A COMPARISON BETWEEN SOUTH AFRICAN AGRICULTURAL EXPORTS TO THE EUROPEAN UNION AND THOSE OF OTHER SELECTED SOUTHERN HEMISPHERE COUNTRIES

D Adriaen[1], TE Kleynhans[2], & E Tollens[3]

Abstract

Primary Eurostat data of EU imports of agricultural products from selected southern hemisphere countries – namely, South Africa, Argentina, Chile, Australia and New Zealand -was used to compare the exports from those countries to the EU for the period 1988 to 2000. The study starts with a general overview of the total and agricultural export performance of these selected countries in a global context and their specialization indexes for food. This is followed by a comparison of the total value, total mass and value per tonne of agricultural exports to the EU and of their exploitation of seasonal differences with the northern hemisphere in terms of relative emphasis on particular product groups and value/mass ratios of their major products. Comparison is made of the impact of their location relative to EU ports in terms of transport cost and duration of trips and the efficiency of their own ports. The conclusions reached is that in order to remain competitive, South Africa will have to add value to carefully selected non-seasonal products. Seasonal production will have to expand with a sharper focus on market windows becoming narrower due to research and development conducted by both northern and southern hemisphere competitors. The overview motivates an even more aggressive research and development (R&D) programme by South African agriculture and food industries in order to remain competitive on export markets, especially given the rapidly changing environment. For example, the introduction of much faster ships which will decrease South Africa's present advantage of having the shortest distance to the EU among the other southern hemisphere competitors.

1. INTRODUCTION

Trade with the European Union countries (EU) is still of major importance for South African agriculture, despite the EU food market showing signs of

[1] *Student Bio-Engineer, Afdeling Landbouw- en Milieueconomie, Departement Agrotechniek en –economie, Katholieke Universiteit Leuven, Belgium.*
[2] *Associate professor, Department of Agricultural Economics, University of Stellenbosch.*
[3] *Professor, Afdeling Landbouw- en Milieueconomie, Departement Agrotechniek en -economie, Katholieke Universiteit Leuven, Belgium.*

saturation and other markets becoming more accessible and attractive after a change in government in South Africa. In exploiting trade opportunities with the EU, South Africa faces competition from other southern hemisphere countries which enjoy the same seasonal difference with the northern hemisphere. The southern hemisphere countries also have to deal with transport costs that, in most cases, are higher than those of the Mediterranean and Eastern European competitors. Furthermore, the various southern hemisphere countries show differences in terms of agricultural resource endowments and locations relative to the EU ports. Against this background a study was done, based on Eurostat data for 1990 to 2000, which compared South African agricultural exports to the EU with those of its main southern hemisphere competititors. The goal was to identify some strategic guidelines for export driven agricultural production for South Africa from the trade data, giving full recognition to the existence of other important supply chain competitiveness determinants which are not addressed here, such as ownership and power in distribution chains; product traceability and reliability of delivery and branding and consumer preferences.

2. RESEARCH METHOD

Primary Eurostat data on the six figure level of the Harmonized System code (HS code) of EU import of agricultural products from selected Southern hemisphere countries – namely, South Africa, Argentina, Chile, Australia and New Zealand - was used to compare the trade between those countries and the EU. The annual total tonnage and values (Euro) for the period from 1988 to 2000 were used for all countries, except for South Africa for which the data series is available from 1990. Data for the period 1980 to 1987 was also available, but could not be linked to the 1988 to 2000 series as it was based on a different classification system. Statistically meaningful forecasts based on the limited time series data sets could therefore not be generated. Data on the transport cost of fruit and vegetables was obtained from Belgian and other companies involved in international trade.

3. GLOBAL PERSPECTIVES ON TRADE BETWEEN THE EU AND THE SELECTED SOUTHERN HEMISPHERE COUNTRIES

The general and agricultural export performances by the selected countries in a global context are described in the following section and compared on the basis of the Revealed Comparative Advantage method. This is followed by a discussion of the value and nature of exports to the EU from the selected countries.

3.1 The limited, but fast growing contribution of southern hemisphere countries to world trade

In comparison with the other four selected southern hemisphere countries, South Africa took second place in terms of value of total exports in 2000, but showed the lowest growth rate from 1990 to 2000. With 0,47% market share, South Africa is still one of the main exporters from the southern hemisphere (see Table 1 and Figure 1). In absolute terms, the differences in export performance may appear insignificant, but, relative to one another, those differences are vast. New Zealand export values were the lowest, Chile's exports were 50% higher, Argentina and South Africa both exported double this amount and Australia's export value was five times that of its neighbour.

Table 1: Change in value of total exports of all goods from selected southern hemisphere countries from 1990 to 2000

Country	Export value of all goods in 1990 (billion $)	Export value of all goods in 2000 (billion $)	Change 1990-2000 (%)	Share in total world export in 2000	Ranking in 2000
Argentina	12.35	26.3	112.96	0.41	42
Australia	39.75	63.87	60.68	1	25
Chile	8.37	18.16	116.97	0.29	48
New Zealand	9.49	13.27	39.83	0.21	52
South Africa	23.55	29.98	27.30	0.47	38
EU		2196.77		35.37	

Source: WTO: International Trade Statistics, April 2001, WTO Publications

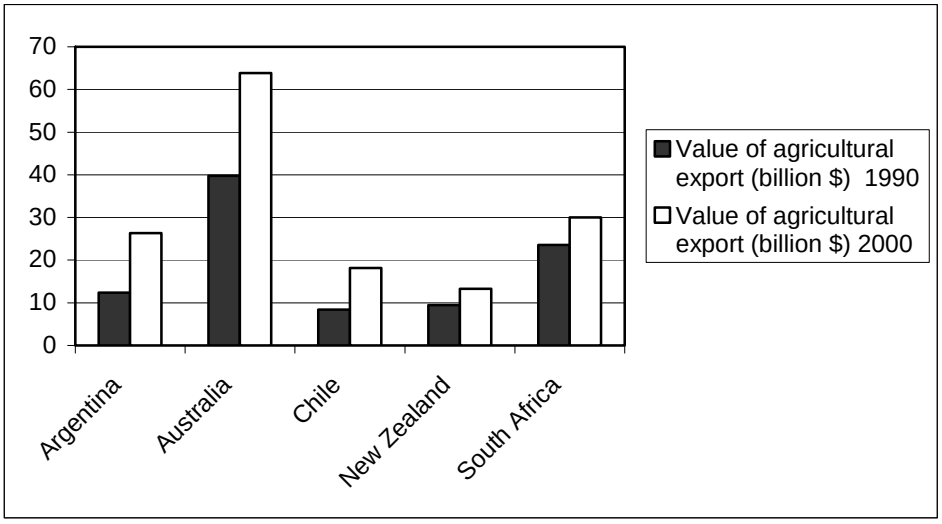

Figure 1: Change in value of total agricultural exports from selected southern hemisphere countries from 1990 to 2000

As in the case of the value of total exports South Africa's agricultural exports also grew more slowly than those of its southern hemisphere competitors (Table 2 and Figure 2). The relatively small contribution of agricultural exports to total exports from South Africa reveals a more diversified economy than those of its southern hemisphere competitors. The contribution of 11% is well in line with the world average of 9%. In contrast, New Zealand and Argentina depend on agricultural exports for more than half of their total export value, while for Chile and Australia, it is a third and a quarter respectively.

Table 2: Change in value of export of agricultural products from 1990 to 2000

Country	Value of agricultural exports 1990 (billion $)	Value of agricultural exports 2000 (billion $)	Change 1990-2000 (%)	Share of agricultural exports in total exports in 2000 (%)
Argentina	7.48	11.97	60.03	51.3
Australia	11.63	16.37	40.76	25.6
Chile	2.78	6.4	130.22	35.2
New Zealand	5.97	7.64	27.97	57.6
South Africa	2.88	3.38	17.36	11.3

Source: WTO: International Trade Statistics, April 2001, WTO Publications

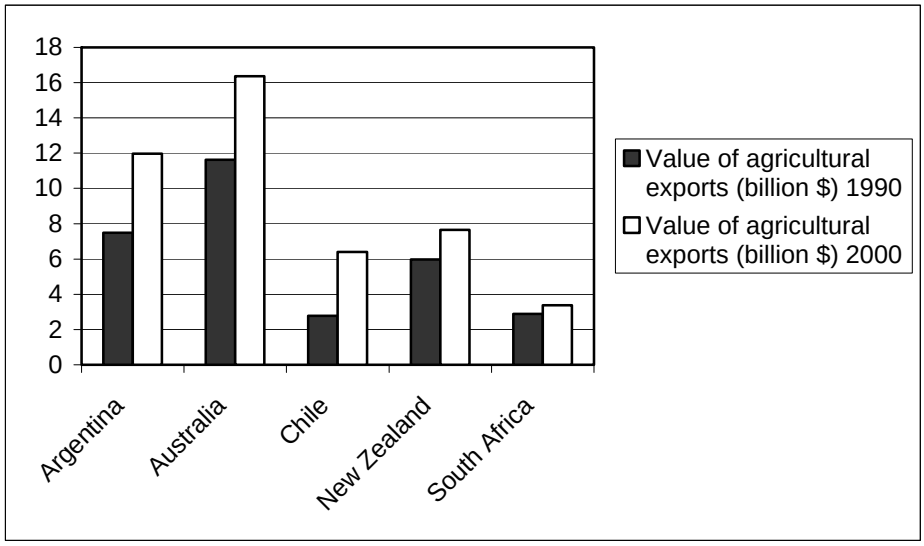

Figure 2: Changes in agricultural exports of the selected southern hemisphere countries from 1990 to 2000

The specialization index for fresh and processed food is shown in Table 3. This index is based on Balassa's measurement of the Revealed Comparative Advantage (RCA). The RCA takes the percentage contribution from export of a particular sector, e.g. the agricultural sector, and compares this to the value of the total export of a country. It then compares this with the percentage

contribution from the export of the same sector on a global level to the value of total exports on a global level. A value lower than 1 shows a lack of comparative advantage. A value higher than 1 applies to a sector in which a country specializes.

Table 3: Specialization index of fresh and processed food products: Revealed comparative advantage /Ranking on global hierarchy

Country	Fresh food products	Processed food products
Argentina	5.51/54	5.86/13
Australia	4.78/62	2.05/51
Chile	4.14/67	2.43/42
New Zealand	7.59/48	5.98/12
South Africa (S.A.C.U.)	1.47/108	1.34/81

Note: The highest ranking (no 1) will indicate the highest level of specialization
Source: ITC, 2002

Table 3 shows that Argentina and New Zealand show the highest levels of specialization for both fresh and processed products, as expressed in terms of the higher RCA values and the ranking of these countries. South Africa shows the lowest RCA values and the lowest ranking. Australia and Chile find themselves between these extremes.

3.2 Exports to the EU from the selected southern hemisphere countries

The relative importance of the selected southern hemisphere countries as trade partners in terms of value and mass (metric tonne) of agricultural products exported to the EU is shown in Figures 3 and 4.

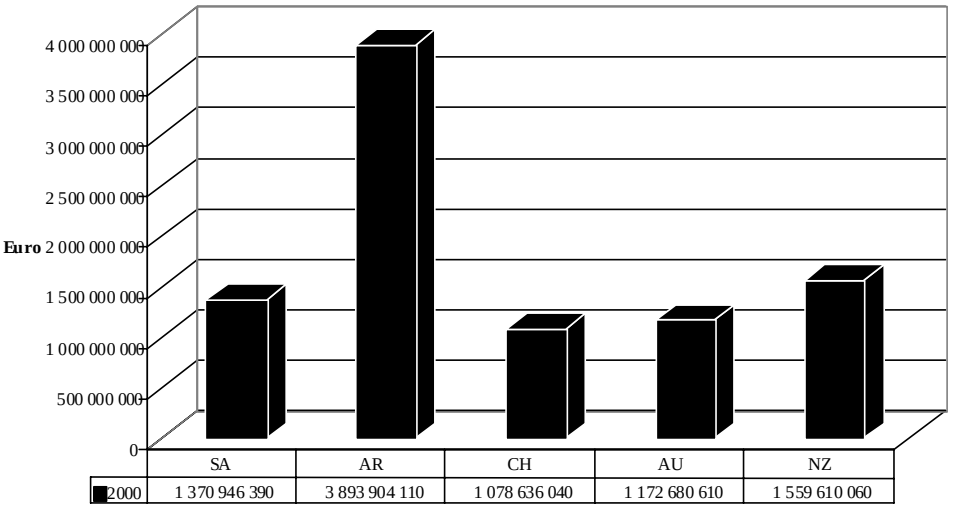

Figure 3: Total value of agricultural exports from the selected southern hemisphere countries to the EU in 2000

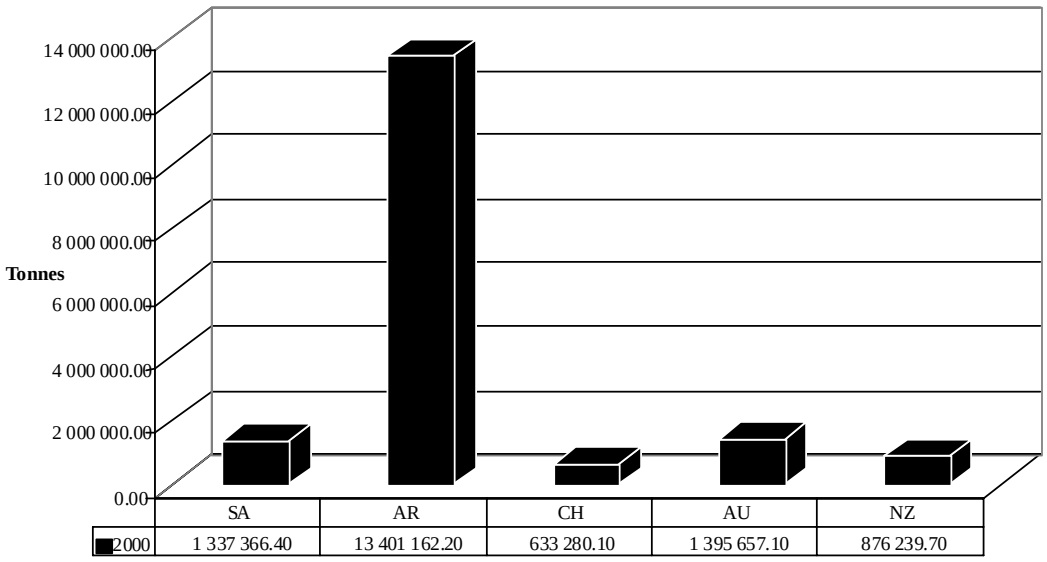

Figure 4: Agricultural exports from the selected southern hemisphere countries to the EU in tonnes

The imbalance between the values and tonnage of exports to the EU among the selected countries can be ascribed to differences in the product mixes. New Zealand and Chile generally export products with high value-mass ratios of 1.780 euro/tonne and 1.703 euro/tonne respectively, in comparison with 1.025 euro per tonne for South Africa and 840 euro per tonne for Australia. On the other hand, Argentina exports low value to mass products with a ratio of 291 euro per tonne. These consist mainly of residues from the food industry which are used for animal feeds (see Figure 5).

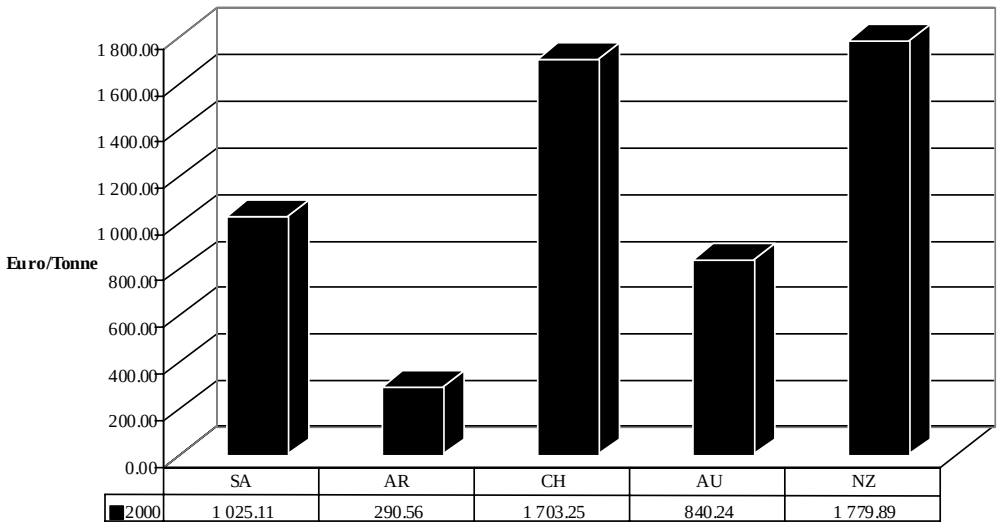

Figure 5: Value per tonne of agricultural export to the EU

Table 4 and Figure 6 show the evolution of exports in value (Euro), quantity (tonne) and euro per tonne during the period 1988 to 2000 for four of the selected countries (1990 to 2000 for South Africa).

Table 4: Changes in value (Euro) and quantities (tonne) and value per tonne (Euro per tonne) of exports from the selected southern hemisphere countries to the EU from 1988 to 2000

	South Africa	Argentina	Chile	Australia	New Zealand
V 2000	1,370,946,390	3,893,904,110	1,078,636,040	1,172,680,610	1,559,610,060
□V (total)	154.67%	95.58%	75.56%	216.05%	77.44%
□V (annual)	14.06%	7.35%	5.81%	16.62%	5.96%
Q 2000	1,337,366	13,401,162	633,280	1,395,657	876,240
□Q (total)	45.18%	116.23%	-31.80%	70.11%	47.42%
□Q (annual)	4.11%	8.94%	-2.45%	5.39%	3.65%
V/Q 2000	1,025	291	1,703	840	1,779
□□V/Q (total)	75.42%	-9.55%	157.42%	85.79%	20.36%
□□V/Q (annual)	6.86%	-0.73%	12.11%	6.60%	1.57%

Note: 1. 1990 to 2000 for South Africa
2. The cells with grey background indicate the highest values among the selected countries
3. V = value; Q = quantity and V/Q = value per tonne

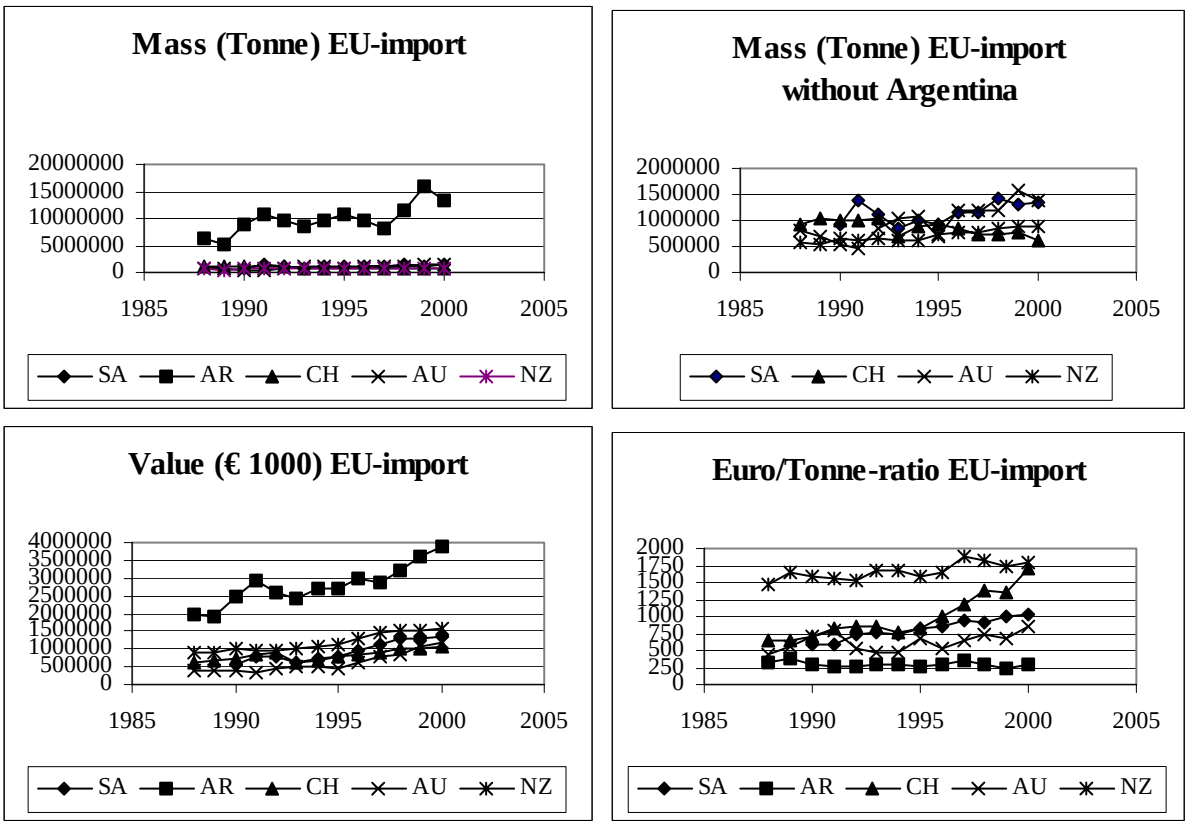

Figure 6: Change in mass, in value and in value/tonne of exports from the selected countries to the EU from 1988 to 2000

During the periods indicated the five countries experienced growth in their exports. Argentina's export quantity showed the highest growth rate - exceeding the growth in value - with the result that the value-mass ratio decreased during this period. Chile represents the other extreme with a negative growth in its export quantity. This results in the highest annual value-mass growth rate, despite the lowest annual growth in value. Australia managed to increase the value of its exports most rapidly. It has the second highest annual growth in export quantity, which has resulted in a 6.6% annual growth in its value-mass ratio. South Africa's export growth - in terms of value, quantity and value-mass ratio - was more or less similar to that of Australia.

4. EXPLOITATION OF SEASONAL DIFFERENCE WITH THE NORTHERN HEMISPHERE

The southern hemisphere countries provide 29% of total EU agricultural imports (see Figure 7). A fifth of this value is contributed by fresh fruit and vegetables. Seasonal production provides a fairly protected market.

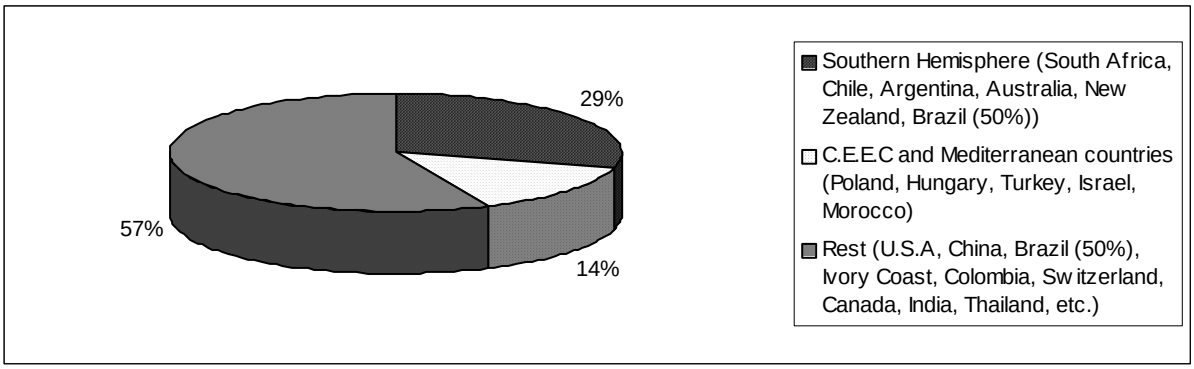

Figure 7: EU Agricultural imports from the most prominent countries exporting to the EU in 1999

The shorter distance from South Africa to the EU means that fresh produce can be shipped within 14 days to European ports, as compared with 23 days for many of the other southern hemisphere countries. A shorter transport period also implies that fruit can be harvested later and riper and sold as a tastier product (Eurofruit Magazine, 2002b).

Mediterranean and Eastern European countries producing the same agricultural product mix as the southern hemisphere countries have a transport cost advantage. The southern hemisphere countries therefore have to exploit maximally their seasonal difference advantage. However, technological innovations, such as the 'controlled atmosphere' cold storage of

apples, reduce this seasonal advantage. The northern hemisphere competitors focus on stretching their season by production in heated glass houses and the development of cultivars that can be harvested earlier or much later in the season. The southern hemisphere countries also invest heavily in developing new cultivars in order to satisfy demand as far as possible during shrinking windows of opportunity. For example, attempts made to develop easy-peeler citrus cultivars which can be harvested in June to August - after the normal South African harvest has ended in July and before the Spanish harvest starts in October (Eurofruit Magazine, 2002a). While seasonal differences diminish over time, some lucrative windows of opportunity still exist for exporters. This in turn motivates further investment in research and development (R&D). For example, land suitability assessment by means of a Geographical Information System (GIS) has been developed in order to identify suitable production areas for a particular crop for a particular harvesting time. Alternatively, the same GIS can be used to identify suitable crops with seasonal advantages for a particular area (Kleynhans, 2001).

5. TRADE PERFORMANCE ON PRODUCT LEVEL

5.1 Comparison of the export performance of the selected southern hemisphere countries in terms of product categories

In order to describe the relative trade performance of each selected southern hemisphere country with the EU in 2000 in terms of their dominant export products, the two digit classification in terms of the Harmonized System code (HS code) system is used. According to this system, products are categorized into 24 categories. The value of exports in each category is expressed as a percentage of total agricultural exports (see Table 5).

Some products are essential for all five of the selected countries, such as fish, meat, fruit and beverages. Each country has one product that contributes approximately half of the total agricultural and fisheries export, with the exception of Chile which has two products each contributing around 30%. For all the countries some five product categories collectively contribute 90% of export earnings. The product categories per se and their relative contributions differ significantly, showing greater structural differences among the export sectors of the countries. Those differences indicate, inter alia, the variety of resource endowments, specialized skills that were developed to exploit the opportunities and the influence of location relative to the main export markets.

Four product categories contributed more than 90% of the South African agricultural and fisheries export earnings; namely, Fruit (50.4%); Beverages and alcohol (19.63%); Fish and crustacean (13.93%); and Processed Vegetables and Fruit (6.11%).

In the case of Argentina, 45.21% of the total agricultural and fisheries export earnings came from lower value per tonne residues from the food industry; 11.92% from Fish and crustacean; and 9.37% from meat. Three product categories contributed around 7% of export earnings, namely fruit, grains and oilseeds.

The top three product categories in Chile correspond with South Africa's top three product categories, although their percentage contributions differ: namely, Fruit (34.16%), Beverages and alcohol (28.80%) and Fish and crustacean (18.11%). Processed meat and fish contributed 5.14%.

Australian agricultural and fisheries export earnings consisted mainly of contributions from Beverages and alcohol (50.41%), Meat (10.11%), Dairy (9.54%) and Oilseeds (9.38%).

New Zealand exported meat to the value of 48.23% of total agricultural and fisheries export earnings; dairy products 17.04%; fruit 17.36%; and fish and crustacean to the value contribution of 7.14%. Beverages and alcohol added some 4%.

Table 5: Contribution of each category to the total agricultural and fisheries export earnings of each selected country for 2000 (%)

HS Code	Product Classes	South Africa	Argentina	Chile	Australia	New Zealand
02	Meat	1.32	9.37	1.36	*10.11*	***48.23***
03	Fish and crustacean	*13.93*	*11.92*	***18.11***	1.87	7.14
04	Dairy	0.19	1.20	0.34	9.54	***17.04***
07	Vegetables	0.73	2.04	1.94	1.72	**2.37**
08	Fruit	***50.40***	7.20	*34.16*	2.51	*17.36*
10	Grains	0.05	**7.73**	1.15	5.59	0.02
12	Oilseeds	1.15	6.52	2.30	**9.38**	0.88
16	Processed meat/fish	0.36	1.66	**5.14**	0.06	0.09
20	Processed vegetables/fruit	**6.11**	0.44	0.44	1.83	0.05
22	Beverages and alcohol	*19.63*	2.00	*28.80*	***50.41***	4.08
23	Residues and livestock fodder	0.18	***45.21***	3.36	0.28	0.17

Notes: 1. HS code = Harmonized System code
2. A figure in *italics* indicates a product category with minimum 10% contribution to the total agricultural & fisheries export earnings of a country
3. A figure in **bold** shows the country where a particular product category makes the highest contribution to the total agricultural & fisheries export earnings of that country

5.2 Products with the highest value/mass ratio

The product categories of agricultural and fisheries products with a value/mass ratio of more than €10 000/tonne is given below.

Table 6: Product categories with products with a value/mass ratio of more than €10 000/tonne

02	Meat	Fresh beef and mutton.
03	Fish and crustacean	Live ornamental fish, salmon and eel, fresh salmon, tuna, oysters, mussels, molluscs.
04	Dairy	Yoghurt, whey and blue cheese.
07	Vegetables	Leeks, mushrooms.
08	Fruit	Fresh and dried figs and a variety of berries and nuts (coconuts, hazelnuts, walnuts, and mixed nuts).
16	Processed meat and fish	Salted or dried pork and beef, deep frozen or cooked crayfish, prawn, crab and crustacean and fish liver.
20	Processed vegetables and fruit	
22	Beverages and alcohol	Beer, wine, whiskey, rum, gin, vodka, liqueurs and vinegar.
24	Miscellaneous	Coffee, Ceylon tea, pepper, vanilla, cardamom, caraway, thyme and herb mixtures. Fish oil, peanut oil, virgin olive oil, jojoba oil. Seeds, natural glue, opium, hop extract, pectins, agar. Chewing gum, cacao powder, chocolate and biscuits, inactive yeast, baking powder, soups, protein concentrates. Tobacco, cigars, cigarettes.

For the products listed in Table 6, transport costs play a lesser role in the final price in Europe and can thus provide opportunities for southern hemisphere countries to be more competitive towards their northern hemisphere suppliers. A high value/mass ratio is even more important in the case of non-seasonal products where the southern hemisphere countries do not have a price advantage in some seasons. New Zealand and Chile set good examples of specializing more in higher value to mass products, as can be seen from Figures 4 and 6 and Table 5. It must be kept in mind when searching for opportunities for value addition that, although processing seasonal products in the southern hemisphere so as to export prepared meals or products with a longer shelf life to the EU can increase the value/mass ratio, this also implies more competition from producers in Eastern European and Mediterranean countries.

6. TRANSPORT COSTS

Transport costs absorbed around 5.25% of the value of global imports in 1997 (Clark *et al*, 2001). The transport cost elasticity of exports is estimated at –2.5 (Limão & Venables, 1999), implying a reduction of 25% in exports if transport costs should increase by 10%. Transport costs are therefore an important determinant for competitive export from southern hemisphere countries to the distant EU. Transport costs arise from an international transport cost component (from a sea or airport in the exporting country to a sea or airport in the importing country), as well as from an internal transport cost component (from the farm to the sea or airport).

6.1 International transport costs

Maritime transport is responsible for 98% of the export volume from South Africa to the EU (Naudé, 1999). The seven South African seaports, of which Durban, Cape Town and Port Elizabeth are the most important, lie closer to Europe than the seaports of the other southern hemisphere countries. However, transport distance plays a less dominant role in the total transport costs on a route than what may be expected. Economics of scale, port costs, other overheads and the level of competition on the route all play a lesser or greater role (Fuchsluger, 2000). Table 7 shows the relative contribution of the various cost components. The magnitude of fixed costs incurred at the departure from or arrival at a port suggests the importance of economics of scale of transport in the competitiveness of another southern hemisphere country.

Table 7: Breakdown of costs of maritime transport between South Africa and the EU

	Relative cost (%)	Current cost ($)
Ship (capital)	11.55	150
Ship (operational cost)	5.08	66
Fuel	3.39	44
Port taxes	5.77	75
Administration	9.55	124
Terminals	16.94	220
Transport and food	23.79	309
Depots	0.69	9
Refrigeration	0.54	7
Container imbalance	5.62	73
Equipment (provision)	11.01	143
Equipment (maintenance and repairs)	4.62	60
Insurance	1.54	20
Average price $/TEU		1.299

Source: WestLB Panmure, 2002

'Container imbalance' refers to the imbalance in trade volumes between South Africa and the EU. The total export volume (including non-agricultural products) from the EU to South Africa exceeds the export volume (including non-agricultural products) from South Africa to the EU. The result is that some containers must return empty from South Africa, resulting in a higher tariff per unit to South Africa than from South Africa to the EU. According to the Department of Trade and Industry of South Africa, this container imbalance will disappear in 2006 to 2008 due to expectations of more balanced trade (Naudé, 1999). The container balance depends on the harbour and the season. The latter influence is shown by Table 8 which indicates that a larger volume is exported than imported from Durban during the second semester compared with the first semester.

Table 8: Monthly import and export volume for Durban port in 1999 (1000 tonnes)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Import	364	276	399	322	262	331	339	359	362	321	327	201	3,861
Export	310	268	293	415	407	520	477	601	413	356	330	346	4,735
Export - Import	-53	-8	-106	93	145	188	139	242	51	35	3	146	874

Source: Portnet (2002)

Due to the effects of container imbalance and the economics of scale of ships, a stable and greater trade volume between a southern hemisphere country and the EU is of importance for the competitiveness of agricultural exports to the EU. The import of non-agricultural products from the EU directly affects the cost of agricultural exports. For instance, ships with refrigerated containers can transport fruit to the port of Antwerp cheaper if it can take second-hand motor vehicles back to South Africa if no EU agricultural export products for South Africa are available.

The cost efficiency of a seaport due to a favourable physical infrastructure can be reduced by inefficient custom services, less than competent management and regular labour strikes. On average, South African ports perform fairly well when compared to the average performance of ports in the other southern hemisphere countries. On a seven point scale, the average score for Durban, Cape Town and Port Elizabeth was 5.24 compared to 3.81 for Argentinean and 3.76 for Chilean ports. Australian ports scored an average of 4.79 and those of New Zealand 5.82. Port costs differ between 30 and 50% between the 25% least efficient ports and the 25% most efficient ones (Clark *et al*, 2001).

South Africa lies closest to the EU seaports, followed by Argentina. Chile lies in third place, regardless of whether the Punta Arenas via Cape Horn route or the Valparaiso – Panama canal route is taken. Australia lies fourth and New Zealand lies furthest away from the EU (see Table 9). Nevertheless, while Wellington lies nearly twice the distance from the EU compared with Cape Town, the total transport cost is only 16.4% higher than on the Cape Town – EU route (Clark *et al*, 2001).

Table 9: Distance and travelling time between European and southern hemisphere ports

	Distance to Europe (London – Rotterdam – Hamburg) (nautical miles)	Difference in distance in comparison with South Africa (Cape Town) (nautical miles)	Duration at 15 knots (days and hours)
South Africa (Cape Town)	6.255	-	17-9
Argentina (Buenos Aires)	6.447	192	17-17
Chile (Valparaiso – Punta Arenas)	7.493	1.238	20-20
Australia (Freemantle – Adelaide – Sydney)	10.723	4.468	29-19
New Zealand (Wellington)	11.395	5.140	31-20

Note: Durban and Port Elizabeth lie 781 nautical miles and 403 nautical miles respectively from Cape Town

Technological innovation with regard to ship hull design will probably significantly alter the current relative impact of distance from the southern hemisphere countries to northern hemisphere destinations on transport cost and the ability to export new products, and will favour South Africa's southern hemisphere competitors relatively more. The main effects will lie in the ability gained to produce and export softer and more popular apricot, prune, pear and table grape cultivars - even avocados and other subtropical fruit - that until now were out of reach of the other southern hemisphere countries. The following excerpt from *The Leading Edge: A Technology Scan* (2001) of the Institute for Futures Research describes the innovation [December 2001]:

"*The race is on to bring into production a new generation of fast ships, capable of travelling at twice the speed of present container ships. FastShip Atlantic, Kvaerner and ADX Express all have fast ships in the development phase, and ADX Express plans to lay its first keel next year. The ADX Express ship will be 280 metres long and will have a cargo capacity of 8,000 tonnes. With a top speed of 41 knots and a planned average of 38 knots (70 kilometres per hour), it will be able to cross the Atlantic in just three days, half the current journey time for cargo vessels which travel at about 25 knots at best, and barely 17 knots in bad weather. The ship is longer and thinner than any other and tends to pierce through the waves rather than responding*

to them, and so is able to maintain its speed. Around two-thirds of the world's freight still travels by sea and increasing the speed of container ships could therefore have a big impact on the industry."

6.2 Internal transport

Due to the landbound nature of agriculture, the distances from production areas to ports are normally significant, especially in the case of land-locked countries like some Southern African countries. The transport cost for land-locked countries is on average 58% higher than for countries with their own ports (Limão & Venables, 1999). South African ports serve inter alia Botswana, Zimbabwe, Zambia, Lesotho and Swaziland, thereby benefitting from economics of scale.

Some 80% of internal transport in South Africa is done by road and 20% by rail. A comparison of transport infrastructure and number of lorries used in the selected southern hemisphere countries is given in Table 10.

Table 10: Transport infrastructure in some southern hemisphere countries

Transport Infrastructure	South Africa	Chile	Argentina	Australia	New Zealand
Main roads (tarred; km)	59,753	11,012	63,553	353,331	53,568
Amount trucks (millions)	1,73	0,81	1,23	2,24	0,35
Railway lines (all types; km)	20,384	6,701	33,744	33,819	3,908
Canals and navigable rivers (km)	None	725	10,950	8,368	1,609
Ports	7	11	11	13	5
Airports (landing strip minimum 3.047m)	9	6	4	10	2

Note: International transport from South Africa is done 98% by ship and only 2% by air
Source: Naudé (1999) and The World Factbook (2001)

7. CONCLUSIONS

Transport cost is one of the important determinants of the competitiveness of a southern hemisphere country exporting agricultural produce to the EU *viś-à-viś* other southern hemisphere and northern hemisphere countries. Given its agricultural resource endowment and location relative to other southern hemisphere competitors, the question remains as to what the primary production focus, value adding strategy and infrastructural and logistical support should be. A comparison of South Africa with its main southern

hemisphere competitors - in terms of the magnitude and content of exports, transport costs and duration of a shipment to the EU - provides some guidelines in this regard.

The high fixed cost component of transport by ship as by far the most dominant means of transport emphasises the need for a fast growing total trade volume between South Africa and the EU. This would decrease the impact of container imbalance and reduce the cost per tonne per kilometer. Total exports from South African to the EU grew most slowly between 1990 and 2000.

With regard to the variable or distance correlated component of transport cost, a decrease favours the competitiveness of South Africa *viś-à-viś* its northern hemisphere competitors. These are mainly the Mediterranean and Eastern European countries which produce the same agricultural product mix as that of the southern hemisphere countries. A more likely increase in the variable cost weakens the competitiveness of South Africa *viś-à-viś* its northern hemisphere competitors, but also increases its competitiveness *viś-à-viś* its southern hemisphere competitors due to its location closer to the EU.

An increase in the value/mass ratio decreases the impact of transport cost of exports of all southern hemisphere countries to the northern hemisphere. In this respect, New Zealand performed well to neutralise its least favourable location *viś-à-viś* its southern hemisphere competitors for trade with the EU. However, a value/mass ratio reducing strategy for South Africa should focus on those products with which it can compete best with its northern hemisphere competitors based on resource characteristics, special skills and institutional strength etc. South Africa's leading position in ostrich meat export to the EU is a case in point. The production of wine, herbs and spices as higher value/mass products are also examples of non-seasonal products which justify more momentum. The selection of those production areas in South Africa which has the most suitable micro climates, soils, slope and aspect for such crops by means of geographical information system technology (as in the case of *terroir* selection for optimal wine grape production) also provides opportunities to increase production effectivity and efficiency.

Northern hemisphere competitors can best be beaten if southern hemisphere countries export fresh seasonal products, such as fruit and vegetables. South Africa currently dominates fruit exports from the southern hemisphere to the EU. But it will only maintain this position through aggressive research and development of new cultivars and production and logistical management procedures to supply products for particular marketing windows. In contrast

with non-seasonal products (where value-addition strengthens the position of South Africa's location *viś-à-viś* its northern hemisphere competitors), value-addition to seasonal products will actually harm South Africa's competitiveness *viś-à-viś* its southern hemisphere competitors based on its more favourable location with regard to the EU. The shorter distance to the EU enables faster transport, riper picked fruit and thus higher quality fruit as compared with its southern hemisphere competitors. In the case of exporting fresh Protea Magnifica to the EU, it is precisely the shorter duration of a trip that provides this opportunity to South African exporters: the longer duration of shipments from Australia and New Zealand exclude their Protea Magnifica producers from this highly lucrative trade (Allerts *et al*, 1998). Faster ships may however change the current competitive edge in this regard, necessitating investment in such fast ships and new cultivars thereby addressing other consumer preferences. Fresh vegetable export by ship is growing slowly as compared to fresh fruit export for which refrigeration procedures have been developed decades ago. The popularity of tasty vegetables grown in the sunny southern hemisphere justifies intensive research and development of optimal growing and logistical procedures for export to the EU.

The maintenance of the internal transport infrastructure and efficient harbour management to limit handling time of fresh produce for export is a basic precondition to exploit the trade opportunities mentioned.

REFERENCES

AJAYI IS (2001). What Africa needs to do to benefit from globalization. *Finance and development*,. IMF, pp 6-8.

ALLERTS S, KLEYNHANS TE & VINK N (1998). Fynbos exports from the Western Cape Province: A problem of logistics. *Agrekon* 37(4):588-596.

CLARK X, DOLLAR D & MICCO A (2001). *Maritime transport costs and port efficiency.* World Bank Paper, pp 1-37.

EUROFRUIT MAGAZINE (2002a). *Southern Hemisphere soft citrus.* May 2002, pp 54-64.

EUROFRUIT MAGAZINE (2002b). *South Africa.* February 2002, pp 28-46.

FUCHSLUGER J (2000). *An analysis of maritime transport and its costs for the Caribbean.* ECLAC Analysis Report, pp 1-56.

INTERNATIONAL TRADE COMMISSION (ITC), USA (2002). Website of the USITC: www.usitc.gov/2002.

KLEYNHANS TE (ed) (2001). *SADC Agricultural potential assessment: The spatial organisation of resources for policy planning*. Development Paper No 147, Development Bank of Southern Africa, pp 1-20.

LIMÃO N & VENABLES A (1999). *Infrastructure, geographical disadvantage and transport costs,* World Bank Paper, Washington, pp 1-39.

NAUDÉ W (1999). *Trade in transport services: South-Africa and the general agreement on trade in services.* TIPS, Draft Report, pp 1-60.

PORTNET (2002). *Portnet.* Website of the South-African ports, http://www.portnet.co.za

INSTITUTE FOR FUTURES RESEARCH (2001). *The leading edge: A technology scan.* Institute for Futures Research, University of Stellenbosch, December 2001.

THE WORLD FACTBOOK (2001). *The World Factbook.* Website of the CIA, http://www.cia.gov/cia/publications/factbook/.

WESTLB PANMURE (2002). *Container shiping: Every cloud has a silver linin.* Tue Ostergaard. WestLB Panmure, London, 2002-84. AHB: L2-M06.03 PANMUR 2002.

WORLD TRADE ORGANISATION (WTO) (2001). *International Trade Statistics, April 2001*. WTO Publications, Geneva.