THE EFFECT OF THE SOUTH AFRICAN TRADE POLICY REGIME ON THE BEEF AND MAIZE SUB-SECTORS

by

SIRAK TECLEMARIAM BAHTA

Submitted in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN AGRICULTURE

(Agricultural Economics)

in the

Department of Agricultural Economics
Faculty of Natural and Agricultural Sciences at the
University of the Free State

Promoter:
Prof. André Jooste

July 2004

ACKNOWLEDGEMENT

First and foremost praise be to my heavenly father who through his grace allowed me to persevere in the seemingly endless period of this thesis.

I would like to express my deep appreciation to a number of people who made contribution towards this study.

To begin with, special tribute and thanks to my promoter, Prof. André Jooste, for his guidance with the theoretical and methodological aspects of this study through out the course of this study. In fact my thesis would not have been possible without the immense assistance I received from the Professor.

I am grateful to the Department of Agricultural Economics, university of the Free State, in general and Prof.H.D.Van Schalkwyk, the Dean of Natural and Agricultural sciences, Mrs.Annely Minnaar, Mrs. Lorinda Rust, Mrs. Luise Hoffman and Mrs.Jeanne Niemann, from international office, in particular for their gracious support and encouragement.

I am also indebted to my parents, Mr. Teclemariam Bahta and Mrs. Yergalem Fessehaye, for their ceaseless prayer and confidence on me.

With out the assistance of many people this study would not have been possible. Their loyalty and willingness to be helpful are acknowledged here with deep gratefulness.

Sirak Teclemariam Bahta

Bloemfontein

July 2004

THE EFFECT OF THE SOUTH AFRICAN TRADE POLICY REGIME ON THE BEEF AND MAIZE SUB-SECTORS

By

SIRAK TECLEMARIAM BAHTA

Degree: **M.Sc. (Agric)**

Department: **Agricultural Economics**

Promoter: **Associate Professor André Jooste**

ABSTRACT

Trade policies form the main economic "buffer" between one national economy and another, i.e. the general and specific elements of each nation's trade policy interact directly or indirectly with those of other nations in all economic transactions across international borders. A nation's trade policy involves specific actions to encourage and promote or discourage foreign trade through the legal, financial and institutional environment within which foreign transactions occur.

This study evaluates the trade policy applicable to the beef and maize sub-sectors in South Africa. Issues that are investigated include whether trade policy provides more or less protection than needed, whether it creates more openness for trade and the revealed comparative advantage of beef and maize.

According to the RCA and RCA# the beef sub-sector in South Africa shows a revealed comparative disadvantage for 17 out of the 22 years since 1980. The maize sub-sector, on the other hand, shows a revealed comparative advantage for 18 out of the 22 years since 1980. It appears as if both the beef and maize sub-sectors have adjusted favourably since the implementation of the Marrakesh Agreement and subsequent deregulation of the domestic market. Favourably in this context means that both sub-sectors appear to have

discounted the changing trade and regulatory environments into their respective supply chains. It is however important to take note that the results do not show the real state of competitiveness that exists in these sub-sectors. The reason for this is that the RCA measures should not be used to make definite conclusions whether an industry, sector or sub-sector in a country is competitive nor whether it uses scare resources in an efficient manner. The RCA measures explain in more accurate ways, relative to a simple analysis of export trends, how a country features in the context of word trade. Hence, one possible application of RCA measures is to deduct the impact of changes in trade policies on an industry, sector or sub-sector. Cognisance should also be taken that the RCA measures fail to distinguish between a region's factor endowments.

The study also shows that the ERP calculation is lower than the NRP for beef and higher for maize. This means that the protection for inputs is higher than that of the output in the case of the beef sub-sector and vice versa in case of the maize sub-sector. The results from the ERP calculations show that the beef sub-sector is taxed, whilst the maize sub-sector are subsidized.

Furthermore, this study recommends the market niche should be exploited more. However it is necessary to give attention to: (i) Small scale farmers (ii) Increased efficiency and (iii) Considering issues such as food safety.

TABLE OF CONTENTS

CHAPTER 5
THE EFFECTIVE RATE OF PROTECTION

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

International agricultural trade is becoming a more and more important facet of individuals' lives, since it will directly and indirectly influence their level of welfare. Of this there is ample evidence as noted by, amongst others, Hoekman, Michalopoulos, Schiff and Tarr (2002), Ingco and Townsend (1998), Harrison, Rutherford and Tarr (1995) and Hertel, Masters and Elbehri (1997). According to Nuppenau (1994), governments follow different strategies of autarky in food markets in order to prevent their population from becoming dependent on foreign markets. The reasons for trade intervention are plentiful and are well documented by Houck (1986).

Trade policies form the main economic "buffer" between one national economy and another, i.e. the general and specific elements of each nation's trade policy interact directly or indirectly with those of other nations in all economic transactions across international borders. A nation's trade policy involves specific actions to encourage and promote or discourage foreign trade through the legal, financial and institutional environment within which foreign transactions occur. Moreover, the trade policy of a nation reflects its overall attitude towards the importance and value of foreign trade within a complex environment where there exist distinct differences in consumption and production patterns, culture and tradition and local socio-economic conditions.

According to Groenewald (1990), the process of trade liberalisation has been a difficult one with agriculture proving the most troublesome. Agricultural policies have in many countries caused local prices to exceed real market prices, and disparities have developed between domestic and world prices. For example, export subsidies employed by some countries, notably the US and the EU, have distorted international agricultural commodity

markets. Nevertheless, developments all over the world, i.e. the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations, the subsequent institutionalisation of the World Trade Organisation (WTO) and various Free Trade Agreements (FTAs), indicate a more market orientated approach and free markets as opposed to control and central planning.

According to Vink, Kirsten and Tregurtha (2002), South Africa's trade regime had been characterised by numerous quantitative restrictions, a multitude of tariff lines, a wide dispersion of tariffs, and various other forms of protection such as formulae, specific and *ad valorem* duties and surcharges. These restrictions, a maze of price controls and other regulations, often eliminated any foreign competition, but this state of affairs changed considerably after South Africa became a signatory of the Marrakesh Agreement that emanated from GATT.

Moreover, South Africa's trade regime in the 1960s and 1970s was not entirely in line with both the changing external economic circumstances and the new domestic consensus on the appropriate role of trade in growth and development. During this period, South Africa's trade was characterized by excessive protection built around high tariffs, formula duties, import surcharges and direct controls. The system of tariff protection was put in place during the 1960s, but direct import controls remained the main protective mechanism through to the mid-1980s (Kusi, 2002).

The necessity to reform South Africa's trade regime was, nevertheless recognized, and according to Cassim, Onyango and Van Seventer (2002), a programme of trade liberalization in South Africa was initiated about 20 years before the country linked its reform programme to the WTO in 1995. They argue that the basic logic behind trade liberalization was the reduction of import protection in order to reduce the anti-export bias and to enable resources to flow from poorly competitive sectors to sectors with a comparative advantage.

The move towards more liberalised markets also affected the agricultural sector. It is within this context that this study focuses on the impact of the South African trade policy regime on the beef and maize sub-sectors.

1.2 MOTIVATION AND PROBLEM STATEMENT

There are a number of reasons why agricultural industries are continual candidates for public protection. Three major problems the industry experiences are stability problems, income problems and foreign trade problems. There is wide, though not unanimous, agreement that markets for most agricultural products are more unstable than necessary for efficient use of resources and efficient management of buyers' expenditures. Sizable price, output and income fluctuations occur in agriculture because of notorious inelasticities of demand and supply, uncertainties in foreign markets, and the vagaries of weather, insects and diseases peculiar to farming. Most legislation to protect farmers and most programmes dealing with the marketing of agricultural products usually involve the term "stabilization" in some respect (Houck, 1986). The question is, however, whether this goal is actually achieved through the set of policies and programmes that are in place and whether they are sufficiently integrated to create an environment that increases efficiency to enhance competitiveness. More specifically, within the scope of this study the question focuses on the role of trade policy.

According to Otto (1990), during 1963-1976, most developing countries considered agricultural products as a basic need which had to be available readily and cheaply, thereby reducing consumer prices. Furthermore, food and agricultural production rose sharply due to improvements in farming techniques and the green revolution. This enabled less developed countries to become less dependent on food imports, but Otto (1990) argues that this state of affairs did not sufficiently induce changes in policies governing agricultural trade and prices. As mentioned South Africa embarked on a programme of trade liberalisation around this time, but it was not until the mid-1990s during the Uruguay Round of trade negotiations that agricultural trade liberalisation was put firmly on the agenda. However, Groenewald (2001) argues that the failure of the previous South African government to participate in the agricultural discussions of the Uruguay Round resulted in a lack of negotiating skills and depth in terms of backroom competency to support negotiators. As a consequence, the recommendations embedded in the South African WTO modalities pertaining to protection were mainly based on a general guideline that the customs duty should result in domestic production and consumption volumes more or less similar to those produced under import control (Kraamwinkel, 1998).

Liberalization in the agricultural sector first took the form of tariffication of quantitative restrictions (QRs), followed by the reduction in diversity of *ad valorem* tariffs. While the absolute number of tariff lines was well below the 2004 target by the end of 1996, the range of tariffs is still comprehensive. In 1996, for instance, these ranged from zero per cent to 131.5 per cent, while the WTO-bound rates ranged from zero to 597 per cent. It must be noted, however, that the requirements of the Marrakesh Agreement specify maximum levels of duty for agricultural products, which are in general much higher compared to those for industrial products. South Africa also fixes the rate of customs duties on agricultural products at a level necessary to increase the price of imported products to the imported price level of the Southern African Customs Union (SACU) (Cassim *et al.,* 2002). Cassim *et al.,* (2002) also argues that little progress has been made in creating greater uniformity in the range and number of tariffs that exist in South Africa. One of the objectives of South Africa's WTO commitment was to reduce the overall tariff bands to 6 categories. However, there are currently still close to 50 bands.

There are many reasons why a simplified tariff structure would be superior to the current regime. One of the most important is from an administrative point of view, i.e. it would be much easier for customs to regulate products that fall into one of only 6 tariff bands. A highly dispersed and cumbersome tariff structure may cause protection to be uneven, and gains from openness may be limited. Moreover, with considerable tariff peaks, trade reform may not succeed in encouraging exports, especially in those sectors that rely on internationally competitive inputs. Cassim *et al.,* (2002) is of the opinion that without resorting to a wholesale liberalization, simple streamlining of tariffs will ensure that tariffs peaks do not hinder efficiency.

Given the importance of the beef and maize sub-sectors in South Africa answers to questions pertaining to the impact of trade policy on these sectors are vitally important, especially in the light of the momentum that globalization is gaining. The South African government is clearly demonstrating its willingness and desire to further integrate the economy in the global arena. Evidence to this is the multitude of FTAs government has engaged into over the last decade, as well as the FTAs that are currently under investigation. These conditions create a need to critically evaluate the role of trade policy in agriculture.

1.3. OBJECTIVES

The primary objective of this study is to evaluate the trade policy applicable to the beef and maize sub-sectors in South Africa. Issues that will, for example, be investigated are whether trade policy provides more or less protection than needed and whether it created more openness for trade. In order to meet the primary objective of this study several secondary objectives will be addressed. These are:

- Provide an overview of general trade policy evolution in South Africa.
- Provide an overview of the beef and maize sub-sector with specific emphasis on trade.
- Calculation of measures to evaluate trade in beef and maize.
- Examine the protection provided to the beef and maize industries by the entire structure of tariffs.

1.4 METHODOLOGY AND DATA USED

In an effort to analyse South Africa's trade in beef and maize, as well as trade policy regimes that governs it, different methodologies will be employed. The study will use the TradeMaps, concentration coefficients, the revealed comparative advantage (RCA) measure and the effective rate of protection methodology.

The International Trade Centre (ITC) has developed a number of tools for international marketing and trade promotion based on trade statistics. All of these tools strive to present trade statistics in an analytical and user-friendly format. TradeMaps refer to charts, pictograms and tables that analyse markets for a specific product for a given country. In essence they benchmark the weight and dynamics of each market in national exports against the weight and dynamics of other markets in a world context. They scan and analyse the positioning of national exports in a target market in terms of average unit values and are useful in exploring trade patterns.

The concept of concentration, which is mostly associated with the concept of distributions, is used determine the concentration or diversification in trade i.e. the extent to which a

country or region concentrates its trade in different products to foreign markets and the extent to which foreign countries or regions concentrate their exports to domestic markets. In other words, the degree of inequality with respect to trade can be investigated. In this regard Lorenz curves and Gini-Coefficients are used to determine inequality/skewness or concentration in the trade.

The impact of trade liberalization and expansion can indirectly be measured by the revealed comparative advantage (RCA) methodology as developed by Balassa (1965, 1977 and 1979). The RCA, in theory, provides an index measure of changes in comparative advantage. The concept of revealed comparative advantage (RCA) is grounded in conventional trade theory. In this study the RCA is used to analyze the comparative advantage and export pattern of beef and maize in South Africa. This is because the nature of the results can enlighten the issue of trade specialization, which in turn provides valuable information for explaining trade policy. Moreover, Bender and Li (2002) states that the impact of changes in trade policies can be deducted from movements of the RCA. The RCA methodology also has limitations, but these will be discussed in the relevant chapter.

Finally the study employs the Effective Rate of Protection (ERP) methodology. The theory of effective protection holds that, to determine the protective effect of a tariff one must not only look at the size of the nominal tariff, but at the proportionate change in the value added of the protected commodity which occurs as a result of the tariffs imposed on the good and its inputs. The relative difference between nominal and effective rates often differs. For example, it may not be unreasonable to assume that South Africa's nominal tariffs are average by middle income country standards, but its effective rates of protection are high by similar standards (Cassim *et al.*, 2002).

1.5 OUTLINE OF THE STUDY

Chapter 2 provides an overview of the developments in multi and bilateral trade agreements as applicable to South Africa. **Chapter 3** contains an overview of the beef and maize sectors in South Africa in terms of trends related to production, consumption, trade and policies. This chapter also examines trade in these products by estimating the intra- and inter industrial trade coefficients. In **Chapter 4** the RCA methodology is used to

analyze the impact of trade liberalization in the beef and maize industries. In **Chapter 5** the ERP is calculated and **Chapter 6** provides overall conclusions and recommendations.

CHAPTER 2

SOUTH AFRICAN TRADE POLICY AND WORLD TRADE ISSUES

2.1 INTRODUCTION

Within the overall national economic policy framework, trade policy refers to direct and indirect government actions and programmes that influence development and expansion of trade. Generally it comprises of exchange rate policy, commercial policy (tariffs, taxes, subsidies, etc.) and trade regulatory schemes (administrative restrictions, quotas and bans) as policy instruments. These are often designed to affect exports and imports of goods and services (Future, 1993).

In this chapter South Africa's trade regime is discusses as it evolved over the last number of decades. In addition, trade relations between South Africa and its main trade partners are also highlighted.

2.2 TRADE POLICY IN SOUTH AFRICA

As mentioned, South Africa started to liberalize its trade policies already in the 1970s (Cassim *et al.*, 2002). Meaningful momentum was only gained when South Africa linked its reform programme to the WTO in 1994 (Matlanyane and Harmse, 2000). It is nevertheless worthwhile within the scope of this study to also reflect on the process prior to 1994.

2.2.1 Trade policy prior to 1994

South Africa's trade regime in the 1960s and 1970s was out of line with both the changes in external economic circumstances and the new domestic consensus regarding the appropriate role of trade in growth and development (Cassim *et al.*, 2002). During this period, the country's trade regime was characterized by excessive protection built around high tariffs, formula duties, import surcharges and direct controls.

The system of tariff protection was put in place during the 1960s, but direct import controls remained the main protective mechanism up to the mid-1980s (Kusi, 2002). One of the first programmes South Africa embarked on in respect of trade liberalization was the introduction of export subsidies in the 1970s in an attempt to counter the anti-export bias of import protection. On the import side, trade liberalization focused primarily on the replacement of quantitative restrictions with equivalent tariffs and other duties. The 1980s were, however, characterized less by import liberalization than it was by simply attempting to improve conditions for exporters. These attempts took the form of customs duty drawbacks and duty exemptions.

But, as stated by Kusi (2002), with the imposition of financial sanctions and debt standstill in 1985, the balance of payments pressures halted and even reversed progress with regard to trade liberalization. An import surcharge of 10 per cent was introduced in September 1985 as part of the response to the emerging balance of payments disequilibrium. In August 1988, the surcharge was raised to 60 per cent on some items in a bid to contain imports, but in May 1989, the surcharge on capital goods was eased from 20 per cent to 15 per cent. In March 1990, the surcharge on a range of imports was cut by one third, and in 1991, further reductions were made, except for luxury consumer goods. By the end of 1993, there were three rates: 5 per cent on intermediate and capital goods, 15 per cent on motor vehicles, and 40 per cent on home electronics and luxury products.

According to GATT (1993), 15 per cent of tariff lines were affected by import controls by the end of the 1980s, with a high level of variation across sectors. While most sectors were relatively free of controls, some sectors were highly restricted, including agriculture (74 per cent of tariff lines), food, beverages, tobacco, and rubber (about 90 per cent), and clothing (59 per cent). A World Bank study into the trade regimes of 32 developing countries corroborates this complex system of protection, placing South Africa just above the median in the sample of countries studied. The distinguishing features of South Africa's protective regime were complexity and a high level of dispersion. Moreover, South Africa displayed an exceptionally high ranking with regard to the coefficient of dispersion of tariff rates. This situation was further compounded by the fact that the manufacturing sector was often able to lobby the Board of tariffs and trade (BTT), which traditionally adopted a sympathetic stance to such applications (Roberts, 1998).

While this average level of protection was not seriously out of line with that of many other developing countries, the tariff structure was extraordinariy complex. It had more tariff rates than any other country (about 200 *ad-valorem* equivalent of formula duties); the widest range of tariffs (rates exceeding 100 per cent for 5 per cent of the tariff lines) and the second highest level of dispersion (as measured by the coefficient of variation) among developing countries (Belli, Finger and Ballivian, 1993). The formula duties were intended to forestall dumping by adding floor prices to the tariff schedules of certain products, effectively setting lower thresholds for their import prices. By 1990, formula and specific duties covered about one third of the tariff lines (Kusi, 2002).

Although quantitative import control was gradually replaced by tariffs, licensing remained the main instrument of control in agriculture, forestry and fishing, covering some three quarters of the tariff lines. Among manufactured products, import licensing applied largely to processed food, clothing and rubber products. Overall, import licensing was required in about 15 per cent of the tariff lines or about 10 per cent of the total import value. It is estimated that import licensing added some 10 per cent to the rate of protection (GATT, 1993).

As mentioned above, South Africa's trade regime also included measures to stimulate exports to compensate for the anti-export bias implicit in the import restrictions. By 1980, a full range of incentives was in place, including direct cash grants, tax concessions on export turnover and on profits from exports, rebates and drawbacks of custom duties on imported inputs, and rail freight concessions. The rebates and drawback provisions were applied to customs duties imposed on imported materials used in manufacturing, processing, or packaging of exported goods. By 1990, there were four types of export subsidies: (i) an input compensation, whereby exporters could receive half the cost of protection afforded to imported inputs; (ii) a value-added compensation, whereby exporters could receive 10 per cent of the value added of export sales; (iii) a marketing development scheme; and (iv) a marketing allowance provided under the Income Tax Act. The last two subsidy schemes were introduced to partly compensate for costs incurred in the development of new export markets for the country's products (Kusi, 2002).

The move towards trade liberalization continued in the 1990s with the General Export Incentive Scheme (GEIS), promulgated in April 1990 to replace the export incentives of the 1980s. The GEIS was designed as an economy-wide package, based on value-added and local content, providing considerable incentives to exporters (tax-free subsidies to exporters based on the value of exports, the degree of processing of the exported product, the extent of local content embodied in exports, and the degree of overvaluation of the exchange rate). One of the main reasons for the implementation of the GEIS can be traced to Belli *et al.* (1993) who quotes a study by the South African Chamber of Business (SACOB) in 1991. This study showed that manufacturing costs in South Africa was 15 per cent higher than the OECD average because South African manufacturing firms paid 24 per cent more than their OECD counterparts for their inputs, and their capital and productivity-adjusted labor costs were higher as well.

Moreover, the GEIS was introduced to help firms offset the price disadvantage that the country's exporters faced in international markets, including those arising from the anti-export bias inherent in the import protection system. In some ways the introduction of GEIS was not fundamentally different from schemes in the 1980s, as it encouraged exports by addressing the anti-export bias on the export incentive side of the equation rather than through import liberalization. It certainly was more far-reaching than anything introduced in the 1980s (Cassim *et al*., 2002).

2.2.2 Trade policy after to 1994

The process of trade liberalization in South Africa after 1994 is characterized by various changes. In a nutshell, it involved lowering the average tariff level by one third over five years since 1994. As it stood, the agreement was to reduce the level of tariff protection from a weighted average of 30 to 15 per cent, to bind 98 per cent of tariff lines, to rationalize the tariff structure, to terminate export subsidies and the tariffication of quantitative restrictions in respect of agricultural imports (Cassim *et al*., 2002).

2.2.2.1 Multilateral trade liberalization

Kusi (2002) and Cassim *et al*. (2002) explains how South Africa offered a 5-year period to liberalize its trade regime effective from January 1995 (except in the case of three sectors where reductions were phased in over a longer period) in accordance with the Marrakesh Agreement. The offer aimed to:

- Reduce the number of tariff lines (from over 13,000) at the six-digit harmonized code level by 15 per cent in the first year and by 30 per cent or higher by 1999;
- Convert all QRs on agricultural imports to bound *ad valorem* rates; lower all bound agricultural tariffs by 21 per cent on average; and reduce export subsidies by 36 per cent;
- Increase the number of bindings on industrial products from 55 per cent to 98 per cent by 1999; replace all QRs and formula duties with tariffs; and reduce the number of tariff rates to six (0 per cent, 5 per cent, 10 per cent, 15 per cent, 20 per cent, and 30 per cent) with the exception of the "sensitive" (textiles, clothing and motor vehicles) industries;
- Liberalize the sensitive industries over an 8-year period; and
- Phase out the GEIS by 1997.

2.2.2.2 Unilateral trade liberalization

In 1994 South Africa also announced a schedule of unilateral tariff liberalization, expiring in 1999, going beyond the Uruguay Round commitments. In June 1994, the Government began dismantling the system of import surcharges by removing the 5 per cent surcharge on intermediate and capital goods. This was followed in September 1995 by the removal of the 15 per cent surcharge on motor vehicles. In October 1995, the 40 per cent surcharge on home electronics and luxury products was abolished, completing the dismantling of the system of import surcharges.

A large number of changes to the tariffs on non-agricultural commodities took place between 1994 and 1996. For intermediate goods, the import weighted average tariff rates, excluding zero-rated tariffs, were cut from 16 per cent in 1994 to 15 per cent in 1996. For

this group of goods, between 1994 and 1996, the weighted average tariff rates exceeding zero dropped in 9 out of the 30 categories. The rates for five categories increased during this period, while the rates remained unchanged for 16 categories.

The share of intermediate goods with zero tariff rates increased from 46 per cent in 1994 to 67 per cent in 1996. For capital goods, the import weighted average tariff rate fell from 27 per cent in 1994 to 21 per cent in 1996. Four out of the six capital goods categories experienced a drop in tariff rates over the period, while the share of capital goods with zero rates increased from 46 per cent to 60 per cent.

For final manufacturing goods, the import weighted average tariff rates dropped from 22 per cent in 1994 to 20 per cent in 1996, while the share of zero-rated final goods increased from 29 per cent to 34 per cent over the period. The import tariff rates for 14 out of the 34 final goods categories increased between 1994 and 1996, while the rates for 13 categories dropped.

Overall, the import weighted average tariffs for the whole manufacturing sector declined from 15.8 per cent in 1994 to 10.3 per cent in 1998. In 1990, the average unweighted tariff was about 30 per cent, while the average weighted tariff, including import surcharges, was 36 per cent.

A striking feature of the tariff reforms is that, in 1995, tariffs in 25 intermediate goods categories, all but one of the capital goods categories, and 25 final goods categories were below the WTO commitments for 2004. Although some individual lines within each of these categories still had to fall to meet WTO commitments, this was not necessary in a large number of cases. The Government’s own targets for 2004 were much lower than those bound in accordance with commitments to the WTO: the tariffs were often below the tariff rates applied in 1995.

By the end of 1999, virtually all quantitative import restrictions had been eliminated, including those operating through the agricultural marketing boards; the tariff regime has been rationalized, with the number of lines reduced from over 13,000 in 1990 to about 7,900 in 1998, and the number of tariff bands reduced from over 200 to about 72. The tariff

regime was also simplified, as the number of lines carrying formula duties (which acted like variable import levies) had been reduced from 1,900 in 1993 to 28 in 1997, and the number of lines facing specific tariffs had been reduced from 500 to 227.

Table 2.1 shows progress in tariff liberalization for the whole economy. From 1990 to 1999 tariff liberalization was more rapid prior to 1996, while a modest reduction in the number of tariff lines, as well as in the maximum rates applied has occurred up to 1999 (Lewis, 2001).

Table 2.1: Changes to the South African tariff structure

Item	All rates 1990	All rates 1996	All rates 1999
Number of lines	12,500	8,250	7,743
Number of bands	200	49	47
Minimum rate (%)	0	0	0
Maximum rate (%)	1,389	61	55
Unweighted mean rate (%)	27.5	9.5	7.1

Source: Lewis (2001).

Table 2.2 shows average import-weighted tariffs for South Africa. Applied rates were considerably lower in 2000 than in 1996, particularly in the agricultural sector.

Table 2.2: Average import-weighted tariffs for South Africa (1996 vs. 2000)

Category	1996 Applied rates (%)	2000 Applied rates (%)
Agricultural products	9.23	1.4
Industrial products	11.4	8.6
Average	11.3	7.3

Source: Van Seventer (2001b).

Table 2.3 shows selected indicators that in part shed light on the impact of a more liberal/reformed trade regime. It is clear trade has increased its prominence within the overall GDP. Both imports and exports increased it share in GDP and customs revenue as percentage of GDP also increased.

Table 2.3: Selected indicators of the impact of trade liberalization (1988/89 to 1999/2000)

Year	Exports as % of GDP	Imports as % of GDP	Customs revenue as % of total revenue	Customs rev as % of GDP	Budget def/sup as % of GDP
1988/89	18.99	15.46	3.9	0.43	1.6
1993/94	21.46	19.49	3.6	0.59	4.9
1997/98	25.19	24.04	4.4	1.21	4.4
1999/2000	25.27	22.61	3.5	1.07	3.5

Source: Matlanyane and Harmse (2000).

In spite of reforms to the South African tariff regime, the tariff schedule remains complex, and could create uncertainty for businesses that frequently import goods (USTR, 2000). This state of affairs is also echoed by Cassim *et al* (2002) who state that less progress has been made to create greater uniformity in the range and number of tariffs that exist in South Africa. For example, one of the objectives of South Africa's WTO commitment was to reduce the overall tariff bands to 6 categories. However, there are currently still close to 50 bands. Cassim *et al.* (2002) furthermore state that a highly dispersed and cumbersome tariff structure may mean that protection remains uneven, and gains from openness may be limited, since with considerable tariff peaks, trade reform may not be completely successful in encouraging exports especially for those sectors that rely on internationally competitive inputs.

2.3 AGRICULTURAL TRADE REFORM IN SOUTH AFRICA

Vink, Kirsten, and Tregurtha (2002) state that South Africa's trade regime had been characterized by numerous quantitative restrictions, a multitude of tariff lines, a wide distribution of tariffs, and various other forms of protection such as formulae, specific and *ad valorem* duties and surcharges. These restrictions, a maze of price controls and other regulations, often eliminated any foreign competition. This situation changed considerably after South Africa became a signatory of the Marrakech Agreement and promulgation the Marketing of Agricultural Products Act, 1996. These events resulted in a turning point in the marketing of agricultural products in South Africa.

The Marketing of Agricultural Products Act stipulated that the 14 remaining control boards of the original 23 had to be phased out within twelve months (Jooste, Viljoen, Meyer,

Kassier and Taljaard, 2001). Liberalisation resulted in significant changes in the level of direct subsidies paid to the farmers, apart from changes in the quantitative and tariff protection producers were afforded. Interest rate subsidies were severely cut as a result of monetary policy reforms which re-oriented financial services to the market. The depreciation of the Rand also eliminated any subsidisation of imported inputs that may have resulted from an overvalued exchange rate. Direct export subsidies which farmers had previously qualified for under the General Export Incentive Scheme (GEIS) were also discontinued in 1997.

2.3.1 Agricultural trade liberalization since 1994

Jooste, Van Schalkwyk and Groenewald (2003) listed the main trade policy instruments as follows:

- **Import permits**

Under the Import and Export Control Act of 1963, the Minister of Trade and Industry may limit the import of certain goods into South Africa. For those goods subject to import control measures, importers must apply for import permits prior to the goods importation. The list of restricted goods requiring import permits has been substantially reduced as the Department of Trade and Industry (DTI) has tried to phase out import permits in favor of tariffs (Cassim *et al.*, 2002).

- **Tariffs**

According to Agri SA (2000), commitments related to market access, such as replacing QRs with tariffs and the general reduction of tariffs, went smoothly and is completed. Most applied rates of duties (average 11%) are well below the commitment levels of the bound rates (average 41%). In some cases specific duties (e.g. poultry and garlic) were implemented. Although this complicates the monitoring of WTO-commitments, it is still in accordance with WTO rules which allow for both *ad valorem* and specific duties. Although South Africa reserved the right to use special agricultural safeguards for a number of products, these were not used in the course of the implementation period as they

were not deemed necessary, mainly because of the substantial margin between bound and applied tariffs which made it possible to raise tariffs when necessary.

Cassim *et al* (2002) also states that the degree of protection derived by an activity from a tariff on its output needs also to be qualified by the degree of taxation due to tariffs on its inputs, in order to get a sense of the *net* protection, as opposed to the *gross* protection. This is then expressed as the effective rate of protection a product receives. Agriculture is ranked fifty-third out of a total of 95 categories in terms of its nominal rate of protection (note: the lower the rank, the lower its nominal rate of protection). Agriculture's rank improves to 58 for the effective rate of protection. In fact, agriculture's effective rate of protection is negative (-0.2%) because the weighted input tariffs on it's inputs amount to more than it's output tariff (Cassim *et al.,* 2002). This entails that the tariff regime is actually taxing the agricultural sector. This state of affairs is also confirmed by Jooste and Van Zyl (1999).

- **Export subsidies**

In 1995, the Government initiated a three-year program to eliminate the GEIS, as envisaged under the commitments to the WTO. In June 1995, the GEIS benefits became taxable and the number of export categories eligible for the subsidy was reduced, while the level of subsidy was also cut. In March 1996, a program to accelerate the phasing out of the GEIS was announced. In April the GEIS subsidy for processed products was cut from 14 per cent of the export value to 12 per cent, and was scheduled to decline further to 6 per cent in July; the GEIS subsidy for raw materials was cut from 3 per cent of the export value to 2 per cent in April, and was phased out in July, effectively limiting the GEIS to fully manufactured products. In July 1997, the GEIS was abolished (Kusi, 2002).

- **Domestic support**

Given significant changes in domestic policy e.g. scaling down of the budget of the National Department of Agriculture (NDA) and changes in the marketing dispensation (i.e. price fixing no longer occurs), South Africa now complies fully with the Green Box criteria as well as domestic support reduction commitments (Amber Box).

- **Standards and regulations**

Various Government Departments and parastatals set and police standards affecting the trade of agricultural products, most notably the NDA, the Department of Health, Department of Trade and Industry (DTI), the South African Bureau of Standards (SABS) and the Council for Scientific and Industrial Research (CSIR). Most standards conform, or are in close conformity with international standards (Jooste, Kruger and Kotze, 2003). There are, however, various constraints and areas of inefficiency that will have to be addressed in the near future.

2.4 SOUTH AFRICA'S TRADE RELATIONS WITH OTHER COUNTRIES

Apart from South Africa's multi-lateral trade commitments, it is also currently a signatory to various bi-lateral trade agreements. Most notable of these are the Southern African Customs Union (SACU), the Southern African Development Community (SADC) and the EU-SA Trade, Development and Cooperation Agreement (EU-SA TDCA). Other less significant trade agreements between South Africa and SADC countries are summarised in Table 2.4.

Table 2.4: Specific trade agreements between South Africa and selected SADC countries

Country	Objective	Date
Malawi	Duty free access to South Africa for all goods grown, produced or manufactured in Malawi except coffee, tea and sugar, which are subject to import control.	1967
Mauritius	Exemption from surcharge on tea from Mauritius granted by the Republic of South Africa under Section 48 of the Customs and Excise Act of 1964.	1964
Mozambique	Tariff concession by South Africa to Mozambique in the form of a full rebate of the import surcharge or customs duty under the section 75 of the Customs and Excise Act of 1964.	1964
Zimbabwe	Preferential rates of duty, rebates and quotas on certain products.	1964

Source: Poonyth, Esterhuizen, Ngqangweni and Kirsten (2002).

2.4.1 The Southern African Customs Union (SACU)

The Southern African Customs Union came into existence on 11 December 1969 with the signing of the Customs Union Agreement between South Africa, Botswana, Lesotho, Namibia and Swaziland. It came into force on 1 March 1970, thereby replacing the Customs Union Agreement of 1910 (Blumberg and Wentzel, 1994).

SACU is an agreement which sets a common trade system for the five countries. In terms of the SACU, there are no tariff barriers between member countries and all members share a common external tariff on imports into the region (Jooste, Kruger and Kotze, 2003)

Providing for an almost unrestricted flow of goods and services between its members, the SACU collects the levies on member states' imports from the rest of the world and apportions this income among the member states according to an agreed formula. Earnings from the customs and excise pool contribute substantially to the government revenues of Botswana, Lesotho, Swaziland and Namibia (Jooste *et al.*, 2003).

Many authors, amongst others, (Cattaneo, 1990; Mayer & Zarenda, 1994,Van Dijk, 1994; Stoneham, 1994; Davies, 1994 and Jooste, 1996) have reported extensively on the structure and nature of SACU. However, since these studies have been completed the SACU was renegotiated and a new agreement was reached in 2002.The main provisions retained from the 1969 agreement were the following:

- Free Trade in locally produced goods;
- Free movement of goods once cleared through customs;
- Common external tariffs;
- Common excise tariffs;
- Infant industry protection for BLNS;
- No intra-SACU restrictions allowed;
- Similar customs and excise legislation;
- Import control where each member state has its own regulations; and
- Freedom of transit and non-discrimination on transit duties.

There was also agreement on various new provisions that include the following:

- SACU will be an international juristic person;
- Six new institutions, namely Council of Ministers, Customs Union Commission, Secretariat, Tariff Board, Technical Liaison Committees (i.e. agriculture, Customs technical, Trade and Industry and Transport), and a Tribunal;
- Efficient cooperation on customs issues, industrial development, competition issues, agriculture, unfair trade practises and dispute settlement; and
- A new revenue-sharing arrangement.

The accepted provisions provide a proper framework for economic integration and not merely cooperation. The new institutional framework also provides a basis for greater autonomy in respect of economic development and other SACU countries can play a vitally important role to ensure that South Africa's political and economic supremacy in the region is used positively to implement mutually beneficial policies. The new Tariff Board effectively removes South Africa’s control over tariff setting for SACU as a whole. Tariffs intended to protect South African manufacturers and primary producers that hold only marginal benefits for partner countries through the tariff revenue sharing formula will now

not distort benefits provided. Greater integration would also entail increased investment in sectors that hold a comparative advantage in BLNS countries (Jooste *et al.*, 2003).

2.4.2 The South African Development Community (SADC)

The Declaration and Treaty establishing the Southern African Development Community (SADC) was signed at the Summit of Heads of State or Government on July 17, 1992 in Windhoek, Namibia. SADC replaced the Southern African Development Coordination Conference (SADCC), (SADC, 1994).

The ultimate objective of SADC is to build a region in which there will be a high degree of harmonization and rationalization to enable the pooling of resources to achieve collective self-reliance and to improve the living standards of the people of the region.

The SADC cooperation was discussed extensively by many authors, amongst others, including SADC (1994) and Jooste (1996). However, since these reports have been completed more than two-thirds of member states had ratified the SADC "Protocol on Trade" by December 1999, which came into force on 25 January, 2000. However, the implementation of the protocol was delayed until 1 August 2001, to allow member states to deposit instruments of ratification (Poonyth *et al.*, 2002). This agreement is discussed briefly below.

A very important feature of the SADC Trade Protocol is the intention to stimulate trade between member countries through the reduction of tariffs. SADC incorporated the principle of asymmetry. SACU will phase down in 8 years (by 2008) while others will do so in 12 years (by 2012). Each non-SACU SADC country prepared two offers: one to South Africa and the other to the rest of SADC. In order to compensate the less developed SACU members (BLNS), who would liberalize their imports faster than non-SACU countries, the SACU offer was made conditional upon BLNS being able to maintain all the preferences they had enjoyed in trading with non-SACU SADC states, e.g. enhanced market access for selected products of export significance. Under the principle of asymmetry, there was a general understanding that the developing non-SACU states

(Mauritius and Zimbabwe) would mid-load their tariff reductions while the least developed countries (LDC's) would backload.

Products have been classified into four categories for tariff dismantlement. Tariffs on Category A products will be reduced to zero immediately. Liberalisation of Category B products would be gradual over eight years while liberalization of Category C products would take place over twelve years. Offers for tariff dismantlement under categories B and C for almost all countries cover over 85 per cent of their SADC trade. Category E products are considered very sensitive and elimination of duty at the end of the 12 years is not envisaged.

According to Flatters (2002), the confusingly differentiated tariff reduction schedules are a major source of concern. Another concern is that insufficient attention is given to non-tariff barriers. Effective tariffs are often higher than nominal tariffs because of collection problems at borders. An African Development Bank study of 1993 identified non-tariff barriers, as opposed to tariffs, as being the major impediment to trade in the region (Mayer and Thomas, 1997). The Development Policy Research Unit (DPRU, 2001) mentions further concerns: poor infrastructure in some of the LDC's may divert industrial development and foreign investment to other areas; the Trade Protocol does not include the supply side measures needed to restructure and diversify industry in the region; it fails to link trade and investment; it fails to link trade integration to industrial development; and there are no measures to compensate countries who may be de-industrialised in response to its implementation.

2.4.3 South Africa and the EU

South Africa inherited a trading regime for Europe characterised by the apartheid era. As a result, South African exports to the European Union (EU) faced high levels of discrimination, often much higher than for wealthier countries. Against this backdrop South Africa petitioned the EU for preferential market access as similar as possible to that offered to the African, Caribbean and Pacific (ACP) countries in terms of the Lomé Convention. This request was declined however, due to concerns raised by certain ACP and EU member states (Gladwin, 1999).

In 1996 South Africa, was awarded partial Lomé membership, which excluded the usual trade and financial provisions, while the EU simultaneously offered to negotiate a trade and development agreement, culminating in the creation of a FTA with South Africa within 10 years (Penzhorn and Kirsten, 1999).

The implementation of the SA-EU Trade, Development and Cooperation Agreement (TDCA), which includes a FTA, on 1 January 1999 marked the end of more than three years of negotiations with the EU towards a Trade, Development and Cooperation Agreement. This Agreement covers a comprehensive range of elements, including provisions for political dialogue, free trade in a wide range of goods, promoting trade related issues, economic co-operation, financial assistance and development co-operation (Jooste *et al.*, 2003).

Some of the most important aspects of the TDCA are as follows:

- SA-EU Free Trade Area

Under the TDCA, the majority of tariffs on imports to the EU will be phased down over a ten year period. The majority of tariffs on imports to South Africa will be phased down over a twelve year period. The FTA covers the free movement of goods in all sectors as well as covering the liberalisation of trade in services.

According to AMT (2004), the EU will provide duty free access for about 99 per cent of South African industrial products and about 75 per cent of its agricultural products. South Africa will open its market to 86 per cent of EU industrial goods, but will keep protection for its car and textiles industries. It will liberalise trade at a slower pace, with many of its tariff cuts not beginning to take effect until 2005. The Agreement also contains provisions on services, government procurement, intellectual property and competition policy.

The EU and South Africa also reached consensus in respect of the wines and spirits sector. The purpose is to facilitate and promote trade in wines and spirits between the two sides. As part of the wine agreement, the EU will provide a duty free quota for imports of South African wine, which will be increased by 5 per cent each year until 2011.

- Development Cooperation

The TDCA provides for access by South Africa to development assistance from the EU. This includes assistance aimed at integrating the South African economy into the global economy, development of sustainable private enterprises, regional cooperation, improving the delivery of social services as well as support to protection of human rights and strengthening civil society. In addition, development cooperation is aimed at strengthening the link between South African government and society as a whole.

- Economic Cooperation

The economic cooperation aspect of the agreement includes strengthening economic links between the EU and South Africa, supporting regional economic cooperation, promoting sustainable development, promoting SMME's, promoting economic empowerment, promoting the role of women in the economy and promoting worker and trade union rights as well as protecting and improving the environment.

The impact of the above Agreement on agricultural trade can be derived from figures 2.1 and 2.2. Since the trade provisions of the TDCA have been applied, SA exports to the EU have risen by 60 per cent.

However, the export of agricultural goods to the EU has slowed down in 2003, which could largely be attributed to the slow down of South Africa's real GDP growth in the first half of 2003.

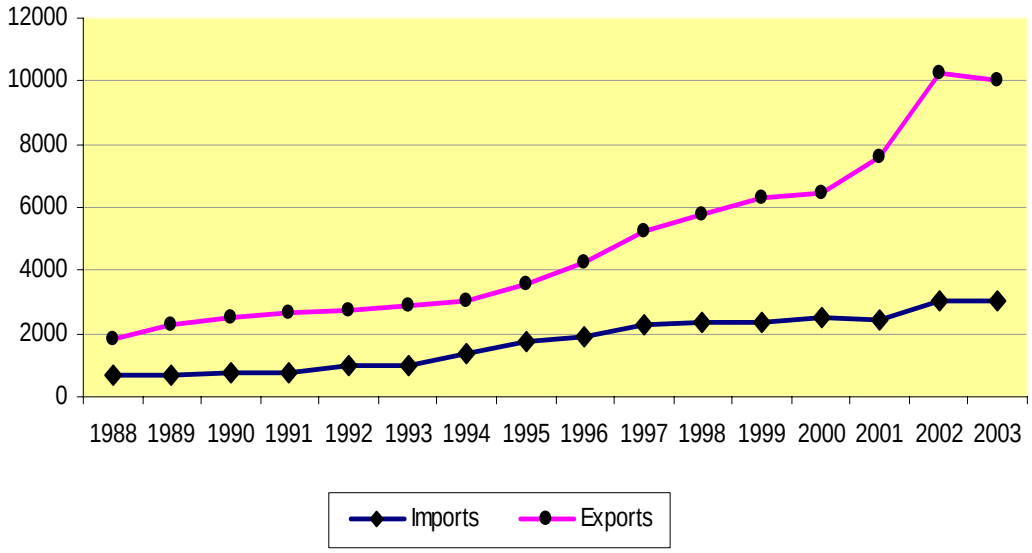


Figure 2.1: South Africa's agricultural exports and imports to and from the EU (Rand millions)

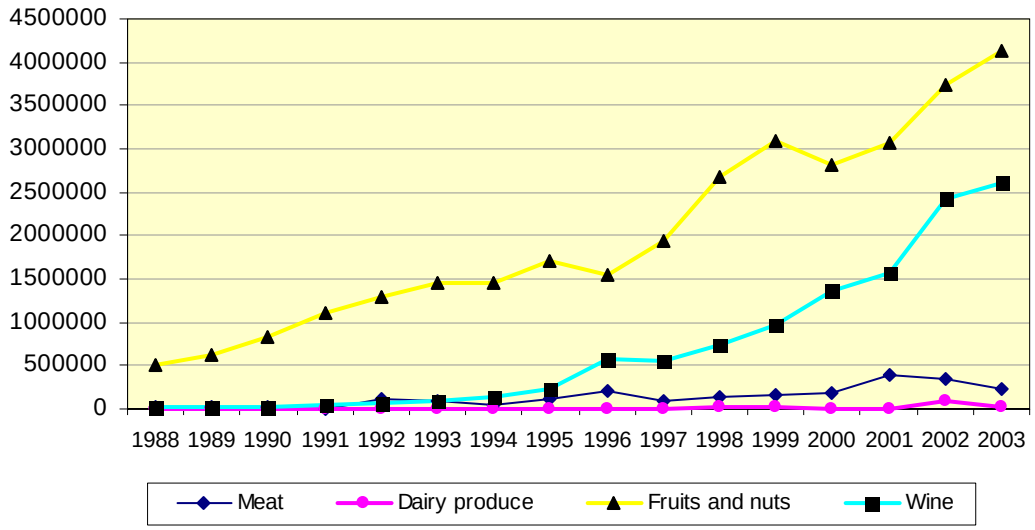
Source: AMT (2003).

Figure 2.2 shows the major exports to the EU from South Africa. These exports are dominated by fruits and wines, which accounted for 41 per cent and 26 per cent, respectively, of total agricultural exports to the EU in 2003. Exports of fruit increased by 34 per cent, while exports of wine increased by 170 per cent since 1999. The increase in wine exports is expected to gain further momentum as tariff quotas are being opened gradually.

The EU will remove duties on about 75 per cent of South African farm exports over 10 years, covering about 1 800 tariff lines, including poultry, eggs, onions, mushrooms and garlic. The EU placed beef, certain dairy products (including milk, butter, why), cut flowers, certain fresh deciduous fruits, rice, maize, sugar, certain canned fruits and vegetables and certain fruit juices and wine on the reserve list[2]. This explains why meat and dairy products' export remained low since implementation of the TDCA.

[2] Products excluded from the agreement on both sides have been placed on so-called reserve lists. The reserve list is a negative list as it includes all the products that are not included in the agreement.

Figure 2.2: Major agricultural exports to the EU 1988-2003 (Rand thousands)



Source: AMT (2004).

Figure 2.3 shows the major agricultural imports by South Africa from the EU. In 1995, the imports of meat reached its peak, valued at R285.5 million, but show a continuous decrease due to BSE, a depreciating exchange rate and new competition on the South African market. Since 1999 it has been decreasing by an average 7.57 per cent annually. Dairy products comprise almost 60 per cent of the total agricultural imports in 2003.

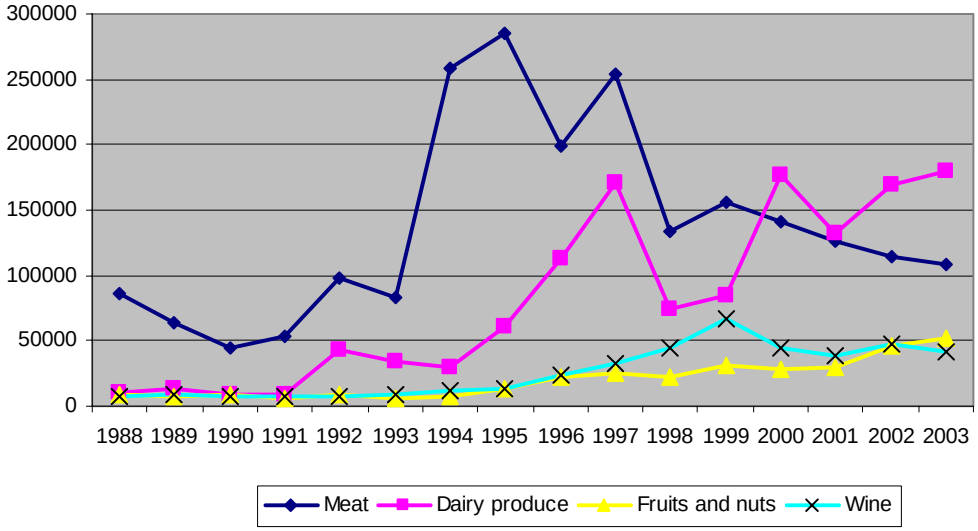


Figure 2.3: Major imports from the EC 1998-2003.

Source: AMT (2004).

2.4.4 The Africa Growth and Opportunity Act (AGOA)

The US's Africa Growth and Opportunity Act (AGOA), which was promulgated in October 2000, claims to "move Africans from poverty to prosperity by increasing their economic opportunities." The Act extends Generalized System of Preferences (GSP) status to qualifying African countries until September 2008 and expands the existing list of 4,650 GSP products by 1,837. Thirty-four sub-Saharan African (SAA) countries, including South Africa, qualify for AGOA (Matto, Roy and Subramanian, 2002).

South Africa is one of the US's foremost trading partners in Africa. Total trade between the two countries has been increasing steadily in recent years, with South Africa holding an increasing trade surplus since 1999. This amounted to just under $1.8 billion in 2002, growing 22 per cent to $2.2 billion in 2003.

According to AMT (2004), US exports to South Africa far exceed US exports to any other country in SSA, emphasising the importance of access to the South African market. In terms of SSA exports to the United States, South Africa's exports rank second after those of Nigeria, with Gabon's exports being in third position. However, the latter two countries' AGOA exports consisted (in 2001 and again in 2002) virtually only of energy-related products (mostly oil), whereas South Africa's AGOA exports were highly diversified. The amount of exports falling under AGOA was $1.7 billion in 2003 (2002: $1.3 billion), although this figure includes exports under the GSP program, of which AGOA is essentially an extension. Exports of products that were added under AGOA amounted to $998 million (2002: $789 million) (See Table2.5).

Table 2.5: Bilateral trade profile between United States and South Africa (Data of agricultural products and all sectors) (Value, 1,000 USD)

	2001	2002	2003
Agricultural products:			
US Exports to South Africa	100,678	150,899	149,169
US Imports from South Africa	173,169	192,160	207,742
Total AGOA including GSP provisions of AGOA	78,750	123,723	132,655
- US imports under GSP from South Africa	29,638	47,160	29,323
- US imports of duty-free items added under AGOA	49,112	76,563	103,332
All sectors:			
US Exports to South Africa	2,822,354	2,446,169	2,698,201
US Imports from South Africa	4,429,539	4,235,974	4,887,962
Total AGOA including GSP provisions of AGOA	923,243	1,342,594	1,668,573
- US imports under GSP from South Africa	505,987	553,042	670,152
- US imports of duty-free items added under AGOA	417,256	789,552	998,420

Source: Africa Growth and Opportunity Act (2004)

2.5 SUMMARY AND CONCLUSION

This chapter described briefly South African trade policy and its liberalization. It is evident from this discussion that South Africa considerably liberalised its trade policy since the 1970's. These reforms included changes to a wide range of policy instruments, most notably the tariff system. It is nevertheless shown that further reform will be needed, particularly in terms of the number of tariff lines still in place.

In addition this chapter discussed South Africa's WTO commitments and the extent to which South Africa complied. Several bilateral agreements were also discussed. It is evident from this chapter that the reforms in the trade regime, coupled with South Africa's engagement in trade agreements, have resulted in increased trade as reflected in increased exports and imports and its share in the GDP. This chapter, however, does not reflect on whether the more open trade regime has resulted in increased efficiency neither whether the institutions associated with a more open trade regime has reformed sufficiently.

CHAPTER 3

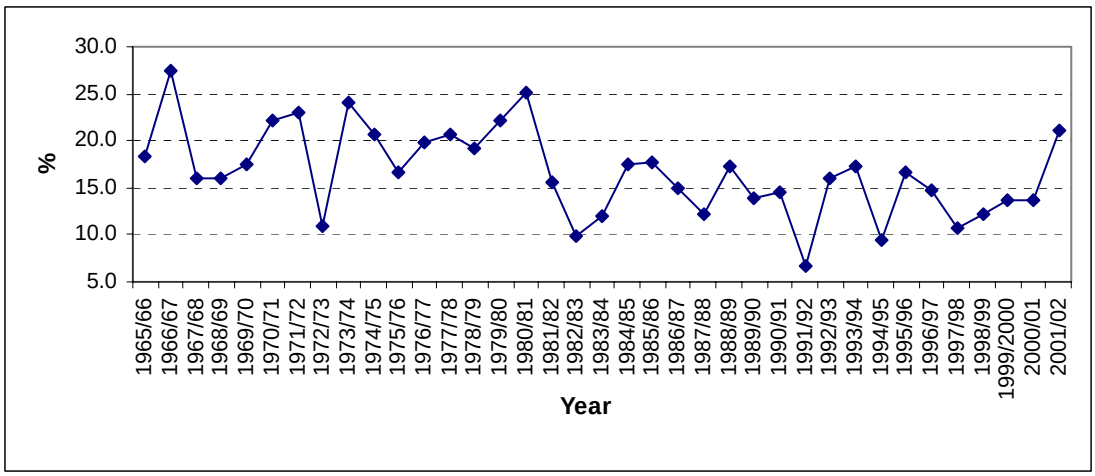
OVERVIEW OF THE BEEF AND MAIZE INDUSTRIES

3.1 INTRODUCTION

The Republic of South Africa covers an area of 1,220,088 square kilometres. Approximately 84 per cent of the total area is used for agriculture and forestry, of which approximately 80 per cent consists of natural veld, which varies from semi desert vegetation to the highly productive grasslands of the high rainfall areas. This illustrates the importance of extensive livestock farming and field crops in the country's agricultural economy.

In contrast to the 60's and 70's, the contribution of the maize industry towards total agricultural GDP stayed below 20%, but since the 2001/2002 season it started to increase above this level again. The share of maize as a percentage of the gross value of the total agricultural production increased since the 1997/1998 season, as indicated in Figure 3.1 below. In terms of volume white and yellow maize is the most important products in the South African agriculture, followed by fowls (chicken).

Figure 3.1: Gross value of maize production as a percentage of total gross value of agricultural production



Source: NDA, (2003).

As mentioned in the previous chapters the subject matter of this study is the evaluation of South African trade policy with respect to the beef and maize industries. However, in order to understand this issue properly a holistic overview of the industries is necessary. This chapter provides an overview of the beef and maize industries in terms of production, consumption and trade.

3.2 THE BEEF INDUSTRY

Beef is an important product in southern Africa in terms of resource utilization. It is also an important export product for some of the countries. Namibia, Botswana, Zimbabwe and Swaziland have been allocated quotas for beef exports to the EU under the Lomé convention. Sartorius Von Bach, Van Renen, and Kristen, *(*2002) state that with trade liberalization and the resulting lowering of import tariffs by many countries, new markets are opening up. Therefore, if the southern African countries can realize their full production potential, increased beef production and exports could simulate economic growth, export earnings and development.

According to Jooste (2001), the red meat industry in South Africa was, and will in the future remain, one of the most important agricultural sub-sectors. The red meat industry has evolved from a highly regulated environment to one that is totally deregulated today. Various of the policies that characterized the red meat industry before deregulation researched widely by, amongst others, Lubbe (1992), Elliott, Nieuwoudt and Lyne (1984), Jooste (2001) and Laubcher and Kotze(1984).

3.2.1 South African production and consumption of beef

Figure 3.1 shows the South African cattle herd and the number of animals slaughtered annually since 1970. Jooste (2001) stated that the commercial cattle herd comprises approximately 65 per cent of the total cattle herd. This means that non-commercial farmers own approximately 35 per cent of all cattle in South Africa. Sixty-eight per cent of the commercial herd comprises female animals, of which the majority is intended for meat production.

The main significance of the data given in Figure 3.2 is the cyclical trend in herd numbers. Lubbe (1990) states that the cyclical behaviour of beef supply is attributable largely to the cyclical nature of female slaughterings. According to the Sunnyside Group (1991) the main contributor to this phenomenon is climatic conditions. They estimated the correlation between national herd numbers and the three year moving average of rainfall as 0.62.

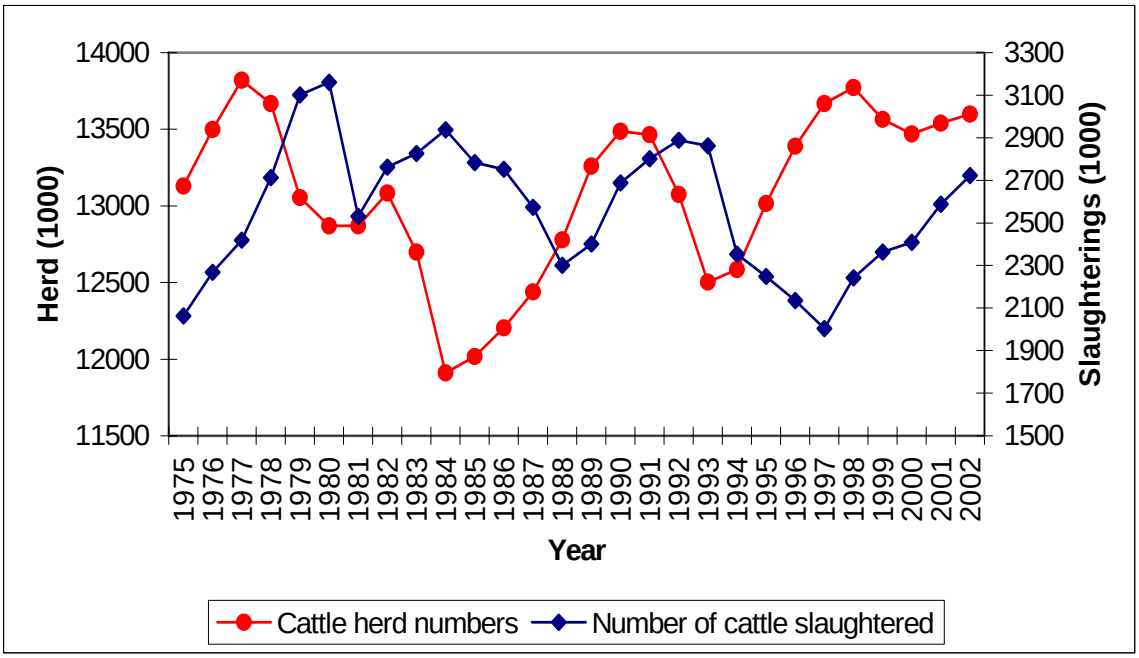


Figure 3.2: The South African cattle herd and slaughtering (1975 - 2002)
Source: AMT (2003); NDA (2003).

Lubbe (1990) who investigated the decomposition of price time series components of the red meat industry, state that the combined effect of rainfall, the variation in production capacity and price expectations produce an environment conducive to relatively stable prices. Furthermore livestock expansion and liquidation processes are fuelled by the rainfall cycle and rainfall expectations. Lubbe (1990) concluded that agricultural policy and farmers' strategies could be more effective if the existence and nature of price and rainfall cycles are known.

Table 3.1 shows that in 1989/90 beef and veal and chicken almost had similar percentages of all meat production in South Africa. This situation has, however, changed since. In 2000/01 chicken contributed 50 per cent to the total meat

production, while beef and veal were responsible for 36.3 per cent, a remarkable relative decline. The reason for this decline, apart from consumption consideration, is probably cheaper production and shorter production cycles for poultry than for beef and mutton.

Table 3.1: The relative performance of different types of meat produced in South Africa for selected years (1000 tons)

Type of meat	1989/1990		1994/1995		2000/2001	
	1000 t	% ofΣ	1000t	% of Σ	1000t	% of Σ
Beef and Veal	609.0	40.6	508.0	35.9	571.0	36.3
Mutton and goat's meat	167.9	11.2	135.6	9.6	84.7	5.4
Pork	126.2	8.4	119.0	8.4	120.9	7.7
Chicken	597.0	39.8	653.0	46.1	796.0	50.6
Total	1,500.1	100.0	1,415.6	100.0	1,572.6	100.0

Source: NDA(2002) and own calculations.

According to Jooste *et al*., (2003) the per capita consumption of beef has declined, while; the opposite is true for the per capita consumption of poultry.

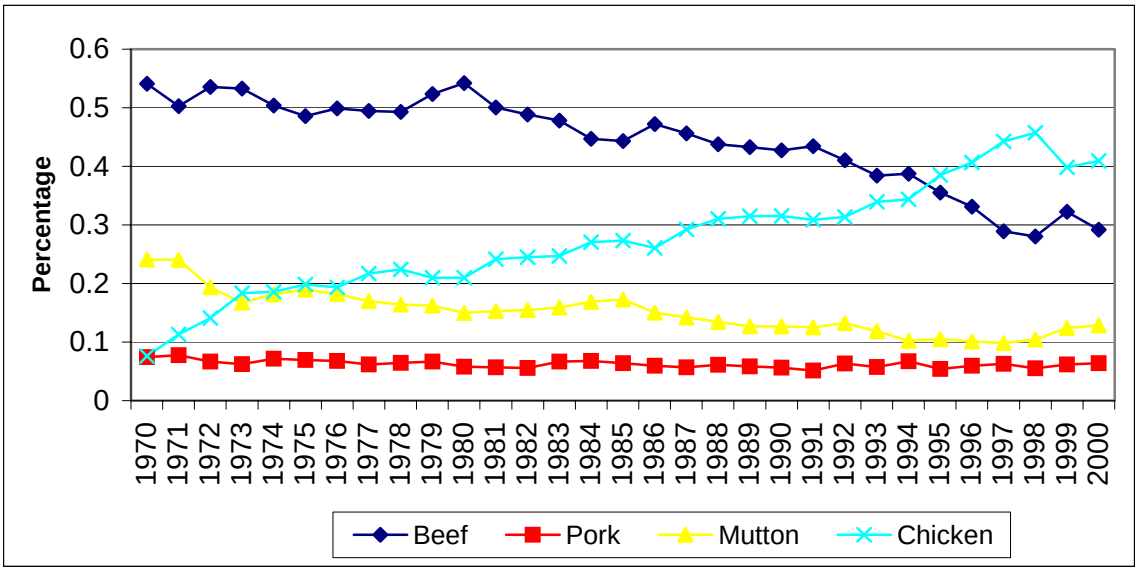
The reason they gave for this decline in beef and veal consumption was the sharp increase in the importance of chicken among non-whites as well as the increasing popularity of this product among whites. The red meat industry, especially beef, faces increasing competition from chicken; this fact can change the face of the South African livestock industry completely.

Other reasons are stated by Jooste *et al*., (2002). These include:

- decreasing or stagnating 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.

Taljaard (2003) investigated the total expenditure shares of four types of meat (beef, chicken, pork and mutton) for South Africa from 1970 to 2000. He found that, of the four products, 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. These trends are shown in Figure 3.3.

Figure 3.3: Total expenditure shares of beef, chicken, pork and mutton (1970 – 2000)



Source: Taljaard (2003).

3.2.2 Beef trade by South Africa

South Africa is a net importer of beef. Table 3.3 shows the imports of bovine meat products from abroad. From 1998 to 2002 South Africa experienced negative growth in the import value of bovine cuts (boneless, fresh or chilled) and bovine cuts (bone in, frozen), but positive growth in the value of bovine cuts (boneless, frozen).

Table 3.2: Imports of bovine beef products from overseas

HS Rev	Product	Value 2002 in US$ thousand	Quantity 2002 (tons)	Unit value	Annual growth in value between 1998-2002, %	Annual growth in value of world exports between 1998-2002, %
20130	Bovine cuts boneless, fresh or chilled	287.00	154.00	1,864	-75	5
20220	Bovine cuts bone in, frozen	204.00	425.00	480	-67	0
20230	Bovine cuts boneless, frozen	3,576.00	3,793.00	943	1	2

Source: ITC calculations based on COMTRADE statistics (2003).

It is, however, not only value that dropped, but also the quantity of beef that are imported. According to Jooste, *et al*. (2002) some of the reasons responsible for this decline in beef imports since 1998 are:

(i) Clamping down on fraud by exporters together with a new tariff dispensation for beef;

(ii) 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. Imports of beef virtually came to a stop. Namibia and Botswana also achieved record prices in the EU for their safe beef and reduced the volumes to South Africa.

(iii) A substantial depreciation of the Rand against the Dollar since 1998. Figure 3.4 shows the producer price for beef and the exchange rate.

It is clear from Figure 3.4 that there is a large degree of correlation between the producer price of beef and the exchange rate.

These peaks coincided to a large extend with the peaks of the R/$ exchange rate in 2001 and 2002. Hence, imports were relatively expensive during periods of high seasonal demand due to the low value of the rand against the dollar, and this further supported beef prices. All these factors led to imported meat either not being available, due to disease problems, or not affordable

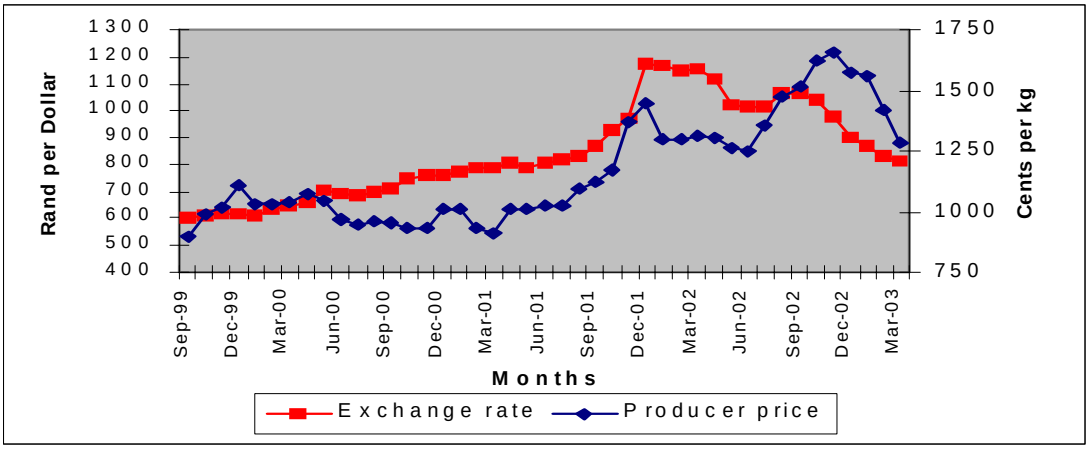


Figure 3.4: The producer price for beef and the exchange rate
Source: Jooste, *et al.* (2002)

In terms of bovine cuts (boneless, frozen), Argentina was the most important source of imports with an import value of US$1,718,000 and 1,858,000 tons in 2002. Australia is an important source of imports of bovine cuts (bone in, frozen) with a value of US$185,000 and 406 tons, respectively.

Table 3.3 shows South Africa's export of selected bovine meat products. Only in three instances have the value of exports increased from 1998 to 2002, namely bovine carcasses and half carcasses (frozen), bovine cuts bone in (frozen) and bovine cuts boneless (frozen).

Table 3.3: Exports of selected meat products from South Africa

HS Rev	Product	Value 2002 in US$ thousand	Quantity 2002 (tons)	Annual growth in value between 19980-2002, %	Annual growth in value of world imports between 19980-2002, %
20110	Bovine carcasses, fresh or chilled	14	16	-79	-10
20120	Bovine cuts bone in, fresh or chilled	1,556	903	-29	-11
20130	Bovine cuts boneless, fresh or chilled	3,317	4,674	-7	4
20210	Bovine carcasses and half carcasses, frozen	57	32	84	-9
20220	Bovine cuts bone in, frozen	5,181	1,453	21	1
20230	Bovine cuts boneless, frozen	2,561	3,986	14	4

Source: ITC calculations based on COMTRADE statistics.

3.3 THE MAIZE INDUSTRY

Maize is undoubtedly South Africa's most important field crop, and it is the staple food for the majority of the population. Almost 70 per cent of maize grown in South Africa is white, while the remainder is yellow. Of the total area cultivated, 35 per cent is planted to a combination of white and yellow maize (Taljaard, Botha, Hallatt and Jurgens (2003).

According to Taljaard *et al*, (2003) the maize industry plays a very important role in the economy. It is the most important source of carbohydrates SACU for human and animal consumption. It is estimated that more than 9000 maize producers are responsible for the majority of the South African maize crop, while the rest is produced by thousands of small-scale producers. The maize industry has strong linkages throughout the economy, both upstream to the input industries and downstream into milling, animal feed and food processing industries.

The main production provinces for maize are the Free State, Gauteng, Kuwa Zulu Natal, Mpumalanga, Northern Province and the North West. The Free State produces 33 per cent of the total maize, the North West 28 per cent, Mpumalanga 25 per cent, and the remaining provinces mentioned accounts for 14 per cent collectively. These provinces are located in the central and eastern parts of South Africa and are separated by a range of mountains. The central area is called the highveld, while the eastern side stretching towards the coast is referred to as the lowveld (NDA, 2003).

3.3.1 Maize production, consumption and trade in South Africa

Maize can be produced in areas where the rainfall exceeds 350 mm per year. Production is dependent on an even distribution of rain throughout the growing season. Medium and high potential soils are preferable for maize production. Dry land production mainly takes place mainly in the Free State (34%), North West (32%), Mpumalanga (24%) and KwaZulu-Natal (3%) provinces (see figure 3.5 for detail).

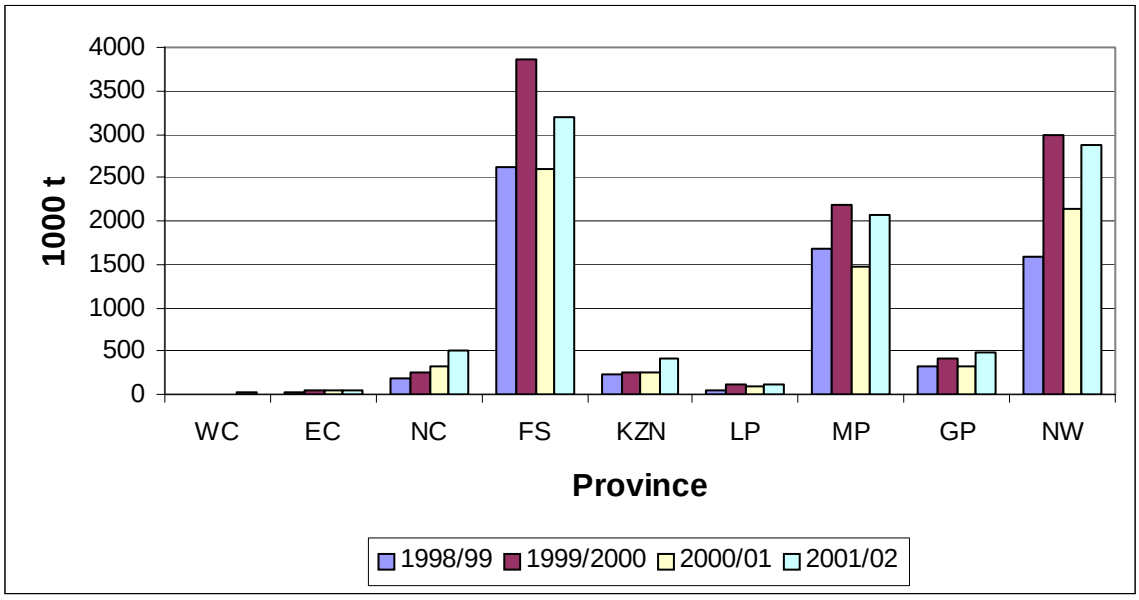


Figure3.5: Geographical location of maize production in the RSA from 1998 to 2002

Source: NDA (2003).

Maize is planted from October to December. Due to variation in rainfall pattern, temperature and duration of the growing season, planting times differ in the eastern

and western production areas. Tillage practices vary from plough to no-till depending on soil type and rainfall. A wide range of cultivars is available, adapted to the range of climatic and production conditions. The area used for maize plantation per year varies between 3.8 and 4.8 million ha, which represents approximately 25% of the country's total arable land (NDA, 2003). The average annual commercial production of maize during the past 10 years was 8.2 million t (4.3 million t of white and 3.9 million t of yellow maize). Subsistence farmers produce an average of 500 000 tons of maize, mainly white, for household consumption each year. The local consumption requirements for maize are approximately 7.5 million tones (4.4 million tons white and 3.1 million tons yellow) (NDA, 2003).

Production of white and yellow maize is highly correlated. During the early 1990's the production of white and yellow maize were approximately equal in terms of volume. Since the 1995/96 production year, the volume of locally produced white maize exceeds that of yellow maize. South Africa is one of the largest producers of white maize in the world. Yellow maize is mostly used for the manufacturing of animal feed, and is produced across the world. It is freely available for importing. Yellow maize, is mainly used in the animal feed sector. Due to this, the sourcing of white maize for importation during years of local shortages is more difficult (Taljaard *et al.*, 2003).

As shown in Table 3.4 shows that total consumption from 1995/96 to 2000/01 was lower than production. This situation of below 50 per cent human consumption, which consists of mainly white maize can be described as interesting when it is compared to the earlier times where there was above 50 per cent human consumption.

Table: 3.4: South African Maize production and consumption

Production year	Area planted (1000ha)	Total production 1000T	Gross value R1000	Consumption		Price index[31]	Exports Quantity
				Total 1000T	Human 1000T	1995=100	
1995/96	3,761	10,171	6,043,332	6,842	2,807	102.6	887
1996/97[2]	4,023	10,136	6,000,866	6,738	2,912	98.5	2,656
1997/98[2)]	3,560	7,693	4,454,363	6,383	3,382	94.9	1,921
1998/99[2)]	3,567	7,946	5,397,112	6,341	3,381	112.6	1,388
1999/2000[2)]	3,814	11,455	6,281,346	6,785	3,648	100.0	652
2000/01[2)]	3,223	8,040	6,258,059	6,924	3,685	100.0	1,488

Source: NDA (2002).

1) Index figures are for calendar years, e.g. marketing year 1995/96 = 1995

2) Preliminary

According to Taljaard (2003), the consumption of maize in South Africa increased with approximately 50% over the last 30 years (see figure 3.6). White maize produced for human consumption has a more stable consumption pattern, compared to yellow maize.

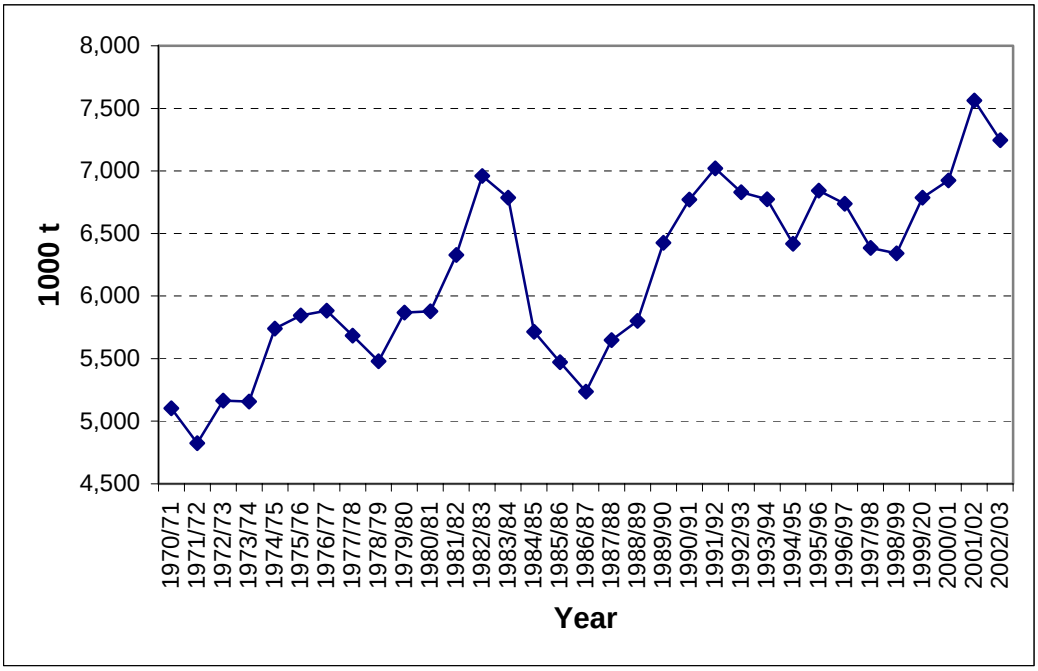


Figure 3.5: Total maize consumption in South Africa
Source: NDA, (2003).

According to Van Zyl (1989) the black consumer is the most important buyer of maize as human food. However, rising living standards led to the consumption of more meat and meat products, while, because of the negative income elasticity of white maize, less maize is being sold for human consumption. In the long run this implies that more and more maize will be used for livestock production. This point is reaffirmed by Groenewald (1987), who states that rising living standards are associated with a rising use of crops for livestock production, especially beef.

There was a 3.8% decrease in per capita consumption of maize over the last 30 years (See figure 3.6). Taljaard *et al*. (2003) mentioned two reasons for this downward trend. The first is westernization, with changing consumer needs. They associate the second reason with Engel's law, which says when consumer income increases, the proportion spent on food decreases, ceteris paribus. The regular consumer desires more value added food, like ready to eat meals. In the case of an inferior good, like white maize in South Africa, a rise in the income leads to a decrease in the consumption of the specific good.

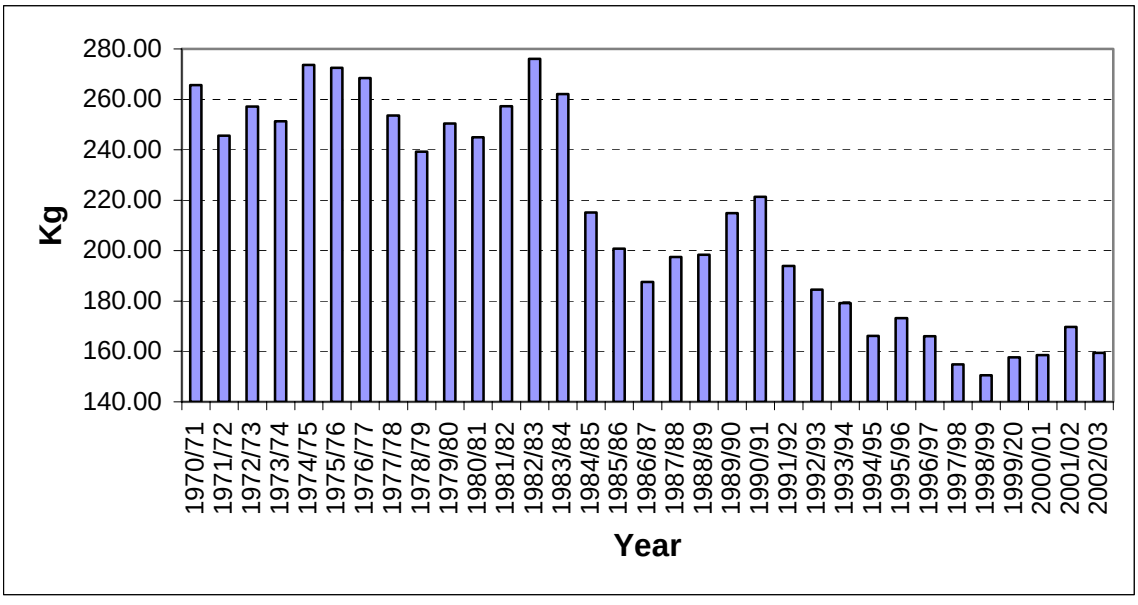


Figure 3.6: Per capita consumption of maize in South Africa
Source: NDA, (2003).

3.3.2 Trade in maize by South Africa

South Africa is in most production years a net exporter of maize. The quantity and value of South African maize imports and exports are shown in Figures 3.7 and 3.8. According to Taljaard *et al.*, (2004) the declining trend in exports since 1996 was due to the efforts made by Grain SA, urging producers to plant for the domestic market only. Exports have been increasing since 1999 though.

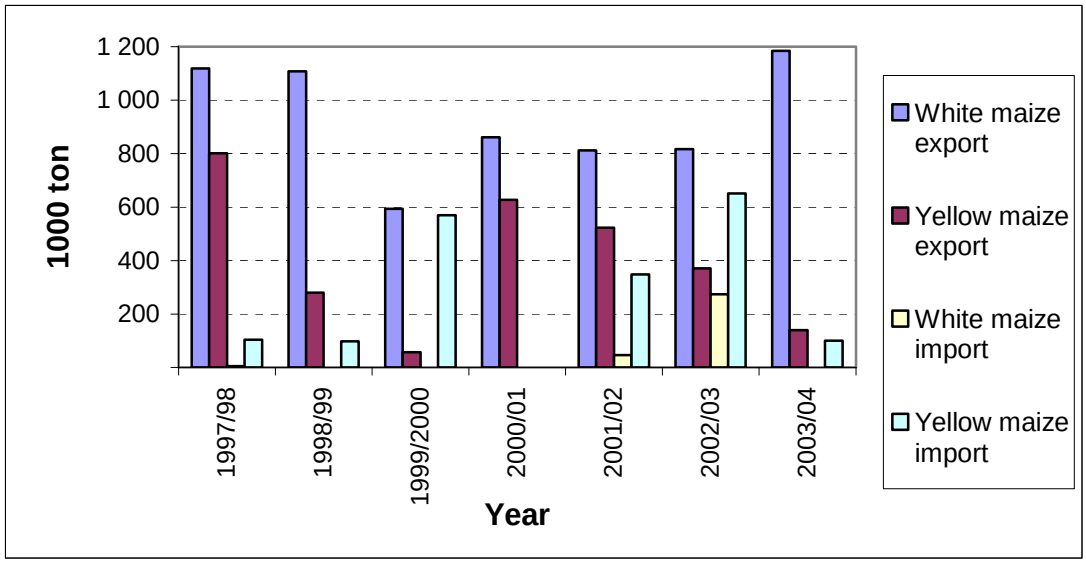


Figure 3.7: Amount of White and Yellow maize traded in South Africa
Source: Grain SA (2003).

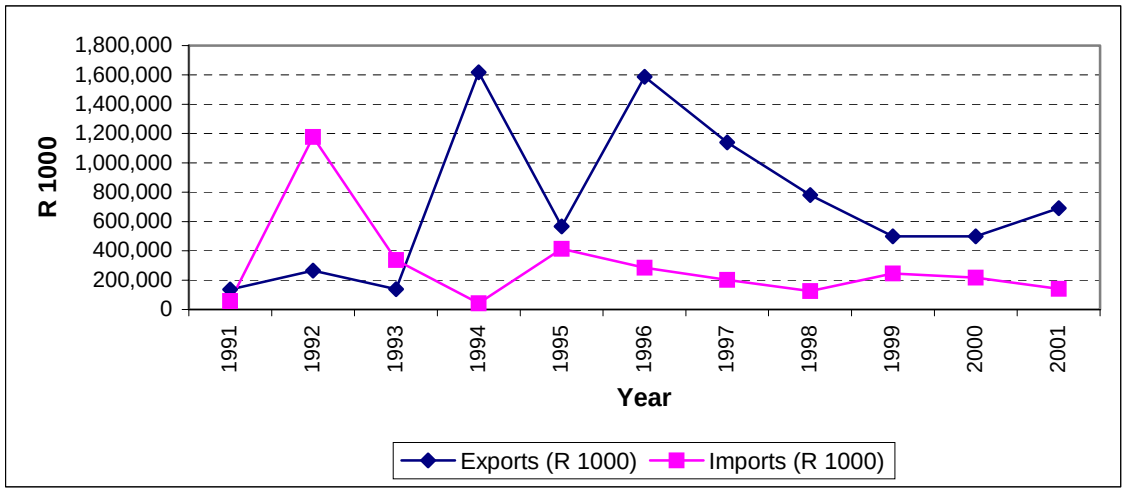


Figure 3.8: Value of South African maize imports and exports
Source: NDA, (2003).

Approximately 39% of maize imported by South Africa originates from the US, followed by Argentina (22%) and China (18%). The rest is imported from Brazil, Mexico and Canada. Table 3.5 gives a list of all exporting countries from who South Africa regularly import maize. The total value of maize imported by South Africa in 2002 was R105,452. The total quantity of maize imported by South Africa was 1,043,661 tonnes.

Table 3.5: Main exporting countries of maize to South Africa

Exporting countries	Imported value 2002 in US$ thousand
United States of America	40774
Argentina	23091
China	18522
Brazil	14922
Mexico	4732
Others	3411

Source: ITC calculations based on COMTRADE statistics.

The main export destinations of South African maize together with the corresponding values are shown in Table 3.6. Most South African maize exports are destined for other African countries. Zimbabwe are the largest importer with a share of 54% of South Africa's total maize exports. Zimbabwe's production decreased tremendously after the government's invasion of farm land, which increased their demand for South African maize. Zambia imports 19% of South Africa's total maize exports, followed by Malawi with 8% and Japan with 7%. Other countries importing maize from South Africa are Mozambique, Turkey, Democratic Republic of the Congo and Angola.

Table 3.6: Main exporting destinations of South African maize

Importers	Exported value 2002 in US$ thousand
Zimbabwe	73504
Zambia	25325
Malawi	11055
Japan	9684
Mozambique	3749
Turkey	3410
Democratic Republic of the Congo	2116
Angola	1589
Others	3905

Source: ITC calculations based on COMTRADE statistics.

3.4 TRADE CONCENTRATION OF BEEF AND MAIZE INDUSTRIES

The concept of concentration is mostly associated with the concept of distribution. Concentration refers to the concentration or diversification of trade i.e. the extent to which a country or region concentrates its trade in different products to foreign markets and the extent to which foreign countries or regions concentrate their exports to domestic markets. In other words, the degree of inequality with respect to trade can be investigated. Concentration of regional exports and imports can be used to determine countries whose commodities have relative comparative advantages. It also shows preferences regarding trading partners.

3.4.1 Lorenz curve and Gini-coefficient

The Lorenz curve and Gini-coefficients are used in this section to determine inequality/skewness or concentration in the trade. The Lorenz-curve is based on the share of total trade that accrues to different regions/countries starting with the smallest and working up to the largest. The Lorenz-curve can also be used to define a common measure of inequality or concentration, generally known as the Gini-coefficient.

A Gini-coefficient equal to zero denotes that trade is equally distributed amongst regions/countries; however, if it is equal to one, trade is restricted to only one country. The extreme points are seldom actually reached with respect to a total commodity group. However, due to the diversity that exists within a commodity group it is possible that a certain quality, class etc. may actually reach one or zero. The higher the Gini-coefficient is higher the more a country has concentrated its exports on one region, while a low Gini-coefficient indicates a high level of diversification of the exporting country or region (Satorius von Bach, 1993, Grote and Satorius von Bach, 1994 and Satorius von Bach and Von Rooyen, 1995).

The degree of concentration can vary from a situation with no concentration (total diversification) to a situation of total concentration. The extent to which concentration varies is determined by various factors such as:

- Different preferences of consumers, which result in different trade streams
- Trade barriers which prohibit or restrict trade between different regions;

- Trade barriers which prohibit or restrict trade in certain products or product type production capacity and climatically factors;
- Trade agreements and trade incentives;
- Infrastructure (if existing infrastructure cannot facilitate the processing of primary goods to final products, these primary goods will be exported to a region/country where the necessary processing can be done. Hence, processors of the final product will target this market);
- The political stability or instability of a region/country; and
- The ability to pay, which is a function of the level of income.

Static concentration refers to a situation where current inequalities are measured, i.e. a specific state is investigated. Dynamic concentration refers to a process where by different static concentration situations are measured over time, showing increasing or decreasing trends with respect to inequalities.

Atkinson (1970) and Ritson (1977) in Jooste (1996) stated the major disadvantage of using the Lorenz curve is that the Lorenz curve may be infinitely varied without any change in the Gini-coefficient; it is possible for two different Lorenz curves to have the same Gini-coeffiient at a point where they intersect with each other.

A static concentration or current inequalities is investigated below, that is are measured with respect to South Africa. According Table 3.8, the Gini-coefficient of all the selected beef and maize products is high. This indicates that trade in the above products is highly concentrated to a region/country or it is highly concentrated.

Table 3.8: Gini-coefficient for selected South African beef and maize exports for the year 2001

HS Rev	Product name	Gini-coefficient
20130	Bovine cuts boneless fresh or chilled	0.98
20230	Bovine cuts boneless, frozen	0.96
100510	Maize seed	1.0
100590	Maize other	0.99

Source: ITC calculations based on COMTRADE statistics.

3.4.2 Intra-industrial trade

Intra industrial trade is a common feature among countries trading with each other and it can thus also be used to explain trade patterns. Intra-industrial trade refers to the phenomenon that countries import and export the same commodity in a specific year.

A coefficient of 0 indicates that a country only imports or exports and a coefficient of 100 denotes a situation where all the imports are re-exported i.e. the import volume is equal to the export volume of a specific commodity. A coefficient of 50 means that given an export surplus, one third of the export volume will be imported, and not 50 per cent as might be assumed.

$$IIT = \frac{[(Xi + Yi) - |Xi - Yi|]}{(Xi + Yi)} \times 100$$

Where

IIT = Intra industrial trade coefficient

Xi = Export volume Product i

Yi = Import volume Product I

According to Table 3.9, the IIT for bovine cuts (boneless fresh or chilled) is 0.09, that is close to zero. This indicates that South Africa imports mostly bovine cuts (boneless fresh or chilled) during the past decade. However, IIT for bovine cuts boneless (frozen) is 0.41 which is close to 50 per cent. And this means given an export surplus, one third of the export volume were imported. As far as maize is concerned the calculated IIT coefficients indicate there were export surplus.

Table 3.9: Intra Industrial Trade coefficients

HS Rev	Product name	Export	Import	IIT
20130	Bovine cuts bone less fresh or chilled	13,932,149	656,687	0.09
20230	Bovine cuts boneless, frozen	13,533,950	3,470,473	0.41
100510	Maize seed	21,110,730	3,894,744	0.31
100590	Maize other	599,156,242	106,111,801	0.30

Source: ITC calculations based on COMTRADE statistics.

3.5 SUMMARY AND CONCLUSION

The chapter provided a review of the beef and maize sub-sectors and provided information on the level of markets integration as calculated with the Gini-coefficient and the IIT.

The main conclusions of this chapter can be summarised as follows:

- Beef still exhibits it cyclical price trend, but per capita consumption of beef has come under pressure.
- There appears to be niche market opportunities for the export of boneless cuts.
- Although total maize consumption increased, the per capita consumption experienced a significant decline.
- Maize exports have dwindled of the last couple of years, which can mainly be attributed to local market conditions.
- Beef and maize exports are very concentrated and there is generally a low level of intra-regional trade.

CHAPTER 4

REVEALED COMPARATIVE ADVANTAGE FOR SOUTH AFRICAN BEEF AND MAIZE

4.1 INTRODUCTION

There is much confusion between the use of the terms comparative advantage and competitiveness in economics. The concepts are related, but are often mistakenly exchanged for one another. Comparative advantage and competitiveness would be the same in a world of perfect competition, in which there are homogeneous products, perfect information and an absence of market failure (Cordon, 1974).

From a trade point of view Worley (1996) provides more clarity. He states that comparative advantage elucidates how trade benefits nations through more efficient use of their resource base when trade is totally unrestricted, while competitive advantage explains trading patterns as they exist in the real world, including all the barriers to free trade ignored by comparative advantage.

Understanding the aforementioned is vitally important when one endeavours to use the various different measures that are available to quantify policy options and trade. It is for this reason that these concepts are discussed in more detail in the next section. Against this background the Revealed Comparative Advantage (RCA) methodology will be used to explain trade in beef and maize by South Africa.

4.2 ABSOLUTE ADVANTAGE, COMPARATIVE ADVANTAGE AND COMPETITIVENESS

While the mercantilists believed that one nation could gain only at the expense of another nation and advocated strict government control of all economic activity and trade, Adam Smith and other classical economists believed that all nations would gain from free trade and strongly advocated a policy of as little as possible government interference with the economic system.

According to the theory of Adam Smith, trade between two nations is based on absolute advantage. When one nation is more efficient than (or has an absolute advantage over) another in the production of one commodity but is less efficient than (or has an absolute disadvantage with respect to) the other nation in producing a second commodity, then both nations can gain by each specializing in the production of the commodity of its absolute advantage and exchanging part of its output with the other nation for the commodity of its absolute disadvantage (Salvatore, 2001). By this process, resources are utilized in the most efficient way and the output of both commodities will rise. This increase in the output of both commodities measures the gains from specialization in production available to be divided between the two nations through trade.

David Ricardo's law of comparative advantage, on the other hand state that, even if one nation is less efficient than the other nation in the production of both commodities, there is still room for mutually beneficial trade. The first nation should specialize in the production of and export the commodity in which its absolute advantage is greater and import the commodity in which it has an absolute disadvantage. Salvatore (2001) argues that there are exceptions to Ricardo's law of comparative advantage, since it may happen that the absolute disadvantage that one nation has with respect to another nation is the same in both commodities. This, therefore, requires a slight modification of the law of comparative advantage that read as follows –"Even *if one nation has an absolute disadvantage with respect to the other nation in the production of both commodities, there is still a basis for mutually beneficial trade, unless the absolute advantage is in the same proportion for the two commodities"*.

Two important questions were left largely unanswered by Smith and Ricardo. These are associated with the basis of comparative advantage and analyzing the effect that international trade has on the earnings of factors of production in the two trading nations. The Heckscher-Ohlin theory provides answers to these two important questions.

Before discussing the Heckscher-Ohlin theory it is worth mentioning the assumptions on which the theorem is based. The assumptions are:

- There are two nations and two factors of production;
- Both nations use the same technology in production;
- One commodity is labour intensive and the other is capital intensive in both nations;
- Both commodities are produced under constant returns to scale in both nations;
- There is incomplete specialization in production in both nations;
- Tastes are equal in both nations;
- There is perfect competition in both commodities and factor markets in both nations;
- There is perfect factor mobility within each nation but no international factor mobility;
- There are no transportation costs, tariffs, or other obstructions to the free flow of international trade;
- All resources are fully employed in both nations; and
- International trade between the two nations is balanced.

Starting on the above assumptions the theory of Heckscher-Ohlin (H-O) can be presented in a nutshell in the form of two theorems: the so-called H-O theorem, which deals with and predicts the pattern of trade and the factor equalization theorem, which deals with the effect of international trade on factor prices.

The H-O theorem states that a nation will export the commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor and import the commodity whose production requires the intensive use of the nation's relatively scare and expensive factor. In short, this means the relatively labour rich nation exports the relatively labour intensive commodity and imports the relatively capital intensive commodity.

Of all the possible reasons for differences in relative commodity prices and comparative advantage among nations, the H-O theorem isolates the difference in relative factor abundance, or factor endowments, among nations as a basic cause or determinant of

comparative advantage and international trade. For this reason, the H-O model is often referred to as the factor–proportions or factor endowment theory.

Thus, the H-O theorem explains comparative advantage rather than assuming it, as was the case for classical economists. That is, the H-O theorem postulates that the difference in relative factor abundance and prices is the cause of the pre-trade difference in relative commodity prices between two nations. This difference in relative factor and relative commodity prices is then translated into a difference in absolute factor and commodity prices between the two nations. It is this difference in absolute commodity prices in the two nations that is the immediate cause of trade.

With the same set of assumptions in mind, the factor–price equalization theorem argues that international trade will bring about equalization in the relative and absolute returns to homogenous factors across nations. As such international trade is a substitute for the international mobility of factors. What this means is that international trade will cause the wages of homogenous labour to be the same in all trading nations. Similarly, international trade will cause the return of homogenous capital to be the same in all trading nations.

However, there is exceptional case to both, H-O and factor price equalization, theorems. This is when the factor-intensity reversal, which refers to the situation where a given commodity is the labour intensive commodity in labour abundant nation present and capital intensive commodity in capital abundant nation. The H-O model fails to explain this because it would predict that the labour abundant nation would export its labour intensive commodity and the capital abundant nation would also export its capital intensive commodity. Since the two nations cannot possibly export the same homogenous commodity to each other, the H-O model no longer predicts the pattern of trade.

Clearly, not one of the aforementioned theories explains the reasons for why countries trade with each other in its entirety in the modern world of globalization. These theories nevertheless provide the premise on which arguments could be based to explain trade.

According to Khemani (1997), **comparative** advantage can be the basis on which to build **competitive** advantage. Many deviations in policy and marketing practices, that violate conditions necessary for trade, are solely based on comparative advantage. Worley (1996) states that competitive advantage encompasses these factors and, when all these additional factors are considered, better describes trade patterns. He further affirms that competitive advantage characterizes trade patterns resulting from comparative advantage together with policy effects, product quality differences and industry marketing skills. It is hence clear that one needs a proper understanding of comparative advantage before one attempt to explain competitive advantage. It is for this reason that the next section will investigate the measurement of comparative advantage more closely.

4.3 MEASURING COMPARATIVE ADVANTAGE

Net social profitability (NSP), Domestic Resource Cost (DRC), and Resource Cost Ratio (RCR) and the Revealed Comparative Advantage (RCA) are all measurements of economic efficiency (Mucavele, 2000).

NSP refers to the profit of producing a commodity by efficiently utilizing all foreign and domestic resources. It can be estimated by subtracting all input costs from the sum of their opportunity costs plus any externalities (Tuan and Tingjun, 2000). NSP measures can only be used to contrast similar types of activities, such as alternative agricultural product projects competing for given fixed resources (Mucavale, 2000).

The DRC methodology compares the economic value of land, labour, and capital to the value-added measured in world prices (Salinger, 1999), i.e. the concept of DRC relates to a measure of real opportunity cost in terms of total domestic resources of producing (or saving) a net marginal unit of foreign exchange (Bruno, 1967). It is used as an *ex ante* measure of comparative advantage to determine which among a set of alternative production activities is relatively efficient for a country or region in terms of contribution to national income (Bruno, 1967). However, the DRC method measures only static efficiency and fails to account for the dynamics of price and quantity changes in input-output relations (Haque, 1991).

An alternative measure of economic efficiency that is easier to interpret is the RCR. Resource cost ratios provide an explicit indication of the efficiency with which production alternatives uses domestic resources to generate or save foreign exchange (Morris, 1990), thus serving as a relative indicator of the degree of efficiency. According to Morris (1990), the RCR's also lend itself more readily to cross-country comparison.

Another measure of changes in comparative advantage is the RCA. It provides a measurement of comparative advantage base on countries trade patterns. It is this measure that forms the basis of this chapter. It is, however, necessary to clearly define the use and interpretation of the RCA to prevent wrong interpretations of its meaning in an analytical context. This will be highlighted in the next section.

4.4 REVEALED COMPARATIVE ADVANTAGE

4.4.1 What do we actually learn from RCA?

Bender and Li (2002) state RCA faces a measurement problem, as it is defined in terms of autarkic price relationships that are not observable. Trade statistics reflect only post-trade situations. They further state that this approach, pioneered by Balassa (1965, 1977, 1979), assume that the true pattern of comparative advantage can be observed from post-trade data. The availability of data at different levels of aggregation and the data bias caused by government policy distortions (e.g. non-trade barriers and export subsidies) caused immeasurable damage to the "true" pattern of comparative advantage.

Bender and Li (2002) is, however, also of the opinion that RCA measures are still acceptable since the impact of changes in trade policies can be deducted from movements of RCA, even though it fails to distinguish between a region's factor endowments. It is within this context that the RCA is used in this study.

4.4.2 Formulation of RCA

The positive impact of trade liberalization and expansion thereof can indirectly be measured by calculating the RCA of a product. According Cassim, Onyango and Van Seventer (2002), RCA is based on observed trade patterns; it measures a country's exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries.

For this study two RCA measures are used. One is the original RCA index, formulated by Balassa (1965), that compares the export share of a given sector in a country with the export share of that sector in the world market. The other is an improved version constructed by Vollarath (1991), and is denoted as RCA#. According to Bender and Li (2002), Vollarath's RCA# is considered to be the more appropriate measure, because a group of countries is expected to have a much greater impact at the world level than an individual economy. RCA# considers the significance of a country's exports in a given sector and at the world level and purges any double counting problem in the world trade. For any export of sector "*i*", the RCA and RCA# are defined, respectively, as:

$$RCA_i = \left[\frac{\left(X_{ij} \Big/ \sum_i X_{ij} \right)}{\sum_j X_{ij} \Big/ \sum_j \sum_i X_{ij}} \right] \qquad [1]$$

$$RCA\#_i = \frac{\left\{\frac{X_{ij}}{\left(\sum_i X_{ij}\right) - X_{ij}}\right\}}{\left\{\frac{\left(\left(\sum_j X_{ij}\right) - X_{ij}\right)}{\left(\left(\sum_j \sum_i X_{ij}\right) - \left(\sum_j X_{ij}\right)\right) - \left(\left(\sum_i X_{ij}\right) - X_{ij}\right)}\right\}} \qquad [2]$$

Where:

X_{ij} - the exports of sector "*i*" of country "*j*";

$\sum_i X_{ij}$ - the total exports of country "*j*";

$\sum_j X_{ij}$ - the world exports of sector "*i*"; and

$\sum_j \sum_i X_{ij}$ - the total "world" exports.

A value greater than 1 signal that the country has a revealed comparative advantage in that product, whereas a value smaller than 1 signal a revealed comparative disadvantage.

Cognisance should be taken of the fact that more than one variation exist for equations 1 and 2 shown above. Edwards and Schoer (2001), however, found a high degree of correlation between these measures, i.e. in general the correlation coefficient exceeds 0.8. Therefore, for this particular study, the Balassa (RCA) and the Vollarath (RCA#) methods are applied to determine the revealed comparative advantages of the South African beef and maize industries.

4.4.3 Evidence from other studies

Laursen (1998) conducted an analysis of Balassa's RCA. He showed that, when using this RCA it should always be adjusted in such a way that it becomes symmetric. He based his conclusion on a theoretical discussion of the properties of the measure, and on the basis of

convincing empirical evidence based on the Jarque-Bera test of normality of the error terms from regressions, using both the RCA and the Revealed Symmetric Comparative Advantage (RSCA). He also compared the RSCA to other measures of international trade specialisation. These measures included the Michaely index and the chi square measure. The conclusion that emerged from his analysis was that the RSCA is - on balance - the best measure of comparative advantage.

Bender and Li (2002) who investigated the performance of manufacture exports in a number of Asian and Latin American economies over the period 1981-1997 argues that although the RCA measurement may not distinguish between the factor endowment effects a trade policy may have, the RCA measures provide an indication of the movement in a regions comparative advantage. Their evidence strongly suggests that, despite the strong export performance experienced by East Asian economies, they are losing their comparative advantage to the lower-tier economies in Southeast Asia and Latin America.

In a study by Cassim *et al.* (2002), they showed that South Africa has a revealed comparative advantage for the production of agriculture, mining and manufacturing products relating to these sectors. These results appear consistent with those of Nordas (1996) and suggest that South Africa is relatively competitive in the production of mineral and agricultural resource intensive products. Edwards and Schoer (2001) and GESP (2001) showed that South Africa has a revealed comparative disadvantage in the production of the more high-technology products such as electrical machinery, apparatus and appliances.

4.4.4 RCA's for the beef and maize sub-sectors in South Africa

In this section the results of applying equation 1 and 2 described in Section 4.3.2 on the beef and maize sub-sectors are discussed. Data was sourced in terms of total world exports, as well as exports of beef and maize by South Africa and the world.

In line with Edwards and Schoer (2001), the hypothesis is tested that there is no significant difference between the calculated RCA and RCA#. This is demonstrated with the RCA and RCA# that was calculated for beef. Table 4.1 shows that there is no significant

difference between these two measures as measured by the F-test. In addition, a correlation test found a correlation coefficient of 0.9998.

Table 4.1: F-test for RCA and RCA# values

Indicators	***RCA***	***RCA#***
Mean	0.799976	0.800613
Variance	0.307271	0.314376
Observations	22	22
Df	21	21
F	0.9774 ($p < 0.05$)	

Source: Own calculation.

– **Beef**

Figure 4.1 depicts the RCA and RCA# calculated for beef. According to the definition of RCA and RCA# South Africa only showed a revealed comparative advantage for beef in 1985, 1991, 1996, 2000 and 2001. Thus, South Africa had a revealed comparative disadvantage for 17 out of the 22 years since 1980.

Two questions arise, (i) are the results indicating that the South African beef sub-sector indeed has a comparative disadvantage, and (ii) do the RCA measures for 2000 and 2001 indicate that the beef sub-sector is becoming more export orientated. In order to answer these questions several issues have to be considered. They are:

- South Africa is a net importer of beef, i.e. imports exceed exports because local production does not meet local demand for beef. This situation has not changed since 1980.

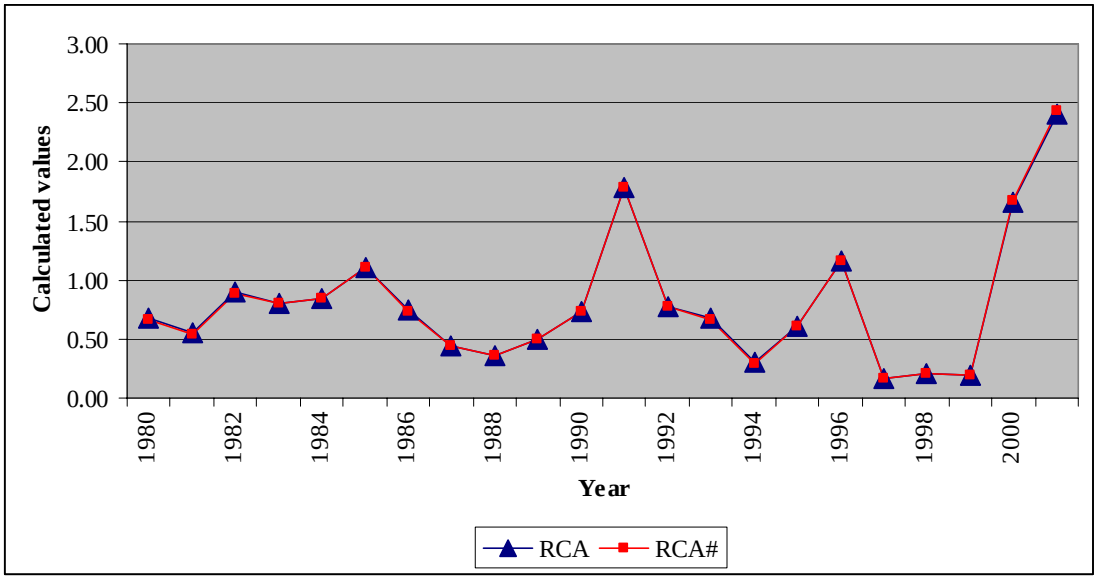


Figure 4.1: Revealed comparative advantage for beef

- South Africa was isolated by the rest of the world for most of the 1980s, effectively restricting exports of most products.
- The period prior to 1995 was characterized high levels of protection of beef industries worldwide. It was only after the Marrakesh Agreement that more liberal trade and domestic policies were implemented (Jooste, 2001).
- The period prior to 1997 was characterized by a high level of domestic regulation, even though major changes in the level of regulation took effect already in 1994.
- Due, in large to the previous three events, the South African beef industry is not export orientated. For example, only a select few companies are exporting beef and beef products. This state of affairs can largely be attributed to the fact many countries restrict the imports of, for example, carcasses and beef (frozen, chilled or fresh) from South Africa due to its animal disease status. In addition, compliance cost to strict international standards is high (Jooste *et al.*, 2003).

Given the aforementioned, it is clear that one can not merely conclude from the RCA results that the beef sub-sector has a comparative disadvantage. Moreover, Siegfried (2002) state that the RCA is primarily based on relative export shares that could be biased due to distortions from various trade and non-trade barriers; which is indeed the case for beef. Also, Jooste and Van Zyl (1999) showed that the beef industry in South Africa is

actually taxed. They also used the RCR measure of comparative advantage to show that the beef industry does have a comparative advantage, i.e. the beef industry does make effective use of the scarce natural resources used to produce beef.

Lastly, it appears as if the beef sub-sector has started to re-orientate itself to a more open trade regime and that niche export opportunities exist if one looks at the trend in the RCA measures since 1997. That is, the RCA measures remained more or less stable from 1997 to 1999 (a period that one can postulate that the industry adjusted itself to a globalised environment) and increased to above the threshold value since 2001. The reason for the latter trend could be that firms have sufficiently discounted international factors that affect global meat markets into their operational and business environments to market beef internationally.

- **Maize**

Figure 4.2 shows the RCA and RCA# that were calculated for maize. According to the definitions of the aforementioned measures South Africa enjoyed a revealed comparative advantage for maize. However, South Africa showed a revealed comparative disadvantage during the years 1984, 1985, 1988 and 1993. Thus, South Africa had a revealed comparative advantage for 18 out of the 22 years since 1980. The years in which South Africa has a revealed comparative disadvantage coincides with droughts, and hence delivery of maize was lower than usual.

The result obtained above is not surprising since South Africa is a net exporter of maize. What is, however, surprising is the downward trend in both RCA measures since 1996. This is the period that coincides with the implementation of the Marrakesh Agreement (i.e. more liberal trade regimes) and the deregulation of the agricultural sector, including the maize sub-sector, in South Africa. Although it is probably too early to make a definite conclusion, it appears as if the downward trend in the RCA measures levelled out in 2000. This may be indicative that the sector has more or less adjusted to the new trading and regulatory environment, i.e. production has stabilized at the level where South Africa maintains its relative export share as net exporter of maize.

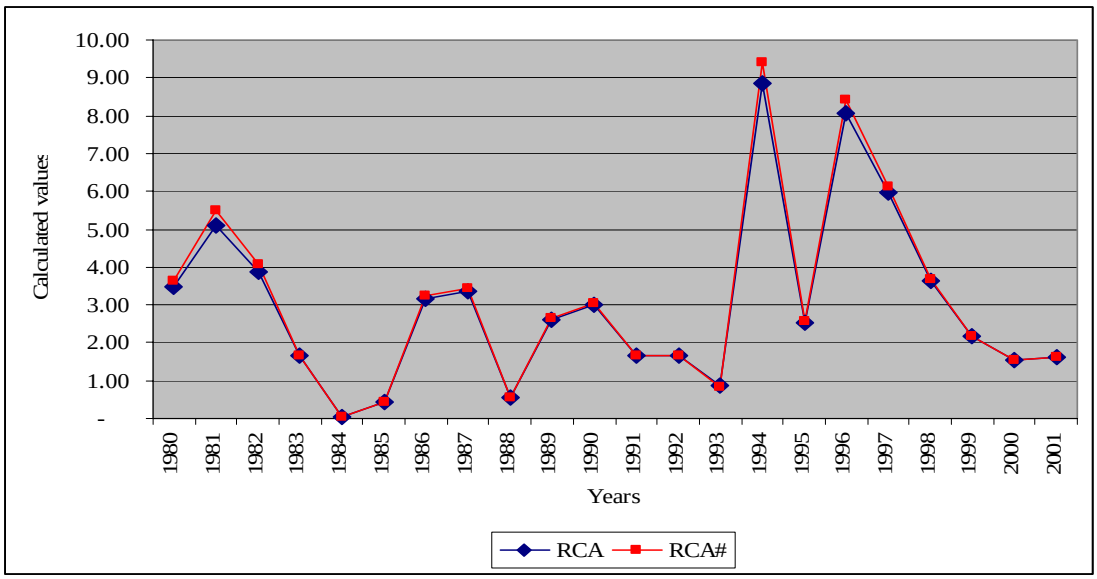


Figure 4.2: Revealed comparative advantage for maize

4.5 SUMMARY AND CONCLUSIONS

The content of this chapter serves multiple purposes. Firstly, it provides a brief overview of the theoretical basis of trade theory. Secondly, arguments are built why comparative advantage and competitive advantage are different from each other. Thirdly, different methodologies pertaining to comparative advantage is explored. Fourthly, the revealed comparative advantage of the beef and maize sub-sectors are analysed. From this important conclusions are drawn that provides insight into the adjustments these sectors have undergone in recent years from a trade perspective.

According to the RCA and RCA# the beef sub-sector in South Africa showed a revealed comparative disadvantage for 17 out of the 22 years since 1980. The maize sub-sector, on the other hand, showed a revealed comparative advantage for 18 out of the 22 years since 1980. It is however argued that the results do not show the real state of comparative advantage that exists in these industries. According to Cassim, *et al.* (2002), the RCA measures explains in more accurate ways, relative to a simple analysis of export trends, how a country features in the context of word trade. Hence, one possible application of RCA measures is to deduct the impact of changes in trade policies on an industry, sector or

sub-sector. Cognisance should also be taken that the RCA measures fail to distinguish between a region's factor endowments (Siegfried, 2002).

Finally, it appears as if both the beef and maize sub-sectors have adjusted favourably since the implementation of the Marrakesh agreement and subsequent deregulation of the domestic market. Favourably in this context means that both sub-sectors appear to have discounted the changing trade and regulatory environments into their respective supply chains. The question of how competitive these sub-sectors are relative to their international counterparts however remains unanswered, and will require a much more in depth analysis of the complete value chains for these sub-sectors.

CHAPTER 5

THE EFFECTIVE RATE OF PROTECTION

5.1 INTRODUCTION

A widely advocated reason for imposing a tariff, or its expected effect, is to erect a wall of "protection" around the national market against competition from merchants of foreign made goods. The rate of protection is the increase in the price of an imported commodity and the import-substitute (an equivalent product made by a local manufacturer) in proportion to its border price. The price increase is the amount of market "protection" provided to domestic producers. It equals the tariff rate, if there is no other trade barrier. The "effective" rate of protection (ERP) is the proportional increase in the domestic "value-added", which is the portion of the price that is attributed to the domestic producer. It is the relative increase in value-added in a tariff-protected economy over its magnitude under free trade, or in terms of border prices (USAID, 1998).

Cassim, *et al (*2002), state that the extent to which the production of import substitutes is stimulated by tariff imposition depends not only on the nominal tariff imposed on a final product, but also on any tariffs levied on imports of intermediate inputs needed in the production of that product. Rather than looking only at the nominal protection that a product enjoys, one should consider the effective protection it obtains, given its nominal protection as well as the protection that its inputs enjoy.

In this study ERP is used to examine the effect of the South African trade policy on beef and maize sub-sectors.

5.2 TARIFFS AND PROTECTION

Tariffs, which are taxes on imports of commodities into a country or region, are among the oldest forms of government intervention in economic activity. Tariffs can

be *ad valorem,* specific or compound. The *ad valoerem* tariff is expressed as a fixed percentage of the value of the traded commodity. The specific tariff is expressed as a fixed sum per physical unit of the traded commodity. Finally a compound tariff is a combination of an ad valorem and a specific tariff. They are implemented for two clear economic purposes. First, they provide revenue for the government. Second, they improve economic returns to firms and suppliers of resources to domestic industry that face competition from foreign imports.

This protection comes at an economic cost to domestic consumers who pay higher prices for import-competing goods and to the economy as a whole through the inefficient allocation of resources to the import competing domestic industry. Therefore, since 1948, when average tariffs on manufactured goods exceeded 30 percent in most developed economies, those economies have sought to reduce tariffs on manufactured goods through several rounds of negotiations under the General Agreement on Tariffs Trade (GATT). Only in the most recent Uruguay Round of negotiations were trade and tariff restrictions in agriculture addressed. In the past, and even under GATT, tariffs levied on some agricultural commodities by some countries have been very large. When coupled with other barriers to trade they have often constituted formidable barriers to market access from foreign producers (USAID, 1998).

Whatever the ultimate purpose, tariffs constrain to some degree the price and quantity of imported commodities. As a consequence, the degree of market competition among suppliers is reduced, favoring the nation's producers at the expense of the consumers.

A tariff, like any other tax imposed upon a commodity, will raise the market price of that particular commodity and near substitutes. If a tariff rate is applied to imports, and if the domestic product is not equally taxed, the domestic producer can reap windfall profit simply by raising the price of the domestic product, correspondingly. Although the overall effect of a tariff is usually a higher market price, and consequently a reduction in the quantity purchased, the domestic producer would still gain a higher profit per unit. Moreover, the producer would take some or most of the market from the importer, while

expanding his own sales, by holding the price to less than the duty-paid price of the equivalent import (USAID, 1998).

5.3 EFFECTIVE RATE OF PROTECTION (ERP)

The concept of effective rate of protection (ERP) was first introduced by Barber (1955) and extensively applied and developed in the following two decades. The idea was to shed light on allocative effects of tariff systems. In addition to mapping nominal tariff rates imposed on commodities, input-output relationships between commodities then have to be accounted for. In a partial industry study, an ERP computation, in a consistent way, accounts for simultaneous effects of the complete tariff structure on that industry. ERP analyses that cover all industries may, under certain restricting assumptions, shed light on the structural implications of the tariff system. The ranking of industry-specific ERPs indicates the qualitative structural implications of the tariff system (Faehn, 2002). Corden (1985) provides a theoretical basis and summarizes the main limitations of ERP computations.

The extent to which the production of import substitutes is stimulated by tariff imposition depends not only on the nominal tariff imposed on a final product, but also on any tariffs levied on imports of intermediate inputs needed in the production of that product (Davarajan, 1992). Rather than looking only at the nominal protection that a product enjoys, one should consider the effective protection it obtains, given its nominal protection as well as the protection that its inputs enjoy.

The theory of effective protection therefore holds that to determine the protective effect of a tariff one must not look at the size of the nominal tariff, but at the proportionate change in the value added of the protected commodity which occurs as a result of the tariffs imposed on the good and its inputs. The relative difference between nominal and effective rates could often differ. For example, it may not be unreasonable to assume that South Africa's nominal tariffs are average by middle income country standards, but its effective rates of protection are high by similar standards (Van Seventer, 2001b).

Cassim, *et al* 2002 state that some general rules as to whether a country's nominal rates are higher or lower than its effective rates. These are

Effective rates of protection are equal to nominal rates if all tariffs are equal when:

- Tariffs on output (clothing, for example) are higher than tariffs on inputs (textiles), the effective rates are higher than the nominal rates; and
- Tariffs of inputs (textiles, for example) are higher than tariffs on outputs (clothing) the effective rates are smaller than the nominal rates.

It is apparent that the degree of protection derived by an activity from a tariff on its output needs to be qualified by the degree of taxation due to tariffs on its inputs, in order to get a sense of the *net* protection, as opposed to the *gross* protection. Both, Cassim, *et al* (2002) and Van Seventer, (2001b) mentioned that Net, or rather, effective protection has been the subject of several studies in South Africa. While the traditional ingredient in the calculation of effective rates of protection is the nominal tariff, as scheduled by the authorities, Fedderke and Vaze (2000) use collection rates as a proxy in the face of data constraints. The other ingredient that is essential for the successful examination of effective protection is information on the inputs of each of the activities identified (Van Seventer, 2001a).

5.3.1 Evidence from other studies

The effective rate of protection for nine pesticides commonly applied to vegetables in the Philippines was calculated to determine whether government policies are creating incentives or disincentives to adopt more integrated management methods (Tjornhom, Norton and Gapud, 1997). In their calculations, Tjornhom *et al.*,(1997), found that direct price policies, primarily through an import tariff, tax pesticide use while an overvalued exchange rate subsidizes pesticide use. The net effect was 6 to 8% pesticide subsidy. This subsidy results in economic surplus gains to vegetable producers and consumers when negative externalities associated with pesticide subsidy. This subsidy results in economic surplus gains to vegetable producers and consumers when negative externalities associated with pesticide use are not accounted for.

Developing countries have a variety of governmental and trade policies which are intended to affect the return to capital. In an estimation of the return to capital in Colombia an attempt was made to account for taxes, both direct and indirect, governmental subsidies, and trade taxes and subsidies. Giosa, Amin and Pineres (1999) anticipated the economic income that accrues to Colombia's capital stock by estimating the growth of the capital stock and the net cash flows generated by that capital. Additionally, they estimated the average annual effective rate of protection to the manufacturing sector. Then using these effective rates of protection, a test was done to determine if in fact protectionism affects the return to capital. Results reveal that there was a significant positive relationship between trade protection and the rate of return to capital in Colombia. Furthermore, the study by Giosa, *et al* (1999) show that support was found for a Stopler-Samuelson effect of higher prices in the labour intensive agricultural sector leading to decline in the return for capital. Therefore, government policies, such as tariffs, do in fact cloud market signals and distort relative factor prices resulting in the misallocation of resources.

5.3.2 Formulation of ERP

The simplest way to think about effective rate of protection is to continue with the net protection concept mentioned above. The difference between an industries value added in world prices and in domestic (i.e. distorted or observed) prices expressed in terms of the latter can be written as:

$$(1) \qquad ERP_j = \frac{VA^*j - VA_j}{VA_j}$$

in which *ERPj* is the effective rate of protection in activity *j*, the "*" subscript indicates domestic price so that VA^*_j value added of activity *j* at domestic prices and *VAj* value added of sector *j* at world prices as observed in the input-output data base. Since value added is the difference between output (*Xj*) in activity *j* and intermediate inputs ($Intm_{ij}$) that activity *j* purchases from activity *i*, equation (1) can be rewritten as:

$$(2)ERPj = \left(Xj - \sum_{i}^{j} Intm * ij \right) - \left(Xj - \sum_{i}^{j} Intmij \right) \Big/ \left(Xj - \sum_{i}^{j} Intmij \right) =$$

or

$$\left(Xt(1+tj) - \sum_{i}^{j} Intmij(1+ti) \right) - \left(Xj - \sum_{i}^{j} Intmij \right) \Big/ \left(Xj - \sum_{i}^{j} Intmij \right)$$

in which t_j and t_i are the tariffs on activity *j* and *i* respectively. Some properties worth mentioning here are that the effective protection will be higher if the nominal protection on output (t_j) is raised, but lower if the nominal protection on inputs (t_i) is raised. With higher intermediate demand ($Intm_{ij}$), value-added will be lower and with a given tariff on output, the proportional effect on value-added is greater as there is less to protect.

The issue of non-traded inputs, such as construction, electricity, domestic trade, transport, financial and community services remain problematic when calculating the ERP. According to Van Seventer (2001b), two crude options are available, either non-traded inputs are considered as traded inputs with a zero tariff, which has been labelled the Balassa method, or non-traded inputs are considered to be part of value-added. The latter option, in which the index *i* of equation (2) above only applies to traded activities, was proposed by Corden. Consequently, with an expanded view on value-added there is more to protect, so to speak, and as a result the leverage of the output tariff is smaller and the effective rates of protection of the Corden method are most likely to be lower than those calculated by the Balassa method.

5.4 DATA AND DATA SOURCES

The source of data for this study was the enterprise budgets of beef and maize for the year of 2002 which was obtained from the Provincial departments of Agriculture (NDA). The economic price of both beef and maize was calculated by giving due consideration to the shadow value of the exchange rate, transportation cost, CIF cost, import parity price, export parity price as well as tariffs imposed on inputs. However, the source of data didn't include the costs for the non tradable inputs such as electricity and labour. This analysis is therefore limited to the reporting of effective

rates of protection, according to the Balassa method also, the analysis is limited to the gross margins of the respective commodities.

5.5 RESULTS

According to the Table 5.1, the Balassa ERP for beef in KwaZulu Natal (weaner), KwaZulu Natal (steer) and Vryburg (Steer) is -33.72, -31.18 and -39.33, respectively. The negative ERP indicates that the weighted input tariffs on beef inputs amount to more than the output tariff. In other words this sector is actually taxed by government tariff policies.

Table: 5.1 Nominal and effective protection for 2002

	Place	Balassa ERP	NRP
Beef	KZN (Weaner)	-33.72	-26.42
	KZN (Steer)	-31.18	-24.93
	Vryburg(Weaner)	-39.33	-29.58
Maize*	Hrtzogville	58.17	24.34
	Wesselsbron	57.25	25.95

* using import parity price

Cognisance should be taken of the fact that the value added at border prices could significantly affect the ERP calculations. Also, one has to take account of the shadow exchange rate and transportation cost from and to the harbors.

The ERP for maize is positive and it is greater than the NRP. This means the tariff applied on the output is higher than the tariff on inputs.

5.6 SUMMARY AND CONCLUSION

This chapter was devoted to an analysis of ERP and NRP. An attempt was made to analyze the extent of protection in the beef and maize industries by calculating the respective ERP's an NRP's.

It was showed that the ERP calculation is lower than the NRP for beef and higher for maize. This means that the protection for inputs is higher than that of the output in the case of the beef sub-sector and vice versa in case of the maize sub-sector. The results from the ERP calculations show that the beef sub-sector is taxed, whilst the maize sub-sector are subsidized.

CHAPTER 6

CONCLUSIONS AND RECOMENDATIONS

6.1 INTRODUCTION

Trade policies form the main economic "buffer" between one national economy and another, i.e. the general and specific elements of each nation's trade policy interact directly or indirectly with those of other nations in all economic transactions across international borders. A nation's trade policy involves specific actions to encourage and promote or discourage foreign trade through the legal, financial and institutional environment within which foreign transactions occur. Moreover, the trade policy of a nation reflects its overall attitude towards the importance and value of foreign trade within a complex environment where there exist distinct differences in consumption and production patterns, culture and tradition and local socio-economic conditions.

South Africa's trade regime had been characterised by numerous quantitative restrictions, a multitude of tariff lines, a wide dispersion of tariffs, and various other forms of protection such as formulae, specific and *ad valorem* duties and surcharges. These restrictions, a maze of price controls and other regulations, often eliminated any foreign competition, but this state of affairs changed considerably after South Africa became a signatory of the Marrakesh Agreement that emanated from GATT (Vink, Kirsten and Tregurtha, 2002).

It is vital to give due consideration to the important implications of trade liberalization, and the consequences for South African agriculture; in the context of this study specifically in terms of the beef and maize sub-sectors. The aim of this study was investigate the possible trade policy implications on the aforementioned sub-sectors using different methodological tools.

6.2 MAJOR CONCLUSIONS DRAWN FROM THIS STUDY

6.2.1 South African trade liberalization

It is evident that tariff liberalisation in South Africa has been an on-going process since the early 1970s, with the introduction of export subsidies and quantitative restrictions on imports, together with the imposition of tariffs and other duties. What was more significant in the 1990s was South Africa's commitment to the Uruguay Round, under the auspices of what was then called the GATT. The country committed itself to a five-year tariff reduction and rationalisation programme, which involved the reduction of tariff categories and weighted average import duties. There was also a substantial increase in the proportion of bound tariffs and zero-rated tariffs, together with a reduction by one third of the simple average industrial tariff. It is nevertheless shown that further reform will be needed, particularly in terms of the number of tariff lines still in place. While tariffs have declined over the period 1997-2001, notably for manufacturing, the overall pace of tariff liberalization has significantly slowed down, with only a small reduction in the number of tariff bands, a modest decline in the maximum tariff and a small increase in the dispersion of tariff codes. By 2000, approximately 25 per cent of the HS8 commodity lines still faced non-*ad valorem* tariffs, although the value of imports involved was not more than 4 per cent of total imports.

According to Cassim *et al*., (2002) the key problem is that South Africa's tariff structure still remains cumbersome with some 47 *ad valorem* tariff bands, with over 7000 lines. It may be worth considering a highly simplified tariff structure with a greatly reduced number of ad-valorem tariff lines. The structure of the tariff schedule may have an important bearing on efficiency. A highly dispersed and cumbersome tariff structure may mean that protection remains uneven, and gains from openness may still be limited. Thus, although South Africa has reduced the overall tariff rate, the large number of different tariff bands render the system unwieldy to administer and not very transparent. In addition, the high degree of dispersion and discretion evident in South Africa's tariff regime is likely to send a confusing message to South African exporters and importers alike.

In summary, a more uniform tariff rate is likely to create higher efficiency in the economy while creating less arbitrary protection for firms. It will be easier to bring imported intermediate inputs into the country that are important for international competitiveness of firms, less rent seeking at customs and excise and less distortion in the economy. Such an initiative is less controversial than are attempts to accelerate tariff reform.

6.2.2 Beef trade by South Africa

South Africa is a net importer of beef. From 1998 to 2002 South Africa experienced negative growth in the import value of bovine cuts (boneless, fresh or chilled) and bovine cuts (bone in, frozen), but positive growth in the value of bovine cuts (boneless, frozen).

Overall the quantity of beef that are imported dropped. According to Jooste *et al*., (2002) some of the reasons responsible for this decline in beef imports since 1998 are:

- 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.
- A substantial depreciation of the Rand against the Dollar since 1998.

In terms of bovine cuts (boneless, frozen), Argentina was the most important source of imports with an import value of US$1, 718, 000 and 1, 858, 000 tons in 2002. Australia is an important source of imports of bovine cuts (bone in, frozen) with a value of US$185,000 and 406 tons, respectively.

6.2.4 Maize trade by South Africa

South Africa is a net exporter of maize. The country experienced a decline trend in exports since 1996 which was due to the efforts made by Grain SA, urging producers

to plant for the domestic market only. However due to the higher levels of surplus maize production the exports have been increasing since 1999.

Majority of South African maize import originates from U.S.A, followed by Argentina and China. The remaining is imported from Brazil, Mexico and Canada. South Africa's total maize import was1,043,661 tonnes in 2002, which is worth of R105,480.

African countries are the main importers of South African maize. Zimbabwe is the largest importer with a share of 54% of South Africa's total maize exports. Zimbabwe's production decreased tremendously after the government's invasion of farm land, which increased their demand for South African maize. Zambia imports 19% of South Africa's total maize exports, followed by Malawi with 8% and Japan with 7%. Other countries importing maize from South Africa are Mozambique, Turkey, Democratic Republic of the Congo and Angola.

6.2.5 Revealed comparative advantage of beef and maize

According to the RCA and RCA# the beef sub-sector in South Africa showed a revealed comparative disadvantage for 17 out of the 22 years since 1980. The maize sub-sector, on the other hand, showed a revealed comparative advantage for 18 out of the 22 years since 1980. The paper, however, argues that the results do not show the real state of competitiveness that exists in these sub-sectors. The reason for this is that the RCA measures should not be used to make definite conclusions whether an industry, sector or sub-sector in a country is competitive nor whether it uses scare resources in an efficient manner. The RCA measures explain in more accurate ways, relative to a simple analysis of export trends, how a country features in the context of word trade. Hence, one possible application of RCA measures is to deduct the impact of changes in trade policies on an industry, sector or sub-sector. Cognisance should also be taken that the RCA measures fail to distinguish between a region's factor endowments.

Finally, it appears as if both the beef and maize sub-sectors have adjusted favourably since the implementation of the Marrakesh agreement and subsequent deregulation of

the domestic market. Favourably in this context means that both sub-sectors appear to have discounted the changing trade and regulatory environments into their respective supply chains. The question of how competitive these sub-sectors are relative to their international counterparts however remains unanswered, and will require a much more in depth analysis of the complete chains for these sub-sectors.

6.2.6 Effective rate of protection of beef and maize

Cognisance should be taken of the fact that the value added at border prices could significantly affect the ERP calculations. Also, one has to take account of the shadow exchange rate and transportation cost from and to the harbors.

The ERP for maize is positive and it is greater than the NRP. This means the tariff applied on the output is higher than the tariff on inputs.

6.3 RECOMMENDATIONS

Based on the findings of this study the following recommendations are made on the impact of trade policy on beef and maize sub sectors.

- This study has clearly demonstrated that the beef sub-sector is taxed. The structure of the tariff schedule may have an important bearing on efficiency. A highly dispersed and cumbersome tariff structure on inputs and outputs may mean that protection remains uneven, and gains from openness may still be limited. Thus, the tariffs structure of the input sector for beef should be reinvestigated.

- The study clearly shows from the calculated Gini-coefficients that exports are highly concentrated. This may mean that other market opportunities may exist. This state of affairs needs to be investigated further since a high level of dependence on only a few markets could be very risky.

REFERENCES

AGRIMARK TRENDS (2000). *Unpublished database*, Pretoria.

AMT (2004). Beef out look. Available from http://www.agrimark.co.za. (12/06/2004)

ATKINSON, A.B. (1970). On the measurement of in equality. *Journal of Economic Theory*, Vol 2.

BALASSA, B. (1965). 'Trade liberalization and 'revealed' comparative advantage'. *The Manchester school of Economics and Social Studies*, Vol 33 (99).

BALASSA , B. (1977). Analysis of Relative Export Shares of the Industrial Countries, 1953-1971.*The Manchester School of Economic & Social Studies*, Vol. 45 (4).

BALASSA , B. (1979). The Changing Pattern of Comparative Advantage in Manufactured Goods. *The Review of Economics and Statistics*, Vol. 61(2).

BARBER, C. L. (1955) Canadian tariff policy. *Canadian Journal of Economics and Political Science*, 21.

BELLI, P., FINGER, M. AND BALLIVIAN, A. (1993). "South Africa: Review of Trade Policy Issues", *Informal Discussion Papers on Aspects of the South African Economy*, No. 4, Washington DC: The World Bank.

BENDER, S. & LI, C. (2002). "The changing trade and revealed comparative advantages of Asian and Latin American manufacture exports" (March 2002). Yale Economic Growth Center *Discussion Paper No*. 843. http://ssrn.com/abstract=303259.

BILAL, S. (2002). Questions Raised by the Proposed EC Negotiating Mandate. *Trade Negotiations Insights*. Vol 1 (2).

Botha, L., Taljaard, P., Hallatt, J. and Jurgens, F. (2004). Review of the field crop subsector - Chapter 14. In Groenewald, J.A. (Ed). South African agricultural sector review - Evaluation of changes since 1994. National Department of Agriculture, Pretoria.

BLUMBERG, L. & WENTZEL, W. (1994). Trade relations with Southern Africa: A preliminary legal analysis. *Development paper* 29, Development Bank of Southern Africa.

BOWN, A.N., ORTMANN, G.F. & DARROCH, M.A.G. (1999). Use of maize marketing alternatives and price risk management tools by commercial maize farmers in South Africa. *Agrekon*, Vol 38 (3).

BREITENBACH, M.C. & FENYES, T.I. (2000). Maize and wheat production trends in South Africa in a deregulated environment. *Agrekon*, Vol 39 (3).

BRUNO, M. (1967). "The optimal selection of export-promoting and Import substituting Projects," in planning the external sector: Techniques, Problems and Polices. *Report on the first inter-regional seminar on development planning, Ankara, Turkey, 6-17 September 1965*. ST/TAO/SER.c/91.c/91. New York: United Nations.

BRYANT, C. (1988). Poverty, policy and food security in Southern Africa. Lynne Rienner, Boulder.

CARGO INFO. (2000). South African Customs Tariffs. Available from http://rapidttp.com/tariff/chpindx.html (28/02/2004).

CARSALADE, J., DIAZ, J. & SOTO, D. (1998). Competitiveness of Chilean pear exports. *ActaHort*. Vol 475 (77).

CASSIM, R., ONYANGO, D. & VAN SEVENTER, D.E.N. (2002). The state of trade policy in South Africa. Unpublished document, Trade and Industrial Policy Strategies (TIPS).

CATTANEO, N. (1990). Piece of paper or paper of peace. The Southern African Customs Union agreement. *International Affairs Bulletins*, 14(1).

CHACHOLIADES, M. (1990). International Economics. Mc graw-hill international editions, Singapore.

CHIPETA, C. AND DAVIES, R. (1992). Regional regulations and cooperation post-apartheid: a macro-framework study, Gaborone, Consultancy report for SADC secretariat.

CLINE, W.R. (1983). Trade policy in 1980's. Washington, USA.

COM TRADE STATSTICS (2003). South African Trade Map available from http://www.trademap.org.za. (09/03/2004).

CORDEN, W.M. (1974). Trade policy and economic welfare. Oxford:Clarendon Press.

CORDEN, W. M. (1985). *Protection, Growth and Trade, Essays in International Economics.* Oxford, Basil Blackwell.

DA PIDADA, L. & DE LANGE, R. (2000). Free trade doesn't come cheap. Traders, Vol 1.

DAVARAJAN, S. & SUSSANGKARN, C. (1992). Effective rate of protection when domestic and foreign goods are imperfect substitutes: The case of Thailand, *The Review of Economics and Statistics,* 74.

DAVIES, R. (1994). The SACU: Background and possible negotiating issues facing a democratic South African Government. In Sisulu, M., Nhosi, M., Setai, B. & Thomas, R.H. (Eds). Reconstituting and democratising the Southern African Customs Union, Report of the workshop held in Gaborone, Botswana, 6-8 March 1994.

DEPRU (2001). *Annual report,* University of Capea Town, Captown.

DIRECTORATE AGRICULTURAL STATISTICS, **(1995).** Abstract of agricultural statistics, Department of Agriculture, Pretoria.

DIRECTORATE AGRICULTURAL ECONOMIC TRENDS (2002). Abstract of agricultural statistics. Department of Agricultural Economics and Marketing:Pretoria.

DUSHMANITCH, V.Y. & DORROCH, M.A.G. (1991). The impacts of monetary policy on the maize and beef sectors of South Africa I: Theoretical foundations and model specification. *Agrekon*, Vol 30 (3).

EDWARDS, L. AND VAN SEVENTER, D. E. N. (2001). Notes on Welfare Losses of Tariffs and Tariff Protection: A Partial Equilibrium Approach to South African Data. Paper prepared for the TIPS Trade Policy Review Workshop, 4-5 May.

ELLIOTT, M.B., NIEUWOUDT, W.L. & LYNE, M.C. (1984). Demand analysis for meats in South Africa. *Agrekon*, Vol 23 (2).

EUROSTEP BRIEFING PAPER (2000). The EU-South Africa Trade, Development and Co-operation Agreement: Analysis of the Negotiating Process, the Agreement and the Economic Impact. Available from http://www.eurostep.org/pubs/position/trade/sa123.htm#_ftn17 (05/08/2003).

FAEHN, T. (2002). The Qualitative and Quantitative Significance of Non-Tariff Barriers: an ERP study of Norway. Economic Systems Research, Vol. 14 (1).

FAO (2001). Meat outlook. Available from: http://www.fao.org/es/ESC/esce/escb/meat/pdf/Outlooke.pdf (28/09/2003).

FELLONI, F., GILBERT, J., WAHL, T.I., & WANDSCHNEIDER, P. (2002). Trade policy, biotechnology and grain self-sufficiency in China. *Agricultural Economics*, 28(3).

FERTÖ, I., HUBBARD, L.J. (2003). Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors. *The World Economy* 26 (2).

FLATTERS, F. (2002). SADC rules of origin: Impediments to regional integration and global competitiveness. *Southern African Update*, Vol (15).

FUTUR, W. (1993). Importance of trade and industrial policy for socio economic development: Reflections on the Eritrean economy. In **Tesfagiorgis, G. H. (Ed).** *Emergent Eritrea: Challeges of economic developmen*t. The red Sea press, Trenton, New Jersey.

GAY, S. H. & NIEUWOUDT, W.L. (1999). An analysis of the free trade agreement in agricultural products between South Africa and the European Union. Proceedings of the 12th International Farm Management Congress, Durban, South Africa: 18-24 July: 267-278.

GAAT (1993). *Trade Policy Review*: South Africa.

GESP. 2001. Unpublished paper.

GIOSA, C.P., AMIN, S., PINERES, G.D (1999). Do government policies distort relative factor prices: evidence from Colombia. *Applied Economics*; Vol. 31 (6).

GLADWIN, C. AND OTTO, R.J., (1999). South Africa-European union trade relations: The trade development and co-peration agreement-opportunities and challenges and implications for trade policy. *Agrekon*, Vol 38 (4).

GRAIN SOUTH AFRICA, 2003. Online industry information published. Available on http://www.grainsa.co.za.

GROENEWALD, J.A., (1987). Agriculture: A perspective on medium-term prospects. *Development Southern Africa*, Vol 4. Pp224-241.

GROENEWALD, J.A. (2001). Impediments to delivery of policy for growth with equity in South African agriculture. Unpublished report, Africa Institute for Policy Analysis and Economic Integration (AIPA).

GROTE, U. AND SARTORIUS VON BACH, H.J. (1994). Research note: An investigation of avocado trading in Europe. *Agrekon*, Vol 33(3): 135-140.

HAQUE, I. UL. (1991). International Competitiveness: Public Sector/Private Sector Interface¾Report on the Seminar in International Competitiveness: *Interaction of the Public and the Private Sectors*, Economic Development, Institute, World Bank, Washington, D.C.

HARRISON, G., RUTHERFORD, T. AND TARR, D. (1995). Quantifying the Uruguay Round. In **Martin, W. and Winters, L.A. (Eds)**, The Uruguay Agreement and developing countries. Cambridge University Press.

HERTEL, T., MASTERS, W. AND ELBEHRI, A. (1997). The Uruguay Round and Africa: Implications and Policy Responses. Paper prepared for a meeting of Ministers from Africa under the auspicious of UNECA.

HOEKMAN, D., MICHALOPOULOS, C., SCHIFF, M. AND TARR, D. (2002). Trade Policy Reform and Poverty Alleviation. *Working document by the Development Research Group,* World Bank, Washington DC.

HOUCK, J.P. (1986). Elements of agricultural trade policy. Macmillan Publishing Company, New York.

INGCO, M.D. AND TOWNSEND, R. (1998). Experiences and lessons from the implementation of the Uruguay Round commitments: Policy options and challenges for African countries. Paper presented at the International Workshop on Agricultural policy of African Countries and Multilateral Trade Negotiations: Challenges and Options, Harare, Zimbabwe, November 23-26, 1998.

JOOSTE, A (1996). Regional beef trade in Southern Africa. Msc thesis. University of Pretorea, Pretorea.

JOOSTE, A. (2001). Economic Implications of Trade Liberalization on the South African red meat industry. Unpublished PhD Thesis, University of the Free State, Bloemfontein.

JOOSTE, A., KRUGER, E. & KOTZE, F. (2003). Standards and trade in South Africa: Paving pathways for increased market access and competitiveness, Chapter 4: 235 - 370. In Wilson, J.S. & Abiola, V.O. (eds). Standards and global Trade: A voice for Africa. The World Bank, Washington DC. ISBN 0-8213-5473-6

JOOSTE, A. AND VAN SCHALKWYK, H.D. (1996). Beef trade preferences and intensities in the Southern African customs union. *Agrekon,* Vol 35 (3).

JOOSTE, A. AND VAN SCHALKWYK, H.D. (1996). The impact of different macro-economic variables on the optimal distribution of beef in the Southern African customs union. *Agrekon,* Vol 35 (4).

JOOSTE, A., VILJOEN, L.J.C., MEYER, N., KASSIER, E. AND TALJAARD, P.R. (2001). Competition issues in the agricultural sector. Unpublished research report. Competition Commission, Pretoria.

JOOSTE, A. & VAN ZYL, J. (1999). Regional Agricultural Trade and Changing Comparative Advantage in South Africa. Technical Paper No. 94, SD Publication Series, United States Agency for International Development (USAID). Washington DC.

JOSEPH, F.F. & KENNETH, A.R. (1997). Applied methods for trade policy analysis: A handbook. Cambridge university press, Australia.

KANT, C. & GAYL, S. (1997). Trade diversification in the least developed countries. United Nations.

KELLMAN, M., ROXO, T. AND SHACHMUROVE, Y. (2002). South Africa's International Competitiveness: A Product Level Analysis. Available from http://www.aoef.org/papers/2002/KellmanTrevor_1.doc (25/12/2003).

KHEMANI, R.S. (1997). Fostering competitiveness. Available online at www.worldbank.org/wbi/mdf1/product.htm. (15/05/2004).

KRAAMWINKEL, A. (1998). Customs tariff policy. *Poultry Bulletin*, October 1998: 459–463.

KUSI, N. K. (2002). Trade liberalisation and South Africa's export performance. Unpublished document, Trade and Industrial Policy Strategies (TIPS).

LAUBSCHER, J.M. AND KOTZE, H.A. (1984). The South African beef cattle industry: Its relative importance to agriculture as a whole and recent development in supply and demand. *Agrekon*, Vol 23(2): 30:37.

LAURSEN, K. (1998). Revealed Comparative Advantage and the Alternatives as Measures of International Specialisation. Copenhagen, Denmark.

LEWIS, J. (2001). Reform and opportunity: The Changing Role and Patterns of Trade in South Africa and SADC. *Africa Region Working Paper Series*, #14. World Bank.

LUBBE, W.F. (1992). The red meat marketing scheme: An evaluation in a dynamic environment. Unpublished PhD thesis, University of Pretoria, Pretorea.

MATTOO, A., H ROY D., & SUBRAMANIAN, A. (2002*).* The Africa Growth and Opportunity Act and Its Rules of Origin: Generosity Undermined? *Technical paper* No. 2908. World Bank.

MEYER, N.G. & BREITENBACH, M.C. (2002). The market potential of the South African Deciduous fruit industry strategies and options. Paper submitted for the annual AEASA conference 2002.

MEYER, N., JOOSTE, A., VAN SCHALKWYK, H.D. (2002). The possible impact of the EU-SA Free Trade Agreement. Unpublished research report, NEDLAC - Fridge, Johannesburg.

MAYER, M.J. & ZARENDA, J. (1994). The Southern African Customs Union: A review of costs and benefits. *Policy Working Paper* 19, Development Bank of Southern Africa, Midrand.

MHONE, K. (1991). Law as a factor for regional integration: SADCC- Problems and prospects. Comparative and International Law Journal of Southern Africa, Vol (24)3.

MICHALOPOULOS, C. (1999). Trade Policy and Market Access Issues for Developing Countries. Washington, USA.

MUCAVELE, F.G. (2000). Analyisi of comparative acvantage and agricultural trade in Mozambique, *Technical paper* No.107. USID: Amex international.

NDA. (2003). Maize update available from http://www.nda.agric.za/docs /Maize/ maize.htm (27/11/2003).

NUPPENAU, E.A. (1994). Regional trade and pricing of maize in southern Africa. *Agrekon*, Vol 33(4).

NIEUWOUDT, W.L. (1998). The demand for livestock products in South Africa for 2000, 2010 and 2020: Part 1. *Agrekon*, Vol 37(2).

OTTO, R.J. (1990). International market prospects for selected agricultural products. Msc thesis. University of Pretoria, Pretoria.

OFFICIAL JOURNAL OF THE EUROPEAN COMMUNITIES. (1999). Agreement on Trade, Development and Cooperation between the European Community and its Member States, of the one part, and the Republic of South Africa, of the other part (Real time). Available: http://europa.eu.int.

PENZHORN, N. AND KIRSTEN, J.F. (1999). The impact of the EU free trade agreement on South African Agriculture: A general Equilibrium analysis. *Agrikon*, Vol 38 (4).

POONYTH, D., ESTERHUIZEN, D., NGQANGWENI, S. & KIRSTEN, J.F. (2002). *Trade policies and agricultural trade in the SADC region: Challenges and implications, South Africa country study*. Unpublished research report, University of Pretoria.

RICHARDSON, J.D. AND ZHANG, C. (1999). Revealing comparative advantage: Chaotic or coherent patterns across time and sector and U.S. trading partner?, *Technical Paper* No. 7212. Cambridge, UK.

RITSON, C. (1977). Agricultural economics, principles and policy. Granada, New York.

ROBERTS, S. (1998). A Preliminary Analysis of the Impact of Trade Liberalisation on Manufacturing. Trade and Industrial Policy Secretariat (TIPS) Working Paper #8. Johannesburg: Trade and Industrial Policy Secretariat.

SACC, (2000). The EU-SA Free Trade Agreement: Implications for Post-Lomé Trade Relations. South African Council Of Churches Public Policy Update. Cape Town.

SADC, (1992). Declaration Treaty and Protocol of the Southern African Development Community. A declaration by the Heads of State or Government of Southern African states, Windhoek, Republic of Namibia.

SADC, (1994). Southern African development community, SADC Secretariat, Gaborone, Botswana.

SALINGER, B.L. (1999). "Comparative advantage analysis." Website text prepared for the World Bank's agribusiness website.

SALU, (1999). Negotiations on agriculture during the next Round of the World Trade Organisation (WTO). Unpublished document, South African Agricultural Union. Pretoria.

SALVATORE, D. (1998). International Economics. New Jersey, USA.

SALVATORE, D. (2001). International Economics. New Jersey, USA.

SARTORIUS VON BACH, H.J. (1993). The mango market in European countries. Unpublished research report Bavaria Fruit Estate, Hoedspruit.

SARTORIUS VON BACH, H.J., VAN RENEN, E., AND KRISTEN, J.F. (2002). Supply response, demand and stocks for Southern African Beef. *Technical paper* No. 98-01, University of Pretorea, Pretorea.

SARTORIUS VON BACH, H.J. AND VAN ROOYEN, C.J. (1995). Interaction in the Southern Africa region (SAR): Recorded and unrecorded agricultural trade. Working paper: USAID Southern Africa Trade and Structural Adjustment Project. Commissioned by the land and Agricultural centere.

STACY, M.E., LOWELL, D.H AND LAUBSCHER, J.M (1998). Privatization progress in South African maize industry. Urbana Champaign, USA.

STEENKAMP, E. (1999). Strategic Market Research on South African Exports: A Focus on Agriculture. Pretoria: National Department of agriculture working Document.

STEENKAMP, E. AND KIRSTEN, J.F. (2000). Reviewing the achievements of South African agricultural exports between 1988 and 1997. *Agrekon, vol 39 (2).*

STONEHAM, J. (1994). Botswana country paper: Perspectives on the history of a current situation in SACU. In Sisulu, M., Nhosi, M., Setai, B. and Thomas, R.H. (Ed). Reconstituting and democratising the Southern African Customs Union, Report of the workshop held in Gaborone, Botswana, 6-8 March 1994.

STOPLER, W. F. AND SAMUELSON, P. A. (1941) in **GIOSA, C.P., AMIN, S., PINERES, G.D (1999)**. Protection and real wages, *The Review of Economic Studies*, IX, 58-73.

SURANOVIC, S.M. (1998). The international Economic study center available from:http://internationalecon.com/v1.0/ch110/110c020.html

SUNNYSIDE GROUP, (1991). The red meat industry: assessment and recommendations. Report of: September, 1991.

TONTZ, R.L. (1966). Foreign Agricultural trade. Iowa, USA.

TOSTNSEN, A. (1993). What role for SADC© in the post-apartheid era? In Odén, B. and Othman, H. (Ed). Regional co-operation in Southern Africa: a post-apartheid perspective. Seminar Proceedings no. 22. Nordisha Afrikainstilutet, Uddevella.

TUAN, F.C. AND TINGJUN, P. (2000). Structural Changes in China's Livestock and Feed Production: Trade Implications available from http://iatrcweb.org/oldiatrc/Papers/Tuan.pdf. (12/09/2003).

USAID (1998). Effective rate of protection in Egypt. Cairo, Egypt.

USTR (2000). Foreign Trade Barriers – South Africa. Office of the United States Trade Representative. Pretoria, South Africa.

VAN DIJK, G. (1994a). Customs Unions. Internal information document, Department of Agriculture, Pretoria.

VAN DIJK, G (1994B). Southern African Development Community. Internal information document, Department of Agriculture, Pretoria.

VAN ROOYEN, C.J., NJOBE, B. AND SARTORIUS VON BACH, H.J. (1995). Prospects for agricultural co-operation and trade in the Southern Africa region. A working paper, Development Bank of Southern Africa.

VAN SCHALKWYK, H.D., VAN ZYL, J. AND JOOSTE, A. (1995). The effect of the exchange rate and international factors on the competitive position of South African wheat producers. Agrekon, Vol.34 (4).

VAN SEVENTER, D.E.N. (2000). Inter- Industry revealed comparative advantage for South Africa available from http://www.tips.org.za. (12/01/2004).

VAN SEVENTER, D.E.N. (2001a). Note on the Structure of the South African Tariff Schedule. Paper presented during the TIPS Annual Forum, 10-12 September.

VAN SEVENTER, D.E.N. (2001b). The level and variation of Tariff rates: an analysis of Nominal and effective Tariff Rates In South Africa for The Years 2000 and 2001. Paper presented during the TIPS Annual Forum, 10-12 September.

VINK, N., KIRSTEN, J.F. & TREGURTHA, N. (2002). South Africa's changing agricultural trade regime. Unpublished article, University of Stellenbosch.

WORLD BANK (1994) available from http://www.worldbank.org. (24/10/2003).

WORLEY, T. (1996). PNW agricultural trade: Comparative advantage and Competitiveness are Fundamental available from http://agecon.uwyo.edu/wmmec/WebArticles/MarketingArticles/PNWAgTrade.htm. (15/03/2003).

ZEREYESUS, Y., A. (2003). Chain management and marketing performance of the banana industry in Eritrea. Msc. Thesis. University of the Free State, Bloemfontein.

APPENDIX A

Table A.1: List of importing markets for Maize seed exported by South Africa in 2002

Importers	Exported value 2002 in US$ thousand	Share in South Africa's exports, %	Exported quantity 2002	Quantity unit	Unit value (US$/unit)	Export trend in value between 1998-2002, %, p.a.	Export trend in quantity between 1998-2002, %, p.a.	Export growth in value between 2001-2002, %, p.a.	Ranking of partner countries in world imports	Share of partner countries in world imports, %	Total import growth in value of partner countries between 1998-2002, %, p.a.
World	52,752	100	271,595	Tons	194			646			4
Zimbabwe	37,780	72	214,472	Tons	176			26694	38	0	
Zambia	6,857	13	38,922	Tons	176			2806	40	0	20
Malawi	2,136	4	4,832	Tons	442			582	37	0	7
Angola	894	2	1,676	Tons	533			462	59	0	
Korea, Rep. of Korea	646	1	373	Tons	1,732				54	0	-10
Argentina	367	1	501	Tons	733			87	39	0	-25
Netherlands	335	1	231	Tons	1,450			-26	8	3	-2
Thailand	330	1	989	Tons	334			-64	60	0	-16
Mozambique	307	1	1,872	Tons	164			-56	34	0	
France	305	1	174	Tons	1,753			1505	4	10	10
Colombia	291	1	390	Tons	746			41	51	0	21
Democratic Republic of the Congo	264	1	1,255	Tons	210			474	73	0	
Kenya	264	1	329	Tons	802			439	72	0	
United Arab Emirates	229	0	691	Tons	331			-56	63	0	
Morocco	204	0	990	Tons	206			6	58	0	
Côte d'Ivoire	133	0	412	Tons	323			-21	71	0	
Tunisia	126	0	110	Tons	1,145			117	93	0	
Algeria	123	0	448	Tons	275			-34	82	0	31
Greece	121	0	341	Tons	355			-33	14	1	19
Russian Federation	111	0	323	Tons	344			106	33	0	-15
Cyprus	102	0	154	Tons	662			219	97	0	4
United Kingdom	94	0	190	Tons	495			-11	13	1	3
Egypt	76	0	286	Tons	266			-6	90	0	
Bahrain	73	0	215	Tons	340			564	89	0	119
Jordan	71	0	239	Tons	297			87			

Source: ITC calculations based on COMTRADE statistics

Table A. 2: List of importing markets for bovine cuts (boneless fresh or chilled) exported by South Africa in 2002

Importers	Exported value 2002 in US$ thousand	Share in South Africa's exports, %	Exported quantity 2002	Quantity unit	Unit value (US$/unit)	Export trend in value between 1998-2002, %, p.a.	Export trend in quantity between 1998-2002, %, p.a.	Export growth in value between 2001-2002, %, p.a.	Ranking of partner countries in world imports	Share of partner countries in world imports, %	Total import growth in value of partner countries between 1998-2002, %, p.a.
World	3,317	100	4,674	Tons	710			-7			4
Lebanon	1,166	35	456	Tons	2,557			1210	36	0	-40
United Kingdom	1,129	34	2,809	Tons	402			42	4	7	12
France	189	6	500	Tons	378			-36	5	5	-3
Mozambique	132	4	95	Tons	1,389			-15	64	0	
Germany	129	4	291	Tons	443			55	8	3	-13
Norway	128	4	318	Tons	403			237	40	0	-23
Mauritius	120	4	36	Tons	3,333			422	54	0	8
Kuwait	115	3	48	Tons	2,396			-17	41	0	-2
Angola	58	2	21	Tons	2,762			-17	45	0	55
Hong Kong (SARC)	46	1	12	Tons	3,833				24	0	5
Democratic Republic of the Congo	40	1	54	Tons	741			700	88	0	
Belgium-Luxembourg	23	1	10	Tons	2,300				17	0	2
Netherlands	18	1	2	Tons	9,000			-86	6	4	15
Canada	0	0	0	No quantity					7	4	2
Japan	0	0	0	No quantity					2	18	-9
Mexico	0	0	0	No quantity					3	16	23
United States of America	0	0	0	No quantity					1	18	17

Source: ITC calculations based on COMTRADE statistics

Table A3: Main exporting countries of maize to South Africa

Exporting countries	Imported value 2002 in US$ thousand
United States of America	40774
Argentina	23091
China	18522
Brazil	14922
Mexico	4732
Canada	2034
France	431
Zambia	287
Zimbabwe	200
Italy	172
Chile	74
Austria	66
Mozambique	66
Australia	59
Switzerland	22

Source: ITC calculations based on COMTRADE statistics

Table A4: Main exporting destinations of South African maize.

Importers	Exported value 2002 in US$ thousand
Zimbabwe	73504
Zambia	25325
Malawi	11055
Japan	9684
Mozambique	3749
Turkey	3410
Democratic Republic of the Congo	2116
Angola	1589
Korea, Rep. of Korea	646
Argentina	367
Netherlands	354
Thailand	351
France	305
Colombia	291
Kenya	278
United Arab Emirates	254
Morocco	204
Côte d'Ivoire	149
Greece	139
Tunisia	126
Algeria	123
Russian Federation	111
United Kingdom	105
Cyprus	102
Benin	79

Source: ITC calculations based on COMTRADE statistics

Table B.1: RCA for South African Beef Industry

Year	Total Market TOTL - Total - all commodities Total Market *Xnt*	Total Market 0111 - Meat of bovine animals, fresh, chilled or frozen Total Market *Xnj*	South Africa TOTL - Total - all commodities Total Market *Xit*	South Africa 0111 - Meat of bovine animals, fresh, chilled or frozen Total Market *Xij*	Beef share in SA Exp Xij/Xit	Beef share in World Trade Xnj/Xnt	RCA (Xij/Xit)/ (Xnj/Xnt)
1980	2,013,837,000	8,535,623	27,157,530	77,764	0.3%	0.4%	0.68
1981	1,976,241,000	7,887,042	20,935,000	45,798	0.2%	0.4%	0.55
1982	1,866,633,000	7,982,333	18,313,840	69,930	0.4%	0.4%	0.89
1983	1,811,132,000	7,521,277	18,582,780	62,329	0.3%	0.4%	0.81
1984	1,916,091,000	6,598,658	16,598,540	47,910	0.3%	0.3%	0.84
1985	1,970,186,000	6,953,629	11,955,990	46,902	0.4%	0.4%	1.11
1986	2,141,818,000	8,446,966	19,532,880	57,125	0.3%	0.4%	0.74
1987	2,500,951,000	10,169,840	24,473,010	44,230	0.2%	0.4%	0.44
1988	2,860,023,000	11,697,070	21,980,320	32,585	0.1%	0.4%	0.36
1989	3,064,667,000	12,872,380	22,959,070	48,234	0.2%	0.4%	0.50
1990	3,470,928,000	13,945,160	25,086,100	73,960	0.3%	0.4%	0.73
1991	3,570,684,000	14,471,740	16,323,210	117,640	0.7%	0.4%	1.78
1992	3,864,017,000	15,545,470	22,192,240	69,419	0.3%	0.4%	0.78
1993	3,964,154,000	15,487,470	21,537,820	56,512	0.3%	0.4%	0.67
1994	4,412,961,000	15,640,130	25,330,480	26,836	0.1%	0.4%	0.30
1995	5,266,676,000	16,232,800	27,468,900	51,550	0.2%	0.3%	0.61
1996	5,517,463,000	13,816,400	19,045,040	55,493	0.3%	0.3%	1.16
1997	5,732,699,000	14,355,000	23,133,370	9,542	0.0%	0.3%	0.16
1998	5,628,697,000	14,038,530	20,526,740	10,687	0.1%	0.2%	0.21
1999	5,882,068,000	15,165,710	24,555,670	12,458	0.1%	0.3%	0.20
2000	6,665,378,000	15,298,800	35,677,940	136,187	0.4%	0.2%	1.66
2001	6,481,907,000	13,677,820	39,650,820	201,732	0.5%	0.2%	2.41

Source: World trade data base & own calculations

Table B.2: RCA for South African Maize Industry

Year	Total Market TOTL - Total - all commodities Total Market *Xnt*	Total Market 0440 - Maize (corn) unmilted Total Market *Xnj*	South Africa TOTL - Total - all commodities Total Market *Xit*	South Africa 0440 - Maize (corn) unmilted Total Market *Xij*	Maize share in SA Exp Xij/Xit	Maize share in World Trade Xnj/Xnt	RCA (Xij/Xit)/ (Xnj/Xnt)
1980	2,013,837,000	12615000	27,157,530	588773	2.2%	0.63%	3.46
1981	1,976,241,000	12695370	20,935,000	687494	3.3%	0.64%	5.11
1982	1,866,633,000	9438222	18,313,840	360094	1.97%	0.51%	3.89
1983	1,811,132,000	10317430	18,582,780	174286	0.94%	0.57%	1.65
1984	1,916,091,000	10809370	16,598,540	5286	0.03%	0.56%	0.06
1985	1,970,186,000	8965373	11,955,990	24406	0.20%	0.46%	0.45
1986	2,141,818,000	6894064	19,532,880	198714	1.02%	0.32%	3.16
1987	2,500,951,000	6862863	24,473,010	224789	0.92%	0.27%	3.35
1988	2,860,023,000	8841476	21,980,320	37850	0.17%	0.31%	0.56
1989	3,064,667,000	10629370	22,959,070	208151	0.91%	0.35%	2.61
1990	3,470,928,000	10182770	25,086,100	220056	0.88%	0.29%	2.99
1991	3,570,684,000	9152231	16,323,210	68746	0.42%	0.26%	1.64
1992	3,864,017,000	10010610	22,192,240	95364	0.43%	0.26%	1.66
1993	3,964,154,000	9108644	21,537,820	42065	0.20%	0.23%	0.85
1994	4,412,961,000	8973928	25,330,480	455141	1.80%	0.20%	8.84
1995	5,266,676,000	11492970	27,468,900	152665	0.56%	0.22%	2.55
1996	5,517,463,000	13772250	19,045,040	383212	2.01%	0.25%	8.06
1997	5,732,699,000	10800320	23,133,370	259341	1.12%	0.19%	5.95
1998	5,628,697,000	9735075	20,526,740	129105	0.63%	0.17%	3.64
1999	5,882,068,000	9240931	24,555,670	83266	0.34%	0.16%	2.16
2000	6,665,378,000	9366135	35,677,940	77561	0.22%	0.14%	1.55
2001	6,481,907,000	9386266	39,650,820	93017	0.23%	0.14%	1.62

Source: World trade data base & own calculations