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.

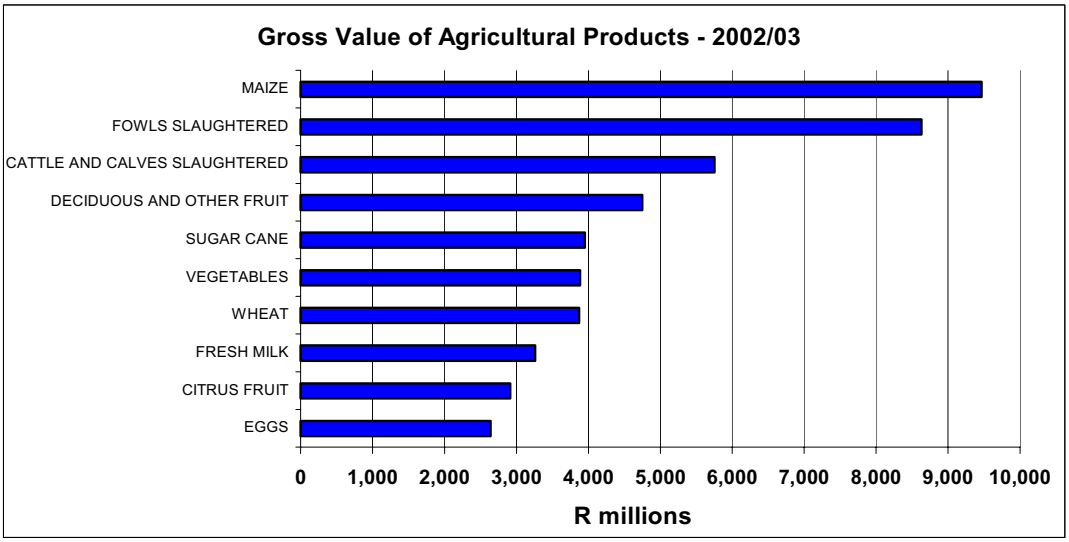

Figure 2.1: Gross value for the top ten agricultural products for 2002/03

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.

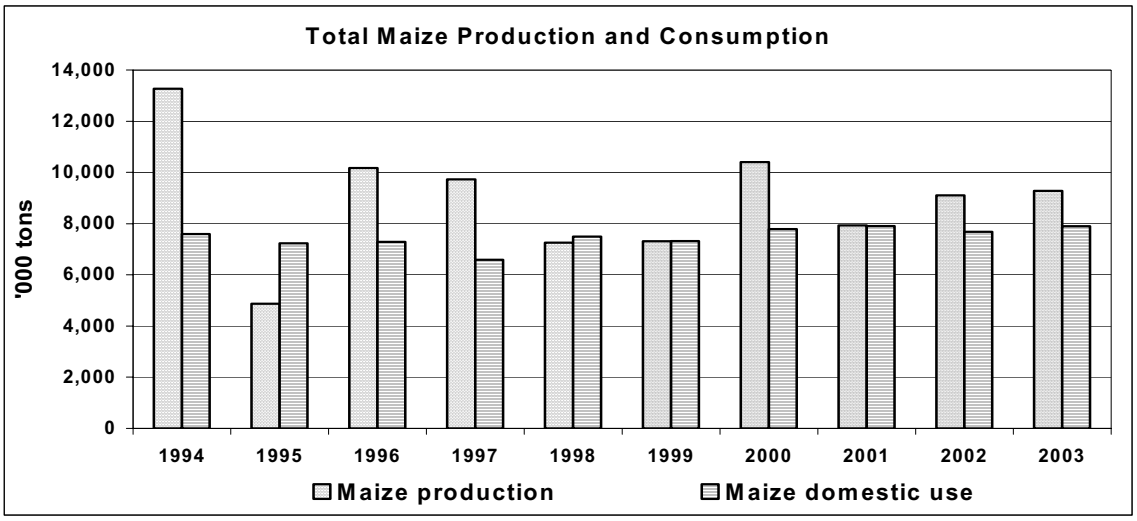

Figure 2.2: Total production and consumption of maize, 1994-2003.
(Source: Abstract of Agricultural Statistics, 2003)

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.

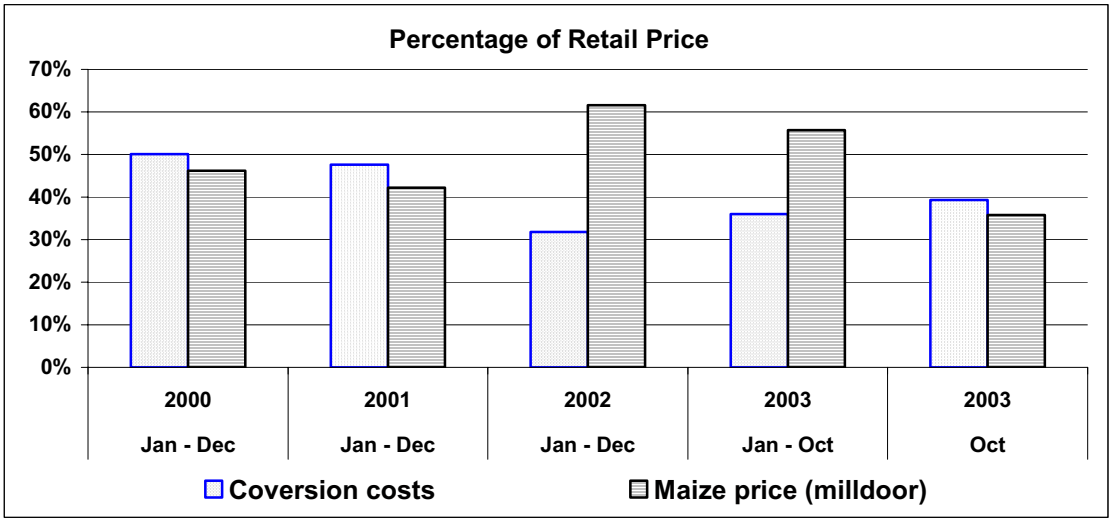

Figure 2.3: Conversion costs and raw material price (maize at mill door) as percentage of retail price

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'.

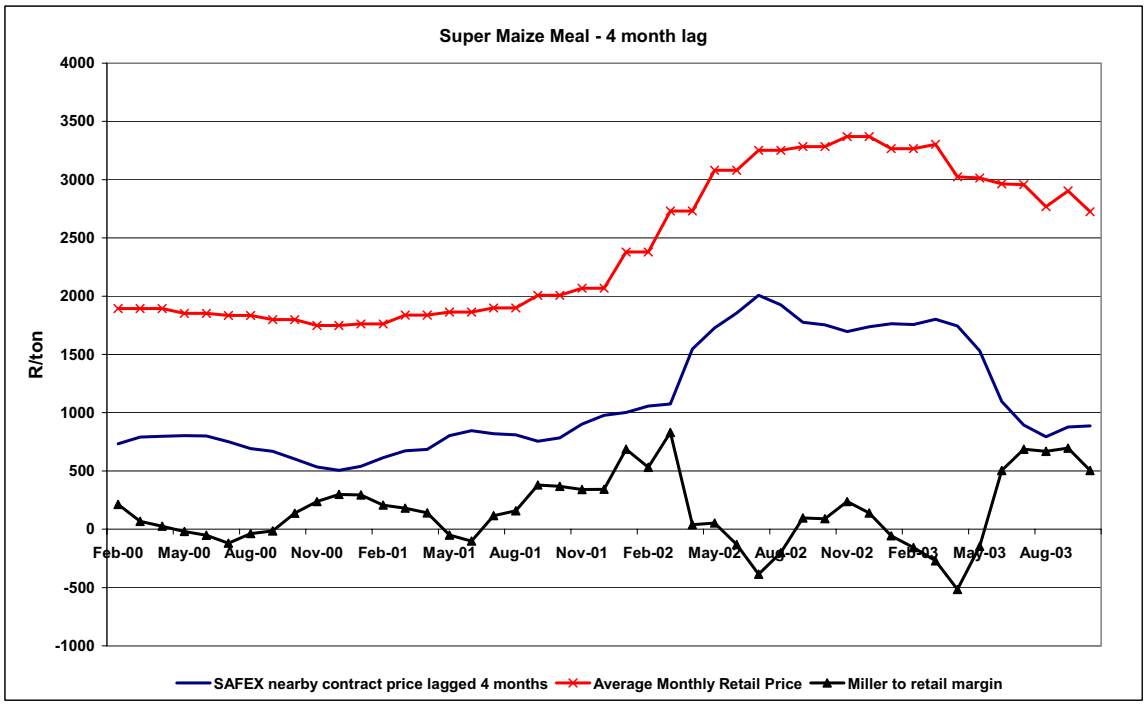

Figure 2.4: The white maize spot price, the super maize meal retail price and the miller-to-retail margin
Source: SAFEX, AC Nielsen, Committee calculations

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.**

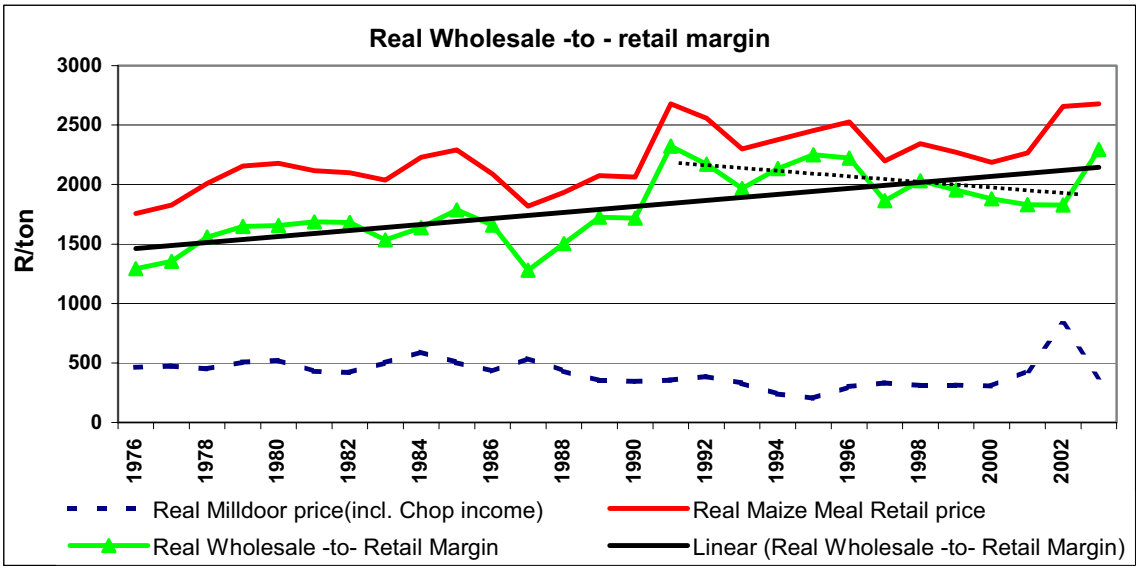

Figure 2.5: The real wholesale – to – retail margin
Source: Abstract of Agricultural Statistics, SAFEX, AC Nielsen, Committee calculations

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.

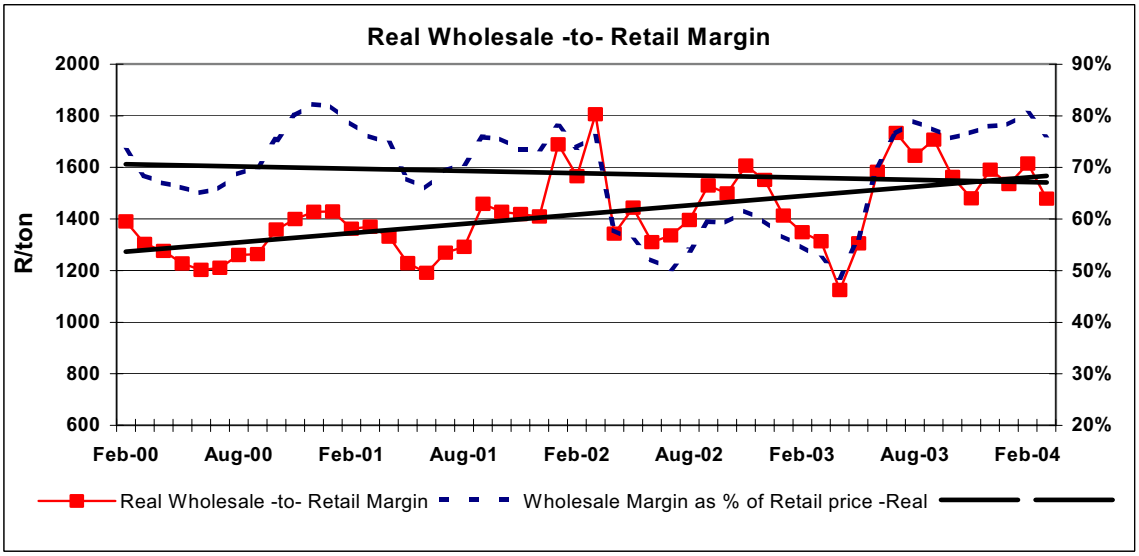

Figure 2.6: Real Wholesale – to- Retail margin, February 2000 – February 2004
Source: Abstract of Agricultural Statistics, SAFEX, AC Nielsen, Committee calculations

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'.

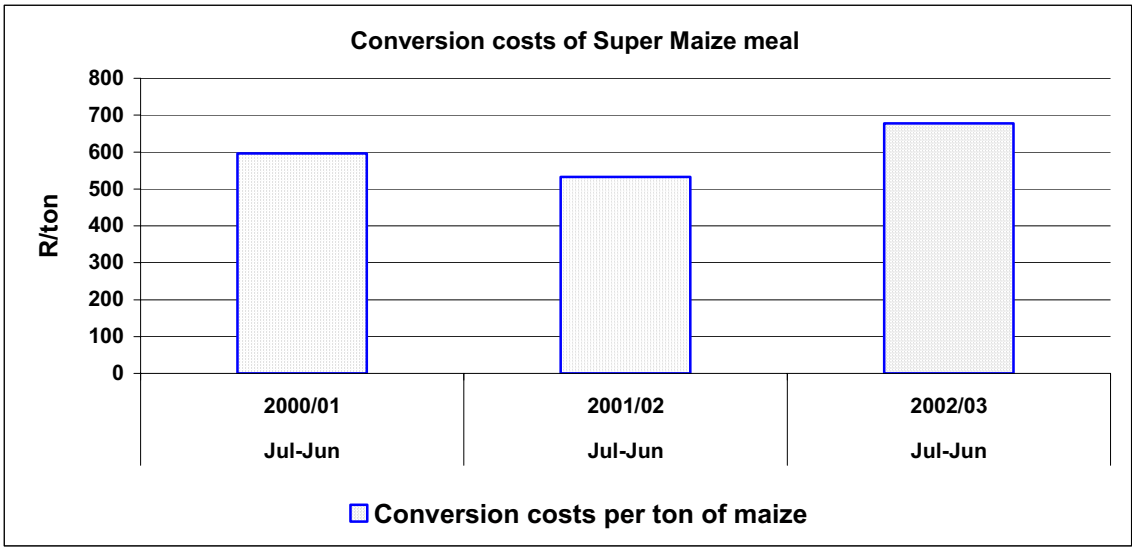

Figure 2.7: Total conversion costs of 1 tonne of maize
Source: The National Chamber of Maize Millers, own calculations.

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.