CHAPTER 5

ANALYSING THE COMPETITIVENESS OF THE SOUTH AFRICAN AND AUSTRALIAN FLOWER INDUSTRIES

5.1 Introduction

This chapter approaches the issue of competitiveness of the South African flower industry by comparing the South African flower industry with the Australian flower industry from different viewpoints. By applying the methods identified and described in the preceding chapter, a better understanding will be gained of the ability of these two countries to compete in the international flower market and with each other.

The reason for comparing South Africa to Australia is because of the intensified rivalry between the two flower industries in recent years. This competitive interaction is visible firstly in the fact that both Australia and South Africa can produce a wide variety of increasingly popular indigenous flower varieties and compete for market share in the large world markets such as the EU, Japan and the USA. Second, Australia is probably South Africa's fastest-growing market and South Africa is Australia's second-largest supplier. Large quantities of roses, carnations and chrysanthemums valued at $730 000 in 1996 increased by almost 120% to $1 600 000 in 1997 (FECA, 1997). Thirdly, the South African and Australian flower industries have some similarities, such as geographical isolation from the major world markets, their size and the development stage of the respective industries. However, little attention has been given to understanding the nature of the competitiveness between the South African and Australian flower industries. This shortcoming gives rise to an opportunity to include in this study an analysis of the competitive position of the Australian flower industry compared to that of the South African flower industry.

For analysing the competitiveness of the South African and Australian flower industries three methods were chosen: the first defines the determinants of competitiveness (Porter, 1990); the second uses the Revealed Comparative Advantage model (Balassa, 1989) to determine the elements of each country's flower industry; and the third method involves the compilation of a Policy Analysis Matrix (PAM) (Monke, *et al.*, 1990).

5.2 Background

Can South Africa be competitive in the international flower market? The competitiveness of Zimbabwe and Kenya in the international arena prove that African countries have the ability and potential to compete in Europe.

South Africa could feature among the top ten flower exporters in the world. In 1993 and 1994 South Africa was ranked the fifteenth largest exporter of cut flowers but in 1995 and 1996 SA dropped to the seventeenth position (Table 5.1). South Africa's competitiveness in terms of the southern African region can be summed up as follows: South Africa has advantages in the form of the region's most advanced economic and physical infrastructure and the largest and most complete (domestic) floriculture industry and market. South African manufacturers can supply nearly any input needed for floriculture and the country has the best logistics and freight situation. However, South Africa also faces numerous disadvantages that are unique to the region. These include high import tariffs in the European Union, less favourable climatic conditions for floriculture production, relatively high and increasing labour costs, labour unrest, difficulty with organising growers who are scattered over such a large geographical area, a lack of motivation to export and a good local market, but one with low standards that do not prepare growers for competing overseas. So far, the balance of these factors has not stimulated the large-scale development of cut flowers for export (Van der Meer, 1996; Malter, *et al.*, 1996).

The production of local growers decreases during the relatively cold winter season in South Africa and Zimbabwean, Zambian and Kenyan growers target South Africa as an export destination. The relatively mild winters in Zimbabwe and Zambia allow growers there to continue producing from May until the end of September.

Table 5.1: Cut flower exports to European markets

Rank				Exporting country	1996	1995	1994	1993
96	95	94	93		$'000	$'000	$'000	$'000
1	1	1	1	Netherlands	1 848 130	1 766 963	1 524 603	1 332 336
2	2	2	2	Israel	151 783	144 721	136 855	110 820
3	4	4	4	Kenya	105 350	98 170	70 014	60 324
4	3	3	3	Colombia	102 679	107 651	101 207	110 915
5	5	5	5	Italy	78 962	78 006	67 344	46 848
6	7	6	6	Spain	55 174	43 082	42 670	28 346
7	6	7	7	Zimbabwe	52 818	50 264	34 376	27 153
8	8	10	12	Ecuador	34 335	29 823	19 349	11 630
9	9	8	9	France	28 269	29 680	27 654	13 525
10	12	12	10	Germany	22 595	17 739	13 715	12 578
11	10	9	8	Thailand	22 209	25 532	24 575	25 887
12	11	14	16	Bel/Lux	19 658	18 416	12 332	6 677
13	13	11	13	Turkey	14 761	12 729	12 587	12 022
14	14	13	11	Canary Islands	12 921	16 624	13 950	10 112
15	15	29	14	Morocco	12 442	14 210	12 991	11 560
16	16	16	17	United Kingdom	11 658	10 261	7 001	4 138
17	17	15	15	South Africa	10 172	9 433	8 930	7 589

Source: IFTS, 1997

In spite of the 20% tariff on imported cut flowers, these imports from African countries still offer competition for local producers during the winter months. However, most of the farmers interviewed stated that this increased supply of flowers has expanded the demand for cut flowers in the main SA production season. This corresponds with observations in other countries such as Mexico, where South American countries have entered the Mexican market (Van Rooyen, 1997).

5.3 Determinants of Competitiveness

This method as developed by Porter (1990) and described in Chapter 4 will now be used for presenting a broad overview of the factors influencing the competitiveness of the South African and Australian flower industries.

5.3.1 Factor conditions

In past years, factor conditions were regarded as almost the only way for a country to gain a competitive advantage. Factor theory can partly explain the increasing success of flower exports from such countries as Colombia, Kenya, Sri Lanka, Malaysia, Thailand and Zimbabwe; all of which, to varying degrees, are generally well endowed with the basic factors of production (Batt, 1994).

The position regarding the factors of production necessary to serve both the South African and Australian flower industries should be explored so as to define the role that these factors play in creating a competitive advantage. These factors can be categorised as human resources, physical resources and infrastructure, and are discussed below.

5.3.1.1 Human resources

The management and administration of the farm require skilled people. The owner usually takes care of the technical, financial and marketing management of the farming business, but it is not uncommon for the owner to employ a manager to assist with management tasks. An administrative person is usually appointed on a full-time basis. Porter (1990) states that the availability and degree of excellence of skilled people will ensure a strategic or sustainable competitive advantage. The superior production knowledge and efficiency of the Dutch flower growers and marketers are a good example of their sustainable competitive advantage over growers in other countries (Maharaj *et al.*, 1995).

Flower farming is a perfectionist activity requiring skill and talent from each labourer. Due to the emphasis on quality, labourers must be trained to perform precise and sometimes complex tasks, such as pruning, spraying, fertilising, harvesting, irrigation and packaging. Therefore the labourers have to be semiskilled, as well as able and willing to learn.

South Africa and Australia both have tertiary training facilities such as universities, colleges, and agricultural schools that offer a high standard of horticultural and farm management training, with the result that people skilled in these fields are available in both countries

In South Africa a typical traditional cut flower farm employs between 15 and 25 full-time labourers per hectare (de Bruin, 1998). However, labour requirements and costs vary from

one flower variety to another and from farm to farm. Labourers in South Africa are generally regarded as less expensive but also less productive than European or Australian labourers. Labour activism in South Africa is also regarded as a significant problem, owing to ongoing labour strikes and increasing friction with trade unions about wage increases (Malter *et al.*, 1996).

South Africa's wage rate is higher than in other African countries. In South Africa labour costs on traditional flower farms range between 10% and 20% of the annual operating costs (excluding manager cost) whereas labour costs in Zimbabwe and Zambia come to between 6% an 8% of their annual operating costs (including manager cost). There is a great deal of European investment in African countries like Zimbabwe, Zambia, Uganda, Kenya and Malawi because cheap labour is available. South Africa's higher wage rate hampers competition in this regard, but is still an advantage in comparison to the high labour costs in Europe, which range between 30% and 40% of annual operating costs (White, 1996).

Labour costs on traditional flower farms in Australia range between A$10 and A$13 per labourer per hour (Young, 1998) and are estimated to contribute to about 50% of operating cost (Hardy, 1993).

When comparing the labour costs for native flower production in Australia and South Africa, the following came to light: the labour cost of producing proteas in Australia will comprise almost 90% of annual operating costs, while labour makes up 81% of operating costs to produce waxflowers (Karingal Consultants, 1998). South Africa's labour cost is much lower as wages contribute to only 42% of the operating cost (Department of Agriculture – Western Cape, 1997).

To conclude, it is evident that South Africa has a strong competitive position regarding the availability of low-cost labour. By contrast, Australia has high labour costs which have been claimed to be the single most detrimental attribute affecting the competitiveness of the Australian flower industry (Young, 1998).

5.3.1.2 Physical resources

The influence of abundance, quality, accessibility, and cost of resources like land, water, soil, and climatic conditions have major influences on the competitiveness of an industry (Porter, 1990).

Biological diversity

Both South Africa's and Australia's strength in the world flower market lies in its biological diversity and the opportunity available to develop valuable 'new' lines of wildflowers for the world cut flower market (Nederwieser, *et al.*, 1997; Lewis, 1997). As Craig Musson (1998), Managing Director of Westralian Flora Exports commented "We have a gene pool which is the envy of every flower producing country in the world". For flowers with market appeal, it is the attribute of 'newness' that makes such flowers attractive to buyers. An opportunity exists for Australia to continually introduce new flowers ahead of competitors and obtain a premium price once the market accepts them. Development systems to continually bring new lines to the market will help the Australian industry increase its sales of flowers (Lewis, 1997).

Australia faces competition from countries such as South America and Southern Africa that can grow wild flowers, have lower production costs and are closer to potential markets. This places Australian growers in a weak position if they continue to rely on a limited range of flowers. Furthermore, if Australia does not develop its potential flower species, it risks having other countries developing more of its species and of growers losing that advantage. Australia also faces the threat of other countries developing their own wildflowers; South Africa, in particular, has a pool of potential cut flower species that could provide a competing source of 'new' flowers of a similar type to Australian flowers in the world market.

Thus, both Australia and South Africa have a large gene pool of potential flower species for the production of 'new flowers'. This attribute places them both in a very competitive position with respect to the rest of the world.

Land

In South Africa and Australia the soils are generally regarded to be of good quality and cut flowers can be produced without too many additives (Young, 1998). In South Africa the Muldersdrift / Honeydew area is are an example of ideal soil for flower production and a large percentage of growers have chosen this area for production (Malter, 1996). High quality land close to markets and transport links In both Australia and South Africa are estimated to be R40 000 / ha (Collins, 1998) and R50 000 / ha (De Bruin, 1998) respectively.

According to Young (1998) buying land for the specific purpose of producing native Australian flowers will not be economically viable; the establishment cost will be too high to cover. The option of renting land is also not feasible, since a rental market for agricultural land is virtually non-existent in Australia. All the growers of wild flowers either embarked on the production of flowers as a secondary farming activity to diversify risk or to occupy vacant pieces of land on their farm. Often low quality soils are used and sometimes preferred due to the greater control over the exact soil requirements.

In South Africa a rental market for agricultural land does exist and numerous flower growers make use of this option. This is especially common practice among native flower growers (Wessels, 1998).

In summary, it is difficult to establish which of the two countries are in the most competitive position with regard to land. Both seem to have abundant good quality soil at reasonable prices. However, in Australia a rental market for land is virtually nonexistent where as in South Africa the market for rental land is part of the system. It be concluded that South Africa will have a slight advantage over Australia.

Geographical position

A few years ago it was generally believed that African countries were going to supply Europe, South American countries were going to supply the United States and that Australia would supply Japan with flowers. But, this theory was proven to be weak by Colombia (the second largest producer of cut flowers) supplying most of its produce to European markets, and Australia supplying a large percentage to the United States (Young, 1998). South Africa's closest export market is the Western European market, only an eight-hour flight away. Australia is much closer to Japan and the U.S.

South Africa is in the same time zone as most Western European countries, making it possible for a South African grower, marketer to do business with European companies during a normal working day. In a world of instantaneous global communications, South African exporters to Europe (world wide the most popular export destination) will have this advantage over many other countries like Colombia, Australia etc. that compete in the same market. Australia is more or less in the same time zone as Japan and they will have similar advantages over South Africa when competing for Japanese market share than South Africa have over Australia when competing for European market share.

Climate

Flowers are very sensitive to climate and generally require high light intensity, mild temperatures, and high relative humidity of 65% to 70%. The light intensity should be as high as possible, but high levels of radiation can result in temperatures that are too high. The ideal day temperature is 24°C to 29°C, while the best night temperature is 15°C to 18°C. Higher day temperatures than the above are only acceptable when air humidity is raised and evaporation slowed. As the temperature rises a crop will show the following responses:

- Flower production increase if temperature is not above 27°C.
- Flower colour has the tendency to fade with increasing temperatures.
- The number of petals drops dramatically at higher temperatures; few petals produce a soft bud that opens quickly and has a short vase life.
- Stem length decreases with increasing temperature. On the world flower market, prices increase in proportion to stem length.

In general, higher temperatures give greater yields but lower quality (Plaisier, 1998).

The above description of ideal climatic conditions may imply that South Africa and Australia have a competitive advantage over the most large European flower producers where climatic conditions are far from ideal with long, cold and dark winters. However, in comparison to large flower producing countries in Africa, South America and the Middle East, South Africa and Australia does not have a competitive advantage. Local growers believe that unfavourable climatic conditions are the fourth largest factor that negatively influence South Africa's competitiveness with the rest of Africa (See Chapter 2, Figure 2.18).

Australia has at least ten geographic regions and varied climatic conditions, thus enabling it to produce a wide range of traditional, exotic and native flowers (FECA,1996). However, it is also believed that Australia's weather is both too extreme and too variable to create a competitive advantage over countries such as Zimbabwe, Kenya, and Colombia.

Both countries are generally regarded as countries with good weather conditions, long summers and mild winters. Most of the areas occupied by growers in Australia and South Africa have suitable climate for flower growing. Most of South Africa's growers are concentrated in the Johannesburg / Pretoria area where mild weather at high altetude are close to ideal for flower growing. Australia's growers are all situated around the major cities like Melbourn, Sydney and Brisbane where wheather conditions are less favourable than that of Johannesburg and Pretoria.

Physical infrastructure

Infrastructure is very important to the success of perishable exports. In comparison to other African flower producing countries, South Africa has very good infrastructure. In the past Zimbabwe made use of the developed South African infrastructure by transporting truck loads of cut flowers to Johannesburg International Airport and exporting from there. South Africa is serviced by 54 airlines and nearly 10 international flights per day, many direct to markets in Europe. South Africa pays less than other African exporters as shown in Table 5.1 due to more competition among carriers, more southbound cargo and a larger off-season volume.

Table 5.2: Guideline air freight rates from Africa to Europe ($ / kg) 1995

Type of aircraft	Product	Zambia	Zimbabwe	South Africa	Kenya
Passenger	Vegetables	1,50	1,60	1,35	1,50 – 1,60
Passenger	Flowers	2,60	2,55	1,87	
Freighter	Vegetables	1,45	1,83	1,35	
Freighter	Roses	2,22	2,80	1,87	1,95 – 2,22
Freighter	Summer flowers	1,81	2,29	1,87	1,60 – 1,80
Freighter – Total cost ($)		56 000	70 000	55 000	50 000 – 55 000

Notes: Rates shown include 5% freight forwarder's commission
Rates per kilogram were calculated from rate per pallet
Rates in some countries may vary by airline
Rates may be considerably less in off-season

Source: TDI/Landell Mills Ltd / Doxiadis Associates, Zega - Development of Air Freight Strategy, Zambia export development programme, June 1995

Another important form of infrastructure is cold transport. Even though there is a well-developed network of cold transport services available in South Africa, only a few South African producers make use of cold transport. When flowers are not kept cold during transport, the result is a loss in the quality of flowers between the farm and wholesaler, retailer or consumer. This loss in quality is a critical issue if producers want to produce high-quality flowers for the export market. Flowers are highly perishable and every hour after harvesting, even in cold storage rooms and cold transport, will cause a decline in quality. Therefore exporters cannot expect to compete with the fresh flowers available – sometimes only a hour after harvesting – on the European markets, unless they use cold transport from the farm to airport.

Australia also has a highly developed infrastructure with excellent roads, an extensive network of cold transport services and arguably the best communication system in the world (Musson, 1998). In Australia there is fierce competition among airlines, especially on routes to Japan and the USA, consequently freight costs are relatively low. However, over the peak

harvesting and export season (September to December) the limited air freight capacity is an increasing cause for concern as the air freight requirements for cut flowers are growing at a rate of 10% - 20% per annum (Karingal Consultants, 1997; Young, 1998).

Information infrastructure

The production technology for traditional flowers in both South Africa and Australia is mainly imported from Europe and adjusted by consultants, growers and institutions to make it more suitable for local conditions. This technology boosts productivity but producers have to realise that this technology was developed under vastly different conditions than those prevailing in South Africa or Australia. The main problems for European technology are as follows:

- Adverse weather conditions
- Limited availability of land
- High cost of labour

These conditions will encourage European technology to alter the effect of bad weather conditions on flower production and restrict the number of labourers by using capital-intensive technology. By contrast, labour is relatively cheap in South Africa and Australia, and this will require a more labour-intensive technology. Moreover weather conditions are better than in Europe.

In South Africa the information infrastructure that forms a link between the researchers and the growers of traditional flowers is weakly developed. There is virtually no contact between the informational centres in South Africa and the grower, largely because growers lack confidence in these institutions (see Chapter 2; section 2.6.3.1). As far as the South African indigenous flower industry is concerned, the growers rely more on the information disseminated by research institutions. The ARC - Fynbos information service is the most prominent source of information and consists of publications, extension services, consultations and training courses (Wessels *et al.*, 1997).

South Africa does have a history of research into agriculture and, as a result, general climate and soil data have been collected in South Africa for many decades and are used by some local floriculture advisers. Although scientific floriculture information systems are limited in capacity, there are some institutions to support the knowledge information system available to

South African growers. The efforts by several institutions were discussed in Chapter 2; section 2.2.

The informational infrastructure developed in Australia is mainly focused on the Australian wildflower industry. Numerous research reports have been published and the infrastructure to support growers with production and market research does exist (Young, 1998). Institutions developed for this purpose are the Native Flower Group, Rural Industries Research and Development Corporation (RIRDC), the Horticultural Research and Development Corporation (HRDC), universities, Austrade, the Department of Foreign Affairs and Trade and the Department of Primary Industry (Karingal Consultants, 1997).

5.3.2 Home demand conditions

The most important influence that home demand has on competitive advantage is the mix and the character of the household buyer's needs (Porter, 1990).

South African and Australian consumers do not have a culture of buying flowers. South Africa's per capita consumption expenditure on flowers averages approximately R3,04 (see Chapter 2; section 2.2). Australia's per capita consumption expenditure on flowers is estimated at between R48 and R58 per annum (Karingal Consultants, 1997). By contrast, Switzerland has the highest per capita consumption expenditure in the world, averaging R385,53 on flowers. A complete list of per capita consumption statistics is given in Table 2.3.

South Africa

The relative attractiveness of distant export markets has diminished for South African growers because of the domestic market that is large enough to purchase all their production at reasonable prices and without the competition and complications involved in export sales.

Another hindrance to competitiveness is that local buyers are not as quality conscious as European buyers. Therefore the local buyer does not pressure local growers to innovate faster and achieve more sophisticated competitive advantages than their foreign rivals.

Well-established flower growers in South Africa may have benefited unduly for many years by, until very recently, having an isolated domestic market. Some producers also seem to

lack the motivation to modernise and take the steps necessary to launch successful export drives or compete against new imports.

Growers in countries such as Zimbabwe and Kenya realised that the South African market with its relatively low quality demands would be an ideal market for the low-quality flowers that would not be acceptable on the European markets. These countries are now dumping large quantities of flowers (especially roses) on the South African market.

Conseqeuntly, it can be concluded that the domestic demand in South Africa does not contribute positively to South Africa's competitiveness in the international arena.

Australia

Australia has a small market for flowers seen in the context of the world flower trade, with a population of about 18 million (1995) and an estimated consumption expenditure of R1,2 billion on flowers (FECA, 1996; Karingal Consultants, 1998; James, 1996).

More than 90% of flowers purchased by Australian consumers are exotic or traditional flowers. Like South Africans, Australians do not have a culture of buying flowers. Purchasing trends are confined to special occasions, and per capita flower consumption is relatively low. Personal consumption expenditure appears to be closely linked to economic conditions. The market is also price sensitive. For example, a recent Sydney Market Authority survey indicated that there are price barriers at A$6 and A$12 for flowers for personal use and that the usual amount spent for special occasion purchases ranges from between A$20 to A$30. Such purchases face competition from other gift lines such as alcohol, confectionery, artificial flowers and soft toys. Supermarket and roadside sales have contributed to the increased impulse buying of flowers (Lewis *et al.*, 1997; Karingal Consultants, 1994).

When compared with countries in the northern hemisphere, countries such as Australia are poor consumers of cut flowers, but Australia is gradually catching up. The Australian population growth rate is about 1,1% per annum and flower consumption is projected to increase by 5% per annum (Yencken, 1997). Flowers are increasingly being distributed via supermarkets (following trends in the United States and more recently in Europe) and will reach more target customers and can provide better quality at more affordable prices. This

trend will have a positive effect on the per capita consumption expenditure on flowers (ACIAR, 1996).

The reason for South Africa and Australia's low per capita consumption expenditure on flowers is that consumers in these countries do not have to endure the harsh winters of countries like Germany or Switzerland, where a fresh bunch of cut flowers is essential to add colour to the grey and gloomy days. Most Australians and South Africans have home gardens but this is seldom the case in Japan or Europe (Lynch, 1988).

5.3.3 Related and supporting industries

The presence or absence in the nation of supplier industries and related industries that are internationally competitive, has a major influence on an industry's competitiveness (Porter, 1990). Both South Africa and Australia have excellent industries able to supply almost every input necessary for flower production at a price that can compete with that of imported products. These products include greenhouses, EC controllers and spray equipment, fertilisers, and chemicals.

5.3.4 Strategy, structure and rivalry

The fourth broad determinant of competitive advantage in an industry is the context in which entities in the flower industry are created, organised and managed as well as the nature of domestic rivalry (Porter, 1990).

As growers in both Australia and South Africa do not give much support to industry organisations, it is difficult for these organisations to create a structure and strategy for the industry (De Bruin, 1998; Young, 1998). The primary role of any industry organisation is to obtain benefits for and represent the interests of its members. This lobbying and representative role is crucial in dealing with government at all levels (Karingal Consultants, 1993). Governments will listen to the views of a well represented, coherent industry when given by an organisation that is clearly recognised as representing that industry.

There is a strong association between vigorous domestic rivalry and the creation and persistence of international competitive advantage in an industry (Porter, 1990). Nations with leading positions in the world almost invaribaly have a large number of strong local rivals

whereas firms with limited local rivalry are seldom highly competitive. The availability of close substitutes limits the price competitors that can charge without inducing substitution and eroding industry volume. A large number of competitors will push down margins as they seek to increase their market share (Porter, 1990).

South Africa

Figure 5.1 illustrates the factors that give structure to the floriculture sector in South Africa:

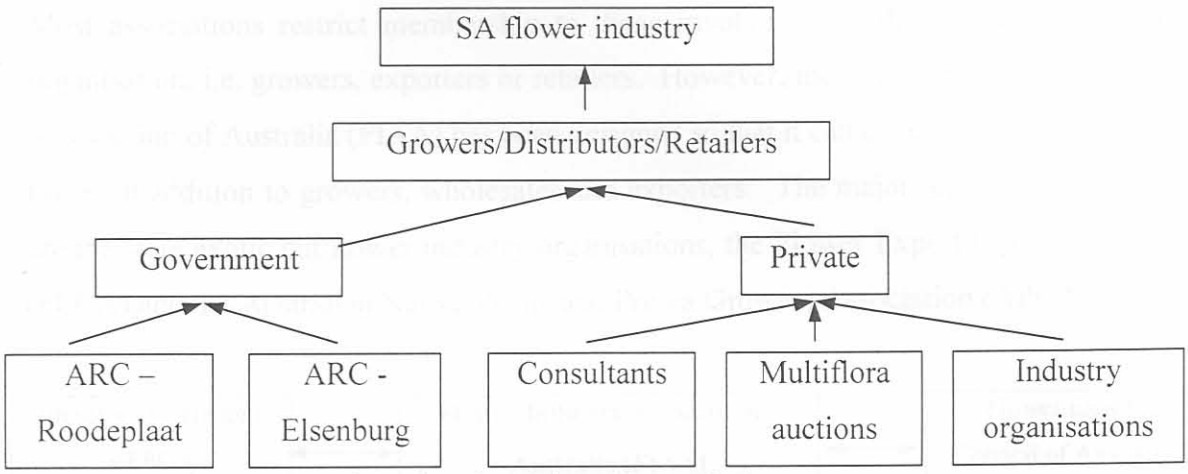


Figure: 5.1: Structure of the South African flower industry

The elements in this structure are discussed in Chapter 2, section 2.2.

There is strong competition on local markets in South Africa. Growers tend to be extremely secretive to maintain or create a competitive advantage. Most South African growers are situated in the Johannesburg and Pretoria region. The rivalry among growers in this area is intense, especially where there is a high concentration of growers in a particular area, often literally a stone's throw from one another. The reasons for this concentration are access to well-developed infrastructure, mild weather conditions, close proximity to the largest local distribution channel (Multiflora) and easy access to Johannesburg International Airport for exports.

The factors of strategy, structure and rivalry cannot be regarded as important to creating a competitive advantage for the South African flower industry. Flower growers are unable or unwilling to co-operated with increasing their production and marketing capacity. Even though domestic rivalry is apparently keen, it cannot prepare the grower to produce flowers of

a high quality for the export market. However, the Multiflora auctions, which are the central point of the distribution channel, can be regarded as a strategic part of the infrastructure.

Australia

In Australia fewer than 25% of the eligible people or organisations are members of their industry associations. However, in most cases the associations nevertheless represent a major proportion of production and are influential in the industry (Karingal Consultants, 1997). Most associations restrict membership to those involved with the primary interest of the organisation, i.e. growers, exporters or retailers. However, the newly created Flower Industry Association of Australia (FIAA) has been designed so that it can cover retail florists and allied trades in addition to growers, wholesales and exporters. The major representations of FIAA are the state exotic cut flower industry organisations, the Flower Export Council of Australia (FECA) and the Australian Native Plants and Protea Growers Association (APGA).

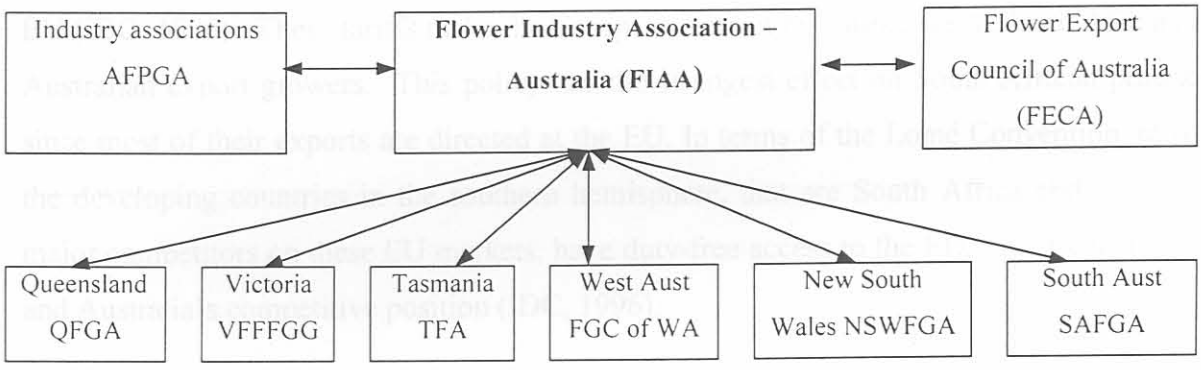


Figure 5.2: Flower industry organisations in Australia

Source: FECA (1996)

FECA is a key institution for the wildflower industry, since it exports more than 50% of its production and accounts at present for 94% of flower exports. FECA has been active in negotiations for market access, the promotion of trade (trade shows in Japan, USA, Taiwan and Indonesia) and the promotion and development of the quality assurance (QA) programme. FECA is highly regarded overseas especially in Japan (Young, 1998). However, FECA does not have the support of all growers.

The Australian and South African growers have a remarkably similar attitude. Australian growers tend to be very secretive about any knowledge they gain. This is especially obvious

in the relationship between Western Australian wildflower growers and East Coast growers, among whom no love is lost (Young, 1998).

5.3.5 Government

Porter (1990) claims that firms compete internationally, not nations. Governments cannot create competitive industries, as a government does not control nor is it the source of competitive advantage, it can only influence it. The role of the government should be to stimulate investment, to encourage the introduction of more sophisticated technology, assist firms to penetrate more advanced segments, encourage competition and upgrade demand conditions. In world floricultural production the influence of government intervention has a strong effect on the competitiveness of growers, especially in the EU.

Currently South African and Australian flower exporters have to pay an 18% tariff from 1 June to 30 October and a 12,7% tariff from 1 November to 31 May on goods exported to the EU (IDC, 1996). These tariffs make the European market less attractive to South African and Australian export growers. This policy has the strongest effect on South African producers since most of their exports are directed at the EU. In terms of the Lomé Convention, most of the developing countries in the southern hemisphere, that are South Africa and Australia's major competitors on these EU markets, have duty-free access to the EU, thus weakening SA and Australia's competitive position (IDC, 1996).

Both Australia and South Africa have to compete with flower growers, especially those in the EU, that receive government subsidies and grants in order to maintain their competitive position in the world. The Dutch government has recognised that floricultural production is an area in which the Netherlands has a lead, which should be maintained through technological development. In order to maintain this lead, grants and subsidies are available for companies conducting research into such areas as biotechnology, the cultivation of new species, the development of installations for the mechanisation of processes, environmental protection and energy conservation measures. Dr J W Vriethof of BNS states that it is possible to obtain from the Dutch government, grants of up to 40% for technological development and 50% - 60% for research. Further grants are available from European Union funds. Small and large companies are both eligible, but bigger companies have easier access to grants because their research projects tend to be more ambitious. Individual grants usually

range from 200 000 to 300 000 Dutch guilders, but bigger projects may receive up to one million guilders (Maharaj *et al.*, 1995).

South Africa

South African trade has for many years been handicapped by the economic sanctions that isolated South African producers from international competition. These sanctions denied South African flower growers access to the Dutch auctions and to other national markets where other Southern African countries had laid the groundwork for a takeoff in exports during the crucial years of the late 1980s (Malter *et al.*, 1996).

South African growers producing for the local market face stiff competition from Kenyan, Zimbabwean and Zambian exporters who are increasingly focusing on South Africa as an export destination. Imports of cut flowers grew by 67% during 1994, 49% in 1995 and 126% in the first 6 months of 1996. According to the IDC (1996), imports from these countries accounted for 40% of produce on the local market. However, 80% of this produce was imported during the South African winter when local production is low.

South African growers also complain about the unfair competition and under-invoicing that reduce the duties paid on the value of imported flowers. An *ad valorem* tariff of 20% is levied on imports and, according to trade statistics, the average import price for roses is about R0,15 per stem. These imports comprise about one-third of the low-quality flowers on Multiflora auctions (IDC, 1996). Another role that government could play is in improving phytosanitary supervision and control. Therefore it is important for the competitiveness of the industry on the local market that the government should enforce the correct payment of import tariffs. South African growers would also benefit if trade barriers on the imports of plant material were liberalised but this would require better phytosanitary supervision and control.

South African growers also have to compete on the European markets with countries where assistance from the government plays a vital role, but assistance from the South African government is virtually non-existent, except for the ARC that makes a limited contribution to research and the distribution of information.

Australia

As far as tariff and non-tariff barriers to trade are concerned, Australia's major market, Japan, does not charge an import tariff on flowers. But the United Sates of America, Australia's second largest export destination, charges the tariffs shown in Table 5.3.

Agricultural input items imported to Australia are generally not subject to import tariffs. Should there be a tariff it would probably not exceed 5%. Possible imported input items used by Australian flower growers are listed below in Table 5.4. Some of the items listed below were subject to sales tax, but a new Goods and Services Tax (GST) of 10% will be introduced shortly, which will be payable on all input and services.

Table 5.3: USA import tariffs on flowers

USA import Tariffs on Flowers	
Description	**Tariff**
Mini carnations	3,5%
Roses	7,2%
Standard carnations	6,9%
Orchids	6,9%
Chrysanthemums	6,9%
Anthuriums	6,9%
Other (including South African and Australian native flowers)	6,9%

Source: APEC, 1998

Table 5.4: Distortions on input items in Australia

Items	Import duty	Sales tax	GST
Equipment, tools, etc.	5%	20%	10%
Greenhouse	5%	20%	10%
Irrigation equipment	0%	0%	10%
Spray equipment	5%	20%	10%
Fertilisers	0%	0%	10%
Chemicals	0%	0%	10%
Pipes	5%	0%	10%
Electronic equipment	5%	20%	10%
Cold storage	0%	0%	
Water tanks, stands	0%	0%	10%
Pumps	0%	0%	10%
Tractor			10%
Utility vehicle		15%	10%

Source: Customs and Excise, 1998

Australia does not charge any tariffs on flower imports (APEC, 1998). Large producers of low-cost flowers, such as Zimbabwe, Malaysia and South Africa (FECA, 1998), are increasingly viewing Australia as a viable export destination. Australian exotic or traditional flower growers admit that they cannot compete with these countries and that there is growing uncertainty about the future for growers of roses, carnations and chrysanthemums (FECA Update, 1998).

Government research is mainly focused on the Australian wildflower industry. Numerous research reports have been published and the infrastructure to support growers with production and market research does exist (Young, 1998). The institutions established for this purpose are the Native Flower Group, Rural Industries Research and Development Corporation (RIRDC), the Horticultural Research and Development Corporation (HRDC), universities, Austrade, the Department of Foreign Affairs and Trade and the Department of Primary Industry. The RIRDC currently spends a rate of about 2,5% of gross Production

Value (PV) on the R&D of the wildflower industry, while other agencies and individuals have an expenditure of an approximate additional R3,4 million. Karingal Consultants (1997) suggest that there is a need for a progressive increase in R&D funding to at least R6,8 million per annum and an additional R7 million to R10 million over the next 10 years to fund the commercial development of new products from underdeveloped Australian native germ plasm.

Government research on the production and distribution of traditional or exotic flowers is non-existent and the growers of these flowers rely heavily on European consultants and the research conducted in Europe. However, the public sector makes grants and funds available for the development of agribusinesses. These funds and grants are potentially available to growers of indigenous and traditional flowers (Karingal Consultants, 1994).

In general, government research in Australia still tends to focus heavily upon the need for on-farm productivity gains without necessarily examining the opportunities for such gains throughout the entire supply chain (Gleeson *et al.*, 1994).

5.3.6 Interpreting the results

To "quantify" this qualitative analysis, a multicriteria analysis was conducted where values were awarded to each of the criteria identified above. An award schedule was developed in order to quantify performance. If a country has a low competitive advantage in a certain field identified it is awarded 1 point, a mediocre (Medium) competitive advantage scores 3, high competitiveness 5 and very high 8. A country can also score between low and mediocre which will be classified as "Low+" and 2 points will be awarded, and similarly for "Medium+", "High+ "and "Very High+". Table 5.5 represents the performance-award schedule.

The evaluation of the performance of the countries in a specific determinant was based on the published facts and general attitudes of industry experts, as portrayed in the literature studied.

Table 5.5: Performance-award schedule

Performance	Points awarded
Low	1
Low+	2
Medium	3
Medium+	4
High	5
High+	6
Very High	7
Very High+	8

Before conducting this analysis, the following assumptions had to be taken into consideration:

1) Each of the five determinants was weighted equally

- Factor conditions 20%
- Home consumption 20%
- Related and supporting industries 20%
- Structure, strategy an rivalry 20%
- Government 20%

2) The scale is linear

3) There are no absolute threshold values for any criterion

Table 5.6: Results derived from analysing the determinants of competitiveness

Criteria	Performance		Score	
	SA	Austr	SA	Austr
Factor conditions	**High**	**Medium+**	**4,8**	**3,8**
• Human recourses	High+	Low+	6	2
□ *Semiskilled labour (wages)*	*High+*	*Low+*	*6*	*2*
□ *Skilled labour*	*High*	*High+*		
• Physical resources	High	High	5	5
□ *Biodiversity*	*Very high*	*Very high*	*7*	*7*
□ *Land*	*High+*	*High*	*6*	*5*
□ *Climate*	*High*	*Medium+*	*5*	*4*
• Infrastructure	Medium+	High	3,5	4,5
□ *Physical infrastructure*	*High*	*High+*	*5*	*6*
□ *Informational infrastructure*	*Low+*	*Medium*	*2*	*3*
Home consumption	**Medium+**	**Medium**	**4**	**3**
Related & supporting industries	**High**	**High+**	**5**	**6**
Strategy, structure & rivalry	**Low+**	**Medium+**	**2,3**	**3,7**
• Domestic rivalry	Medium	Medium	3	3
• Structure	Low+	Medium+	2	4
• Strategy	Low+	Medium+	2	4
Government	**Medium**	**Medium**	**2,7**	**3,3**
• Research	Low+	Medium+	2	4
• Industry protection	Medium+	Low+	4	2
• Accessibility of export markets	Low+	Medium+	2	4
Total	**Medium+**	**Medium+**	**3,76**	**3,96**

It should be kept in mind that the main aim of this approach is to lay a broad foundation for a more specific study. As this method is mainly a descriptive analysis, the competitive position of the industries can be compared for the individual determinants. However, comparing the competitiveness of the industries by taking all the determinants into consideration would require a highly complex multicriteria analysis in which weights should be assigned to each industry's individual determinants. As stated in the assumptions above, each of the five

determinants is weighted equally in the present analysis. This can be regarded as a weakness and will decrease the validity of the results of this analysis, but this methodology will still provide some insights into the competitiveness of these industries, especially when comparing the individual determinants.

The results presented in Table 5.6 indicate that the Australian flower industry has a slight competitive advantage over the South African flower industry. The competitive advantage that Australia has over South Africa is due to (1) superior related and supporting industries, (2) greater capacity in its structure and strategy, (3) better developed physical and information infrastructure, (4) higher capacity of government research programmes and (5) greater access to export markets.

However, these determinants in which Australia and also large European flower-producing countries excel are not necessarily the most important. As floriculture is such a labour-intensive industry, countries with lower labour costs and suitable weather conditions, such as Colombia, Kenya, Zimbabwe and South Africa, have shown remarkable growth in recent years.

The determinants that can be considered to be the main contributors to South Africa's competitiveness when compared to those of Australia are: (1) low labour cost, (2) accessibility to land and a more favourable climate, (3) larger growth potential for home consumption and (4) greater government protection of the industry.

Both South Africa and Australia can be considered as mediocre competitors in the world flower industry. However, both countries have a great biological diversity of indigenous wildflower species, which are the envy of every flower-producing country in the world. As the flower industries in both countries are relatively young and underdeveloped, high growth rates can be expected.

5.4 Revealed Comparative Advantage

5.4.1 South Africa

Balassa's (1989) proposed Revealed Comparative Advantage / disadvantage (RCA) of the South African floriculture sector and also the subsectors within the floriculture sector can be calculated by substituting the trade data in Table 4 (Annex 1) into the equations developed by Balassa (1989) and described in Chapter 4. These subsectors include the flower, cut flower, cut foliage and house plant sectors. In the calculation 1994 and 1995 were regarded as time period 1 and time period 2 respectively.

Table 5.7: RCA analysis – South Africa

	Equations[1]	Results				
		Floriculture	Flowers	Cut flowers	Foliage	House plant
1	$(Xaj^{i} / Xwj^{i}) / (XAt^{i} / Xwt^{i}) = xAj^{i} / xA^{i}$	1,093	0,735	0,747	6,955	0,406
2	$(Xaj^{ii} / Xwj^{ii}) / (XAt^{ii} / Xwt^{ii}) = xAj^{ii} / xA^{ii}$	1,114	0,716	0,713	7,228	0,476
3	$(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})$	1,019	0,974	0,955	1,039	1,174
4	$(xAj^{ii} / xA^{ii}).(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})$	1,134	0,697	0,681	7,511	0,559
5	$1/2\ [(xAj^{ii} / xA^{ii}) + (xAj^{ii} / xA^{ii}).(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})]$	1,124	0,707	0,697	7,370	0,518

The result of equation 5 indicates whether or not the sector will have a comparative advantage. The results are shown in Table 5.8.

Table 5.8: Results derived from the RCA analysis – South Africa

	Floriculture	Flowers	Cut flowers	Cut foliage	House plants
Comparative (dis)advantage	1,124	0,707	0,697	7,370	0,518

The results shown in Table 5.8 represent the comparative advantage (disadvantage) of the total floriculture, flower, cut flower, cut foliage and house plant sectors in South Africa, compared to the performance of other agricultural sectors and world exports. As described in Chapter 4 any figure greater (less) than 1 represents a comparative advantage (disadvantage).

[1] Symbols used in equations are defined in Chapter 3

The total floriculture sector shows a comparative advantage of 1,124. This comparative advantage is largely due to the high comparative advantage of cut foliage (7,37). However, the flower and cut flower sectors show a comparative disadvantage with figures below one, at 0,73 and 0,70 respectively.

It is important to note that the comparative advantage / disadvantage calculated for each sector represents firstly, the relative share that of the different South African floriculture sectors have in world exports, secondly, the export performance of other agricultural sectors and thirdly, how the share changed between 1994 and 1995.

The comparative disadvantages of the flower (0,70), and cut flower (0,69) sectors are mainly due to the relative share of world exports (of flowers and cut flowers) which is lower than the relative export share of the South African agricultural sector as a whole. For example, in 1994 the flower sector's share was only 0,4% and the cut flower sector only 0,41% (Table 6) while the share of agricultural exports as a whole in 1994 was 0,55%. This relatively low share of world exports by South Africa may be due to a combination of the following factors

(a) Political isolation forced the South African flower industry out of international competition.
(b) Large growers who supply the local market and who have been involved with floriculture for many decades dominate the South African flower industry. Most large flower growers concentrate on local demand and are reluctant to export.
(c) The distribution channels for South African exports are poorly developed.
(d) The South African market is satisfied with a much lower quality than the European market.

Consequently the growers are not prepared to produce flowers of consistently high quality so as to comply with international standards.

Between 1994 and 1995 South African flower exports increased in value from R30 347 030 to R33 918 210 and cut flower exports increased from R23 128 700 to R25 374 770. However, the comparative disadvantage of the flower and cut flower sectors has increased because the relative share of these two sectors in world exports declined between 1994 and 1995.

Owing to a lack of data for previous years, the actual growth rates in the relative share of the different sectors over the past few years are not accurately reflected in equation 5 and may give the wrong impression.

5.4.2 Australia

The Revealed Comparative Advantage / disadvantage (RCA) of the Australian flower industry as a whole and also subsectors within the flower industry was calculated as proposed by Balassa (1989). These subsectors include the wildflower industry, traditional flower industry and waxflower industry.

The data required to calculate the comparative advantage / disadvantage of the Australian flower industry were sourced from the FAO statistics web page, the Australian Bureau of Statistics (ABS) and the IFTS (1997). Time series data over the period 1994 to 1996 were used for calculating the RCA for the flower industry. Time series data to calculate the wildflower and waxflower industries were inadequate. However, by combining the estimates that industry experts made in various publications (ACIAR, 1996; Karingal Consultants, 1997; FECA, 1996) data could be gathered to calculate the comparative advantage for 1996 as shown in Table 5 (Annex 1). The RCA can be calculated by substituting the appropriate trade data (Table 5, Annex 1) into the equations in Table 5.9.

Table 5.9: RCA analysis - Australia

	Equations[2]	Results		
		Flower	Wildflower	Wax flower
1	$(XAj^{i} / Xwj^{i}) / (XAt^{i} / Xwt^{i}) = xAj^{i} / xA^{i}$	0,211	3,245	9,735
2	$(XAj^{ii} / Xwj^{ii}) / (Xat^{ii} / Xwt^{ii}) = xAj^{ii} / xA^{ii}$	0,192	No data available	
3	$(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})$	0,911		
4	$(xAj^{ii} / xA^{ii}).(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})$	0,175		
5	$1/2 [(xAj^{ii} / xA^{ii}) + (xAj^{ii} / xA^{ii}).(xAj^{ii} / xA^{ii}) / (xAj^{i} / xA^{i})]$	0,183		

According to Balassa (1989) the result of equation 5 will indicate whether or not the sector will have a comparative advantage. In this case only the flower sector had sufficient data to

[2] Symbols used in equations are defined in Chapter 4

yield a result for equation 5. However, Balassa (1989) indicates that the result of equation 1 also shows the comparative advantage but does not take change over a time period into consideration. The results are shown in Table 5.8.

Table 5.10: Results of the RCA analysis - Australia

	Flower industry	Wildflower	Wax flower
Comparative (dis)advantage	0,183	3,245	9,735

The results shown in Table 5.10 represent either a comparative advantage or a comparative disadvantage, as described previously.

The Australian flower industry as a whole scores a value of well below one (0,183) indicating a comparative disadvantage. However, this comparative disadvantage is largely due to the weak performance of the Australian traditional flower sector, since the wildflower sector and more specifically the waxflower sector score comparative advantages.

Australia is a dominant world player in the production and export of wildflowers. Australia produces and exports approximately 10% of the total world output of wildflowers, and 30% of world waxflowers (ACIAR, 1996; Karingal Consultants, 1997; FECA, 1996). This dominant position resulted in an RCA value of 3,245 for the wildflower sector and 9,735 for the waxflower sector.

The long-term prospects for Australia's competitive advantage in the wildflower sector are under threat because producer countries in Africa and South America are showing an increasing interest in producing inexpensive wildflowers. Australia also faces the threat that other countries may develop more of their own wildflowers; South Africa, in particular, has a pool of potential cut flower species that could be a competing source of wildflowers of a similar type to Australian flowers on world markets.

The only way that Australia can maintain its comparative advantage in this field is to make use of its biological diversity and the opportunity to develop valuable new lines of wildflowers for the world cut flower market. To this end, Australia will have to develop systems that will continually bring new lines onto the market.

5.4.3 Summary

The data allow a comparison of the flower industries in South Africa and Australia. Both these industries have a comparative disadvantage, though Australia has the greater (0,183) disadvantage. South Africa has a far smaller comparative disadvantage of 0,7 indicating that South Africa's flower industry has a comparative advantage over the Australian flower industry. However, Australia reveals a large comparative advantage as a producer of wildflowers. Even though no data were available to compute South Africa's comparative advantage in the production of wildflowers, South Africa would probably also have a comparative advantage in this area. Since the limited export data do not allow significant comparisons, an analysis of representative production systems would be useful. This analysis is in the form of a Policy Analysis Matrix.

5.5 Policy Analysis Matrix

5.5.1 Construction of Policy Analysis Matrices

Policy Analysis Matrices were constructed by deriving information from the enterprise budgets of the most representative flower crops in both South Africa and Australia. This type of analysis is done to establish the competitive and comparative advantages of each system, and also gives insight into the effect that government intervention has on the competitiveness of the systems.

5.5.1.1 South Africa

Rose (Long stemmed) / Gauteng Province / 1998

A PAM of the rose production and export system was constructed (Table 5.11) for South Africa, because roses are the largest export crop of traditional flowers and also the most popular flower on the local South African market (IFTS, 1997; Multiflora, 1998). A budget (Annex 3 and Annex 4, Table 3) for a typical rose export farm in the Johannesburg and Pretoria area (in Gauteng Province) was compiled for the specific purpose of constructing a PAM. The variety produced is long stemmed, large flowered roses, as this variety is believed to be the most profitable to produce and export (Taschner, 1997). Approximately 60% of the produce is exported to the Netherlands, and the remaining 40% sold on the local market. This production system will reach its full capacity in the second year of operations and this analysis is therefore based on the second year of production.

Table 5.11: Policy Analysis Matrix: Rose (long stemmed, large flowered), Johannesburg and Pretoria area

		Costs		
	Revenue	Tradables	Domestic factors	Profits
Private prices/ha	2 296 182,06	1 473 164,28	142 903,51	**680 114,27**
Social prices/ha	2 596 238,50	1 350 780,00	141 132,28	**1 104 326,22**
Divergences/ha	**-300 056,44**	**122,384,28**	**1 771,23**	**-424 211,95**

Protea / Western Cape Province / 1995

Another PAM was constructed (Table 5.12) for South Africa's largest export cut flower, the protea (Wessels *et al.*, 1997). This analysis was based on the budget of a farming system for exporting proteas (Annex 4, Table 4) in the Western Cape Province in 1995. It was estimated that approximately 80% of the produce would be exported and 20% distributed to the local market (Department of Agriculture - Western Cape, 1995). Wessels (1998) conducted an economic cost-benefit analysis (based on the 1995 protea budget) in which both social and private prices were calculated for revenues, tradable and domestic factors. The results of this economic cost-benefit analysis were modified in the construction of the PAM. This system will reach its full capacity in the fifth year of operations and this analysis will therefore be based on the fifth year.

Table 5.12: Policy Analysis Matrix: Proteas - South Africa

		Costs		
	Revenue	Tradables	Domestic factors	Profits
Private prices/ha	37 323,25	9 289,55	4 446,41	**23 587,29**
Social prices/ha	40 966,28	22 576,29	4 895,60	**13 494,39**
Divergences/ha	**-3 643,04**	**-13 286,75**	**-449,19**	**10 092,9**

5.5.1.2 Australia

Carnation / New South Wales / 1993[3]

Carnations are estimated to be the largest traditional flower crop produced in Australia (Haze, 1998). The PAM constructed (Table 5.13) is based on a budget (Annex 4, Table 1) compiled by Hardy (1993). A carnation production system of 1 hectare, undercover (igloo) and in soil, supplying only the local market was analysed. This system will reach its full capacity in the second year of operations and this analysis will therefore be based on the second year.

Table 5.13: Policy Analysis Matrix: Carnations - Australia

		Costs		
	Revenue	Tradables	Domestic factors	Profits
Private Prices/ha	680 625,00	130 334,42	409 964,86	**140 325,72**
Social Prices/ha	680 625,00	126 549,78	409 964,86	**144 110,37**
Divergences/ha	**0**	**3 784,65**	**0**	**-3 784,65**

Waxflower / Queensland / 1995

Waxflowers are Australia's largest export flower crop (Karingal Consultants, 1997; FECA, 1996) and analysing this crop will give significant insights into the competitiveness of the Australian flower industry. This PAM (Table 5.14) is based on a budget (Annex 4, Table 2) constructed by International Horticultural Marketing Pty Ltd in 1995 (DPI, 1995). This system will reach its full capacity in the fifth year of operations and this analysis will therefore be based on the fifth year.

[3] The most recent carnation budget available in Australia.

Table 5.14: Policy Analysis Matrix: Waxflowers - Australia

		Costs		
	Revenue	Tradables	Domestic factors	Profits
Private prices/ha	59 400,00	14 693,34	22 941,64	**21 765,02**
Social prices/ha	59 400,00	14 172,58	22 941,64	**22 285,78**
Divergences/ha	**0**	**520,76**	**0**	**(520,76)**

Protea / Queensland / 1995

South Africa's proteas are among the most popular wildflower crops produced in Australia. It was not possible to estimate the significance of proteas in the Australian flower industry, but as authors focus a great deal of attention on this crop and as protea systems can be compared for Australia and South Africa, this crop was selected for analysis. This PAM (Table 5.15) is based on a budget (Annex 4, Table 5) constructed by International Horticultural Marketing Pty Ltd in 1995 (DPI, 1995). This system will reach its full capacity in the seventh year of operations and this analysis will therefore be based on the seventh year.

Table 5.15: Policy Analysis Matrix: Protea-Australia

		Costs		
	Revenue	Tradables	Domestic factors	Profits
Private prices/ha	83 820,00	23 651,73	19 641,64	**40 526,63**
Social prices/ha	83 820,00	23 130,97	19 641,64	**41 047,39**
Divergences	**0**	**520,76**	**0**	**(520,76)**

5.5.2 Comparison of results

Table 5.16 shows the ratio indicators for the comparison of unlike output, such as the output of rose and protea systems in South Africa; and of carnation, waxflower and protea systems in Australia.

Table 5.16: Ratio indicators

	South Africa		Australia		
	Rose	Protea	Carnation	Waxflower	Protea
PRC	0,17	0,16	0,74	0,51	0,33
DRC	0,11	0,27	0,73	0,50	0,32
NPCO	0,88	0,91	1	1	1
NPCI	1,09	0,41	1,03	1,04	1,02

5.5.2.1 Competitive advantage

The competitiveness of each production system analysed, given current technologies, output values, input costs and policy transfers, is reflected in the value that represents the private profit. That is R680 114,27 (A$178 977,44) for roses (SA); R23 587,29 (A$8 768,50) for proteas (SA); A$140 325,72 for carnations (Australia); A$21 765,02 for waxflowers (Australia) and A$40 526,63 proteas (Australia).

It seems that the rose system has the capability to make the greatest profit per hectare. However, land is not the only limiting factor in question, so it would be inappropriate to compare only the private profits of the different systems.

An alternative measure is required to compare the competitiveness of different systems with one another. This measure is the private cost ratio (PCR) that was developed specifically to compare the competitiveness of different systems. PCR shows how much the system can afford to pay domestic factors and still remain competitive. If the PCR ratio equals 1 the profitability is zero, thus by minimising the PCR, private profits will be maximised.

Of the systems analysed (Table 5.16) South Africa's protea system proved to be the most competitive with a PRC of 0,16. The second most competitive system is South Africa's rose system 0,17; with Australia's protea system third with a PCR of 0,33; waxflower fourth and carnation fifth with PRCs of 0,51 and 0,74 respectively.

5.5.2.2 Comparative advantage

The efficiency or comparative advantage of this system is reflected by the social profitability. Efficient outcomes are achieved when an economy's resources are used in activities that create the highest levels of output and incomes. The systems analysed yielded the following results: R1 104 305,05 for roses (SA); R13 494,39 for proteas (SA); A$140 110,37 for carnations (Australia); A$22 285,78 for waxflowers (Australia) and A$41 047,39 for proteas (Australia). These results show the social profits that can be made on 1hectare of land for each of these crops. However, all of the systems differ widely and no significant conclusions can be drawn by comparing these figures. Nevertheless, these figures can be used to calculate the domestic resource cost ratio (DRC) which was developed to compare the relative efficiency or comparative advantage of these different systems. Similarly to the PCR, the DRC equals 1 if its profitability measure equals 0. Minimising the DRC is therefore equivalent to maximising social profits.

When comparing the different systems according to their DRCs (Table 4.16) South Africa's rose system proved to be the most efficient or to have the largest comparative advantage with a DRC of 0,11. The second most efficient system is the South African protea system with a DRC of 0,27; followed by the Australian protea system (DRC=0,32); the Australian waxflower system (DRC=0,5) and the Australian carnation system (DRC=0,73).

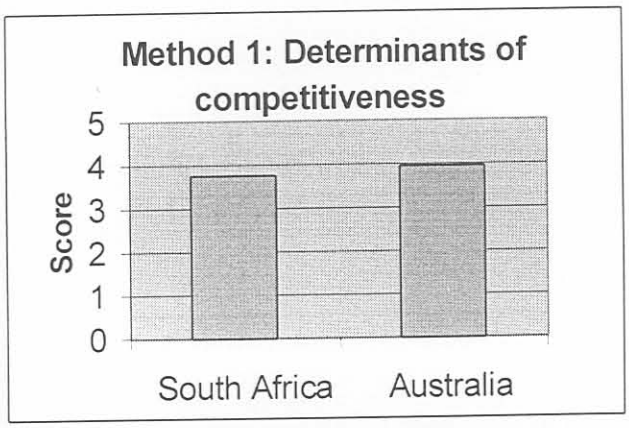
5.5.3 Summary

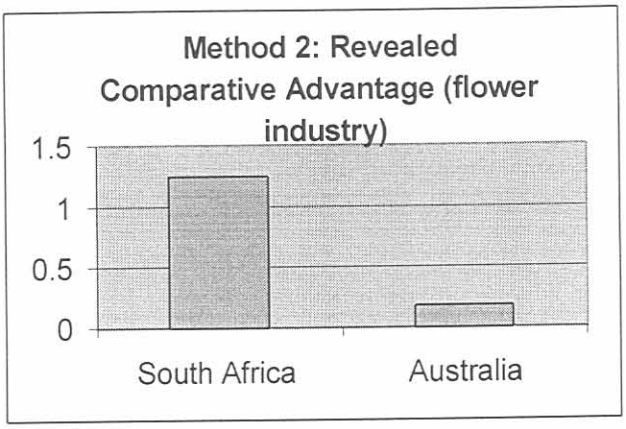
The results of the PAMs conducted indicate that the South African protea system which is South Africa's main floricultural export crop, is the most competitive (PRC=0,16) and the second most efficient system (DRC=0,27). South Africa's rose system is the most efficient (DRC=0,11) and the second most competitive system, whereas the Australian systems analysed were found to be less efficient and less competitive than the South African systems. Of the Australian systems analysed, the protea system seems to be the most competitive (PRC=0,33) and efficient (DRC=0,32), and is even more efficient and competitive than the waxflower system, which is the most prominent floricultural export crop (DRC=0,5; PRC=0,51). Carnations are the least efficient (DRC=0,73) and competitive (PRC=0,74) crop which explains the inability of this flower to compete on international markets and its vulnerability to imports from Zimbabwe and South Africa.

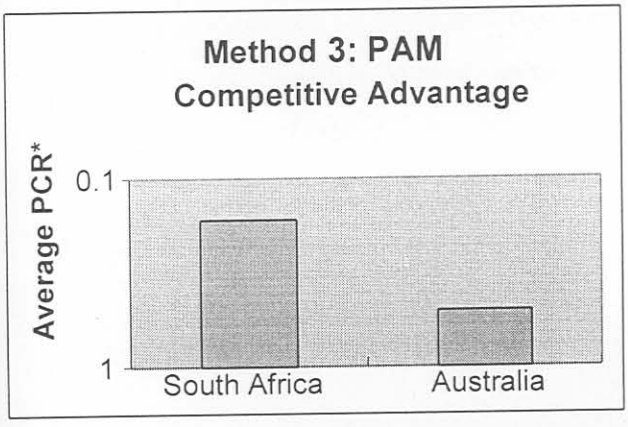
The analysis of the effect of government interventions shows that the South African flower systems analysed are more affected by government than the Australian flower systems analysed. Input prices are higher and output prices lower for the analyses of the South African flower systems. This change in prices has a negative effect on competitiveness. The Australian flower systems analysed were affected negatively as regards input prices, but output prices were not affected by government intervention.

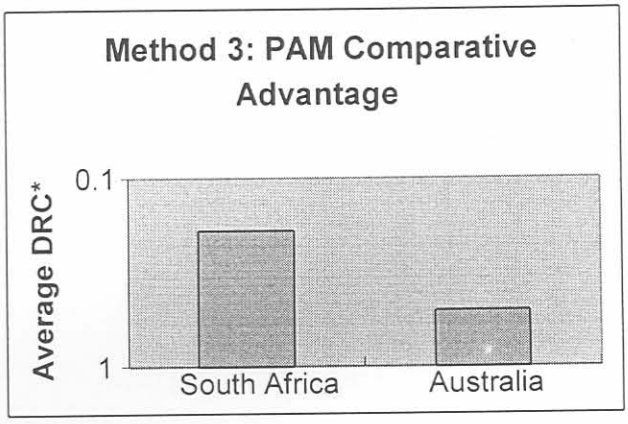
5.6 Conclusion

The results of the three methods are illustrated in the figures below.









*An average of the PCR and DRC values for different flowers was calculated.

Judging from the three approaches, it seems that South Africa is more competitive in producing flowers than Australia. Method 1 shows a slight advantage for Australia but the other two methods show that the South African flower industry has a distinct advantage over the Australian flower industry.

In this chapter the framework created for analysing the competitive position of an industry in comparison with the same industry in another country was practically implemented. This approach can also be refined to assist investment decisions by individual firms especially with regards to the selection of the most competitive cultivars. The generalised analysis in this study will however be very useful in determining policy and strategy support to a particular industry.