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Where are the Opportunities for the Dube TradePort?

An Assessment of the Potential Demand from some

Time-sensitive and Time-critical Sectors

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1 **PROJECT OBJECTIVES**

1.1 General features of the DTP

Spatial Development Initiatives (SDIs) are zones of developmental priority. With the aim of triggering growth, small geographical areas have been identified by the South African authorities where firms will be granted special investment and trade incentives, the Industrial Development Zones (IDZs). Supported by both private and public stakeholders, SDIs/IDZs seek to attract industries and expand export in existing and/or in new sectors. In order to ensure the viability of the IDZs, and to generate an investment momentum, core projects - large-scale investment projects or 'anchor' – are actively being sought. Three IDZs are set in the of KwaZulu-Natal (KZN) Province – South Durban, the Dube Trade Port (DTP) located at La Mercy and Richards Bay/Empangeni. This report is concerned with the DTP.

The DTP is a state-of-the-art multimodal logistics gateway strategically located on the Coast of KZN. The gateway offers specific forms of dedicated logistic supports geared towards the production of time critical goods for foreign markets. A broad impact of the DTP is to develop businesses around improving the movement of these goods to Intercontinental markets.¹

- The DTP offers unique opportunities by providing the beneficiaries new airfreight support capacity for manufacturing and agricultural perishable goods through the King Shaka airport which is to be built at La Mercy. Currently, goods produced in KZN are, when required, shipped by air to reach the foreign markets through Johannesburg International Airport. This typically first requires that the goods be forwarded by truck to Johannesburg, a process which takes one day. As such, an important economic spillover of the setting up of a Provincial airfreight base is that the Province would, at least, capture financial resources related to transport that are currently spent in Gauteng.
- The DTP will further support its dominant time critical function by its strategic position. As it is situated between two important (national and provincial) harbours (Durban and Richards Bay) exporters located at the DTP would have easy access to goods imported by sea. The transformation of inputs into time critical goods is supported by bonded zone packaging freight villages. The DTP IDZ's main incentive is in the form of a concession on VAT.
- Outside benefits to be derived from a transformation of imported inputs, the DTP offers new prospects for locally produced goods. The DTP directly supports the production of organic goods through an organic pilot farm project situated on its grounds. Organic fruits and vegetables are typically perceived to yield higher export revenues over conventional agricultural exports. More widely, the DTP is connected with three freight villages. These will be set up for agricultural goods that have high value overseas: Jozini (coastal – sea/pelagic and farm produces), Mooi River and Umtata (in the interior – farm produces including cut flowers).
- Besides fresh impetus for exports of perishable farm produces, the DTP offers new opportunities for manufacturing exporters through an e-commerce platform. These activities are supported through the establishment of a Cyber port and village to support seamless trade. New prospects are in the direction of business-to-business (or B2B) and business to consumers (or

¹ A particular zone which has served as model for the DTP is the Jebel Ali (Dubai) Free Trade Zone – another model cited is that of Alliance in Texas. The interest in the Jebel Ali zone lies with the initial absence of a strong manufacturing base turned to export and its subsequent success. The DTP shares some of the common characteristics of the Jebel Ali Free Trade Zone; few large key players within specific sectors of activities dominate KZN exports. More generally, the international experience of EPZs is also useful to establish the impetus associated with the DTP IDZ.

B2C) trade. The reduction of transaction costs thereby entailed opens up new market to producers who further face additional incentives for just-in-time production.

- Finally, the first phase of the DTP is set for 2006.

In the main, the DTP will provide new forms of logistical support to the existing industry as well as open up opportunities in the production and trade in high-value added sectors. The service sector has an important role to play the around the DTP. Foreign investments, currently scarce in South Africa in the manufacturing activities, could also be attracted to new sectors that require the presence of the various forms of support referred to above. Efficient means for producers to get the goods rapidly to foreign markets have become a prerequisite for the process of integration into international value chains. Offering such means should contribute to redirecting some of the trade and related gains back to KZN and, ultimately, to the South African economy.

1.2 The context of this report

This DTP report has been developed in a context of a forthcoming overhaul of the transport infrastructure network in KZN and in other Provinces where goods are re-directed at important transport nodes.² The reforms of the infrastructure will have substantial impacts on the trade and industrial performance of both, the Province and the Nation. As such the DTP's time critical emphasis will be supported by a more efficient and suitable rail, sea and land transport network.

In parallel to the writing of this report, large amount of new research has been/is being undertaken that provides information complementary to what is set out here. Two projects were commissioned in 2002 with the following objectives:

- To identify and analyse the current economic performance of KZN. To this purpose, the HSRC has been involved in producing the *KZN Economic Review*. The review provides detailed information in terms of (historical) investment and production trends of the Province as well of emerging key issues. It also provides important insights into specific aspects of the DTP *vis-à-vis* alternative IDZs plans and infrastructure developments in other South African Provinces. Issues specific to the IDZ scheme and to the complementarities of the various IDZ projects in South Africa are dealt with in this particular research project.
- Identifying trade opportunities and issues specific to the KZN Province. The researchers involved with this report conducted an analysis of Provincial trade data for this other project. The research focuses on an analysis of KZN pattern of trade and on the relative position of the manufacturing sectors in term of their trade performance.

The aforementioned research has primarily an industrial, trade and development focus. Specialised research has been/is being undertaken that details the state of the transport infrastructure and use of various modes of transportation in KZN (and South Africa).³ These also contain information with regard to sectoral patterns of trade. However the prime focus of those involved with such work is to suggest some solutions to the transport problems identified and to consider the viability of various alternative schemes.

- The favourable (pre-)feasibility study for the DTP has been carried out in 2002 by McClier (AECOM).

² With 70% of goods reaching Durban to reach other Provinces, the city's role is currently one of gateway (CSX Consulting, 2002). Durban faces problems similar to other international port cities. The new developments around the setting of the IDZs and improved transport would, at least, address the problem of "absent linkages between port, city and key local actors" as raised in Morris, Barnes and Dunne (2002: 110).

³ These studies document operational techniques and systems associated with the current and/or planned logistics pipeline.

- LawGibb carried out, in 1999, a separate feasibility study for the Richard Bay/Empangeni IDZ. This research is also strongly favourable to the establishment of such IDZ.
- Finally, a wealth of new information on the performance and issues related to rail freight has become available from CSX World Terminal Consulting's (AECOM) comprehensive study.

1.3 The overall structure of this report

The prospects for a relocation of South African and foreign firms as well as the diversification of the activities of provincial firms to solely tap on the IDZ package of incentives and advantages will depend on a series of factors. Whether profitable activities can be triggered by the new incentives available is *a priori* undetermined with challenges originating from a series of direction; for instance the fact that greater incentives are available to foreign investors outside South Africa through Export Processing Zones (EPZs) is typically viewed as diluting some of the positive impacts of the South African scheme. Yet, the discussion of IDZs needs to be integrated with the broader context of the fact that each KZN IDZ offers specific advantages in terms of modes of support to access foreign markets. As these advantages are distinct, it is difficult to establish their individual impact on the local economy with some degree of accuracy.

This is not to say that the impacts are small; there is typically a strong link between the state of a country/region's infrastructure, its trade and growth. Therefore, the KZN IDZs will commonly share the benefits from a substantially improved infrastructure network.

What differentiates the DTP from other IDZs is its time critical/sensitive dimension. As such, it will have unique as well as substantial effect on the competitiveness of the Province. This report steps back from the KZN IDZ specificities to provide a snapshot of the importance of a reduction of time/distance in influencing trade flows. The point here is that this particular dimension alone makes a strong case in favour the infrastructural changes which are entailed with the DTP. Although some of the issues and comments raised here are applicable to other KZN IDZs⁴, we primarily focus on the time critical/sensitive dimension of the DTP.

This report seeks to explore some of the prospects associated with the time critical dimension of the DTP. Two questions are addressed; first, what sectors are associated with the supply of time-critical logistical support. Second, what is the current state of the potential demand for time-critical logistical support? As limited information is currently available in terms of the key trade actors in the Province and in terms of the motives which underlie the traders' decisions, this report does not claim to provide a comprehensive sectoral review of potential demand in the KZN. The emphasis is instead with detailing some issues around key sectors and to explore some of the problems that will have to be addressed in order for the supply of time-critical goods by the exporters to expand and for additional *potential* exports of such type to actually materialise. There are large areas for further research in this regard.

The brief for this project was to assess some core characteristics of the DTP. More specifically, two themes are set out in this report.

- A first theme deals with the implicit importance of logistical costs for specific sectors. Since airfreight commands a *premium*, what factors influence the choice of exporters towards this particular mode of transport?⁵

⁴ The KZN transport improvement will generate *an overall* reduction of the *relative* distance between the Province/South Africa and overseas markets – in absolute terms, Durban is geographically closer to London and to New York than Mumbai.

⁵ The Provincial government estimates that about 40% of a good's final cost is accounted for by logistics. This figure is likely to vary substantially across economic sectors, as well as through the logistical modes chosen for the goods to be traded.

- The second theme deals with detailing ‘time critical’ exports. Whilst the logistical capacity of the DTP is defined (internally and internationally) around a series of complementary/interconnected communication modes, a preliminary question relates to the state of the Provincial *demand* for time critical/sensitive logistical support. A secondary question relates to the state of international demand for perishable and other time critical goods with which the Province might become involved. The focus here is on specific sectors.

The structure followed in this report is not sequenced according to the above themes which are used instead as a framework to the discussion. This report contains three main sections together with this section and a conclusion.

- A first main section (*Section 2*) deals with the impact of ‘time’ and ‘distance’ on trade. Whilst, geographically distance remains an important determinant of a supplying country’s level and direction of trade, the concept of time is more encompassing allowing for costs associated with transport delays and the idleness of goods in transit to be incorporated into the discussion.
- A second intermediate section (*Section 3*) focuses on drawing a small typology of sectors of activities according to their presence in KZN and to their potential responsiveness to time costs reductions. This section briefly identifies sectors that emerge as time-critical/sensitive sector.
- *Section 4* deals with a specific analysis of the sectors in KZN that emerge as airfreight users.
- *Section 5* focuses on few specific sectors of activities as they are either important in terms of their airfreight time critical or time sensitive demand potentials and/or their value added. The list is far from exhaustive but serves to illustrate some dimensions relevant to the DTP take off. These are the automotive, clothing and farm/pelagic sectors.

Besides setting out the main key points that emerge from this report, the conclusion returns to the key points identified and the conceptual framework.

2 TIME AND DISTANCE MATTER FOR TRADE

A key characteristic of historical trade data is that world trade in manufacturing has grown more rapidly than trade in agriculture and in mining. The developing countries have been an active contributor to this pattern. In spite of a slow down of developing countries’ merchandise exports at the end of the 1990s, the share of manufactures in their total exports increased from 20% in the 1970s and the 1980s to 70% at the end of the 1990s. (The shift has been characteristically away from agriculture rather than from mineral resources exports.)⁶

Associated with changes in the composition of trade is the observation that whilst the value of trade increases, the weight-value ratio of the goods traded declines. In parallel to a transformation of the type of good traded is the observation that the choice of the mode of transportation involved with trade has evolved. Data shows that 25% of US imports were by air compared to 46% by sea at the end of the 1990s. 30% and 35% of US exports would be by air and sea respectively. For purpose of comparison, the figures were of the order of 15% and 60% for imports and 25% and 43% for exports in 1985 (Hummels, Nov. 1999). A series of questions emerge around the pattern at hand: to what extent have changes in modes of transportation influenced the pattern of trade? In turn, what role have relative declines in specific transport costs played in the selection of specific modes of transportation? (Or to what extent do increasing movements of goods cause relative transport costs to fall?)

⁶ Strong qualifications are associated with the qualitative shift in the composition of trade and the difficulty for developing countries to generate and/or maintain returns from their exports. These issues are the subject of the 2002 UNCTAD *Trade and Development Report*.

The task of isolating a link between trade performance, the sectoral pattern of trade and transportation modes whilst relevant to the discussion of the time-critical dimension of the DTP is complex. Rather than detailing the debates and the evidence, this section raises some key points about the impact of ‘distance’ and of ‘time’ on trade. Although generally interpreted as geographic distance, distance in fact refers to economic distance: geographic distance, with standardised data easily available, crudely proxies for the extent to which differences in production techniques, in consumer preferences, in infrastructure facilities as well as differences in transaction, transport and information costs influence bilateral trade flows. In turn, as transaction costs are associated with mismatches in information (asymmetries), improvements in regulatory framework and in customs procedures have effects that are relevant to the transport infrastructure improvement debate.

Recent improvements in terms of the impact of ‘distance’ have been achieved through a focus on time: time captures the fact that a given geographic distance can be covered more rapidly by different modes of transportation (i.e. air *vs.* ocean). Moreover, thinking in terms of time allows one to account for how differences in frequency of shipments across countries, delays at customs etc. impact on costs and favour trade from particular countries or regions. This adds to the conventional framework of production flexibility contained within the concept of just-in-time (JIT) manufacturing.

The recent work of Hummels has been a breakthrough with regard to the aforementioned shift in focus. In particular, his research sheds light onto why some modes of transportation (air) are increasingly used in spite of substantial *premia* over other modes of transport (sea). Also, the author has been able to quantify time costs relatively by transforming these into tariff equivalents. More specifically for the purpose of this report, the author provides a simple and easy to use estimate of the cost per day of transport and of idleness.

This section reports some basic points about the effect of distance/time and of transport costs on trade. Relative transport costs are an inherent part of the discussion as they influence, to a large degree, the choice of a particular mode of transportation. The context is also emphasised: distance and transport costs are *substantial* barriers to trade. Thus, similarly to barriers to trade elimination arguments, reductions of these are set to have important effects on welfare and industrial development. They are accordingly to be treated as areas of policy priority. In the context of the KZN policy commitments, logistics improvements have the potential to generate substantial additional trade effects provided the costs associated with the improvements do not outweigh the gains to the producers and exporters. In the context of the DTP the improvements take the form of the provision of both, *new* airfreight facilities and a revision of customs procedures as they are associated with the IDZ aspect of the DTP.

This section is structured in three small parts. A first sub-section gives a brief overview of why the state of a transport network in an economy matters; a second sub-section sets out a few key points about changes in transport costs before shifting to the theme of time cost and airfreight use.

2.1 The importance of the state of the transport network: a brief overview

Although limited available data have, in the past, translated into comparatively little research on the effect of the state of the transport infrastructure and of transport costs on Africa’s trade, there is increasing evidence that the poor state of infrastructure and high transport costs play a substantial role in the poor trade (export) performance of sub-Saharan Africa (SSA). This theme was the key focus of a 1999 UNCTAD study which set out that there is an “infrastructure crisis” in SSA and that serious steps - at least in the supply of Overseas Development Assistance – would be necessary to address the difficulties at hand.

A challenge for researchers was to account for the observation that whilst the tariffs African exporters face are low (in absolute or relative terms), there has been a deterioration of African export market shares that is combined with limited progress over the region’s diversification of exports. This observation was made in parallel to the fact that transport costs were high and thus would substantially impact on import and on these countries’ international competitiveness – in the extreme even, this could cause suppliers/buyers to be excluded from export/import activities. For instance, although there are wide

variations across countries, Yeats *et al.* (1996) found that transport costs (including insurance) absorbed in Africa between 25% and 70% of the value of exports at the beginning of the 1990s. Evidence of this is brought back into the UNCTAD (1999) report.

In contrast to other SSA countries, South Africa fares particularly well: besides deregulation progress in terms of the introduction of private participants in some transport sectors, it belongs to a small set of countries whose share of imports of transport services as a percentage of total exports was below 10% at the end of the 1990s (UNCTAD, 1999: 9).⁷ Moreover, it has a very relaxed maritime policy regime – i.e. no cargo reservation policy. Yet this does not preclude that South Africa's transport costs are of no relevance. According to Chasiomeris' data they are high as well as possibly increasing. A pattern of decline in cif/fob ratios from 11% to 8% from the mid-1980s to the early 1990s seems to have reversed subsequently – occasionally the ratio was in excess of 11%. In contrast to international transport, domestic transport costs are at a normal/standard level. High transport costs and transport cost differentials across countries as well as the state of the transport network matter for a series of reasons:

- From a development perspective and for a given country, not only do transport costs divert scarce resources from alternative productive activities, they affect international competitiveness - affecting the price of imports and thus the prospects for exported goods that incorporate imported inputs, diverting investments away from exports, increasing the cost of capital investments - and potentially constraint prospects for wage increases (see UNCTAD, 1999 and Chasiomeris, 2002).⁸
- Other more specific impacts are the state of transport network as it affects inventory costs. These entail: 1) the per day interest rates of the good in transit or pipeline inventory costs and 2) the depreciation rate.
- Inventory costs however only constitute one type of transport-related cost. Another aspect relates to the fact time causes a growing mismatch between the good required and that which is supplied. Complexities are in terms of the 'distance' between the user/consumer's ideal type and the characteristics of the good type produced and exported. This effect forms part of the perishability argument. The concept refers to the fact that the characteristics and/or properties of the good deteriorate with time. Ultimately the good becomes obsolete or destroyed (i.e. some pharmaceutical/medical products, farm and pelagic produces that are unprocessed/fresh/chilled). This deterioration varies across products: for instance newspapers are presented as extreme type of perishable items. Differences in the relative speed at which the goods lose their value to the consumers/users separate time-critical from time-sensitive goods. The discount rate needs to account the depletion of components embedded in the goods (i.e. to allow for the rate of innovation, the development of better goods).⁹ Time-critical goods that become obsolete in days have very high discount rates. In other words, their quality to a buyer relates to access to these over a short time period.
- A final point to stress with regard to the importance of transport costs is that they are increasingly important in a context of increasing vertical specialisation¹⁰ (see UNCTAD, 2002 and

⁷ Tagg (2002) summarises the state of SA transport infrastructure relative to that of other SADC countries.

⁸ The impact of transport costs on investment is however complex; transport costs reductions might remove incentives to invest in favour of export to a market. Yet, investments would take place if the cost of moving information is in excess of the cost of moving goods.

⁹ For newspapers, computers etc., the depletion is over the knowledge, know-how and capital content.

¹⁰ Alternative labels are multi-stage production, fragmentation, international production networks etc.

OECD, 2002). With a new pattern of trade in which the “import context of exports relative to value added” increases, the impact of transport costs is compounded at each stage of production, adding another dimension to the importance of such costs for some regions in attracting both, foreign investments and new foreign orders.

In spite of the above complexities, geographic distance (in kms) between an exporting and importing country is still largely used in bilateral trade flows models (gravity models). This variable performs well in models that seek to explain determinants of bilateral trade; controlling for other specified determinants of trade flows, the further away the trading countries are from each other, the less trade takes place. In other words, for exporters, the chances of accessing a market (alternatively, of being selected by importers) drop the greater the distance between them and the importers.

Few studies have been carried out that set out the impact of South Africa’s international transport costs on the national export performance.¹¹ For South Africa, there is some evidence that the size of the impact might be small (a low elasticity) and that other factors may have a stronger individual influence on exports – viz. the exchange rate. In the absence of a consensus a consistent finding remains that transport costs are important determinants of trade.

2.2 Changes in relative transport costs

Whilst distance is a proxy for transport costs, transport costs in turn proxy for distance. There are numerous ways in which transport costs are measured. Typically, cost insurance freight and free on board ratios (cif and fob respectively) are used. Alternatively, *ad valorem* freight rates - the aggregate transportation expenditure as a share of the value of import - can be used.

There are a series of determinants of transport costs (distance or transport leg, charges, containerisation – a proxy for technological change, route density - also a proxy for market structure - and government policies).¹² Identifying whether transport costs have declined relies allowing for differences in the composition of trade and controlling for changing modes of transportation. Notwithstanding this difficulty, transport costs are high relative to other types of costs; aggregated freight expenditure estimates suggest that they amount to 4% to 13.3% of the value of imports. A key point about transport costs (defined as the freight rates means) is that they are higher as well as more dispersed than tariffs (means).¹³

“The consistent finding [with regards to assessment of transport costs] is that transport costs pose a barrier at least as large, and frequently higher than tariffs.” (Hummels, Nov. 1999: 4)

Moreover, transport costs have effects similar to geographic distance insofar as “import choices are made to minimize transport aggregate costs” (Hummels Nov. 1999: 20). Declines in transport costs thus stimulate trade with an impetus from importers.

Changes in relative transport costs also matter by possibly influencing a progressive substitution towards particular modes of transportation. Two key characteristics are identified by Hummels (Nov. 1999):

1. Sea transport costs have not obviously and systematically declined over a long period of time. In spite of short-term changes - caused for instance by the 1970s drop in oil prices – the author

¹¹ A literature review is provided in Chasiomeris (2002).

¹² Hummels (Nov. 1999) illustrates that the gains from containerisation are not systematic. However, containerisation may cause prices over long routes to fall relative to that of short routes.

¹³ This result parallels a re-prioritisation by policy makers of infrastructure improvements and of developing the trade facilitation context.

does not observe declines between the early 1970s and the end of the 1990s in his time series.¹⁴ Stressing that trends identified by researchers vary markedly depending on the data considered, this does not preclude changes across regions. Developing countries would face the highest (sea) transport costs, at twice the level of developed countries. Africa in particular has high transport costs (12% compared to 6% for the world). In turn, variations in the type of good traded by regions and in market structure (concentration) differences might account for some of the variations.

Table 1. Comparison of transport costs for some key SSA exports to the US (Africa vs. other)

Product	Transport costs (% of export value)				Disadvantage (percentage points)	
	African		Other		Sea	Air
	Sea	Air	Sea	Air		
Raw vegetables suited for dyeing	5.6	2.5	5.3	4.4	0.3	-1.9
Cotton fabrics	7.5	25.3	5.4	10.1	2.1	15.2
Clothing	5.7	16.3	3.6	11.1	2.1	5.2
Other textile articles	5.0	19.8	3.7	15.1	1.3	4.7
Pearls & precious stones		0.5		0.2		0.3

Note: only sectors for which air transport cost is given are reported here. The sectors listed in the table belong to the top 15 export sectors from SSA countries. Data for mid 1990s – the year is not given in the source.

Source: UNCTAD (1999: 5).

2. In contrast, air transport costs/rates, controlled for distance, have declined substantially relative to ocean rates particularly for long routes. This is a pattern observed after the 1970s. However, air transport cost is still high.

2.3 Time cost and airfreight use

For the US, Hummels finds a *premium* of about 25% of air over sea transport. (Given the nature of the US market, this figure can be taken as a low estimate of an average *premium*.) Yet, the observation that an expanding amount of trade in manufacturing goods is by air suggests that traders are prepared to incur a cost in order to obtain goods within a shorter time period. There are undoubtedly variations with the optimal mode of transportation varying by location as well as by commodity. However, a relatively clear-cut pattern emerges in Hummels in terms of a relation between the level of sophistication of the product exported (based on product classification) and frequency of airfreight use (see Appendix Table 2, page 38).

In spite of the *premia*, airfreight is an important mode of transportation in (US) trade. In a complex multi-stage econometric model, Hummels finds that longer shipment days are associated with (cause) increases in air freighting generally. Although the results are for imports by the US and thus might not be applicable in a similar format or extent to other importing markets, the author finds, allowing for product heterogeneity within main product groups (at the 2 digit level), that freight rates and shipment days yield a combined effect of 0.5% (on average) to 0.8% (for manufacturing goods) of the value of the good per day

¹⁴ Data are from a variety of sources. The author raises strong reservations towards IMF Direction of Trade Statistics data that are commonly used to establish transport costs.

This observation does not preclude changes in relative transport costs across vessel type. For instance, for liners (cargo with fixed trade routes and timetables), there appears a notable temporary increase (over the 1970s up to 1980/85). For tramp ships (bulk cargo and spot market prices) there was a decline after the mid 1970s. Yet, fluctuations rather than decline are observed. Considered relatively however, liners' rates fell recently relative to tramp rates possibly accounting for technological changes (containerisation). Generally prices increased up to the mid-1980s and declined a little afterwards.

in *total* transport cost. On a 20 days shipment, this is equivalent to a tariff of 16% for a manufactured good.¹⁵

Table 2. Tariff equivalents of Shipping Time between South Africa and Other Ports to the US

(% -ad valorem)

	Shipping days	Days between port calls	Total
Namibia, Walvis Bay	30	10	40
Nairobi, Kenya – New York	38	10	49
Cape Town, SA – New York	17	3	20
Durban, SA – New York	18	2	20
Hong Kong, China – Long Beach	10	0	10
Cartagenia, Colombia - Miami	2	6	7

Note: Based on average number of days and on the tariff equivalent of 1 day of ocean freight of 0.8% of Hummels. It takes 25 days for goods sea-freighted from South Africa to reach the US. For purpose of comparison, it takes between 20 and 21 days for a vessel to travel between Durban and Bristol, UK (between 14 and 17 days from Cape Town).

Source: ShipGuide.Com – consulted in September/October 2002.

Table 2 reports the result of calculations undertaken for apparel exports to the US. It shows tariff equivalents for clothing goods shipped from South Africa and from of a series of competitors to South Africa for the sector. Shipping days cost *alone* would amount to 20% of the value of apparel exported to New York once the goods reach the US market. The table serves *to illustrate* that time costs are high. The point emphasised is that airfreight might be selected as an alternative to sea freight if the benefits to the seller/producer from a reduction in time cost exceed the air/sea freight *premium* for the good. The same principle of time cost reduction would apply to the e-commerce platform with seamless trading, as it is associated with reductions in transaction costs.

The discussion sets out a series of key determinants of trade that have important implications for the infrastructural changes which are associated with the overall program of IDZ. Independently of aspects specific to the IDZs, the changes in terms of the combination of Provincial authorities providing new air freight facilities and of improving the frequency and efficiency of other forms of transportation concomitantly to this provision will, by reducing time costs, open up new trade and market opportunities. The figure provided by Hummels, whilst crude provides a rule of thumb of time cost. In parallel, the method emphasises that calculations of the cost per day of idleness on the basis of interest foregone from not using the good might substantially underestimate time costs. All in all thinking of the costs entailed in terms of time explains the observation that high-value items are (increasingly) air-freighted. For these goods, time costs are high and might be reduced substantially by the choice of air in spite of the *premium*.

2.4 Conclusion

Models seeking to explain bilateral trade flows contain a series of determinants of trade other than distance. Whilst the direction of the impact of determinant is not always consistent across analyses – varying depending on the model and trade considered –, distance is only one determinant of trade. For instance, adjacency, common language, income level and regional integration schemes influence bilateral trade. In a recent analysis by Cassim (2001), Gross Domestic Product (GDP) was found to be the *most* important determinant of SADC trade, particularly for export, not distance, in the early 1990s. As should be clear, a series of other factors account for the export performance of a country; an apparently important determinant of the South Africa's export performance is the exchange rate. For some of these factors, national policy makers and national agencies and institutions have an important role to play in the area of expansion national trade. Yet, the above discussion indicates that there is a large scope for South

¹⁵ Whether a similar figure is applicable to the EU cannot be ascertain. Also, not all figures reported for goods at the 2 digit-SITC level provided by the author are credible.

Africa's enhancing its export competitiveness by engaging with the transport improvements as they are set out for the DTP.

Although oversimplified, the above discussion can be extended to a series of themes of relevance to the new opportunities associated with DTP. Seamless trading through the e-commerce platform, more efficient customs procedures and new airfreight facilities by enhancing the movement of goods have trade facilitation effects. Considering any single determinant of trade facilitation in isolation is misleading. A time cost framework enables the positive effects of the overarching context of transport network improvements and of the emphasis on air-freighting to be easily grasped.

Transport cost reduction can be combined with other forms of transaction cost reductions. The process of improving the more intangible trading environment is described as a process of "trade facilitation". The changes entailed go beyond transport network improvement and the establishment of an e-commerce platform. For instance the regulatory environment (streamlined customs procedures and rules and greater transparency), more relaxed rules on the mobility of businessmen/women reduce costs. These other inherent aspects of the IDZ scheme will support the success of the DTP.¹⁶

There are comparatively few studies of the overall impact of trade facilitation on trade. According to a recent World Bank/APEC study (2002: 76), potential gains from trade facilitation are of the order of 2-3% of total trade value.¹⁷ Moreover, the process of trade facilitation positively impacts on trade *generally* (i.e. on exports as well as imports). The gains are direct – i.e. savings generated by the improvements – and indirect – i.e. business foregone –.

The APEC study points out that improvements of port logistics (including air transport), increasing internet use and conforming to common trade facilitation standards (i.e. getting to a model or benchmark of trade facilitation) were robust determinants of exports.¹⁸ The authors find that port logistics improvements have the *biggest* impact on welfare. Yet, this is an area in which improvements are the *hardest to make*.

Specific procedures tailored to core characteristics of each of the IDZs and the industries in place will benefit the Province specifically. Yet some aspects of the trade facilitation progress have to be undertaken and supported nationally because they involve national authorities or agencies. Generally, easing access to goods from outside the IDZ is an inherent part of the trade facilitation process.

¹⁶ Two points are here emphasized with respect to trade facilitation. First, transport costs and distance are only some aspects of "trade facilitation". For instance, Cassim (2001) by documenting a mismatch between predicted and actual trade argues that "unnecessarily high transaction cost in the Southern African region acts as a bias against trade in the region and instead encourages firms to trade extra-regionally." Yet, this argument - checked through the inclusion of a dummy for trade between African country - in his gravity model appears unfounded: the dummy is not significant. Second, trade facilitation is a core aspect of Export Processing Zones (EPZs). Under such schemes "distance costs" reductions are associated with more efficient customs procedures and management. Trade facilitation at least means that the South African rebate scheme cannot be conceived as having effects similar to that of EPZs. This is not to say that the rebate scheme is devoid of important advantages. Instead one issue is that rebates are granted on a firm specific basis, thereby entailing administrative and important monitoring costs (to be borne by Customs) as well as uncertainty in terms of the outcome of the application for the rebate.

¹⁷ In light of Hummels' work this figure is likely to be an underestimate of the overall effect of trade facilitation. However, the point remains that with important potential gains from trade facilitation, trade facilitation related issues will be dealt with in the forthcoming trade negotiations agenda. One key factor that drives the shift is a common stand across sectors and across importers and exporters as to the gains to be reaped.

¹⁸ Robust here applies to the variables remaining consistent in their sign and resistant to model changes.

What the above does not address is that, as time cost varies across sectors, different sectors might display a differing interest and response to the new transport framework associated with the DTP. We turn attention to this in the next section. As before, the discussion follows Hummels as the author provides a large set of data of relevance to the analysis of sectoral differences.

3 A SECTORAL TYPOLOGY OF THE IMPORTANCE OF TIME/DISTANCE

Transport costs (freight rates) vary markedly depending on the type of commodity exported as well as on the mode of transportation. Distance (shipment length) appears irrelevant for some of the products which enter the US market.¹⁹

- Whilst Hummels' result might be specific to the US markets, some of his findings, if applied to goods that are important in the composition of the Province's exports suggest that some sectors would be unaffected by a process of relative distance reduction. This is the case for the core commodities and basic chemical goods (i.e. wood, pulp and fertilisers).
- However, for clothing, a new star trade sector in KZN, Hummels identifies a low time cost of 0.2% per day. 64% of US apparel shipments were through air. This contrast with a figure given by a key respondent that only 20% of US apparel imports (in volume) from South Africa would be by air. One can interpret this figure by suggesting that the development of air-freighting facilities directly in the Province would close the gap between actual and potential volume air-freighted.²⁰
- The strongest effects from air freighting and infrastructure development would appear in the direction of sectors that are on a potentially deteriorating trade path in the Province. This is the case particularly for the machinery and equipment sector. Time costs are amongst *the highest* for electrical machinery, road vehicles and power generating equipment – with the greatest effect for office machinery. Finally some of the trade sectors in the Province that have potential but (still) would also gain (precision and optical, toys and games and made up and precision and optical).

Combining information of the sectors identified by LawGibb that might relocate into an IDZ, and Hummels' estimates, the following sectors could tap on developed provincial air freight facilities (see Appendix Table 1, page 36):

- furniture
- clothing
- electricity apparatus
- electronic components and
- motor vehicles (parts thereof and related components).²¹

¹⁹ The sectors examined are detailed in another DEDT project carried out by the researchers that details the post 1994 KZN pattern of trade.

²⁰ In parallel textile yarns imports through air might grow.

²¹ In LawGibb, relative transfer costs are emphasised. A distinction is made as to whether the sectors are input or output oriented. For the former, the cost of transport of inputs (sources) to factory are high (as a proportion of total costs) and in excess of cost of transports from factory to market. Firms that import their inputs will assess the cost of the relocation against the import duty gains and the possibility to change mode of transport. For the latter, the costs of transporting the output from the factory to markets are high and in excess of cost of transports from input source to factory. Although the study is for Richards Bay/Empangeni, the results are applicable more generally to other KZN IDZs insofar as the study is really only concerned with sectors that are already present in the region of study.

The sectors for which time costs are the highest are small trade sectors in the region. For these sectors a separate investment strategy might have to be pursued by the DEDT. This is bearing in mind that investment flows into South Africa are small (having peaked in 1997) in nominal as well as in real terms as well as geared into conventional primary sectors of activities rather than in (new) manufacturing sectors. Perhaps more importantly, investments in South Africa are rarely of the greenfield type and not related with efficiency seeking except in the automotive sectors (BusinessMap, 1999 and Vickers, 2002).²²

4 KZN EXPORTS AIR-FREIGHTED

There are important variations in the air/sea *premium* across sectors. The following statements from South African respondents illustrate the extent of the differential:

- For one carpet exporter, airfreight adds 30% to the cost of a good compared to 5% in the case of sea freight. For an automotive industry respondent, air freighted goods from South Africa cost 3.8 more than importing the goods from Eastern Europe. Airfreight amounted for this exporter to 7% of the value of the good.
- Not controlling for differences in time to reach a market, for another automotive component exporter, goods air freighted to Los Angeles would be 6.6 times more expensive than freighting the goods by sea to that destination.

Yet, in spite of a higher cost of air shipping, some sectors use airfreight intensely. Is the pattern of KZN exports air-freighted in line of the other country's experience? The previous discussion pointed out that air-freighting is widely used in the US experience at least for clothing or some automotive related components. This section shifts attention to detailing the pattern of KZN air-freighted exports.

Air-freighted export data relates to information associated with certificates of origins issued for goods exported by KZN firms for the late 1990s and early 2000s (the data are discussed in *Section 8*). The data thus excludes goods subject to (bilateral) trade advantages (and which require origin to be certified, i.e. the African Growth Opportunities Act – AGOA - and the EU/SA free trade area deal – the TDCA). For these, the certificates are issued by and registered with the DTI in Pretoria. As should be clear, an incomplete picture is thereby presented here of the extent to which goods are traded by air; the data are likely to exclude a large volume of clothing goods that are exported duty-free under AGOA.²³ In spite of its incompleteness, the data presented in this section reveals some interesting preliminary trends, allowing questions to be raised with regards to the type of goods shipped by air and markets of destination for goods that do not benefit from preferences. In particular, emphasised here is that the pattern of KZN air-freighted goods is dominated by more conventional time-sensitive products.

This section presents, first, an overview of the time pattern of air-freighted exports. Attention then shifts to a presentation of the origin and destination of air-freighted goods. A third part details the sectoral composition of air-freight. A fourth sub-section summarises by emphasizing the most salient characteristics identified in the data.

²² The author also provides a small summary of various causes of low (foreign direct) investment in SA. Another feature of FDI into SA is that it is not notably associated with a market focus of exporting beyond the region. However, foreign investment might be replaced by gross domestic fixed investment (GDFI).

²³ AGOA exports, between January and June 2002, across all countries beneficiaries were composed of energy related products (82%), apparel and related products (10%). Agricultural products, mineral and metals, and transportation equipment – possibly primarily BMW SA manufacturing operation in South Africa - formed the remainder (8%) (Business Day, 14/01/03).

With over 60% of clothing items destined for the US and a relatively strong clothing production base in KZN, the data is likely to substantially under-estimate clothing goods.

4.1 The overall pattern of air-freight exports from KZN firms

For the two years for which the data are complete there was little change to the number of pallets air-freighted (Table 3). Notwithstanding a potential growth of trade of goods subject to preferences not captured here, an average of 4817 pallets of goods subject to duties per year was shipped by air in 2000 and 2001. Yet, (and assuming that the number of pallets shipped by air is similarly distributed across the months of a given year), there was an apparent sharp take off in air-freight between 1999 and 2000.

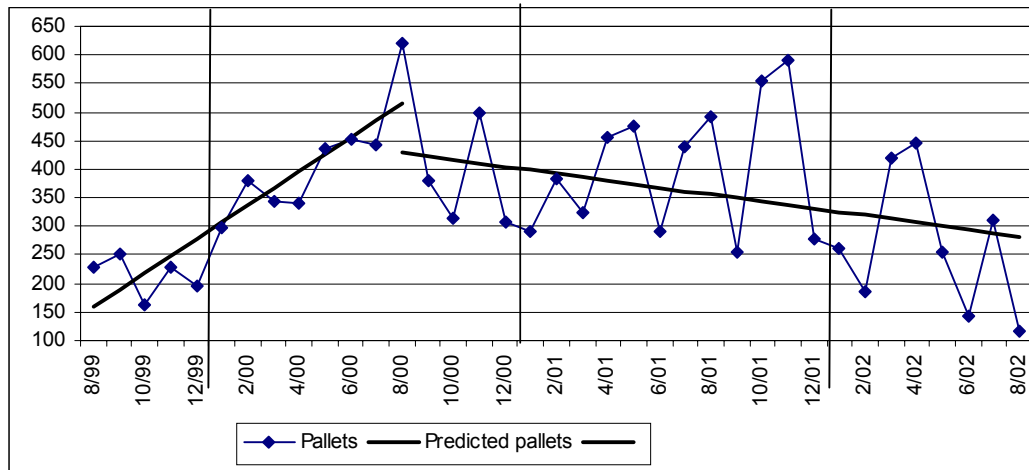
Table 3. Number of air-shipped exported pallets

	Based on trade according to regions	Considering monthly data
Aug.– Dec. 1999	1116	1068
2000	4807	4814
2001	4826	4826
Jan – Aug. 2002		2137
2002	2160	2163

Notes: Discrepancies arise from the nature of missing data. No data was provided for September 2002 so that 2002 data are incomplete.

There is no apparent time pattern to the data under study; there is no obvious consistent seasonal behaviour of air-shipped exports nor peak month over which airfreight is used.²⁴ Instead fluctuations appear more pronounced from the end of 2000 and a break is observed in the air-freighted pallets time series in September 2000. Between August 1999 and August 2000, the number of pallets air-freighted expanded by about 10.4% per month.²⁵ Afterwards - that is until August 2002 - the number of airfreight pallets declined by 1.7% per month (Figure 1). The observation of increasingly pronounced fluctuations suggests that exporters have changed their behaviour towards the air-freighting option - they have, possibly, adopted a more JIT approach to delivering the goods.

Figure 1. Number of pallets air-shipped (actual and predicted)



Notes: For exporting firms with certificates of origin issued in KZN. Predicted number of pallets based on linear regressions.

²⁴ Peak months were August and November in 2000 and 2001 respectively. Airfreight use is generally high in the last quarter of the year. In Figure 1, airfreight exports peak in the third and fourth quarter of 2000 and 2001 respectively.

²⁵ The figures vary depending on whether August or September 2000 is taken into account. August was taken as end-point with $R^2 = 0.82$ (i.e. a good fit between actual and predicted data) for the first period.

The overall pattern of monthly changes across the years of the number of pallets air-freighted (percentage change on a month-on-month basis reported in Appendix Figure 1 page 39) confirms the reversal of the growth trend. Between December 2000 and January 2001, there was a relatively *ad hoc* pattern of change. The month-on-month decline became notable in March 2002. This pattern conforms loosely to the trends for the two main markets of destination, Mauritius and the UK for which a decline was more evident from January 2001 (as with Figure 1).²⁶

Although little change was observed in terms of the average of the number of pallets exported by each firm (Table 4), few KZN firms account for a large proportion of airfreight volumes. Five firms accounted for over 25% of the number of consignments between 1999 and 2001. The concentration appears to have decreased by 2002 with eight firms' consignments then dominating.

Table 4. Number of air-shipped exported pallets

	1999	2000	2001	2002
Number of distinct KZN firms using air-freight	148	298	280	227
% of potential total*	27.0	54.4	51.1	41.4
Average number of pallets per KZN firm	3.29	3.27	3.23	3.35

Note: * - See text for an explanation.

Two firms that are consistently large airfreight users are a clothing and textile firm (located in Durban Mobeni and Hammersdale respectively, the latter with diverse markets of destination). Three other clothing firms are important in their share of the volume air-freighted (in Pinetown, Mobeni and Tongaat with exports to the USA, the UK and other EU and NAFTA markets). Two other firms were important users of airfreight to the Mauritian market. These are in the distribution sector (possibly wholesalers): one became important in 2002 whereas the other, whose rank dropped in 2002 was involved with exports of agro-industry goods besides other goods.

Another striking feature of the data is that few firms consistently used the air-freighting option under the period under study. Whilst we do not have information as to whether all the firms listed as users were up by 1999, and acknowledging the caveat that the data series is incomplete, a large proportion of firms appeared only once. In other words, taking a *potential* number of airfreight users of 548 for each of the year under study, over 55% of the firms would have used airfreight only once in the four years for which data are available. About 8% of the firms used air-freight in all the years under study (Table 5) although the figure is higher for the two complete year, standing at about 28%.

Table 5. Occurrence of firms using air-freight (%)

Only used air freight once	Used air freight in 2 years only	Used air freight in 3 years	Used air freight in all the years	Used air-freight in both 2000 & 2001
56.3	20.7	14.7	8.3	27.7

Generally, comparatively few firms have taking the option of systematically air-freighting their goods. What is underlined by the data is that there is an emergency dimension to the firm's choice of exporting goods by plane.

²⁶ There are nuances for specific markets of destination. For instance an overall pattern of consistent growth of air-freighted containers occurred for the NAFTA region from August 2000 to November 2001. This disappeared subsequently (based on a comparison of a month-on-month change not reported here).

4.2 The origin and market of destination of goods air-freighted

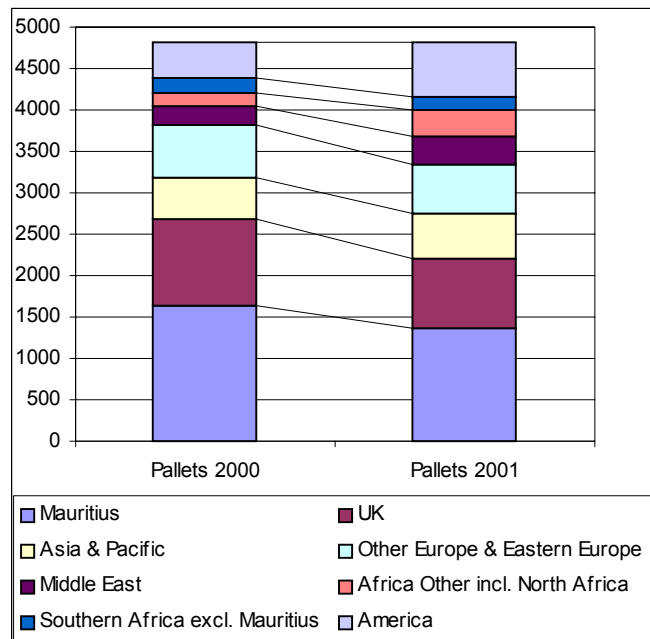
Notwithstanding that data is missing in terms of an expansion of air-freight of goods under preferences, there are few dominant markets of destination. About 30% of the pallets were destined for Mauritius and another 30% for Europe, principally the UK (Table 6). The Asia and Pacific region and the Middle East are other relatively important markets of destination. These are regions with which South Africa has relatively well developed air-freight links, in contrast to more marginal destinations such as Mexico and Canada. There was, however, a limited amount of air-freighted exports to Southern African countries besides Mauritius. Possibly goods are shipped by sea/rail to these markets.

Table 6. Destination of air-freighted pallets (2000-01)

Country/region	%
Mauritius	31.2
UK	19.6
Asia & Pacific	10.9
Other Europe (incl. Turkey)	10.2
Middle East	6.2
USA	5.6
Other Africa (incl. North Africa)	4.8
Latin America & Caribbean	3.8
Southern Africa (excl. Mauritius)	3.7
Eastern Europe (incl. Russia)	2.2
Mexico & Canada	1.8

One witnesses between 2000 and 2001 an expansion of air consignments to the more marginal regions (Figure 2). Whilst too short a period to describe this as a possible pattern, the most notable increases in air consignments were to Africa excluding the Southern African region (a doubling of the pallets), to the Middle East and to the American continent. The size of the yearly consignment to the more established markets decreased however with a shift of air-freighted exports away from Mauritius and the UK. In the absence of complete long term data series, one cannot address the possibility of whether this is indicative of KZN firms' attempting to break into new (non-preferential) markets.

Figure 2. Change in the destination of air-freighted pallets (2000 to 2001)



In terms of the origin within KZN of airfreight, Durban dominates (Table 7 in terms of the number of pallets as well as in terms of the presence of firms that air-freight goods - Appendix Table 4, page 40). Yet, this dominance decreased temporarily in favour of Hammersdale, Tongaat (which are textiles and clothing production centres) and Verulam in 2001.²⁷ A different pattern emerges for (part of) 2002 with exports from Pinetown, Winterton (a weaving firm) and elsewhere in KZN displacing Durban and the Northern Durban area. As for the Pinetown area, the consistent users are three firms that export miscellaneous goods.²⁸ However, 60% of the pallets are for clothing goods. Another 20% are for 'metal products and machinery'. In the main, the air-freight pattern remains framed by geographical clusters of activities. This is set out next.

Table 7. Origin of air-freighted pallets within KZN (%)

	1999	2000	2001	2002
Durban	62.6	61.8	54.3	46.9
Pinetown	15.4	14.1	14.2	20.6
Durban North	9.1	9.4	9.4	10.6
Hammersdale	6.9	7.4	8.6	7.1
Pietermaritzburg	2.5	2.7	5.9	4.0
Tongaat	0.9	0.9	2.3	1.3
Winterton	0.4	0.2	1.6	3.9
Verulam	0.4	0.2	1.2	0.5
Other town/area	2.0	3.2	2.5	5.2
<i>No. of missing cases</i>	3	6	18	22

Notes: Missing data excludes information incorrectly entered in terms of the origin of the pallets. Missing cases refers to information unavailable in terms of the number of pallets.

Durban North is as stated in the original database as well as including Briardene, Mount Edgecombe, Phoenix and Umhlanga.

A detailed breakdown of the frequency of the origin across all the years under study is given in Appendix Table 4, page 36.

4.3 The sectoral composition of air-freighted goods

Airfreight is specific to a small set of sectors of activity; in particular, air consignments are concentrated in textiles and clothing (Table 8). 31% of 2000-01 air-freighted exports was with clothing goods. This observation is striking. As noted above, the main market of destination for KZN air pallets is Mauritius. Yet Mauritius is a small outlay market for clothing (swimwear and core items). In fact, clothing airfreights were principally and increasingly to the UK followed by the US. The observation that over 10% of air-freighted clothing goods are to the US probes into the underlying difficulties of the KZN firms to meet AGOA rules of origin requirements. Whether there is a JIT dimension to non-preferential clothing exports to that market that is similar to that of preferential exports cannot be addressed here. Nevertheless, the sector conforms to the prediction of airfreight being used for time-sensitive goods.²⁹

²⁷ The pattern for Verulam relies on the behaviour of one firm. The export specialisation of the this firm from the range of good exported is unclear. Tentatively, the firm is a distributor.

²⁸ These firms export a mixture of electrical, information communication and metal products in one case and machinery and automotive parts in another case.

²⁹ Similarly, the data alone do not answer whether the pattern at hand might simply reflect the fact that the firms were facing difficulties in the reliability of other modes of transport in a sector for which timely deliveries are important. Alternatively, problems might have been with the exporting firms themselves who are not in a position to complete production in time and thus have limited choice in terms of their delivery mode.

The second most important sector in which pallets are air-freighted is ‘metal products and machinery’ followed by ‘textiles and made-up’ and ‘chemical, plastic and rubber’ goods. Another important sector is ‘arts and craft and goods for entertainment and promotional purposes’.

When focusing on the top four larger sectors in which air-freight takes place, Mauritius figures largely as a market of destination for air-consignments of ‘metal’, ‘chemical plastics & rubber’ and ‘textiles & made up’ goods. Re-iterating the issue of information not available to assess exports of items not subject to duties, besides textiles and clothing items, Europe figures as a marginal country of destination for the majority of air-shipments.

Whilst some shipments are to also the Middle East and to Asia and the Pacific across products, some markets are targeted for specialised goods. The greater sectoral concentration of exports (i.e. specialised used of air-freighting) – was for the UK in both 2000 and 2001.³⁰ In 2000, the second concentration was for the USA and for the Latin America and Caribbean region (with clothing) in 2001. The most diversified air-freighted export patterns were to Africa other than Southern Africa as well as to the Middle East.

Table 8. Sectoral breakdown of air-freighted goods (2000-01)

Modified classification	%	Original Classification	%
Chemicals, plastics & rubber goods	4.0	Chemicals	3.2
Metal products & machinery - parts of, including electrical equip.	23.1	Metal products & primary	26.4
Clothing (incl. swimwear)	31.0	Clothing	31.4
Automotive parts & components	3.1	Automotive & components	2.6
Textiles & made up goods	14.0	Textiles	14.0
Footwear & leather including related machinery	0.7	Footwear & leather	0.7
Paper & wood products (forestry)	2.5	Forestry, paper & wood	2.9
Information & communication technology (software & hardware)	2.7	Information & communication technology	2.5
Food & beverages (incl. alcoholic beverages)	2.4	Food & bev. Processing	2.4
Fresh produces / perishables	0.9	Fresh produces	0.5
Aquaculture	0.1	Aquaculture	0.1
Aluminium pdcts	1.4	Aluminium	0.8
Arts & crafts. Goods for entertainment & promotional purposes	4.0	Arts, crafts & entertainment	2.6
Mining (gold & stone) products	0.1	Mining	0.1
(Agro-industry) - agric. Machinery (incl. sugar) & seeds	0.9	Agro-industry & processing (excl. sugar & forestry)	0.4
Construction	0.5	Construction	0.3
Pharmaceuticals (incl. cosmetics but excluding medical clothing)	1.3	Pharmaceuticals	0.8
Other	7.5	Other	8.3

Note: The results for a series of sectors have not been reported with zero or few observations in the original classification (tourism, sugar etc.). The appendix note explains the change in classification.

³⁰ Based on calculations of coefficients of variation not reported here (for all the years for which data are available).

Table 9. Sectoral breakdown of air-freighted goods (modified classification)

		1999	2000	2001	2002	Change (2000-01)
Clothing	UK	46	46	48	48	↑
	USA	17	11	13	23	↑
	Other Europe inc. Turkey	19	21	15	12	↓
	Other	20	22	25	21	
Metal products	Mauritius	60	64	51	49	↓
	Middle East	10	7	6	8	↓
	Asia & Pacific	5	13	19	20	↑
	Other	25	17	24	23	
Chemicals	Mauritius	92	65	53	39	↑
	Middle East	0	6	19	18	↑
	Asia & Pacific	0	2	7	21	↑ (but small sector)
	Other	6	21	20	30	
Textiles & made-ups	UK	28	39	12	8	↓
	Asia & Pacific	15	14	20	27	↑
	Mauritius	15	19	22	16	↑
	Other Europe inc. Turkey	14	11	15	20	↑
	Middle East	12	11	15	20	↑
	Other	17	16	20	14	
Arts, crafts & entertainment	Other Europe inc. Turkey	30	22	12	14	↓
	Mauritius	5	15	16	19	stable
	Africa Other inc North Africa	0	10	14	10	↑
	Mexico & Canada	11	10	13	9	↑
	UK	11	12	8	10	↓
	Other	43	32	37	38	

Notes: Last column based on the change to the number of pallets between 2000 and 2001. ↓ and ↑ denote a decrease and an increase.

'Africa Other' is Africa excluding Southern Africa and Mauritius. The change in classification causes markets of destination to change markedly for arts, crafts and entertainment (see Appendix Table 3, page 39).

4.4 Summary

The following points emerge from the analysis of air-freighted export data:

1. The KZN firms make a relatively *ad hoc* use of the air-freighting option. Only 8% of the (potential) firms would have used air-freighting from 1999 to 2001. As such, airfreight is generally unlikely to be a consistent and/or preferred mode of transportation. At best, the figure would be of the order of 28% on the basis of the two years for which the data are complete. The costs associated with air-freighting (over alternative modes of exporting) and the currently inefficient air freighting capacity are likely to be the main causes for this inconsistency.
2. The KZN airfreight users are located primarily in Durban. There are exceptions to this according to sectors of activities (namely textile and clothing) and whether a few firms are located in specific areas. Agglomeration effects are likely to play a role in triggering a process of transportation mode switch.
3. The airfreight option is primarily used by textiles and clothing firms. Besides the increasing export orientation of firms in this sector, this feature reflects the combination of a KZN production base in this sector as well as the time-sensitive nature of orders of these goods in the EU and US markets. These firms are the more consistent users of air-freight suggesting that they have made a longer term switch to airfreight as a mode of transportation.

Other items important in the composition of air consignments are metal products, items of the chemical, plastic and rubber goods as well as items of arts, crafts and for entertainment and

promotional purposes. Although it is likely that a larger proportion than identified of components for the automotive sector (misclassification) is air-freighted, even when combined with alternative sectors (chemical and/or metal), the sector remains a small air-freight user.

4. Air-freighted goods to the UK and the USA are primarily located in one sector, clothing. In contrast, a comparatively diverse range of goods is exported to Mauritius, to other Africa (i.e. non-Southern) and to the Middle East.

Undoubtedly different factors affect the choice of the mode of transportation to each of the markets as they have been identified for the purpose of the analysis (proximity, frequency of flights etc.). As usual, the data alone does not allow one to identify who the key actors are in terms of triggering the choice of a particular mode of transportation. For clothing, for instance, the impulse to airfreight garments is likely to be driven externally following the role of the foreign buyers and their international experience of the ease with which goods can be procured rapidly. As such, airfreight could already be a given criterion of performance for this particular sector of activity. Also whether the freight forwarders based in SA further bias the sectoral pattern of airfreight in this regard is to be determined. According to one respondent (from the automotive sector) all airfreight is managed by freight forwarders rather than by integrators.

A separate gap is that the data does not allow to distinguish high from lower value items. Generally, a distinct classification of the sectors and a more systematic follow up of airfreight use would be required for a more refined analysis. From the data the following questions can be raised around the effect of the DTP.

- Airfreight is associated with the presence, in KZN, of distribution firms. This particular sector is key to channelling goods produced by small firms to overseas markets. These firms fill an important intermediate role in terms of managing and organising the transport for a wide range of goods. By enabling transaction costs to be overcome, they have a trade-facilitating role. The future role distribution firms can play in the DTP needs to be focused upon in forthcoming research and in particular whether they would respond to the DTP incentives. Presently, these firms are involved with the more proximate African markets. With some possible exceptions, orders are likely to be managed through the conventional methods of communication (telephone, fax). Prospects for seamless trade with countries at lower levels of development are to be determined. The DTP e-commerce platform might be of a limited (relocation) appeal to these firms.

- Second, the principle of freight villages being set up around agricultural nodes can be applied on a wider basis. Currently there is a pattern of exports emerging around clusters of activities. The setting up of freight villages around clusters might be a more cost effective option than firms relocating.³¹ A solution to this might be to expand the concept of airfreight villages on a broader sectoral basis. Given that the DTP is set on a comparatively long term horizon, a more systematic follow up of exports originating according to postcode will help identify the importance within Durban of such clusters.

In terms of volume air-freighted by sector, the airfreight data conform to a limited processing of raw materials in the Province. Yet, the volumes required for the DTP air-freight facilities to be economically viable might already exist across a small number of firms. Further details with regard to the some aspects of the automotive, clothing and agricultural/pelagic sectors relevant to the DTP are provided in the next section.

³¹ There are two grounds for this. First, the technology entailed with production is fixed (i.e. large plants in textiles, carpet, chemical etc.). Second, firms might have limited resources devoted to land or building developments (i.e. no investment plans in buildings and fixtures for some of the Mobeni clothing firms, a problem which is exacerbated by the small profit margins of the sector).

5 POTENTIAL DEMAND FOR THE DTP LOGISTICS SUPPORT FROM SOME SECTORS

The response of firms to the DTP is market (of destination) specific³² as well as sector/industry specific. A series of actors have a role in shaping the potentials of the DTP.

- For producers, potential demand relies on current performances as well as on orders that are lost because of the relative absence of air-freight facilities. Whilst little excess demand might emerge if order volumes are specified accurately in advance by the buyers/end-customers and if the firm's production cycle is already efficient, firms are still set to save on the time for the goods to reach Johannesburg International Airport. However, the savings in turn depend on the current competition across freight forwarders.

The archetype of JIT management in South African is with the automotive component sector. This is a sector which is well integrated with the global value chain (the automotive sector has a notable and growing export orientation). Moreover, the sector is of interest because some of the components (electrical/electronics) are of high-value per weight - high-value added - fragile and required on a short notice basis. Automotive component goods are typically air-freighted goods. What is the demand from this sector for *additional* airfreight facilities?

- Buyers/end-customers requirements also shape the prospects of the DTP. From a value chain perspective, international standards and widespread air-freighting practices might isolate the expansion of trade of particular sectors in KZN when these practices cannot be followed. This is in sectors for which time cost reductions offers substantial benefits to the end-customers and where the market is volatile.

The clothing and fresh farm/pelagic sectors fit this description.

This section shifts attention to the automotive, the clothing and farm/pelagic sectors. The objective of the discussion is to sketch a framework within which prospects from the DTP can be drawn. Various dimensions are touched upon:

- current export practices and experience – the automotive sector and fresh farm/pelagic produces;
- the requirements of the sector for e-commerce facilities – the case of clothing;
- Future developments that will impact on the expansion of these sectors- fresh farm/pelagic produces.

The dimensions are set out to highlight which sectoral aspects can be considered rather than to make assertion about potential demand. This is bearing in mind that by 2006, the operational date for the DTP, the KZN business environment is likely to have evolved substantially.

5.1 The case of the automotive sector

The automotive component sector, whose growth is framed by the MIDP, a local content sectoral support scheme, encompasses a mixture of low and high value added sub-sectors. Leather car seats and catalytic converters whilst high value goods because of the cost of the raw materials (hides and platinum) contain limited value added. In contrast, radio alarms and immobilisers are the high value items.

A dominant car manufacturer - Toyota SA – and a substantial number of auto-component firms are based in KZN.³³ Some KZN automotive component firms are already heavy users of air-freighting; these are 2 to 3 firms (according to one key respondent) that are involved with car alarms and other related electronic components and Aunde, one of seven such firms in South Africa involved with car

³² Some are larger markets with regular orders. Other markets are smaller and a wide range of goods is trade as illustrated in the discussion of *Section 4*.

³³ A third of KZN auto-component firms are located in the Southern Industrial Basin and Pinetown according to Morris, Barnes and Dunne (2002).

seats and trims. The latter, which operates in a high value/weight segment is affected by fast changes in customer requirements. It thus uses airfreight as a means to meet the changes over a large range of product variations as they are specified by the original equipment manufacturer (OEM) on a weekly basis. Besides Aunde, PFK and Sherlock are KZN automotive component firms involved with air freight through Johannesburg.

Some amount of air-freight is also for import; these are from Toyota SA - which imports components from Japan via European Union markets -, Mantrucks in Pinetown and Bell Equipment in Richards Bay. Occasionally Daimler Chrysler, in Pinetown, would also import parts and accessories.

The DTP changes would cause a redirecting of the current transport expenditure by these firms back into KZN. However, air-freighting decisions for the automotive component firms are determined by their relationship with their OEM overseas, the production requirements of the OEMs as well as by their financial position (toward inventories costs). These dimensions take primacy over that of air-freighting as a means to enhance and support these firms' international competitiveness.

The aforementioned aspects of transport selection need to be considered in parallel to the fact that *additional* air freight capacity is unlikely to modify the nature of the business. Export levels, at about one-fourth of firms' production (across the industry), are increasing and occasionally a firm might entertain airfreight. However, there is no systematic trend towards a growing demand for an expansion of airfreight capacity besides than for specific niche uses and 'emergency' air-freighting. Airfreight is current for leather seats, alarms and immobilisers. Moreover, the expansion of exports is conditional on the performance of current automotive component firms and the strategy pursued by the companies overseas.³⁴

5.2 The case of the clothing sector

Much has been written on the performance of the clothing sector in South Africa. Of relevance to the DTP is that clothing firms are presently important users of airfreight. Moreover, clothing is a comparatively large sector in terms of the volumes traded and the frequency at which exports occur in any given year – an increasing number of seasons translates into an increase in turnaround of production on the behalf of end-customers. This is in parallel to the fact that the sector's export orientation has expanded over time. Also, of importance is the fact that the sector has diversified its exports across a series of foreign markets; whilst European markets are still important exports to the US currently dominate. Further opportunities are generated through the renewal of the AGOA deal – although the details of AGOA II are still pending. Of direct relevance to KZN is the fact that clothing is not a negligible export sector. It amounted to 1.7% of the Province's exports in 2001.

Of interest to the discussion of the DTP is that whilst the sector is in a position to generate a growing demand for airfreight capacity in the Province, apparel exporters presently face a series of difficulties in the process of air-freighting goods from Johannesburg. According to a key respondent, the problems are with 1) an unreliable air-transport timetable; 2) volumes that are not guaranteed by the airline *as well as* 3) high costs of transportation.

In contrast to the fact that as much as 20% of South Africa clothing export volumes are already shipped by planes overseas, firms have expressed only a limited interest for the e-commerce platform. Table 10 reports the criteria supporting the selection of suppliers. These are drawn from fieldwork information towards 28 large exporting clothing firms in South Africa. What the information illustrates is that whilst delivery reliability and quick access to fabrics are listed of importance by all and more than half the firms

³⁴ Although Toyota Motor Corporation has substantially increased its share in Toyota South Africa for the purpose of exporting to the vehicles to Australia, the company has set a target for local content of 70%. The role of the DTP around Toyota is therefore unclear at least in the direction of channelling air-freighted import components.

interviewed, e-commerce capability does not enhance the supplier position towards foreign buyers.

Table 10. Key Supplier Selection Variables

	Frequency	Percentage
Price	28	100.0
Quality	28	100.0
<u>Delivery reliability</u>	<u>28</u>	<u>100.0</u>
<u>Telecommunications (telephone, fax, and email)</u>	<u>28</u>	<u>100.0</u>
Product/production engineering capabilities	28	100.0
Conformance to specifications	28	100.0
Production capacity	25	89.3
Lead times/flexibility	22	78.6
Social accountability	21	75.0
Technological capability	19	67.9
Current portfolio of clients	16	57.1
<u>Proximity to appropriate fabric supply sources</u>	<u>15</u>	<u>53.6</u>
<u>E-commerce (transactional) capability</u>	<u>0</u>	<u>0.0</u>

Source: Moodley, Morris and Velia (2003: 30, Table 17).

Whilst Moodley, Morris and Velia (2003) report a series of positions as they are expressed by the firms on the matter of adoption and use of B2B e-commerce, it is sufficient, for the purpose of this report, to stress that clothing firms have presently very little involvement with web-based international trading.

There are numerous barriers to such engagement. These range from issues of perceptions to a high cost of the investments against limited returns from such investment. Combined with an absence of incentives, the development of e-commerce platform *that can be shared across sectors* might overcome some of the obstacles at hand. What remains to be seen however is how the position of a series of clothing firms and of global sourcing companies based in South Africa will evolve. Presently, knowledge of the suppliers and the ability of suppliers to produce the good of the commanded quality require *physical* checks (quality assurance and quality controls carried out directly by people). Individual contacts reduce the incentives and need for seamless trading, particularly when individual orders are small by international standard.

Clothing exports are generally time-sensitive. However amongst goods exported, it is the high-fashion apparel segment (as opposed to long run core items) that is typically time-sensitive. The fashion-sensitive segment is relatively absent from South Africa, particularly women's wear. Whilst airfreight is standard practice in the US over comparatively large clothing orders, the setting up of the DTP might release some of the constraints facing exporters in some sub-sectors specifically and in the sector more generally. Some clothing producers might find the option of relocating to the DTP attractive, particularly in the higher price-point segment where fabrics amounts to an important cost of production. However, clothing firms have, in the main, a limited capacity to invest in new buildings and fixtures. The sector also face some amount of uncertainty in terms of export prospects as the international trade regime is set to change in 2005 to become more competitive. As for e-commerce based trade, it has presently a limited driver effect.

5.3 The case of unprocessed farm/pelagic produces

As discussed in *Section 4*, the use of air-freight for goods from the 'food and beverages' and 'fresh produce' sectors is currently negligible. This absence does not preclude that there are important returns to be reaped by producers who can engage in time-critical trade. The rewards from integration into the global value chain are well documented in Dolan, Humphrey and Harris-Pascal (1999). These are with:

- Shifts of value adding segments of the value chain to the supplying country;
- Moreover, there is virtuous circle potential – new skills creation keeps exports on a virtuous path (being good at meeting external requirements strengthens the exporter trade position).

- Export prospects are with the fact that whilst the goods are purchased by higher income consumers and whilst demand is income-inelastic, fresh (farm) produces are “destination” goods.³⁵
- Fresh produces have relatively high per unit value (with nevertheless important variations across sectors as can be seen in Appendix Table 5, page 41). Demand in the sector is also buoyant.³⁶

Whilst there are sharp difficulties in newcomers integrating into the global value chain,³⁷ prospects are signaled by successes of some SSA exporters (various Freshinfo.com articles). Floriculture is a case in point of such success. For instance, 8% of East Africa’s exports are in this sector. Kenya’s flower exports amount to 10-15% of the UK market. Kenyan flowers, known for their quality, are supported by the ability of the buyers to trace farms of origin. This is because Kenyan flower producers have developed directly on the farms the facilities required for direct shipment of fresh flowers to foreign markets. A similar strategy is followed for fresh (prepared) vegetables. In the main, Kenya’s fresh produces exports are supported by state of the art cargo centre facilities at Jomo Kenyatta International airport that is currently under capacity (it only operates at about 50 per cent capacity).

As for South Africa, it already has an established reputation overseas through its strong position in some sectors – South Africa’s ranked 3 to 5 in 2001 in the world as an exporter of citrus fruits and grapes. Its rank was 9 in avocados. This reputation and performance is based on strong links with foreign retailers and, in parallel, through the presence of established and large domestic players (i.e. Capespan, “a specialised world class leader in the marketing of fresh fruit internationally”). A major difficulty however remains for (South Africa and specifically) KZN which lies with the fact that the Province has a small agricultural/pelagic export base. Moreover this base is not diversified.

Whether there are prospects in the direction of an expanding export base can be considered from two perspectives:

- from the perspective of whether South Africa/KZN exports have on par of or in excess of international demand;
- from that of whether South Africa/KZN has managed to maintain its exports in spite of a decline in excess of international demand.³⁸

An additional dimension relates to the relative attractiveness of the sector that is pinned with the returns from exporting some produces. For South Africa, there are high returns from fresh produces (third column of Table 11). Yet, these are only typically, not systematically higher than other products (processed - i.e. frozen or tinned).

³⁵ I.e. they channel consumers to a particular supermarket.

³⁶ Demand for fresh fruits and vegetables grew in the UK in volume by 21% between 1993 and 1996 and by 35% in value between 1994 and 1996.

³⁷ These are with (i) high barriers to trade (pronounced in EU in the fish sector) and stringent phyto-sanitary controls and requirements, (ii) the dominance and control of the buyers – i.e. supermarkets in the UK – and (iii) difficulties in integrating into already established value chains and competing with exporters with which buyers have already established a high level of trust. This is in a sector in which competition is intense with the consequence that new products rapidly become commodities and according along an expanding number of dimensions (Dolan, Humphrey and Harris-Pascal, 1999 and UNCTAD, 1997).

³⁸ This follows the methodology employed by the International Trade Centre. Growth in exports combined with declining demand signals trade specialization as well as competitive advantages. Prospects might be sub-sector specific but data are only available for countries or regions, not Provinces.

Table 11. Per unit value of export for some sectors and products within those sectors

(South Africa)

Chapter	Per unit value \$/kg (2001)	Per unit value \$/kg (2001) Fresh	Sub-sector for which unit value of export is the highest	Per unit value \$/kg (2001)
Seafood	2	2.23 to 2.9	Livers & roes, fresh or chilled	57.0
			Crustaceans not elsewhere specified, not frozen, in shell or not, including boiled in shell	37.6
Dairy; eggs; honey	1.1		Egg yolks not elsewhere specified	11.6
			Cheese, fresh (incl. whey cheese) unfermented & curd	3.7
Trees; bulbs/roots; cut flowers/foilage	2.4***		Cut flowers & buds for bouquets or ornamental purposes, excluding fresh	3.4
Vegetables	0.26	0.25** to 0.76*	Capers -provisionally preserved but not suitable for immediate consumption	5.0
			Mushrooms, fresh or chilled	4.2
Fruit and nuts; Fruit peel	0.33		Cranberries etc. (genus Vaccinium) fresh	6.6
			Black, white or red currants & gooseberries, fresh	3.7

Notes: * for HS 0708 & HS 0709 (Leguminous & other fresh vegetables); ** including alliaceous vegetables, fresh or chilled and lettuce (*lactuca sativa*) and chicory (*cichorium* spp.), fresh or chilled. ***: calculations with quantities in tons.

Source: International Trade Centre database available through TIPS.

Table 12 reports the export performance for some sectors in KZN – defined in terms of export growth – relative to that in other Provinces of South Africa. The information suggests that a potential demand for air freighting facilities in the farm sector could originate from the fish and tropical fruit sectors. In contrast, vegetable and cut flower exports have declined over the late 1990s. Yet, whilst seafood offers the most attractive returns and potential shift towards air transport, this is a small sector in KZN. In relative terms, a strong fresh farm sector emerges in the data, the avocado sector (Table 13). Production is negligible in two farm produces that have strong international prospects – mushrooms and peppers –. This is in spite of the presence of a large mushroom producer in KZN (Denny).

Table 12. Growth rate of exports (1998 to 2001) in some farm/pelagic produces for KZN and other provinces of South Africa

	Fish	Total fruits	Tropical fruits*	Avocados	Cut flowers**	Vegetables
KZN exports	44.1	16.1	34.2	50.5	-55.1	-10.6
Other SA Provinces exports	7.8	-6.5	-11.9	-20.3	-5.5	39.3

Notes: Based on trade data at 2000 prices. * avocados, pineapples, bananas, mangoes, guavas & other misc. fruits; ** figures for HS 060310 only – bouquets.

Source: Customs and Excise trade database.

Table 13. Share of KZN sectoral exports in South Africa exports (%)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Fish	Total fruits	Tropical fruits	Share of avocado in tropical fruits from KZN	Share of avocado in tropical fruits in other SA provinces	Cut flowers	Vegetables	Share of fresh mushroom	Share of pepper*
1998	0.20	1.15	2.0	65.2	75.8	2.7	10.6	0.0	0.0
1999	0.25	1.50	2.7	59.1	57.1	0.1	8.3	0.2	0.0
2000	0.30	1.73	6.0	48.8	64.4	0.2	3.1	7.8	0.0
2001	0.47	2.18	6.7	92.0	56.0	0.3	3.0	0.1 to 1.7**	0.6

Notes: Columns [4] and [5] refer to the share of the specified product in KZN/other Provinces exports of the main product group.

* capsicum & pimienta variety; ** As Customs and Excise trade data for South Africa are not credible a sector second figure is reported with calculations based on KZN data from Customs and Excise and data from TIPS ITC TradeMap for South Africa.

Sources: Customs and Excise database and ITC database through TIPS.

The following summarises the trade prospects for various fresh farm/pelagic produces:

- For cut flowers – trade nomenclature HS 60310 -, international demand has declined according to both 1996-2000 & 1997-2001 data. The decline is of the order of 2 to 3%. The sector's recent KZN performance is characterised by export difficulties. Moreover, there was no report of airfreight use in the airfreight data (1 occurrence only unlikely to be fresh flower). One issue with the cut-flower sector is that export performances are determined by the current capacity to airfreight the goods. Difficulties are reported in terms of goods being 'bumped' at Johannesburg International Airport, that is that some amount of shipment is not forwarded on time.³⁹ Various researchers have suggested that the sector is likely to take off with substantially improved (provincial) airfreight facilities.
- Peppers (capsicum & pimenta) and fresh mushrooms – HS 70960 and 70951- exhibit varying average returns. For peppers, export returns are small but this is a champion sector in terms of international demand trends. This contrasts with mushroom which, whilst only marginally a champion sector with growth in demand below and up to 0.5% (for the 1997-01 and 1996-00 according to the ITC Trademap data available at TIPS and directly at the ITC), the returns on exports are high. For these sectors, long term developments are not known. Pepper exports were recently initiated (in 2001 from KZN) but these are destined for East Asia & the Pacific – with a small amount sent to Zimbabwe. KZN capacity in mushroom export is in contrast unclear – Denny, a South African producer has acquired the Peppadew business and has this product already listed in over 2000 stores in the UK. The main producer thus has an already established customer base overseas.
- As for avocados – HS 70951 -, it is also possibly a champion sector. International demand growth has been of the order of 9% but variations over the period in demand are caused by the fact that outside of Mexico (the Hass variety), exporters typically supply residual amounts. In 2000, South Africa accounted for 3% of the world market share and ranked 9. A striking feature of this sub-sector remains the growing share of KZN in South Africa's tropical fruit exports. KZN avocados, the dominant tropical export fruit, have grown and are destined for the EU (65% to the Netherlands and the UK) and SADC (25% to Mauritius).
- Finally, high returns are with seafood produces. The bulk of both, developing country and South Africa's exports are in sub-sectors in which demand is growing (see the win-win column of the last part of Appendix Table 5, page 41). However whilst growing and relatively large export sector for the country KZN exports in this sector have to become significant, possibly tapping on Mozambique's seafood production for export through.

As noted earlier the provision of time-critical logistical support needs to be incorporated in a broader context of a series of other determinants of trade performance. Other determinants will have to be overcome in order for time critical exports to expand. This point is notable in for perishable organic farm produces. Box 1 below illustrates some of the barriers associated with organic food exports to the European Union (EU), stressing again that national support will have to be sought for South Africa's hygiene/phyto-sanitary standards to be recognized and approved.

Airfreight demand for vegetables and flowers are currently small. Exports will generally expand in a difficult context as exchange rate levels typically affect the opportunities of these goods (spot market

³⁹ The term refers to the fact that airlines sell space to freight forwarders by trading off passenger load with cargo load. Since the space devoted to goods depends on the passenger load for a given flight it is not systematically guaranteed. The main problem facing exporters with the airline is little flexibility in peak time period (i.e. Christmas) when there is a bidding process and space is allocated to the highest bidder ('priority goods'). This has been reported by a series of respondents.

prices) if the produces are sold to independent buyers/distribution centres rather than to established supermarket chains. However, with the forthcoming international negotiations on agricultural subsidies, international demand might expand in favour of less established suppliers. Tropical fruits also come through as a potentially small sector. Yet, some products are important to some EU markets. Avocados from South Africa amount to 40% of avocados' sales in the UK. Developments in the avocado sector however signal for some of the challenges ahead with regard to a shift to airfreight. These are in two directions: 1) a potential consolidation of reefer-shippers and 2) the introduction and spreading of new technology (i.e. controlled atmosphere or CA containers) by sea transporters. KZN avocado exporters are increasingly given flexibility and traceability through the adoption of the Chill-Trac system.⁴⁰

Box 1. The case of organic food – a difficult EU import context

The analysis of the organic EU import context illustrates the importance of a series of factors in insuring that organic farming produce exports occur and that they are viable.

Issues emerge in a series of directions:

- 1) Ensuring that the price *premia* obtained in the import market for organic products exceed the costs associated with lower yields and air transport. Whilst there is a *premium* associated with organic produces, it varies across products in non-systematic ways. Also, the observation of large *premia* in foreign supermarkets *does not systematically translate* into the farmers capturing these.
- 2) Obtaining a contract overseas. There are two main difficulties here. First, opportunities for exports vary substantially within the EU. The opportunities available across Member States depend on the depth and nature of government support in organic food produces in the national markets, the market and retailing structure and national consumer preferences. Specifically there are differences in levels of excess demands for organic goods and in extra-EU import orientation; few Member States have engaged in the import of organic produces: namely the UK and the Netherlands. Second, food import in the EU is controlled by a series of key actors and intermediaries. Thus, even in States where accreditation on non-EU import can be secured, a hurdle for exporters lies in establishing sales within a particular channel. Again, there are differences across the EU countries. Whilst supermarkets are typically the dominant sales conduct for these goods, health and specialised stores dominate in certain Member States. A detailed analysis of how to target sales to foreign supermarkets, the barriers to sales and the niches available (i.e. own or supermarket brands) are thus further aspects that need scrutiny. New exporters have to allow for the fact that a growing number of developing suppliers are already engaged with the main supermarkets so that competition might already be intense in some specific organic segments.
- 3) Meeting additional and specific requirements specified by the EU Member States. As EC regulation only specifies a minimum standard, consumers are informed about the organic status through logos and labels. These are Member States specific insofar as the different standards applied across MS are not equivalent. In effect, this is a barrier to trade: exports are constrained by the fact that standards in some EU States are only 'achievable' domestically. This is the case of Denmark.
- 4) Ensuring that South Africa has secured third country standard enabling the minimum EU safety and hygiene standard to be met before seeking to obtain Member States specific accreditation. The key point is that South Africa authorities themselves will have to be involved with developing a particular third country standard so that it is recognised in the EU (i.e. possibly the South African Bureau of Standards will have to first be involved in this process).

⁴⁰ "Storage temperatures of avocados can be checked at any online terminal in the world, at any time – whether the fruit is in the packhouse, on the water, or ready for unloading at Tilbury Docks." (See FreshInfo.com, "South Africans Avo Go", story published 12/04/2002.)

5.4 Conclusion

There are numerous dimensions through which to assess the potential demand for airfreight facilities. These are at least with 1) current volumes air-freighted, 2) a foreseeable expansion of these volumes and 3) the role of e-commerce in boosting trade from some sectors of activities. For businesses, 2006 is a long time horizon.

Domestically, demand for air-freighting facilities is already evident from some sectors of activities, namely the clothing sector. Whilst volumes of trade might be sufficient or might expand sufficiently rapidly to ensure that there is adequate air-traffic demand from the KZN firms to ensure the viability of the DTP, there is limited potential for the firms to relocate to the DTP on the basis of seamless trade opportunities. This is partially because of the physical characteristics nature of the goods traded and partially because exports with some foreign end-customers are recent (thereby requiring monitoring of performances by individuals). The sector also operates in an uncertain context. This uncertainty is both, with the characteristics of the producers selected by end-customers for the orders and with forthcoming international developments in the direction of a liberalisation of trade in the sector. The liberalisation will affect the selection of producers by intermediaries on the behalf of end-customers. This should take place in 2005, if the programme of trade liberalisation of imports by the EU and the US takes place. For now, the sector, whilst time-sensitive, is typically footloose.

The nature of the integration of some sectors with foreign customers shapes the current pattern of airfreight use. This is the case for the clothing and the automotive component sectors. Both are likely to engage with air-freighting in order to follow international practices and external requirements but air-freighting is qualitatively different for the automotive sector for which the delivery cycle is short, with orders specified in days. For some automotive component firms however, the extent to which air-freighted volumes will expand is uncertain. Volume is specified externally to coincide with foreign production requirements. The overall strategy of companies located overseas matter in this regard. The case of the automotive component sector, a success story in South Africa, is likely to be framed by the fact that sector specific incentives have contributed to lowering air transport costs. The sector is thus likely to be unique in South Africa as a case of successful trade in a vertical specialisation context.

Electronic automotive components and leather seats and trims are already air-freighted. There is therefore again the possibility that volumes are sufficient/rapidly become sufficient to ensure that the DTP airfreight project is sustainable. What the automotive component sector also illustrates is that the goods that are shipped by air are of the high value per weight as well as of the high value added variety.

The discussion of fresh farm produces also emphasises current potential in the direction of tropical fruits. Shipments from other sub-sectors are likely to be sporadic. One general area of difficulty for the management of air shipments of such produces is the seasonal nature of trade – more evident for fruits and ‘cut flowers, foliage and trees’ -. ⁴¹ High returns are derived from exporting or fresh/unprocessed produces and there are opportunities in some sub-sectors. Reefer shipper developments (changes in market structure, role and the introduction of new technologies) are likely to impact on the trade of fresh produces and opportunities for air-freighting. Nevertheless, the DTP offers distinctive opportunities through freight villages being set up in the proximity of agricultural production centres. Transaction costs would be reduced accordingly.

6 CONCLUSION

The outcome of the DTP is difficult to establish because it entails the setting of additional air-freight capacity, because it makes new capacity available to firms in a dynamic South African Province, because the platform will entail new means of trade support that have trade-facilitation effects and because new incentives are being offered to exporting firms. The problem that faces policy makers and researchers in

⁴¹ See Appendix Figure 2, page 43.

specifying the outcome of the scheme is that which governs decisions of investing into infrastructure when only a small trading place is in place:

“On the one hand, infrastructure investment is not viable until economic activity justifies it; that is, transport is a derived demand. On the other hand, economic activity cannot emerge unless there are adequate transport facilities; ...” (UNCTAD, 1999: 23)

This report starts by focusing on the dimension that economic activities will emerge only once an adequate level of infrastructure facility is provided. More specifically the emphasis bears on the benefits that the main features of the DTP will create a context in which relative distance and more generally time costs are substantially reduced. This will occur through an expansion of airfreight facilities and a platform for seamless trading. Such support will yield, *ceteris paribus*, substantial improvements in the export performance of KZN firms by enhancing their international competitiveness. Undoubtedly, the changes at hand require an improvement of the traffic of goods generally (port, rail etc.) to allow firms to make a cost-effective choice as to how their goods will be transported.

Time costs are important for the trade of all goods, but its impact is greater on manufacturing goods. From trade data show that higher value added goods are more likely to be traded by air than by sea. Therefore, for KZN exporters to compete internationally in the higher value added segments, instantaneous to rapid access to foreign buyers – through airfreight and an e-commerce platform - is required. As these goods become relatively rapidly obsolete getting these rapidly to foreign markets is a priority. Also, rapid access to foreign market is a prerequisite to the integration of a country/region into international vertical production networks or value chains. As should be clear not all sectors will shift from sea to air-freight. Producers will trade off the cost of the more expensive method of transport against reduced time costs. Airfreight will not be chosen if the *premium* associated with air rather than with sea transport does not outweigh the benefits associated with air-freighting. Sectoral trade might not be observed if there is insufficient airfreight capacity as well.

The second section part of this report focuses on the second dimension, that enough economic activity has to be in place to justify the investments associated with the DTP. Presently there is an apparent limited potential demand within KZN when the focus bears on individual sectors. Some exceptions are reported in this Report as they emerge either through the analysis of the performance of individual sectors or through an analysis of current airfreight use. The goods that are identified are textiles, clothing, avocados and potentially seafood. For (some of) these sectors there might already be enough volumes air-freighted to justify KZN Provincial government seeking to redirect the transport expenditure back to the province.

The discussion of the potential demand from specific sectors of activities however suggests that some specific aspects rather than all aspects of the DTP offer new opportunities. For clothing, e-commerce related trade potentials are presently limited. Yet, access to an already set-up e-commerce platform might generate new trade. Such trade could emerge from a new-customer base. For automotive components, volumes might expand further but this expansion is externally driven. There are in contrast sharper opportunities for fresh farm/fish produces, the other sector considered in this report.

Air-freighting is used for high value added goods whilst KZN production and trade of such goods is small at least at the sectoral, as opposed to firm-specific, level. Yet, prospects of use of the DTP logistic platform can be identified through the presence of high tech firms in the Province that are currently engaged in air-freight goods at Johannesburg International Airport (i.e. UEC). The DTP project is a long term project and relations might have to be nurtured with particular firms and/or sector to identify how potential demand might evolve. This is important because the introduction of technological innovation in sea-freight might be underway as reported for avocado exports.

Generally the opportunities for the DTP rely on The firms themselves identifying time-critical or time-sensitive demands overseas.

- The behaviour of large firms – their current transport mode and use of e-commerce as a method of trading and their role as a catalyst to other firms.

- The emergence and expansion of small new sectors for which time costs reductions are important determinants of performance.

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8 ADDITIONAL NOTE: ABOUT THE KZN AIRFREIGHT DATA USED FOR THIS BRIEFING

- Airfreight data for KZN firms is available for part of 1999 (from August onward), 2000 and 2001. Whilst data is also available for 2002, the data is incomplete for that year: information was supplied to the main researcher in early December 2002 with no data available for September. Comparisons of time trends are thus only with data considered up to August 2002.

The original data provided lists: the exporting firm, the type of good air-freighted and the number of pallets associated with each air consignment, the time at which the consignment was shipped as well as origin of exports within the province (the town from where the export certificate is issued). 4031 air-freighted observations were initially reported for the period and a relatively small proportion of observations was originally incomplete. Yet, a series of problems emerge with the data.

1. Distinct firms with similar names were given the same code. After checking whether the firm might have changed name (by consulting the internet and the South African Yellow Pages), the initial number of firms of 545 air-shipping goods, was expanded to 548.
2. Some observations were dropped on the basis of incomplete information as to the destination of the consignment. This is because a country of destination was not systematically specified – towns or airports were listed instead – and some towns could not always be attributed to a particular country. The researcher used her judgment to decide, at times, a most likely *country* of destination for the goods.
3. Also, the initial classification of goods exported had to be redefined following the identification that a number of errors had occurred (i.e. ‘sweaters’ or ‘dried fruits’ classified as ‘chemicals’). Largely, the classification followed by Provincial Government was kept noting that the classification adopted underlies some confusion as to whether goods are considered according to their material (i.e. plastic) or final use (i.e. for entertainment purposes). A large number of items were reclassified and a somewhat modified classification further considered.⁴² Data have been presented using the original *and* modified classification.

⁴² It should be noted that the revised classification only constitutes a minor improvement insofar as there was insufficient information to reclassify a series of goods properly. Again the researcher applied her judgment. It would be appropriate for the future to instigate a HS classification of the goods shipped by air (keeping it at 2 or 4 digit level for quick collection). Not only are exporters already familiar with HS codes, it would further allow an overall insight for some sectors and for some partners of the proportions of trade air-freighted.

Table 1. Classification of air-freighted exports into sectors of activities

Initial	Code	Modified	Code
Chemicals	1	Chemicals, plastics & rubber goods	1
Metal products & machinery	2	Metal products & machinery - parts of, including electrical equip.	2
Clothing	3	Clothing (incl. swimwear)	3
Automotive & components	4	Automotive & components	4
Textiles	5	Textiles & made up goods	5
Footwear & leather	6	Footwear & leather including related machinery	6
Forestry, paper & wood	7	Paper & wood products (forestry) -	7
Sugar	8		
Information & communication technology	9	Information & communication technology (software & hardware)	9
Food & beverage processing	10	Food (incl. Sugar) & beverages (incl. alcoholic beverages)	10
Tourism	11		
Fresh produce	12	Fresh produces / perishables	12
Aquaculture	13	Aquaculture	13
Aluminium	14	Aluminium pdcts	14
Transport & logistics	15	Transport & logistics	15
Arts, crafts & entertainment	16	Arts, crafts & entertainment (i.e. includes goods for entertainment purposes)	16
Financial services	17		
Mining	18	Mining (gold & stone) products	18
Agro-industry & processing (excl. sugar & forestry)	19	(Agro-industry) - agric. Machinery & seeds	19
Construction	20	Construction	20
Property services	21		
Bio-technology	22		
Pharmaceuticals	23	Pharmaceuticals (incl. cosmetics but excluding medical clothing)	23
Professional Services	24		
Other	25	Other	25

Notes:

- The original classification substantially underestimates items of Sector 4 that are distributed across Sectors 2 and 25. Only when obvious (i.e. “Volvo brakes”) were the goods relocated in the modified classification. Sector 14 apparently narrowly bears on goods made solely of aluminium.

- When goods were reclassified, Sector 16 was expanded to encompass goods for advertising and promotional purposes. Thus advertising posters fall in this sector, not in Sector 7. However, promotional clothing (i.e. T-shirts with advertising logo) was kept in Sector 3 whenever unclear.

- Sector 9 excludes alarms and electrical burglar detection system.

The attempt was made to keep as many goods as possible as with the original list and to reclassify the goods for consistency purposes. Whilst obvious mistakes were corrected, we considered that those involved with the initial data collection had first hand knowledge of the product exported and of the firms.

Appendix

Box 2. Trade facilitation: Progress achieved in three APEC countries

The APEC study contains three distinct case studies of trade facilitation. The trade facilitation (including Customs) changes occurred in the 1990s (early to mid).

- The case of Chinese Taipei illustrates the role and involvement of the private sector in the process of improving Customs clearance. A particular concern of the authorities was risk and enforcing compliance. Importers, exporters and traders were engaged in strategic partnership to review and support the risk management process.
- Peru where trade was affected by a series of severe problems – coordination, corruption, high inspection rates, complex tariff modalities etc. – underwent a major restructure of its Customs procedures. Improvements came in the form of a top to bottom restructuring and the introduction of advanced technology.
- In Korea a more complex model was applied to yield a paperless customs system.

The changes yielded the following results:

	Customs clearance time		Inspection rate	
	Before	After	Before	After
Chinese Taipei		21 min (air); 1:52 h (sea)	18% (air) 25% (sea)	
Peru	48 h	2 h	70% to 100%	15%
Korea	2:50	45 min		

Appendix Table 1. Existing sectors and sub-sectors that might shift to locate to the DTP

Sector	Sub-sector	Distance / Time matters
Textiles	Automotive	Yes
Clothing		Yes but small effect of time cost reduction predicted
Furniture	Of metal, plastic and other	Yes for distance Time effect unclear
Paper	Printing	Yes for paper and paperboard but not time for pulp
Chemicals	Paints, varnishes, inks, mastics	Distance but not time
Plastic		Yes But No for rubber products
Glass	Containers & scientific glassware	Yes for distance Time effect unclear
Metal	Structures, tanks, springs Metallurgy & powder metallurgy	Yes but small effect of time cost reduction predicted
Non-electrical Machinery	Mechanical engineering Handtools, hardware Pumps, compressors, taps and valves Automotive components Lifting & handling equip. Specialised (mining-quarrying)	Yes Strong effect of distance Strong effect of time cost
Electrical Machinery	Office equip. Electricity apparatus & cables Electronic components	Not distance - time Yes strong effect Yes strong effects
Motor vehicles	Bodies Radiators & parts	Yes strong effects
Transport equip.	Repairing of boats	No

Notes: The table simplifies the sectors which are originally specified at the SIC 5 digit level. The IDZ of reference is here that of Richards Bay/Durban.

Distance matters means that distance influences import demand. Third column information drawn from significance level of the distance variable in an OLS model (Hummels Jan. 1999). Time effect unclear refers to the wrong sign of the effect, suggesting variations within the main product group.

Sources: LawGibb (1999, Table 3.4: 19) and Hummels (Jan. 1999 and July 2001).

Appendix Table 2. Product imported by the US by air – frequency of observations in which mode of transport was air

0-20%	20-40%	40-60%	60% +
Meat & meat, Dairy pdcts Cereals Vegetables and Fruits, Sugar, coffee, tea Misc. food pdcts Beverages Oil seeds Cork & wood Pulp & paste Misc. ores, coal, coke, petroleum, gas Animal & vegetable fats	Fish Feeding stuff Crude rubber Textile fibers Crude fertiliser Animal oils Inorganic chemicals	Tobacco Crude Animals n.e.s. Organic chemicals	Live animals Hides & skins
Fertilisers Cork & wood manuf. Iron & Steel	Paper & paperboard Nonmetallic manufc.	Dyeing & tanning Essential oils Plastics Chemical material, n.e.s. Rubber manufactures Nonferrous metals Manufactures of metals nes	Pharmaceuticals Leather manufactures Textile yarn
	Prefabricated buildings Furniture	Machine specialised Metalworking machinery Road vehicles Footwear Misc. manufactures	Power generating machinery General industrial machinery Office machines Telecommunications Electrical machinery Transport equip Travel goods Apparel Scientific instruments Photographic equip.

Note: Thresholds have been arbitrarily defined. The rows correspond to commodities, chemicals and simple manufacturing and machinery and miscellaneous manufacturing. The breakdown is based on data for the 1974-98 period.

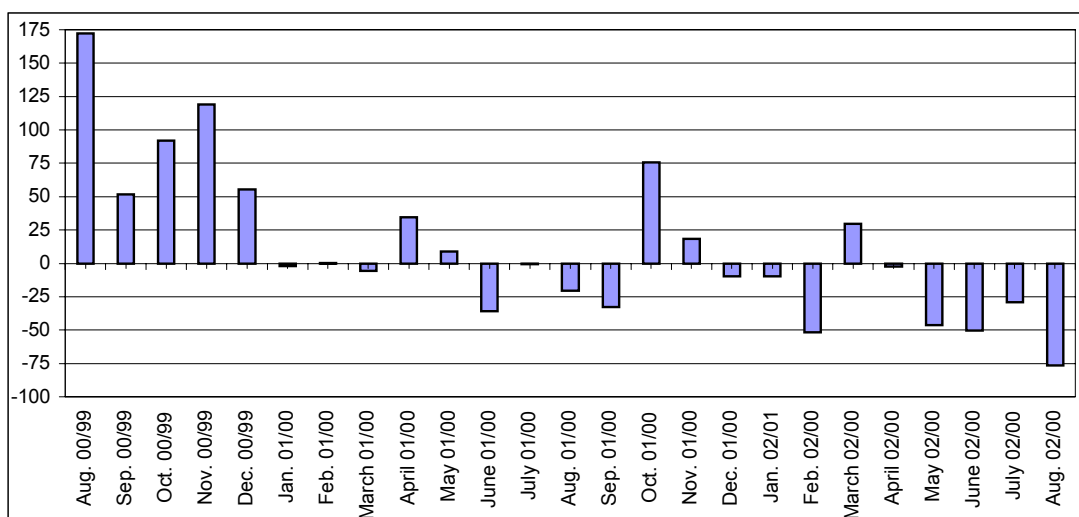
Source: Hummels (July 2001).

Appendix Table 3. Sectoral breakdown of air-freighted goods (original classification)

		1999	2000	2001	2002	Change (2000-01)
Clothing	UK	44	45	47	47	↑
	USA	16	10	13	23	↑
	Other Europe inc. Turkey	15	21	15	10	↓
	Mauritius	7	3	2	8	↓
	Other	19	21	23	13	
Metal products	Mauritius	61	63	50	48	↓
	Middle East	11	6	7	8	↓
	Asia & Pacific	4	12	18	18	↑
	Other	24	18	25	26	
Chemicals	Mauritius	71	62	55	33	↑
	Middle East	0	19	21	19	↑
	Asia & Pacific	0	3	3	20	↑ (but small sector) stable
	Other Europe inc. Turkey	24	4	2	4	
	Other	6	13	18	23	
Textiles & made-ups	UK	30	39	12	9	↓
	Asia & Pacific	12	14	18	29	↑
	Mauritius	13	18	23	20	↑
	Other Europe inc. Turkey	16	12	17	18	↑
	Middle East	11	1	9	11	↑
	Other	17	16	20	14	
Textiles & made-ups	UK	30	39	12	9	↓
	Asia & Pacific	12	14	18	29	↑
	Mauritius	13	18	23	20	↑
	Other Europe inc. Turkey	16	12	17	18	↑
	Middle East	11	1	9	11	↑
	Other	17	16	20	14	
Arts, crafts & entertainment	Other Europe inc. Turkey	37	12	8	19	↑
	Mauritius	16	19	25	18	↑
	Africa Other inc North Africa	0	15	27	12	↑
	Mexico & Canada	5	15	12	11	↓
	UK	21	6	0	0	↓
	Other	21	33	28	40	

Notes: Last column based on the change to the number of pallets between 2000 and 2001. 'Africa Other' excludes Southern Africa and Mauritius.

Appendix Figure 1. Month-on-month change of pallets air-freighted (KZN - %)



Appendix Table 4. Frequency of the origin of airfreight in the Province

	No.	%		No.	%		No.	%
Missing cases	18	0.4	MARGATE	1	0.0	UMHLATUZA	1	0.0
AMANZIMTOTI	4	0.1	MAXMEAD	11	0.3	VERULAM	17	0.4
ASHWOOD	11	0.3	MAYVILLE	22	0.5	WANDSBECK	15	0.4
BAYHEAD	1	0.0	MERRIVALE	7	0.2	WESTMEAD	22	0.5
BEREA	6	0.1	MKUZE	5	0.1	WESTVILLE	45	1.1
BISHOPSGATE	2	0.0	MOBENI	622	15.4	WINTERTON	52	1.3
BLUFF	2	0.0	MOOI RIVER	1	0.0	Total	4030	100
BOTHA'S HILL	2	0.0	MORNINGSIDE	10	0.2			
BRIARDENE	22	0.5	MT EDGECOMBE	47	1.2			
BRICKFIELD	1	0.0	MTUBATUBA	6	0.1			
CASCADES	2	0.0	MUSGRAVE	20	0.5			
CATO RIDGE	12	0.3	NEW GERMANY	85	2.1			
CHATSWORTH	1	0.0	NEWCASTLE	20	0.5			
CLAIRWOOD	11	0.3	NORTH COAST	3	0.1			
CONGELLA	89	2.2	NORTHWAY	6	0.1			
DALBRIDGE	12	0.3	OSLO BEACH	1	0.0			
DORSPRUIT	2	0.0	OTTAWA	1	0.0			
DURBAN	676	16.8	OVERPORT	47	1.2			
DURBAN NORTH	201	5.0	PAVILION	7	0.2			
DURBAN SOUTH	1	0.0	PHOENIX	43	1.1			
ESCOMBE	8	0.2	PIETERMARITZBURG	122	3.0			
ESTCOURT	5	0.1	PINETOWN	486	12.1			
GILLITTS	16	0.4	PORT EDWARD	2	0.0			
GINGINDLOVU	10	0.2	PROSPECTON	5	0.1			
GLEN ANIL	13	0.3	QUEENSBURG	9	0.2			
GLENASHLEY	18	0.4	QUEENSMEAD	17	0.4			
GLENWOOD	14	0.3	RED HILL	59	1.5			
GREYTOWN	14	0.3	REUNION	9	0.2			
GREYVILLE	25	0.6	RICHARDS BAY	4	0.1			
HAMMERSDALE	256	6.4	RICHMOND	1	0.0			
HILLARY	1	0.0	ROCHDALE PARK	1	0.0			
HILLCREST	38	0.9	ROSEHILL	2	0.0			
HLUHLUWE	1	0.0	ROSSBURGH	28	0.7			
HOWICK	2	0.0	SCOTTBURGH	4	0.1			
ISIPINGO	11	0.3	SOUTH COAST	2	0.0			
ISLAND VIEW	1	0.0	SPRINGFIELD	146	3.6			
JACOBS	84	2.1	STAMFORD HILL	76	1.9			
KLOOF	12	0.3	STANGER	3	0.1			
LA LUCIA	8	0.2	TONGAAT	103	2.6			
LADYSMITH	1	0.0	UMBULO	130	3.2			
LINK HILLS	3	0.1	UMBOGINTWINI	2	0.0			
MALVERN	11	0.3	UMGENI	5	0.1			
MANDENI	45	1.1	UMHLANGA	24	0.6			

Appendix Table 5. Key trade characteristics of the perishable sectors

HS Ch.	Description
03	Fish and crustaceans, molluscs and other aquatic invertebrates
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, n.e.s.
06	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
07	Edible vegetables and certain roots and tubers
08	Edible fruit and nuts; peel of citrus fruit or melons

HS Ch.	Trade balances (2001 \$Mio)	Per unit value \$/kg (2001) [1]	Export (2001)		Import (2001)	
			(000 R)	(000\$)	(000 R)	(000\$)
03	223.4	2	2 172 308	254 871	269 715	31 519
04	-1.9	1.1	246596	28 652	256 319	30 515
06	24.4	2.4*	246697	28 365	34 067	3 991
07	2.3	0.26	186080	21 825	165 193	19 509
08	547.8	0.33	4 703 791	567 742	170 078	19 910

Note:* :excluding sectors for which quantities are given in differing units for the sector.

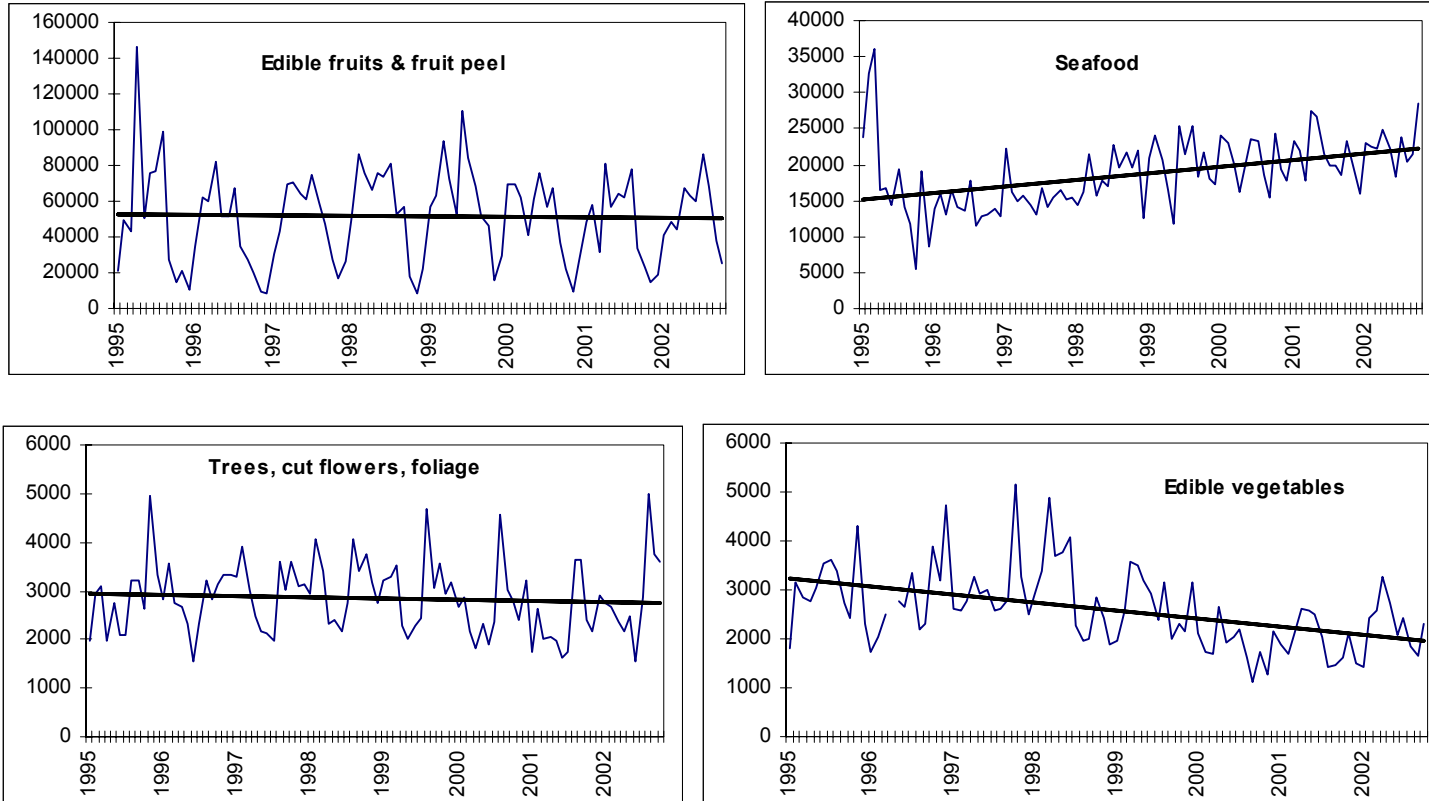
Sources: [1]: TIPS - ITC Trademap data. [2] TIPS annual trade database.

	% of South Africa exports in the win-win category [1]	% SA win- World loss
Seafood	60.1	11.1
Dairy; eggs; honey	35.1	
Trees; bulbs/roots; cut flowers/foilage	45	
Vegetables	20.4	21.4
Fruit and nuts; Fruit peel	34.9	11

Note: [1]: international demand growing and South Africa's exports are growing; [2] international demand is declining but South Africa exports are growing. Changes are for 1997 to 2001.

Source: ITC TradeMap data through TIPS.

Appendix Figure 2. Monthly South African Export in some Farm and in the Seafood Sector (\$ 000)



Source: DTI Monthly Trade Data. DTI Trade database.