the prices of Urea, Dap, and Ammonia increased between September 1994 and December 2001. The domestic prices of Urea, Dap, and Ammonia increased by 93%, 83% and 54%, respectively, between September 1994 and August 2000. Their rate of growth remained positive but slowed down to 41%, 55%, and 19% between August 2000 and December 2001.

As shown in Table 1.1, changes in the price of these inputs can be attributed entirely to the depreciation of the Rand from 3.56 per USD in September 1994 to 6.69 per USD in August 2000 and to 12.11 per USD in December 2001, but not to international prices. We propose this because, as can be seen from the same table, international prices of these inputs exhibited a downward trend between September 1994 and December 2001.

Table 1.1: Impact of a depreciation in the exchange rate on selected fertilisers

Month	$/ton	R/$-exchange rate	R/ton
International price of Urea, FOB, Eastern Europe			
September 1994	131.10	3.56	466.72
August 2000	129.90	6.96	900.21
December 2001	104.76	12.11	1268.64
September 2003	147.42	7.15	1054.03
International price of DAP, FOB, US-gulf harbour			
September 1994	178.4	3.56	637.69
August 2000	167.62	6.96	1167.26
December 2001	149.78	12.11	1813.84
September 2003	178.6	7.15	1277.67
International price of Ammonia, FOB, Middle-East			
September 1994	189	3.56	675.58
August 2000	150.1	6.96	1045.25
December 2001	102.56	12.11	1242.00
September 2003	211.19	7.15	1510.81

It is evident from Table 1.1 and Figures 1.3 and 1.4 that, except for Ammonia, the prices of Urea and Dap fell by 17% and 30%, respectively, following the appreciation of the Rand by 69% in September 2003. These prices are still higher than their September 2000 levels when the exchange rate was approximately equal to its September 2003 level. This implies that the appreciation of the Rand has not brought in a sizeable reduction in the domestic prices of Urea and Dap in recent months. This can be attributed to the increase in the international prices of these inputs, which increased by 29% and 16%, respectively (Table 1.1). Unlike the prices of Urea and Dap, the price of Ammonia increased in September 2003. This can again be attributed to the increase in the international price of Ammonia by 52% (Table 1.1).

Fertiliser price trends

Although the landed cost of the few standard international fertiliser commodities influences local price levels, it should be noted that many locally produced grades of fertiliser are not available internationally. Some large players hold more than 200 product registrations with the Registrar of Act 36 of 1947. These products have specifically been developed and optimised for local combinations of soil, climatic and crop specific requirements.

Fertiliser is not generally sold in South Africa on a list price basis but by individual negotiation with the end user. This happens because of several market factors, outlined below. List prices are therefore more of an internal guideline than a reflection of actual selling prices.

Selling prices are typically lower than list prices by varying percentages depending on factors such as competitive conditions in the market, the volume purchased and the level of value-added services used by the customer. The list prices also vary for different geographic areas and the sales mix differs from year to year and from season to season depending on the agricultural conditions, with the sales mix influencing the "average" list price. An indication of recommended retail selling prices of selected fertilisers is presented in Figure 1.5

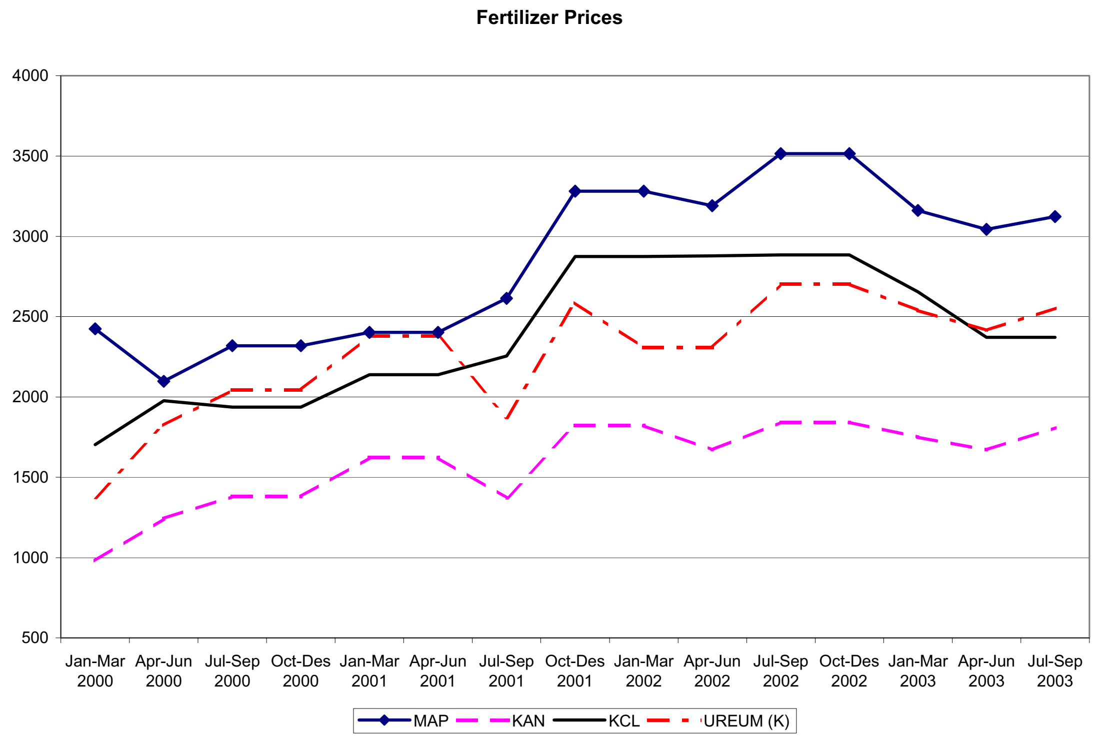

Figure 1.5: Selling prices for different fertilisers

Foskor is currently the sole supplier of phosphate rock, a key raw material for the production of phosphate fertilizers. Foskor indicated to the Committee the pricing process for phosphate rock (trends are reflected in Figure 1.6). In order to enhance the production of fertilisers at low cost in South Africa, a unique pricing formula is applied for the domestic industry. The formula has allowed the local industry to purchase phosphate rock from Foskor at about 30% below that of imported phosphate rock. Figure 1.6 shows the monthly variations in the price. It must be mentioned here that the agreement to use this pricing formula, will expire in March 2004. The current pricing arrangement made sense as phosphate rock exports, which were priced at international market prices assist to sustain the viability of the local industry. Recent changes relating to Spoornet being required to charge market related rail tariffs have, however, made Foskor uncompetitive on the international market.

Foskor also produces diammonium phosphate (Dap) and monoammonium phosphate, which is adequate to meet the requirements of the domestic industry. Prices are at the ruling international price levels and any changes are due to both commodity and exchange rate movements.

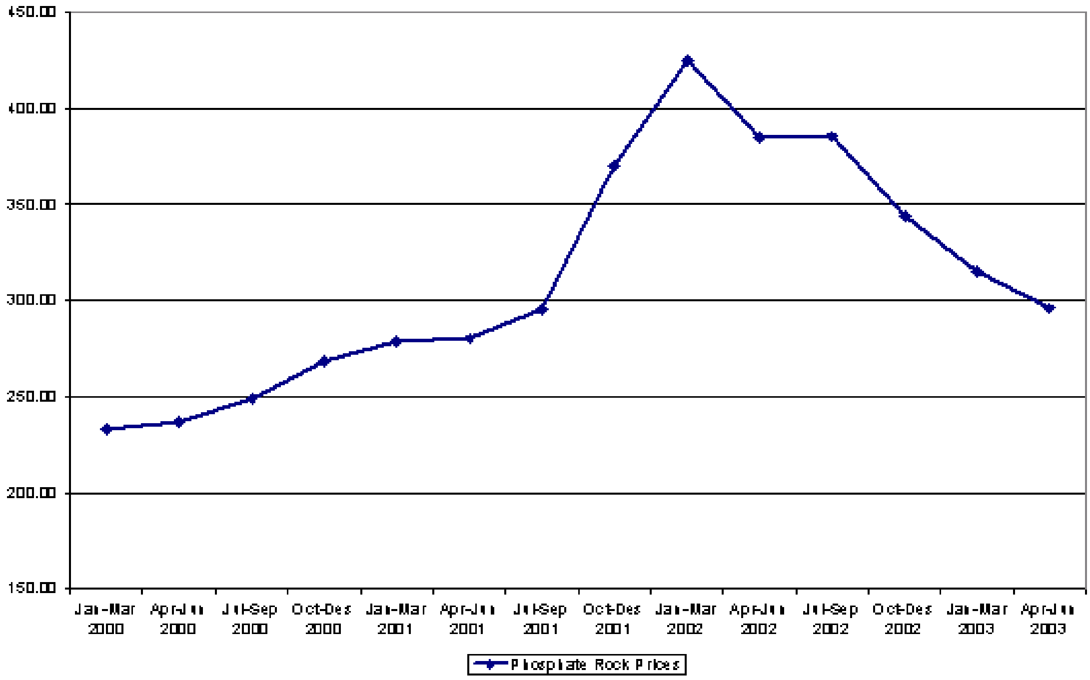

Figure 1.6: Monthly prices of phosphate rock: January 2000 – April 2003

1.3 Trends in Seed Prices

On request of the Committee, several seed suppliers provided information on seed price increases over the past few years. Most seed companies increased their prices in response to the changes in the exchange rate, but also because of an increased demand during the 2002 season.

Figure 1.7 gives an indication of the dramatic increase in maize seed prices since 1984/85. The prices of maize seeds increased exponentially with more than 950% in nominal terms over the last 20 years, which represents on average an increase of 47.6%

per annum The index shown is a combination of all the white and yellow maize cultivars from different seed companies.

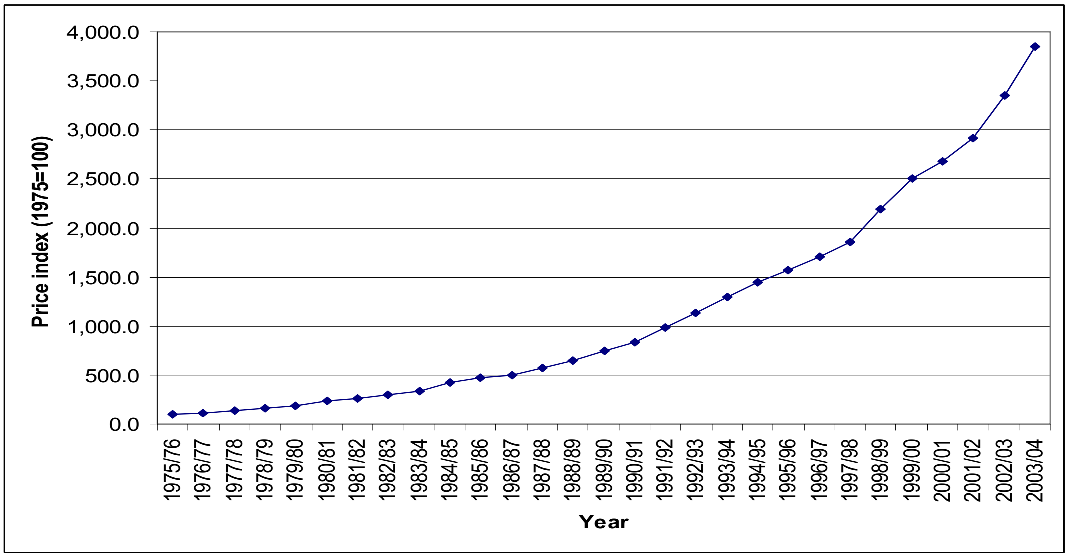

Figure 1.7: Annual combined maize seed (yellow and white) price index (1975/76 – 2003/04)
Source: Grain SA, 2003

Figure 1.8 shows the increase in seed prices of other summer grains (grain sorghum, sunflower seed and soy) over the last nine production seasons. During this period, the grain sorghum seed prices showed the largest increase (185.6%) followed by sunflower seed prices (167.1%), maize seed prices (144%) and soy beans seed prices (120.6%).

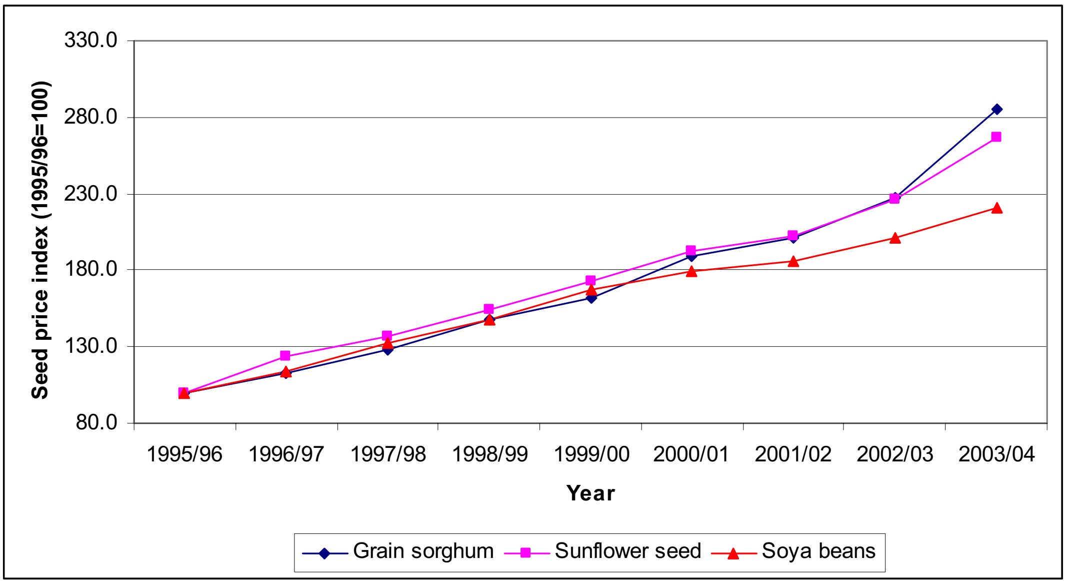

Figure 1.8: Annual price index for grain sorghum, sunflower seed and soy bean seeds (1995/96 – 2003/04)

Source: Grain SA, 2003

1.4 Trends in animal feed prices

Feed costs play an important role in the total input costs of the livestock sector. In the broiler and layer industries, for instance, the costs of feed constitute over 60% of the total input costs of these industries. This section analyses the recent trends in the costs of feed and will determine how closely the trends in feed costs have traced the trends in the prices of grains an oilseeds over the past three years. The Animal Feed Manufacturing Association (AFMA) provided data on the costs of feed and the inclusion rates of the various grains and oilcakes in specific feed rations. AFMA members produce 97% of the total broiler feed in South Africa, 89% of all layer feed, 47% of all dairy feed, 39% of all pig feed, and 25% of all beef and sheep feed.

It is a well-know fact that the inclusion rate of maize in the total production of feed is well over 50%. In fact, over the past three years maize products have made up more than 55% of the total feed produced by members of the AFMA (Table 1.2). This provides solid grounds to assume that feed costs will largely trace the price of maize. Mainly yellow maize is consumed in the livestock sector, and, therefore, the trends in yellow maize prices are compared to feed costs.

Table 1.2: Usage of Maize products by AFMA members, 1 April 1999 to 31 March 2002

Maize Products (Tonnes)	1999/2000	% Inc.	2000/2001	% Inc.	2001/2002	% Inc.
Maize/(Incl. Maize meal)	1,989,173	48.32%	1,986,530	50.43%	2,025,262	50.14%
Maize gluten meal/(20%)	35,567	0.86%	37,057	0.94%	41,811	1.04%
Maize gluten meal/(60%)	32,310	0.78%	28,266	0.72%	20,799	0.51%
Maize screenings	27,117	0.66%	19,578	0.50%	12,811	0.32%
Maize germ meal	60,582	1.47%	42,791	1.09%	30,526	0.76%
Defatted maize germ meal	5,081	0.12%	18,887	0.48%	19,224	0.48%
Maize germ oilcake	6,038	0.15%	2,974	0.08%	934	0.02%
Hominy chop/Germ meal	110,581	2.69%	102,471	2.60%	105,781	2.62%
TOTAL	**2,266,449**	**55.06%**	**2,238,554**	**56.82%**	**2,257,148**	**55.88%**
Total Feed Production	**4,116,266**		**3,939,506**		**4,039,058**	

Source: AFMA chairman's report, 2003

Table 1.3 presents the inclusion rates of various oilcakes in the total quantity of feed produced. From a total quantity of just over 4 million tonnes of feed produced, close to 500,000 tonnes of soybean oilcake were included in all the rations in 2001/02. A further 230 000 tonnes of sunflower cake were also added to the rations. In total, oilcakes make up 19.73% of the total feed produced by AFMA members.

In the following figures the costs of the feed rations for broilers, pigs, cattle and dairy are compared to the price of yellow maize, sunflower oilcake and soybean oilcake over time. Figure 1.9 graphically illustrates the relationship between the weighted average price of broiler growth mash and the SAFEX price of yellow maize. Similar to the methodology used in the analysis of the value chain of maize (Part 4, chapter 2), the SAFEX price of yellow maize is lagged by three months. This implies that it takes three months from the moment the maize is bought by the feed manufacturers until the feed is sold.

Table 1.3: Oilcake usage by AFMA members, 1 April 1999 to 31 March 2002

OILCAKE (Tonnes)	1999/2000	% Inc	2000/2001	% Inc	2001/2002	% Inc
Soya	402,190	9.77%	406,677	10.32%	495,546	12.27%
Sunflower	304,970	7.41%	286,078	7.26%	232,460	5.76%
Cottonseed	54,165	1.32%	43,758	1.11%	53,741	1.33%
Groundnuts	5,699	0.14%	3,845	0.10%	5,164	0.13%
Canola	12,420	0.30%	8,683	0.22%	8,347	0.21%
Copra & Palm kernels					1719	0.04%
TOTAL	**779,444**	**18.94%**	**749,041**	**19.01%**	**796,977**	**19.73**
Fish meal	103,435	2.51%	115,990	2.94%	100,652	2.49%
Total Feed Production	**4,116,266**		**3,939,506**		**4,039,058**	

Source: AFMA chairman's report, 2003

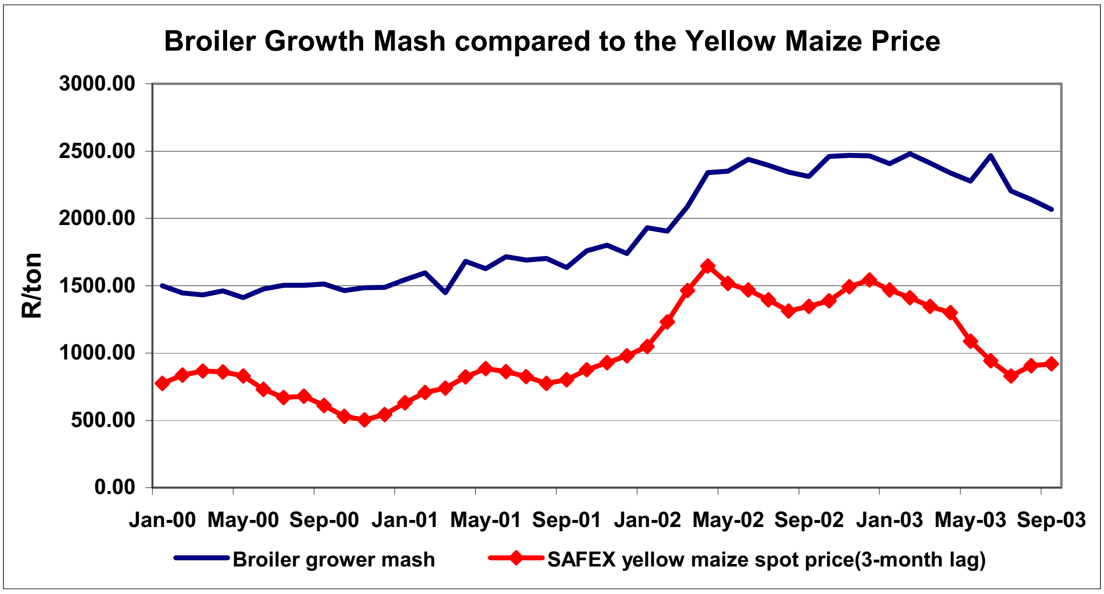

Figure 1.9: The average weighted price for broiler growth mash and the 3-month lagged yellow maize spot price

Source: SAFEX, AFMA, 2003

Figure 1.9 shows the trend in the margin between the price of yellow maize and the price of broiler mash over the past three years. It is evident from figure 1.9 and figure 1.10 that the margin between the price of broiler mash and the yellow maize has increased sharply over the past in the period April 2003 – September 2003.

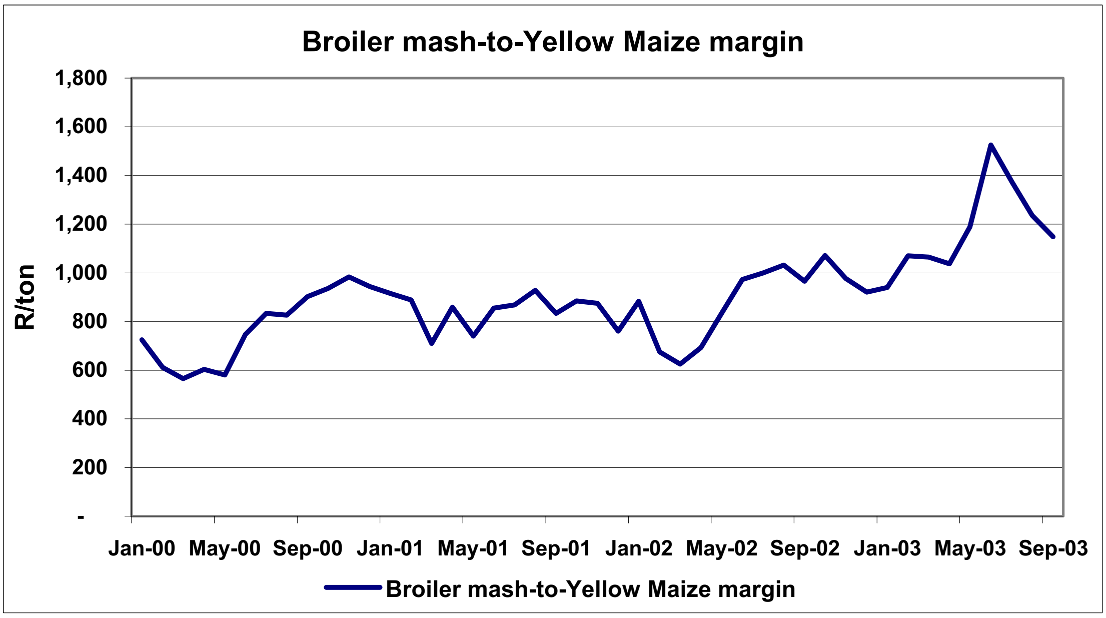

Figure 1.10: Broiler growth mash –to- yellow maize margin
Source: Own calculations

Broiler mash does not only consist of maize products but also of soybean cake and some sunflower cake. Figure 1.11 compares the trends in the price of broiler mash to the trends in the prices of sunflower cake and oil cake.

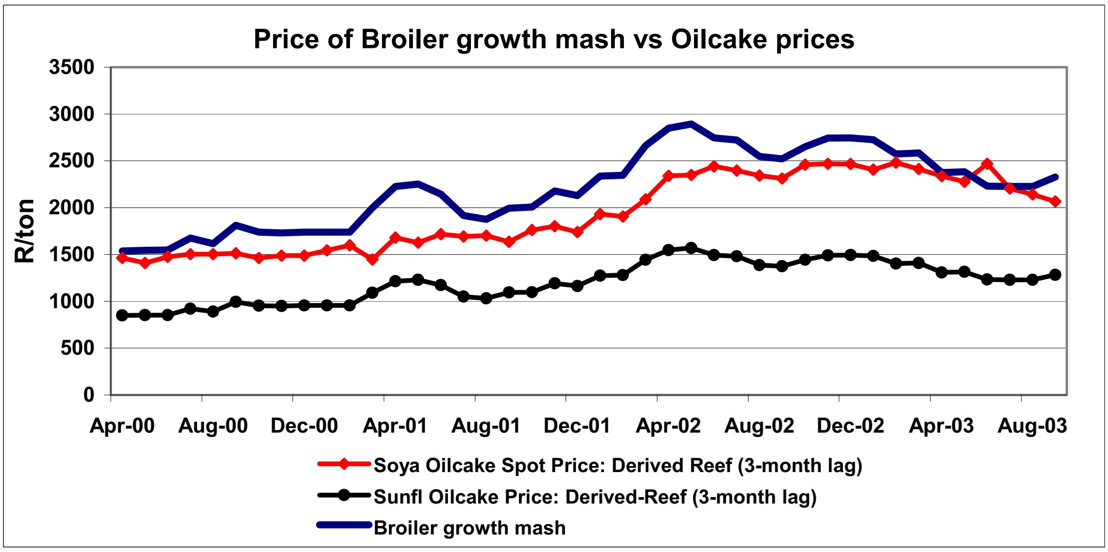

Figure 1.11: The average weighted price for broiler growth mash and the 3-month lagged prices of sunflower cake and soybean cake
Source: Reuters, Own calculations, AFMA, 2003

Similar figures can also be presented for layer mash, pig growth meal, dairy meal and cattle finisher. Figure 1.12 presents the 3-month moving average of the price of pig growth meal over the past three years. The Committee is concerned about the fact the there was no real declining trend in the moving average of the price of this specific feed.

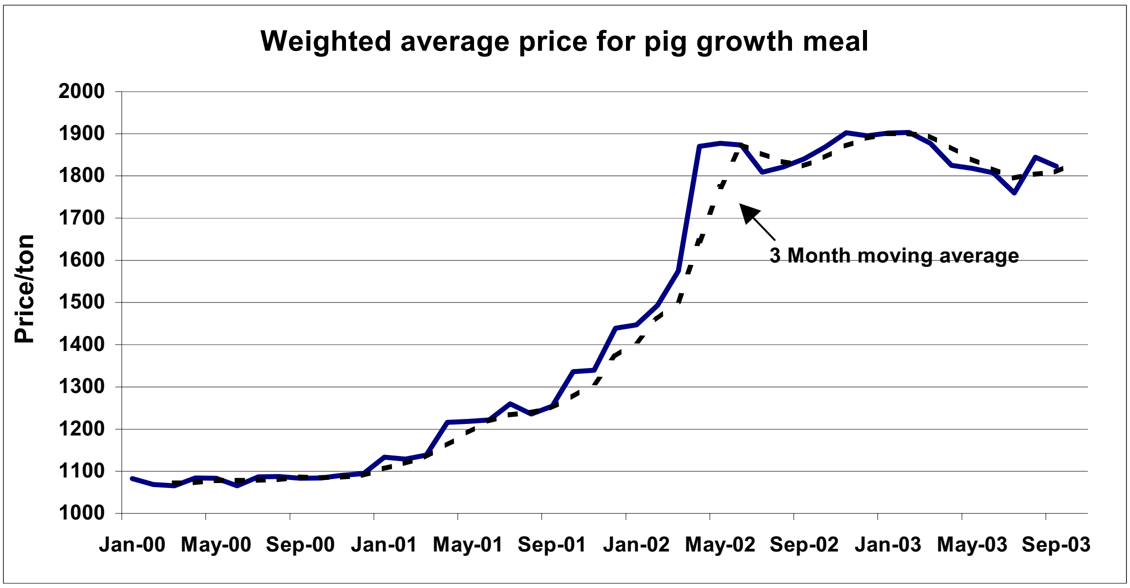

Figure 1.12: The average weighted price for pig growth meal (Source: AFMA, 2003)

Table 1.4 presents a short summary of the average percentage changes in the prices of the various animal feeds compared to the percentage changes in the prices of yellow maize and oilcakes for the period 2000 – 2003.

Table 1.4: Prices and average % changes for various animal feeds

	PRICES				% CHANGES		
R/ton	2000 Jan-Dec	2001 Jan-Dec	2002 Jan-Dec	2003 Jan-Sep	00-01	01-02	02-03
Broiler growth mash price	1473.56	1661.56	2291.38	2310.92	12.76	37.91	0.85
Layer mash price	1100.7	1233.04	1780	1717.64	12.02	44.36	-3.50
Dairy meal price	1025.33	1179.57	1704.27	1662.43	15.04	44.48	-2.46
Pig growth meal price	1081.38	1243.4	1772.9	1840.17	14.98	42.58	3.79
Cattle finisher price	1023.05	1176.7	1551.75	1590.92	15.02	31.87	2.52
Yellow maize price	668.83	911.57	1444.25	958.05	36.29	58.44	-33.66
Sunflower oilcake price	934.53	1186.57	1464.38	1230.26	26.97	23.41	-15.99
Soybean oilcake price	1701.52	2172.08	2691.67	2227.22	27.66	23.92	-17.26

Table 1.4 clearly shows that the prices of animal feeds have not responded to the lower grain and oilseed prices. In the case of broiler mash, pig meal and cattle finisher, prices have even increased over the past year despite the fact that the average prices of yellow maize, sunflower oilcake and soybean oilcake have decreased by 33%, 16% and 17%, respectively.

1.5 Packaging costs

The South African Packaging Industry grew by 3.2% during 2002 to a volume of 2.4 million tonnes. The market was worth an estimated R21.2 Billion, which is a 14.1% growth from the previous year. Growth was primarily attributed to the positive performance of exports during 2002, particularly in the fruit and wine markets. Paper still has the largest volume share of the packaging industry, with 37.6%. Plastic – due to its consistent positive performance over the last few years – surpassed paper in 2003 to constitute the largest value share of the packaging industry. Glass volumes grew well in the past year, largely due to the recovery of the malt beer market and the positive growth in wine exports.

Figures 1.13 – 1.16 report the actual prices of packaging in cents per item from January 2000 to January 2003, reported biannually. From the figures, it is clear that packaging costs have increased for all the four products. The packaging costs for a 10kg bag of maize meal increased by 60% from the 2000/01 average. The packaging costs for 1kg of rice increased by 41% in the same period, while the packaging costs for 750ml of cooking oil and 1 L sachets of milk increased by 31% and 39%, respectively.

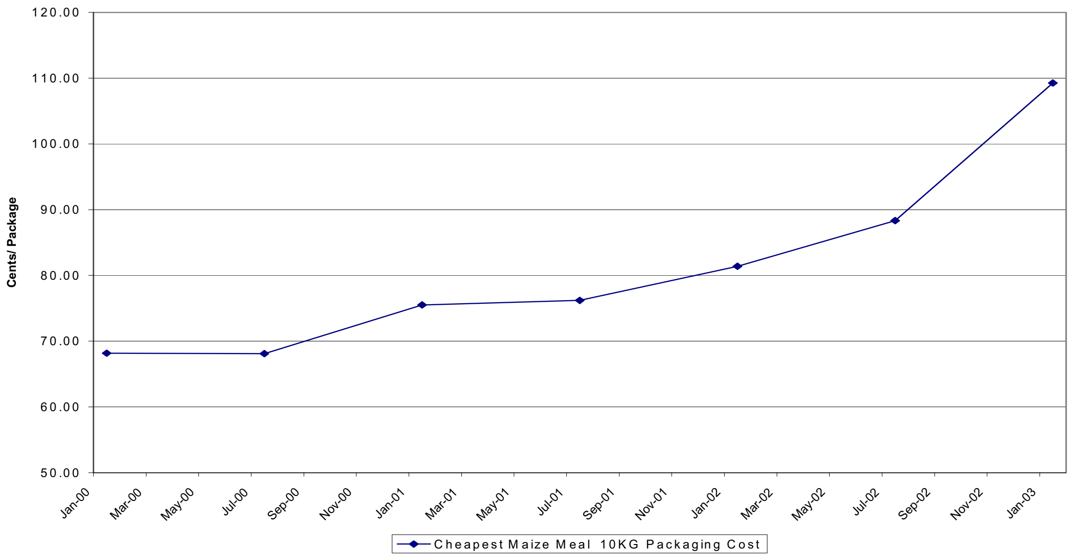

Figure 1.13: Packaging Costs of 10 Kg Maize Meal: January 2000- January 2003

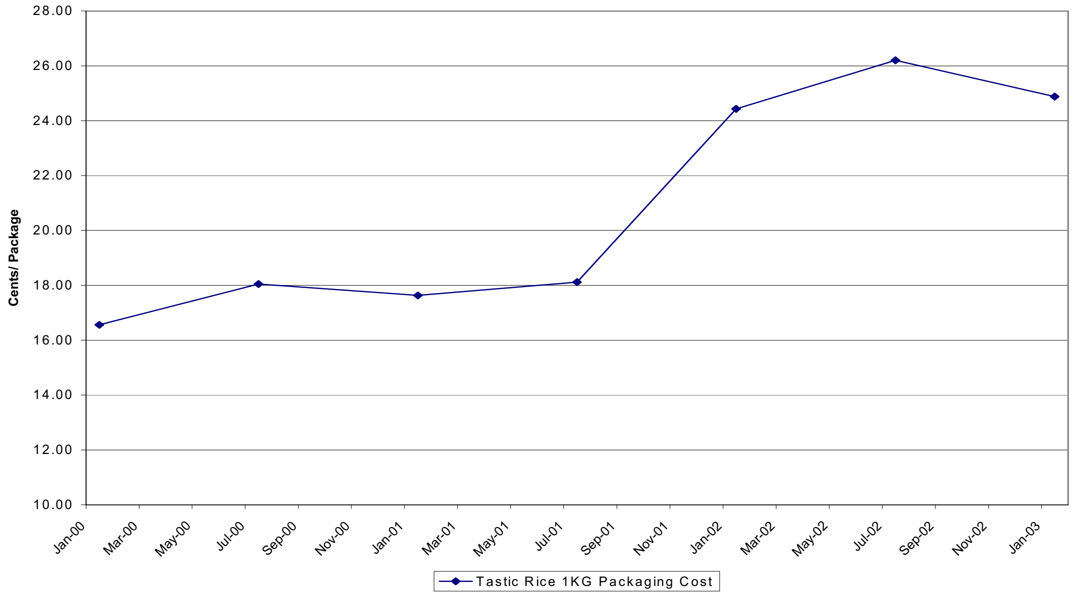

Figure 1.14: Packaging Costs of 1 kg Rice: January 2000- January 2003

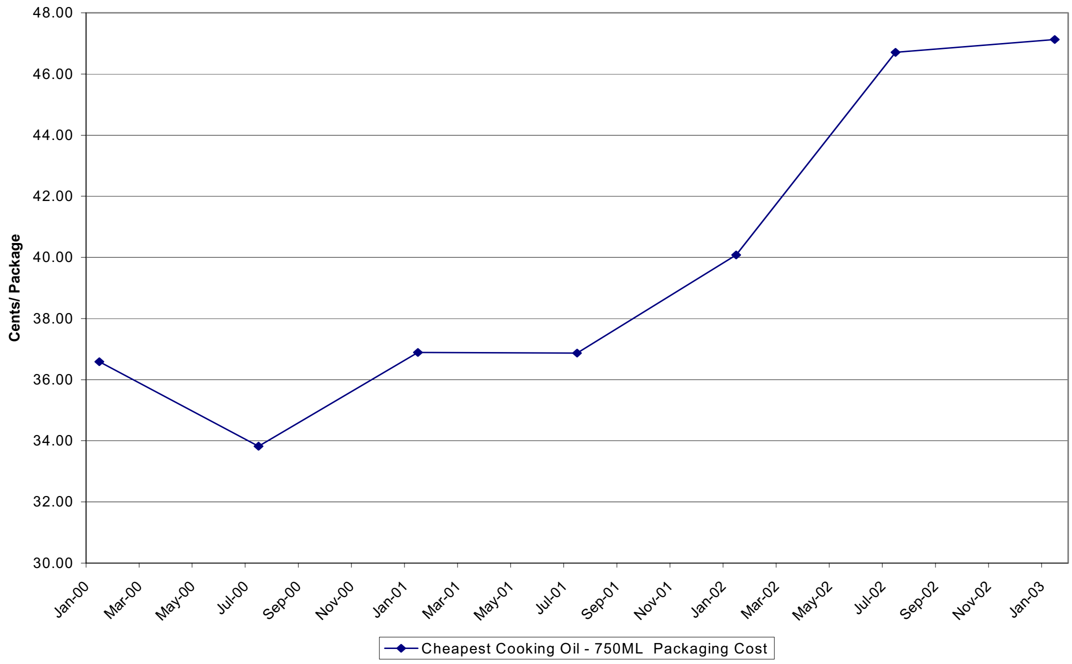

Figure 1.15: Packaging Costs of 750ml Cooking Oil: January 2000- January 2003

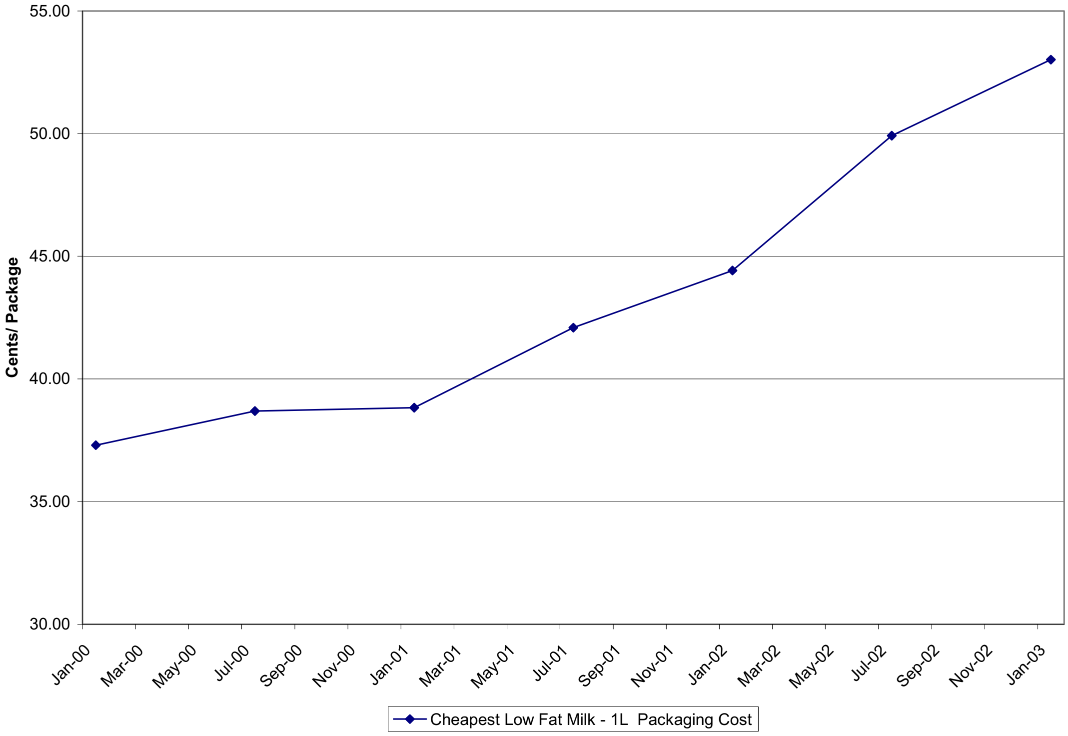

Figure 1.16: Packaging Costs of 1L sachet of Low Fat Milk: January 2000- January 2003

1.6 The agricultural chemical industry

The growth in the price of agricultural chemicals was constant in 1995/96 and in 1996/97 at 15%. The trend in growth rate was positive between 1997/98 and 2000/01. It increased by over 26% in 2000/01. From 2000/01 up to the present, the price has been registering a positive growth rate, although at a decreasing rate. This is evidenced by the negative trend in the growth of the price of agricultural chemicals since 2000/01 (Figure 1.17). The 26% growth in the price of chemicals in 2000/01 is attributable to the sudden growth of the exchange rate in the same year.

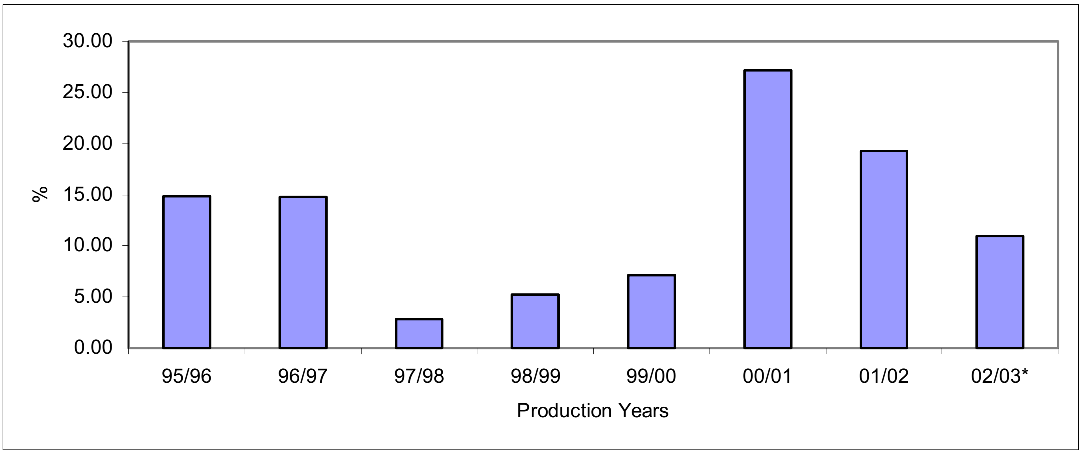

Figure 1.17: Annual Increases of Agricultural Chemicals, 1995/96-2002/03

The quarterly prices of agricultural chemicals (dips and sprays) at constant 1995 prices are shown in Figure 1.18 to 1.20. On average, the prices of agricultural chemicals increased with 111% in real terms since the beginning of 1995. Overall, agricultural chemicals can broadly be divided into livestock remedies and crop protection chemicals, (see Figure 1.18), the prices of which follow similar trends.

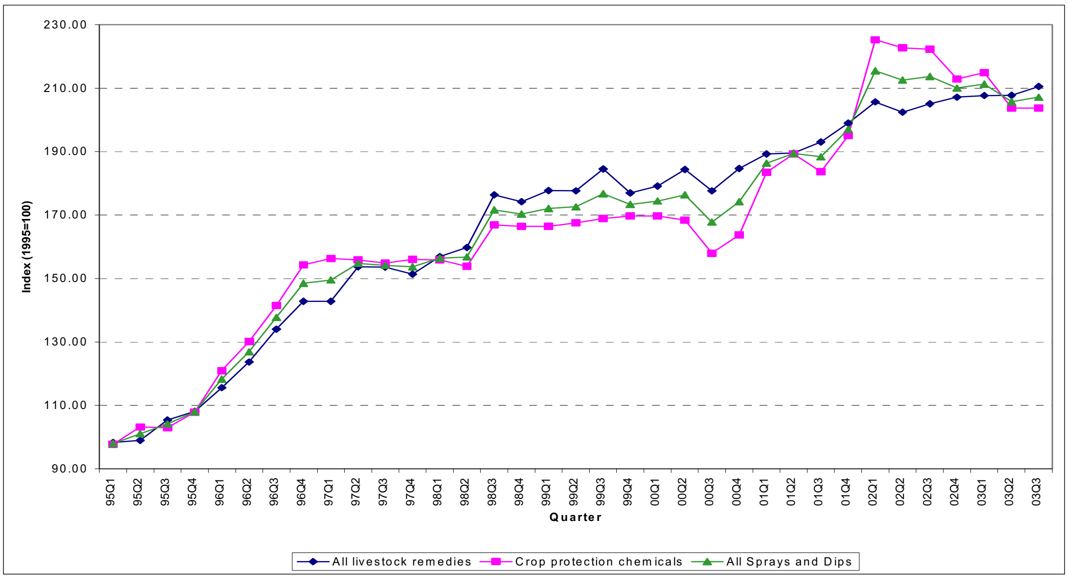

Figure 1.18: Quarterly price index of different animal remedies (1995Q1 – 2003Q3)

Crop protection chemicals are sub-divided into insecticides, herbicides, fungicides and plant growth adjusters. The real prices of these four sub-categories are shown in Figure 1.18. It is clear that over the past two years the prices of insecticides tend to be more volatile compared to other crop protection chemicals.

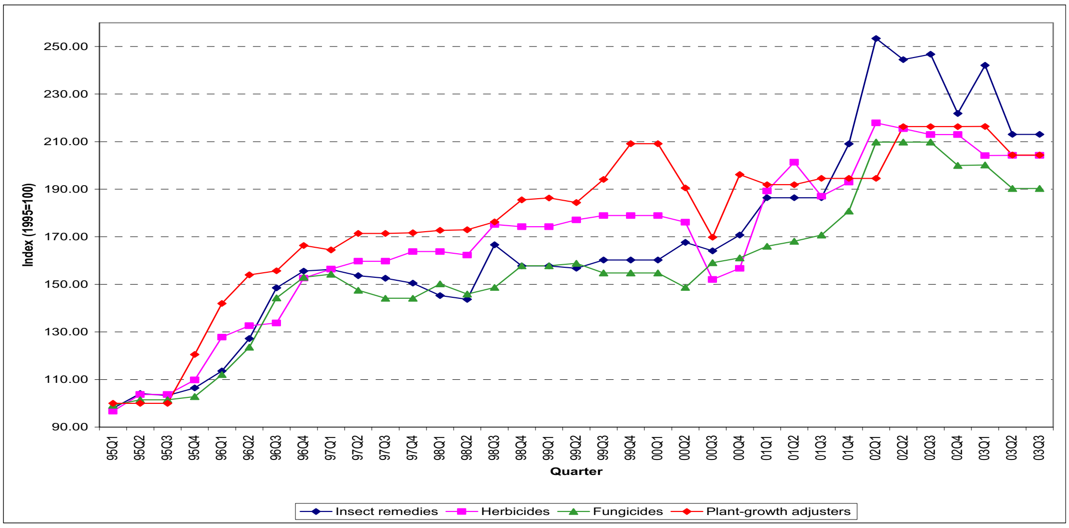

Figure 1.19: Quarterly price index of different crop protection chemicals (1995Q1 – 2003Q3)

The prices of sub-categories of livestock remedies can be sub-divided into dips, worm killers, vaccines and anti-microbial remedies (Figure 1.20). It is clear from Figure 1.20 that changes in the prices of vaccines and anti-microbial remedies are largely to blame for the sharp increases in the price of livestock remedies, especially over the last four years.

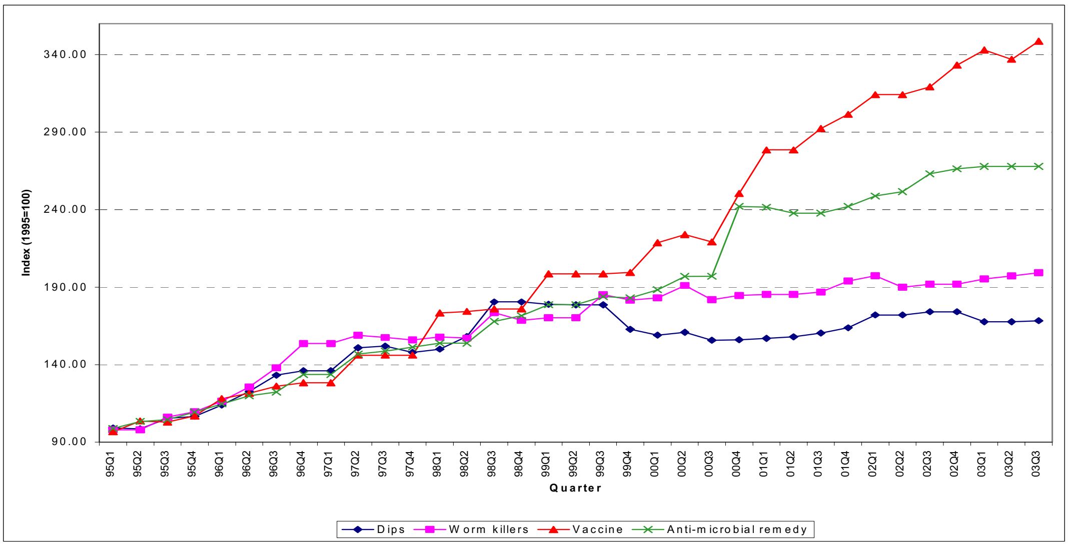

Figure 1.20: Combined quarterly price index of dips and sprays (1995Q1 – 2003Q3)

1.7 Agricultural machinery

Very little response was received from individual agricultural machinery companies on the Committee's request for information on price trends, The general feeling was that the information requested was of strategic and proprietary nature and could not be released. The South African Agricultural Machinery Association (SAAMA) however, provided a submission to the Committee, which provides an overview of the multitude of factors affecting agricultural machinery prices. In the case of agricultural machinery the Rand/Euro exchange rate is clearly of more importance. With the weakening of the value of the Rand many machinery importers bought forward cover and were thus tied in to forward contracts at weak Rand rates. Price increases were thus inevitable. Many local companies also receive price instructions from parent companies in Europe and the US, which also makes it difficult for local companies not to pass on price increases.

The difficulty with price analysis in this market is that the prices that are available are only the recommended retail price or list price, which forms the starting point of price negotiations. The actual selling price is thus never known. Although Figure 1.21 reveals how fast tractor prices have increased since 2001/02 until present, SAAMA quotes the AGFACTS database that shows that the year-on-year tractor price change fell every month from March 2002 to October 2003.

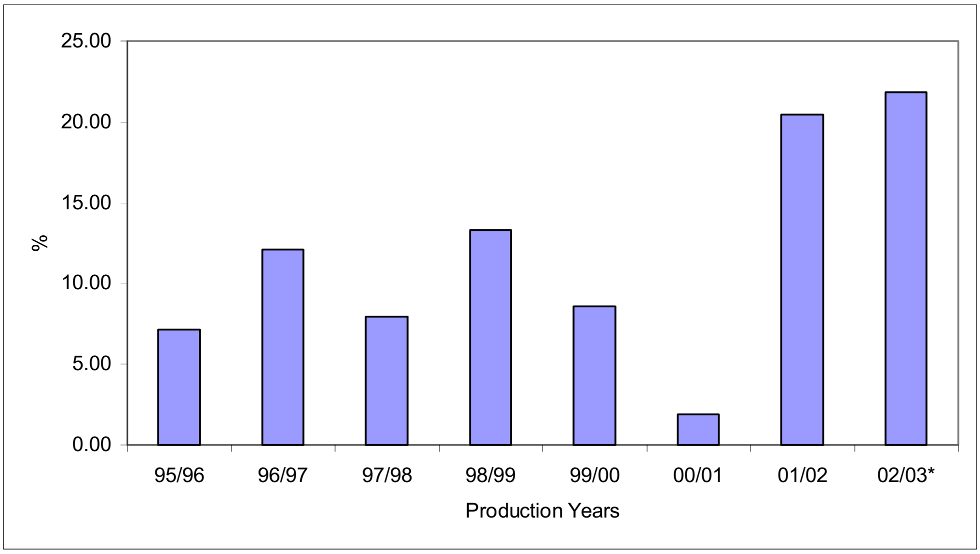

Figure 1.21: Annual increase in Tractor Prices (%), 1995/96 –2002/03

Prices of fertiliser, agricultural chemicals, and tractors have registered upward trends over the past many years. Compared with their pre 2000/01 levels, however, the rates at which these prices have increased since 2000/01 are high. For the most part this is attributed to the significant decrease in the Rand/USD exchange rate.

Based on the descriptive analysis presented, the following tentative conclusions can be made. Input prices increased following the weakening Rand in 2000/01. However, when the Rand started to pick up strength in recent years, it was not followed by a reduction in input prices. Questions that need answering are "Does it have something to do with volatility? If it does, can this be explained by volatility in the exchange rate?"

Attempts to answer these questions are useful because, in the literature, volatility and uncertainty are used in an interchangeable manner. In the next Section it is hypothesised that increased uncertainty in the exchange rate induces increased uncertainty in the input prices. Increased uncertainty in input prices in turn induces increased instability in the input market, which generally results in higher prices. The recent upward trend in input prices, despite the relatively stronger Rand -which in itself is a product of uncertain foreign exchange market - can be explained by uncertainty in the inputs market, that is, provided that uncertainties in input prices can be proved and that uncertainties in input prices are increasing over time.

1.8 The effect of exchange rate volatility on input prices.

Exchange rates, wage rates, interest rates, land rental rates and food parity prices (or rural-urban terms of trade) are considered macro-prices. In this section, much of the discussion revolves around theoretical claims regarding the impact of the exchange rate volatility on the agricultural sector, in general, and on food prices in particular. The exchange rate is defined as the price of a nation's money in terms of other currencies. It represents the terms by which domestic prices, costs, and other values are translated from the domestic economy onto the international scene.

There are two arguments (i.e. macroeconomic and microeconomic) that explain sources of changes in major agricultural commodities and food prices. The macroeconomic argument considers exchange rate volatility as one of the major determinants of changes in commodity prices. The microeconomic argument takes large demand and supply mismatches and weather as causes of increased volatility in prices (Moledina, et al, 2003). The effect of the latter on commodity prices is alterable by government intervention, which targets the structure of the market. However, the application of target-oriented policies to alter the effect of exchange rate volatility on commodity prices is said to have a much less certainty of results (Houck, 1986).

Theoretical studies on the impact of exchange rate volatility in an economy give contradictory predictions (Yuan, et al, 2003; Barkoulas, et al., 2002). There is a standard hypothesis that exchange rate volatility increases risk and uncertainty and discourages domestic firms from engaging in international trade (Cushman, 1986; Peree and Steinherr, 1989). Others like Viaene and de Vries (1992) and Sercu and Vanhulle (1992) argue on the other hand that volatility in the exchange rate can have ambiguous or positive effects on trade volume. According to the latter group of researchers, the effect of exchange rate volatility on the volume of trade derives from the degree of risk aversion. Increased risk associated with volatility will induce risk-averse agents to direct their economic resources to less risky activities (See Yuan, et al., 2003 for a summary on these). The former group, on the contrary, believes that exchange rate volatility translates in an economy into the reduction of volumes of imports and exports. This would, then, result in the reduction of the surplus or deficit of the trade balance. The impact on volumes of trade arises from variability in the profit streams of international traders (Barkoulas, et al., 2002).

The effect of the exchange rate volatility is not limited to volume of trade alone. Its effect extends to investment and prices. Bleaney and Greenaway (2001), who conducted a study on the effect of real exchange rate volatility on investment and growth, found that real exchange rate volatility has a significant negative impact on investment. The impact of exchange rate variability on the prices of agricultural commodities, in general, and those from the food sub-sector, in particular, extends through its impact on the costs of production if imported inputs enter into the calculation of costs of production.

The other channel through which the exchange rate can affect prices of agricultural inputs is through its impact on the transfer of resources from non-traded to traded sectors of the economy and vice versa, or through its direct impact on domestic product prices emanating from increased/decreased competitiveness of the domestic market that is made possible by its volatility. Mitchell (1987) has documented direct relationships between shocks to macroeconomic variables such as exchange rate and agricultural commodity prices. According to Aron et al. (2003), the exchange rate channel of transmission is important in the inflation process. It enters directly into the import price, producer price and consumer price index equation. The recent experience in South Africa provides some evidence to this effect.

Sudden Changes in the Variances of the Exchange Rate and Input Prices

Points of sudden discrete changes in the variances of exchange rate and input prices are detected by applying the Iterated Cumulated Sums of Squares (ICSS) method. The cumulative sum of squares is used to detect changes in variances and the time point of each variance shift. The information obtained regarding months of sudden variance changes can then be used to divide the data into different periods in order to determine the effect of exchange rate volatility on input prices at different time intervals.

Here we apply the ICSS methodology in order to tentatively identify cause and effect relationships between input prices and the exchange rate. This is done by comparing time points of sudden change in the input prices and the exchange rate. For exchange rates to be a cause for a sudden jump in the input prices, a sudden jump in the exchange rate is expected to precede a sudden jump in the input prices. The ICSS algorithm is considered useful for detecting the time lag required for an exchange rate shock (or sudden jump in the exchange rate) to be felt by input prices, and approximate the time that a shock in an input price, -whatever the source of the shock might be - to settle down to its pre-shock level. Attempts will be made to supplement findings from the ICSS algorithm by GARCH and regression models.

A relationship between the exchange rate and any one of the input prices is said to exist if the volatilities in the input prices and the exchange rate exhibit discrete spikes within similar time intervals and/or when, within similar time intervals, the volatility of the input price and exchange rate exhibit secular increase over time.

A GARCH/ARCH based measuring of volatility is applied to calculate time varying measures of volatility. This method is preferred to other methods because it has the potential to overstate the magnitude of volatility by taking into account the predictable and seasonal components as part of the volatility (Moledina, et al., 2003). The predictable component represents past values and trends of the price series. However, the

ARCH/GARCH method of measuring volatility considers only the unpredictable or stochastic component, which is believed to be a good measure of uncertainty. The unpredictable component is obtained after the predictable and seasonal components of the price process are removed from the price process. Volatility calculated this way is known as conditional volatility. It is called conditional because past values and trends of the series are considered as accumulated information or knowledge by agents.

Results on Sudden Changes in the Exchange Rate and Selected Input Prices

The time periods of a shift in volatility in selected variables as identified by the ICSS algorithm are shown in Figure 1.22 to Figure 1.27.

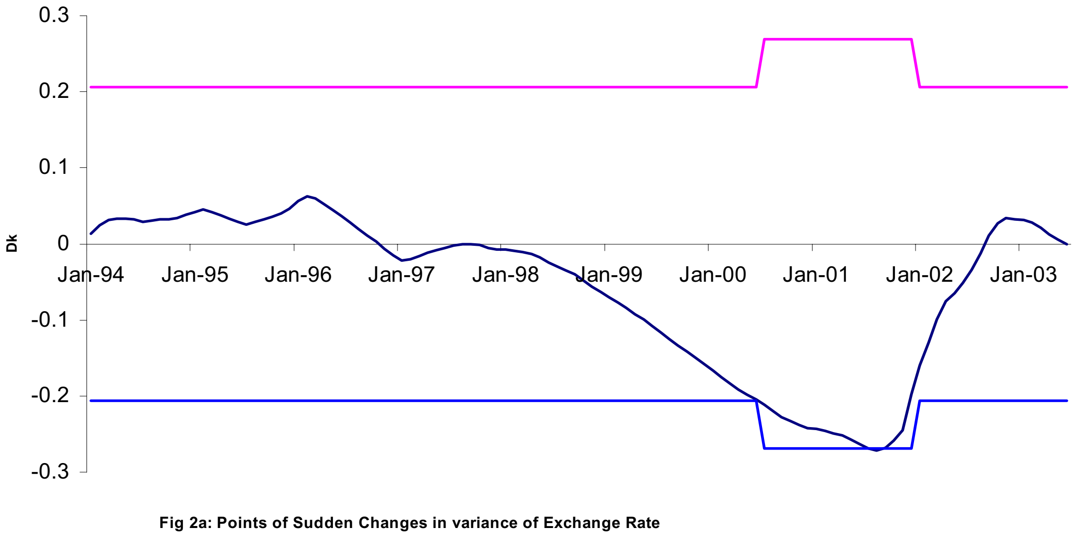

Figure 1.22: Points of sudden change in variance of exchange rate

As can be seen from Figures 1.22 (above) and 1.23) below, a sudden jump in variances of the exchange rate and in tractor prices of all models coincide. The jump in the exchange rate started in June 2000. Its variance attained its peak value in August 2001. The variance remained below the –3 standard deviation band (i.e. in the region where the null hypothesis of homogeneous variance is rejected) until December 2001. The sudden jump in tractor prices started late in March 2001, that is, eight to nine months after the sudden jump in the exchange rate occurred. The null hypothesis of homogeneous variance is accepted for the exchange rate starting January 2002 but for tractor prices this occurred after February 2002, that is a month after the variance in the exchange rate subsided to its pre-June 2000 level. Therefore, it can be concluded that the sudden jump in the tractor prices was preceded by a sudden jump in the exchange rate. In other words, we are suggesting that the sudden jump in the exchange rate was a cause for the sudden jump in the tractor prices.

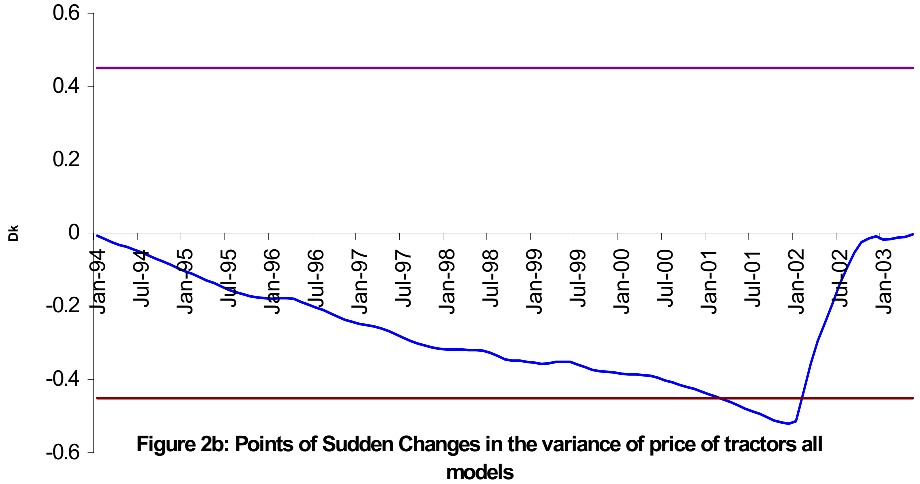

Figure 1.23: Points of sudden changes in the variance of price of tractors

To see the time points during which sudden jump in the fertiliser prices occurred, data on the prices of Ammonia, DAP, and Urea were subjected to a similar type of analysis. According to figure 1.24 below, a significant sudden change in the price of Ammonia occurred in September 2000, three months after a significant exchange rate variance was registered for the exchange rate in June 2000. The time it took for the variance in the Ammonia price to settle back to its September 2000 level was short. Therefore, according to these findings the sudden jump in Ammonia price was preceded by a sudden jump in the exchange rate.

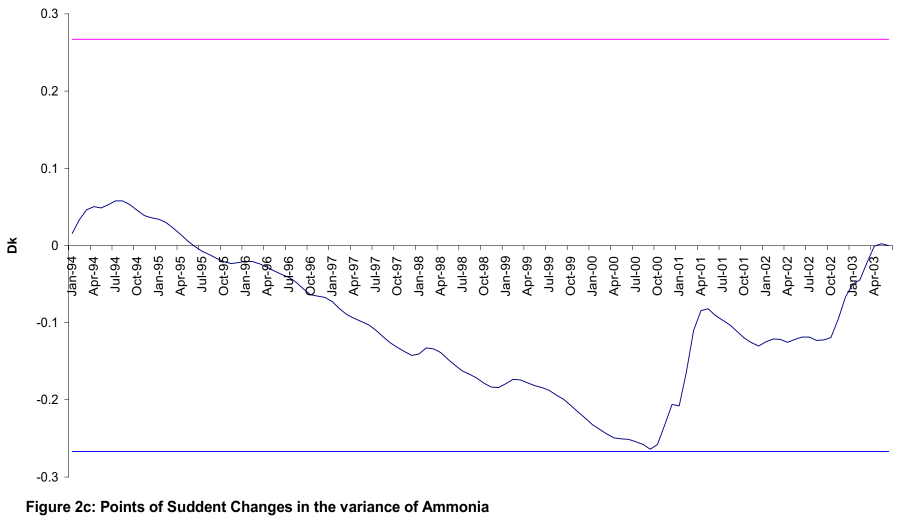

Figure 1.24: Points of sudden change in the variance of the price of Ammonia

A similar relationship between jumps in the exchange rate and the price of Urea was found, except that the time gap between the jump in the exchange rate and the Urea price was wide. A significant jump in the price of Urea was registered in August 2001, that is, ten months after the sudden jump in the exchange rate was realised. The time it took the volatilities in both cases to settle down to their pre-jump levels coincides, however. The urea price returned to its pre-August level in December 2001. Therefore, it can be concluded that the jump in the Ammonia prices was preceded by sudden jump in the price of Urea.

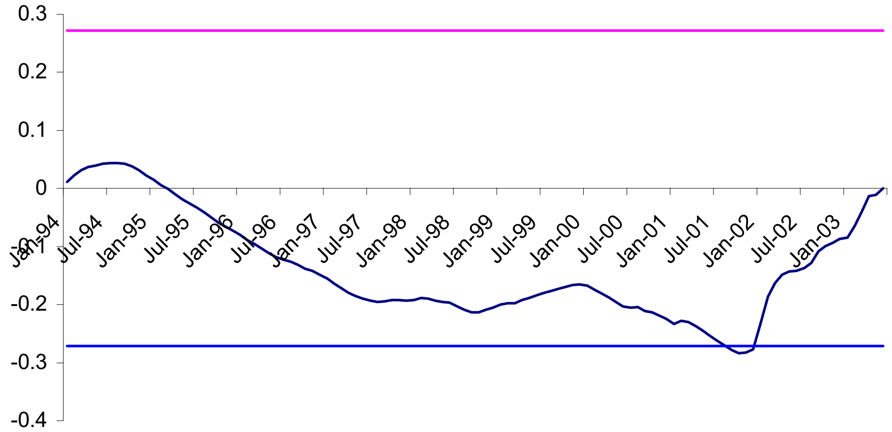

Figure 2d: Points of Sudden Change in the variance of Urea

Figure 1.25: Points of sudden change in the variance of the price of Urea

The effect of the exchange rate volatility on fertiliser prices was further investigated by looking at the relationship between Dap prices and the exchange rate. According to figure 1.26, a significant sudden change in the price of Dap occurred in February 2001, seven months after a significant jump in the variance of exchange rate was registered. The variance or volatility in the Dap price returned to its pre-February 2001 level a year later, that is, in February 2002. Considering the adjustment time that is required for a shock to take effect, we conclude, once again, that the sudden jump in the exchange rate occurred before the sudden jump in the Dap price was realised.

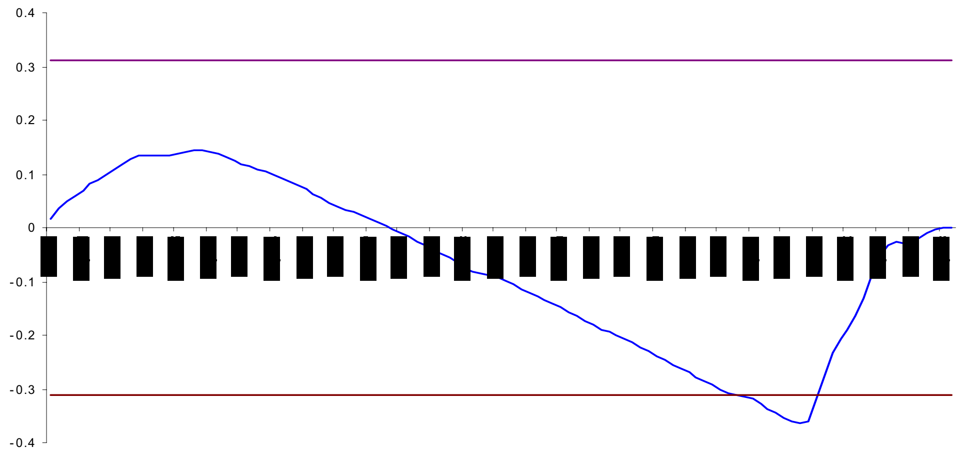

Figure 2e: Points of Sudden Change in the Variance of DAP

Figure 1.26: Points of sudden change in the variance of the price of Dap

In this section the results are discussed of calculating the measure of volatility for the following agricultural inputs: farm implements, tractors, trucks, irrigation equipment, building materials, fuel, fertiliser, feeds, etc.

Table 1.5: Measures of volatility of input prices and exchange rate

Series Name	Period	Process of series	Presence of non constant volatility indicator ã for yes and – for No
Exchange rate	1994:04-2003:01	ARIMA (1,1,0) GARCH (1,1)	ã
Farm implements	1994:04-2003:01	ARIMA (1,2,0)	–
Building materials	1994:04-2003:01	ARIMA (0,2,1)	–
Feeds	1994:04-2003:01	ARIMA (2,2,0)	–
Urea	1994:01-2003:06	ARIMA (1,1,0) GARCH (1,1)	ã
Dap	1994:01-2000:06	ARIMA (1,1,0) GARCH (1,1,0)	ã
Ammonia	1994:01-2000:06	ARIMA (1,1,0) GARCH (1,1)	ã
Tractors all models	1994:04-2003:01	ARIMA (1,1,0) GARCH (1,1)	ã

Source: Author's calculation

As shown in the first line of Table 1.5 above, the null hypothesis for no ARCH effect was rejected for the exchange rate. This means that the volatility in the exchange rate measured by the standard error of the GARCH regression has no constant variance during the period under investigation. This is an important result because from here we will attempt to establish whether the input prices follow suite.

According to Table 1.5 (above), the null hypothesis of no ARCH effect was accepted for farm implements, building materials, and feeds. This means that farm implements, building materials, and feeds have a constant standard error (a measure of volatility) over the period under study. This entail that the volatility in these prices have been constant and cannot, thus, be related to the exchange rate whose volatility is varying over time. In this way, it can be established that the exchange rate volatility has had no effect on the prices of building materials, farm implements, and feeds. This can be attributed to the fact that most of these inputs are either manufactured locally, or to the fact that the imported components for manufacturing have a negligible share in the production cost of these inputs.

Table 1.5 further indicates that the no ARCH null was rejected for tractors of all models and for some of the major ingredients of fertiliser (i.e. Urea, Dap, and Ammonia). This means that the conditional standard errors of these input prices are not constant but vary over time. To see whether the volatilities in these prices and the exchange rate exhibit some form of relationship, the presence of common trends in these prices and the exchange rate were checked, firstly, by inspecting trends in their respective conditional standard plots and, secondly, by regressing the input prices (in first difference form) on a constant term, one month lag of the dependent variable, and a conditional standard error of exchange rate obtained from the GARCH regression. The exchange rate volatility is expected to have a positive and significant impact on the prices. This is discussed in the following paragraphs.

As shown in Table 1.5 above, only the exchange rate, the tractor and fertiliser prices (which include Ammonia, Dap and Urea) exhibited ARCH effects. The null hypotheses for no ARCH effects were accepted for the rest. Therefore, those aspects with ARCH effects were remodelled to calculate time varying measures of volatility. The results of this are shown in Figures 1.27 and 1.28.

According to Figure 1.27 (below), the volatility in the exchange rate exhibits discrete spikes in August 1998, January 2002, June 2002, and January 2003. Except for August 1998 and January 2002, they exhibited a relatively low rate of volatility. Volatility in the exchange rate has been on the increase since September 2001. This is demonstrated by the positive trend in the rate of volatility of the exchange rate after September 2001.

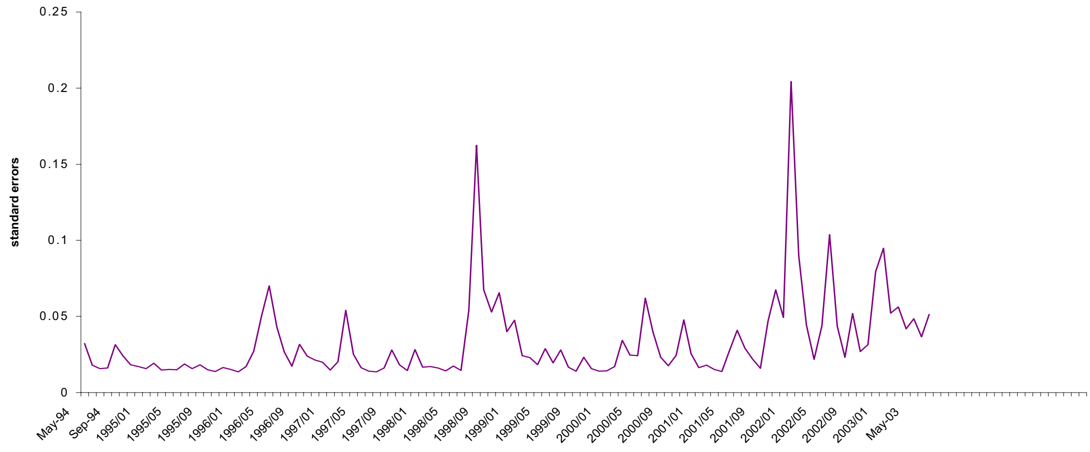

Figure 3: Conditional standard error of GARCH Regression

Figure 1.27: Conditional standard error of GARCH regression for the exchange rate

To determine whether similar spikes and trends in the volatility of input prices can be found, conditional standard errors of tractor prices were calculated using the GARCH method. These were then compared with the conditional standard errors of the exchange rate given in Figure 1.27 (above).

According to Figure 1.28, tractor prices showed discrete spikes in June 1996, June 1997, March 2002, and February 2003. The spikes in March 2002 and February 2003 are the highest. The spike in March 2002, the highest of all, can be correlated with the spike in the exchange rate that occurred in January 2002 with a time lag of three months, while the spike in February 2003 can be correlated with the spike in January 2003 with a time lag of one month.

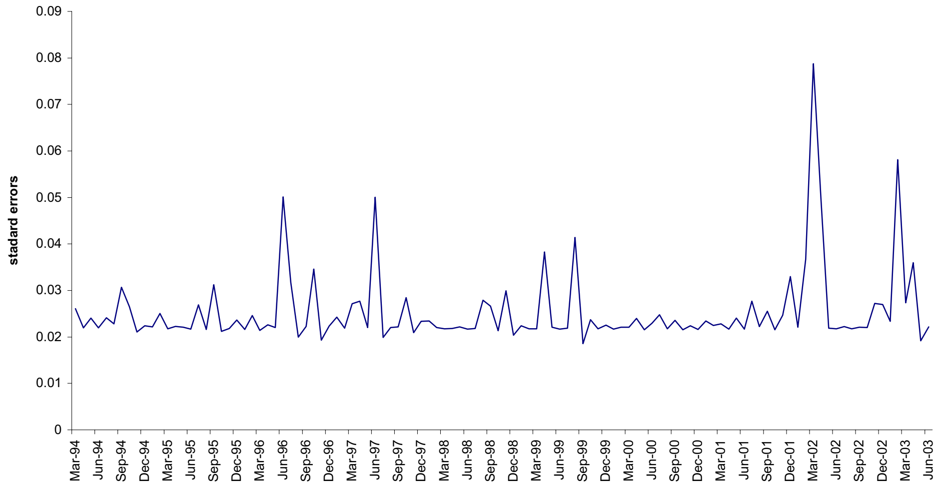

Figure 4: Conditional Standard Errors of GARCH Regression for tractors

Figure 1.28: Conditional standard error of GARCH regression for tractor prices

The above findings were confirmed by running a regression of tractor prices in first difference format on a constant term, one year lag of the dependent variable (tractor prices in differenced form) and volatility in exchange rate. The conditional standard error of the exchange rate was used as a measure of volatility in the exchange rate. According to the results obtained, the impact of the exchange rate volatility on the price of tractors is positive, and is highly significant at one percent level of significance.

The impact of the exchange rate volatility on fertiliser prices was determined in the same fashion. The paragraphs that follow discuss some of the major findings regarding the relationship between the volatility in the fertiliser prices and the volatility in the exchange rate for Ammonia, Urea, and Dap. As was done for tractors, here too, similarities in the time points of major spikes and overtime trends in the volatility of the exchange rate and prices of Ammonia were compared.

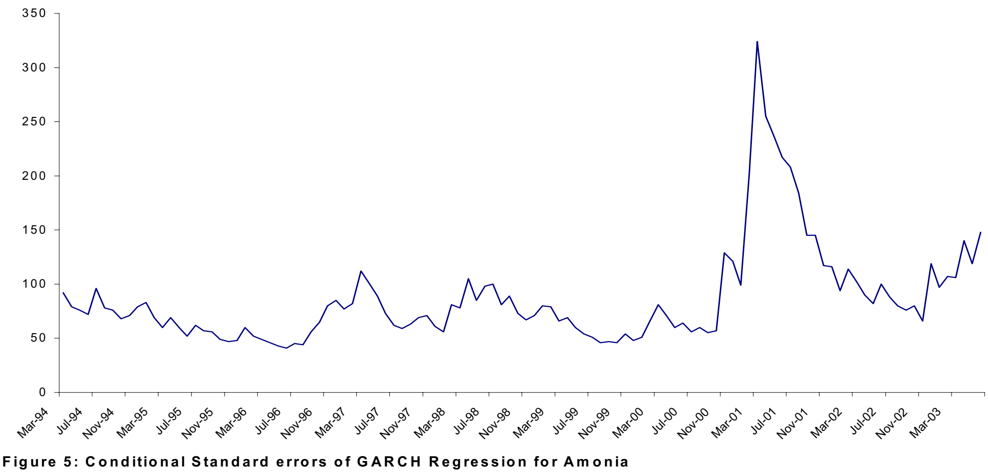

Figure 1:29: Conditional standard error of GARCH regression for Ammonia prices

As shown in figure 1.29 above, the volatility in the Ammonia price exhibited no discrete spikes other than the one that occurred in March 2001. Like the volatility in the exchange rate, the volatility in the price of Ammonia has been increasing over time since October 2000. Further attempts made to determine the effect of the exchange rate volatility on the price of Ammonia gave a positive but insignificant coefficient for the exchange rate volatility.

The same results were found for the analysis of Urea and Dap, thus supporting the earlier findings that fertiliser prices are positively affected by the volatility in the exchange rate.

Conclusions

This section focused on the investigation of the impact of the exchange rate volatility on input prices. To achieve this, trends in selected agricultural input prices that involved imported components in their cost of production, such as the prices of fertiliser, agricultural chemicals, and tractors, were analysed in relation to the exchange rate. According to the results, with the exception of tractor prices, which grew by less than 3%, these increased by more than 25% in 2000/01 alone. The tractor price did follow the price of other inputs in later years (2001/02 up to present) by growing on average by 23% annually. These changes in price coincided with the sudden fall in the value of the Rand in 2001, and with the subsequent fluctuation of the same to date.

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CHAPTER 2

OTHER POTENTIAL CAUSES OF FOOD PRICE INCREASES: 'COLLUSIVE' BEHAVIOUR OF SILO OWNERS AND TRANSPORT COSTS

2.1 Introduction

The purpose of this Chapter is to explore a number of other factors that may inflate food prices. One of these factors is, the perception (rightfully or wrongfully) that silo owners hoard grain to push up grain prices, thereby cause a spiral of rising prices in the food sector. This is dealt with in Section 2.2.

Another concern amongst maize farmers and food manufacturers relates to the inefficiency of South Africa's rail network - and transport system in general - which causes food manufacturers to transport by road, a very expensive but time-efficient solution. The concerns and issues related to this factor are debated in detail in Section 2.3.

2.2 The ability of silo-owners to influence commodity prices

This Section aims to verify whether it is possible for co-operatives/agribusiness or silo owners to influence the market price for agricultural commodities through hoarding. It is hoped that the discussion in this Section will clear up the misunderstandings surrounding the grain trade and stock holding of grain.

Ever since the deregulation of the market the international maize price and the factors affecting this price, have gradually played a larger role in determining the South African maize price. This phenomenon can be seen in the seasonality of the maize price, as shown in Figure 2.1. At the beginning of the season, when maize is scarce, the domestic market price for maize moves closer to the import parity price. Later in the season, however, when the surplus of maize might be exported, the domestic price tends towards the export parity price. At the beginning of a season, when farmers prepare to plant, the price is very volatile.

The actual level of the domestic price lying between the minimum and maximum level will depend on local (SA) supply as well as on demand in the local market, albeit we need to recognise that the latter is relatively stable in the short to medium term. In Figure 2.1 below, the SAFEX spot prices of white and yellow maize are plotted against the monthly deliveries over the past three years. From the graph it can be seen that trend in spot prices is declining at the time of the harvest. Even during the 2002 harvest season when extremely high producer prices were the reality, a declining trend can be identified.

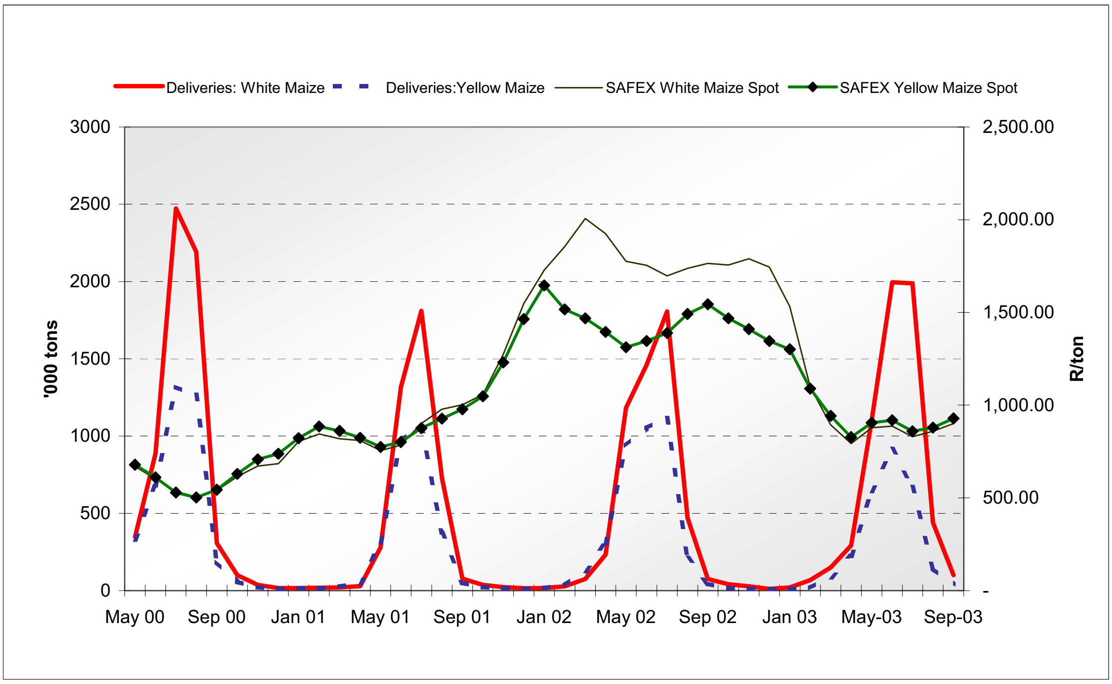

Figure 2.1: SA white and yellow maize monthly deliveries versus maize prices

Source: SAGIS & SAFEX

According to the Grain Silo Industry (2002), the total grain silo storage capacity in South Africa is estimated at 17.5 million tonnes, which comprises 14.5 million tonnes in the northern provinces, 970 000 tonnes in the south and 2.1 million tonnes at the harbours and with private owners. There exists quite a high amount of concentration with three silo owners owning 70.3% of all the domestic storage facilities.

Silo owners store the following grain stocks: farmer's stocks, grain pools, back-to-back contracts, and hedge stocks. These are discussed in detail below.

Farmer's Stock

The producer is the owner of the maize. The maize can either be stored on the farm or in the silo. When the farmer delivers his/her maize (or any grain) for storage in the silo, it is unknown whether this maize has been sold or not since the sale of the grain takes place by means of a 'silo-certificate'. When the maize is delivered to the silo a silo certificate is issued and the producer can decide when to sell this certificate. The producer is exposed to the price risk and can hedge against this risk. The silo owner merely supplies the services of storage and handling at a specific cost per month. The delivery (i.e. the movement out of the silo bin) of the physical stock of grain to a trader will only take place through an instruction from the farmer.

Part 5

Grain Pools

A group of producers delivers their maize in a pool. An organisation appointed by the group of producers will do the marketing and sale of the grain stock. A silo-owner can be appointed by the group of producers to administer the pool, and he provides services in terms of handling and storage. The stock belongs to the producers participating in this pool. The pool is exposed to price risk and, therefore, has to hedge itself. All price risks and hedging costs are for the account of the specific pool.

Grain stocks related to 'back-to-back contracts'

The silo-owner acts as the agent of the buyer of maize (millers/processors) and purchases the maize from the producer. The buyer determines the price and the quality of the grain. The stock belongs to the buyer (the milling company/processor and NOT the silo-owner). The buyer will also determine where and when this stock will be utilized. After the maize has been purchased, the silo owner acts as the supplier of storage and handling services.

Hedged Stock

The silo-owner purchases the maize from the producer. The silo owner is now exposed to price risk, which might be hedged on the futures market. Any role player on SAFEX can now buy this stock from the silo-owner. As soon as the silo-owner has hedged the stock on the futures market, he is no longer exposed to the fluctuation of prices and, therefore, can earn the amount that is charged for handling and storage. The risk of any price movement is through the SAFEX hedge transferred to another player on SAFEX.

The deliveries received by all silo-owners during the past 3 seasons can be grouped according to the classifications above. The first 3 classifications can be considered as deliveries/stock for other people's accounts, while purchases by the silo-owners for their own account make up the balance. As indicated in Table 2.1 (below), the latter is, generally, the smallest component of all stocks and deliveries – thus making it almost impossible for silo-owners to influence the market.

Table 2.1: Grain deliveries to silos

	2000/01			**2001/02**			**2002/03**		
	Total deliveries (t)	Own account (%)	Other accounts (%)	Total deliveries (t)	Own account (%)	Other accounts (%)	Total deliveries (t)	Own account (%)	Other accounts (%)
White maize	4 281 951	1.3	98.7	3 934 741	2.1	97.9	4 245 747	0.6	99.4
Yellow maize	2 382 224	2.0	98.0	2 721 341	1.6	98.4	3 082 797	0.9	99.1
Sunflower	539 405	0.05	99.95	573 739	0.35	99.65	572 758	0.2	99.8
Wheat	1 893 301	2.5	97.5	1 944 699	2.9	97.1	2 046 272	2.2	97.8
Sorghum	203 311	0.23	99.77	111 821	0.45	99.55	112 746	2.05	97.95

Investigating other aspects of the food value chains

The working of a 'trading book'

There exists a wide range of marketing options for all the role players in the maize market, which depends on factors such as the time of marketing, the trends in futures prices, the cash flow position, and quite a few others. In this Section, some of these marketing strategies will be illustrated through explaining the basic functioning of a "trading book", which role players have to maintain in the market. A "trading book" contains all the open positions that a role player has in the market. These positions can either turn out in a profit or a loss, depending on the trend in the futures market. It follows that these positions need to be managed with skill and discipline. This discussion of the trading book also shows that it is unlikely that a silo-owner can, or wants, to use his trading book to influence the futures market.

It is assumed that the spot price for white maize on SAFEX (nearby contract) trades at R900/ton, 4 months ahead of the harvest period (see Table 2.2). Two scenarios are used as an example to depict the possible functioning of the market. For the first scenario, it is assumed that the SAFEX spot price increases by R200/ton, and for the second scenario it is assumed that the SAFEX spot price decreases by R200/ton. The term "spot price" refers to the price of the nearby contract, which is traded on the futures market on the selected trading day.

Four months before the harvest time the silo owner (e.g. Afgri) buys maize from the farmer. The contract price, or the farm gate price (realisation price), is R800/ton (R900/ton minus R60/ton transport differential minus R25/ton handling fee and R15/ton commission). The silo-owner immediately hedges his downside price risk by selling a future contract on SAFEX. All major role players have taken a position in the market and, therefore, have "opened their trading book". Now they need to manage their risk on these open positions in their trading book.

<u>Scenario 1</u>*: The SAFEX price increases by R200/ton*

At the time of delivery/sale to a maize miller or processor, the SAFEX spot price has increased to R1100 per ton. The miller buys at an actual price of R1015 when transport and the handling fee are accounted for. The silo-owner gains R215/ton on the physical trade of maize because he bought it at a lower price (of R800), but loses R200/ton on the futures market by means of buying back the future contract. The net gain of the silo-owner is R15/ton; the initial commission that was charged when the maize was bought from the farmer. The miller's call option is "in the money". He can either exercise or sell this call option. For simplicity's sake, it is assumed that the call option is sold at a profit of R200/ton and he buys the physical maize from the silo-owner at R1100. Hence, the miller loses only the R30/ton premium he initially paid for the call option.

Table 2.2: Trading book of various roll players in the maize market

TRANSACTION	SAFEX Price	Transp. Differen-tial	Handl-ing	Commiss-ion	Premium	Realisa-tion Price
1) 4 MONTHS AHEAD OF HARVEST						
The Farmer						
Farmer sells physical maize to silo	900	60	25	15		800
Farmer buys future contract on SAFEX	900					
The Silo-owner						
Silo-owner buys from farmer	900	60	25	15		800
Silo-owner sells future contract on SAFEX	900					
The Miller						
Miller buys call option on SAFEX	900				30	
2) AT HARVEST TIME						
a) Scenario 1: SAFEX price increases by R200/ton						
Farmer sells future contract on SAFEX	1100					
Silo-owner sells physical maize to miller	1100	60	25			1015
Silo-owner buys back future contract	1100					
Miller sells call option on SAFEX	1100					1070
Profits and Losses						
Farmer	R200/ton loss on physical maize. R200/ton profit on futures market					
Silo-owner	R200/ton profit on physical maize + R15/ton commission. R200/ton loss on futures market					
Miller	R200/ton loss on physical maize. R170/ton profit on call option.					
b) Scenario 2: SAFEX price decreases by R200/ton						
Farmer sells future contract on SAFEX	700					
Silo-owner sells physical maize to miller	700	60	25			615
Silo-owner buys back future contract	700					
Miller's call option expires	700					
Profits and Losses						
Farmer	R200/ton profit on physical maize. R200/ton loss on futures market					
Silo-owner	R200/ton loss on physical maize. R200/ton profit on futures market+ R15/ton commission					
Miller	R200/ton profit on physical maize. R30/ton costs of call option					

Scenario 2: The SAFEX price decreases by R200/ton

Under this scenario, the silo-owner sells/delivers to the maize miller at a lower price of R700/ton (an actual price of R615/ton when transport and handling fee is accounted for). The loss on the physical trade is R185/ton (R800-R615). Through buying back the futures contract a profit on SAFEX trade of R200/ton is made. The net gain from running the trading book is once again R15/ton.

From this explanation and from the information presented it is evident that it would not be in a silo owner's interest to hold back stock and so influence the market price. From the evidence provided here, it is also unlikely that the silo-owner will actually be able to do that since the grain in the silos belongs to different role players.

2.3 Transport costs and food prices

Introduction

Recent studies have shown that retail and transport margins have a huge impact on food prices. There is also a view that the South African Transport Policy, as currently implemented, is eroding competitiveness of South African goods particularly because of the inefficiencies in the rail transport. Another view is that the axle load on the road and poor inspection by the road traffic inspectors has resulted in overloading and free riding by heavy vehicle users at the expense of light vehicle users.

The South African government transport strategy is reflected in the Moving South Africa project. The Moving South Africa Project (MSA) was designed to " provide safe, reliable, effective, efficient and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable."[1]

It has been argued that recent government policies have relied on a simple yet contentious hypothesis that market-oriented policies in South Africa will result in allocative efficiency. Following this argument it is presumed that less government is better government and that competition increases welfare. This argument infers that privatisation and deregulation (which both reduce government involvement and increase competition) necessarily enhance economic efficiency. Despite theories of second best and of market failure, this (old) article of faith remains seductive, particularly, where roads and rail transport are concerned, sectors that straddle the grey zone between pure public and pure private goods. In this murky area, however, the design and implementation of the process can also be centralised; privatisation alone might well not be a necessary and sufficient condition for the achievement of efficiency and welfare gains.

This reveals some inefficiencies in both road and rail transport that do have an impact food prices at the expense of the consumer. One suggestion is that Government levels the playing field between road and rail by addressing the axle size and invests in rail to reduce the costs of transport.

Background

In recent years, the number of toll-roads in South Africa and the volume of traffic they carry have expanded sharply. Some were originally built and maintained by the South African National Roads Agency (SANRA), which subsequently outsourced their

[1] Moving SA, 1998, Department of Transport, Government Printers, Pretoria

operation, the maintenance and the toll collection to the private sector. Since 1997, the process has also made allowances for unsolicited bids, that is, private consortia obtaining the right to levy toll from traffic on a particular route by paying SANRA for an existing road and agreeing to maintain it for a fixed period. Currently, SANRA maintains South Africa's roads using funds allocated by Parliament. It performs some of the work itself, the remainder of the upkeep and construction activities it puts out on tender. Privatisation is seen as an alternative process that contributes funds to the fiscus and reduces subsequent demands on it.

The government transport policy document, "Moving South Africa", requires that the tolling system be economically efficient. In its overview, Government proposes the objective that tolls should: *"recover full costs from user*s". This is based on two premises: the first requires that users be charged for the full cost of their use of the infrastructure and operations used, as well as the full cost of all externalities they generate. The second premise requires that users *not* be charged full costs in order to support infrastructure and operations that do not provide them with benefits.

Economic efficiency requires that the price paid by a road user equals the marginal social costs incurred. It requires that each road user pay toll fees equal to the incremental costs which that user is imposing:

a) on maintaining the road – marginal operating costs
b) on other road users – marginal external costs
c) for the road itself – amortisation/interest on capital expended

A final caveat is that no group of users should cross-subsidise another. Leighman (2003) has concluded that in South Africa light motor vehicles subsidise heavy vehicles. Therefore, in terms of systemic efficiency, the cross-subsidization of heavy vehicles has implications for the competitiveness of Spoornet. These will be discussed later in this Chapter. It will be argued that economic efficiency requires a rise in the ratio of the toll paid by a heavy vehicle to that paid by a light one; moreover, that such tolls be collected on *all* the roads in the country, and that the means of calculating and collecting tolls be changed.

The toll system in South Africa has some points of failure. One obvious weakness is that the tolls levied in South Africa are not based on actual axle loading, but on potential vehicle capacity (number of axles). A vehicle laden to the legal limit pays no more than one carrying a far lesser load. The implicit incentive is to reduce the number of vehicles and to load them more heavily. This reinforces the effects of existing scale-economies in road transport, which already induce overloading.

An even more central tenet is that an increase in the number of axles *reduces* the damage done by a given load, yet the South African tolling system *increases* the charge as the number of axles rises. A true 'the user pays' toll should be based on a combination of: loading per axle/ number of axles/distance covered. Such tolling systems are already used in places like Oregon, Iceland, New Zealand and Norway. In South Africa, the transactions cost of establishing and monitoring such a toll form the immediate constraints on its introduction.

Another issue is that fully laden heavy vehicles are not paying the full costs that they impose on the network; they are, in fact subsidised by tolls paid by light vehicles. Moreover, tolling one road in a network has impacts on traffic flows elsewhere. It can lead to distortions and unexpected costs that threaten the efficiency of the overall transport network. Currently, the bulk freight transport system is already subject to distortions.

Spoornet, the SA rail operator, not only has to cover the running costs of its own haulage operations but is also responsible for all track construction and maintenance. In contrast to this, hauliers do not pay for road damages or any clean ups (e.g. chemical spills) that are caused by accidents involving trucks, while rail operators have to cover all cost associated with rail accidents. Also, road haulers are not subjected to variable tariffs to make them liable for either road construction costs or for their share of road maintenance costs. While such distortions are in place, the market mechanism cannot be relied on to allocate resources efficiently. This pattern of distortions and the advantages enjoyed by road hauliers over rail transport are especially marked in South Africa. Another example of this is that the maximum gross vehicle mass allowed on the roads is 56 tonnes; well above the limit of 48 tonnes in the early 1990s, and far above the 38 tonne limit in the USA (and SADC countries such as Mozambique and Angola). Overloading of trucks is another aspect. The CSIR and the Road Freight Association estimate that 15% to 20% of all heavy vehicles are overloaded, and that these are responsible for approximately 60% of the road damage (which they value at R600 million annually). Heavy vehicles loaded according to regulations cause the bulk of the remaining damage, and light vehicles cause virtually none.

In 2000, the Department of Public Enterprises (DPE) of the South African Government announced its plan to break Spoornet into separate businesses and concession them to the private sector. Two years later, after more than eight months engagement with the railway trade unions, Government accepted that this plan made no developmental, business or financial sense.

Who is Spoornet?

Spoornet is the largest railroad and heavy haulier in Southern Africa with annual revenue of over R10 billion, generated by the transportation of 181 million tonnes (mt) of freight. It has a 55% market share of the 329 mt cargo available in South Africa. To serve these markets, it utilises 19,282 active route kilometres and an active fleet of 2,410 locomotives and 88,000 wagons. In addition to its extensive rail network, which represents 80% of

Africa's rail infrastructure, Spoornet also connects with rail networks of the Sub Saharan region.

The business focus in the different markets is ensured through the operations of strategic business units, namely GFB (domestic and export general freight cargo), COALlink (export coal), OREX (export iron ore), Luxrail (5 star hotel on wheels) and Shosholoza-Meyl (inter-city passenger transport). GFB is the largest business unit of Spoornet in terms of revenue, and the number of customer accounts and people employed. It handles in excess of 52% of Spoornet's freight tonnage per annum.

Spoornet's competitive position in terms of the market share is measured as a percentage of the total surface freight public transport market, and, more specifically, in the three main sectors of the economy, namely agriculture, manufacturing and mining. Diagram A (below) quantifies modal volume movement, classified by type of traffic. (*ATD = Average Transport Distance*) The Diagram reveals that 59 mt of the 147 mt transported by public road (transport for hire or reward) is long distance traffic on the main road corridors, which is commonly regarded as natural rail type traffic. This road traffic can therefore be seen as theoretical potential rail traffic for Spoornet.

Table 2.3: Turnover in the different business sectors of Spoornet

BUSINESS SECTOR	**2001/2002**	
	Tonnes (Millions)	**External Turnover (Millions)**
Industrial Mining	19	1,353
Grain and Timber	**12**	**796**
Building, Construction & Coal	16	956
Steel	23	1,563
Fuel, Chemicals & Fertilizers	10	1,074
Consumerware	7	851
Consolidation Customers	3	262
TOTAL GFB	**90**	**6,855**
COALlink	**65**	**2,476**
OREX	26	892
Luxrail	N/A	55
Shosholoza-Meyl	N/A	262
TOTAL	**181**	**10,540**

Diagram A

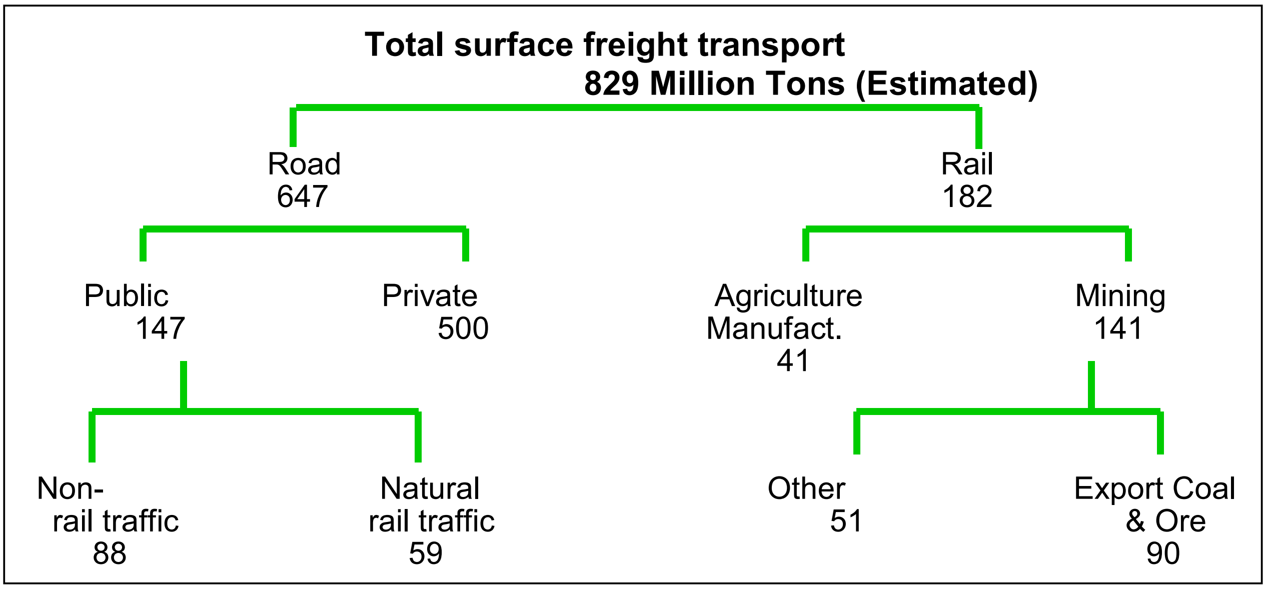

Diagram B

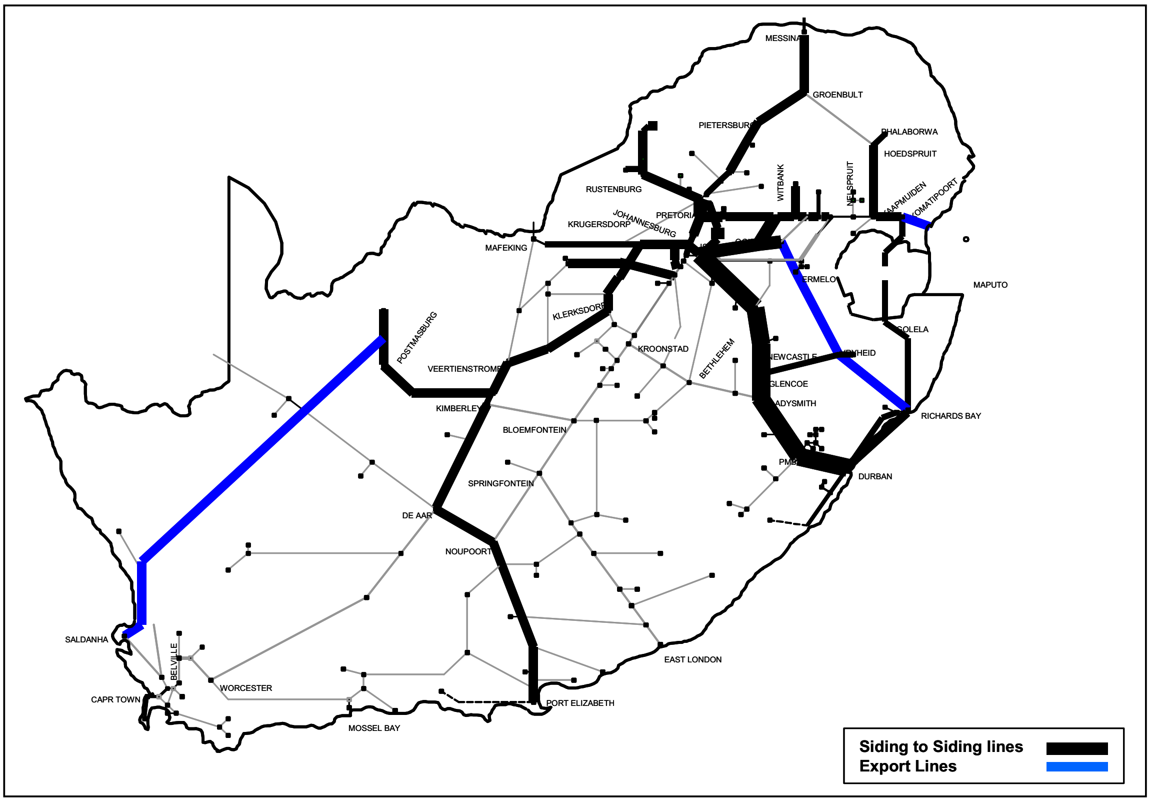

Diagram C

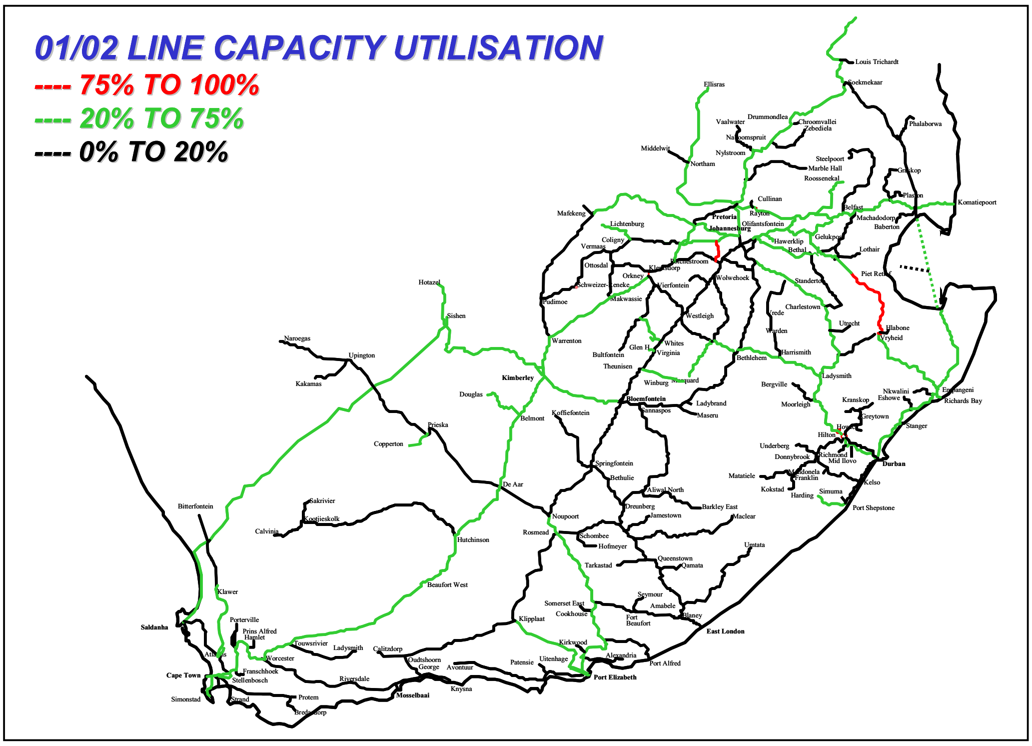

Diagram B shows the export lines and sidings for rail freight. Diagram C indicates that the rural network is 0–20% utilised. Therefore, most of the farming output, when transported by road, impacts negatively on the road infrastructure and pushes the transport costs up as the price of diesel increases. Spoornet argues that transport is a derived demand, consequently they reason that there is therefore minimal scope for Spoornet to stimulate the demand for transport in farming communities.

The capital-intensive nature of Spoornet's business and the long life cycle of its assets contribute to an inflexible cost structure. Spoornet hired a consulting company, Halcrow, to address the above situation through product efficiencies and cost containment. Halcrow's findings include a proposal to rationalize non-profit customers that are the greatest cost contributors. It further proposes a network rationalization, which, together with measures for improvement, will create a GFB that could be funding its own capital investment. Management has implemented some of the proposals; they have resulted in allegations, however, that the closure of certain lines has led to high transport costs particularly for grain and timber.

Spoornet's share of medium value and medium volume that benefited agricultural products traditionally sent by rail is being eroded by road competition as a result of Spoornet's poor service delivery, capacity constraints, and ageing equipment. During the 2001/2002 financial year, 90 million tonnes were transported by GFB against 94 million tonnes in 2000/2001, with a fleet best suited for 82 million tonnes per annum. This placed excessive demands on Spoornet's resources and directly affected their ability to service base-load business. The inability to transport the required demand resulted in extreme customer dissatisfaction.

GFB cannot afford to maintain its historic asset base because of the high level of maintenance and renewal/investment cost which this requires. This lack of financial resources is caused by the fact that a significant amount of current business is transported at a loss, which is not sustainable in the long term. The well-publicised price hikes of around 40% were introduced, partly to address these problems but might lead to further erosion of the remaining slice of the market in favour of road transport

The legislative bias towards road usage, where "road trains" can transport a maximum of 58.8 tonnes (including 5% margin of error allowed by the Department of Transport), has, over the years, led to a considerable decline in general freight tonnage transported by rail.

In other words, it is relatively easy to gain access into the road transport market. As a result, road hauliers have experienced excess transport capacity, and, so, cut-throat prices are offered, while at the same time gross overloading has become the norm in order to compensate for depressed prices.

As sole owner and user of rail, Spoornet bears the total cost of its infrastructure and maintenance, which is not the case with road hauliers. Spoornet is experiencing turbulent times as markets and customers respond to the threats and opportunities of globalisation, but also to current structural changes in domestic markets. Against the backdrop of the general economic outlook, Spoornet's current market position is affected by the following:

- There is a rising demand for rail transport in many of the primary sectors of the economy. Spoornet's ability to capitalise on this is influenced by the number of players and size of consignments, the latter being predominantly single wagonload traffic.

- Productivity improvements to overcome capacity restraints in wagons and locomotives are influenced by their effect on customers. Notably improved wagon utilisation also requires the active co-operation and buying in of customers re improved loading and off-loading times.

- A climate of uncertainty is not conducive for an enthusiastic marketing and service-oriented delivery.

- A focus on profitability as opposed to income will affect the majority of GFB business.

- There is an increase in competition by road hauliers creating market niches.

Table 2.4: Spoornet budget and operating costs: 2000/01 to 2002/03

Components	00/01	01/02	02/03
	Actual	Actual	Budget
Total Labour Costs	4 042 034 460	4 045 208 932	4 351 500 000
Total Operating Costs	9 721 486 746	10 033 118 097	11 314 100 000
Labour Cost as % of Operating Costs	41,58%	40,32%	38,46%

Conclusion

As the traditional freight carriers, Spoornet has been confronted by new State regulations that raised the maximum gross (road) vehicle mass to 56 tonnes, an unusually high level by international standards. The greater flexibility of road transport and the economies of scale when trucks are heavily loaded, have resulted in more and more freight being diverted from rail to road. The state's failure to recover the costs that these vehicles impose on the road system has distorted the system further in the favour of road haulage. Because road haulage is cross-subsidised by taxpayers and drivers of small vehicles, it has made the current system unsustainable. With no alternative but road transport, this has led to an increase in the price of food and other commodities in rural areas. .

South Africa is a country with a high quality road infrastructure; at the same time, it lacks sufficient funds to maintain it. In public meetings on unsolicited bids for the privatisation of arterial roads, it has become clear that 'interested and affected parties' are willing to pay for the certainty that these roads will be maintained in the future. It is not clear, however, how much they are willing and able to pay; how payment must be exacted; and what is desirable in terms of economic efficiency.

It appears that Spoornet may also have been responsible for the diversion of the transport of goods from rail to road because of poor service delivery caused by the ageing fleet. This situation has been aggravated by the legislative bias towards road transport, where "road trains" can transport a maximum of 58.8 tonnes. In response to these challenges, Spoornet has increased its prices to maintain its fleet and in so doing, increased transport costs, making it even less popular as an alternative for transport. In a growing economy where there is an excess demand for transport, Spoornet should perform well, even when charging higher prices, which are inflexible because of its cost structure, as long as the network and service is reliable.

There is a need to recapitalise Spoornet. This has been recognised by Government. Recapitalisation will assist in improving Spoornet's efficiency. Another, even more important, aspect is the need to amend the Road Act, which favours road haulage to the detriment of rail transport.

South Africa needs to look at its macroeconomic strategy, particularly that of creating employment in rural areas aimed at alleviating poverty. One of the policy options is the provision of a direct subsidy by the National Treasury to Spoornet to keep the networks alive. This will ensure that Spoornet does not raise prices; at the same time this will create employment and in doing so it will assist in the alleviation of poverty. In essence, it is virtually impossible for any railway to make money on a stand-alone basis. The State either provides a subsidy directly or ring fences areas that have huge negative externalities. The State has a responsibility to also ensure that food is accessible to all and that there is mobility to reach out to the poorest in time of food insecurity. An investment in rail services will reduce the cost of transport and so result in food prices becoming affordable. At the same time, revitalising the rural rail networks promotes local economic development, which the country desperately needs.

CHAPTER 3

RELATIONSHIPS BETWEEN FOOD MANUFACTURERS AND RETAILERS: CONTRIBUTING TO RISING FOOD PRICES?

3.1 Introduction

Based on various rounds of interviews with retailers and food manufacturers, the Food Pricing Monitoring Committee (FPMC) gained the impression (rightly or wrongly) that there are several factors and practices within the supplier-retailer relationship (mainly the large retail chains) that have the potential to contribute to inefficiencies and extra costs to the consumer, and, thus, making food more expensive. These include the following:

- Confidential rebates
- Returns on no sales and in-store breakage and losses
- Poor management of the cold chain for perishables (temperature regulation in delivery areas, shelves, fridges)
- Poor management and care of supplier packaging material (such as crates) and thus losses to suppliers (could be as high as 10c/l of milk for example)
- Long periods before payment
- Price being the only issue in the relationship – no quality, collaboration in product development and other soft issues are considered which could be important in establishing long term and sustainable supplier-retailer relationships.

It was hypothesised that these factors might increase the cost of food since suppliers usually factor all these cost items into their costing of different products. The Committee was, therefore, interested to know from food manufacturers whether they could indicate the potential cost savings to the consumer - or alternatively, decreases in the list prices of the main food lines – and if supplier-retailer relationships could become more long-term and sustainable irrespective of the mentioned costs.

The Committee, then, invited submissions from various food manufacturers on indications of how improved relationships and greater efficiency and a reduction in losses and wastage could be to the benefit of consumers, suppliers, retailers and the South African economy as a whole. Manufacturers/suppliers were also invited to provide the Committee with their vision of the ideal and most beneficial supplier-retailer relationship. A recent article by Norbert Diamant in Food Review (October 2003) touches on the same issues. The Committee has used some of his findings based on a 2-year study to illustrate the not-so-apparent factors behind food inflation.

Very few of the manufacturers provided an indication of how much could be saved if the aspects listed above were not present in current transactions. In some communication it was indicated that there could potentially be cost savings in such a scenario.

The research by Mr. Diamant, however, does provide some numerical data, which are discussed below. Most of the written submissions merely discussed suppliers' perceptions and concerns regarding some of the current practices by retailers. From this side, thus, no concrete data were provided, and this section merely presents a summary of the views of suppliers.

3.2 Views on confidential rebates

It is widely known that manufacturers sell goods to retailers and wholesalers on a negotiated rebate basis. A rebate is a discount negotiated between the supplier and the retailer and is usually based on the volume of business. It is meant to cover the support that retailers offer in terms of advertising, shelf space, listings, etc. The concept of rebates is not unusual, and most large manufacturers nowadays accept that confidential rebates (or part thereof) generally form part of a retailer's margin. They believe that the current practice of confidential rebates is both sound and ethical and should not be tampered with. Some suppliers argue that rebates ultimately become part of the value chain, and that a reduction in the level of these rebates would probably not save any money. This is based on the premise that if an industry were to take away rebates, retailers would compensate for their loss through taking higher profit margins on their products. In many cases, however, the starting point for the negotiations increases annually and is an extra cost that gets factored into the selling price.

The view of small suppliers to the large retail stores differs from the large suppliers. They point out that in some instances where primary industries are weak, and very fragmented, and have little negotiating power, the rebates can be quite high. Confidential rebates are sometimes as high as 12%-15% (maximum levels). This makes it very difficult for small suppliers to stay in business because these rebates cannot be easily recovered from list prices.

Despite confidential rebates, retailers can, from time to time, discount product prices (even at "loss levels") in order to attract consumers to a particular outlet. This is usually done out of the supermarket's own pocket.

It was also pointed out that the practice of confidential rebates is not conducive to competitiveness since rebates are normally granted to the large retailers who have the necessary bargaining power to negotiate them. Thus, it makes even more difficult for small retailers to compete with the larger supermarkets.

3.3 Returns and losses

In South Africa, the corporate supermarket chains expect suppliers to unconditionally guarantee their products. This, according to Diamant (2003), means that they must accept all returns, no matter the reason, except where they can prove that the supermarket was at fault. In the US when stores buy a product, it is theirs.

In some places returns have become somewhat of a cult with them being top of the list when suppliers negotiate their deals with retailers. The magnitude of returns and wastage is often grossly underestimated and can vary between 1 and 15%. With better merchandising controls, however, returns can be reduced to below 1% (Diamant, 2003). The message is that if returns are not controlled and are left "open-ended" the general result is that 1-10% of all products are being returned.

Policies and arrangements differ between manufacturers. Some have a "sell-or-return" others a "no-return" policy. In the case of "sell-or-return" the supplier carries the cost of the damaged and/or expired product. In the case of "no-return", the retailer has to carry the cost of the damaged and/or expired product. The manufacturer/suppliers argue that in either case these costs will be taken into account in establishing the price – whether at wholesale or retail level -, and in the end the customer will pay. The manufacturer/supplier is, however, of the opinion that a "sell-or-return" policy is the better option because it allows retailers to cut their mark-ups to the bone since what they buy will be what they sell and no additional mark-up will be necessary to recover the cost of damaged or expired goods. This statement is made in the light of the fact that suppliers are generally in a position to recover a considerable portion of the loss by repackaging or reselling the damaged goods to low-income markets.

Some suppliers also point out that a "return on no-sales" policy can lead to abuse by retailers since they might over-order and then return the balance as "no sales". On the other hand, it is also very difficult to maintain a "no return" policy since retailers sometimes threaten de-listing if their terms are not accepted.

A number of suppliers feel that greater efficiency can be gained by having a 'no-returns' policy in place that allocates the responsibility for control to the party that actually controls the product at any given time. This sprouts from the fact that suppliers generally dictate the "sell-by" or "best before" dates implying that goods can be inspected upon delivery and returned if not acceptable since the retailer has the right of refusal at the point of delivery.

In general, suppliers feel that "returns" are a direct result of poor purchasing and ordering together with poor management of the cold chain and poor hygiene, mostly at the premises of the retailer. Because of the fact that "returns" result from the actions of the retailer, and that suppliers generally has very little control over the level of "returns", some suppliers feel that a maximum "returns" allowance should be negotiated.

With regards to losses, suppliers note that in-store breakages and losses can give rise to substantial losses, which are recovered through higher prices. Suppliers ascribe these substantial losses to the fact that little emphasis is placed on the proper handling of goods because retailers are not responsible for any losses incurred through their negligence. Once again, it is felt that problems with products resulting from retailers conduct (breakages, rotation, over-ordering, etc.) should be at the retailers' cost.

3.4 Management of the cold chain

The cold chain is a major problem. The study by Diamant (2003) found that the temperature of some refrigerators were consistently at 9^{o} C or over when they should be less than 3^{o} C. This causes spoilage and increases returns, as well as customer dissatisfaction. Freezers, too, are often too warm – with temperatures fluctuating between $+3^{o}$ C and -15^{o} C. Some suppliers point out that the majority of retailers have very poor receiving areas, which is not conducive for managing the cold chain effectively. The delivery of perishable goods could and should happen more effectively. This could be done at night as few hold-ups and congestion at the receiving bays will be experienced. In so doing, substantially cheaper and more efficient delivery services to customers will be guaranteed and fewer out of stock situations will occur. These will be added, but major benefits.

Customers are also to blame for wastage and losses. They collect cold meat or other perishables in their baskets, then change their minds and leave them, for example, in the clothing department of the supermarket. Or they leave their food in the car boot for a few hours. When then the food has 'gone off' they return it to the store, which passes it back to the supplier.

3.5 Management and care of supplier packaging material

Primary producers supplying directly to retailers are of the opinion that consumer prices could be lower if retailers took greater care of the supplier packaging material (trolleys), and would be held responsible for mishandling products in their stores. Suppliers point out that retailers seldom take good care of the supplier packaging material, and in industries where the supplier packaging material is a very large cost component, poor care for the packaging material can be very costly. Suppliers are of the opinion that retailers regard crates as a cost to the supplier despite the fact that retailers tend to use these crates for their own storage purposes.

It is also pointed out that there is currently no deposit system in place, and that if a deposit system were to be imposed, retailers could simply deduct the deposit from the invoice, which is a good incentive for taking care of packaging material.

As a result of the poor care that is given to packaging material and the resultant losses, some suppliers build into their cost structure the annual cost of replacing a proportion of their containers. Even so, this cost is still considerably less than switching to non-returnable containers.

One supplier noted that, in general, neither retailers nor wholesalers nor distributors put any emphasis at all on "caring" for the suppliers packaging material. The result is that, monthly, in some industries approximately 2% of the packaging material is lost. It was suggested that retailers should either pay for the packaging material in the form of a deposit or retailers should, on receipt, return crates on a one-on-one basis.

3.6 Payment terms

Generally, payment terms vary considerably and stretch from 7 to 90 day credit terms. Manufacturers point out that, in general, they finance inventory (either in partially finished or finished goods form) while retailers continue to order products as and when they consider this to be in their interests. This is done because retailers take into consideration the benefits of pre-stocking before notified price increases as well as periodic promotional activities undertaken by each manufacturer.

The general view is that manufacturers do not experience many problems with credit payment terms. Some manufacturers do, however, point out that there are problems with some, very specific, retailers where payment may take up to 60 days.

A certain supplier pointed out that slow repayment is a problem but it is not common for all retailers. This supplier is of the opinion that goods should be paid for no later than when they are sold. Some suppliers are of the opinion that all perishables must be paid for in full in cash while other goods should be paid for in full no later than when they are sold.

Suppliers commented that some retailers are open to negotiation with regards to the payment terms while others coerce suppliers into agreeing to less than favourable terms of payment for the suppliers through a “take it or leave it” attitude. One supplier noted that the payment period is a commercial issue, and that it is best left to the individual businesses, suppliers and the customers to resolve the terms and conditions of the transactions and the payment thereof.

3.7 Relationships

The relationships between manufacturers and their retailers and wholesalers has, historically, been characterised by hard negotiations with each party pursuing their respective interests. Suppliers do, however, point out that in recent times relationships between manufacturers and their market retailers and wholesalers have matured into practical relationships governed by a more open and constructive atmosphere dealing with many more issues than just price and credit terms. In the fast paced and extremely competitive consumer goods market, retailers and wholesalers are increasingly recognizing that the development and maintenance of sound relationships with key suppliers is in their own best interests.

Some producers in the primary industries do, however, feel that they are treated with very little respect by major retail and wholesale groups. A major objection is the fact that suppliers have very little choice other than to accept the terms of the retailers or face de-listing.

Suppliers are of the opinion that it is indeed possible to build long-term relationships with retailers that would be to the benefit of the shareholders of the retail company, to the benefit of the shareholders of the supplier and to the benefit of the consuming public as a whole.

3.8 Government intervention

Direct government intervention is generally viewed as unnecessary over and above the fact that there is probably very little that the Government can do to improve the supply chain efficiency. One manufacturer pointed out that the Government could contribute through controlling theft and armed robberies. It is felt that crime adds to costs through security costs, ever increasing insurance costs and through the fact that losses incurred in this way must be written off.

3.9 Concluding comments

From the many responses that were received from various food manufacturers, a clear dichotomy has emerged. For the major food companies in South Africa there does not seem to be much of a problem. Relationships with the large chain stores have matured and they are working together to achieve good, efficient supply chain management or effective consumer response (ECR). Negotiations are tough but the relationships have matured and are much more cordial.

However, the small suppliers have different views, with many of them complaining about the practices of the supermarkets discussed above. Many of them find it difficult to survive financially because of the 'unfavourable' terms at which they need to trade. Many of the smaller suppliers sent anonymous submissions to the Committee because they fear being "de-listed" or "blacklisted" if the retailers they deal with would find out. This clearly illustrates a relationship that is not built on partnership but on antagonism.

There seems to be substantial evidence that suggests that practices by retailers act as an entry barrier for many smaller suppliers. This situation can potentially lead to greater concentration in the food manufacturing and retail sector, which might become a concern for consumers and Government. It could well act against the Government's objectives of to promote small-scale business, and it could become a major challenge to Black Economic Empowerment.

Against this background, there is an obvious task for Government to continue to monitor prices but also to monitor the specific nature of the manufacturer-retail structure that might limit competition and participation in the economy.

CHAPTER 4

MARKET STRUCTURE, ASYMMETRY AND PRICE TRANSMISSION IN THE FOOD CHAINS

"Market power is like the wind. You can feel it but you cannot see it"
(Kohls and Uhl 2002, p 270)

4.1 Introduction

Price is the primary mechanism by which various levels of the market are linked. The extent of adjustment and speed with which shocks are transmitted among producer, wholesale, and retail market prices is an important factor reflecting the actions of market participants at different levels. The transmission of changes in the producer price to changes in the consumer price depends, however, greatly on the type of product. Products that are perishable and undergo minimal processing such as vegetables, fruit, and fresh milk, are expected to have a relatively quick price transmission mechanism. Products that however undergo a certain level of processing and are not as perishable as fresh produce, are expected to have a slower price transmission mechanism. This is particularly noticeable for commodities such as maize, wheat and sunflower that can be stored relatively easily and are traded on the futures market, where processors can hedge against large price fluctuations. It is due to storability and hedging strategies that various time lags exist between changes in commodity prices and consumer prices.

Because of supply and demand fluctuations, prices are subject to a certain degree of variation. The more a price fluctuates from a long-term trend the more volatile a price is said to be. Volatility is also, however, also a measure of risk, that is, the more volatile a commodity price is, the higher the risk the farmers and processors are subjected to in terms of their expected returns. The main consequence of high risk is increased prices since the profit-maximizing firm is forced to hedge against large price fluctuations through hedging strategies. On the consumer side, however, increased volatility makes budgeting increasingly difficult, especially when prices increase beyond an accepted amount.

4.2 Time lags

Economic variables, mostly, do not respond instantaneously to changes in related variables. For example, the rise in fuel prices will not affect the prices of goods on that same day. The modern electronic nature of pricing and record keeping, however, implies that prices can be adjusted the following day (as opposed to monthly or quarterly adjustments). Thus, it is necessary to determine the period of input- or related price changes (lags) that affects the recent prices of goods and services. This, in turn, affects the correlation, i.e. the tendency of two or more variables to be related, positively or negatively.

The following figures indicate the relationship between the maize meal price and the SAFEX white maize nearest contract price, both in monthly averages. From the figures, it is clear that as the SAFEX price is lagged, the two graphs get closer and closer together and the correlation (percentage in the graph) between the two prices increases. This gives us an indication that the SAFEX white maize price increases (on a monthly average) will cause the consumer maize meal price to increase between three and four months later, because this is where the highest correlation values are found.

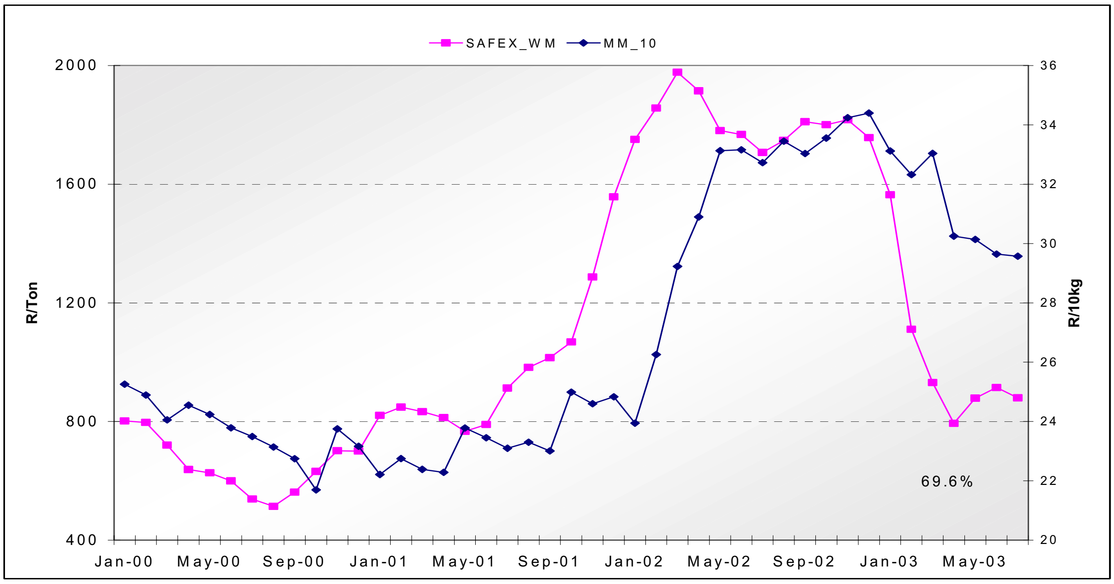

Figure 4.1: SAFEX white maize price and maize meal price, no lags

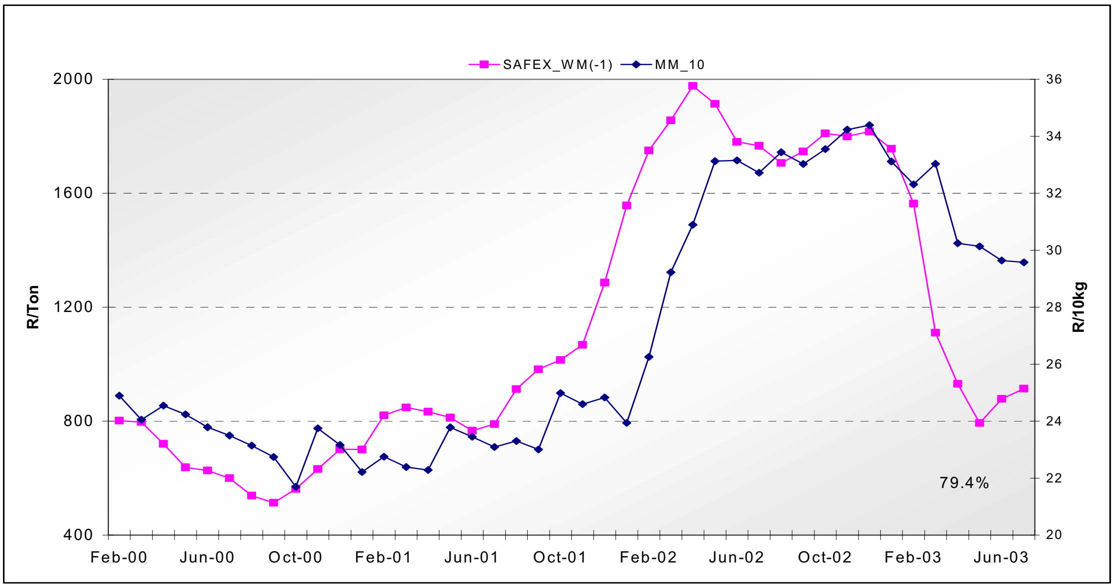

Figure 4.2: SAFEX white maize price and maize meal price, 1-month lag

Note: When a data series is lagged, it is possible to either move one series back in the graph, or the other one forward. In this case, the SAFEX price was moved forward. Thus, for example, the February SAFEX maize price is compared with the March maize meal price. As the number of lags increases, so does the gap in months between the prices being compared. Thus, when the SAFEX price is lagged by four months the February SAFEX price is compared with the June maize meal price.

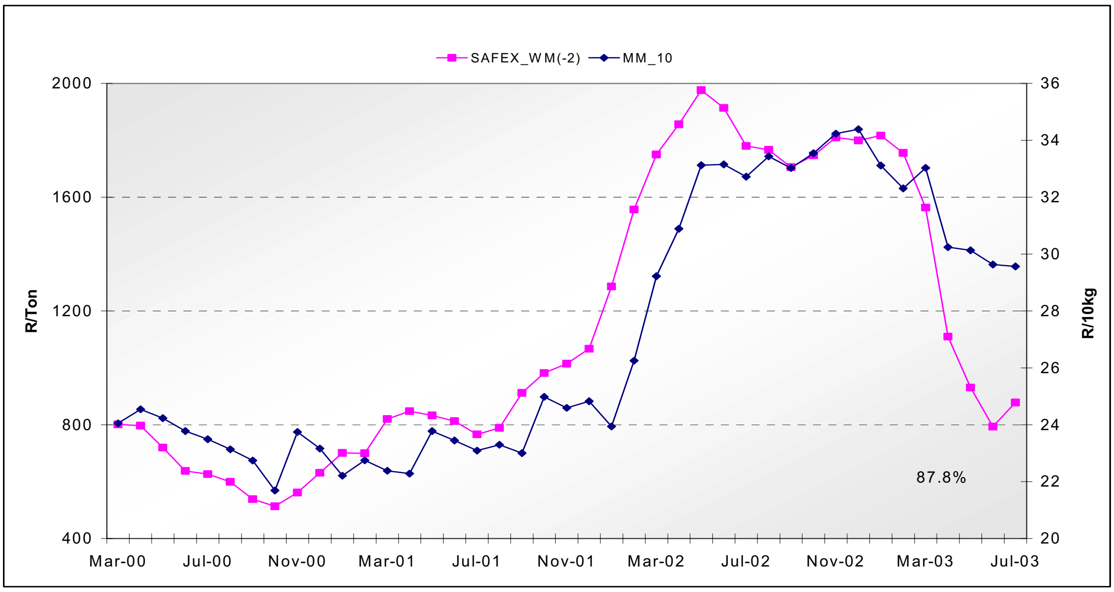

Figure 4.3: SAFEX white maize price and maize meal price, 2-month lag

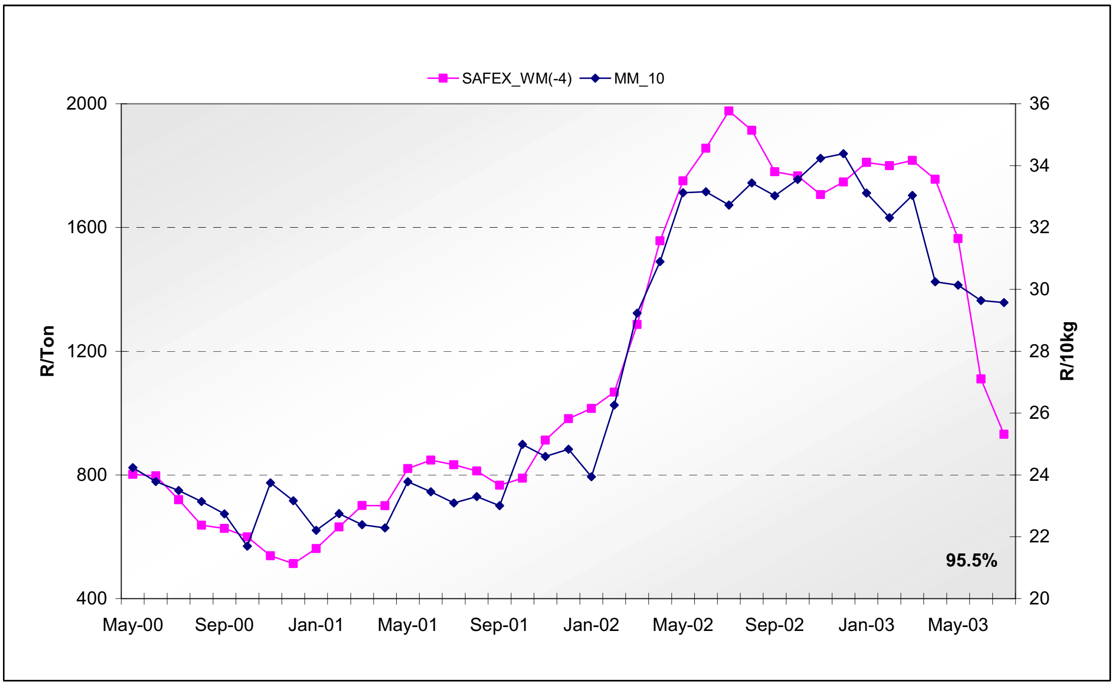

Figure 4.4: SAFEX white maize price and maize meal price, 4-month lag

The above process was repeated for wheat and bread prices, and for sunflower seed and cooking oil prices. The correlation between the wheat and bread prices is the highest when the SAFEX wheat price is lagged 4 months. The correlation between sunflower seed and cooking oil prices is the highest when sunflower seed prices are lagged 3 months.

4.3 Volatility

Prices naturally increase and decrease; however, these fluctuations usually occur around an average price. The volatility of prices is a measure of the uncertainty of a price. This means that the higher the volatility the more uncertain the price is because of a higher degree of variation around the mean. Volatility can be measured daily, weekly, monthly and annually depending on the data available and the price being studied. Here monthly data were used to calculate the annual volatility using the Black-Sholes-Merton differential equation method of calculating volatility. The tables below indicate the volatility of the consumer price and that of the commodity price closely related to it.

Table 4.1: Maize volatility

	Maize Meal	SAFEX white Maize
Jan00-Dec00	12.5%	32.80%
Jan01-Dec01	12.40%	29.40%
Jan02-Dec02	15.40%	18.30%

From the above Table it is clear that maize meal prices have remained fairy stable in terms of their level of volatility, with volatility increasing slightly for the year 2002. The commodity price (SAFEX white maize), however, has had a decreasing volatility year-on-year. Although it is generally expected that the consumer price volatility decrease when commodity price volatility decreases. This was not the case.

The bread price volatility remained around 9% for the three years under study. The SAFEX wheat price volatility showed much variation year-on-year. Again, commodity prices showed varying volatility while the consumer price volatility stayed the same. This indicates that there is little correlation between the volatility (or degree of variation) of the commodity price and the consumer price.

Table 4.2: Wheat and bread volatility

	Brown Bread	SAFEX Wheat
Jan00-Dec00	9.32%	13.26%
Jan01-Dec01	9.62%	24.42%
Jan02-Dec02	9.80%	18.26%

Table 4.3: Sunflower seed and cooking oil volatility

	Cooking Oil	SAFEX Sunflower Seed
Jan00-Dec00	6.15%	14.03%
Jan01-Dec01	13.70%	17.76%
Jan02-Dec02	19.41%	19.83%

Sunflower seed and cooking oil, however, present a different picture. Both the commodity price and the consumer price saw year-on-year increases in volatility. Thus, there appears to be a certain degree of correlation between the volatilities of the two prices. However, consumer price volatility may also be caused by exchange rate fluctuations as cooking oil can, and is, competitively imported.

In the case of the analysis of beef prices, we used the method known as Generalized Autoregressive Conditional Heteroscedasticity or GARCH[2] to measure the price volatility. This method distinguishes between the predictable and unpredictable components in the price series, and allows for measuring volatility on the bases of only the unpredictable components in the price series. The conditional standard deviation[3] or price volatility as defined for beef prices is shown in Figure 4.5.

The information presented in Figure 4.5 satisfies two of the conditions for the presence of price volatility, i.e. presence of discrete spikes and the secular increase of such spikes. It is clear that there is an increase in the frequency of the occurrences of discrete spikes and that they occurred more often since the latter part of 1999. The volatility since 2001 can largely be explained by the volatility in the exchange rate.

[2] When constructing econometric models, it is assumed that the variance of the error term is constant (i.e. homoscedastic or time invariant). To test whether this assumption holds, the Autoregressive Conditional Hetroscedasticity (ARCH) method was used in this study and it was found that the homoscedasticity assumption is violated, hence the use of the GARCH process instead of an Autoregressive Integrated Moving Average (ARIMA) model.

[3] Unlike the common measure of volatility (unconditional), the calculation of the conditional volatility is based on the assumption that "producers can distinguish regular features in a price process such as seasonal fluctuations and the ex-ante knowledge of the conditional distribution of commodity price" (Almayaz, et al. 2003).

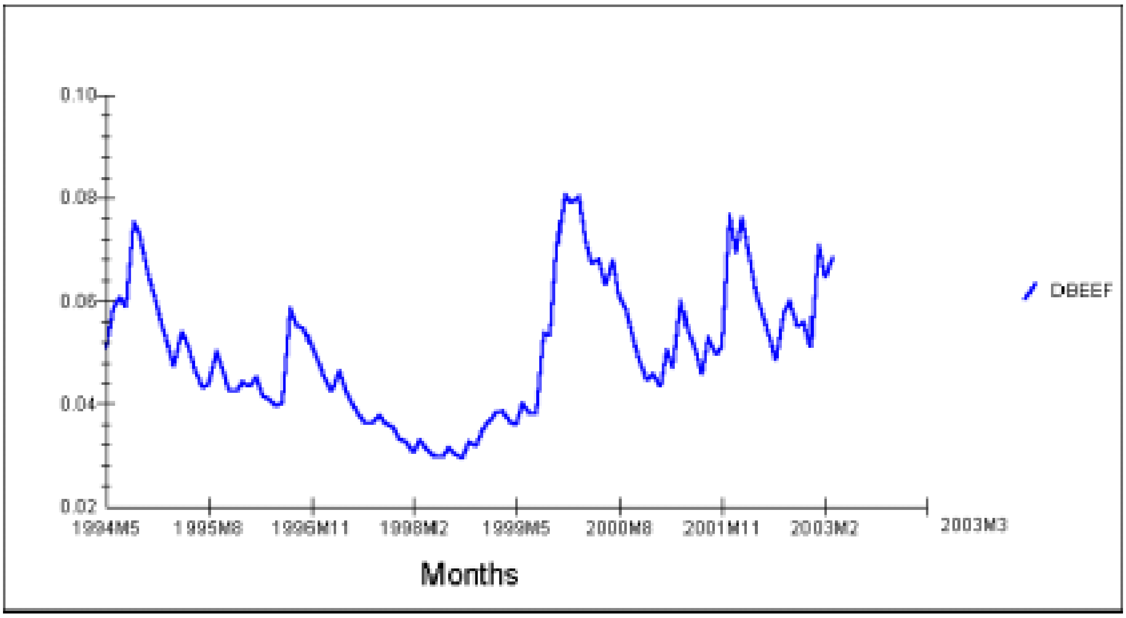

Figure 4.5: Conditional standard deviation of the beef producer price (May 1994 to July 2003)

4.4 Asymmetric Price Transmission

Over the past several decades producers, consumers, food industry interest groups and legislators have been concerned about the efficiency and equity of price transmission of agricultural and food products. Both casual and empirical research indicates that there are several asymmetries in price transmission in food marketing chains (e.g., Von Cramon-Taubebel, Bunte and Peerlings, Miller and Hayenga, Goodwin and Holt, Azzam, and Abdulai). It was found that (1) changes in farm and wholesale prices are either not fully, or they are more than fully transmitted to consumer prices; (2) changes in consumer prices are not related to short-run changes in farm prices and follow medium- and long-run changes in farm prices with a time lag; (3) downstream changes in consumer prices show a longer time lag than upstream changes do.

Several possible explanations can be put forward to explain this asymmetry depending on the market structure and the nature of the product. Of the three asymmetries, the one that appears to be of particular interest in the asymmetry in the adjustment process, is the one dealing with the issue whether retailers pass on price increases, while decreases in price are not completely transferred to the consumer. From the studies stated previously, it appears that this is in fact the case, in particular with agricultural products. One of the reasons price increases are passed on to the consumer faster than decreases, is that firms will react faster to decreases in profit margins than increases. Another reason for the asymmetric price adjustments is the presence of search costs in locally imperfect markets. For example, grocery stores and other retailers may enjoy local market power because of the absence of similar firms in a given neighbourhood. Although customers may have a finite number of choices, they may not be able to gather full information about prices offered by other firms because of the cost of the search. In particular, consumers may observe a price increase at one local retail outlet but they may be uncertain whether others have also increased their prices. Given this scenario, firms can quickly raise prices as upstream prices rise and slowly decrease prices as the upstream prices decline.

Another possible source of asymmetric price transmission is market power. Stephan Von Cramon-Taubadel (1997) suggested that asymmetry in the German pork market was caused by market power and inventory holding. Griffith and Piggott (1994) suggest that well-documented increases in the concentration in the pork, beef and lamb processing and marketing sectors has led to increasing levels of asymmetric price transmission. In general, supply chains for food products are less concentrated at the farm level than at higher levels since economies of scale may limit the number of viable role-players in a market. Oligopolistic processors might, for example, react collusively more quickly to shocks that squeeze their profit margins than to shocks that stretch it. The same can happen if individual firms believe that competitors will match increases in output prices as input costs increase, but do not respond in the same way as input costs decrease.

There are a number of different methods available to the researcher when testing for asymmetric price transmission. The choice of method depends on the data available, the available budget, and the types of questions that need to be answered. The most widely used method for testing market power and asymmetric price transmission in agricultural economics literature is the time-series model. This model is based on the assumption that the agricultural product included in the production process is the largest cost component of the final consumer good. This is an important assumption because the higher the cost component the more direct the effect of increases and decreases of farm prices on retail prices, since few other cost components come into play. Thus, the question being investigated is whether increases and decreases in farm prices are reflected in or transmitted to selling or retail prices. To do this, tests for asymmetric price transmission that are consistent with cointegration are applied to the transmission of commodity prices to retail prices for several goods.

The products investigated in this report include maize meal, bread, cooking oil, fresh milk, long life milk, and cheddar cheese. The prices used in this study are based on the SAFEX white maize nearest month contract, the SAFEX sunflower nearest month contract, the SAFEX wheat nearest month contract, the milk producer price as reported by the National Department of Agriculture, and all consumer prices gathered from the AC Nielson data base. As stated previously, the cost of the primary input as a percentage of the total cost is important in order to determine the degree of price transmission. The Table below reports the average percentage of total cost of the primary input for each of the above products. It is important to note that these are average percentages as commodity prices fluctuate more than the cost of other inputs.

Table 4.4: Main input percentage of total cost of selected consumer goods

	Percentage of total cost
Wheat Flour cost per loaf of Bread	45%
Maize cost per 10kg bag of maize meal	75%
Sunflower seed cost per 750ml cooking oil	60%
Cost of milk per litre of fresh milk	72%
Cost of milk per litre of long life milk	60%
Cost of milk per Kg of Cheddar cheese	80%

Note: These are average costs for the period January 2000-July 2003

Following the percentages listed above it is clear that the costs of raw material are major factors in the production costs of the final consumer good. This was also confirmed by many of the food manufacturers the Committee interviewed. From this it is possible to test for asymmetry in price transmission. The estimation procedure for the asymmetric error correction model for each product can be summarized as follows:

1. Granger causality tests were performed to test that farm prices "cause" retail prices (Granger, 1969).
2. Augmented Dicky-Fuller (ADF) and Philips-Perron tests were performed on all the time series to determine the order of integration. This is important because the series need to be integrated at the same level for the error correction model to be possible.
3. A long run cointegration equation was estimated with retail price as the dependant variable and commodity price (with various lags in some cases) as the independent variable.
4. The error term of the above model needs to be stationary for a cointegrating relationship to exist, thus ADF tests were performed on the error terms.
5. The errors from the cointegrating relationship were divided into two series (ECT+ and ECT-), one for positive errors and one for negative errors
6. The generated series were used to define the error correction terms, and the error correction model was then estimated using the Engel-Granger two-step approach using ordinary least squares.
7. The results of the above model were used to estimate an impulse response function.
8. First, a 10% increase in the commodity price, in an arbitrary month, was run through the model and a new series of expected retail prices was estimated.
9. The difference in the "shocked" price and actual price was calculated and plotted on a graph.
10. Steps 8 and 9 were repeated for a 10% decrease in the commodity price in the same month.

The reader should note that ECT+ indicates that the retail price is "too high" compared to the commodity price, i.e. the profit margin is above its long run equilibrium value. The opposite holds for ECT-. If the coefficient of the ECT- is greater in absolute terms than

ECT+, the retail price reacts faster when the profit margin is squeezed than when it is expanded. The reader should also note that only commodity prices were used to estimate the models and no other costs were included, as they would affect the ECT+ and ECT- terms.

From the above models, it is possible to calculate the price elasticities for each product, that is, how much the retail price (in percentage terms) should increase given a 1% increase in the commodity price. The elasticities for the various goods are reported in the table below.

Table 4.5: Commodity price elasticities

	Price Elasticity
Wheat (-4)* To Bread Price	0.431
Maize (-4)* To Maize Meal Price	0.339
Sunflower Seed (-3)* To Cooking Oil Price	0.739
Milk To Fresh Milk Price	0.849
Milk To Long Life Milk Price	1.022
Milk To Cheddar Cheese Price	0.803

**Note: the number in brackets indicates the number of months the consumer price lags the commodity price.*

Maize meal

The Figure below shows the effect of a 10% upward and downward "shock" to the SAFEX nearest month contract. The 10% increase in the SAFEX price resulted in a R2.42 increase per 10kg bag of maize meal. Assuming all factors returned to normal after this shock, the retail price of maize should gradually return to normal after approximately 8 months. The 10% decrease in the SAFEX price resulted in a R0.95 decrease in the 10kg maize meal retail price, which returned to its normal levels in only 5 months. Thus, price increases were passed on to the consumer much more consistently than the price decreases.

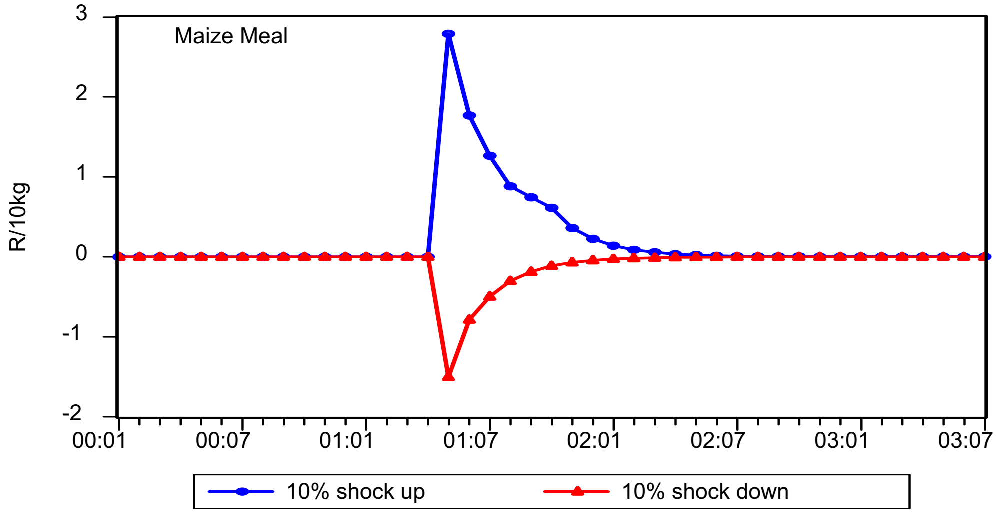

Figure 4.6: Maize meal price change given a 10% up and downward shock

It is difficult to state categorically the reason for this asymmetric price transmission. Several facts need to be taken into account, however. Firstly, 75% of the cost of producing maize meal is maize itself. In other words, the other cost factors only make up 25% of the total cost and, therefore, have little influence on the retail price. Secondly, 75% of the maize meal produced in South Africa is produced by 4 companies. Thus, asymmetric price transmission could be caused by concentration and the resulting market power of these four companies.

Bread

Similar to maize, an impulse response was estimated for a 10% upward and downward shock to the price of the SAFEX nearest month contract for wheat. The results indicated that the bread price was expected to increase by R0.53 for one month, after which it should go down to an increase of R0.14. It was expected that it would take more than 12 months for the increase to reduce itself to zero. The 10% decrease in the SAFEX wheat price would result in a R0.38 drop in the bread price for one month after which the drop in price would be a mere R0.03.

From the results, it became clear that the bread price increase overshot the increase in wheat price for one month after which it returned to more plausible levels of price increases (5.2%) and decreases (1.2%). Although the baking industry is just as concentrated as the maize milling industry, the cost of wheat only makes up 45% of the cost of producing a loaf of bread. Thus, the price transmission is not as direct as that of maize. It does, however, take longer for changes in price levels to run themselves out.

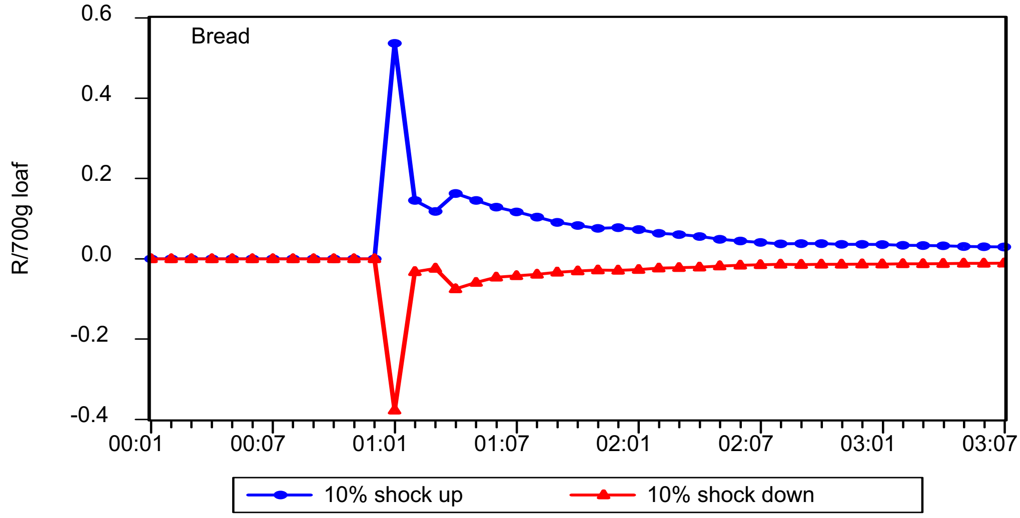

Figure 4.7: Bread price change given a 10% up and downward shock

Dairy

The price transmission of three dairy products was studied. These products are fresh milk, long life milk, and cheddar cheese. All the consumer prices are estimated as a function of the milk producer price, as fresh milk is the primary input for these products.

Fresh milk's asymmetric price transmission displays an interesting difference between upward and downward price effects. Fresh milk is a highly perishable product. Consequently, it could be expected that producers and retailers would avoid increasing their prices since goods may, then, not be sold and thus perish. The Figure below however indicates something completely different. A 10% increase in the producer price of milk results in a R0.17/litre increase in the consumer price of fresh milk. The same downward price change would, however, result in only a R0.04/litre retail price decrease. The decrease in price would work itself out of the system over a period of 8 months while the price increase would take well over 12 months to work itself out.

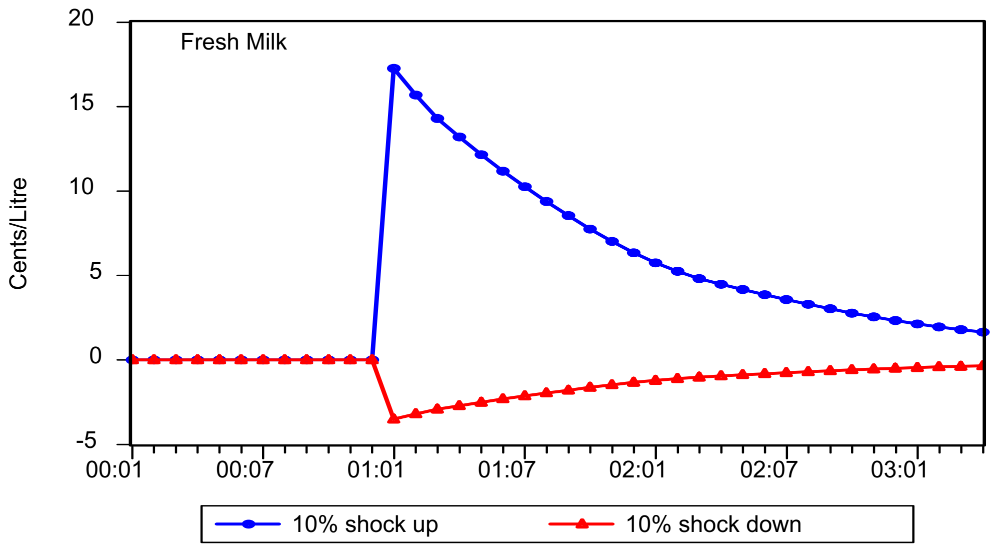

Figure: 4.8: Change in fresh milk prices given a 10% up and downward shock

This large disparity in upward and downward price transmission can help to explain why the consumer prices of dairy products increase almost linearly and why price changes take so long to wear themselves out. Decreases in producer prices have little or no effect on the retail price while increases in producer prices have quite a marked effect. The reason for the existence of such asymmetry in price transmission on such a perishable product could largely be attributed to the oligopolistic dairy manufacturing and distribution system. This makes it possible for these manufacturers (and eventually retailer) to pass price increases through to the consumer. Consumers are not normally aware of producer prices for milk and manufacturers could potentially use this ignorance and the fact that consumers get used to a specific price overtime not to lower prices – one of the reasons then for the downward stickiness of retail prices

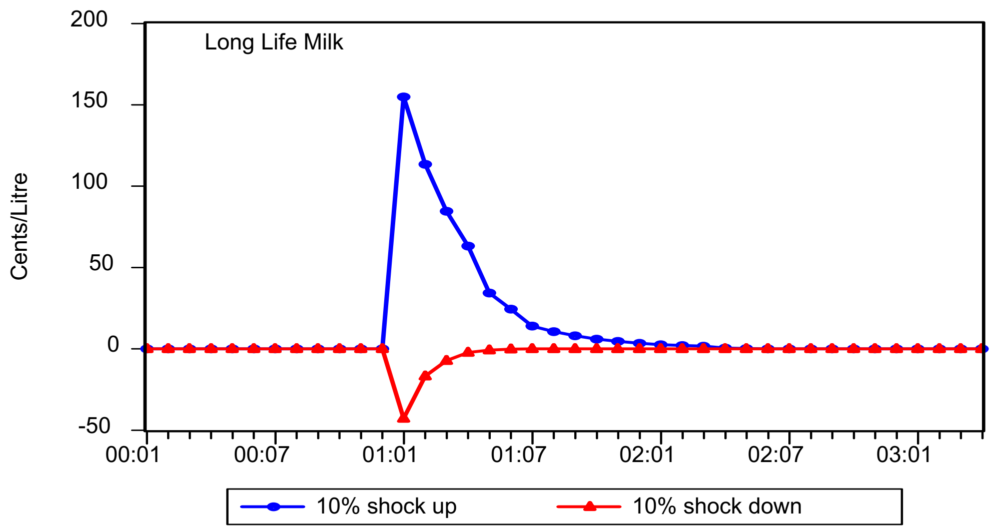

Figure 4.9: Changes in price of long life milk price change given a 10% up and downward shock

Similar to fresh milk, long life milk also displays a large asymmetry in price transmission. A 10% increase in the producer price of milk resulted in a R1.54 increase in the price of long life milk, which would take approximately 12 months to run itself out. Similarly, a 10% price decrease resulted in a R0.43 decrease in the price of long life milk and would take only four months to run itself out.

The final dairy product studied is cheddar cheese, which compared to the previous two products displays a more symmetrical price transmission. A 10% increase in the producer price of milk resulted in a R5.80/kg increase in the retail price of 1st grade cheddar cheese. A decrease in milk price, however, resulted in a R4.90/kg decrease in the retail price of 1st grade cheddar cheese.

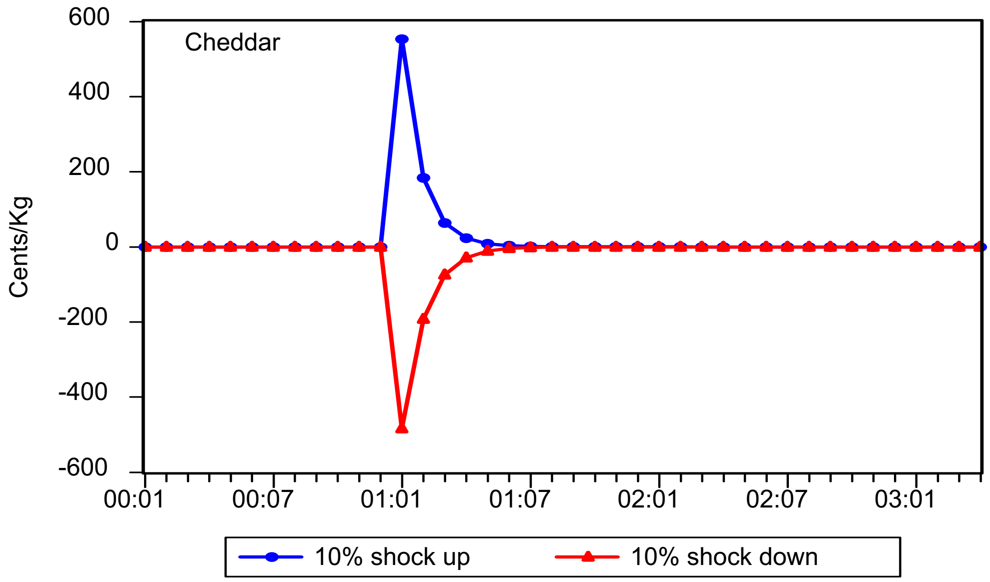

Figure 4.10: Change in prices of cheddar cheese given a 10% up and downward shock

There are approximately 5,000 dairy farmers whose output is sold in an oligopolistic market. There are 2 main dairy processors, namely Clover SA and Parmalat, who are the price leaders when it comes to purchasing milk. A similar situation exists at the retail level where most dairy products are sold through supermarkets and hypermarkets. Thus, there is oligopolistic competition at both the retail and processing level of the market. For a more in-depth discussion on the dairy supply chain and the imperfect competition, the reader is revered to Chapter 5 in Part 4 of the Report.

Given, however, the existence of imperfect competition at both the production and retail level, asymmetric price transmission is likely to be caused by market power within the sector.

Cooking Oil

A similar test was performed for the price transmission from sunflower seed to cooking oil. The results differ from those of the other products because the downward price changes are transmitted by almost the same amount as upward price changes. In fact, both up and downward SAFEX price changes resulted in a R1.27/750ml increase and decrease, respectively. It is interesting, however, that price decreases take longer to return to normal than price increases, which is opposite to the findings re all the other goods.

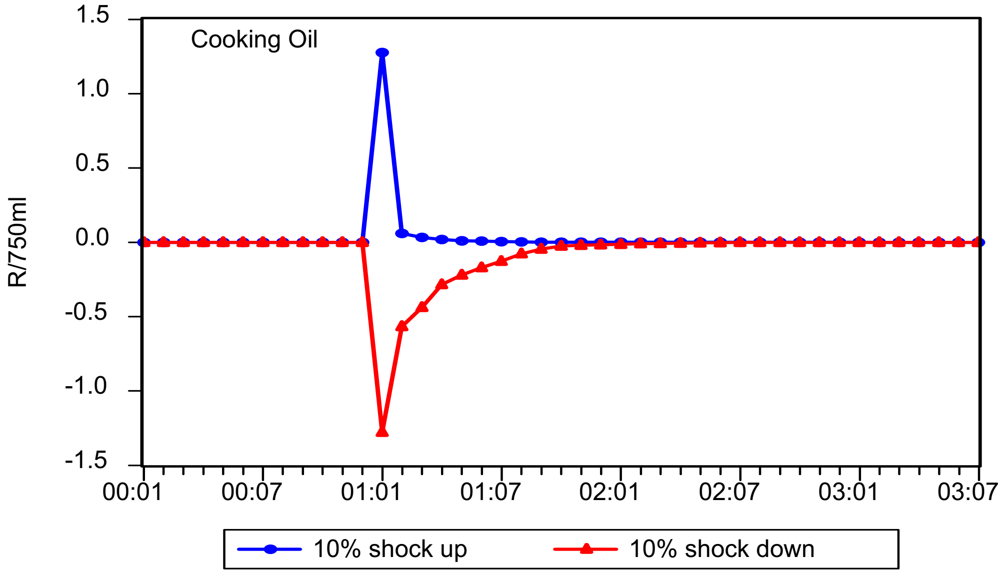

Figure 4.11: Change in price of cooking oil given a 10% up and downward shock

It is difficult to say why the asymmetry in price transmission of sunflower seed to cooking oil is different to that of the other industries. Generally, the more concentrated a market the more asymmetric the price transmission, as was found for the other products discussed here. Although the oil crushing industry is concentrated with only a few role players, cooking oil is imported in bulk, thus decreasing the level of concentration in the cooking oil wholesale market and creating more competition.

Conclusions

Firms incur costs when re-pricing items and will thus only re-price items when the gains from changing the prices (up or down) exceed the costs. There is a range of farm price changes, therefore, which retailers may choose not to re-price. This results in less frequent adjustments both upward and downward. This can be seen in the earlier Section on volatilities. The implication is that pricing rigidity in retail prices during periods of falling farm prices, which draw more attention than rigidity during rising farm prices, may be due to re-pricing costs.

Given the large number of possible variations between commodities, retailers, and consumers, it remains very difficult to determine the cause of observed price asymmetries within a commodity group, and it is not easy to argue that market power and market structure play the main or only role in the manner that prices are transmitted to the retail level.

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PART 6

MONITORING THE FOOD SECURITY SITUATION IN SADC

1. Introduction

Point 6 of the terms of reference of the Food Price Monitoring Committee is "To monitor the regional SADC food situation". It was proposed to analyse the SADC food security situation by focusing on four products: maize, sorghum, pulses and wheat. However, due to the availability of data the following products were finally selected and are covered in this report: Maize, wheat and sorghum / millet.

Data collection and analysis of the selected products was carried out for each of the SADC countries (excluding Democratic Republic of the Congo and Seychelles) involved three time frames: trends for the last 3 years, the current situation and future estimates.

The report will cover the following sections:

- The SADC region: An introduction.
- Trends and the current food supply situation within each of the SADC countries individually.
- The SADC region: Summary of current food supply situation.
- Overview of information sources on the SADC region's food situation.
- Conclusion.
- References.

The report contains all information available up to October 2003.

The following abbreviations were used in the report:

- SADC: Southern African Development Community
- DRC: Democratic Republic of the Congo
- SADC REWU: Southern African Development Community; Regional Early Warning Unit
- SADC FANR: Southern African Development Community; Food, Agriculture and Natural Resources Development Unit
- SADC GIEWS: Southern African Development Community; FAO Global Information and Early Warning System on food and agriculture
- WFP: World Food Programme
- FEWSNET: Famine Early Warning Systems Network

2. The SADC region: An introduction

There are 13 countries within the SADC region: Angola, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Where possible the study focused on all the SADC countries. However, in certain cases it was problematic to find data for the Democratic Republic of the Congo and the Seychelles.

Table 1 displays the important food crops in SADC countries in terms of calorie intake information adopted from information supplied by SADC FANR (The Southern African Development Community; Food, Agriculture and Natural Resources Development Unit). No information was available for Seychelles, DRC and Mauritius.

Table 1: Important food crops in terms of calorie intake information

Country:	Food crops of major importance:			Other relevant food crops:					
ANGOLA	Cassava	Maize		Wheat	Rice	Sorghum/ Millet			
BOTSWANA	Maize	Sorghum/ Millet	Wheat	Rice					
LESOTHO	Maize	Wheat	Sorghum/ Millet						
MALAWI	Maize			Cassava	Rice	Wheat	Sorghum/ Millet		
MOZAMBIQUE	Cassava	Maize		Rice	Sorghum/ Millet	Wheat			
NAMIBIA	Maize	Wheat	Sorghum/ Millet						
SOUTH AFRICA	Maize	Wheat		Rice					
SWAZILAND	Maize	Wheat		Rice					
TANZANIA	Maize	Cassava		Rice	Sorghum/ Millet	Wheat	Pulses	Bananas	Sweet potatoes
ZAMBIA	Maize	Wheat	Sorghum/ Millet						
ZIMBABWE	Maize	Wheat	Sorghum/ Millet						

(Source: SADC FANR)

From this table the most important food crops in terms of the calorie intake information seem to be maize, wheat, sorghum/millet and cassava.

Based on the above analyses, the original calorie intake information by SADC FANR and information availability on countries experiencing current food crisis situations, the following crops were selected for the individual countries:

Table 2: Crops selected for analysis with respect to the various countries

Country:	Crops selected for analysis:
Angola:	Maize, Wheat
Botswana:	Maize, Sorghum/Millet, Wheat
Lesotho:	Maize, Wheat
Malawi:	Maize
Mauritius:	Maize, wheat
Mozambique:	Maize
Namibia:	Maize, Sorghum / Millet
South Africa:	Maize, Wheat
Swaziland:	Maize, Wheat
Tanzania:	Maize
Zambia:	Maize
Zimbabwe:	Maize

3. Trends and current food supply situation within each of the SADC countries individually

The situation in each SADC country is discussed using the following format, subject to the availability of data:

- General information on the specific country.
- Time series graphs of total supply, total demand and per capita demand for the major food crops in the country.
- The food situation in the specific country based on various sources.

The discussions are based mainly on data from two sources:

- SADC REWU.
- FAO, GIEWS.

The discrepancies in the data obtained from SADC REWU and the FAO can attributed to

- Different methodologies.
- Differences in the time periods for which the data was estimated.

3.1 Angola

3.1.1 General information

- Angola is generally seen as a food deficit country where civil disturbances have disrupted food production and distribution.
- The average actual per capita consumption is far below nutritional requirements.
- The population growth rate is 2.7% per annum.
- Marketing year: July - June.
- Major domestic food crops: Cassava, maize.
- Share of staple foods in total calorie intake:
    - Cereals 35% (maize 27%, wheat 4%; rice 2%; sorghum/millet 2%)
    - Cassava 29%

(Source: SADC FANR)

3.1.2 Grain supply and demand situation and outlook

Figure 1: Angola maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

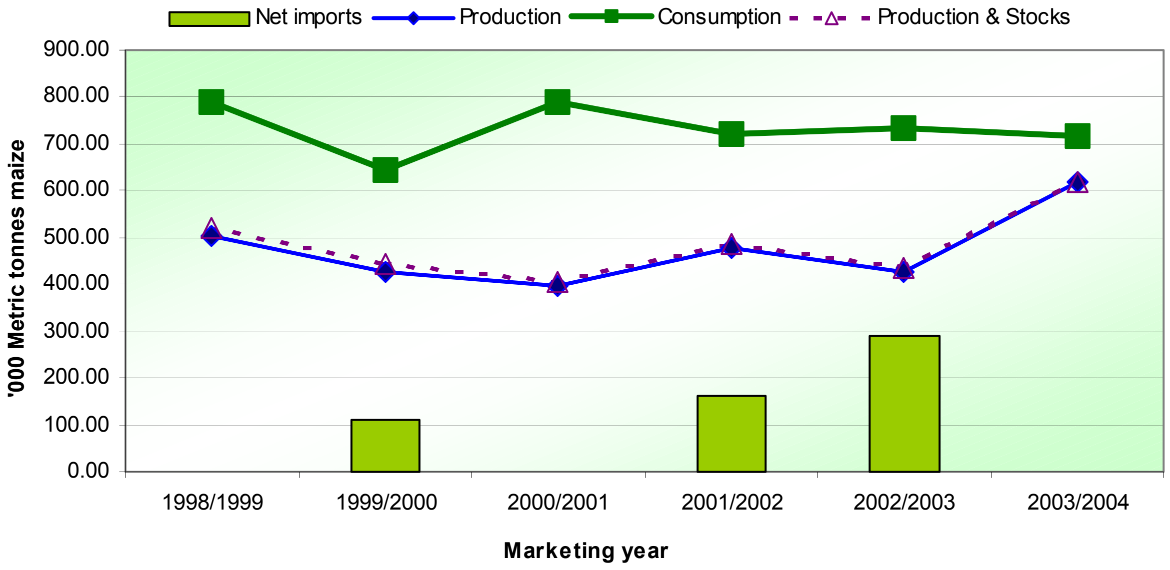


Figure 2: Angola maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

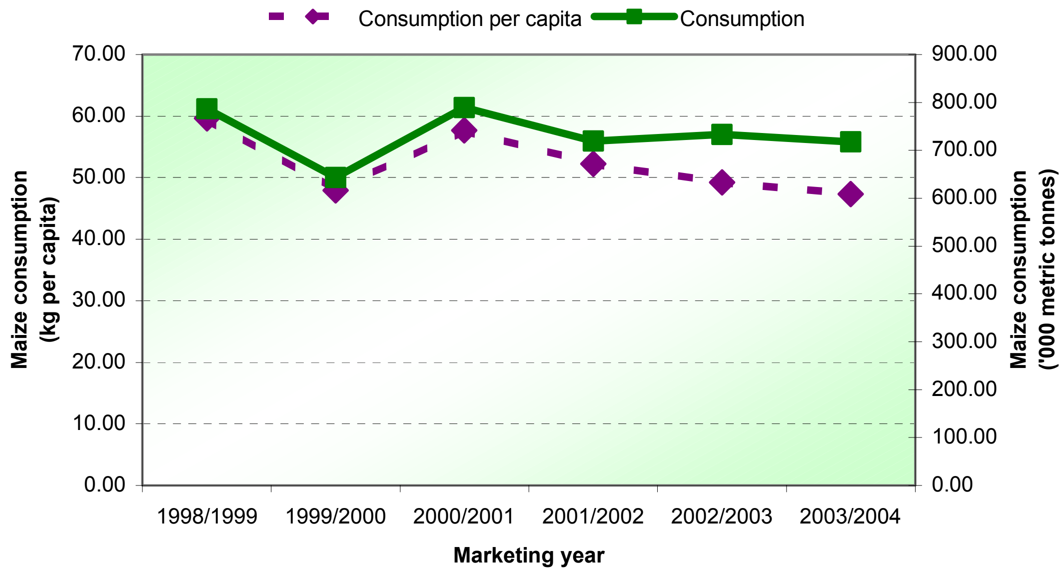


Figure 3: Angola wheat supply and demand for the period 1998/99 to 2003/04
(Source: based on data from SADC REWU maize balance sheets and population data)

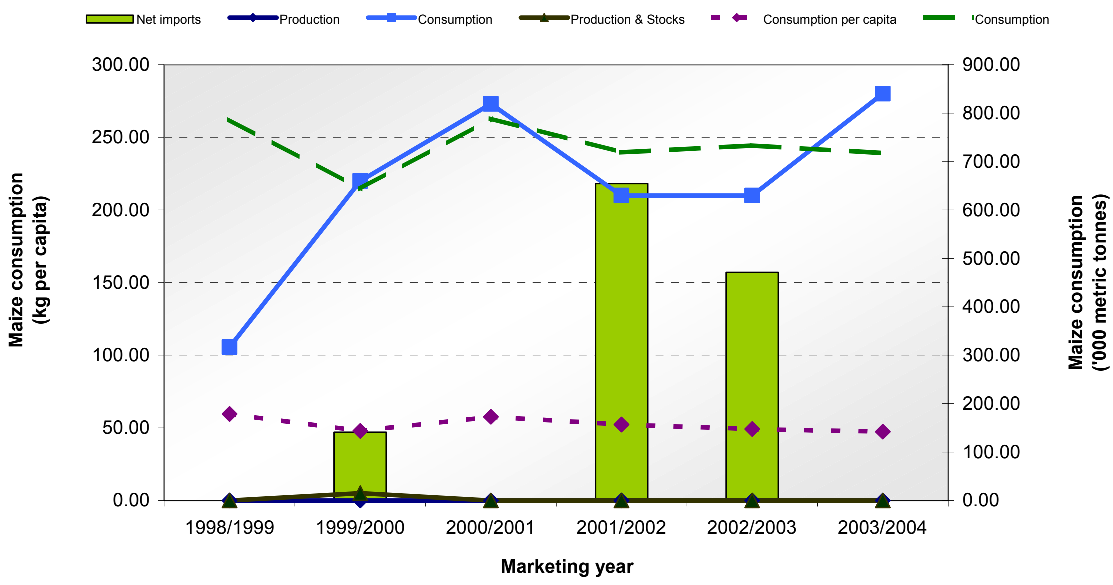


Figure 4: Angola wheat consumption in total and per capita for the period 1998/99 to 2003/04
(Source: based on data from SADC REWU maize balance sheets and population data)

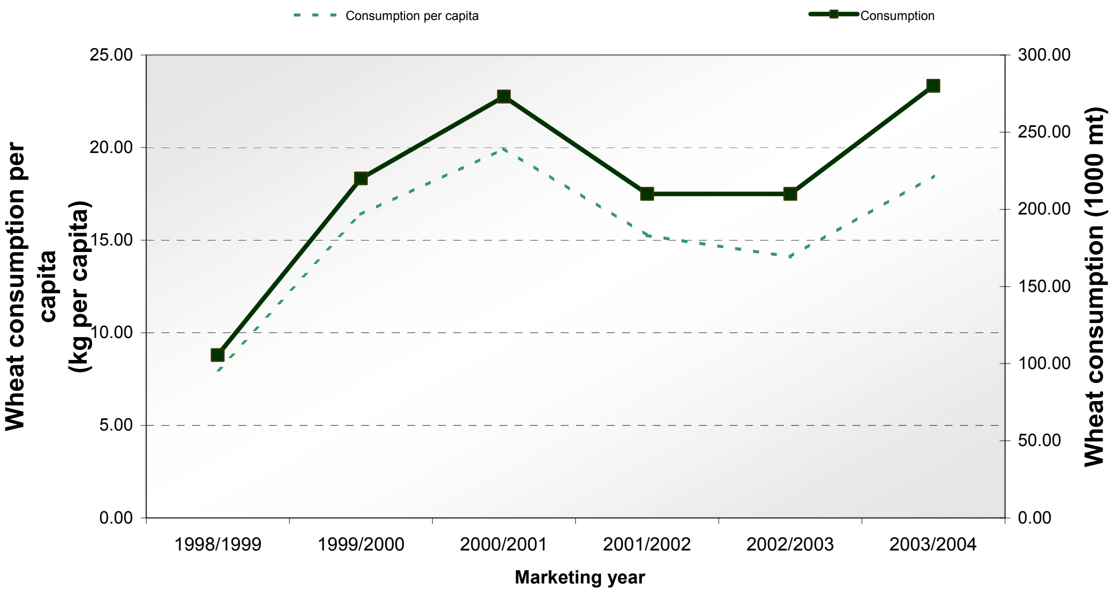
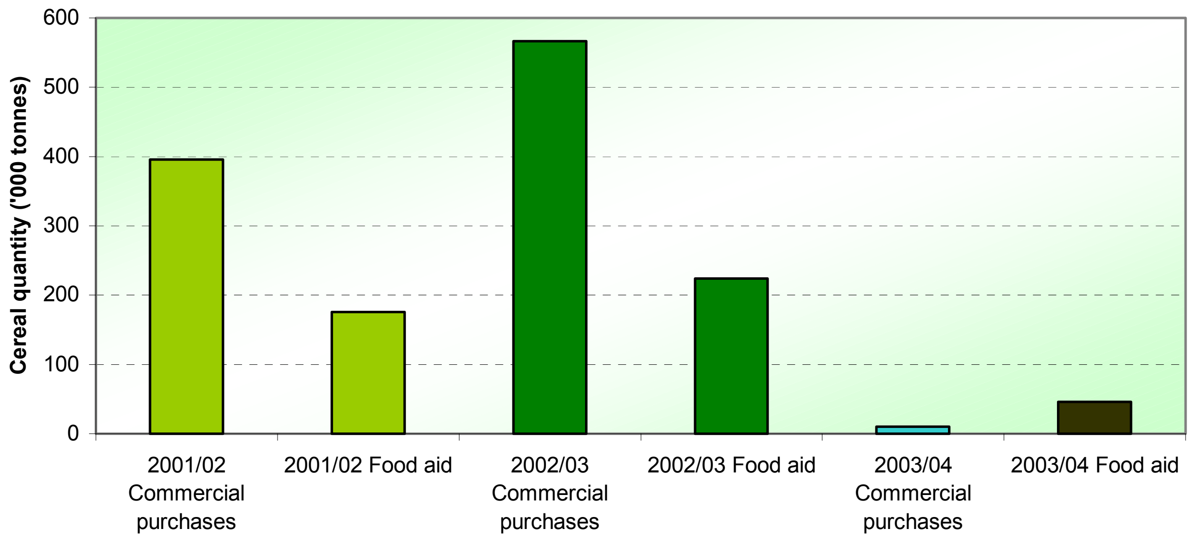


Figure 5: Angola estimated cereal import requirements - 2001/02, 2002/03, 2003/04
(Source: FAO GIEWS)



Angola is currently facing a food emergency, mainly due to returnees (internally displaced persons (IDPs)) (FAO, GIEWS, 2003a, 2003c, 2003d). The country is classified by FAO, GIEWS (2003a) as having a two fold food emergency based generally on adverse prospects for the current crops and / or uncovered shortfalls and being affected or threatened by successive poor crops or food shortages.

According to FAO, GIEWS (2003a, 2003b) an above average 2003 maize crop is expected in Angola, due to several reasons:

- Higher plantings following the termination of the civil war in April 2002. Since then an estimated 1.8 million IDPs and an estimated 130 000 Angolan refugees have returned to their areas of origin where they have cultivated the land.
- Improved yields due to:
    - Timely distribution of agricultural inputs by the Government.
    - Timely distribution of agricultural inputs by the international community.
    - A good rain season.

The 2002/03 maize crop was 23% above the 2001/02 harvest of 670 000 tonnes (FAO, GIEWS, 2003d). The 2003 cereal crops are currently being harvested in Angola. According to FAO, GIEWS (2003e) the coarse grain output on Angola for the 2002/03 season was 549 000 tonnes, which is 18% higher than in 2001/02. However, emergency food assistance is still needed in the country (FAO, GIEWS, 2003b). In the current season the total food aid requirements amount to 161 000 tonnes of cereals and 17800 tonnes of pulses, while in 2003/04 an estimated 1.41 million people will be in need of food assistance (FAO, GIEWS, 2003d). According to the FAO, GIEWS (2003a) the estimated food aid allocated imports (committed or shipped) for 2002/03 is 228 000 tonnes, which is 34.4% higher than the actual food aid imports during 2001/02, while the estimated commercial purchases for 2002/03 is 439 100 tonnes (9.4% higher than the actual commercial purchases imports for 2001/02).

The most recent cereal estimations according to the SADC REWU Balance Sheets are:

- Production: 0.713 million tonnes (total cereals); 0.619 million tonnes (maize)
- Consumption: 1.262 million tonnes (total cereals); 0.717 million tonnes (maize)
- Import gap: 0.600 million tonnes (total cereals); 0.149 million tonnes (maize)

3.2 Botswana

3.2.1 General information

- Botswana is generally seen as a relatively high-income country with food deficits. The country is drought prone and agricultural production is mostly confined to the eastern and south-eastern regions.
- Botswana is land-locked.
- The population growth rate is 3.3% per annum.
- Marketing year: April - March.
- Major domestic food crops: Sorghum, pulses.
- Share of staple foods in total calorie intake:
    - Cereals 56% (maize 31%; sorghum/millet 12%; wheat 11%; rice 2%

(Source: SADC FANR)

3.2.2 Grain supply and demand situation and outlook

Figure 6: Botswana maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

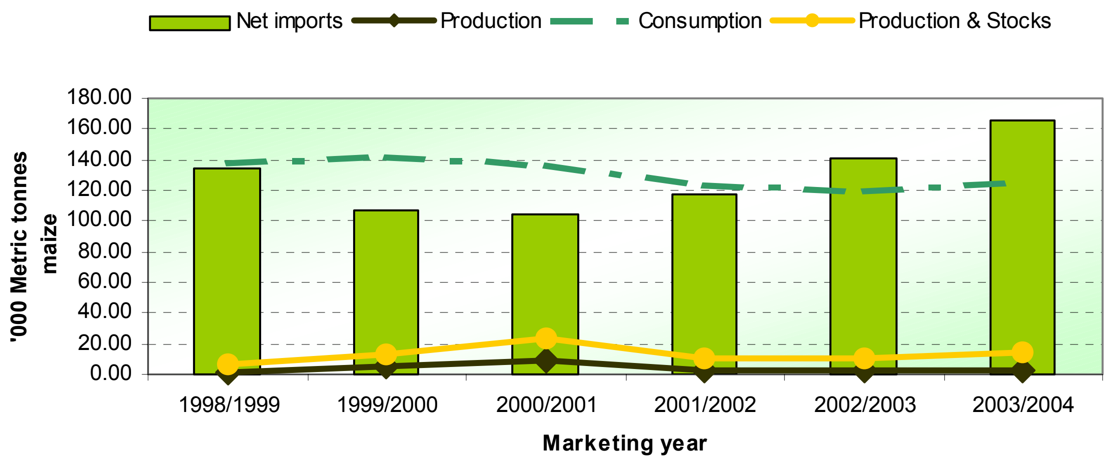


Figure 7: Botswana maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

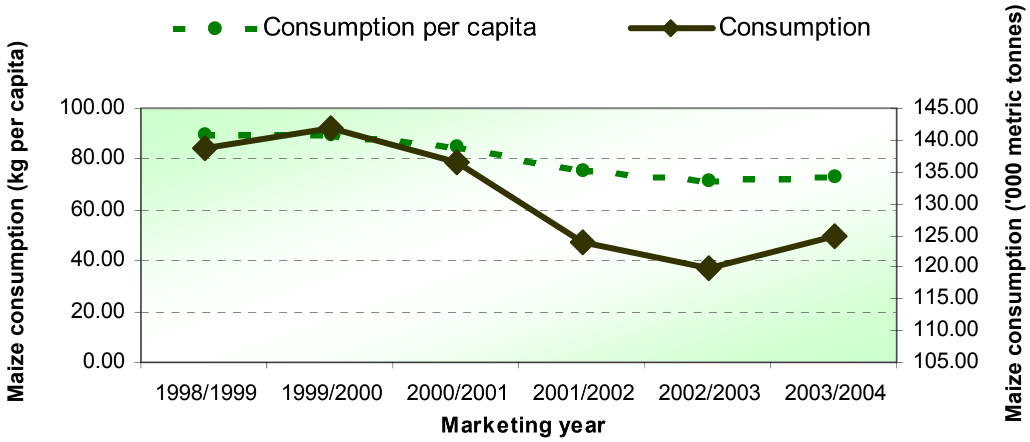


Figure 8: Botswana sorghum and millet supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU sorghum & millet balance sheets)

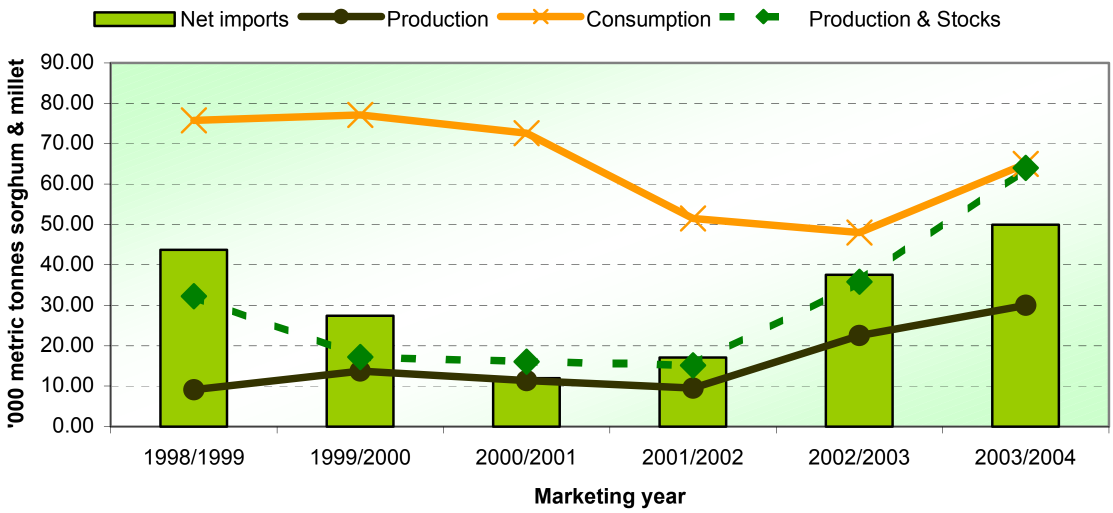


Figure 9: Botswana sorghum and millet consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU sorghum & millet balance sheets and population data)

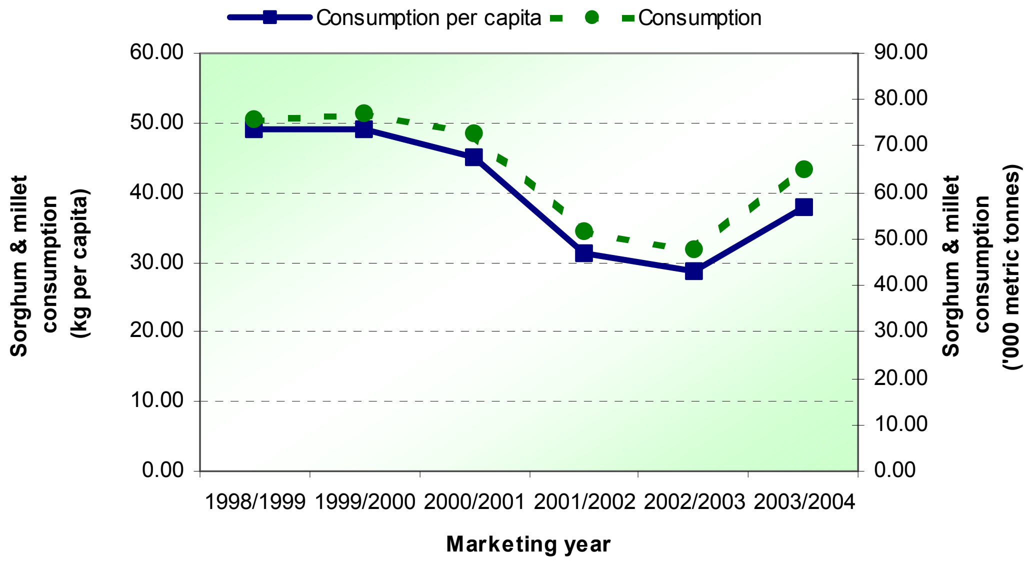
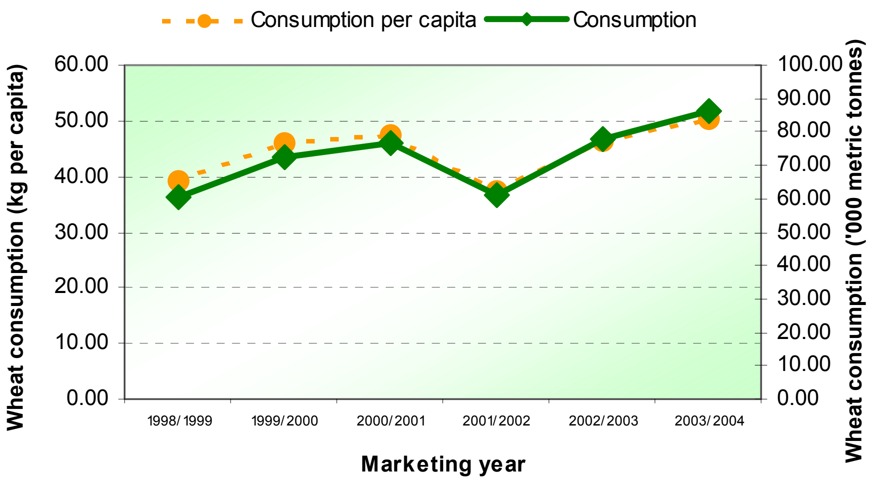


Figure 11: Botswana wheat consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU w heat balance sheets and population data)



Botswana experienced a reduction in the production of cereal crops (mainly sorghum) from the previous 2001/ 2002 season (FAO, GIEWS, 2003a). This can be attributed to late and below average rains that led to reduced plantings and yields. According SADC REWU data, the 2002/03 gross sorghum harvest is estimated at 22 510 metric tonnes. Maize production fell by 9.5% to a level of 2 200 metric tonnes in the 2002/03 marketing year (SADC REWU, 2003). Table 3 displays the most recent cereal estimations according to the SADC REWU Balance Sheets.

Table 3: Most recent cereal estimations for Botswana (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Maize	0.002	0.125	0.165	0
Sorghum / Millet	0.030	0.065	0.050	0
Wheat	0	0.086	0.082	0.003

(Source: Most recent SADC REWU Balance Sheets)

It is evident from the graphs and Table 3 above that Botswana is a net commercial importer of cereals for its consumption requirements. The food supply situation in Botswana remains stable. The Botswana government is distributing food aid in the areas, which were affected by poor harvests (FAO, GIEWS, 2003d).

3.3 Lesotho

3.3.1 General information

- Lesotho is generally seen as a food deficit, land-locked country with mountainous terrain. The economy is heavily dependant on remittances from mine workers in South Africa.
- The population growth rate is 2.6% per annum.
- Marketing year: April - March.
- Major domestic food crops: Maize, sorghum and wheat.
- Share of staple foods in total calorie intake:
    - Cereals 75% (maize 49%; wheat 17%; sorghum 9%).

(Source: SADC FANR)

3.3.2 Grain supply and demand situation and outlook

Figure 12: Lesotho maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

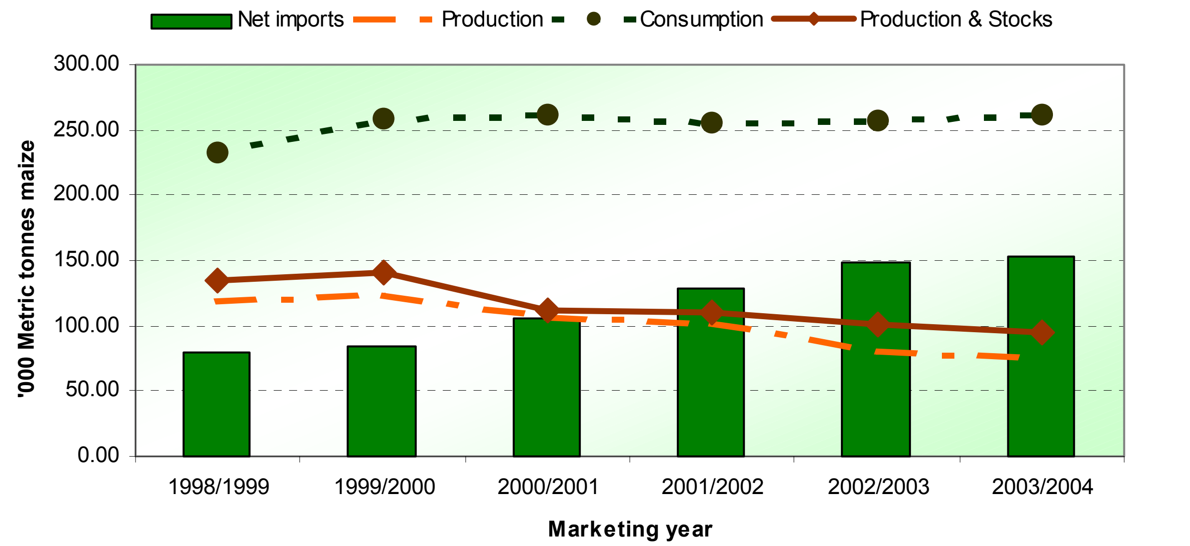


Figure 13: Lesotho maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

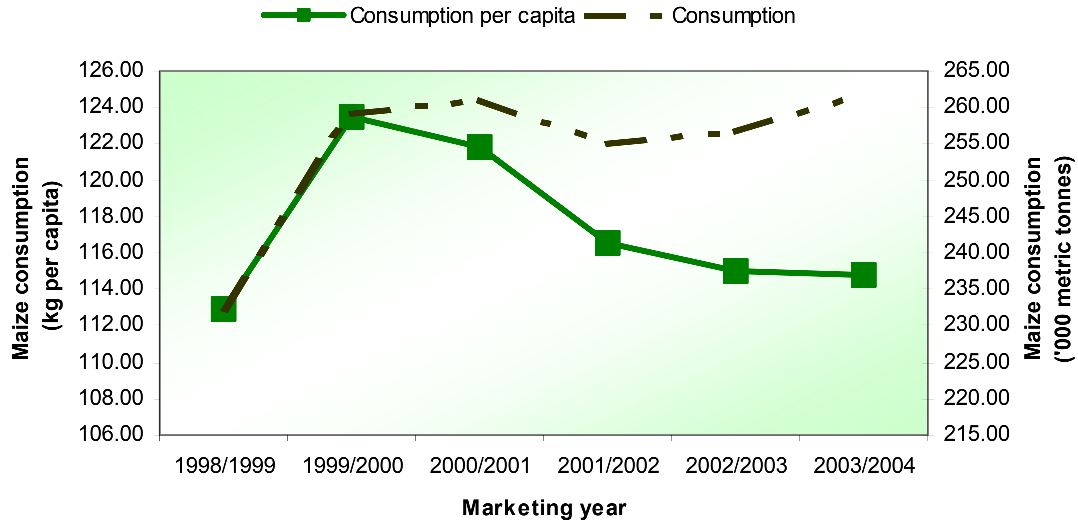
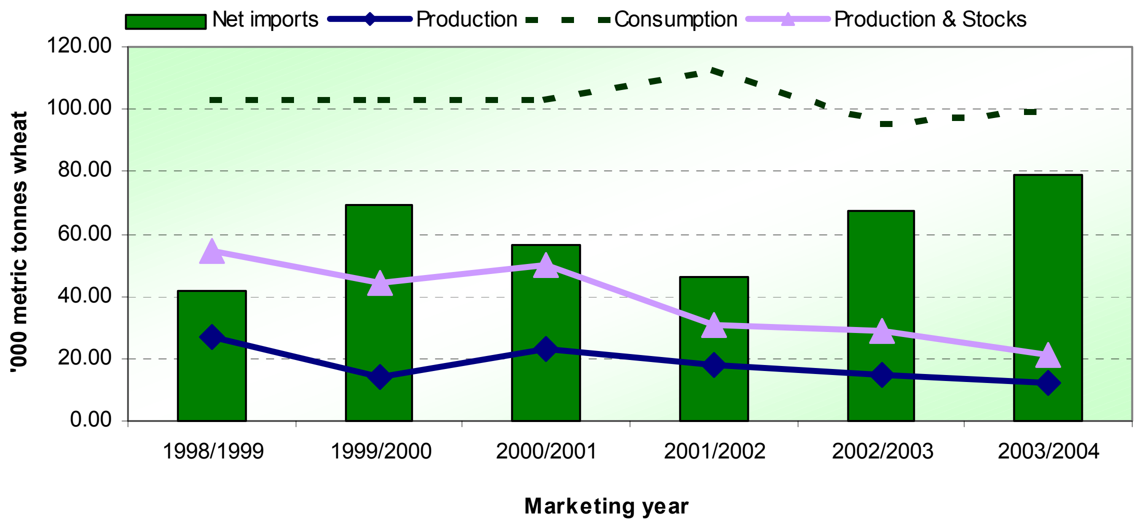
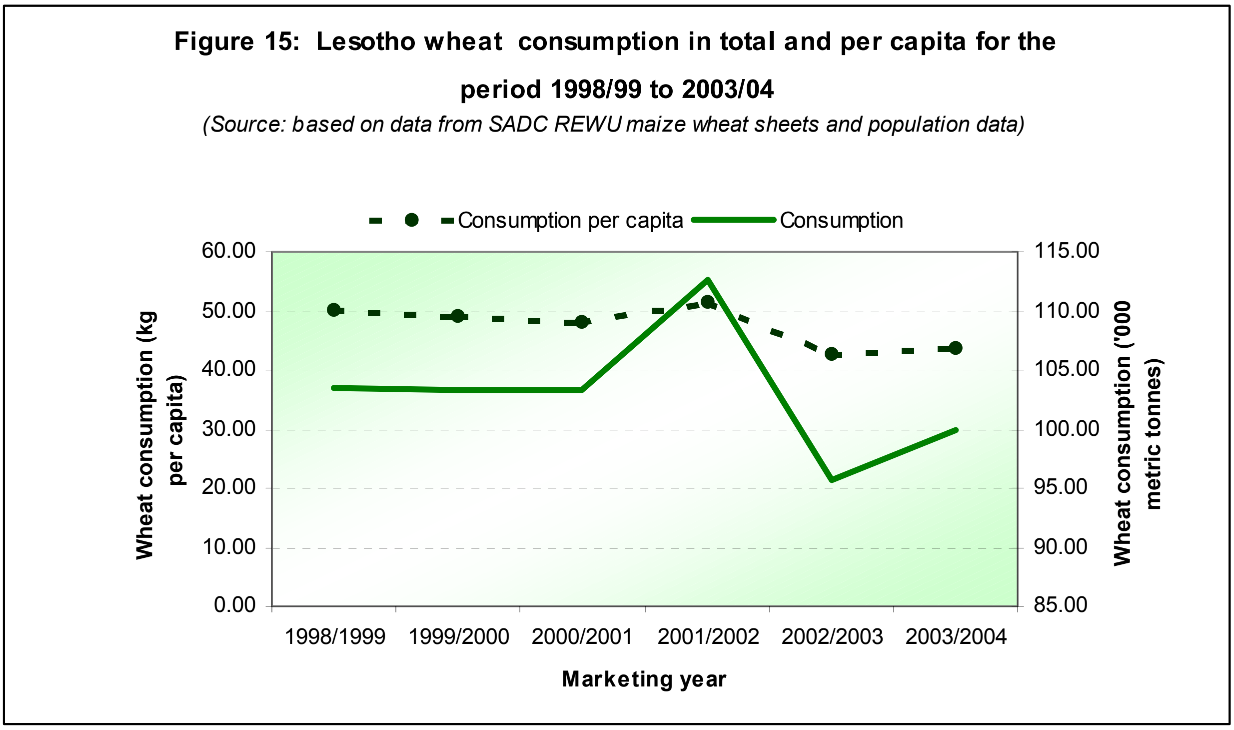
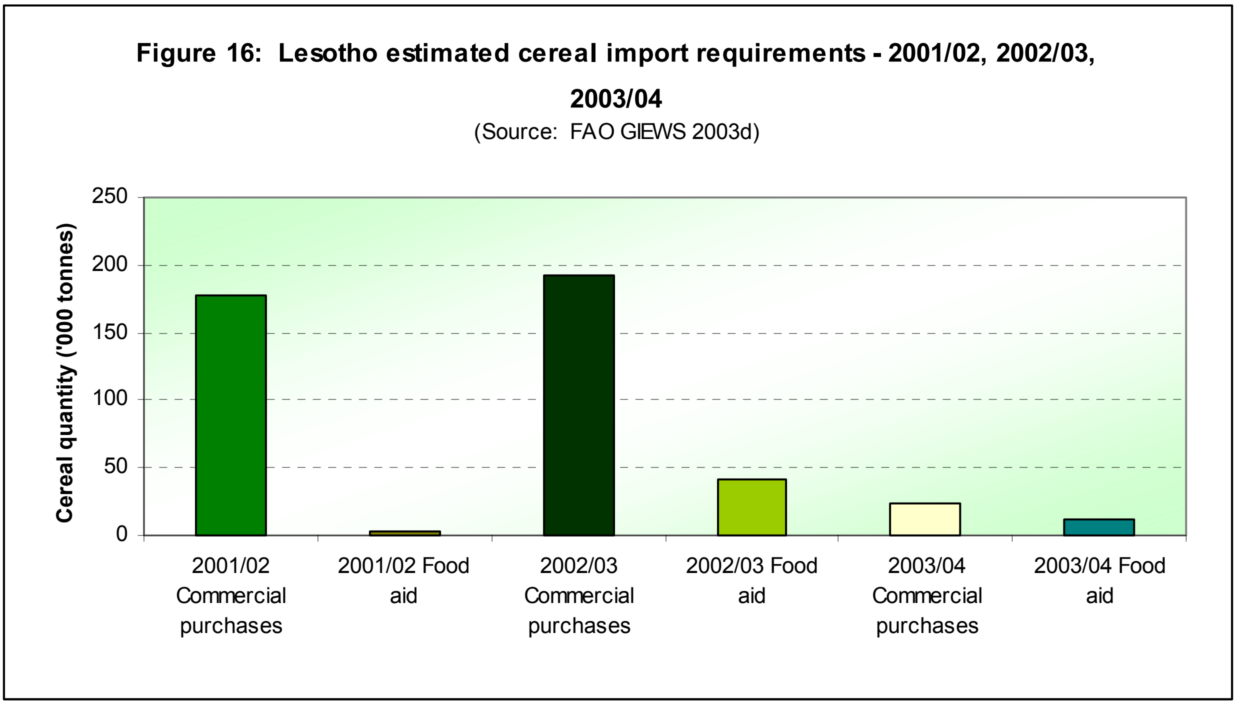


Figure 14: Lesotho wheat supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU w heat balance sheets)







Lesotho is currently facing a food emergency, mainly due to adverse weather in certain parts of the country and the effects of HIV / AIDS (FAO, GIEWS, 2003a, 2003b, 2003d). The country is classified by FAO, GIEWS (2003a) as having a food emergency as a result of adverse prospects for current crops and / or uncovered shortfalls.

A Crop and Food Supply Assessment was conducted by FAO and WFP during April and May 2003 (FAO, WFP, 2003a). The Mission forecasted the following with respect to the 2002/03 marketing year (FAO, WFP, 2003a, 2003d):

- Total cereal production: 89 100 tonnes (66% higher than the 53 800 tonnes which were estimated by the FAO/WFP Mission during the 2001/02 marketing year, but still below average).
- Production estimates for the various cereals:
    - Maize 61 400 tonnes.
    - Wheat 24 300 tonnes.
    - Sorghum 3 400 tonnes.

The Mission forecast the following with respect to the 2003/04 marketing year (FAO, WFP, 2003a):

- Domestic cereal supply: 118 200 tonnes.
- National consumption requirements: 438 900 tonnes.
- Cereal import requirements: 320 700 tonnes.
- Commercial imports: 288 700 tonnes.
- Food aid needs: 32 000 tonnes for 270 000 people suffering due to
    - Localized crop failure.
    - The effects of HIV/AIDS.

According to the Mission (FAO, WFP, 2003a) it is anticipated that cereal shortages will be limited at a national level, due to:

- The improved (though still lower than normal) 2002/03-cereal harvest.
- Improved commercial import capacity.

According to the estimations of SADC REWU the following is projected for the 2002/03 marketing year:

- Gross maize harvest: 81 710 tonnes (20.4% lower than 2001/02).
- Gross domestic maize requirements: 256 850 tonnes (0.7% higher than 2001/02).
- Gross sorghum harvest: 24 650 tonnes (35.6% lower than 2001/02).
- Gross domestic sorghum requirements: 43 130 tonnes (0.8% higher than 2001/02).
- Gross wheat harvest: 15 000 tonnes (16.7% lower than 2001/02).
- Gross domestic wheat requirements: 95 700 tonnes (15.1% lower than 2001/02).

Table 4 displays the most recent cereal estimations according to the SADC REWU Balance Sheets.

Table 4: Most recent cereal estimations for Lesotho (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	0.094	0.395	0.232	0.035
Maize	0.075	0.262	0.153	0.015
Wheat	0.012	0.100	0.079	0

(Source: Most recent SADC REWU Balance Sheets)

3.4 Malawi

3.4.1 General information

- Malawi is generally seen as a potentially self-sufficient country.
- The country was a maize exporter in past years but experienced serious deficits in recent years.
- The population growth rate is 3.7% per annum.
- Marketing year: April - March.
- Major domestic food crops: Maize, pulses, roots, tubers, rice.
- Share of staple foods in total calorie intake:
    - Cereals 67% (maize 61%; rice 2%; wheat 2%, sorghum/millet 2%);
    - Cassava 2%

(Source: SADC FANR)

3.4.2 Grain supply and demand situation and outlook

Figure 17: Malawi maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

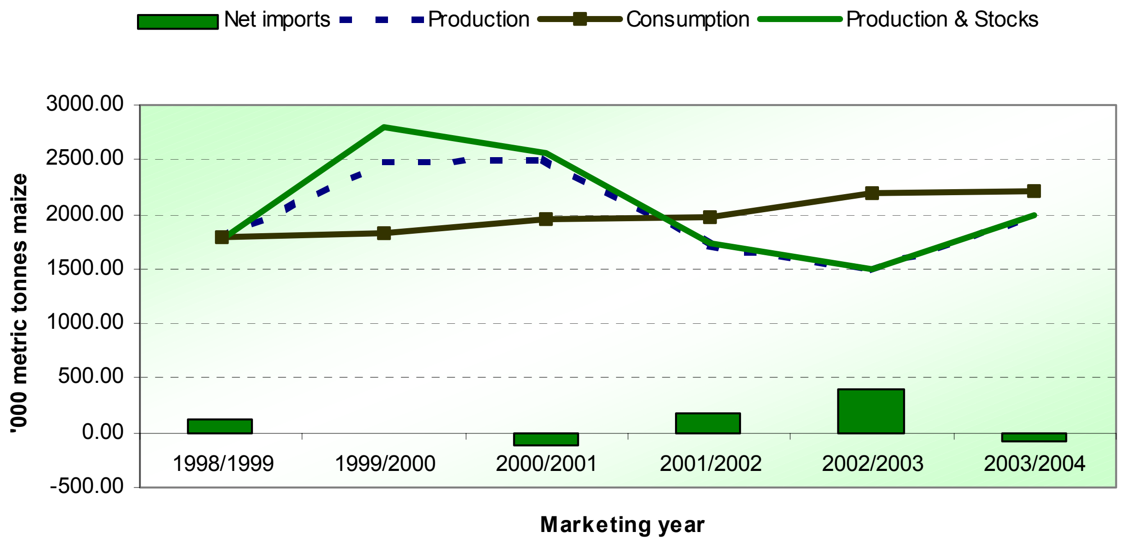


Figure 18: Malawi maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

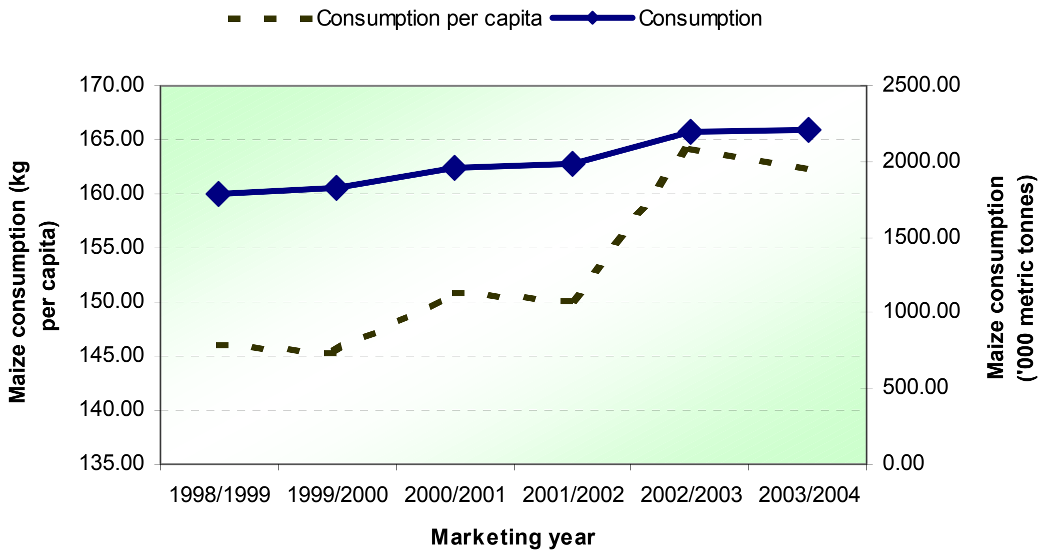
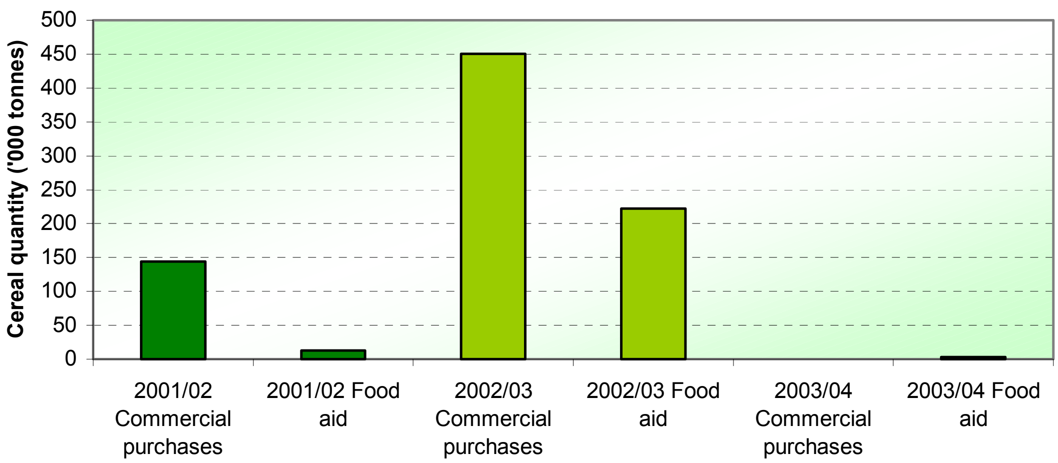


Figure 19: Malawi estimated cereal import requirements - 2001/02, 2002/03, 2003/04

(Source: FAO GIEWS)



In general Malawi has a satisfactory food supply situation, mainly due to (FAO, GIEWS, 2003d):

- Increased 2003 cereal production.
- High levels of maize carry-over stocks.
- The lower maize price contributing towards better food access.

However, according to FAO GIEWS (2003a, 2003b, 2003c, 2003d) certain areas in Malawi are in need of food aid mainly due to:

- Localized drought and consequent crop failures.

- Floods.
- The impact of HIV / AIDS.
- The destitute.

A Crop and Food Supply Assessment was conducted by FAO and WFP during April 2003 (FAO, WFP, 2003a). The most important aspects of the Mission report will be discussed. The Mission forecast the following with respect to the 2002/03 marketing year (FAO, WFP, 2003b):

- Maize production for the 2002/03 marketing year was estimated at a level of 1.9 million tonnes (22% higher than the final harvest estimate for 2001/02). This could mainly be attributed to:

    - Increased rainfall
    - Increased use of improved seed and fertilizers

- Crop failures were experienced in certain areas, leading to the following estimated food assistance needs:

    - 400 000 people in the 2003/04 marketing year.
    - Estimated cereal food aid requirements of 30 600 tonnes.

Due to the reported existence of high maize stock levels in Malawi, it was recommended that the food aid cereal should be bought locally. The Mission forecast the following with respect to the 2003/04 marketing year (FAO, WFP, 2003b):

- Available cereal: 2 319 000 tonnes.
- Consumption requirements: 2 413 000 tonnes.
- Shortage: 94 000 tonnes.
- An adequate food supply is expected, mainly due to:

    - High levels of carryover stocks and other types of crops
    - High (but unrecorded) quantities of maize and rice, which are informally imported from neighbouring countries.

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 5.

Table 5: Most recent cereal estimations for Malawi (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	2.1	2.4	0.027	0.111
Maize	2.0	2.2	0.027	0.073

(Source: Most recent SADC REWU Balance Sheets)

3.5 Mauritius

3.5.1 General information

- The population growth rate was 1.0% per annum in 2001.
- Marketing year: January - December.
- Major domestic food crops: Wheat, rice, maize.

Part 6

- Share of staple foods in total calorie intake:
    - Cereals 48%
    - Pulses 4%
    - Roots and tubers 1%

(Sources: SADC FANR & The World Bank, World Development Indicators database, April 2003)

3.5.2 Grain supply and demand situation and outlook

Figure 20: Mauritius maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

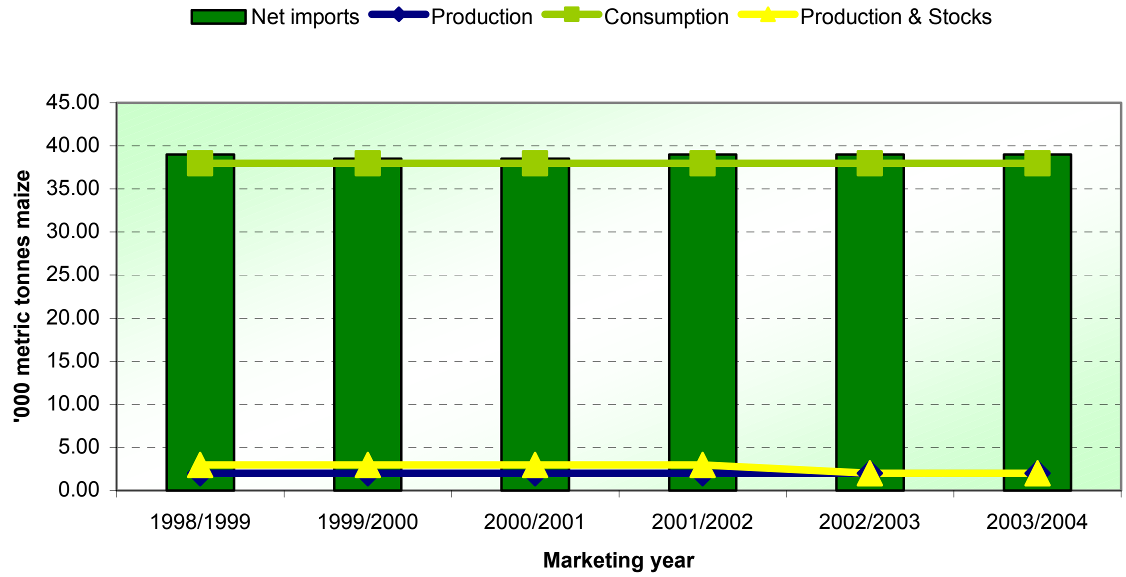


Figure 21: Mauritius maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

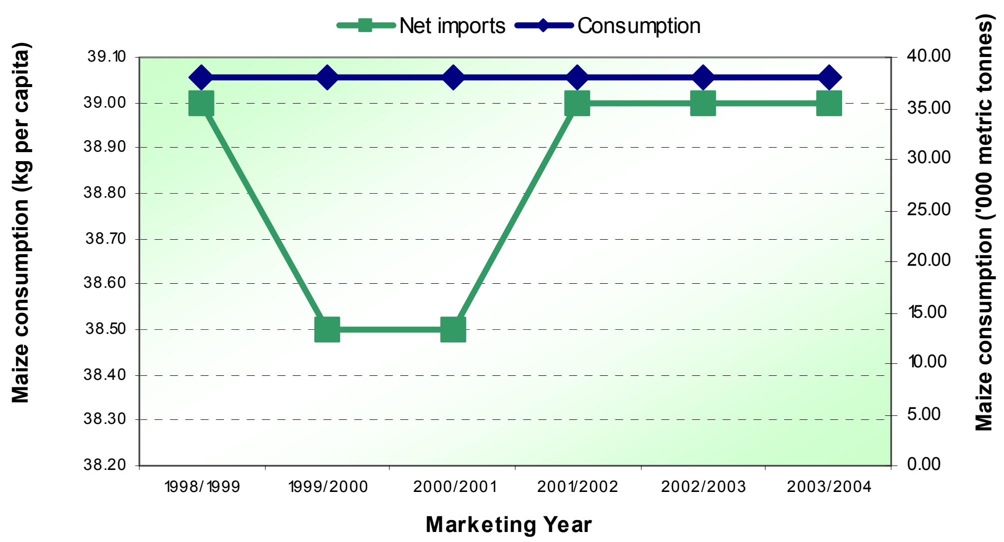


Figure 22: Mauritius wheat supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets)

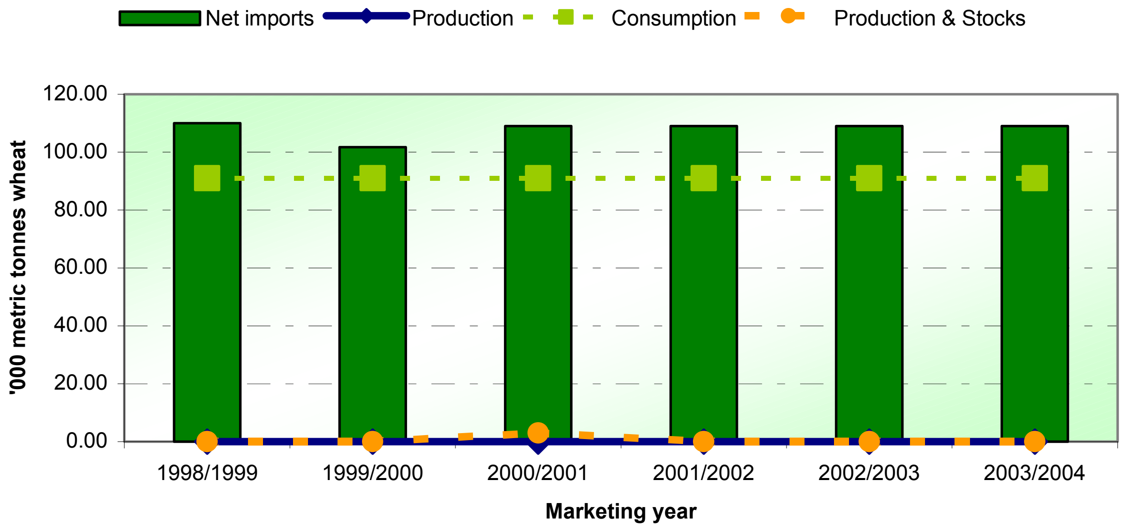
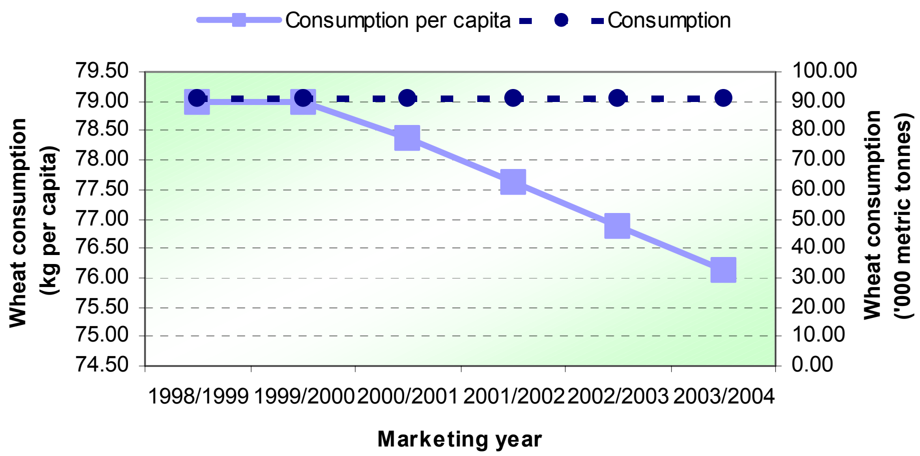


Figure 23: Mauritius wheat consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets and population data)



Mauritius is mainly a net importer of wheat, rice and maize (SADC REWU). Table 6 gives the most recent cereal estimations according to the SADC REWU Balance Sheets.
The country is not listed by FAO GIEWS as having food security problems.

Table 6: Most recent cereal estimations for Mauritius (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	0.002	0.199	0.203	0
Wheat	0	0.091	0.109	0
Maize	0.002	0.038	0.039	0

(Source: Most recent SADC REWU Balance Sheets)

3.6 Mozambique

3.6.1 General information

- Mozambique is generally described as being a food deficit country with the potential to achieve self-sufficiency in the near future.
- Food production is improving following the return to peace, but the distribution from the surplus in the north to the deficit south remains problematic.
- The population growth rate is 3.0% per annum.
- Marketing year: April - March.
- Major domestic food crops: Cassava, maize, roots, tubers, sorghum, rice.
- Share of staple foods in total calorie intake:
    - Cereals 44% (maize 29%; rice 5%; wheat 5%; sorghum/millet 5%)
    - Cassava 36%

(Source: SADC FANR)

3.6.2 Grain supply and demand situation and outlook

Figure 24: Mozambique maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

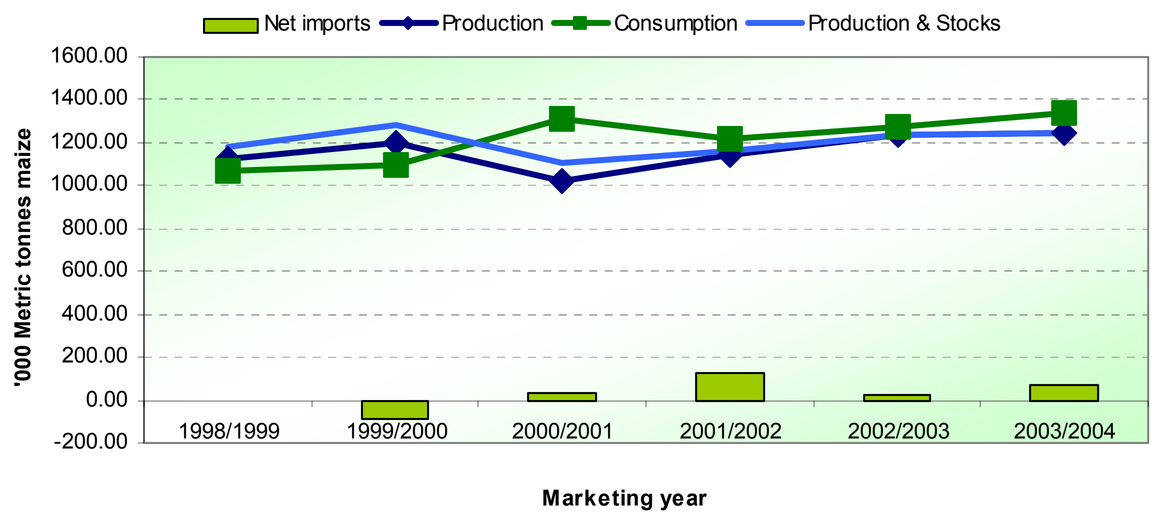


Figure 25: Mozambique maize consumption in total and per capita for the period 1998/99 to 2003/04
(Source: based on data from SADC REWU maize balance sheets and population data)

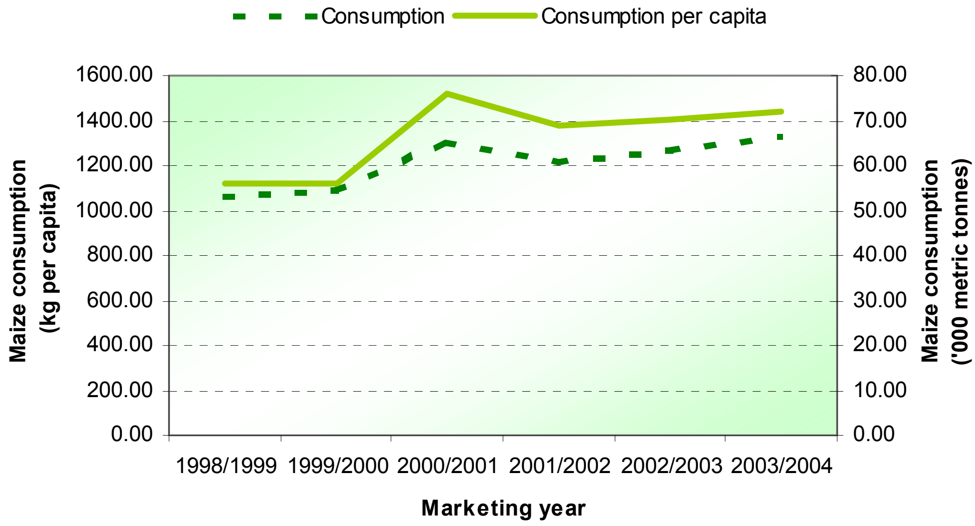
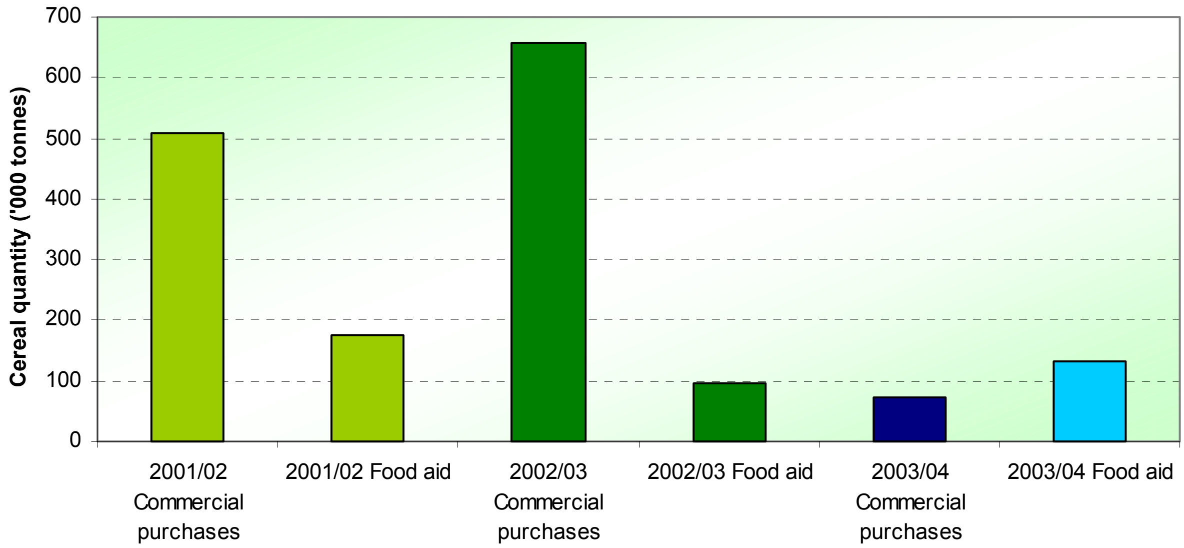


Figure 26: Mozambique estimated cereal import requirements - 2001/02, 2002/03, 2003/04
(Source: FAO GIEWS)



Mozambique is currently facing a food emergency, mainly due to drought in southern parts of the country and floods (FAO, GIEWS, 2003a, 2003c, 2003d). The country is classified by FAO, GIEWS (2003a) as having a food as a result of unfavourable prospects for current crops and / or uncovered shortfalls.

At the national level, Mozambique has an acceptable food situation. However, the combination of the drought in southern Mozambique and the prevalence of HIV / AIDS, has led to the need for food assistance (FAO, GIEWS, 2003a, 2003b, 2003c). According to FAO, GIEWS (2003a) an estimated 950 000 people in Southern Mozambique are going to need emergency food aid in

2003/04. Maize production in the main northern and central agricultural regions is expected to be above average and will consequently lead to increase maize production for the third successive year and harvesting of a bumper crop (FAO, GIEWS, 2003a, 2003b; FAO, WFP, 2003c). A major problem in Mozambique is that even though surplus production exists in the northern parts of the country, it cannot be easily transported to the southern region due to poor road and railway infrastructure (FAO / WFP, CFSAM, 2003). Rice production for the 2002/03 season is estimated at 180 000 tonnes, which is an improvement on the 2001/02 season (FAO, GIEWS, 2003b).

A Crop and Food Supply Assessment was conducted by FAO and WFP during April and May 2003 (FAO, WFP, 2003c). The Mission forecast the following with respect to the 2002/03 marketing year (FAO, WFP, 2003c):

- Total cereal production: 1.8 million tonnes (2.5% higher than 2001/02).
- An estimated 156 000 tonnes of food aid required for an estimated 949 000 drought affected and vulnerable people in the country (especially in some central regions and the south).
- Procurement of the food aid (mostly) from sources outside the country.

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 7.

Table 7: Most recent cereal estimations for Mozambique (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	1.735	2.358	0.686	0
Maize	1.250	1.335	0.141	0

(Source: Most recent SADC REWU Balance Sheets)

3.7 Namibia

3.7.1 General information

- Namibia is generally described as an arid or semi-arid, food deficit country with cereal production mainly in the northern parts of the country.
- The population growth rate is 2.6% per annum.
- Marketing year: May - April.
- Major domestic food crops: Millet, maize and wheat.
- Share of staple foods in total calorie intake:
    - Cereals 60% (maize 23%; millet 24%, wheat 13%)

(Source: SADC FANR)

3.7.2 Grain supply and demand situation and outlook

Figure 27: Namibia maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

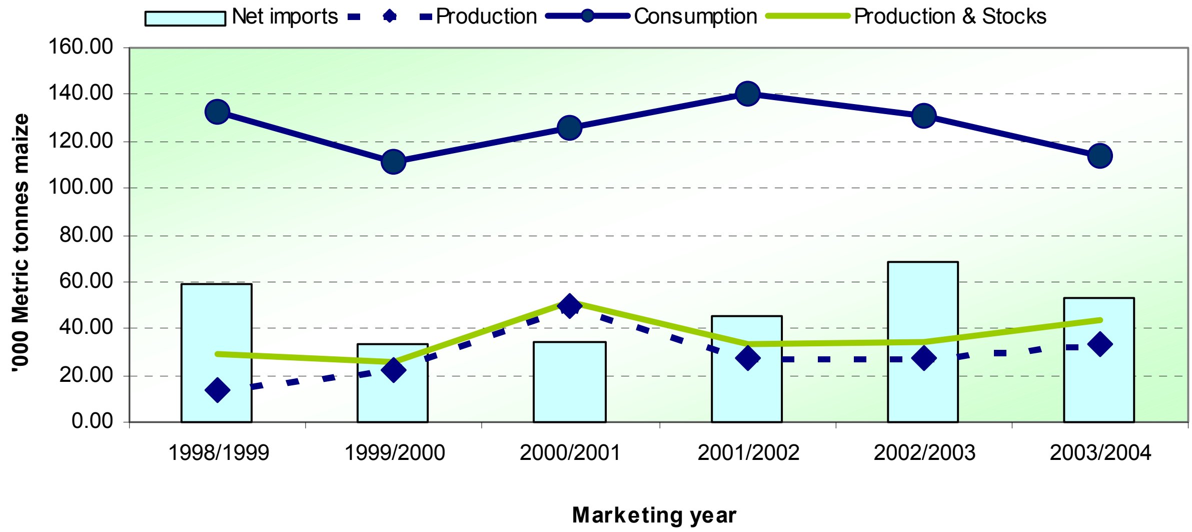


Figure 28: Namibia maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

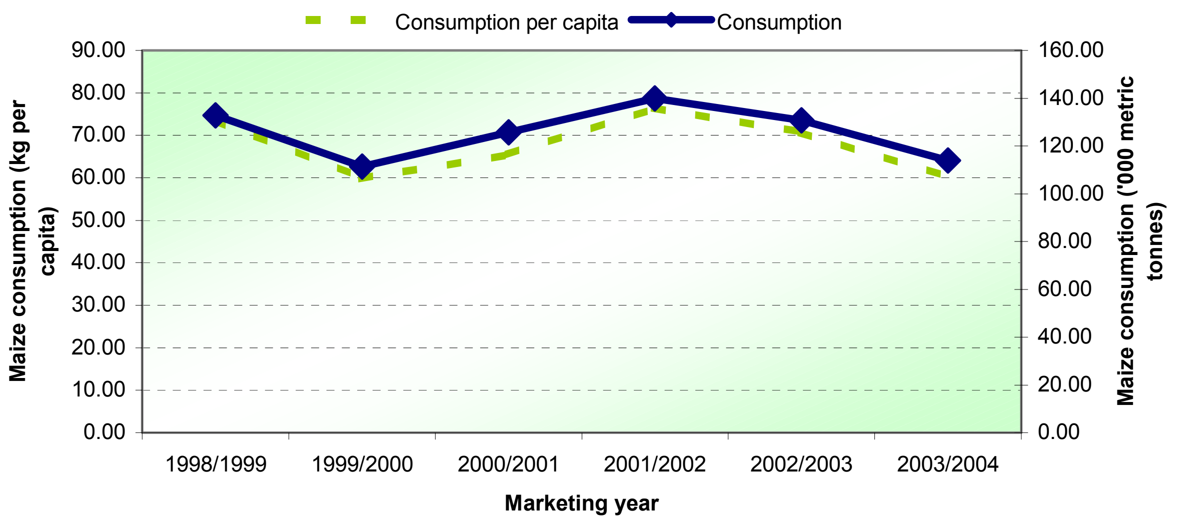


Figure 29: Namibia millet supply and demand for the period 1998/99 to 2003/04
(Source: based on data from SADC REWU sorghum & millet balance sheets)

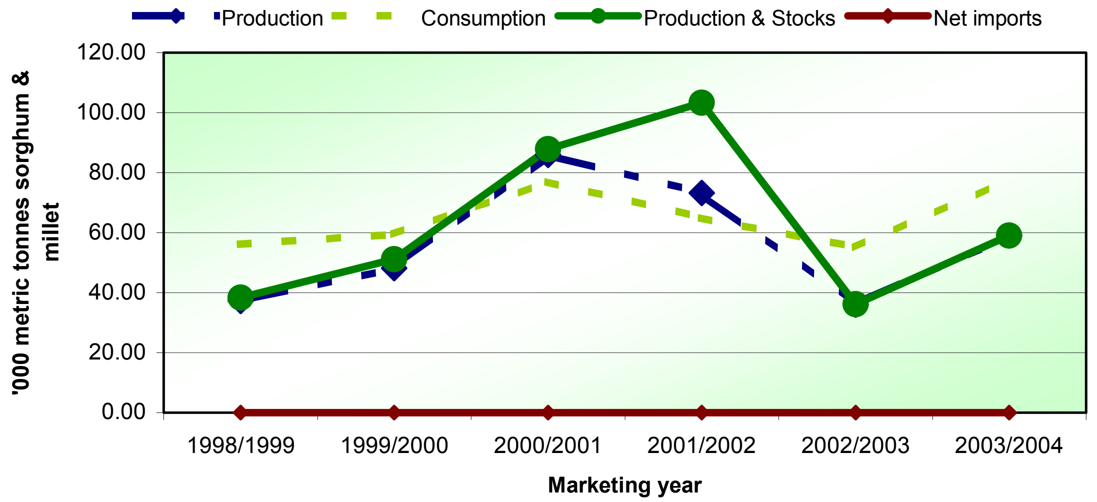
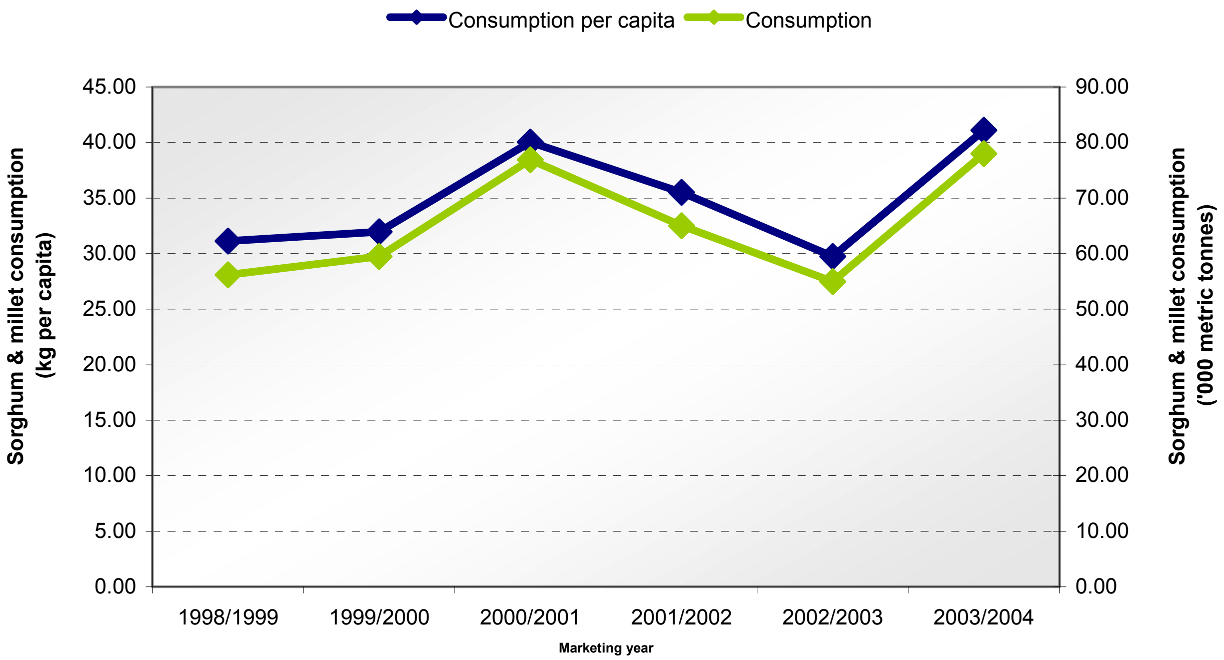


Figure 30: Namibia millet consumption in total and per capita for the period 1998/99 to 2003/04
(Source: based on data from SADC REWU sorghum & millet balance sheets and population data)



The harvest of the 2002/03 cereal crop has been completed in Namibia. Severe dry weather in the Caprivi region lead to reduced harvests (FAO, GIEWS, 2003d). According to the official estimates the following is expected for the 2002/03 marketing year (FAO, GIEWS, 2003d, 2003e):

- Total cereal production: 102 000 tonnes (38% higher than for the 2001/02 season and above average).
- Sorghum & millet production: 77 600 tonnes.

SADC food security situation

- Maize production: 31 800 tonnes.
- Wheat production: 9 500 tonnes.
- Total cereal import requirement will decline to 108 000 tonnes (will be covered by commercial imports).

It is anticipated that the national food supply situation will be satisfactory during 2003/04. The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 8.

Table 8: Most recent cereal estimations for Namibia (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	0.101	0.257	0.104	0.036
Maize	0.033	0.114	0.054	0.032
Sorghum / Millet	0.059	0.078	0	0

(Source: Most recent SADC REWU Balance Sheets)

3.8 South Africa

3.8.1 General information

- South Africa is generally seen as a net food exporter (especially with respect to maize) and a wheat importer.
- The country is generally susceptible to severe periodic droughts.
- Marketing year: May – April.
- Major domestic food crops: Maize, Wheat.
- Share of staple foods in total calorie intake:
    - Cereals 54% (coarse grains 65%; wheat 31%; rice 4%

(Source: SADC FANR)

3.8.2 Grain supply and demand situation and outlook

Figure 31: South Africa maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

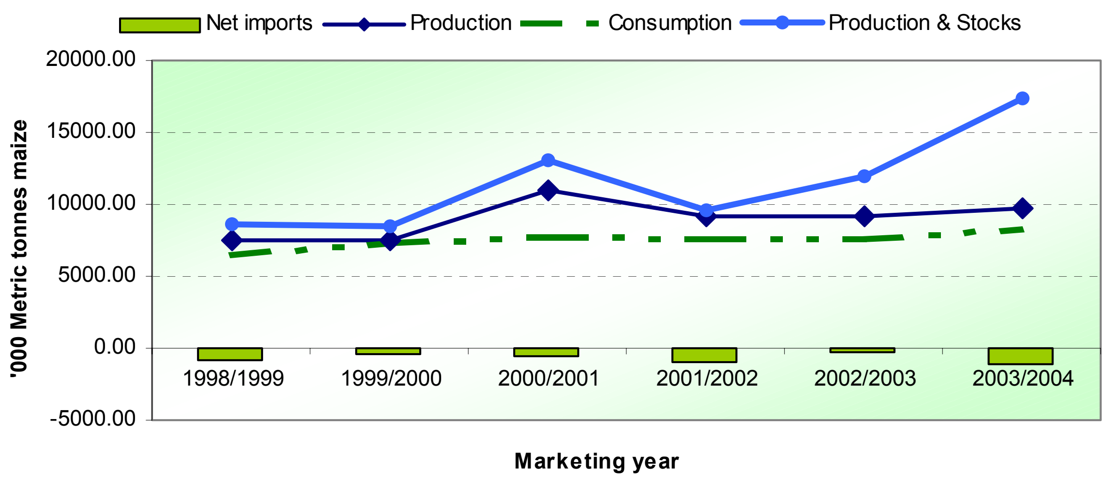


Figure 32: South Africa maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

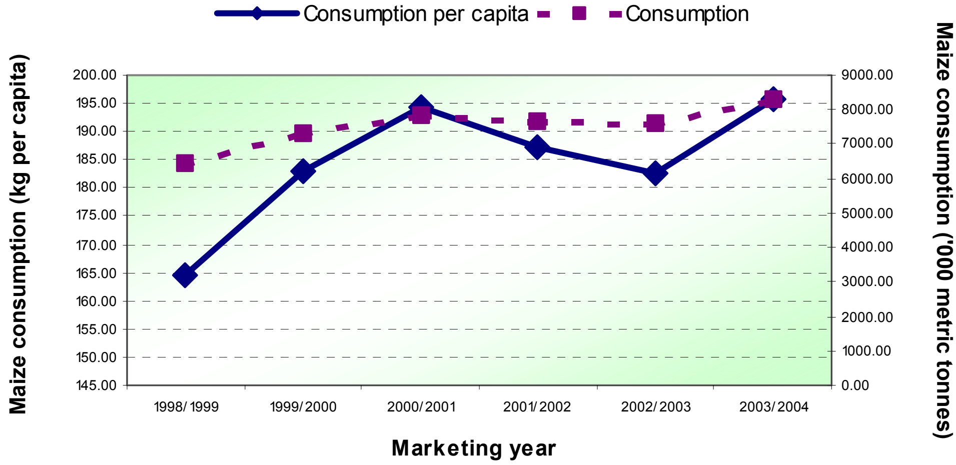


Figure 33: South Africa wheat supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets)

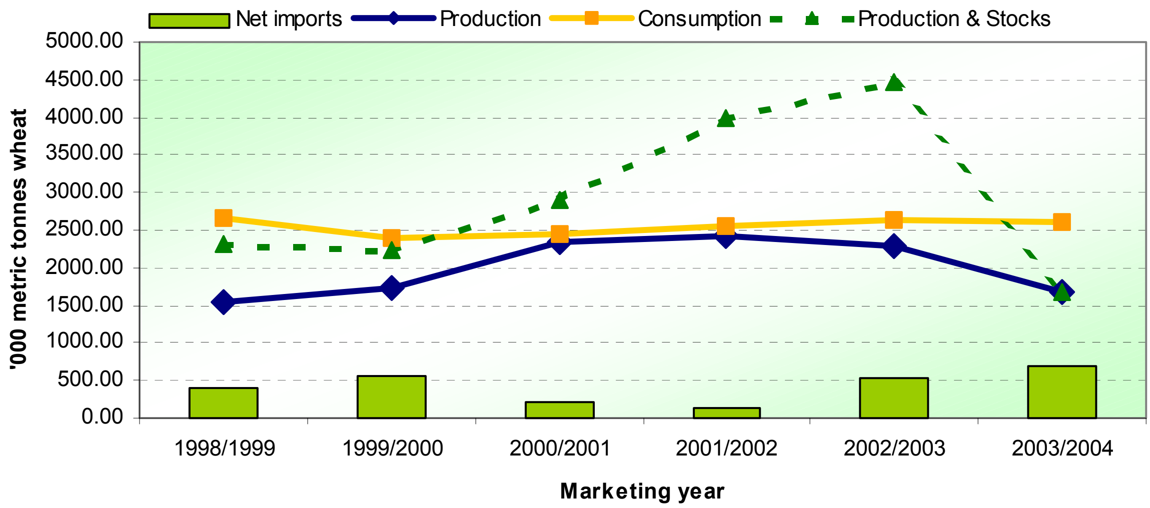
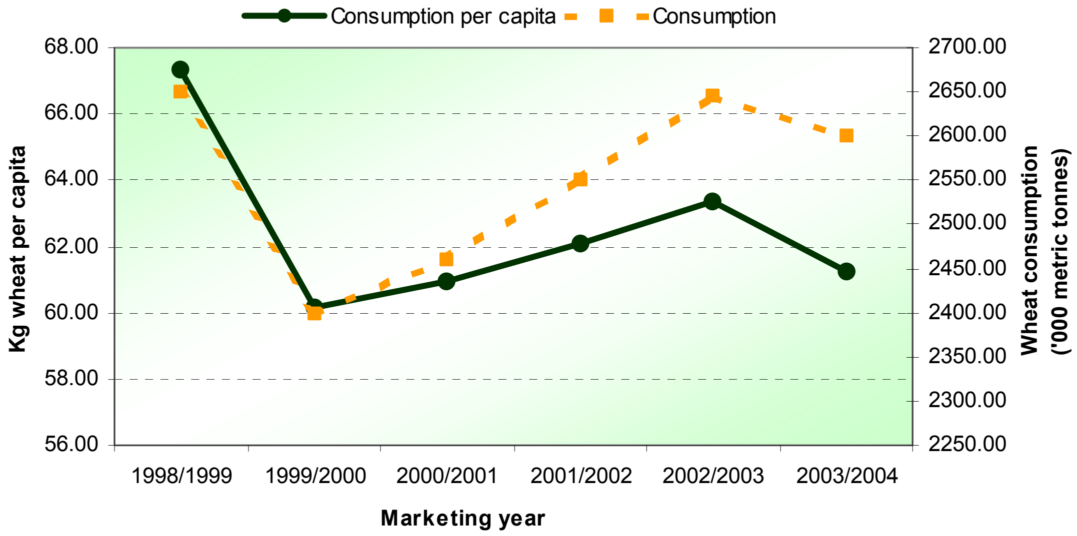


Figure 34: South Africa wheat consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets and population data)



FAO, GIEWS (2003e) reported in September 2003 that the coarse grain production in South Africa has declined by 8% to a level of 9.7 millions tonnes in the 2002/03 season. The decline can be attributed to drought in certain production areas. It is expected that export availability will remain at the 2001/02 levels, with increased levels of white maize production and decreased levels of yellow maize production (FAO, GIEWS, 2003a, 2003d).

South Africa's wheat production accounts for over 80% of the sub-region's aggregate production (FAO, GIEWS, 2003e). Planting intentions of the 2003/04 wheat crop in June 2003 indicated a decline of 11% in the planted area (to 841 000 hectares) due to lower prices (FAO, GIEWS, 2003a). According to the first official production estimates, reported in September 2003 by FAO, GIEWS (2003e), the expected 2003/04 wheat harvest is 1.6 million tonnes (34%lower than previous year and below average).

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 9.

Table 9: Most recent cereal estimations for South Africa (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	11.655	11.150	0.980	0
Maize	9.714	8.309	0.100	0
Wheat	1.685	2.601	0.805	0

(Source: Most recent SADC REWU Balance Sheets)

3.9 Swaziland

3.9.1 General information

- Swaziland is generally seen as a food deficit country but has achieved near self-sufficiency in recent years.
- The country is land-locked.
- The population growth rate is 3.2% per annum.
- Marketing year: May - April.
- Major domestic food crops: Maize.
- Share of staple foods in total calorie intake:
    - Cereals 75% (maize 64%; wheat 10%; rice 1%).

(Source: SADC FANR)

3.9.2 Grain supply and demand situation and outlook

Figure 35: Swaziland maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

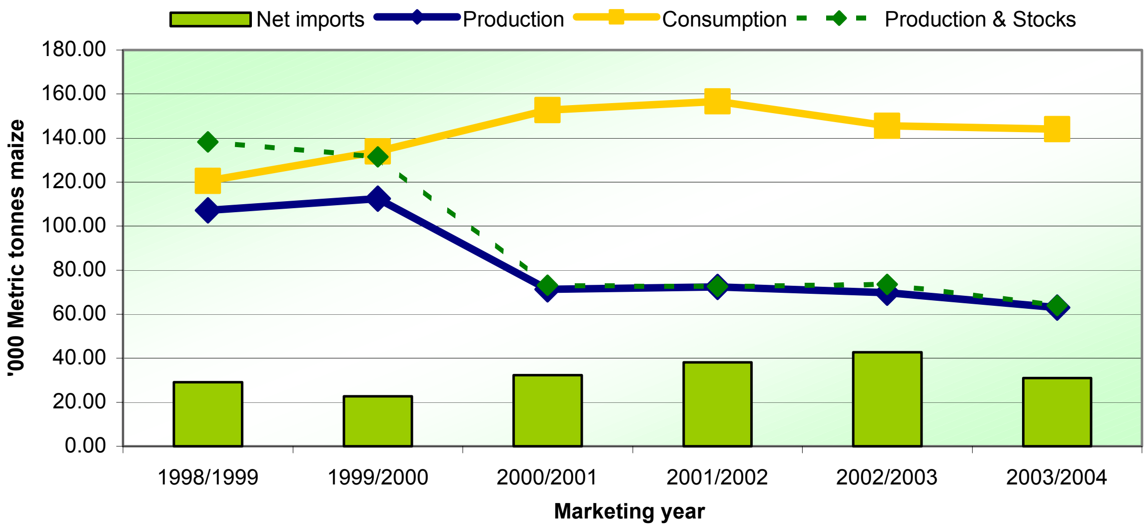


Figure 36: Swaziland maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

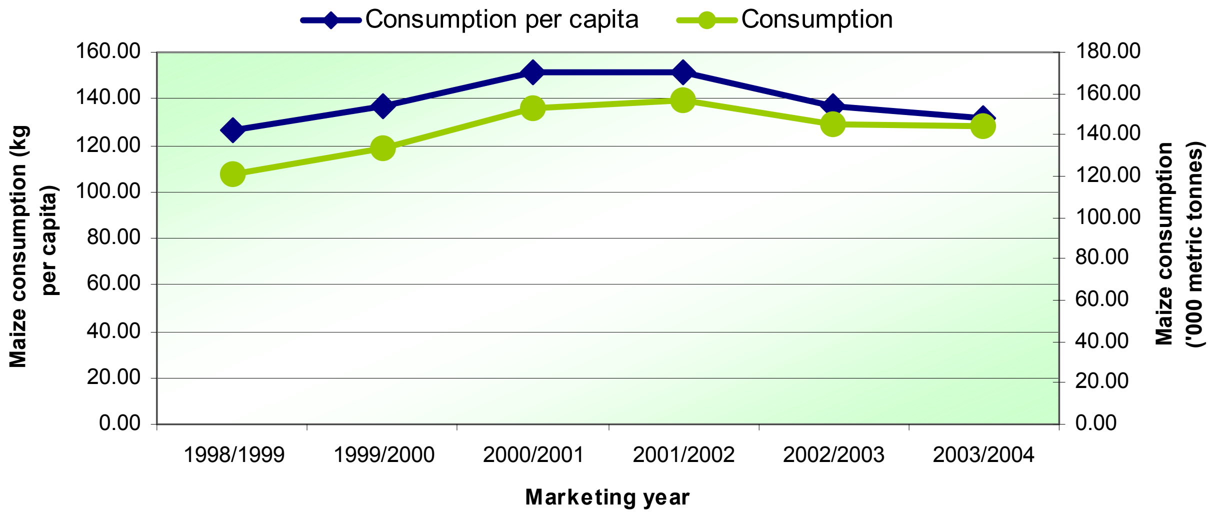


Figure 37: Swaziland wheat supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets)

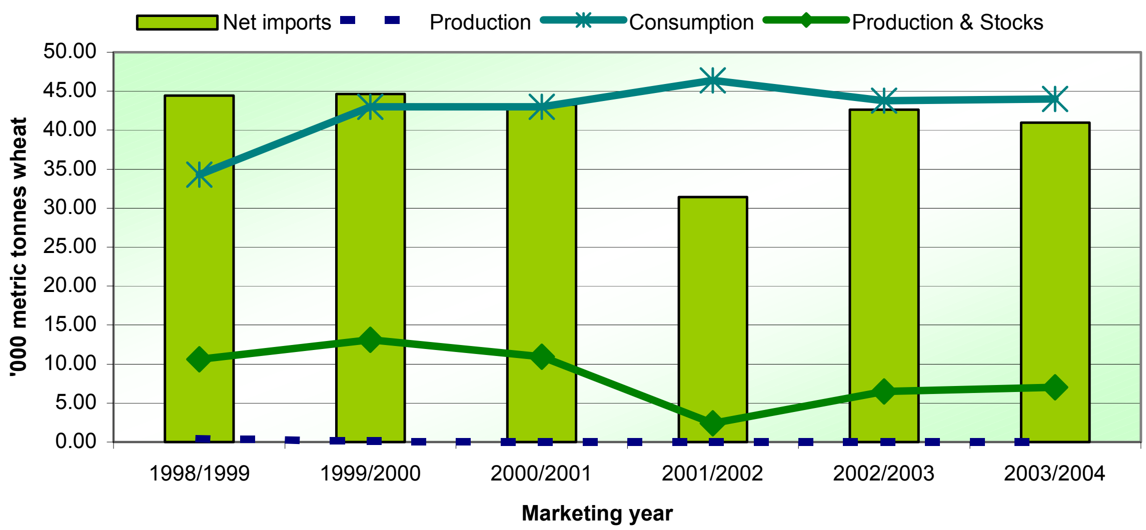


Figure 38: Swaziland wheat consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets and population data)

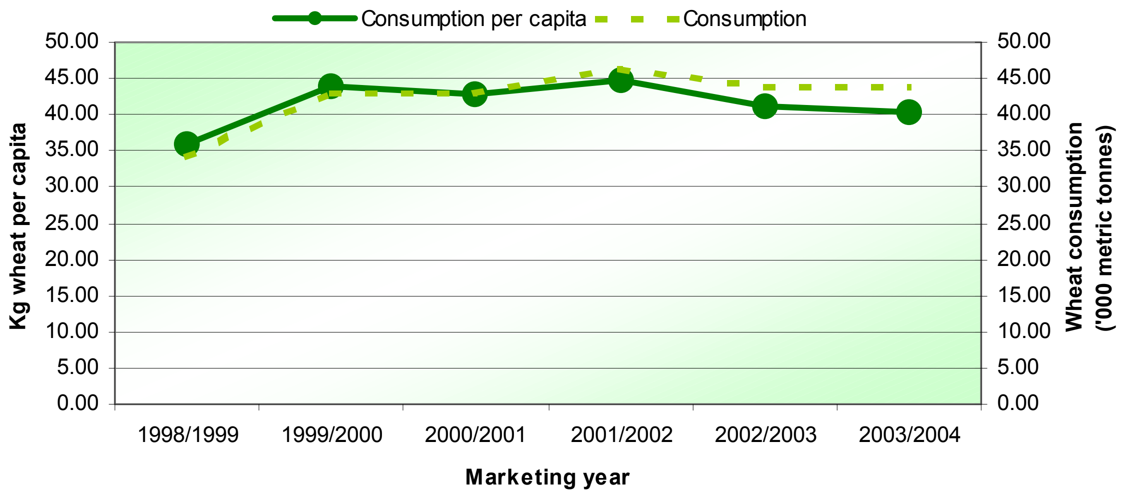
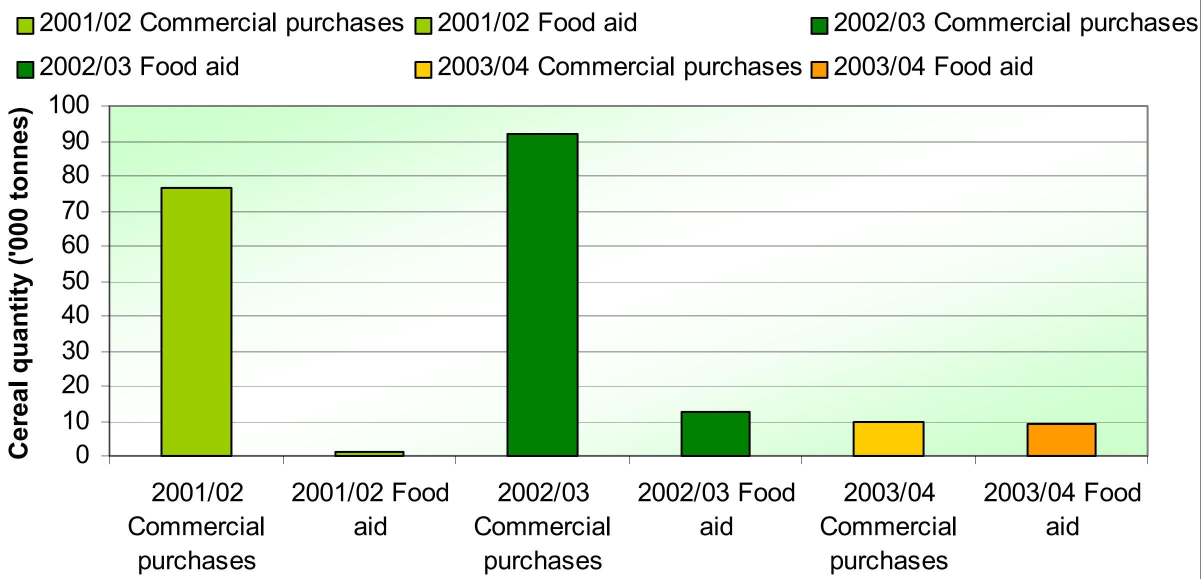


Figure 39: Swaziland estimated cereal import requirements - 2001/02, 2002/03, 2003/04

(Source: FAO GIEWS)



Swaziland is facing a food emergency, mainly due to drought in parts of the country and also due to the effects of HIV / AIDS in the country (FAO, GIEWS, 2003a, 2003b, 2003c, 2003d). A Crop and Food Supply Assessment was conducted by FAO and WFP during May 2003. The Mission forecast the following with respect to the 2002/03 marketing year (FAO, WFP, 2003d):

- Maize production: 73 000 tonnes (6% higher than for the 2001/02 season, but 30% below the five year average for the country).

SADC food security situation

- Due to the improvement in maize production and improved commercial import capacity, no cereal shortages were anticipated at the national level in Swaziland.
- It was estimated that 132 250 people in Swaziland required food assistance immediately (157 750 people by December 2003 and 217 000 people during the period January to March 2004).
- An estimated 24 300 tonnes of food aid was required (to be fully met by the current Government and WFP stocks and pipeline).

No cereal shortages were foreseen in 2003/04 due to improved commercial import capacity and the lower maize prices in South Africa (FAO, GIEWS, 2003d).

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 10.

Table 10: Most recent cereal estimations for Swaziland (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	0.063	0.204	0.085	0.063
Maize	0.063	0.144	0.033	0.053
Wheat	0	0.044	0.042	0.004

(Source: Most recent SADC REWU Balance Sheets)

3.10 Tanzania

3.10.1 General information

- Tanzania is generally seen as a marginally self-sufficient country with maize and rice surpluses in some years and internal food distribution problems.
- The population growth rate is 2.8% per annum.
- Marketing year: June - May.
- Major domestic food crops: Maize, roots, tubers, sorghum, pulses, plantains, rice.
- Share of staple foods in total calorie intake:
    - Cereals 38% (maize 26%; sorghum/millet 6%; rice 5%; wheat 1%)
    - Cassava 25%
    - Pulses 5%
    - Bananas 2%
    - Sweet potato 2%

(Source: SADC FANR)

3.10.2 Grain supply and demand situation and outlook

Figure 40: Tanzania maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

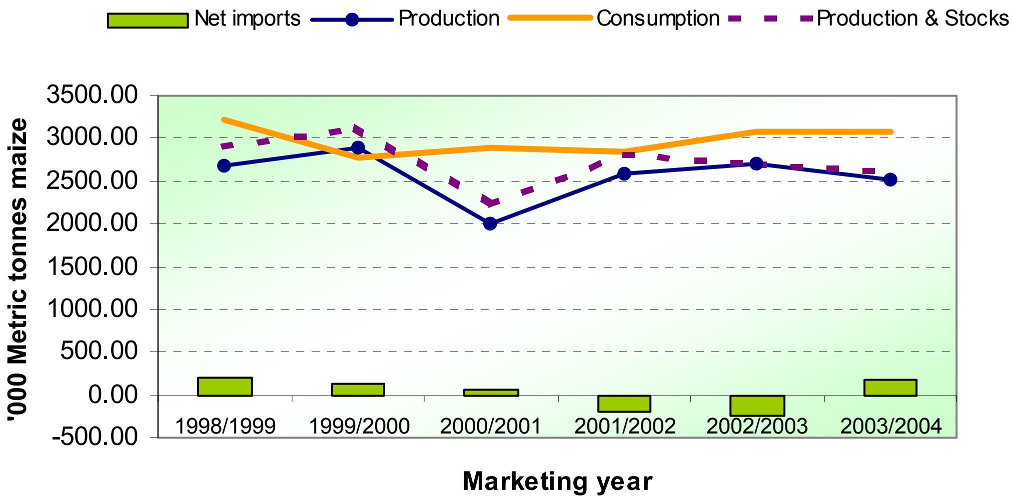


Figure 41: Tanzania maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

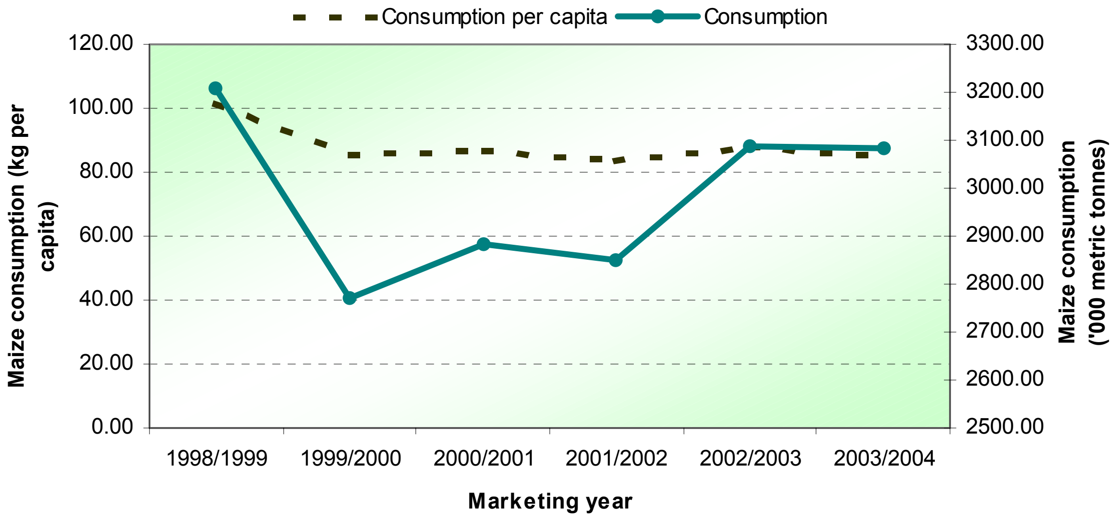
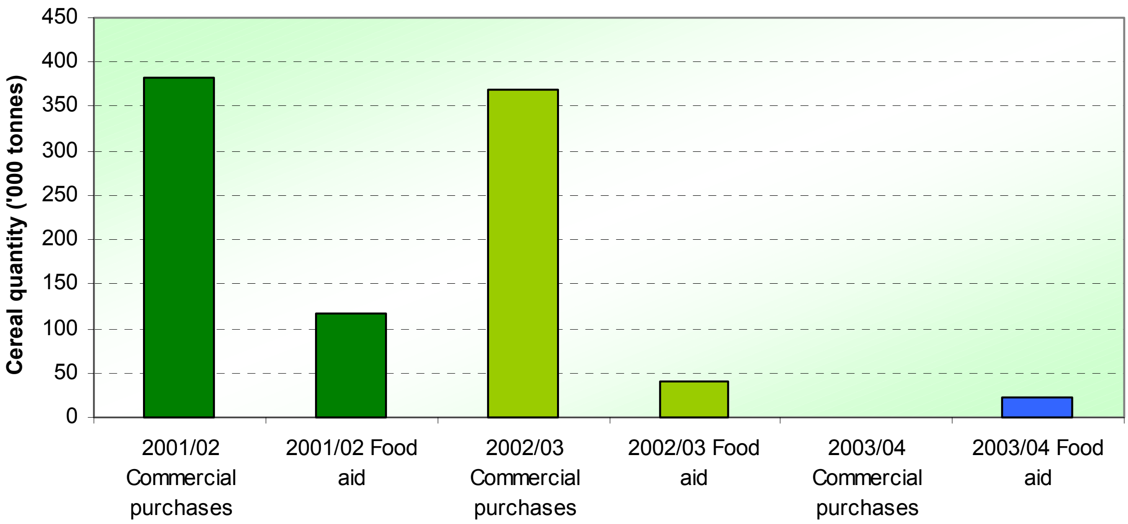


Figure 42: Tanzania estimated cereal import requirements - 2001/02, 2002/03, 2003/04
(Source: FAO GIEWS)



According to FAO, GIEWS (2003a, 2003c, 2003d) Tanzania is facing a food emergency and unfavourable prospects for current crops mainly due to:

- Prolonged drought in many parts of the country, especially the central, southern and eastern regions (leading to a predicted 10% decline in food crop production in 2002/03, compared with the 2001/02 marketing year).
- Refugees.

According to FAO, GIEWS (2003e) the forecast harvest for the 2003 main coarse grain crop season is 3.9 million tonnes, which represents a 10% decline from 2002. The decline can mainly be attributed to drought. The food deficit in the 2003/04 marketing year is predicted as 77 489 tonnes. An estimated 1.9 million people will need food assistance between October 2003 and March 2004. The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 11. There is also an anticipated seed deficit of 3200 tonnes of seed with respect to the next planting season (FAO, GIEWS, 2003d). The national overall food situation in Tanzania is relatively stable.

Table 11: Most recent cereal estimations for Tanzania (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	2.526	3.085	0.190	0.079
Maize	3.837	5.096	0.581	0

(Source: Most recent SADC REWU Balance Sheets)

3.11 Zambia

3.11.1 General information

- Zambia is generally seen as a marginally self-sufficient, land-locked country with irregular maize surpluses and internal food distribution problems.
- The population growth rate is 3.2% per annum.
- Marketing year: May - April.
- Major domestic food crops: Maize.
- Share of staple foods in total calorie intake:
    - Cereals 69% (maize 62%, wheat 4%, sorghum / millet 2 %)

(Source: SADC FANR)

3.11.2 Grain supply and demand situation and outlook

Figure 43: Zambia maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

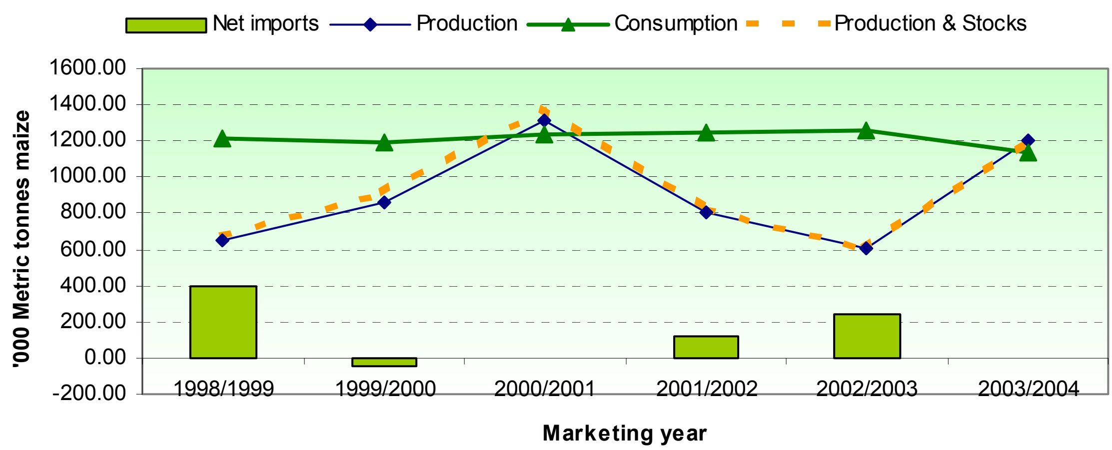


Figure 44: Zambia maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets and population data)

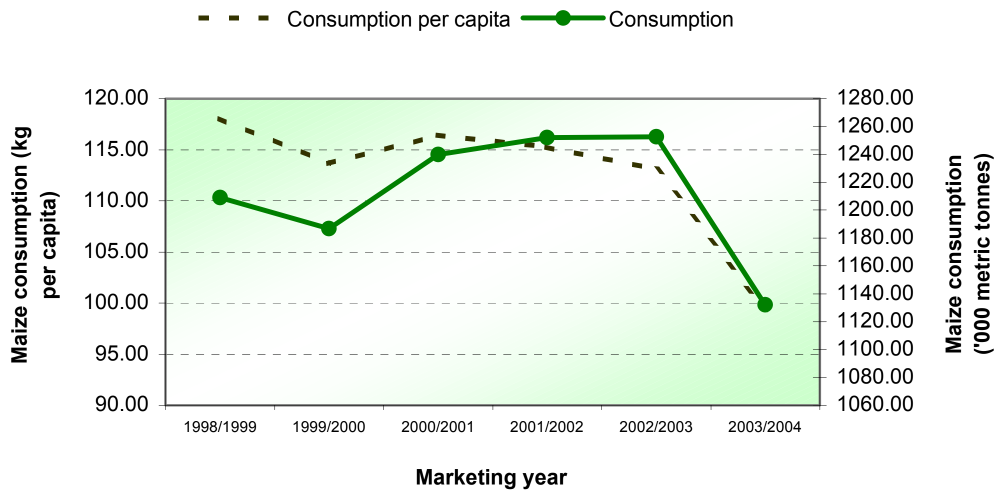
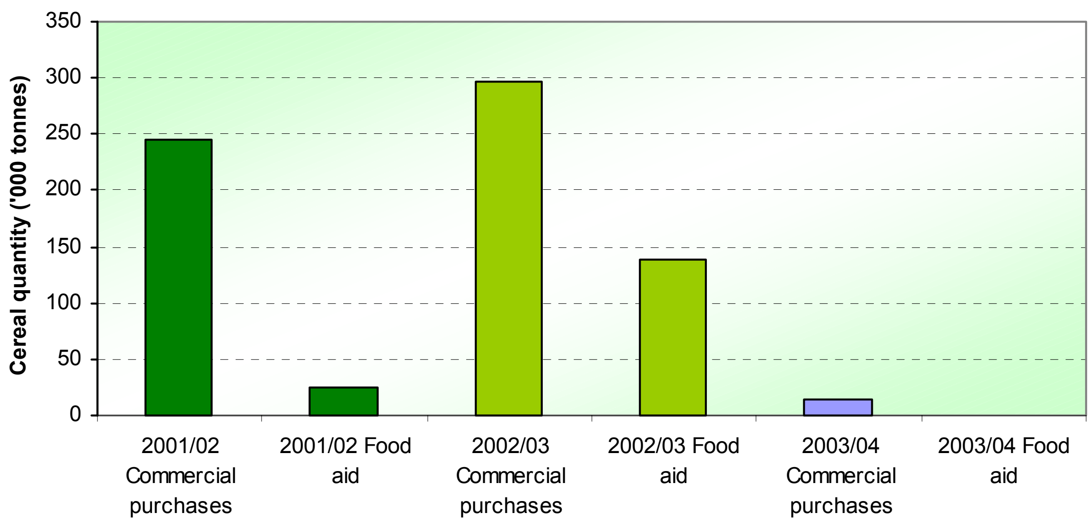


Figure 45: Zambia estimated cereal import requirements - 2001/02, 2002/03, 2003/04

(Source: FAO GIEWS)



According to FAO, GIEWS (2003a, 2003b) Zambia is in need of food aid, mainly due to localized drought and the effects of HIV / AIDS on the country. However, Zambia's cereal production has shown a considerable recovery from the previous dry season.

A Crop and Food Supply Assessment was conducted by FAO and WFP during April and May 2003. The Mission forecast the following with respect to the 2002/03 marketing year (FAO, WFP, 2003e):

- Maize production: 1.16 million tonnes (versus 602 000 tonnes in the 2001/02 season and 28% higher than the 5 year average).
  The increased maize production can be attributed to the following factors:

- Improved rainfall.
- Proper fertilizer distribution programme by the Government.
- Seed provision by NGOs and Government.

- Satisfactory production of other crops such as cassava and sweet potatoes were observed.
- Total cereal production: 1.32 million tonnes (80% higher than the previous season).

According to FAO, GIEWS (2003e) the coarse grain output was 1.2 million tonnes in the 2002/03 marketing year, which is an 85% increase from the previous year. Targeted food assistance will be needed in areas of reduced harvest during 2003/04 (FAO, GIEWS, 2003d).

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 12.

Table 12: Most recent cereal estimations for Zambia (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	1.406	1.346	0.009	0
Maize	1.207	1.132	0	0

(Source: Most recent SADC REWU Balance Sheets)

3.12 Zimbabwe

3.12.1 General information

- The population growth rate is 2.9% per annum.
- Marketing year: April - March.
- Major domestic food crops: Maize, wheat, millet, sorghum.
- Share of staple foods in total calorie intake:
  - Cereals 62% (maize 47%, wheat 8%, sorghum/millet 7%)

(Source: SADC FANR)

3.12.2 Grain supply and demand situation and outlook

Figure 46: Zimbabwe maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

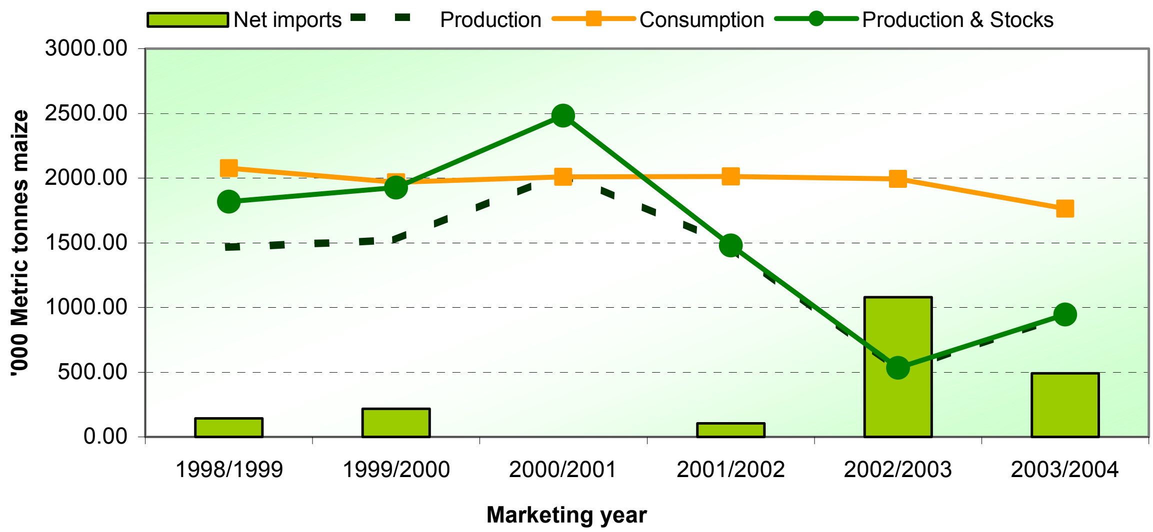
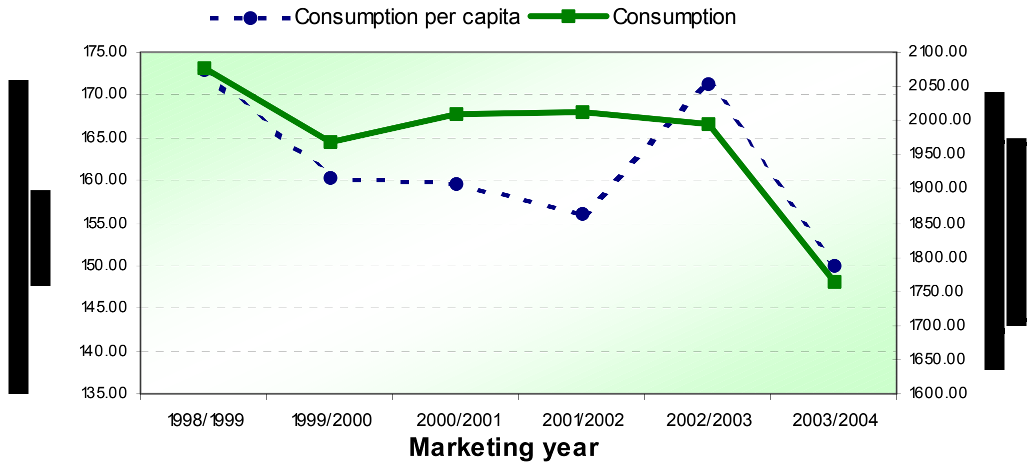


Figure 47: Zimbabwe maize consumption in total and per capita for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU sorghum & millet balance sheets and population data)



According to FAO, GIEWS (2003a, 2003d) Zimbabwe is facing an acute food emergency, mainly due to prolonged drought and ongoing economic disruption. An estimated 5.5 million people will be in need of emergency food assistance during the 2003/04 marketing year (FAO, GIEWS, 2003a, 2003b). A Crop and Food Supply Assessment was conducted by FAO and WFP during April and May 2003. The Mission forecast the following (FAO, WFP, 2003f):

- 2003/04 Total cereal output for consumption: 980 000 tonnes (41% higher than 2002/03 season, 51% lower than 2000/01).
- 2003/04 Maize production (803 000 million tonnes (61% higher than 2002/03, but 46% lower than in 2000/01)).
- 2003/04 Cereal import requirement: 1.3 million tonnes (including maize: 980 000 tonnes).
- Anticipated commercial cereal import: 377 000 tonnes.
  - 370 000 tonnes maize.
  - 298 000 tonnes wheat.
  - 9 000 tonnes rice.
- Maize deficit to be met by emergency food aid: 610 000 tonnes (since the country is experiencing an acute shortage of foreign exchange).
  - 140 000 tonnes are in the pipeline.
  - 470 000 tonnes to be covered by additional pledges.

The most important reasons for the much lower than normal production of cereals in 2002/03 are:

- Irregular rainfall.
- Inadequate availability of seed and fertilizer.
- Newly settled farmers not being able to utilize all the land due to lack of adequate capital and inputs, or collateral to procure capital and inputs.

According to FAO, GIEWS (2003e) the Zimbabwe wheat production is forecast at 90 000 tonnes, which is a reduction of 44% from the 2002 season. Following the land reform programme, the large-scale commercial sector in Zimbabwe only produces about one tenth of its output in the 1990s. In late May 2003 the Zimbabwe government raised the maize meal price four-fold. This will mean even worse access to the available food supplies for the most vulnerable population in the country (FAO, GIEWS, 2003d).

The most recent cereal estimations according to the SADC REWU Balance Sheets are given in Table 13.

Table 13: Most recent cereal estimations for Zimbabwe (millions of metric tonnes)

Crop:	Production:	Consumption:	Total imports:	Import gap:
Total cereals	1.185	2.272	0.573	0.699
Maize	0.945	1.764	0.492	0.626

(Source: Most recent SADC REWU Balance Sheets)

4. The SADC region: Summary of current food supply situation

The purpose of this section is to provide an overview of the current food supply situation in the SADC region as a whole. Figures 49 and 50 display the maize and wheat supply and demand for the SADC region (excluding South Africa) for the period 1998/99 to 2003/04.

Figure 48: SADC (excluding South Africa) maize supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU maize balance sheets)

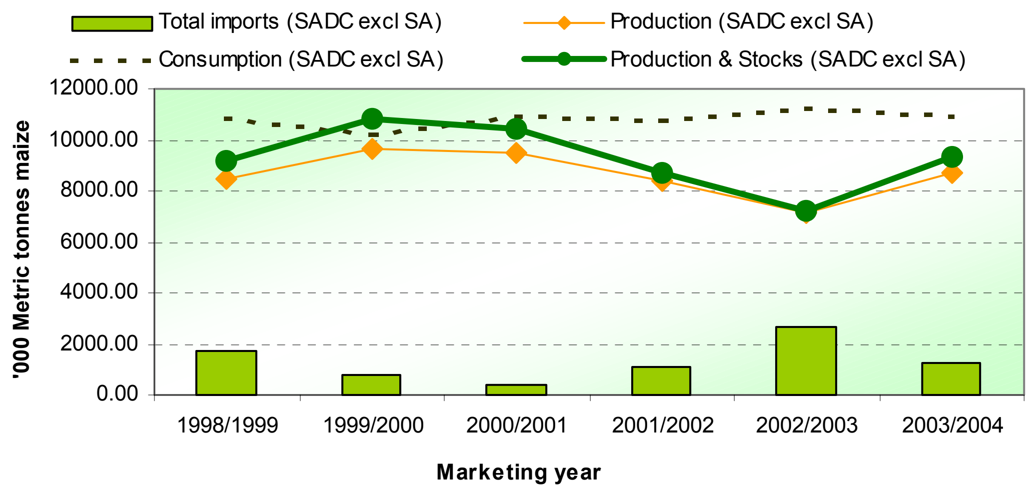
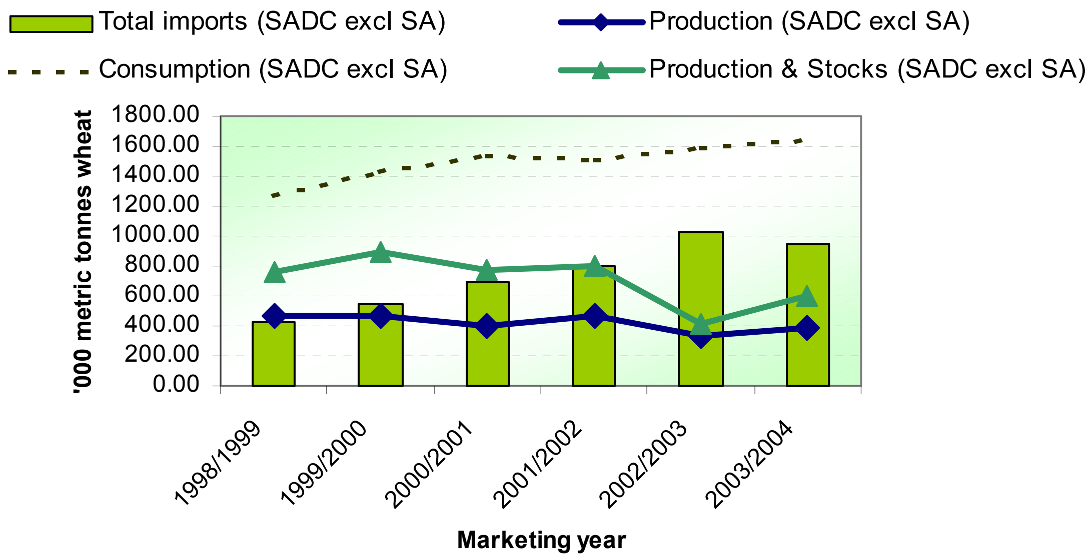


Figure 49: SADC (excluding South Africa) wheat supply and demand for the period 1998/99 to 2003/04

(Source: based on data from SADC REWU wheat balance sheets)



After a serious food crisis during the recent past the food supply situation in southern Africa has eased due to the new harvest, even though the harvest is still below average (FAO, GIEWS, 2003a, 2003b). Production in most SADC countries has recovered from the reduced harvests of the previous two years. Despite a delay in the start of the rains and localized dry spells in the first part of the season, abundant rain has fallen since mid-February (FAO, GIEWS, 2003c). Southern Africa's aggregate 2003/04 cereal import requirement is estimated at 3.8 million tonnes (below the 2002/03 level). Commercial imports are estimated at 3.5 million tonnes, leaving a food aid requirement of 0.3 million tonnes (latest SADC REWU cereal balance sheets). According to FEWSNET (2003) (based on SADC FANR information) the unfilled cereal import gap in Zimbabwe was more than 700 000 metric tonnes at 31 August 2003 with Angola and Tanzania also facing substantial uncovered import gaps of 550 000 MT and 360 000 MT respectively.

According to the latest estimates by the FAO reported in FAO, GIEWS (2003e) (September 2003), the estimated aggregate SADC 2002/03 coarse grain output is estimated as 16.5 million tonnes (5% higher than 2002 and above average). Maize production is estimated as 15.3 million tonnes (5% increase from previous year) mainly due to favourable weather conditions. The harvest outcome at national level was varied. Maize prices have declined considerably in several countries in the sub-region, improving access to food for poorer and vulnerable segments of the population (FAO, GIEWS, 2003a). Table 14 displays the maize import requirements for the SADC countries (excluding DRC) with and without desired stock replenishment.

Table 14: Maize import requirements for SADC countries (excluding DRC) with and without desired stock replenishment for the 2002/03 and 2003/04 production seasons.

Country*	Import requirements / Exportable surplus			
	With no stock replenishment		With desired stock replenishment	
	2003/04	2002/03	2003/04	2002/03
Angola	-98,000	-297,000	-148,000	-347,000
Botswana	-115,000	-110,000	-127,000	-130,000
Lesotho	-167,000	-163,000	-177,000	-173,000
Malawi	50,000	-672,000	-50,000	-732,000
Mozambique	-59,000	-22,300	-59,000	-22,300
Namibia	-74,000	-97,100	-84,000	-107,100
RSA	2,105,000	1,890,600	1,074,000	984,600
Swaziland	-81,000	-75,800	-84,000	-78,800
Tanzania	-335,000	-162,000	-485,000	-312,200
Zambia	175,000	-624,000	119,000	-639,000
Zimbabwe	-790,000	-1,479,100	-1,040,000	-1,979,000
TOTAL:	611,000	-1,810,900	1,060,000	-3,535,800

(Source: SADC FANR as reported by FEWSNET Southern African Food Security Brief, August – September 2003)
(No data was available for Mauritius, Seychelles and DRC)*

It is evident from Table 14 that a maize surplus of 611 000 MT is expected in the 2003/04 season (compared with the 1.8 million MT deficit of 2002/03). When the desired stock replenishment is taken into account, the SADC region maize deficit comes to 1.1 million MT (compared with the 3.5 million MT deficit of 2002/03). The improved situation can be attributed to decreased shortfalls in countries such as Angola, Zambia and Zimbabwe. Increased import requirements were observed in Tanzania, Mozambique, Lesotho, Botswana and Swaziland. The 2003/04 SADC regional import requirements will be below the 1998/99 to 2002/03 average level (FEWSNET, 2003).

According to the latest SADC REWU maize balance sheets, the predictions for the 2003/04 maize season are:

- Production (gross harvest): 18.4 million tonnes.
- Consumption (gross domestic requirements): 19.2 million tonnes.
- Total commercial imports: 1.2 million tonnes.
- Total food aid imports: 0.2 million tonnes.

According to early and more recent information, the overall prospects for the 2003 wheat crop (to be harvested October / November) is unfavourable, mainly due to the reduction in the area of wheat planted (FAO, GIEWS, 2003b, 2003e). The FAO's estimate of the SADC production of wheat in 2002 indicates an average output of 2.5 million tonnes (FAO, GIEWS, 2003b).

According to the latest SADC REWU wheat balance sheets, the predictions for the 2003/04 wheat season are:

- Production (gross harvest): 2.1 million tonnes.
- Consumption (gross domestic requirements): 4.2 million tonnes.
- Total commercial imports: 1.7 million tonnes.
- Total food aid imports: 77 000 tonnes.

5. Overview of information sources on the SADC region and food security

5.1 Data information sources

SADC REWU Cereal Balance sheets obtained from Phumzile Mdladla at FANR SADC. E-mail address: pmdladla@fanr-sadc.co.za .

Rona Beukes, ASD: Food Security Statistics, Directorate Agricultural Statistics, National Department of Agriculture, Tel: +27-12-319 6154, Fax: +27-12-319 6267, E-mail: RonaB@nda.agric.za .

5.2 FAO, GIEWS publications

- Foodcrops and shortages.
- Food outlook.
- Food supply situation and crop prospects in Sub-Saharan Africa.

Available at: http://www.fao.org/giews/english/giewse.htm

5.3 FAO & WFP publications

Special reports on various countries experiencing food supply problems.

Available at: http://www.fao.org/giews/english/giewse.htm

5.4 SADC Barometer

SADC Barometer is a new quarterly analysis by the South African Institute of International Affairs, which focuses on key issues and trends affecting the Southern African Development Community. It is part of a two-year NORAD-funded project to monitor progress toward regional integration and development.
Obtained from:
Sanusha Naidu (Ms)
Research Specialist
Integrated Rural and Regional Development
HSRC
Durban
South Africa
083 637 0903 (mobile)
Fax No. 27 (0)31 273 1403
http://www.hsrc.ac.za
http://www.sarpn.org.za

5.5 USAID Occasional papers

Haddad, L & Frankenberger, T. (2003) *Integrating relief and development to accelerate reductions in food insecurity in shock-prone areas.* Occasional Paper No. 2, June 2003, USAID Office of Food for Peace.
It can be accessed directly at: http://www.sarpn.org.za/documents/d0000519/index.php

5.6 Consortium for Southern Africa Food Security Emergency (C-SAFE) reports

Baseline reports from the Consortium for Southern Africa Food Security Emergency (C-SAFE):

- A general situation report:
  http://www.sarpn.org.za/documents/d0000525/index.php
  Consortium for Southern Africa Food Security Emergency (2003) Situation *report.* No. 5, August 30, 2003.
- Individual baseline survey reports:
  (Contains extensive data on household issues including size, the gender of the head of household, health, assets, education and agricultural activities and other issues.)
  Zambia: http://www.sarpn.org.za/documents/d0000523/index.php
  Consortium for Southern Africa Food Security Emergency (2003) *Zambia Baseline Survey – Report of Findings.* Prepared by TANGO International, Inc, in collaboration with C-SAFE M&E team, September 2003.
  Malawi: http://www.sarpn.org.za/documents/d0000524/index.php
  Consortium for Southern Africa Food Security Emergency (2003) *Malawi Baseline Survey – Report of Findings.* Prepared by TANGO International, Inc, in collaboration with C-SAFE M&E team, September 2003.
  Zimbabwe: http://www.sarpn.org.za/documents/d0000522/index.php
  Consortium for Southern Africa Food Security Emergency (2003) *Zimbabwe Baseline Survey – Report of Findings.* Prepared by TANGO International, Inc, in collaboration with C-SAFE M&E team, September 2003.

The documents have been made available to SARPN for distribution in the region. C-Safe has also indicated that it is prepared to consider making the data sets available to analysts for further analysis.

5.7 FEWS

The Goal of the Famine Early Warning Systems Network (FEWS NET) is to strengthen the abilities of African countries and regional organizations to manage risk of food insecurity through the provision of timely and analytical early warning and vulnerability information.

FEWS NET is a USAID-funded activity that collaborates with international, national, and regional partners to provide timely and rigorous early warning and vulnerability information on emerging or evolving food security issues.

Specific FEWS resources:

Famine Early Warning System Network (FEWSNET) (2003) *Southern Africa Food Security Brief.* August – September 2003.

The publication temporarily replaces the SADC Food Security Network Ministerial Brief, during the restructuring of SADC FANR. More information on the publication can be obtained at e-mail: nmarsland@fews.net or Internet: www.fews.net . The brief was posted on SARPN's website, with permission of FEWSNET. Direct access to the document can be obtained through: http://www.sarpn.org.za/documents/d0000539/index.php

5.8 SADC Barometer report

South African Institute of International Affairs (2003) *SADC Barometer.* Issue 3, October 2003. Published with funding from NORAD & USAID. ISSN Number: 1728-063X.

SADC food security situation

Quarterly publication available at: www.wits.ac.za/saiia . Direct subscriptions, comments and suggestions with respect to the publication can be addressed to SADCBarometer@saiia.wits.ac.za .

5.9 FIVIMS

Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) are networks of national information systems that assemble, analyse and disseminate data on food insecurity and vulnerability.

Information available at: http://www.fivims.net

6. Conclusion

After a serious food crisis in the recent past the food supply situation in southern Africa has eased due to the new harvest. The total SADC regional cereal production during the 2002/03 seasons was 4% above the 1997/98 to 2001/02 average level. Regional maize production was approximately 10% higher than during 2001/02, while the regional production of wheat, sorghum and millet decreased somewhat from 2001/02. Prevailing drought conditions in many regions within the SADC region is a cause of concern.

A maize surplus of 611 000 MT is expected in the 2003/04 season (compared with the 1.8million MT deficit of 2002/03) with no stock replenishment is taken into account. When the desired stock replenishment is taken into account, the SADC region maize deficit comes to 1.1 million MT (compared with the 3.5 million MT deficit of 2002/03). The improved situation can be attributed to decreased shortfalls in countries such as Angola, Zambia and Zimbabwe. Increased import requirements were observed in Tanzania, Mozambique, Lesotho, Botswana and Swaziland. The 2003/04 SADC regional import requirements were below the 1998/99 to 2002/03 average levels.

According to the latest SADC REWU cereal balance sheets, the 2003/04 cereal predictions are:

- Production (gross harvest): 22.934 million tonnes.
- Consumption (gross domestic requirements): 27.269 million tonnes.
- Total commercial imports: 3.477 million tonnes.
- Total food aid imports: 0.334 million tonnes.

According to the latest SADC REWU maize balance sheets, the predictions for the 2003/04 maize season (compared with the 2002/03 season) are:

- Production (gross harvest): 18.4 million tonnes (increase from 16.265 million tonnes in 2002/03)
- Consumption (gross domestic requirements): 19.2 million tonnes (increase from 18.864 million tonnes in 2002/03).
- Total commercial imports: 1.2 million tonnes. (decrease from 2.579 million tonnes in 2002/03).
- Total food aid imports: 0.2 million tonnes. (decrease from 0.856 million tonnes in 2002/03).

Within the countries of the SADC region there are various levels of food emergencies. The countries with no food emergencies are Mauritius, Namibia and South Africa. The countries with some food supply problems are Botswana, Malawi and Zambia. The countries with serious food supply problems are Angola, Lesotho, Mozambique, Swaziland, Tanzania and Zimbabwe.

In the report comprehensive list of resources were discussed where information were and could be obtained on the SADC food situation. It is important that this report should be updated regularly to carefully monitor the SADC food supply and demand situation. It is important to note that an enormous amount of information is available on the subject. It could be suggested that coordination with other institutions working on SADC food security could prove to be valuable in the future.

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SADC food security situation
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SADC FANR, http://www.sadc-fanr.org.zw

SADC REWU Balance sheets was received from Phumzile Mdladla at FANR SADC pmdladla@fanr-sadc.co.zw

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PART 7

DEALING WITH HIGH FOOD PRICES:

RECOMMENDATIONS

CHAPTER 1

SUMMARY OF FINDINGS

1.1 Overview

The regional supply and demand situation and rising world prices for the major grains triggered an upward trend in most agricultural commodity prices in South Africa towards the second half of 2001. This trend was fuelled by the sharp depreciation of the value of the Rand against all major currencies in the world, leading to an even faster rise in commodity prices by early 2002. These events sent inflation spiralling out of the target range of 3 to 6% set by the South African monetary. Food inflation moved from a relatively stable and low rate of between 4 and 10% to a high of close to 20% in October 2002. Subsequently, the exchange rate strengthened, agricultural commodity prices dropped by up to a half of their peak levels and the rate of food price increases declined rapidly to 3.8% in September 2003. The November 25, 2003 CPI release of StatsSA reports food inflation of 2.5%, clearly indicating a much improved situation.

1.2 Main findings from price monitoring

The various analyses of food retail prices reported in Part 3 of this Report clearly confirm the initial sharp increase in basic commodity prices (notably maize). This initial shock then spread through several value chains followed by a levelling off of price increases for virtually all food items, and even a decline for some products (red meat, maize meal, samp and cooking oil). However, while it is true that these prices came down from their peaks in 2002 and early 2003, the decline was in all cases not as large as the initial increases during 2001/2002. When one considers the period (Jan – Oct 2003) over which the Committee monitored food prices, the trends reflect price declines for 11 out of 24 monitored by the Committee. The data are shown in Table 1.1, which also shows a few anomalies, including products such as milk powder, peanut butter, margarine and onions, whose prices have increased at far above the current rate of food inflation.

Our analysis of food inflation for different income groups shows that poor households experienced higher inflation rates than wealthier households. At its peak in October 2002, poor households were confronted with year-on-year food inflation of 23.1% while richer households only experienced food inflation of 19%. The benefit to the poor of the recent lower prices for most staple foods is reflected in a food inflation rate of 3.35% compared to that of richer households of 4.21%.

Table 1.1 Changes in monthly average retail prices for selected food products

	Jan 00	Jan 01	Jan 02	Oct 02	Jan 03	Oct 03	Percentage change Jan-03 to Oct-03
Cheapest Maize Meal per 10kg	25.26	22.21	23.94	33.55	33.12	27.25	-17.70%
Bread Brown – 700g	2.56	2.68	2.84	3.34	3.51	3.56	1.41%
Bread White – 700g	3.12	3.16	3.16	3.72	3.83	3.95	3.24%
Snowflake Cake Flour – 5kg	20.35	19.68	20.99	25.29	23.71	24.45	3.12%
Tastic Rice -Rands per 1kg	6.63	6.53	7.19	7.39	7.32	6.7	-8.44%
Cooking Oil – 750ml	4.16	3.76	6.57	6.91	7.03	6.52	-7.25%
Rama Brick – 500g	6.41	6.29	6.89	7.49	7.26	8.26	13.75%
Peanut Butter – 410g	5.62	6.22	6.51	7.8	7.91	9.58	21.19%
Full Cream Milk Sachet – 1L	2.56	2.86	3.28	3.87	4.05	4.35	7.25%
Elite Milk Powder – 1kg	33.09	36.26	39.9	48.13	48.11	52.97	10.11%
Full Cream Long Life Milk – 1L	3.32	3.73	4.15	5.36	5.38	5.88	9.33%
Cheddar 1st Grade - R/kg	27.25	29.08	31.41	35.81	36.18	37.29	3.06%
Choice Butter – 500g	10.71	12.7	13.23	14.49	15.78	15.63	-0.99%
Stewing Beef – R/kg	16.84	18.8	22.41	25.73	23.6	22.36	-5.28%
Bulk Lamb Pack – R/kg	27.38	27.47	28.78	33.44	33.94	31.19	-8.10%
Pork Braai Chops – R/kg	24.26	22.27	25.58	30.57	32.06	25.63	-20.05%
Fresh Chicken Whole – R/kg	11.94	14.09	14.91	17.13	16.76	16.7	-0.36%
Cheapest Large Eggs - 12 S	5.34	5.54	6.34	7.89	9.07	8	-11.76%
Granny Smith Apples - 1.5kg	6.3	5.83	6.52	7.76	8.75	6.31	-27.95%
Tomato Loose – R/kg	4.75	5.49	6.47	6.66	6.66	6.66	0.00%
Onions Loose – R/kg	2.57	3.14	3.99	4.42	3.56	4.52	27.02%
Cabbage – Each	2.66	2.79	3.33	3.8	3.57	3.81	6.63%
Potatoes Bag (10kg) -	13.55	20.73	23.05	46.79	40.95	28.3	-30.89%
Cheapest White Sugar – 2,5kg	9.39	9.67	10.22	10.49	10.97	11.23	2.32%
Joko Tagless Tea Bags - 100 S	12.55	12.93	14.59	16.17	16.20	15.30	-5.6%
Ricoffy Coffee – 750g	23.02	22.65	22.53	27.45	27.27	27.45	0.7%

Rural households also experience food prices and food inflation differently than urban households. Our analysis in Part 3 (Chapter 5) has shown that prices in rural stores are generally higher than in urban centres. This applies largely to all processed goods, while fresh produce and sometimes milk prices at these stores are lower. Mark-ups between retail and wholesale prices are fairly high, but are largely due to transport costs between wholesale outlets and the trading store. Price trends in rural stores also show some levelling off, with decreases notable in prices for maize meal, dry beans and red meat.

The fact that the Committee received virtually no inputs and complaints from the public through the toll-free number and e-mail line after June 2003 gives some indication that food inflation abated and that consumers did not pick up any extraordinary increases. The monitoring process by the Committee also found no 'sharp' increases in food prices over the period since its appointment. The existence of a monitoring mechanism, increased public awareness as well as improved and more stable macro-economic conditions all assisted in achieving slower food inflation and even food price reductions in some cases.

Lower food inflation does not necessarily translate into cheaper food. This is normal, since lower inflation implies only a lower rate of increase in prices. Thus, prices are on average still increasing, albeit at a lower rate than a year before. As indicated earlier it is only certain food products that are now cheaper than in 2002 while others are more expensive, which is why there is still a common complaint that the consumer's monthly food bill has not declined. The Committee's analysis in Part 3 (Chapter 2) shows that in September 2003 the total cost of the basket of food items monitored by the Committee was only 1.5% cheaper than in September 2002, confirming the sentiment expressed by consumers. The fact that food is not cheaper in nominal terms mean that many poor households will still find it difficult to afford a basket of basic food. Government thus still has a duty towards these households and it is therefore necessary to consider potential options for intervention. These are discussed later in this Report.

The future of price monitoring

The Committee found the monitoring process to be a useful exercise to understand and monitor food price trends of specific food items. This promotes the protection of consumer rights, provides valuable information for policy analysis and leads to better understanding about the variation of prices in similar products in rural and urban settings. As one observer commented: "The one good thing about the Food Pricing Monitoring Committee is that there is a Monitoring Committee". The advantage of this system of monitoring price trends is that it allows qualitative observations of other factors and behaviour that influence food prices in different social environments.

The Committee is of the opinion that the National Department of Agriculture should implement a reliable and consistent price monitoring network throughout the country, as this affords policy makers the opportunity to gain first hand qualitative and quantitative data on price trends, and enables the department to make informed decisions and implement appropriate actions.

1.3 Main findings from the supply chain analysis

Any analysis of food supply chains has to start with an analysis of producer prices at the farm gate (i.e. agricultural commodity prices). Increasing commodity prices (helped by world prices and the exchange rate) were largely responsible for increases in retail food prices during 2002. On the other hand the subsequent sharp decline in commodity prices back to levels of pre-2001 did not have the same dramatic effect on retail prices, as one would expect. Figures 1.1 and 1.2 below provide confirmation of this statement.

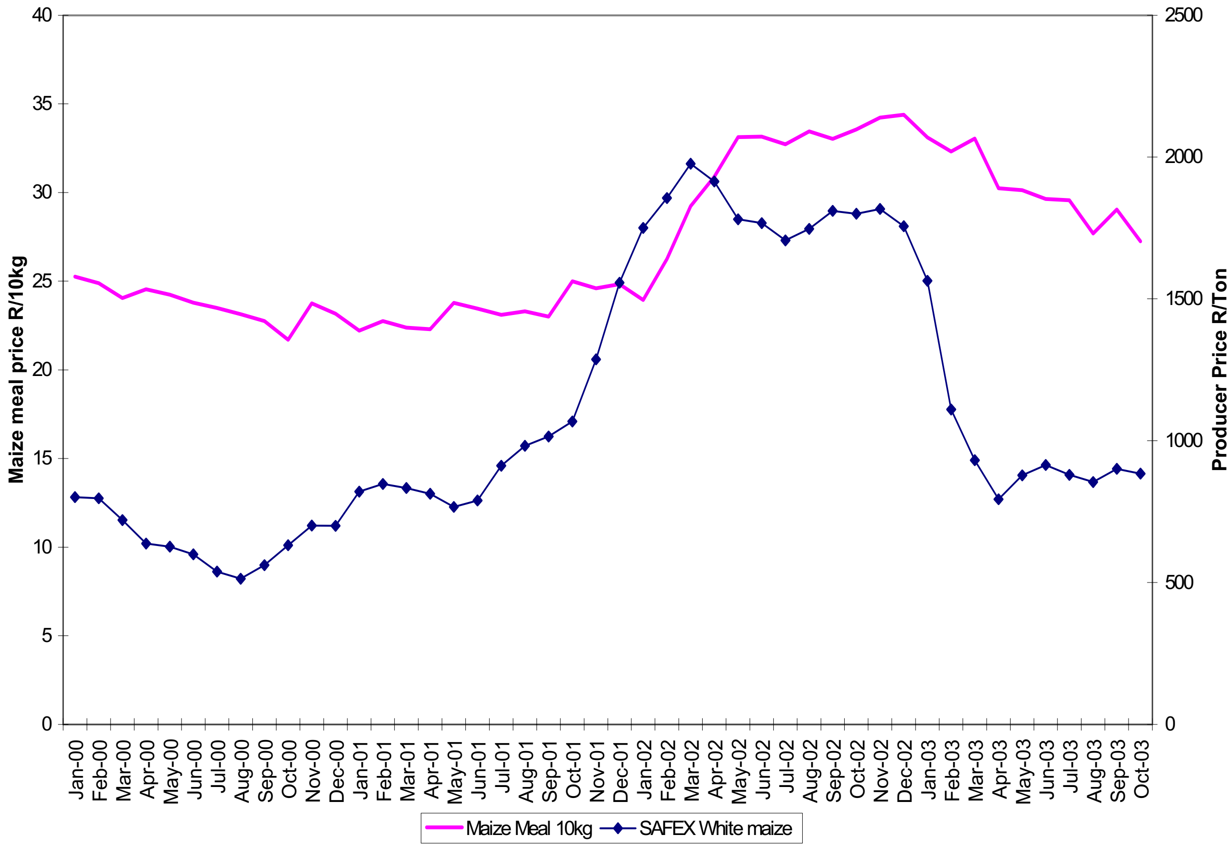

Figure 1.1: National average retail price for 10 kg maize meal and SAFEX producer price for white maize: Jan 2000 to Oct 2003

Trading positions

Sharp rises in commodity prices and the fact that they remained high for a number of months after the 2002 harvest created suspicion about trader behaviour on the agricultural futures market (SAFEX). Large losses by one trading house early in 2003, and an investigation by the Financial Services Board into trading practices of this firm, also confirmed this suspicion. The investigations of the Committee have shown that a combination of factors, including a large open trading position on the futures market, inexperienced traders and incomplete information about the real size of the South African crop as well as the supply and demand situation in the SADC region, created a situation where hoarding of the market was possible for a certain period during 2002, after which the market corrected. New rules on trading positions on the futures market and improved, unbiased and timely information are clearly required.

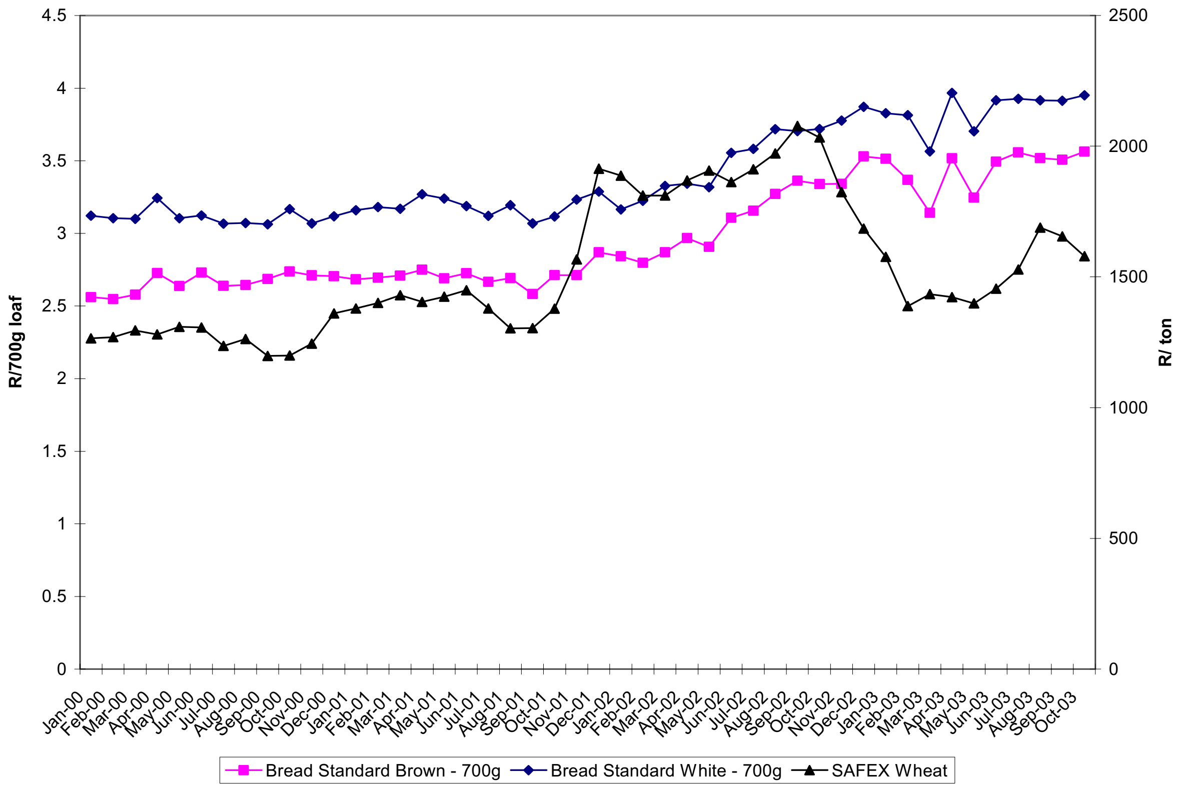

Figure 1.2: Brown and White Bread (700g loaves) National Average Prices vs SAFEX wheat price: Jan 2000 to Oct 2003.

Price flexibility

The analysis of the various supply chains in Part 4 and 5 of the Report provides some explanation for the downward stickiness of retail prices. Other costs such as processing costs, wages, and distribution costs also increased with the normal inflationary trend, making it difficult for manufacturers to reduce prices fully. The ability of manufacturers to recuperate losses and/or to prevent losses through appropriate pricing policies and therefore not to pass through the full benefit of cheaper raw materials to the consumer can partly be explained by the oligopolistic structure in most of the food industries. This aspect came out fairly clearly from the investigations of the Committee highlighted in Part 4 and 5. The analyses here provided substantial evidence of oligopolistic behaviour and monopolistic competition. Brand loyalty by consumers, a limited number of competitors, market segmentation by supermarkets and manufacturers and also the nature of demand often put the supermarket/manufacturer in a position to dictate price.

The structure is such that manufacturers –despite temporary losses – could ensure that profits and return on equity were maintained within a financial year to keep shareholders happy. This structure makes it very difficult for smaller players to enter this market. The competition is so fierce with everything based on economies of scale, small margins but high volumes and turnover. Smaller players do not have the scale of operation to compete in this game. Thus, the volatility in commodity prices and the exchange rate has a clear impact on smaller suppliers and manufacturers, as they find it very difficult to absorb the shocks. All of this has the potential to bring about further concentration in manufacturing and retailing. It furthermore remains evident that the

South African food economy is more and more beginning to replicate the UK, European and US market structures, moving us closer to a supermarket driven economy[1]. In such an environment government seems to have its work cut out – monitor price trends and pricing behaviour on a continuous basis and ensure effective policing of the competitive environment through the Competition Commission.

The Committee holds the view that the long period of correction in the prices of food indicates the role of many factors, which include market power/structure as well as supply and demand forces and lag effects. High prices and high margins were detected in certain markets and in certain months. It is true that the market eventually corrected, but in the process poor households were adversely affected. This should be a major concern to government and to society as a whole. The effect of high prices on food affordability and right of people to sufficient food is still a reality which needs to be addressed.

The Committee's work presented a much clearer understanding of the working of various food supply chains in South Africa. The results provide a clear understanding of costs and structure within the food supply chains for the first time. Nevertheless, the information remains very sketchy since most of the analyses were based on industry averages. It is therefore difficult to link any changes in prices to specific behaviour by any role player. Confidentiality and the proprietary nature of detailed financial information of any one company made it difficult for the Committee to be able to pick-up any 'unjust' price increases.

Thus, although the market structure could provide the opportunity for predatory and unjust pricing, there is limited evidence that this has happened. What the analyses of the Committee do show is that all price increases seemed to track changes in the prices of raw materials, other costs and the exchange rate. Figure 1.3 shows the trends in retail prices for rice, an imported commodity, to illustrate how the exchange rate influenced prices. In this case, international commodity prices plus the exchange rate should directly influence the retail price. This happened here as the food manufacturer increased the retail price in 2002 in response to the rising landed cost of rice. As the exchange rate appreciated, prices improved immediately. Prices are now back to their 2001 levels confirming that with limited processing costs within South Africa, prices will track international prices and exchange rate influences. This, plus the results of most of the supply chain investigations provide sufficient evidence that collusive and unfair business practices are not prevalent.

[1] Through the Committee's investigations it also became evident how little research is done on the food retail market in South Africa. Knowledge about the trends and practices in that market is limited and needs to be researched and documented.

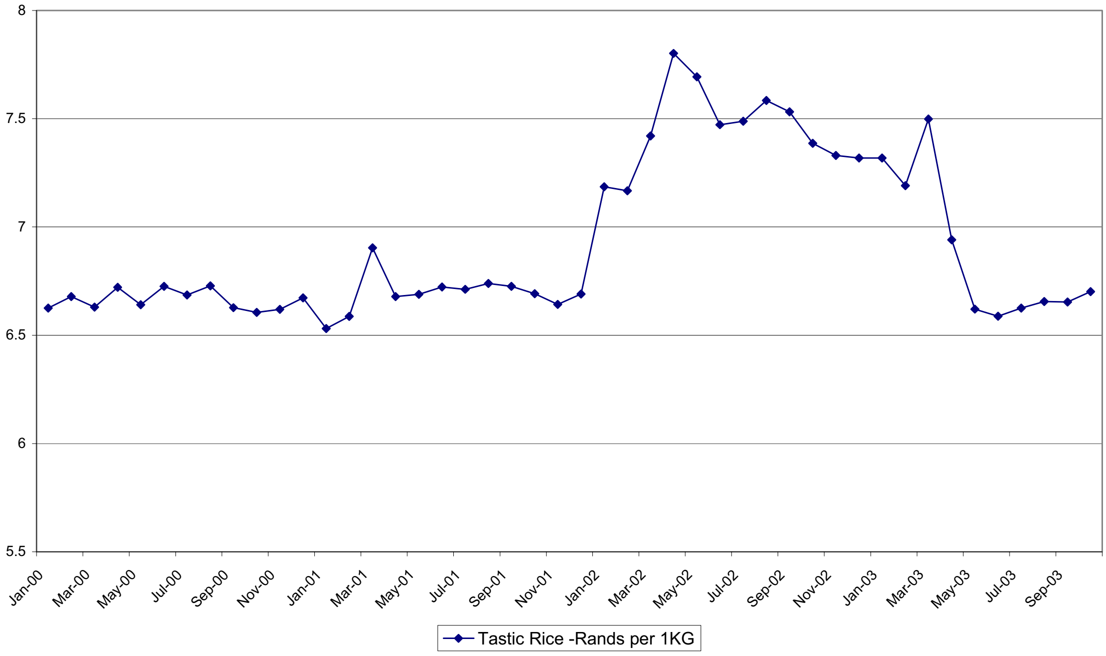

Figure 1.3: 'Tastic' rice national average price: January 2000 to October 2003.

Despite finding limited evidence of unjust price increases, collusive and unfair practices, government still has a duty to address some of the imperfections in the market. It is against this background that recommendations on potential interventions are debated. This will be done along five main themes discussed in the next four chapters:

- Strategic grain reserves
- Direct government programmes
- Improved agricultural information systems
- Increasing competition and reducing barriers to entry
- SAFEX rules, transport and logistics

The recommendations discussed in the next chapters have to be seen against the argument raised earlier that there is an important role for government in the food sector. The sole objective of government's engagement with the role players in the food chain is to ensure food security at household level. It is the duty of government to act to ensure that all its citizens have access to basic food because it is a fundamental human right and is also entrenched in the constitution.

CHAPTER 2

STRATEGIC GRAIN RESERVES: DOES IT PROVIDE A WORKABLE FOOD SECURITY SOLUTION?

2.1 Introduction

Concerns regarding the negative impact of the recent sharp increase in retail food prices have focused the attention of policy makers on methods to curb price instability and to deal with food price increases. The possibility of implementing strategic grain reserves as a measure to stabilise prices has been widely reported and confirmed by an announcement by the Minister of Agriculture during a media release in October 2002. The Chairperson of the Parliamentary Portfolio Committee on Agriculture also alluded to this possibility with the aim to: 'ease pressure on poor communities during periods of high food prices'.

Subsequent to these announcements and various media reports, the Committee was requested by the National Department of Agriculture to provide an independent assessment of the potential role of government in stabilising prices of staple foods through a strategic grain reserve or through a strategic reserve fund.

This Chapter builds on that report by firstly debating the likely objectives of a government controlled strategic grain reserve programme in section two, followed in section three by an analysis of the experience of other Eastern and Southern African countries with strategic grain reserves. In section four trends in producer and retail prices of the most important grain commodities in South Africa are highlighted. In section five the report considers the international experience with price stabilisation measures in general and strategic grain reserves in particular. Finally, the potential interventions and their merits and demerits are discussed, based on the point of intervention, the costs, externalities and price stabilising effect.

At the outset the Committee would like to highlight that there are two issues of concern in this debate on the viability of a strategic grain reserve namely **price instability** and **price increases**. These are two distinctly different issues and need to be addressed separately. As we discuss below, grain reserves are usually kept to stabilise commodity prices but also to avoid a country (or region) running out of food. This is different to dealing with sharp increases in the price of food or dealing with very high food prices. The latter most likely requires a different set of interventions.

2.2 Why a strategic grain reserve?

Strategic grain reserves are primarily used to deal with food emergencies and to prevent food supply crises when climatic adversities have negatively affected supplies. In addition, strategic grain reserves or *buffer stocks* can be used for price stabilisation. This implies that government prevents the price from falling below a floor level by buying grain from the market and adding to its stocks. If the price goes above the ceiling price, then government sells grain in the market by depleting its stocks until the price is driven down to below the ceiling level. The price is thus stabilised within a range or price band. This concept of price stabilisation can only be applied under market conditions where prices are allowed to adjust automatically to reflect shifts in supply and demand. Also, this process requires a government agency that can intervene in the market, and other players such as co-operatives, grain traders and millers whose actions bring about price fluctuations. The policy can also only be implemented for non-perishable products.

The question remains, however: why would government want to keep a strategic grain reserve? Potentially a government grain storage programme may have the following objectives:

- To stabilise supply;
- To stabilise producer prices by accumulating stocks in times of price weakness and liquidating stock in times of price inflation;
- To protect and increase producer prices;
- To avoid sharp increases in food retail prices in periods of shortages by releasing grain from the reserve (thus buying in grain during surplus periods at low prices, storing it and selling from the reserve in periods of short supply and high prices);
- To ensure adequate supplies of staple grains in the country (and, in the case of South Africa, perhaps the SADC region) (the so-called Joseph's policy – see box 1).

Box 1: Joseph's buffer stock programme

The classic method of price stabilisation for agricultural products or of providing food reserves for consumer use is the use of buffer stocks, the first reported case of which is described in the Book of Genesis, 41:29-36. The handsome and talented Joseph, interpreting the dreams of Pharaoh, King of Egypt, foresaw seven years of good crops followed by seven poor crop years. The able Pharaoh, commissioning him to conduct an extensive buffer stock programme, reaped large rewards for the people of Egypt and the surrounding territory. Joseph, the Bible says, was successful because he knew in advance the exact length of the periods of surplus and shortage; an advantage not shared today by Ministries of Agriculture or their advisors.

The United States government introduced one of the first grain storage programmes when the Commodity Credit Corporation was established in 1933 through an executive order of President Roosevelt. The original objective of the Commodity Credit Corporation (CCC) storage programme was to stabilise supplies against variations in production due to good and bad weather. The three fundamental functions of the storage programme were to protect and increase farm prices, to stabilise farm prices and to assure adequate supplies of farm products.

In many developing countries strategic grain reserves were established to fulfil the prime function of dealing with food emergencies and to prevent food supply crises. It can also serve other functions as discussed above, such as playing a role in price stabilisation.

Stabilisation of (commodity) prices through the holding of grain reserves has been an important element of food policy in many countries – both developing and developed, although it has been widely criticised in recent years. In India, for example, grain output depends largely on the uncertain monsoons and, as a result of the extreme variation in output, price instability is a major problem. Domestic price stabilisation therefore remains one of the key objectives of food grain policies of the Indian government. This objective is met mainly through the holding of buffer stocks by government agencies. The grain stocks in India are, however, also used to supply grain through the Public Distribution System to poor consumers at subsidised prices.

The countries in Eastern and southern Africa that established strategic grain reserves did this to deal with food emergencies caused by crop failures. The purpose of these grain reserves is to provide an acceptable basic food supply until such time as additional supplies can be mobilised. The size of these reserves were usually estimated on the basis of a per capita cereal requirement per year or the estimated market demand, and the fact that a lead time of 3 months is necessary to procure and deliver additional supplies. Some of the countries in Eastern and Southern Africa that established grain reserves for this purpose include:

- Ethiopia (180 000 tons)
- Mozambique (60 000 tons)
- Tanzania (100 000 tons)
- Zambia (180 000 to 225 000 tons)
- Malawi (180 000 tons)
- Kenya (270 000 tons)
- Zimbabwe (936 000 tons)

Malawi was able to successfully combat two food emergencies in 1987 and 1991 as a result of having a strategic grain reserve at its target levels. Whether it succeeded in keeping prices low and stable is however not clear, but at least food was available.

Going beyond Southern Africa, it is also known that China holds large grain stocks as insurance against catastrophic crop failures or other disruptions that could affect food supply or force the country to rely on imported grain. China has a strong preference for self-

Box 2: China's Grain Reserves

China maintains much larger grain reserves than any other country. Chinese officials argue that there are four reasons why China needs to have higher reserve levels than those typically recommended by the FAO:

- Mobility of grain is limited within China. China cannot move grains from surplus areas to deficit areas quickly enough to avert food shortages.
- Historically, China has experienced multiple year crop failures and therefore has to keep a reserve for more than one year.
- Substitutability among various grain types is limited and therefore reserve levels for each type of grain should be sufficient.
- Production technology and price elasticities could change from time to time as market conditions change.

China has at least five major categories of grain reserves:

1. Central government (state reserves). The Chinese Government set up 14 grain companies who directly control and operate 2800 grain warehouses with an estimated storage capacity of 25 million tons
2. Government grains in circulation. These reserves include grain purchases based on protection prices, which can be resold at market prices.
3. Local government reserves. Separate grain reserves at country, township or village level as a buffer against short-term price fluctuations. Usually around 1 to 1.5 months consumption needs.
4. Retail and wholesale grain stores. Refers to private stocks or "free market" grain in the commercial pipeline.
5. On-farm storage

Under the 1995 reforms the government mandated a minimum reserve of 3 months of grain consumption for grain surplus provinces and 6 months for grain-deficit provinces.

Source: Hsu, H-H and F. Gale (2001). USDA revision of China grain stock estimates, ERS-USDA sufficiency in grain (See Box 2). The objective here also relates to combating food shortages.

For most countries in sub-Saharan Africa the need for a grain reserve mainly originates from the fact that white maize has to be imported in case of a food emergency, and white maize of the required quality for human consumption is not normally readily available outside the region. When drought affects the region as a whole, with several countries facing shortages of white maize at the same time, this could – and as was seen in 2001/2002 - lead to very high prices of maize. For this reason there might be a preference from governments in the region to hold a physical reserve rather than a cash reserve. One should, however, also bear in mind that there is a price premium on South African white maize in the world market because of higher quality. This should potentially encourage farmers overseas (counter-seasonal) to grow white maize for the South African market when our price increases due to e.g. a drought, but this has not happened in the past due to the 'maize of African origin' clause in futures contracts.

The justification for a grain reserve in many developing countries also lies in the fact that there are many barriers to trade and to importing of emergency supplies. The barriers could be poor infrastructure and limited foreign exchange. Under these circumstances it probably makes sense to keep a grain reserve. The cost of holding such a reserve is however problematic – an aspect that is discussed in more detail later.

The sharp increases in food prices in South Africa during 2001/2002 also echo the problem faced by many other Eastern and Southern African states in the wake of structural adjustment reforms, namely food price instability. Dealing effectively with price instability is now one of the major challenges facing policy makers in the region. However, while other countries in southern Africa faced real food shortages resulting from crop failure in 2001, South Africa has not experienced a major drought in the post-1994 period. For this reason – as highlighted by various government spokespersons – the focus in this country has been on ways of dealing with price instability, and in particular on sharp and unexpected food price increases[2].

The objective is therefore to stabilise prices and not to stabilise quantities, consumer expenditures or farmer incomes. There are many ways by which prices can be stabilised: e.g. buffer stocks/grain reserves, production controls, taxes and subsidies, export and import control, etc., each with its own advantages and disadvantages. Given the brief to the Committee, we will thus only focus on the potential role of strategic grain reserves in achieving price stability. It will however also be necessary to discuss the merits of alternatives towards the end of the report.

Given that price instability is a reality facing all countries in Eastern and Southern Africa following the liberalisation of grain markets, it is useful to review how other countries in the region have dealt with price instability. This is discussed next.

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[2] However, it is important to distinguish between calls for stabilisation and calls for subsidisation (i.e. higher producer prices or lower consumer prices).

2.3 How have other countries in Eastern and Southern Africa dealt with price instability[3]?

Zambia

In response to market stabilisation objectives, the Zambian government established the Food Reserve Agency (FRA) in 1995, officially charged with holding strategic grain reserves. The approach to stabilisation has mainly involved selling maize at below market prices to industrial millers. This was done with the objective of stabilising food prices for consumers, but in the process succeeded in disrupting private trade and preventing the development of private traders and small-scale milling. While FRA's mandate is to stabilise the market, private traders complain that the FRA has in fact introduced greater uncertainty.

Kenya

Kenya's approach to stabilising maize prices has shifted dramatically since 1994. Direct maize procurement, sale and buffer stock holdings have shrunk to marginal proportions and have been replaced by the use of variable trade bans and tariffs. Since the reforms were affected, private trade has shown that it could supply consumers with sufficient quantities at much lower prices than before. Kenya has experienced neither food hoarding nor food queuing in the major cities since the reforms were implemented.

Mozambique

For the past number of years the government of Mozambique has had no direct role in stabilising maize prices. Fixed producer prices were changed to reference prices, however there was no legal requirement to pay these prices. The relatively free trade regime in Mozambique has had varying effects on price stability. It seems that allowing imports from South Africa (and trade in general) has clearly stabilised retail prices during the 'hungry seasons'.

Zimbabwe

Zimbabwe's approach to stabilising maize prices has diverged most significantly from the other countries since the beginning of 1998. Whereas the other countries encouraged imports to stabilise domestic market prices, Zimbabwe resorted to price controls on maize grain and maize meal.

Summary

Price instability is a reality in any free market. However government intervention to deal with price instability can unintentionally depress the participation of private traders in the market, and thus create the potential for even greater instability. The cases of Kenya and Mozambique show that the private sector has been able to stabilise domestic prices through imports and domestic operations. This illustrates again that any intervention could have unintended consequences that must be guarded against.

[3] This section draws heavily on the MSU International Development Working Paper, No. 72, 1999 by T.S. Jayne and others: Successes and challenges of food market reform: Experiences from Kenya, Mozambique, Zambia and Zimbabwe. Michigan State University, East Lansing, Michigan.

2.4 Are agricultural commodity prices and food retail prices in South Africa unstable and volatile?

In this section we continue the debate on whether there is a need for price stabilisation in South African grain markets. The question is therefore; are prices generally characterised by instability and could we identify the sources of these instabilities and address them without interfering with the functioning of the market.

Generally, it seems that calls for the stabilisation of grain producer prices through the use of grain reserves in South Africa have been done on the premise (and perhaps hope) that this will lead to <u>a minimisation of the volatility (read instability) in consumer prices (of grain and grain related products).</u> However, the stabilisation of producer prices in order to stabilise consumer prices will only work **if the volatility of the farm gate and retail prices are similar.** For this reason we have estimated the volatilities of producer and consumer prices for the period September 1999 to March 2003. In addition to the volatility measures, a brief trend analysis was conducted to compare the general movement and growth path of the nominal producer and consumer prices for the major grain products.

Commodity prices naturally increase and decrease; however, these fluctuations usually occur around an average price. The volatility of prices is a measure of the frequency of fluctuations in prices beyond one standard deviation around the mean. Volatility can be measured daily, weekly, monthly and annually depending on the data available and the price being studied.

White maize and maize meal
The volatility of the white maize SAFEX nearest month contract and the retail maize meal price was calculated for four different time periods to enable comparisons amongst different years and over the entire period. The periods are January 2000 to January 2001, January 2001 to January 2002, September 1999 to May 2002, and September 1999 to March 2003. The table below (Table 2.1) gives an indication of the volatility in prices for maize meal and the SAFEX price for white maize. The volatilities are calculated from monthly data and have been annualised to indicate annual volatility.

It is evident that maize meal prices have increased in volatility, however not to the extent of the SAFEX white maize nearest month contracts. Thus, stabilising or reducing the volatility in the SAFEX white maize price will have little or no effect on the consumer price of maize meal. This was also illustrated in the figures in Part 4 (Ch2).

Table 2.1: Annual price volatility in white maize and maize meal

	Maize Meal	SAFEX White Maize
	%	
Jan-2000 to Jan-2001	6.5	32.8
Jan-2001 to Jan-2002	9.2	28.6
Sep-1999 to May-2002	11.3	30.6
Jan-2002 to Jan-2003	16.6	22.2
Sep-1999 to April-2003	14.6	35.9

Wheat, cake flour and bread
Similarly, the wheat SAFEX price is also more volatile than the consumer prices of both cake flour and brown bread (see Table 2.2). Again, stabilising the producer price will not have a great effect on reducing the volatility of consumer prices of bread and flour.

Table 2.2: Annual Price Volatility in wheat compared to bread and cake flour

	Snowflake Cake flour (5kg)	Brown bread (std. 700g)	SAFEX Wheat
	%		
Sep-1999 to April-2003	14.65	11.95	20.64

Sunflower, cooking oil and margarine
Table 2.3 shows a similar difference between the volatility in SAFEX sunflower prices and the volatility of cooking oil and margarine consumer prices. The closer a final product is to the original raw material, the closer it will follow the price fluctuations of the raw material price. This is because there are fewer inputs and other costs that would affect the stability of a price.

Table 2.3: Annual Price Volatility in sunflower, cooking oil and margarine

	Cooking oil (750ml)	Rama Brick (500g)	Rama Tub (500g)	SAFEX Sunflower
	%			
Sep-1999 to April-2003	14.57	14.58	11.44	22.44

Readers are again referred to the Figures in Part 3 and 4 to see how SAFEX sunflower prices and cooking oil prices follow the same general, upward trend. Conversely, margarine's price trend is flatter (and less volatile) than the SAFEX sunflower price.

A casual visual observation of the figures presented in Parts 3 and 4 reflect a common trend, namely extreme stability of retail prices from September 1999 until late 2001 when there were sharp increases in retail prices for a period of 6-8 months, with a stabilisation at a higher plateau since mid 2002. An important concern is to find an explanation for the period of instability between November 2001 and June 2002.

Sources of instability
The theoretical and empirical literature on price stabilisation highlights the importance of distinguishing different sources of price instability, in particular those resulting from domestic supply fluctuations, and those resulting from international price and exchange rate fluctuations. Supply fluctuations are likely to be the main determinant of price instability where the margin between import and export parity is wide. However we know by now that the instability in South African agricultural commodity prices occurred at a time when the 2001/2002 season eventually realised a normal crop, sufficient for domestic needs. Thus supply fluctuations in South Africa were not the cause of the price instability.

Grain traders and food manufacturers interviewed by the Committee have all confirmed the role of the exchange rate depreciation, high world prices, the looming food shortage in the SADC region, the impossibility of importing white maize and the role of a dominant trader in bringing about the sharp increase in prices. This was a unique simultaneous occurrence of events – all exogenous factors – that brought along the sharp rises in producer prices which ultimately also brought about the increases in consumer prices during 2002. The exchange rate not only affected commodity prices but also had an impact on the cost of transport (rising fuel costs); the prices of other raw materials used in food packaging such as paper, cardboard, plastic and polymers; prices of machinery and parts used in the manufacturing process – all of which contributed to the sharp increases in food processing and food marketing costs. (Incidentally this was also highlighted in the Vink and Kirsten, 2002 report to the National Treasury)

Although there were sharp increases in the prices of most of the basic foods during the 2001/2002 period, the evidence also points to relatively stable consumer prices over the 3 year period (2000 to 2003), suggesting that food manufacturers, distributors, traders and retailers are absorbing a large proportion of the instability in commodity prices to ensure relatively stable consumer prices. It seems to the Committee that the countervailing forces within food supply chains are to at least some extent able to smooth out extreme instability occurring at producer level and thereby ensuring rather stable retail prices *(Note: Price stability should not be confused with the price level or price increases)*. It is not in the retailer or food manufacturer's interest to have rapidly fluctuating or unstable prices – it is too costly and in any case the retailers are only taking price increases once a month or once a quarter from their suppliers.

2.5 The price stabilising effect of strategic grain reserves: Evidence from the literature

Despite arguing in section 2.4 against the need for a grain reserve given the stability of retail prices, it would still be worthwhile to review the experience of other countries using grain reserves to stabilise prices.

Governments in both developing and industrial countries have sought to stabilise commodity prices by using buffer stocks. However the use of nationally or internationally managed buffer stocks for this purpose has been widely criticised in recent years as being inefficient and costly. Knudson and Nash (1990) examined the experiences of several developing countries with domestic price stabilisation programmes and also came to the conclusion that in most countries where price stabilisation involves handling of the commodity by government agencies the costs have been extremely high. Gulati *et al.* (1996) found that in India the unit costs of public storage operations are substantially higher than those of private traders. Empirical studies have also indicated that the current levels of public stocks in India are far in excess of optimal levels and part of the funds spent for this purpose could easily be diverted to productivity enhancing investments in agriculture (Ray, 1994).

As noted earlier, the government of Zambia established the Food Reserve Agency (FRA) in 1995, officially charged with the responsibility of holding strategic grain reserves. However, the government has used the FRA to subsidise industrial milled meal for the urban population. This subsidy enabled the selected industrial millers to acquire maize grain at roughly 25% below prevailing market prices. This gave them a major advantage in the maize meal market compared to other millers who did not have access to FRA grain (Johansson, 1998).

A potentially harmful result of strategic reserves is the unequal access thereto. In Zambia, for example, after local maize supplies are depleted, imports by the Strategic Grain Reserve are channelled almost exclusively to the large-scale millers, thereby marginalising the small scale-milling sector. This in itself causes a major increase in maize meal prices for the urban poor, as they are forced to shift to more expensive roller meal.

Experiences from countries such as Kenya, Mozambique and Zambia have shown that private investment in grain distribution, processing and cross-border trade under liberalisation have improved consumer's ability to stabilise expenditures on maize meal. These market-orientated means of stabilising food prices weaken the rational for expensive government price stabilisation schemes. But this does not imply that there is no meaningful role for the state to play in stabilising prices in a market economy. It is however, doubtful whether strategic grain reserves will best serve the government's objectives.

In India it was found (Jha and Srinivasan, 1999) that the magnitude of grain stocks held for price stabilisation as well as the costs of physical storage have become prohibitively high, creating the need for finding cost-effective alternatives including non-interventionist and market oriented methods for price stabilisation. The aspect of cost of storage as well as potential alternatives to grain reserves is discussed later in the document.

The cost of establishing and maintaining the reserve is likely to be higher when it contains several grain types, as the need to maintain different stock combinations in different areas will increase demands on transport, handling and administration. Thus, from a purely cost and operational viewpoint it will be advantageous to have only one type of grain in the reserve e.g. white maize as in most African countries to date, rice in the Far East and wheat in the Near East.

The increasing criticism against the use of grain reserves for price stabilisation is related to the fact that liberalised trade in itself has a price stabilising effect. Hence the gains from price stabilisation, while positive, are smaller with free trade that when trade distortions exist. The need for buffer stocks is also diminished when risk sharing can be facilitated through such means as futures markets and efficient credit markets (Schmitz, 1990). In similar fashion Jha and Srinivisan (1999), comparing different stabilisation options in India, found buffer stocks to be ineffective in stabilising prices under liberalised trade.

Schmitz (1990) also makes an important point when he refers to studies that show that poor countries can still experience famine when production shortfalls occur, even with stable prices. Usually the problem is a shortage of foreign exchange in order to purchase food. For this reason it is often argued that it is better to store money and not food because it is not the lack of food globally that is the problem. The problem lies in the lack of purchasing power to buy it. In addition good transportation networks would be another necessity to avoid food insecurity and famines.

2.6 Evaluating price stabilisation options in South African grain markets: The trade-off between price stability and the cost to the taxpayer

To further illustrate the difficulty associated with a government grain reserve programme, this section shows the impact of government holding a physical grain reserve or utilising the futures market to stabilise prices.

A physical grain reserve

As highlighted in the review of the literature above, it seems that the popularity of buffer stock programmes has declined considerably since the end of the Cold War and as world agricultural trade has been liberalised. Many governments have realised that it might be less expensive to rely on trade to bring about domestic price stability. Consequently many governments, including South Africa, abolished buffer stock/grain reserve programmes during the 1990s. By contrast, many countries that could potentially face food emergencies due to a crop failure for staple crops that are not readily traded in the world market (such as white maize and millet/sorghum), and poor transport infrastructure and foreign exchange constraints, have decided to continue with grain reserve programmes (See Section 2.3).

These facts have also possibly contributed to a general perception in South Africa that a government grain reserve programme will be fairly costly and an unlikely route to take. This is confirmed by our estimates of holding such a reserve – say 3 months of consumption of approximately 1 million tons of maize.

The holding of physical grain will require extensive and specialised administrative expertise. The administrative function could be outsourced, but this would also involve a large cost.

If the physical grain is bought it will require the immediate payment of a fairly large sum of money. Considering the current average market price of R850/t, a reserve of 1 million tons would require an initial outlay of R850 million[4]. From that point onwards a storage fee and a cost of capital component becomes applicable. Given a daily storage fee of 34c/day and the cost of capital at 35c/day, the total carry cost would be some 69c per ton per day. If grain is to be stored from July to March (8 months or 244 days) it implies a total carry cost of R168/t or alternatively an additional cost of R168 million over the 8-month period – equivalent to R252 million per annum.

Due to the fact that the weather and other factors influencing food prices in South Africa cannot be predetermined, this cost will be a burden for the Government each year up to the point when the grain reserve is actually needed. The current food price crisis is the first such crises since 1992/1993 when prices of staple foods increased as Southern Africa, including South Africa, experienced one of its worst droughts. Recent history therefore tells us that the possible benefit of keeping a grain reserve would only have materialised in one out of ten years. In the other nine years the government would have added an annual bill of at least R252 million to government expenditure, which could have funded a number of more direct interventions to the benefit of the poorest households.

[4] The price of R850 is fairly low given the very high levels of 2002 and the current cost of production.

Another alternative to carrying the physical grain would be to carry the same grains exposure in the derivatives market, which could, in the longer run, be more advantageous.

A 'virtual' grain reserve using the derivatives market

One way of avoiding the cost of physically storing grain is to use the derivatives market to hedge potential increases in staple commodity prices. The execution of a grain hedge can be triggered once food inflation reaches a level unacceptable to government. At such a predetermined level of inflation the hedge will be executed. If grain prices continue to rise the hedged position should generate a profit, which could be used to fund targeted food security interventions for the needy. It is literally a situation of using the agricultural futures market to hedge the food inflation rate of the needy.

Another point at which the hedging activity of the government can be triggered is when commodity prices approach export parity levels. This will require the continued monitoring of export parity prices. Once export parity is reached the buy of the hedge should be executed. The hypothesis is that prices don't fall below export parity level, because at that level sales would rather take place to the export market instead of being sold locally. The export parity level thus becomes the lowest point for prices in the domestic market. From this point price can only stay at the export parity level or increase towards the import parity level.

If the hedge is executed at the export parity level and prices then start to increase towards the import parity level the hedge will generate a profit, which can be applied to subsidised food programs.

If for some specific reason government needs the physical stock (the underlying commodity) or needs to remove it from the system, it can still be bought in the physical market when needed. If at that point the prices have increased, the profits from the hedge portfolios can be used to subsidise the grain being bought. It would also be possible to use hedged fund profits for buying physical stocks in the international market.

A possible situation where this need could arise is where domestic market prices rise above local import parity, which also implies that a long hedge renders a profit equal to the increase. Government could then start an import program by using the hedge profits and own funds to import the physical stock from a location cheaper than the local market. This is an arbitrage play, which will also guarantee a risk free profit. By definition the profit in the hedge will be greater than the increase in the international price, for it is the only way by which the local price could have gone above the local import parity level (See Box 3).

Box 3: Buying physical stocks with a hedge

Consider a scenario where the SAFEX prices approaches the export parity price (of say R433/t). At this level the long hedge position needs to be executed and thus the futures contracts are bought at say R440/t. If prices now increase to import parity (say R1117/t) then the long hedge would have yielded a profit of R674 (R1117-R440). If government now decides to import the commodity it will cost a net price of R443/t, (R1117/t import costs minus the R674/t profit).

If SAFEX prices are at R1200, then the profit from the hedge comes to R760. If the government now decides to arbitrage the situation they can import at R1117/t minus the R674/t portion of the SAFEX profit to give a net price of R443/t, and still have the remaining R86/t profit. This arbitrage action will eventually force the local price back to at least import parity level.

Compared to the cost of holding the physical stock, a derivative portfolio with the same one million ton exposure will only require an initial cash outlay for the initial margin of approximately R100 million[5]. Needless to say the approximately R750 million difference in initial cash outlays makes a significant difference to the cost of finance of the two portfolios. Furthermore, since such a portfolio does not require the holding of physical product but only the management of a single market-instrument structured portfolio, it places a far smaller administrative burden upon the portfolio holder.

Although this position would also incur a cost of finance, it must be remembered that the position would also be earning interest at a daily money market rate as quoted by SAFEX. Currently this rate is in the region of 12.5% per annum, thus the total net cost of finance would be the difference between the cost of funding and the interest income. Given current interest rates the cost of finance will be around R1.6 million, substantially less than the R168 million related to carrying the physical stock.

This scenario basically illustrates the strategy of: “rather let the international market carry the stock and when really necessary take delivery, but for the largest part of time the carry and logistics function will be the market’s problem”.

Advantages of a structured portfolio

One of the benefits of derivative instruments is that they can be structured into portfolios or products to give various payoff profiles and cost structures, for example where the portfolio is structured to provide a benefit from extreme financial gearing/leverage given big price movements. Typically government could apply this approach in pursuit of a very low cost if prices stay low, but the maximum benefit as soon as prices increase by large amounts. Under low price situations there is no need to be involved in the food sector, but under high prices when government needs to be involved it can earn the profits to do so at a low opportunity cost. This characteristic originates from the fact that the derivatives market provides for literally endless alternative strategies.

[5] When the government takes delivery of the stock they will however pay the spot price of the contract on the day of delivery – for example R850 per ton.

A **major risk** facing government however, is that the state could find itself in a position where it holds a large share of the open positions on the market, counter to the position limits that are due to be introduced by SAFEX/JSE. In addition there is also the danger that the market can turn against your position, resulting in huge losses. Potentially large grain traders holding positions or doing physical transactions on the basis of the known hedge position of the government could also target the government. These issues will consequently have to be considered carefully on the basis of some ground rules if government wants to go this route.

Some suggested ground rules

The basic idea with a structured portfolio is to hedge an index, in this case the consumer price index for food. This is a common practice in the financial and securities markets. Furthermore the government could apply structured portfolios to hedge the price of a certain quantity of grain, which could be earmarked for the most needy households in times of crises.

In running such a structured portfolio the following rules should apply.

1. The rules and trigger levels should be publicly known and actions should not deviate from them.
2. The management of the portfolio should not be restricted to only one firm, but spread across all the registered broking members to avoid insider trading.

2.7 Opinions from grain traders on a potential strategic grain reserve

During June 2003 the Food Price Monitoring Committee interviewed various role players in the grain trade and also asked them their opinion about a proposed strategic grain reserve. Some traders were in favour of a virtual strategic grain reserve since it would increase their turnover and profitability as trading houses. Several traders expressed concern about whether a virtual grain reserve would have a meaningful impact on SAFEX prices because of position limits. Given the size of such a reserve, the government might be affected by the limits on open positions in the futures market.

Most traders were of the opinion that the costs of implementing a physical strategic grain reserve and the difficulties of administering it, may be too costly and too interventionist and not to be recommended. Even those players that could potentially make a profit out of managing such a grain reserve were honest enough to indicate their opposition to such a programme. Millers were also worried about the initial price effect of government suddenly being a major player in the market.

2.8 Conclusion

In setting up a potential strategic grain reserve and testing the viability of such a system the following issues were debated and considered in this Chapter:

- ü Composition of the reserve: Should the government hold physical grain or rather a cash or virtual reserve?

- ü The size of the reserve, bearing in mind that storing maize and other grains is expensive.
- ü The costs and financing of the reserve: Establishing and maintaining a reserve is a costly exercise and needs to be determined with great care. A grain reserve is likely to be a continued cost burden to the state.

Given the international experience with strategic grain reserves, the maturity and openness of the South African economy and especially the agro-food system, it is unlikely that setting up a grain reserve would outweigh the stabilising effect of international trade. South Africa has sufficient foreign exchange reserves, a sound financial system and a strong private sector, and could therefore rely on world markets to perform the storage duty for South Africa if ever we would need such reserve stocks.

This position can however be disputed given the strategic importance of white maize and the fact that limited quantities are traded internationally. This could potentially justify the need for strategic grain reserves if we experience a devastating drought that will result in all crops being wiped out. The chances that this would occur have been estimated at one in every 10 years, making it difficult to decide about the size and cost of the reserve. One should also keep in mind that milling companies usually keep 4 months of stock, which is in any case equivalent to the size of a typical grain reserve.

According to the literature grain reserves are typically established to counter food shortages and to stabilise prices, and not often to lower consumer prices. Given that stability of prices at retail level is the ultimate objective of a grain reserve, it was necessary to determine the extent of price instability. The FPMC through its monitoring duties has established that retail prices are relatively stable (despite the sharp increase during 2002). These prices are more stable than the fairly volatile commodity prices, showing that food manufacturers and retailers take a lot of volatility out of the system, and in the process presenting the South African consumer with long term stability in prices.

Nevertheless, sharp increases in prices of staple foods remain a concern. There remains in our view the possibility for government to use structured portfolios to hedge the inflationary risk or the price of raw material, which they could use for relief programmes. Potentially such a structured portfolio (or simple hedge position) could generate profits that could also be used in government food programmes. However, the management of such a portfolio requires specific skills, and presents many potential dangers related to insider trading, etc. Thus, the implementation of such a proposal will require considerable preparation and will presents large risks to government.

It is the contention of the Committee that the strategic grain reserve (virtual or physical) will not be the best route to provide relief for the poorest households. The changing nature of the food economy will imply that stable and lower prices at commodity level will not necessarily be passed through to retail level. More direct measures discussed in Chapter 3 might be a better option to ensure affordable food to communities.

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CHAPTER 3

OPTIONS FOR DIRECT GOVERNMENT ACTION

3.1 Introduction

Food price increases have a devastating impact on the poor and affect the 'right to food' which 'entails an obligation of the state to respect, protect and fulfil the access to adequate food of all its people at all times'. The highest law of the land, the Constitution, also enshrines the right to food:

> "Everyone has the right to have access to sufficient food and water… and the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights."

In this context government has a duty to act. Government's duty is further emphasised by the massive poverty and unemployment in the country. There are high prevalence rates of HIV/AIDS and growing numbers of orphans. Studies show that 60% of the poor get no social security grants. In the spirit of building a strong productive population and fostering social cohesion; reducing crime, and encouraging investment it is important for government to act and to ensure that these households do have access to food.

While a number of programmes are already in place to assist food insecure households, this Chapter debates whether these measures are sufficient and operated in an efficient manner to ensure that the poorest people are protected from hunger. In the previous Chapter the Committee argued that it is not fully convinced that Strategic Grain Reserves will bring about an immediate or long-term relief to the poorest families in South Africa. It is for this reason that the Committee considers various direct actions by government to address this serious problem.

Examples of direct government assistance programmes are:

- Price controls and rationing to ensure that the quantities of staple foods are available at a reasonable cost for all. This type of intervention is usually only implemented under very specific circumstances such as in times of war. Most interventions of this nature collapsed when the subsidies were withdrawn and were not necessarily successful in ensuring food security for the poor.
- Providing food to the needy through various means e.g. Food for work, school-feeding schemes, food parcels, and agricultural starter packs.
- The provision of social welfare grants to needy families.
- Establishing a comprehensive social security system e.g. food stamps, income grants, etc.

On the supply side the following programmes could address food security problems:

- Increasing the availability of land and other farming inputs like water, fertiliser etc. Improved agricultural support and agricultural research systems could also enhance agricultural output.
- Reinvestment in agriculture on a massive scale, i.e. investing in technology, irrigation infrastructure, human capacity and improving storage systems to reduce post harvest losses.
- Elimination of conflicts and political instability in the region.
- Improving transport infrastructure between agricultural areas and large urban centres and other areas of large population concentrations.
- Lobbying for free global trade. The European Union and America subsidise their farmers, whose product then competes with produce from farmers in developing countries who are not subsidised.

The purpose of this Chapter is specifically to debate the merits of direct government interventions such as school nutrition programmes, food stamps and some form of income grant. In addition to a much stronger government commitment to agricultural development the Committee is of the opinion that these interventions will address the problem of food security and the affordability of food much more effectively.

3.2 School nutrition programmes

Studies from Kenya and the Philippines show that malnutrition stunts children's intellectual and physical performance. Temporary hunger (caused amongst other things by sudden increases in food prices) is also detrimental to a child's health by reducing attentiveness and mental and physical activity, thus negatively impacting on the child's capacity to learn. The World Food Programme therefore believes that providing a nutritious meal at school is a simple but concrete way to give poor children a chance to learn and thrive thus contributing to human capital formation as well as to the immediate problem of hunger.

Research confirms that basic education is an effective investment for economic growth. This is because, once literate, a person will have skills and be more employable in future, and be better able to know what is nutritionally best for her/his development. The cost of school nutrition programmes will be high but are undoubtedly a long-term investment in human capacity. This is an important intervention for South Africa since the lack of human capital has been identified as one of the impediments to growth.

South Africa implemented, as one of the presidential lead projects of the Reconstruction and Development Programme, the Primary School Nutrition project. The Primary School Nutrition Project had noble goals of:

- Improving education as hungry pupils can only think of their hunger and thus cannot concentrate on their lessons;
- Boosting attendance and in some cases freeing children from the necessary task of looking for food not only for themselves but often for their families;
- Dealing with parasitic infections and micronutrient deficiencies. Eradicating parasites in the body will enhance the absorption and retention of food;
- Dealing with malnutrition, as a 1994 anthropometric study showed high levels of stunting and wasting amongst coloured and black children;

- Providing health/hygiene and nutrition education.

After a few years many of these schemes across the country collapsed. According to a 1997 study produced by the Child Health Unit of the Health System Trust, the reasons for the collapse of many of the school feeding schemes include:

- Irregular supplies of food;
- Food lost through spoilage or black market activities or theft;
- Inadequate rations in calories and nutrients and unacceptable food, stale food;
- Disruption of teaching for meal preparation, burden on school staff. The responsibility for preparing the food sometimes fell on the teachers who allege that it put an additional burden on them "we have been side tracked into preparing sandwiches during teaching time and now we are expected to run food gardens as well, it is too much";
- Burdensome reporting/monitoring. It would take months for claims to be processed and paid;
- Unavailability of infrastructure i.e. water, electricity, kitchens, storage facilities, logistical difficulties in transporting large quantities of food with poor transportation and communication systems;
- Failure of government departments to cooperate. The department of public works was also not brought in to upgrade facilities e.g. kitchens, via the public works programme.

After analysing 17 programmes in different countries, the United Nations came to the following conclusions. For school feeding schemes to be successful and effective, programmes should have:

- Clear but flexible objectives;
- Political support, strong leadership and good management (adequate training, staffing and supervision of both programme staff and community workers, teachers cannot be expected to both cook and teach);
- Geographical targeting of schools in socio-economically deprived areas worked better than any other form of targeting;
- Community mobilisation or partnership with the NGO sector;
- Food must be of good quality, preferably high in protein, culturally acceptable and given to the children in the morning.

Recommendations:

School feeding programmes should be targeted at areas with the highest poverty gap i.e. squatter camps, townships, rural areas and farm schools so as to concentrate the intervention on children that need it the most. Within the primary School Nutrition Programme each province previously targeted differently; the Free State, KwaZulu-Natal, Mpumalanga and Northern Cape used geographic targeting, while the rest targeted individual children within schools. The latter arrangements do have complexities and it is a much better practices to provide food to all children in a school if the school is in an area that is targeted.

School feeding should begin from Early Childhood Learning centres (even those run by the communities) up to grade 12. Indeed the White Paper on Education acknowledges "The care and development of young children must be the foundation of social relations and the starting point of human resource development strategies from community to national levels". Research indicates that a malnourished child never recovers to his full intellectual and physical capacity.

We concur with the government decision to transfer the responsibility for school feeding programmes to the Department of Education. We further recommend that the financial resources needed for the school feeding programmes should be provided to the school governing body on a monthly basis, based on enrolment numbers and feeding days per month. School feeding then becomes the responsibility of the school. The onus will be on the school governing body and the head teacher to report on expenditure. Regular inspections by the Department of Education will be necessary to ensure that the programme is implemented effectively without any corruption. Putting the funds into the control of the school governing body and the headmaster avoids bureaucracy, delays in payments, unclear policies, and government departments that refuse to cooperate.

Nutritious snacks (e.g. peanut butter sandwiches, milk and vitamin fortified fruit juices) should be provided in the morning. Only those schools with the necessary infrastructure (kitchens, fenced land, water, secure storage etc.) should attempt to augment the feeding programme with growing food gardens.

An example of a successful school-feeding programme is the Peninsula School Feeding Scheme operating in the Western Cape. The PSFA targets the poorest schools with a nutritional snack comprising two slices of brown bread, peanut butter, jam and a micronutrient enriched, soya-based milk drink. Their field workers ensure that the children receive their meal daily, early in the morning, by monitoring the preparation and serving on a regular basis.

The menu was devised in consultation with nutritionists from the Department of Health and the Universities of Stellenbosch, Cape Town and Western Cape, and piloted in schools with the co-operation of suppliers. This menu seeks to balance nutritional benefit, limited funds and the logistical constraints of mass distribution and preparation. Through co-operation with the Health Department and the Medical Research Council, the PSFA participates in and supports de-worming and health and sanitation initiatives, based on World Health Organisation criteria.

3.3 Interventions enhancing household food security.

There are other interventions that can enhance household food security. One option would be food stamps and another form of income grant. Both are debated below as potential recommendations for improving household food security.

3.3.1 Food stamps

Food stamps as a social security net are most widely used in the United State of America. Giving food to needy families through food stamps began during the great depression of the 1930s, but the program as it is known today was formalised in 1964.

Since 1974 all states were required by law to offer the program to low-income families. The food stamp programme was always means tested and enables families to purchase bread and cereals; fruits and vegetables; meats, fish and poultry; dairy products, seeds and plants which produce food for the household to eat. Food stamps cannot be used to buy liquor, pet food, hot meals, soap, linen etc. The existence of electronic transfers has reduced fraudulent use of the stamps and the sale of stamps for cash.

According to a study done by Hirsh and Rank for the Food Assistance and Nutrition Research Small Grants Program of the United States Department of Agriculture, 49% of American children and 51% of adults will at some point in their lives use food stamps. Usage varies greatly with race, education and marital status. African Americans, individuals with no college education, and single women with children are at high risk of using food stamps to feed themselves or their children. The number of people using food stamps is influenced by the growth in the economy and changes in the policy of eligibility. For example; between 1994 to 1999 participation decreased from 27.5 million to 18.2 million people. This figure has increased to almost 21 million in April 2003. However, not all those eligible participate in the programme. For example according to the USDA, in 1999 only 57% of eligible households participated because of lack of information on how to access the program, massive administration/cumbersome application procedures, long application forms and the stigma associated with receiving food stamps.

Having a food support system is not cheap. It cost the US state on average $80 per person per month in the 2002 financial year to have a food stamp programme. The food stamp programme served an average of 17.2 million people each month during fiscal year 2002, and cost $20.7 billion. However the programme does not only have the obvious benefits of saving people from destitution (investing in human capital) but it is estimated that "each $5 of federally funded benefits generates approximately $10 in economic activity" (Economic Research Service of the USDA.). The additional demand creates jobs, increases household income, and thus stimulates the domestic economy.

According to government statistics, there are 2,2 million households in South Africa that spend less than R600 a month on food. Supposing each family would receive a food package monthly, it would cost about R7.92bn/year (excluding transportation and delivery costs).

Food stamps require an efficiently functioning distribution system without any shrinkage or losses. The Committee argues that these problems can be overcome through the implementation of a shortened supply chain where the commodity does not change hands too many times.

3.3.2 A means tested income grant

The debate in South Africa on means to alleviate poverty has focussed recently on the recommendations of the Taylor Committee to implement a Basic Income Grant of not less than R100 per month to all persons living legally in South Africa. This would enable South Africa to meet its constitutional mandate on the bill of rights (Section 27).

There is no means test for the BIG, which will minimise the administrative burden and opportunities for corruption that are often associated with means-tested grants. The lack of a means test would also ensure that individuals would not be penalised by the loss of benefits if they work to improve their own situation. This would encourage take up of the grant.

It has been estimated that the cost of the BIG would be R43.8bn per annum. This high cost has created some reservations to the implementation of the BIG. Consequently the Committee feels that a means tested income or poverty alleviation grant should be introduced for targeted households to enable them to afford at least the basic foods. This should address the immediate problem facing many poor households in the aftermath of the rising food prices.

3.3.3 Recommendation

Although food stamps and the BIG have merit as potential mechanisms to address household food security, there are aspects related to the logistics and management of the food stamps and the cost of the BIG that argue against the implementation of these initiatives. It is for this reason that the Committee recommends that the government investigate a poverty alleviation grant based on a means test, which will enable households to access food. This will deal with problems of food security at a household level as well as with other income poverty issues, thus allowing families to take risks and acquire assets.

If the implementation of such a grant were to be accompanied by a deliberate effort to increase agricultural output in areas where the poor reside, households receiving these grants can buy their food from local farmers, which will also promote local economic growth. This implies that small-scale agricultural production should be made a central strategy for production at local level for the various social development initiatives such as the school feeding programmes and any form of income grant.

The Committee confirms that a long-term strategy for household food security is required and that government interventions such as the provision of food parcels cannot be a sustained long-term intervention strategy for all vulnerable groups. An organised and systematic increase in small-scale production must be integrated into the broader poverty alleviation interventions. Manageable technologies in small scale farming which can be utilised in rural and urban settings must be explored and production of food for family consumption must be encouraged and enhanced. Agriculture and social development can form a powerful coalition for the promotion of food security and development.

CHAPTER 4

IMPROVING INFORMATION SYSTEMS IN THE AGRICULTURAL AND FOOD SECTOR

4.1 Introduction

One aspect of the Committee's terms of reference was to look into the effectiveness of current government research and information systems on agricultural and food prices and how this can be improved. On the other hand the investigations into the various supply chains and the futures market clearly highlighted the problem with <u>information</u> in general. It became evident that market information and information about food processing costs is not readily available and not evenly distributed, creating the potential for opportunistic behaviour by role players in the food supply chain.

In this Chapter we assess the current government systems in place to monitor food prices and the distribution costs of food in South Africa. We start by firstly identifying the government departments that are responsible for the monitoring of food, food prices and food manufacturing and distribution costs. After identifying the responsible departments, the current output of these departments or sections is analysed. Finally we discuss recommendations on how to improve the shortcomings of the current systems.

4.2. Agricultural Information Sources

Statistics South Africa and the Department of Agriculture are the two main providers of statistics on aspects related to the agricultural and food sector. In addition the South African Grain Information Service (SAGIS) provides timely information on all grain markets.

Statistics South Africa (StatsSA)

StatsSA is a national government department accountable to the Minister of Finance. The activities of the department are regulated by the Statistics Act (6 of 1999), which ensures independence from political interference in the production and dissemination of official statistics. In the Statistics Act, the role of the department is defined as informing organs of state, businesses, other organisations and the general public in planning, decision-making, monitoring and assessment of policies.

Further roles of StatsSA are to:

- Promote coordination among producers of statistics in South Africa in order to advance the quality, consistency, comparability and optimum use of official statistics and thereby avoid unnecessary duplication;
- Provide statistical advice to government departments; and
- Liase with the statistical agencies of other countries, and other international agencies.

Therefore, its task is to coordinate, collect, and process, analyse and disseminate official statistics in support of economic growth, socio-economic development and the promotion of democracy and good governance.

StatsSA publishes approximately three hundred different releases each year. Statistics on food prices are mostly grouped in the CPI or the production price index. StatsSA produces over 155 different CPI indices on food in South Africa. The CPI indices are available for different expenditure groups and according to metropolitan, metropolitan & urban, and rural areas. CPI indices are also calculated for specific food groups, including meat, milk products, grain products, and processed and unprocessed foods.

Food price information is also available for producer prices. The producer price index (PPI) has over 116 different indices on food and food products. These PPI indices are available for food as well as major food groups. The PPI indices are further divided into production price indices for the manufacturing of food products as well as for the major food groups.

Apart from CPI and PPI indices, StatsSA also provides information on the volume of retail trade in food and processed food products on a monthly basis. The information does, however, require subscription and registration before it can be downloaded from the StatsSA website.

Although it seems that there is a lot of information available on food prices, there are a few shortcomings:

- There does not seem to be any information on actual food prices readily available to the public for specific food products (this is usually only available at a fee and the Committee's own experience leads it to doubt the reliability of the data);
- All the available information is in indices and not in actual prices, making calculations difficult, especially when calculating the farm-to-retail price spread;
- Although information is available for producer prices as well as consumer prices of food, there does not seem to be any information available on the distribution or marketing costs of food;
- The producer price index does include indices on manufacturing prices of food and food groups, but there is no breakdown of processing and distribution costs. Information on the cost of energy, labour, packaging, advertising, depreciation, rent, interest, repairs and corporate taxes is only available on an aggregate level. These costs are not published for specific product groups such as food.

In light of these shortcomings the Committee recommends that StatsSA should join forces with the national Department of Agriculture to find ways to make detailed information on average monthly food retail prices and margins more readily available to the public and to all government departments.

The Department of Agriculture

The Department of Agriculture is responsible for the dissemination of statistics on agriculture and agricultural output through its Directorate: Agricultural Statistics. The Directorate, through the Crop Estimates Committee (CEC), provides information on all major grain crops in South Africa. The CEC meets on a monthly basis during which current conditions and developments are assessed and adjustments to yields and the area planted are made.

The Directorate is organised into three divisions: market information, economic trends, and food security and farm profiles. The following list of information on the agricultural sector is available from the Directorate: Agricultural Statistics:

Private consumption expenditure
Private consumption expenditure on major food items, tobacco and beverages are available on a quarterly basis.

Producer price index
Prices received by farmers for all major agricultural commodities are available in the form of indices on a quarterly as well as annual basis. In addition an index for farm requisites is also published.

Agricultural imports and exports
Statistics on the imports and exports of all major agricultural commodities as well as food items are available on a monthly basis. These statistics include the volume as well as the value of agricultural imports and exports.

Food basket of farm products
Statistics on the food basket of farm products are available on a monthly basis. These statistics measure the farmer's share in the consumer Rand paid for final farm products.

Sales of fresh produce sold on markets
Market information on the volume, value and average prices of fresh produce are available on a monthly basis.

Intake of agricultural products for processing
Information on the trends in processing of fruit and vegetables are available on a national level and are compiled on a quarterly basis. The information is produced per product and includes the main processing activities per product.

All the above information is available from the Directorate: Agricultural Statistics upon request and its available free of charge. Apart from these statistics, the Directorate also publishes a number of publications that contain information on producer prices and production volumes. These include the following:

Abstract of Agricultural Statistics
This annual publication contains (annual) data series on all main agricultural commodities. The publication is available from the Department's website.

Crops and Markets
Crops and Markets is a quarterly publication on fresh produce and market information. It also reviews the latest price trends of major agricultural commodities. The publication is available from the Department's website.

Statistics on Fresh Produce Markets
This annual publication is a comprehensive data set of monthly sales and prices on all fresh produce markets. It is also available on the Department's website.

The information produced by the Directorate: Agricultural Statistics is mainly focused on the producer price level. Very little if any information on the cost of processing, distribution and marketing of food products is available. It is therefore difficult to estimate what proportion of the consumer Rand spent on food will go to various role players and activities in the food value chain. The food basket of agricultural products that the Directorate provides is only based on weights and it only expresses the farmers' share of the total consumer Rand.

South African Grain Information Service (SAGIS)

The stakeholders in the grain industry have through a collective effort established a Section 21 Company, the South African Grain Information Service (SAGIS), which operates a well developed and co-ordinated market information system on all the grain markets. Information on deliveries at silos, export and import parity prices, tariffs, etc is provided through the web and through regular market bulletins. One major shortcoming is that actual export and import figures on all grains are not available on a weekly basis. This is crucial information for the market because it is such information that can prevent opportunistic behaviour on the commodity markets.

4.3 Recommendations

An aspect that was common throughout the investigations was the lack of in-time, reliable information on prices, crop size, stocks, and trades. It is in this respect that the state can provide a useful input to improve information dissemination, awareness and monitoring. The Committee is confident that despite the difficulties inherent in monitoring food prices and in finding evidence of collusive behaviour and unjust profiteering, one good thing about its own existence is that 'there was monitoring of food prices'. In this sense the Committee recommends that a permanent system of review and monitoring of food prices and food processing costs needs to be instituted. In addition it is important to improve current information systems of the government such as the Crop Estimates. These are discussed next.

4.3.1 Establishing a permanent food price monitoring system

The output of the Committee provides an important and useful foundation upon which the state can introduce a permanent mechanism to monitor trends in food prices, food processing costs and farm to retail price spreads. The effect of a public watchdog such as the Committee has been quite dramatic. Despite the limited legal powers of such a mechanism, the fact that trends can be reported and that industries and food products showing extraordinary trends can be 'exposed' does have some impact. The power of 'name and shame' should not be underestimated.

Such a mechanisms should not take the form of *ad hoc* arrangements, but should rather be incorporated in normal government structures, either within the Department of Agriculture or the National Agricultural Marketing Council.

<u>What are the requirements and make up of such a monitoring mechanism?</u> The experience of the USA provides useful ideas. The Economic Research Service of the United States Department of Agriculture is responsible for the measurement of food prices at retail level, of food marketing costs and of food price spreads.

The farm-to-retail price spread measures the contributions of food manufacturing, wholesaling and retailers. Recent increases in consumer demand for convenience foods have increased the demand for manufacturing, processing and marketing services, which have increased price spreads and the food sector's overall marketing costs.

Measuring food marketing and price spreads
The current methods applied by the ERS to obtain information on food price spreads and marketing costs are discussed below.

- Collection of retail price data

Data are collected at the point of sale by supermarkets using electronic scanners in checkout lines. Stores can use barcodes attached to the product package or store codes typed into the register to record the product type and product price. The ERS defines supermarkets as retail grocery stores with dairy, fresh produce, fresh meat, packaged food and non-food departments and annual sales of $2 million or more. Although the process is not based on a random sample, the raw data underlying the database are from supermarkets across the US that account for approximately 20% of US supermarket sales.

Supermarkets using electronic scanners may provide the information to commercial data firms (i.e., syndicated data suppliers). These firms combine point-of-sale transaction data from supermarkets. They process and categorise the data and sell information to both supermarket chains and manufacturers for inventory, revenue control, and general marketing purposes.

The ERS makes use of a third-party co-operator who obtains and processes the retail scanner data and provides ERS with summary statistics. This ensures that the retail scanner data is completely confidential. Store- and chain-level data are therefore not provided to ERS in raw form nor can it be constructed from the data published on the ERS website. No data related to individual store- and/or chain-level sales are obtained or maintained by ERS. The summary data are delivered to ERS every month by the third-party co-operator, reviewed by ERS staff for consistency and quality, and posted to the ERS website.

Food prices are included in the information that the Bureau of Labor Statistics (BLS) collects for development of the CPI. BLS has classified expenditure items into more than 200 categories, arranged into eight major groups. Food and beverages—items such as breakfast cereal, milk, coffee, chicken, wine, full-service meals, and snacks—are in one major group.

For each of the more than 200 categories, BLS has chosen samples of items to represent the thousands of varieties available in the marketplace. For example, in a given supermarket, the Bureau may choose a plastic bag of golden delicious apples, US extra fancy grade, weighing 4.4 pounds to represent the "apples" category.

Each month, BLS data collectors visit or call thousands of retail stores all over the United States to obtain price information on thousands of items used to track and measure price changes in the CPI. These prices represent a scientifically selected sample of the prices paid by consumers for goods and services purchased.

The ERS retail scanner data supplements BLS data in three ways. First, the ERS database contains an index of volume sold (with the average monthly volume for 2001 equalling 100). BLS does not collect information on the volume of meat sold. Second, it provides additional specie coverage for lamb and veal. Third, BLS collects a "snapshot" of prices from sample stores once a month. This may not capture the full amount of featuring done by the store. Since featuring influences the volume sold and the ERS scanner database reflects featuring for the entire month, it is hypothesized that the ERS data may report lower prices.

- Using retail data for market and policy analysis

Retail prices are used to develop farm-to-retail price spread information that measure the relative contributions of farm production, food manufacturing, wholesalers and retailers.

Sources of information for the calculation of price spreads and marketing costs

The ERS uses several sources of information to calculate the farm-to-retail-price spread and marketing costs. The Census Bureau provides data on food processing establishments in their Economic Census. The census is conducted every 5 years and provides information on establishment numbers, value added, materials usage and value of shipments by detailed industry and geographic region. The data on shipments, value added and employment by industry is obtained through the Annual Survey of Manufactures. The annual County Business Patterns survey provides information on plant location and employment. Financial information is obtained through the Quarterly Financial Report and Annual Capital Expenditures Survey. Monthly production and inventory data for selected industries are obtained through the Current Industrial Reports programme. The Bureau of Labour Statistics provides consumer price indices, hourly earnings and the number of employees in the food industry. The USDA National Agricultural Statistics Service provides prices received by farmers for a wide variety of farm commodities.

Implementing such a system in South Africa

The Committee is of the opinion that South Africa has all the machinery and systems in place to copy the system of the USDA to the letter. The Committee experienced good collaboration from AC Nielsen, which is a typical commercial data firm providing retail price data. This company processes all till-point data of all the major supermarkets and should be able to provide aggregate data on sales volumes and retail prices per month. With all systems moving increasingly to scanners, they should soon have a database in place that is free of enumerator or respondent bias, and thus provides value-free and unbiased information. Forming an alliance with this company will provide the first step to ensuring sufficient data for the start of such a monitoring mechanism. Government should, however, assess the cost of purchasing the data, as well as getting the approval from the Consumer Goods Council whose members supply the data to AC Nielsen.

4.3.2 Investments to improve crop estimates and agricultural information

The problems in the commodity market in 2002 were largely influenced by perceptions about the size of the harvest. This was caused by some confusion in the market between the actual deliveries recorded by SAGIS and the estimated final crop size issued by the Crop Estimates Committee. When it was finally confirmed that the total crop including retained stocks (on farms) was 1 million tons more than anticipated, the market corrected very quickly. This information only became known 6 months after the harvest, resulting in the sharp drop in prices in December/January 2003. Had this information been known earlier, and had the crop estimates not been so far off target the market might have behaved differently during the period June to December 2002.

The Committee therefore concurs with the general sentiment in agricultural circles that a substantial investment in the system of crop estimates is required to avoid any similar problems in future. Specific issues related to crop estimates that needs to be addressed include:

- The sample of farmers should be increased to approximately 3500 farmers that provide monthly inputs;
- Improving the analytical and modelling capacity to determine the impact of weather variables and trends (as well as soil moisture levels) on the size of the local crop;
- More objective inputs from experts in the industry such as traders, importers and exporters, seed and fertilizer sales should be obtained on a monthly basis;
- Although the crop estimation methodology has been improved through the appointment of the ARC Consortium, the continued funding and future continuation of the project is not guaranteed. As a result the project is increasingly treated from season to season and not as a long-term statistical process. This is of major concern to the Committee, and it is recommended that the government ensures long term commitment for this process to avoid the problems of 2002;
- A shortage of expertise on the new methodology of crop estimation also poses a problem. More investment in trained staff is needed, especially for enumerators collecting field data;
- The only “cross check” data for crop estimates is SAGIS’s delivery figures (obtained from the Grain Silo industry) and, although very helpful with the reconciliation of production data, it remains deficient for the purpose of calculating area of production. An end of season survey remains necessary to

determine the actual area harvested as opposed to area planted. Funding is currently insufficient to enable such a survey. Investment in the latest satellite technology could also help in obtaining accurate area data.

Through its various investigations, it became evident to the Committee that there is a despite the recent investments through the DoA budget to improve crop estimates still lack of a comprehensive, statistically correct and reliable agricultural production statistics in South Africa. It is the view of the Committee that the development of a complete and accurate statistical system for agricultural production is crucial in the long term. All these recommendations will imply that the Department of Agriculture should <u>increase its budgetary allocation</u> for agricultural information and statistics.

Although <u>SAGIS</u> provides an important, accurate and reliable information service to the grain industry, there are a number of ways in which information delivery can be improved. It is important for Government to see how they can support this organisation, which ultimately provides the key statistics on which many commodity brokers trade and which ultimately influenced commodity prices and thus also food retail prices.

Information on retentions on farms. The Committee received reports that there are currently roughly 600 000 tons of grain storage capacity on farms. Without proper knowledge of how much is stored on farms it will always be difficult to determine the true size of the crop. This is a difficult aspect but it is recommended that the Department of Agriculture should investigate whether accurate information on on-farm storage is necessary and whether it can be obtained in a comprehensive but cost effective manner.

Information on grain imports and exports. The Committee's investigations into the grain market highlighted concerns about the lack of accurate and real-time information about actual trade in whole grain and grain products at any specific point in time. Only the big role players know what quantity of grain is being exported, imported, or planned for export or import. This situation of asymmetric information is not healthy and can create opportunities to corner the market. Inaccurate information (rumours) create instability in the commodity market and it can be argued that it is government's duty to ensure that more accurate and timely information is available to prevent this from happening.

It is therefore recommended that the government introduce a statutory measure complying all grain traders to report on a weekly basis on realised <u>and</u> planned (i.e. a finalised contract) imports and exports of whole grain and grain products. The information can effectively be managed by the current SAGIS structures and disseminated every week. The Committee is of the opinion that such a system, in combination with an accurate crop estimate, can do a lot in avoiding unnecessary volatility in the agricultural commodity markets.

Information about cross border movements of grain (at border posts and at the harbours) seemed to be a general problem, since SARS was, for a variety of reasons, not able to provide information to the Department of Agriculture or SAGIS. In addition to the statutory measure listed above, the Committee also recommends that the government ensures that the following government agencies provide monthly information on cross border trade in grain:

- Portnet
- SARS
- CBRTA (Cross Border Road Transport Agency).

Summary

The purpose of the recommendations in this Chapter is to ensure a system that will provide unbiased, reliable and timely information on market fundamentals such as supply and demand factors, regional market information, and trade deals. Information on retail prices and the cost of food processing should be released at least every six months to act as an 'early warning' system. It is proposed that an annual publication, to be known as the '*South African Food Cost Review*" be published to disseminate information on food costs and trends in retail prices and farm-retail price spreads as widely as possible. Such a publication can also be used to inform the public about food safety issues, food regulations and minimum specifications for food items.

All these recommended interventions by government should ensure a more level playing field and a more competitive environment in agricultural commodity markets.

CHAPTER 5

INCREASING COMPETITION AND REDUCING BARRIERS TO ENTRY

Oligopolistic structure in the food sector

The analyses of the Committee presented in Parts 4 and 5 of this Report provide substantial evidence of oligopolistic behaviour and monopolistic competition in the food sector. Increasing concentration in the food value chain is a worldwide trend, caused by increasingly demanding consumers, concerns about food safety, etc. The competition is fierce, with everything based on economies of scale, small margins but high volumes, and turnover. This structure makes it very difficult for smaller players to enter this market, either as retailers, or as food processors and distributors. Smaller players do not have the scale of operation to compete in the game. Volatility in commodity prices and in the exchange rate also has a clear impact on smaller suppliers and manufacturers, who find it very difficult to absorb such shocks. This has the potential to bring about further concentration in manufacturing and retailing.

The oligopolistic structure and monopolistic competition in the food business is a reality that is amply illustrated by the behaviour of individual firms in the sector. Some firms are able to maintain prices that are higher than would otherwise pertain in a competitive market through branding, product differentiation, price discrimination, market segmentation and advertising. Barriers to entry like high capital costs enable the existing firms to continue to earn above-normal profits, as they have the power to determine the price for the goods/services they produce or sell. Consumers do not have full information so it is possible for the seller to charge different prices for the same product. The consumer many not know how much the rival seller is charging, and may not have all the information on all the 'specials' and other alternative deals, since this involves high search and negotiating costs for the consumer.

Economists such as the Nobel laureate Joseph Stiglitz take the issue further to suggest that retail prices are relatively constant because retailers "co-operate and fix prices". This they do not have to do formally. Because of their proximity to each other, they could conceivably read each other's adverts, and they in any case negotiate with the same suppliers, etc. Research shows that retail produce buyers, if they are able to tacitly co-operate with each other, do so by co-operating when market prices are clearly in their favour. During co-operative periods, prices are bound between a competitive level and a monopolistic one depending upon the extent to which rivals are able to effectively agree on a common price.

Monitoring the competitive environment

In this environment government seems to have its work cut out to ensure effective policing of the competitive environment through the Competition Commission. It would therefore by appropriate to request the Competition Commission to conduct a thorough investigation into the market structure of the food industry as well as the agricultural input industry. The findings of the Committee reported here should provide a useful basis from which to start such an investigation, and such an investigation will put the Competition Commission in a position to monitor competitive behaviour in the food industry on a continuous basis.

Increased competition/participation

A more important intervention by the state would be to increase participation and increase competition in the market by reducing barriers to entry for smaller suppliers, manufacturers and retailers. Innovative programmes under the Black Economic Empowerment programme (BEE), such as preferential procurement systems, can be used effectively to promote increased participation. Government will however have to look at programmes to assist such new entrants with start-up capital.

Though the farming sector is perfectly competitive, there are barriers to entry for previously disadvantaged farmers, which are currently being addressed by the state in partnership with the private sector through a range of strategic programmes. Accelerating land reform and improving government support structures are important to stimulate local production of food. This should enhance the availability of food in remote rural areas and thereby create the potential for cheaper food for poor rural communities.

Food fortification legislation: creating barriers to entry

In the post deregulation era a large number of small-scale millers entered the maize meal market, creating substantial competition for the five large milling groups. There are, however, recently announced regulations on the fortification of basic foodstuffs, which, while noble in intention, will have the unintended consequence of reducing competition in the milling industry. By diminishing competition, created by the small millers, the price of maize meal will inevitably increase over time.

The new regulations on food fortification have potentially large negative consequences for the smaller operators who:

- Cannot afford the mixing equipment, which costs as much as the mill itself;
- Do not have the administrative or technical expertise to administer the fortification;
- Will be running illegal operations due to the regulations, making it possible to close them down whenever they interfere in competing markets.

It should be noted that small mills generally do not remove the germ from the maize meal, therefore dramatically improve the health qualities of the final product. Most vitamins, with the exception of vitamin A, are fat-soluble and are therefore concentrated in the germ. The highly refined super white maize meal was used as a benchmark to calculate the amount of fortification needed, with no consideration given to the much healthier product produced by smaller mills.

The Committee notes this with concern and recommends that small-scale millers be exempt from the food fortification legislation. This should ensure that healthy competition, which the Committee argues is necessary to keep retail prices at bay, remains in place.

Providing some order in the agricultural futures market

The Committee's investigation into the agricultural derivatives market of the JSE (SAFEX) also pointed to the need for rules to prevent opportunistic behaviour by commodity traders. The potential for manipulation of this market lies in the large open positions of traders, which makes it possible for larger traders to corner the market and to lead the market (especially inexperienced traders) into a particular direction. As a result the Committee was of the opinion that rules to manage open positions of traders were necessary. Fortunately, the JSE has also recognised this shortcoming and has, since the start of the Committee's investigation, announced the introduction of 'position limits'. The Committee welcomes this pro-active move. It is hoped that this ruling, plus much stronger monitoring of the ethical conduct of traders, will ensure that competition is brought within bounds so that the 'wild west' character of this market will disappear.

Transport infrastructure: a key constraint to participation

Efficient functioning transport networks are important to any competitive economy, and are key to a successful food security strategy. The gradual movement to road transport of most grains due to poor efficiency (slow turn around time, limited number of trucks) on the rail network has contributed to increased costs of raw material at mill door or factory gate. These costs are eventually recuperated from the consumer, implying higher food prices. A recapitalisation of Spoornet in terms of rolling stock and locomotives, as well as the revitalisation of rural rail sidings could improve this situation. The reopening of rail sidings in rural areas will also form an important component of increasing market participation by small farmers in disadvantaged communities. In this respect one can argue that improving the rail network represents a national asset for economic development in the rural areas, which should not be subjected to the same standards of profitability as purely commercial ventures.

At the same time strong enforcement of load per axle regulations will also help to stem the large shift to relatively more expensive road transport. The social and economic costs of increased road transport in terms of accidents and damage to the road network are astronomical, making it even more important for Spoornet to be revitalised. The Committee therefore supports the government's plans in this regard and argues that it should have positive food security as well as economic development impacts. An improved transport network can thus make an important contribution to a more competitive environment, increased market participation and perhaps lower food distribution costs.

CHAPTER 6

SUMMARY OF RECOMMENDATIONS

The Committee has been aware since its appointment that its terms of reference represent but one initial step in a long-term process that is aimed at the maintenance of fair competition in the food and agricultural sectors of the South African economy. In this respect, the Committee's recommendations will focus in the first instance on the institutionalisation of the key functions required to establish such a food pricing monitoring system.

6.1 A food price monitoring system

The Committee found that the monitoring process was a useful exercise in fostering the understanding of price trends for specific food items, and price determination at the different levels of the food supply chain. This promotes the protection of consumer rights; it provides valuable information for policy analysis and leads to better understanding of the causes of price variation for similar products in rural and urban settings. The advantage of this system of monitoring price trends is that it also allows qualitative observations of other factors that influence food prices in different social environments.

Recommendation 1
The Committee is of the opinion that the National Agricultural Marketing Council in collaboration with the Department of Agriculture should implement a reliable and consistent price monitoring network throughout the country, as this affords policy makers the opportunity to gain first hand qualitative and quantitative information on price trends, and will enable the Department to make better informed decisions regarding food policy in this country.

In light of shortcomings in the provision of data required for the monitoring of food prices, the Committee recommends that:

Recommendation 2
StatsSA join forces with the Department of Agriculture to find ways to make detailed information on average monthly food retail prices and margins more readily available to the public and to all government departments. An alliance with AC Nielsen and the Consumer Goods Council should also be considered to supply scanner data on retail food prices and volumes.

The Committee also concurs with the general sentiment in agricultural circles that a substantial investment in the system of crop estimates is required to avoid any similar problems in future. Although the government has already started to address this during 2002 there are still specific issues related to crop estimates that need to be addressed. This include:

Recommendation 3

- Increasing the sample of farmers should to approximately 3500 farmers that provide monthly inputs;
- Improving the analytical and modelling capacity to determine the impact of weather variables and trends (as well as soil moisture levels) on the size of the local crop needs to be improved.
- More objective inputs from experts in the industry such as traders, importers and exporters, seed and fertilizer sales should be obtained on a monthly basis.
- Although the crop estimation methodology has been improved through the appointment of the ARC Consortium, the continued funding and future continuation of the project is not guaranteed. As a result the project is increasingly treated from season to season and not as a long-term statistical process. This is of major concern to the Committee, and it is recommended that the Government ensure long-term commitment for this process to avoid the problems of 2002.
- The shortage of expertise on the new methodology of crop estimation also poses a problem. More investment in trained staff is needed, especially for enumerators collecting field data.
- The only "cross check" data for crop estimates is SAGIS's delivery figures (obtained from the Grain Silo Industry, millers, processors, traders and exporters) and, although very helpful with the reconciliation of production data, these data remain insufficient for the purpose of calculating areas of production. An end of season survey remains necessary to determine the actual area harvested as opposed to area planted. Funding is currently insufficient to enable such a survey. Investment in the latest satellite technology could also help in obtaining accurate area data.

Apart from the positive moves to improve crop estimates through increased budgetary funding under the MTEF it is of concern to the Committee that there is still a lack of comprehensive and statistically correct data on general production statistics and prices for the agricultural sector in its totality. It is the view of the Committee that the development of a complete and accurate statistical system for the agricultural sector in general is crucial in the long term. It is therefore recommended that:

Recommendation 4

The Department of Agriculture should increase its budgetary allocation for agricultural information and statistics.

Although SAGIS provides an important, accurate and reliable information service to the grain industry, there are a number of ways in which information delivery can be improved. It is recommended that:

Recommendation 5

The State investigate ways to support SAGIS, which ultimately provides the key statistics on which many commodity brokers trade, and which ultimately influences commodity prices and so food retail prices.

The Committee received reports that there is currently roughly 600 000 tonnes of grain storage capacity on farms. Without proper knowledge of how much is actually stored on farms, it will be difficult to determine the true size of the crop. It is recommended that:

Recommendation 6
The Department of Agriculture investigates whether accurate information on on-farm storage is necessary and whether it can be obtained in a comprehensive but cost effective manner.

The Committee's investigations into the grain market highlighted concerns re the lack of accurate and real-time information on actual trade in whole grain and grain products at any specific point in time. Only the big role players know what quantity of grain is being exported, imported, or planned for export or import. This situation of asymmetric information is not healthy and can create opportunities to corner the market. Inaccurate information (rumours) create instability in the commodity market and it can be argued that it is Government's duty to ensure that more accurate and up-to-date information is available to prevent this from happening. It is therefore recommended that:

Recommendation 7
The State introduce a statutory measure compelling all grain traders to report on a weekly basis on realised and planned (i.e. a finalised contract) imports and exports of whole grain and grain products. The information can effectively be managed by the current SAGIS structures and disseminated on a weekly basis. The Committee is of the opinion that such a system, in combination with an accurate crop estimate, will contribute much to avoid unnecessary volatility in the agricultural commodity markets.

Although approached, SARS has not been able, for a variety of reasons, to provide up to date information to the Department of Agriculture or SAGIS. From this it is gleaned that information about cross border movements of grain (at border posts and via the harbours) is a general problem. In addition to the statutory measure listed above, the Committee also recommends that:

Recommendation 8
The State ensure that the following government agencies provide monthly information on cross border trade in grain:

- Portnet
- South African Revenue Services (SARS)
- Cross Border Road Transport Agency (CBRTA).

The purpose of these eight recommendations is to guarantee a system that will provide unbiased, reliable and up-to-date information on market fundamentals such as supply and demand factors, regional market information, and trade deals. Information on retail prices and the cost of food processing should be released at least every six months to act as an 'early warning' system. To this end, the Committee recommends that:

Recommendation 9
An annual publication, to be known as the '*South African Food Cost Review*" is published by the National Department of Agriculture to disseminate information on food costs and trends in retail prices and farm-retail price spreads, and distributed as widely as possible. Such a publication can also be used to inform the public about food safety issues, food regulations and minimum specifications for food items.

6.2 Poverty alleviation

The Committee has debated at length the establishment of a strategic grain reserve, but is, on balance, not convinced that this is necessary for the South African economy and that the funding for such an approach could more wisely be spend on direct interventions at household level. In this respect, the Committee debated the relative merits of direct State intervention to reduce poverty and improve food security, such as school feeding schemes, a food stamp programme, etc., and has the following three recommendations:

Recommendation 10
The Committee favours the expansion of school feeding programmes, and argues that:

- School feeding programmes should be targeted at areas with the highest poverty gap;
- Best Practice requires that all children in a school should be provided with food once the school has been targeted;
- School feeding should begin at the level of Early Childhood Learning Centres and should continue up to Grade 12;
- Responsibility for school feeding programmes should be transferred to the Department of Education;
- The financial resources for the school feeding programmes should be provided to the school governing body on a monthly basis, and should be based on enrolment numbers and feeding days per month; and
- Only those schools with the necessary infrastructure (kitchens, fenced land, water, secure storage etc.) should attempt to augment the feeding programme through food gardens.

Although food stamps and the basic income grant scheme have merit as potential mechanisms to address household food security, there are aspects related to the logistics and management of such programmes that argue against the implementation of these initiatives. It is for this reason that the Committee recommends that:

Recommendation 11
The State investigates a poverty alleviation grant based on a means test, which will enable households to access food. Such a grant will deal with problems of food security at a household level as well as with other income poverty issues, thus allowing families to take risks and acquire assets.

Recommendation 12
The implementation of such a grant should be accompanied by a deliberate effort to increase agricultural output in areas where the poor reside. Thus, households receiving these grants can buy food from local farmers, which will also promote local economic growth. This implies that small-scale agricultural production should be made a central strategy for production at local level for the various social development initiatives such as the school feeding programmes and any form of income grant.

6.3 Monitoring the competitive environment

The State seems to have 'its work cut out' to ensure effective policing of the competitive environment through the Competition Commission. Therefore, the Committee recommends that:

Recommendation 13
The Competition Commission is requested to annually conduct a thorough investigation into the market structure of one or two food value chains (including the agricultural input industry). The findings of the Committee reported here should provide a useful basis from which to start such an investigation. The results of these annual investigations, done in collaboration with the Department of Agriculture, should be published as part of the annual "South African Food Cost Review". This arrangement will put the Competition Commission in a position to monitor competitive behaviour in the food industry on a continuous basis.

An important intervention by the State would be to increase participation and competition in the market by reducing barriers to entry for smaller suppliers, manufacturers and retailers. Innovative programmes under the Black Economic Empowerment programme (BEE), such as preferential procurement systems, can be used effectively to promote increased participation. Government will, however, have to look at programmes to assist such new entrants with start-up capital.

Although the farming sector is exposed to market competition, there are entry barriers for previously disadvantaged farmers. Currently these are addressed by the State in partnership with the private sector through a range of strategic programmes. Accelerating land reform and improving government support structures are important to stimulate local production of food. This should enhance the availability of food in remote rural areas and so create the potential for cheaper food for poor rural communities.

In the post-deregulation era, a large number of small-scale millers has entered the maize meal market, creating substantial competition for the five large milling groups. Recently, however, regulations on the fortification of basic foodstuffs have been announced, which, while noble in intention, will have the unintended consequence of reducing competition in the milling industry. When the competition created by the small millers is reduced, the price of maize meal will inevitably increase over time.

The new regulations on food fortification have potentially large negative consequences for the smaller operators who:

- Cannot afford the mixing equipment, which costs as much as the mill itself;
- Do not have the administrative or technical expertise to administer the fortification ingredients;
- Will be running illegal operations due to the regulations, which will make it possible to close them down when they interfere in competing markets.

It should be noted that small mills generally do not remove the germ from the maize meal, in so doing they dramatically improve the wholesomeness of the final product. Most vitamins, with the exception of vitamin A, are fat-soluble and are therefore concentrated in the germ. Highly refined super white maize meal was used as a benchmark to calculate the amount of fortification needed, and no consideration given to the much healthier product produced by smaller mills.

The Committee notes this with concern and recommends that:

Recommendation 14
The Government investigate whether the survival of small-scale millers are affected by the food fortification legislation. If this is the case it could negatively affect healthy competition, which the Committee argues is necessary to keep retail prices at bay. Government will thus have to consider measures to accommodate these millers.

The Committee's investigation into the agricultural derivatives market of the JSE (SAFEX) also pointed to the need for rules to prevent opportunistic behaviour by commodity traders. The potential for manipulation of this market lies in the large open positions of traders, which makes it possible for larger traders to corner the market and to lead the market (especially inexperienced traders) into a particular direction. As a result,

Recommendation 15
The Committee is of the opinion that rules to manage open positions of traders are needed. Fortunately, the JSE has also recognised this shortcoming and has, since the start of the Committee's investigation, announced the introduction of 'position limits'. The Committee welcomes this pro-active move.

It is hoped that this ruling, plus much stronger monitoring of the ethical conduct of traders, will ensure that competition is brought within bounds so that the 'wild west' character of this market will disappear.

Efficiently functioning transport networks are important to any competitive economy, and are the key to a successful food security strategy. The gradual movement to road transport of most grains because of poor efficiency (slow turn around time, limited number of trucks) of the rail network has contributed to increased costs of raw material at the mill door or factory gate. These costs are eventually recuperated from the consumer, implying higher food prices. It is in this context that the Committee recommends that:

Recommendation 16
The process to recapitalise Spoornet in terms of rolling stock and locomotives, as well as the revitalisation of rural rail sidings should get urgent attention and needs to gain momentum. The reopening of rail sidings in rural areas will also form an important component of increasing market participation by small farmers in disadvantaged communities. In this respect, the Committee argues that improving the rail network represents a national asset for economic development in the rural areas, which should not be subjected to the same standards of profitability as purely commercial ventures.

At the same time, strong enforcement of load per axle regulations will help to stem the large shift to relatively more expensive road transport. The social and economic costs of increased road transport in terms of accidents and damage to the road network are very high, which makes it even more important for Spoornet to be revitalised.

The Committee therefore supports the Government's plans in this regard and argues that improvement of the railroad infrastructure should have positive food security as well as economic development impacts. An improved transport network can, thus, make an important contribution to more competitive environment, increased market participation by emerging farmers, and, perhaps, lower food distribution costs.