# Competitive performance of global deciduous fruit supply chains: South Africa versus Chile

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## Abstract

*The South African deciduous fruit industry has experienced difficulties in the past few years. Most deciduous fruit producers have suffered from increased globalisation of markets; trade liberalisation; deregulation of the industry; advances in information technology; changes in consumer preference; over-supply of deciduous fruit in South Africa's traditional markets and increased global competition, particularly from Chile. These factors have a continuous effect on the competitiveness of the industry and force deciduous fruit producers to position themselves as capable competitors in the global free-market environment. This paper measures the competitive performance of the South African deciduous fruit supply chains relative to those of Chile. An internationally recognised index, the Relative Revealed Comparative Trade Advantage (RTA) index and also data from both Food and Agricultural Organisation (FAO, 2007) and World Trade Organisation (WTO, 2007) are used to measure the competitive performance. The results reveal that South Africa's deciduous fruit supply chains are shown to be competitive internationally, whereas Chile's deciduous fruit supply chains are strongly internationally competitive. In most cases, South African fruit products to which value has been added have a competitive disadvantage, contrary to the case in Chile. South African deciduous fruit competitive performance decreases when moving from primary to processed products in the chains, an indication that value-adding opportunities are still limited*

**Keywords:** Deciduous fruit; competitiveness; supply chains

## 1.　　Introduction

The South African deciduous fruit industry has seen some dramatic changes over the past few years, moving from a wholly regulated market environment towards a free-market system in a global environment. The industry has suffered from increased globalisation of markets; trade liberalisation; deregulation; advances in information technology; changes in consumer preference; over-supply of deciduous fruit in South Africa's traditional markets and increased global competition, particularly from Chile. With global deciduous fruit markets becoming more competitive and the local

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industry being largely deregulated, producers and processors are consistently challenged to position themselves as capable competitors in the global free trading market environment.

The primary objective of this paper is to measure and compare the relative competitive performance of the South African deciduous fruit supply chains relative to those of Chile. The comparison of these two countries is largely motivated by two reasons. First, South Africa and Chile enjoy the same counter-seasonal advantage to access developed country markets, particularly the European Union (EU), United Kingdom (UK), United States (US) and Far East markets. Second, the Chilean deciduous fruit industry constitutes a major competitive force in South Africa's traditional export markets, namely the EU, UK, US and Far East. Thus, a comparison of these two countries will present a realistic picture of South Africa's future prospects in the EU, UK, US and Far East markets. A comparative study on competitiveness between these two countries will thus provide valuable information and intelligence in an era when bilateral trade relations are becoming increasingly important. It is further necessary to compare South African deciduous fruit industry performance post-deregulation with that of its main competitors in the Southern Hemisphere, Chile in this case.

The paper is organised as follows: Section Two provides a brief review of literature on supply chain competitiveness analysis. Section Three discusses, in detail, the research methodology used in this paper. Section Four presents the research results and conclusions are drawn in Section Five.

## 2.     Literature review on supply chain competitive analysis

Recently, supply chain analysis has become a rapidly evolving area of interest for agricultural researchers in South Africa. This is evident from the increasing number of studies that have been and are being conducted in this field. Agricultural supply chain analyses have been undertaken on both the micro- and macro-levels, and these include analyses by Esterhuizen and Van Rooyen (1999), Esterhuizen and Van Rooyen (2001), Van Rooyen (1998), Van Rooyen *et al*. (2000) and Van Rooyen and Esterhuizen (2001), who used Balassa's (1989) Revealed Comparative Advantage (RCA) index method to analyse the competitiveness of the supply chains in the South African agricultural sector. The findings of their analyses are that most commodity chains are marginally competitive, and the competitive index generally decreases when moving from primary to processed products. They concluded that the analyses imply that value-adding activities in the South African agricultural sector are limited.

Jooste and Van Schalkwyk (2001) and Krabbe and Vink (2000) analysed the comparative advantage of primary dry land soybean production and the sugar industry in South Africa respectively using the Policy Analysis Matrices (PAMs) devised by Monke and Pearson (1989). Gronum *et al.* (2000) investigated comparative advantage of the primary oilseed industry in South Africa using Domestic Resource Cost (DRC) and Kirsten *et al.* (1998) analysed the comparative advantage of commercial wheat production in South Africa using a variant of the Domestic Resource Cost. The general conclusion from the analyses done by these researchers is that South Africa has a comparative advantage in the production of these commodities. Although the analyses of comparative advantage done by these authors using these techniques is quite revealing, certain considerations need to be borne in mind. The underlying problem with the Policy Analysis Matrix (PAM) is that it is static in nature and generally focuses on the macroeconomic issues and thus fails to shed any information on micro-incentives, as does the Domestic Resource Cost (DRC).

Venter and Horsthemke (1999) studied the competitiveness of Southern Africa's sheep meat sector (supply chain) relative to the Australian industry using Porter's (1990) model. Their results support the above-mentioned findings of Esterhuizen and Van Rooyen (1999, 2001) that the competitiveness of the South Africa's agricultural supply chains decreases downstream. Their analysis found that the cost associated with value adding in the retail industry, which decreases the competitiveness of the total value chain, is much higher in Southern Africa than in Australia. Venter and Horsthemke (1999) concluded that the Southern African lamb producers were competitive but the mutton producers were not. They suggested that strategies to promote product demand and the formation of strategic alliances in the value chain could increase competitiveness.

Blignaut (1999) used an integrated approach suggested by Porter (1985) to study the local and international competitiveness of the South African dairy industry supply chain. He used two types of competitive advantage to analyse his study, being cost leadership (low cost production) and value adding (product differentiation). The latter is considered in terms of factors such as product safety and quality, marketing approach used and the back-up system. His analysis shows that the competitiveness of the South African dairy industry supply chains decrease downstream. He concluded that South Africa's dairy farmers produce milk relatively effectively but the milk-processing industry was not internationally competitive, which he ascribed to distorted international diary marketing.

Mosoma (2004) analysed the agricultural competitiveness and supply chain integration of South Africa, Argentina and Australia using the Relative

Revealed Comparative Trade Advantage (RTA) index. His analysis shows that South Africa's agricultural food chains are marginally competitive internationally, whereas Argentina's and Australia's agricultural food chains are generally more competitive internationally than those of South Africa. His findings show that South Africa has managed to move further up the value chain compared to Argentina and Australia. He concluded that in all three countries competitiveness decreases when moving from primary to processed products in the chain, which implies that value-adding opportunities are limited in these countries. His results support Venter and Horsthemke's (1999); Blignaut's (1999) and Esterhuizen and Van Rooyen's (1999, 2001) findings that South Africa's agricultural competitiveness decreases when moving from primary to processed products in the supply chain. He recommended that a great deal of attention has to be given to creating value-adding opportunities through aggressive research and development of new products and production techniques.

Recently, Hallatt (2005) used three indexes, namely, the Revealed Comparative Advantage (RCA) index, the Net Export Index (NXi) and the Relative Revealed Comparative Trade Advantage (RTA) index to analyse the relative competitiveness of the South African oilseed industry by comparing it with that of Argentina. Her analysis shows that South African groundnuts and sunflower seeds have a competitive advantage in their primary form, but she found that oilseed to which value has been added has, in most cases, a competitive disadvantage, exactly the opposite of Argentina's oilseed products. Her study reveals that the South African oilseed industry is struggling with comparative and competitive disadvantage for value-added products. She recommended that there should be innovations in sunflower oil production, effective marketing and distribution of service for the industry to gain more competitive advantage.

It is clear from the preceding discussion that a range of studies have been conducted on the competitiveness of South Africa's agricultural supply chains compared with other countries. However, none of these studies have compared the competitiveness of the South African deciduous fruit supply chains relative to those of the Chilean deciduous fruit supply chains. Du Toit (2000) only analysed the competitiveness of the South African apple industry relative to that of the Chilean apple industry, with specific reference to the competition between these two countries on the European markets. A study that compares the supply chain competitiveness of all deciduous fruits relative to those of Chile is thus justified because such a study will enhance the knowledge of the ability of the South African deciduous fruit industry to compete with Chile.

## 3.    Methodology

There is much confusion between the use of the terms comparative advantage and competitiveness in economics. The concepts are related but often mistakenly exchanged for each other. Understanding the meaning of these two terms is vitally important when one endeavours to use the various measures that are available to measure a country or industry's competitiveness. Before any measurement of the competitive performance can be calculated, it is necessary to define these two terms.

Warr (1994) summarises the definitions of comparative advantage and competitiveness. According to him, comparative advantage refers to the ability of one nation to produce a commodity at a lower opportunity cost than another nation, while competitiveness indicates whether a firm could compete successfully in the trade of a commodity in the international markets, given existing policies and economic structure. In this paper competitiveness is, therefore, conceptualised as the ability of the industry to trade and exchange products on a sustainable basis at competitive prices within the global environment. Thus, imports and exports values will be used in the calculation of competitive performance. Short-term features, such as opportunistic 'price-wars', will not influence matters greatly.

The paper calculates the relative competitive performance of supply chains using the RTA, which is discussed below.

### 3.1    Relative revealed comparative trade advantage (RTA) index

Following the analyses of global competitiveness in agriculture (Vollrath, 1987, 1989) and in view of the open world economy, Vollrath (1991) offered an alternative specification of revealed comparative advantage that can be used to measure competitive performance, namely, the Relative Revealed Comparative Trade Advantage (RTA) index. The RTA index describes a country's share of the world market pertaining to one commodity relative to its share of all traded goods, and it accounts for imports as well as exports. It is calculated as the difference between relative export advantage (RXA), which equates to the Balassa index, and its counterpart, relative import advantage (RMA).

The RTA index is mathematically expressed as follows:

$$RTA_{ij} = RXA_{ij} - RMP_{ij} \text{-----------------------------------------------------------------(1)}$$

$$RXA_{ij} = (X_{ij}/\Sigma_{l,\ l\neq j}\ X_{il})\ /\ (\Sigma_{k,\ k\neq j}\ X_{kj}\ /\ \Sigma_{k,\ k\neq i}\ \Sigma_{l,l\neq j}\ X_{kl})\text{----------------------------(2)}$$

$$RMP_{ij} = (M_{ij} \; / \; \Sigma_{l, \, l \neq j} \, M_{il}) \; / \; (\Sigma_{k, \, k \neq i} \, M_{kj} \; / \; \Sigma_{k, \, k \neq i} \, \Sigma_{l, \, l \neq j} \, M_{kl})\text{-----------------------(3)}$$

where *X* and *M* refer to exports and imports respectively, with the subscripts *i* and *k* denoting product categories, while *j* and *l* denote country categories. The numerator in equations (2) and (3) is equal to a country's exports (imports) of a specific product category relative to the exports (imports) of this product from all countries, except for the country in consideration. The denominator reveals the exports (imports) of all products, except for the commodity in consideration from the respective country as a percentage of all other countries' exports (imports) of all other products. Values above zero point to a competitive trade advantage and values below zero point to a competitive trade disadvantage.

The RTA index is considered to be a more appropriate measure of competitiveness. It was proved by many scientists, including Vollrath (1991), that the RTA method allows for the measurement of competitiveness under real world conditions and is therefore the most suited for measuring competitiveness status. However, care should be exercised when interpreting RTA index because, when comparing a cross-section of RTA indicators, different aspects of the formula can change and with them the interpretation of the RTA indicators. Appendix 1 gives some indication of how to interpret different cases of the RTA index. It is important to note that there are three aspects of the formula that can change when calculating RTA indicators. Firstly, there is the product or product group, secondly, there is the country or the group of countries for which one is estimating competitive advantage, and thirdly, there is the group of reference countries.

## 4.    Results and discussion

In this section trends in the global competitiveness of the South African and Chilean deciduous fruit industry for the different supply chains are calculated using the RTA index. This specific index is a comprehensive and superior measure of competitiveness, given the fact that it takes both imports and exports into account, it eliminates double counting and it allows for the measurement of competitiveness under real world conditions. Data including total world exports, as well as exports of the different deciduous fruit products in the supply chains of South Africa, Chile and the world (FAO, 2007; WTO, 2007) are used.

## 4.1    Competitiveness of South Africa's deciduous fruit supply chains

*4.1.1   Competitiveness of South African grape supply chain*

In Table 1 RTA index values are calculated for different grape products in the supply chain. According to Scott and Vollrath (1992) and Galleto and Cappellini (2003), positive RTA index indicates a global competitive advantage and vice versa.

From Table 1 it is clear that RTA index values for the different products in the grape supply chain are mostly positive, with values mostly less than 10. This indicates that most South African grape products in the grape supply chain experienced a global relative competitive advantage, except for grape juice from 1996 to 1997, which experienced a global competitive disadvantage. The reason for this could be the deregulation of the industry which affected the industry negatively. RTA index values for grapes in their primary form, on the other hand, mostly displayed positive values greater than 10, an indication that South Africa has a strong relative global competitive advantage in fresh grapes.

**Table 1: Competitive advantage of South Africa's grape supply chain (RTA index)**

| Chain | Product | RTA 1995 | RTA 1996 | RTA 1997 | RTA 1998 | RTA 1999 | RTA 2000 | RTA 2001 | RTA 2002 | RTA 2003 | RTA 2004 | RTA 2005 |
|-------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| **Grape chain** | Grapes | 11.30 | 8.27 | 10.98 | 13.13 | 17.43 | 14.58 | 11.83 | 10.66 | 12.65 | 18.52 | 19.01 |
| | Grape juice | 3.41 | (1.63) | (0.78) | 3.18 | 5.59 | 7.66 | 5.51 | 5.90 | 2.34 | 4.05 | 3.79 |
| | Raisins | 6.46 | 6.96 | 10.47 | 5.84 | 10.79 | 6.80 | 7.99 | 9.79 | 10.89 | 8.02 | 7.35 |

Source: Own calculations based on data from FAOSTAT (2007) and WTO (2007).
Notes: RTA>0⇒Global competitive advantage; RTA<0⇒Global competitive disadvantage

## 4.1.2  Competitiveness of South Africa's pome fruit supply chain

Table 2 shows the global competitiveness of the South African pear and apple supply chains. From this table it is clear that the RTA index values for different products in the apple supply chain are mostly positive, indicating that all products in the apple chain experience a relative global competitive advantage, except for concentrated apple juice from 1995 until 2002, when this product recorded RTA values of zero. According to Vink (2003) the apple industry was hardest hit by the deregulation, and it experienced a decline in exports in the period immediately after deregulation in the mid to late 1990s. There was a sharp decline in quality and value of South African deciduous fruits delivered into a global market immediately after deregulation.

Pears, on the other hand, show positive RTA values, indicating that South Africa experienced a relative competitive advantage for pears for the whole period depicted in Table 2. The RTA indicates that South Africa's pome fruit supply chains basically experiences a marginal global competitive advantage.

**Table 2: Competitive advantage of South Africa's pome fruit supply chain**

| Chain | Product | RTA 1995 | RTA 1996 | RTA 1997 | RTA 1998 | RTA 1999 | RTA 2000 | RTA 2001 | RTA 2002 | RTA 2003 | RTA 2004 | RTA 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Apple chain** | Apples | 7.15 | 5.26 | 7.33 | 9.37 | 8.23 | 6.44 | 6.31 | 6.44 | 8.90 | 9.63 | 8.95 |
| | Apple juice | 7.89 | 9.19 | 12.32 | 3.69 | 10.97 | 10.22 | 8.13 | 1.93 | 0.75 | 1.27 | 0.92 |
| | Concentrated apple juice | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.59 | 2.95 | 1.11 |
| **Pear chain** | Pears | 7.29 | 6.05 | 10.75 | 8.62 | 10.64 | 8.50 | 6.14 | 7.95 | 8.83 | * | * |

Source: Own calculations based on data from FAOSTAT (2007) and WTO (2007)

Notes: RTA>0⇒Global competitive advantage; RTA<0⇒Global competitive disadvantage; *⇒ Data not available

### 4.1.3. Competitiveness of South Africa's stone fruit supply chain

Table 3 indicates RTA index values for the different stone fruit products in the supply chain. According to this table, RTA index values for both fresh and dry apricots are positive, an indication that South Africa has a relative global competitive advantage in fresh and dried apricots. RTA values for nectarines and peaches are also positive, an indication that these products experienced a relative global competitive advantage for the whole period depicted in Table 3.

RTA values for the plum supply chain, on the other hand, indicate that dried plums recently experience a global competitive disadvantage (i.e. negative RTA value of 0.32 in 2005). However, plums in their primary form experienced a relative global competitive advantage for the whole period. The RTA index indicates that most of the products in the South African stone fruit supply chain experience a relative global competitive advantage.

## Table 3: Competitive advantage of South Africa's stone fruit supply chain

| Chain | Product | RTA 1995 | RTA 1996 | RTA 1997 | RTA 1998 | RTA 1999 | RTA 2000 | RTA 2001 | RTA 2002 | RTA 2003 | RTA 2004 | RTA 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Apricot chain** | Apricots | 1.59 | 0.69 | 5.29 | 3.86 | 6.26 | 6.74 | 4.62 | 4.03 | 4.55 | 3.55 | 4.85 |
| | Dry apricots | 6.11 | 3.75 | 3.66 | 3.80 | 4.28 | 3.30 | 5.82 | 4.59 | 4.01 | 3.18 | 2.87 |
| **Nectarine & peach chain** | Nectarines & peaches | 0.28 | 0.83 | 1.57 | 1.35 | 1.99 | 1.71 | 1.33 | 1.46 | 1.29 | 1.51 | 1.15 |
| **Plum chain** | Plums | 9.63 | 9.39 | 14.62 | 13.23 | 23.47 | 14.51 | 12.77 | 12.52 | 15.23 | 20.71 | 19.59 |
| | Dried plums (prunes) | 0.012 | 0.29 | (0.007) | 0.025 | 0.029 | 0.24 | 0.07 | 0.047 | (0.0079) | (0.09) | (0.32) |

Source: Own calculations based on data from FAOSTAT (2007) and WTO (2007)
Notes: RTA>0⇒Global competitive advantage; RTA<0⇒Global competitive disadvantage

In summing up, the RTA calculations show that the South African deciduous fruit industry has a competitive supply chain. The analysis shows that the competitiveness of the South African deciduous fruit supply chains decreases when moving from primary to processed products. Esterhuizen and Van Rooyen (2001) argue that the decrease when moving from primary agricultural products to processed agricultural products is caused by the high rate of returns recorded for farm-level applications of technology for most primary commodities. This could also be the case for South African deciduous fruit industry. The decline in competitiveness when moving from primary to processed products could mean that value added activities higher up in the deciduous fruit supply chain were somewhat ignored within the industry research and development (R&D) expenditures. To reverse this situation, more direct investments in R&D within the deciduous fruit value adding activities in the industry's supply chain is required.

Another possible explanation for the decrease in the competitiveness of the industry when moving up the value chain could be attributed to the high input costs combined with low productivity, poor business strategies and inefficiencies, and unfair trade practices by the country's competitors (National Department of Agriculture, 2001). Cassim *et al.* (2002) also argue that the key problem that South African agriculture faces is a tariff structure that remains cumbersome with some 47 *ad valorem* tariff bands, with over 7000 lines. The structure of the tariff schedule has an important bearing on efficiency and subsequently on the competitiveness of agriculture, including the deciduous fruit industry. A uniform tariff rate is likely to create higher efficiency in the agricultural sector while creating less arbitrary protection of the sector. With a uniform tariff rate, it will be easier to bring imported intermediate inputs into the country that are important for the international competitiveness of the industry.

## 4.2    Competitiveness of Chile's deciduous fruit supply chains

Chile is one of the biggest deciduous fruit producers in the Southern hemisphere and is South Africa's biggest competitor in the EU, UK, US and Far East markets. Chile deciduous fruit industry competes directly with South Africa.

### 4.2.1  Competitiveness of Chile's deciduous fruit supply chains

Considering the RTA index values for Chile in Table 4, it is clear that Chile has a strong globally competitive grape chain. Most of grape RTA values are very high. The RTA index values show that Chile has a relative global competitive disadvantage in the selling of apple juice and dried apricots. Except these two products, Chile enjoys a relative global competitive advantage in selling all deciduous fruit products.

**Table 4: Competitive advantage of Chile's deciduous fruit chain**

| Chain | Product | RTA 1995 | RTA 1996 | RTA 1997 | RTA 1998 | RTA 1999 | RTA 2000 | RTA 2001 | RTA 2002 | RTA 2003 | RTA 2004 | RTA 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grape chain** | Grapes | 66.57 | 89.65 | 73.86 | 81.42 | 70.78 | 87.60 | 75.19 | 112.71 | 102.25 | 62.59 | * |
| | Grape juice | 14.79 | 22.71 | 8.76 | 22.16 | 5.05 | 6.98 | 13.80 | 9.97 | 8.41 | 10.23 | 11.11 |
| | Raisins | 14.72 | 17.08 | 20.79 | 20.08 | 22.31 | 25.83 | 24.76 | 25.40 | 23.72 | 20.73 | 22.38 |
| **Apple chain** | Apples | 21.64 | 25.16 | 23.98 | 35.09 | 31.67 | 28.64 | 35.89 | 37.36 | 29.48 | 27.04 | * |
| | Apple juice | (0.075) | (0.17) | 0 | 0 | 0 | 0 | 0 | (0.014) | (0.0055) | (0.0028) | 0.096 |
| | Concentrated apple juice | 22.99 | 32.69 | 25.42 | 22.17 | 35.94 | 23.46 | 36.06 | 29.59 | 28.47 | 21.22 | 14.29 |
| **Pear chain** | Pears | 20.11 | 26.67 | 24.56 | 26.78 | 25.51 | 22.63 | 22.07 | 22.09 | 21.70 | * | * |
| **Apricot chain** | Apricots | 4.88 | 5.63 | 3.22 | 7.55 | 5.55 | 8.36 | 6.89 | 8.79 | 6.94 | * | * |
| | Dried apricots | 0.29 | 0.16 | (0.059) | (0.097) | 0.19 | 0.07 | 0.026 | 0.099 | (0.26) | (0.12) | (0.18) |
| **Nectarine & Peach chain** | Nectarines & peaches | 22.76 | 30.29 | 21.69 | 19.06 | 27.49 | 26.11 | 27.31 | 33.11 | 26.66 | * | * |
| **Plum chain** | Plums | 54.04 | 67.66 | 57.08 | 57.37 | 74.67 | 63.21 | 76.93 | 91.69 | 70.23 | 64.93 | * |
| | Dried plums (prunes) | 32.47 | 35.91 | 30.94 | 35.97 | 37.31 | 41.69 | 49.79 | 52.55 | 53.82 | 53.46 | 50.91 |

Source: Own calculations based on data from FAOSTAT 2007 and WTO 2007
Notes: RTA>0⇒global competitive advantage; RTA<0⇒global competitive disadvantage; *⇒ Data not available

In summary, Chile has strong global competitive advantage on the deciduous fruit supply chains. The analysis shows that this country also has a relative global competitive advantage in deciduous fruits to which value has been added. This is because of this country's success in high-value agricultural exports that was based on world market demand. Chile's deciduous fruit export structure is highly dominated by high-value products relative to that of

South Africa. This success arises from a series of reforms moving the country away from the initial import substitution industrialisation model. Internally, the export promotion strategy implied the following policies: a competitive exchange rate policy, reducing unilaterally import duties, streamlining export procedures, supporting a large number of export promotion institutions and opening up the economy to foreign direct investment (FDI). Externally, the strategy was based on very active trade diplomacy and numerous trade agreements (Anonymous, 2005).

On the other hand, the government of Chile initiated an Export Promotion Fund for agricultural promotion in 1995 to assist agricultural groups to develop either new markets for traditional products or to promote new-to-market products for them to become competitive. The government of Chile played and still plays an important direct role in supporting its fruit sector. During 1997 direct government support to export promotion was estimated at $9.9 million. Another device Chile used to encourage exports by small- and medium-sized companies is a simplified duty drawback system designed to refund duties paid on imported inputs without creating an excessive documentation burden. Non-traditional products with a total export value under $21 million were given a refund of between three and ten percent of the Free On Board (FOB) value of their exported merchandise (FAS, 1997). Chile's deciduous fruit competitiveness has also been achieved by focusing on comparative advantage, combined with foreign investment or partnerships, subsidies, tax exemptions, duty drawback schemes, publicly provided market research and public initiatives fostering scientific expertise.

## 4.3    Trends in the South African and Chilean deciduous fruit supply chains

Table 5 summarises the RTA index of the South African and Chilean deciduous fruit industries, indicating the trends in the different deciduous fruit supply chains. According to this table, Chile's deciduous fruit chains exhibit a strong global competitiveness. The South African deciduous fruit chains, on the other hand, show a relative global competitive advantage in selling of deciduous fruit.

**Table 5: Competitive advantage of the deciduous fruit industry, South Africa versus Chile**

| Chain | Product | South African RTA 2005 | Trend 1995-2005 | Chilean RTA 2005 | Trend 1995-2005 |
|---|---|---|---|---|---|
| **Grape chain** | Grapes | 19.01 | + | * | - |
| | Grape juice | 3.79 | = | 11.11 | + |
| | Raisins | 7.35 | - | 22.38 | + |
| **Apple chain** | Apples | 8.95 | - | * | - |
| | Apple juice | 0.92 | = | 0.096 | + |
| | Concentrated apple juice | 1.11 | - | 14.29 | - |
| **Pear chain** | Pears | * | + | * | = |
| **Apricot chain** | Apricots | 4.85 | + | * | - |
| | Dried apricots | 2.87 | - | (0.18) | - |
| **Nectarine & peach chain** | Nectarines & peaches | 1.15 | - | * | - |
| **Plum chain** | Plums | 19.59 | = | * | - |
| | Dried plums (prunes) | (0.32) | - | 50.91 | = |

Source: Own calculations based on data from FAOSTAT 2007 and WTO 2007

Notes: "+"⇒ positive trend; "-"⇒ negative trend; "="⇒ constant trend and *⇒ Data not available

## 5.       Conclusions and Recommendations

The competitive performance of the South African and Chile's deciduous fruit supply chains was calculated using trade data from FAO (2007) and WTO (2007). The paper reveals that the South African deciduous fruit industry enjoys a relative global competitive advantage in the selling of deciduous fruit. However, the competitiveness of the industry decreases when moving further up the value chain. One major possible explanation for this could be the high rates of return recorded for farm level applications of technology for most deciduous fruit primary commodities. Despite the difficult local conditions the South African deciduous fruit industry responded successfully to the great challenges of the major economic deregulations since 1996 and succeeded in operating more competitively, as shown by the positive trend in competitiveness.

Chile, on the other hand, has a strong relative global competitive advantage. This is because of this country's success in high-value agricultural exports that was based on world market demand. Chile's deciduous fruit export structure is highly dominated by high-value products relative to that of South Africa. This success was realised because of series of reforms which moved Chile's deciduous fruit industry away from the initial import substitution industrialisation model. It has achieved its competitiveness by focusing on comparative advantage combined with foreign investment or partnerships,

subsidies, tax exemptions, duty drawback schemes, publicly provided market research and public initiatives fostering scientific expertise..

Therefore, there is a need for competitive strategies to be adopted by all the participants in the supply chains in order to improve the competitiveness of the South African industry, particularly when one looks at the changes that have occurred in the industry in the past decade. It is no longer good enough for farmers to compete at farm-gate level, while value-adding activities are not globally competitive. Value adding should become a focal area for investment, and research and technology development will therefore have to focus on downstream consumer requirements, both locally and internationally. However, this does not mean that primary producer practices should be ignored.

To enhance and sustain the long-term competitiveness of the domestic industry, it is crucial to ensure better co-ordination of all stakeholders in the supply chain, more efficient port operations, better innovation and infrastructural efficiency improvements such as sufficient cold storage facilities. All these have to be supported by the appropriate macro-economic and structural policies. The government, therefore, has to play a crucial role in ensuring that the structural policies are conducive for the industry to improve its competitive performance.

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# Appendix 1

## A framework for interpreting different cases of the RTA index

| Case | Country or group of countries to be analysed | Commodity, product or commodity group | Group of reference countries | Interpretation |
|---|---|---|---|---|
| 1 | Same | Different | Same | RTA indicators can be compared between products/commodities. The higher the value of the indicator, the greater the competitive advantages the product has over the other products in the country that has been analysed. |
| 2 | Same | Same | Different | A specific country's competitiveness for a specific product or commodity is compared to different reference countries. A comparison of the RTA indicator rank enables one to determine the relative importance of the traded commodity with different trading partners. |
| 3 | Different | Same | Same | Special caution needs to be exercised in this case. The index is affected by the size of the economy. Trends should preferably be used to compare the competitiveness between the countries |

Source: Based on Valentine and Krasnik (2000)

When comparing a cross-section of RTA indicators, different aspects of the formula can change, and with it, the interpretation of the RTA indicators. Therefore, care should be exercised when interpreting RTAs. The Table gives some indication of how to interpret different cases of the RTA index. It is important to note that there are three aspects of the formula that can change when calculating the RTA indicators. Firstly, there is the product or product group; secondly, there is the country or group of countries for which one is estimating competitive advantage; and thirdly, there is the group of reference countries.

Consider case 1 in the Table. A comparison of differences in the RTA indicators for different commodities or products traded for the same country with the same reference countries can make use of the real value of the RTA indicator. The higher the value of the indicator, the greater the competitive advantage the product have over other products.

Consider case 2 in the Table. In this case a specific country's competitiveness for a specific product or commodity is compared against different reference countries. A comparison of the RTA indicator rank enables one to determine the relative importance of the traded commodity to different trading partners.

In case 3 of the Table, special care needs to be exercised as different size economies will affect the absolute value of the RTA indicator. However, by using a trend analysis, the competitiveness of different countries can be compared.

A limitation of RTA analysis is that it does not explain how a country or region acquired its international market share and competitiveness status. Market share may well be attained by means of high export subsidies paid by governments (such as is for EU, USA, etc.) or protection (i.e. "uneven playing fields"). The sustainability of a competitive position may thus be in question, especially in view of the ongoing global movement to "free-up" markets and reduce subsidies and protection.