TRADE IN TRANSPORT SERVICES: SOUTH AFRICA AND THE GENERAL AGREEMENT ON TRADE IN SERVICES

DRAFT REPORT

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TRADE AND INDUSTRIAL POLICY SECRETARIAT (TIPS)

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ABBREVIATIONS

BPM	Balance of Payments Manual (IMF)
CGE	Computable General Equilibrium (Model)
CIF	Cost-Insurance Freight
CPC	Central Product Classification
CSIR	Centre for Scientific and Industrial Research
CSS	Central Statistical Services (NOW Statistics SA)
CTS	Council for Trade in Services
DOT	Department of Transport
DTI	Department of Trade and Industry
FDI	Foreign Direct Investment
FOB	Free on Board
GATS	General Agreement of Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IDC	Industrial Development Corporation
IMF	International Monetary Fund
IMO	International Maritime Organisation
IRTF	International Road Transport Federation
IRTU	International Road Transport Union
MFN	Most-favoured-nation (treatment)
MSA	Moving South Africa
MTC	Maritime Transport Committee (OECD)
NAFTA	North Atlantic Free Trade Area
NGMTS	Negotiating Group on Maritime Transport Services
NRA	National Roads Agency
OECD	Organisation for Economic Co-operation and Development
OHS	October Household Survey (CSS)
RCA	Revealed Comparative Advantage
RFA	Road Freight Association
RTQS	Road Transport Quality System
SAA	South African Airways
SADC	Southern African Development Community
SARB	South African Reserve Bank
SATCC	Southern African Transport and Communications Commission
SDI	Spatial Development Initiative
SIC	Standard Industrial Classification
SNA	System of National Accounts
TEU	Twenty-foot Equivalent Units
TIPS	Trade and Industrial Policy Secretariat
WEFA	Wharton Econometric Forecasting Associates
WTO	World Trade Organisation

1. BRIEF

This document has been prepared for the Trade and Industrial Policy Secretariat (TIPS) in light of the imperative for South Africa to prepare its negotiating mandate at the discussions around the World Trade Organisation's (WTO) General Agreement on Trade in Services (GATS) that commences in the year 2000.

The GATS was negotiated during the Uruguay Round of multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT), and is one of the pillars of the agreement establishing the World Trade Organisation (WTO).

This document contains the preliminary and independent results of an investigation into South Africa's trade in *transport services*[1]. In light of the imperative to provide a sound and consistent negotiating base for the South African government the objectives of the present study were to:

- Identify the extent of the (potential) comparative advantage of South Africa in transport services – particularly land and maritime transport services;
- Indicate how far the transport services sector (excluding aviation) can be liberalised (deregulated);
- Identify the possible impediments to the exports of transport services from South Africa.

The document is structured as follows. In section two terminology is clarified and important concepts defined. In section 3 the context of liberalisation in services – particularly transport services, is provided. Section 4 sets out the case for liberalisation in services and identifies the importance of transport services. In section 5 a brief overview is given of the global transport service market. Section 6 outlines the main features of transport service' s contribution to the South African economy. In section 7 the institutional and regulatory framework impacting on transport services in South Africa is discussed. In section 8 the burning issues in transport services for South Africa, namely regional integration, the 20-year strategy of the DOT (MSA) and the question of transport costs to and from South Africa is discussed. Section 9 concludes.

2. TERMINOLOGY AND DEFINITIONS

In this report the focus will be on land transport (road and rail) and maritime transport. In this regard road, rail and maritime transport as used in this text will be taken to include the following.

- *Road transport* includes five sub-categories namely (a) passenger transportation, (b) freight transportation, (c) rental of commercial vehicles with operator, (d) maintenance and repair of road equipment and (e) supporting services for road transport services.

- *Rail transport* also includes five sub-categories namely (a) passenger transportation, (b) freight transportation, (c) pushing and towing services, (d) maintenance and repair of rail transport equipment, and (e) supporting services for rail transport services.

- *Maritime transport* includes seven sub-categories namely (a) passenger transportation, (b) freight transportation, (c) rental of vessels with crew, (d) maritime auxiliary services, (e) port services, (f) services auxiliary to all modes of transport and (g) supporting services for maritime transport.

Transport (together with storage and communication) are traditionally classified under SIC 7.The definition of transport services in GATS corresponds as follows to the standard industrial classification (SIC) and central product classification (CPC) (version 1).

Transport and storage, SIC 71-73 includes as sub-sectors the following:

[1] Following a Workshop on Services organised by the TIPS on 23 October 1998, independent background studies into trade in financial services, telecommunications services and transport services were commissioned.

- *Land transport* such as inter-urban and suburban railroads; urban, suburban and inter-urban highway passenger transport; bus tours, safaris, school buses and taxi-cabs; freight transport by road; pipeline transport; and supporting services for land transport, such as parking garages or renting of motor vehicles.
- *Water transport* such as ocean, coastal and inland water transport; and supporting services for water transport such as operation of piers and docks, navigational services, stevedoring, operation of canals and renting of ships.
- *Air transport* services including space transport and supporting services.

As far as the measuring of transport services in south Africa is concerned, there is consensus that service sector data are inadequate and subject to various shortcomings. The most important shortcomings for purposes of this report are:

- Output data on transport services are only readily available from infrequent surveys by STATISTICS SA (previously Central Statistical Services). The most recent survey for transport dates back to 1992.
- The disaggregation of transport services in the South African input-output tables has not be sufficient to obtain reliable data on sub-sectors for GATS. The most recent input-output table (1996) by the CSIR does however go much further regarding transport than any previous input-output table.
- The official STATS SA statistics for transport services includes only transport of passengers and goods per road by private transport companies, Transnet, S.A Post Office, Telkom & SABC.
- Balance of payments data (for exports and imports of transport service) in South Africa comply as yet only with the 4th edition of the IMF Balance of Payments Manual (BPM). This do however make provision for passenger transport, goods transport, freight and merchandise insurance, non-merchandise insurance. South Africa has not yet adopted the 5th edition of the IMF BPM-, BPMS- that breaks down business services to 10 separate groups. It should be noted that an Inter-Agency Task Force on Statistics of International Trade in Services was established by the United Nations Statistical Commission in 1994, with the aim to develop a manual on statistics of inter-national trade in service. This manual is currently in draft version and build upon the BPM5 and 1993 SNA (see IMF, 1998).
- Data on transport costs are highly problematic in South Africa. Most data are proprietory information. For international transport costs the CIF-FOB bands on imports can be used as a proxy on shipping costs. This is available form the IMF's International Financial Statistics (IFS).
- Data on logistical operations - e.g. turnaround times at South African ports are not yet available since a new database (VTS System) is currently being implemented by Portnet.

As a consequence of the above, the statistical picture of transport services in the economy is likely to be inaccurate, and in all likelihood would underestimate the contribution of transport services to the economy and to trade.

3. CONTEXT

3.1 Service Trade and the Multilateral Trading System

The WTO estimates that global trade in services was valued at $6.5 trillion in 1997. For instance in 1993, cross-border service exports by U.S. firms measured nearly $141 billion, and cross-border service imports measured $99 billion, generating a surplus of over $41 billion. In South Africa, exports of services have grown from R12 billion in 1989 to over R32 billion in 1997, an average annual growth of 13%.

Despite the considerable volume and growth of trade in services, multilateral trade agreements were not applicable to service transactions until the GATS took effect on January 1, 1995. The GATS can therefore be seen as a historical watershed in the development of global free trade, as before 1995 the world trading system (and the formal trade literature) has focused on trade in goods (Francois & Schuknecht, 1999:1). Indeed, as pointed out by Hodge (1998:1) and Hoekman (1993:1) the inclusion of trade in services in the agenda of the Uruquay Round was resisted by especially developing countries during the early stages of the negotiations. South Africa however, is a signatory to the GATS.

South Africa, being a signatory to the WTO and the GATS, will be entering the next round of WTO negotiations that will commence on 1 January 2000. Although South Africa has tabled certain specific GATS commitments (see section below) in 1994, restrictions on service trade in South Africa are ubiquitous and their liberalisation had to gauge at this stage. Furthermore, in view of the current situation, mutual liberalisation under the GATS will be an ongoing process and further specific commitments by South Africa in 2000 should be approached by policy makers as possible bargaining chips in order to make gains in other areas of the GATS negotiations (Du Plooy, 1998:3). (There is mounting pressure internationally for South Africa to make a significant trade offer in services during the next round - Hodge, 1998b:16)

In order to assists the South African Department of Trade and Industry (DTI) to pre-pare for the next round of WTO negotiations, the Trade and Industrial Policy Secretariat (TIPS) initiated a research programme on South African trade in services with a view to :

- Understand the contribution of services to the national economy; [2]
- Understand the domestic service sector and imports;
- Investigate service export activity; and
- Develop a coherent strategy around service trade.

As the GATS covers twelve service categories (see footnote 2), a supporting research program should address the above with reference to theses 12 service categories. These include:

- Business Services
- Communication Services
- Construction and Related Engineering Services
- Distribution Services
- Educational Services
- Environmental Services
- Financial Services
- Health Related and Social Services
- Tourism and Travel Related Services
- Recreational, Cultural and Sporting Services
- *Transport Services*
- Other Services

The focus of this document is on trade in transport services (other separate documents will deal with the other service sectors) – specifically land and maritime transport.

The GATS sets the basic trade rules for 130 countries. This covers over 90% of world trade in services. Each one of its member states must make a commitment that indicates which parts, or 'sectors' of its services markets are open to foreign business.

In the schedules of service commitments by signatory countries, signatories to the GATS specify the limitations that they maintain on international trade and investment in services. Under the GATS, each nation has made individual commitments regarding access to its domestic market in agreed-upon service sectors.

The GATS establishes a basic set of rules for world trade in services, a clear set of obligations for each Member country and a legal structure for ensuring that those obligations are observed. This allows companies to identify which markets are open to foreign services providers and to be sure that that same market will remain open in the future. If the market in question turns out to not to be as liberal as provided for under the GATS, the Agreement provides for each country the possibility to obtain for their own national service suppliers the treatment to which they are entitled.

The GATS and its general rules in principle cover all commercially traded services, although a few services are the subject of specific annexes that limit the coverage. Under the system of specific commitments, members are also able to identify exactly in which services they guarantee an open

[2] The GATS process may identify inefficiencies in the services sector in South Africa (see Hodge, 1998b:6).

market to foreign services suppliers and which restrictions they wish to maintain in relation to those sectors.

The developed countries have identified significant lists of commitments, while most developing countries have tended to make more modest commitments - taking into account that their services sectors are often at an earlier stage of development and are not ready to be totally liberalised.

3.2 Principles of the GATS

The GATS has three basic principles. First it covers all services except those provided in the exercise of governmental authority; Second, there should be no discrimination in favour of national providers - the national treatment principle; and Third, there should be no discrimination between other Members of the Agreement - the most-favoured-nation (MFN) principle.

The agreement provide exceptions to all three of these principles.

First, governments can choose the service sectors in which they make market access and national treatment commitments; Second, they can limit the degree of market access and national treatment they provide; and third, they can take exceptions even from the MFN obligation, in principle only for ten years, in order to give more favourable treatment to some countries than to the generality.

The GATS covers all the major ways in which service suppliers serve their clients - the so-called modes of supply. The *four modes of supply* are defined on the basis of the origin of the service supplier and consumer, and the degree and type of territorial presence that they have at the time that the service is delivered. These modes are:

- *Cross-border (mode 1):* where the trade takes place from the territory of one country into that of another. Only the service itself crosses the border, without the movement of persons such as information and advice passing by means of fax or E-mail, or cargo transportation. The service supplier does not establish any presence in the territory of the country where the service is consumed.

- *Consumption abroad (mode 2):* this relates to services consumed by nationals of a country , in the territory of another country where the service is supplied. Essentially, the service is supplied to the consumer outside the territory of the country where the consumer resides. This is typical of tourism, and also where the property of the consumer crosses the border to make use of services abroad, such as when ships go for repair in another country.

- *Commercial presence (mode 3):* where the service supplier crosses the border to have a commercial presence abroad through which the service is provided. This presence can take the form of any type of business or professional establishment including incorporation, branches, representative offices, joint ventures and so on.

- *Presence of natural persons (mode 4):* this mode of supply applies to natural persons only, when they stay temporarily in the market, for example the self-employed and the employees of service suppliers. The main purpose of defining the supply of a service according to these modes of supply is to facilitate the identification of regulations affecting them.

The above modes have to be addressed in each country's specific commitments. For instance countries have to indicate in their specific commitments whether or not they:

- Allow a foreign company to deal with clients in their market from across the border;
- Allow their citizens to travel abroad to the supplier in order to buy a service;
- Allow foreign service suppliers to establish companies in their market;
- Allow a supplier to enter the country in person to do business.

Of the modes 1 –4 described above, the most significant in terms of investment is the establishment of a company or subsidiary in the foreign market. As part of their commitments in each services sector

that they open-up, countries must state whether there are any limitations on the legal form or ownership of the new establishment.

Although the final outcome of the Uruguay Round as far as the GATS is concerned is on the one hand a watershed in terms of progress towards free trade, Rodrik (1994:14-15) describes the agreement on trade in services concluded during the Uruguay Round as "a rather weak document which leaves developing countries relatively free in choosing the extent and range of liberalisation they will undertake".[3] The reason for this is that the initial round of negotiations yielded few liberalisation commitments by member states as a deadlock was reached in negotiations around key services (Hodge, 1998:2). As a result the GATS can rather be described as providing a framework - including principles - for extended negotiations for countries wishing to table specific commitments in key service sectors (Hodge, 1998:2). As outlined above, this framework consists of a set of general obligations and a set of specific commitments. The general obligations apply to all areas of services and require most-favoured-country (MFN) treatment. The specific commitments[4] are at the heart of the GATS (Rodrik, 1994:14) and they apply only to service sectors or sub-sectors that are listed in a schedule presented by each country[5].

So far, many developing countries have failed to react at all by not participating in negotiations and failing to table any specific commitments. According to Hodge (1998:4) this is largely due to a lack of awareness in these countries as to the role of services in their economics, the contribution of services to growth, and the process of GATS negotiations.

3.3 The Importance of Transport Services

The importance of transport services is clear from the following. Firstly, transport services contribute approximately 5.3% to the South African economy directly. Secondly, exports of transport services exceed R6 billion annually. Thirdly, transport is of vital importance as intermediate input into many other sectors of the economy, such as mining, agriculture, manufacturing and even certain service sectors (e.g. distribution services and tourism). Fourthly, some of the most significant government assets requiring privatisation in South Africa are in the transport sector (road, rail, ports). Fifthly the improvement of regional transport infrastructure is crucial to unlock the economic potential of the SADC countries. Finally, South Africa is geographically distant from its major markets (as Table 1[6] below indicates), so that policies that improve the competitiveness of transport services is vital.

Table 1 : Distance in Nautical Miles from South Africa's Main Ports to Other International Ports

SA PORT	ROTTER-DAM	SINGA-PORE	NEW YORK	RIO DE JANEIRO	SYDNEY	CAIRO	MOM-BASSA
Cape Town	6163	5611	6789	3272	6563	5502	2369
Port Elizabeth	6566	5202	7191	3648	6253	4850	1960
Durban	6944	4867	7569	4026	6109	4469	1580

(Source: Portnet Marketing, 1999)

In South Africa, the DOT has adopted the view that transport is an enabling industry, one which exists not only to meet goals inherent to transport, but also to meet other pressing national and social objectives. Examples of such non-transport objectives include economic growth, creating a high and rising standard of living for all citizens as set out in GEAR and the RDP, Increased trade, especially with neighbouring SADC countries, Improved access to employment opportunities, or Increased

[3] GATS does not provide for more favourable treatment of developing countries as is the case in PART IV of the GATT (Hoekman, 1993:8). South Africa has always had a problem with the latter in that it classifies South Africa as a developed country (see Trade & Industry Monitor).

[4] The framework specifies that counties make commitments for each of four possible modes of supply in twelve service categories (excluding government services). The four modes of supply include cross-border supply, consumption abroad, commercial presence and the presence of natural persons.

[5] The most important principle that applies to services listed in these schedules is that of national treatment.

[6] Table 1 above shows that, outside of Africa, South Africa's ports are situated, on average in excess of 4000 nautical miles from its major trading partners. Since more that 90% of South Africa's exports are seabourne, these distances, presents a significant geographical barrier to increased trade.

social integration. Transport, therefore, becomes a critical input for other industries and other social objectives set outside of the transport context.

A study on the impact of infrastructure provision in Bangladesh by Yusuf & Kumer (1996) indicated that the most significant infrastructure intervention was roads and transport. Roads are necessary to interact with markets, and were found to increase access to institutional credit sevenfold. Transport infrastructure can furthermore provide a powerful stimulus for rural development.

Table 2 : Rate of return to Transport infrastructure

	Transport
Low-income countries	0.39
Middle-income countries	0.71
High-income countries	0.42
All countries in sample	0.56

(Source: Fay, 1996)

Table 2 above shows that the rate of return on transport infrastructure is highest for middle-income countries such as South Africa. South Africa therefore has relatively more to gain from liberalising service trade which could result in improved infrastructure (for instance in the areas of railway construction and port construction and operation).

In light of the above the importance of access to efficient transport services is important for South Africa's internationally competitiveness. Products traded globally are becoming increasingly time sensitive. This tendency is due to both shorter product life-cycles and the pervasive use of just-in-time production management techniques (Hoekman & Braga, 1997:12-13).

Improving transport infrastructure and transport services productivity and lowering transport costs in South Africa could therefore make a significant contribution towards improving the country's international competitiveness. GATS represent an opportunity in this regard. As stated by Rodrik (1994:3) although the GATS does not impose a tremendous amount of obligations on developing countries, it does offer developing country governments the opportunity to "build better structure of governance at home to enhance the performance of their economies in areas that go beyond trade" .

3.4 South Africa's GATS Commitments

These are described as follows:

Table 3 : South Africa's GATS Commitments

TYPE OF SERVICE	**COMMITMENT (Yes/No)**
Business Services	Yes
Construction and Related Engineering Services	Yes
Educational Services	No
Financial Services	Yes
Tourism and travel Related Services	Yes
Transport Services	Yes
Communication Services	Yes
Distribution Services	Yes
Environmental Services	Yes
Health Related and Social Services	No
Recreational, Cultural and Sporting Services	No
Other Services	Yes

(Source: WTO Services DATABASE, 1999)

Table 4 : South Africa's GATS Commitments for Transport Services

TYPE OF TRANSPORT SERVICE	COMMITMENT (Yes/No)
Maritime Transport Services	No
Air Transport Services	No
Rail Transport Services	No
Pipeline Transport	No
Internal Waterways Transport	No
Space Transport	No
Road Transport Services	Yes
Services Auxiliary to All Modes of Transport	No
Other Transport Services	No

(Source: WTO Services DATABASE, 1999)

Table 5 : South Africa's GATS Commitments for Road Transport Services

TYPE OF ROAD TRANSPORT SERVICE	COMMITMENT (Yes/No)
Passenger Transportation	Yes
Rental of Commercial Vehicles	No
Supporting Services for Road Transport	No
Freight Transport	Yes
Maintenance and Repair of Road Transport Equipment	Yes

(Source : WTO Services DATABASE, 1999)

Table 6 : South Africa's GATS Commitments for Passenger Transportation (CPC 7121; CPC 7122)

MODE OF SUPPLY	LIMITATIONS ON MARKET ACCESS	LIMITATIONS ON NATIONAL TREATMENT
1. Cross-Border	Unbound	Unbound
2. Consumption Abroad	Unbound	Unbound
3. Commercial Presence	None	None
4. Presence of Natural Persons	Unbound except as indicated in Horizontal Commitments	Unbound except as indicated in Horizontal Commitments

(Source : WTO Services DATABASE, 1999)

Table 7 : South Africa's GATS Commitments for Maintenance and Repair of Transport Equipment (CPC 6112)

MODE OF SUPPLY	LIMITATIONS ON MARKET ACCESS	LIMITATIONS ON NATIONAL TREATMENT
1. Cross-Border	Unbound	Unbound
2. Consumption Abroad	Unbound	Unbound
3. Commercial Presence	None	None
4. Presence of Natural Persons	Unbound except as indicated in Horizontal Commitments	Unbound except as indicated in Horizontal Commitments

(Source : WTO Services DATABASE, 1999)

Table 8 : South Africa's GATS Commitments for Freight Transportation (CPC 7123)

MODE OF SUPPLY	LIMITATIONS ON MARKET ACCESS	LIMITATIONS ON NATIONAL TREATMENT
1. Cross-Border	Unbound	Unbound
2. Consumption Abroad	Unbound	Unbound
3. Commercial Presence	None	None
4. Presence of Natural Persons	Unbound except as indicated in Horizontal Commitments	Unbound except as indicated in Horizontal Commitments

(Source : WTO Services DATABASE, 1999)

Table 9 : South Africa's GATS Commitments for MFN Exemptions

SECTOR OR SUBSEC-TOR	DESCRIPTION OF MEASURE INDICATING ITS INCONSISTENCY WITH ART. II	COUNTRIES TO WHICH THE MEASURE APPLIES	INTEN-DED DURA-TION	CONDITIONS CREATING THE NEED FOR THE EXEMPTION
Financial Services	Members of the Common Monetary Area enjoy preferential access to the South African capital and money markets and the transfer of funds, to or from the area of any other member of the Common Monetary Area, is exempt from exchange controls.	Lesotho Namibia Swaziland	Indefinite	The Common Monetary Area Agreement is aimed at the sustained economic development of the area as a whole. In particular, it encourages the advancement of the less developed members of the area through preferental access to South Africa's capital and money markets
Road Transportation	Regional bilateral and plurilateral road transport agreement providing for the transport rights to carry goods and passengers to or from South Africa and between third countries concerned, to be reserved for the road transport operators of the contracting parties to existing and future agreements. Cabotage restricted to South African registered vehicles and operators.	Botswana Lesotho Swaziland Malawi Zimbabwe Other Sub-Saharan African countries	Indefinite	To enhance the development of an integrated road transport system to underpin the economic development of the region and to ensure the availability of an efficient distribution network for relief supplies in case of natural disasters such as frequently occurring droughts in the region.

(Source : WTO Services DATABASE, 1999)

4. THE CASE FOR TRADE IN SERVICES LIBERALISATION

Since the late 1980s most developing countries have significantly liberalised trade in goods - either unilaterally, through bilateral agreements on regional level or through multilateral agreement such as GATT. Underpinning these liberalisation efforts are a growing recognition that outward-oriented, open economies perform better than closed, inward-orientated economies.

Consequently, as tariffs and related "traditional" trade barriers on trade in goods decline in importance, industries have now started to focus on the consequences of differences in regulatory regimes across countries for their ability to compete (Hoekman & Konan, 1999:3). There is now a greater recognition that producer services play a crucial role in a country's development and growth. Here transport facilities are important for agricultural markets and the international competitiveness of manufacturing.

It is especially with regards to trade in services were regulatory measures are the predominant mode of "protection". For instance, domestic markets in services (e.g. in rail transport for freight and passengers) are often protected through barriers in the form of state-owned or controlled firms, subsidies on the domestic industry, and competition policy (Hoekman & Konan, 1999:3). Hoekman & Braga (1997:5) point out that policy instruments that affect international trade in services are similar to those used in the goods context. An analysis is contained in Hindley (1988). Hodge (1998:50) point out that barriers to trade in services can be classified according to the mode of supply and by the type of restriction. The four modes of supply, corresponding to the classifications recognised in the GATS, are cross-border supply, consumption abroad, commercial presence and the presence of natural persons (see footnote 3).

Under each of these, the various regulatory measures or types of restrictions can be classified as market access restrictions (e.g. requirements and prohibitions relating to certain activities), national treatment measures (e.g. price controls, subsidies, investment incentives) and other measures (e.g. government procurement, consumer regulations). In the transport service sector, national treatment measures such as subsidies are prevalent, with subsidies for rail transport in many EU countries close to 40% of value added in the 1980's (Hoekman & Braga, 1997:9). Prohibitions are also prevalent.

The move towards liberalisation of trade in services is aimed at a reduction/elimination of these barriers through especially the specific commitments of member countries under the GATS (see section 3). This is increasingly seen as necessary for countries to benefit from the international economy through greater exports of services, but also to improve the competitiveness of manufacturing industries, for which good quality services are an important intermediate input (see Hodge, 1998:15-16). The liberalisation of trade in services entail measures that expand market access to foreign service providers and/or diminish discrimination against them vis-à-vis domestic suppliers. The implications of trade in services and trade liberalisation in this area are potentially far reaching (Francois & Schuknecht, 1999:1).

The guidance from established theory and empirical evidence is at this stage, however, relatively scant. Francois & Schuknecht, (1999:1) point out that the formal trade literature has focused on trade in goods, and that the literature on service trade are relatively limited[7]. The theoretical literature on trade in services has been surveyed by Sapir and Winter (1994) and Stibora and de Vaal (1995).

Underlying the relative lack of formal attention in the literature on trade in services was the (incorrect) perception that services were non-tradable (Hoekman & Braga, 1997:1). However, transport has always been an important traded services, and since the 1980s international service transactions expanded rapidly as new modes of supply have been introduced. In fact, during the 1980's trade in services exceeding the growth in goods trade (Hoekman & Braga, 1997:1). Currently trade in service amounts to at least 20% of total global trade[8]. Furthermore, since 1990 about 50% of the global stock of FDI was in services activities - reflecting the fact that producers of services must generally supply foreign markets through a *commercial presence* (mode 3) (Hoekman & Braga, 1997:1).

Thus, although one expect, a priori, the same beneficial effects as the opening of trade in goods markets - e.g. improved competition, higher productivity, and more choices, - the dynamic effects and consequences of services trade liberalisation (especially of transport services trade) are difficult to identify. These related especially to foreign institutional participation in domestic transport markets. Recent empirical studies, e.g. by Hoekman & Konan (1999:25) do find that the additional impact of service liberalisation (i.e. in addition to goods trade liberalisation) may be significant. Improvement in service delivery is found to lead both to gains in domestic welfare and output as well as improved exports.

The move towards greater liberalisation of trade in services is further strengthened due to the fact that even if a country were to engage in tariff reforms on goods, if it were not extended to services, distortions would continue to persist and resource allocation would be affected. Especially in the case of South Africa, as tariffs and other barriers to goods trade are reduced significantly, effective rates of protection may become negative (or very low) for manufacturing industries as they lose protection on their goods but continue to be confronted with higher transport (input) prices than they would have if the transport services markets were fully opened up.

In support of the above arguments, Brown *et al* (1996) used a CGE analysis[9] to conclude that welfare gains associated with the Uruguay Round reductions in tariffs on goods trade might have been three times higher if service barriers had been cut by 25% as well.

Further practical examples of the benefits of transport services liberalisation and deregulation and their impact on international trade are provided by the experience of Chile and Mexico with respect to

[7] There is a large literature on service sector policy and deregulation, but focused on domestic regulation (see WTO, 1998 for an overview).

[8] Since services provided via telecommunications networks is not properly captured in conventional balance of payment statistics, the share of services in global trade is likely underestimated.

[9] A problem confronting all CGE analysis of trade in services is that there is no reliable data on the impact of the policies that restrict trade and investment.

port services. Elimination of barriers to competition in the provision of port services in Chile led to a reduction of 50% in operating costs over two years. In Mexico the cost of services in the Port of Veracruz declined in one year by some 30% while container turnover increased by almost 50%. In addition, by reducing the costs of shipping, small and medium sized firms that would otherwise by marginal, have been able to expand their export activities (see World Bank, 1993:90; and also Bennethan, Escobar and Panagakos, 1989).

5. GLOBAL PROFILE OF TRANSPORT SERVICES

In this section, a brief overview is given of the salient features of transport globally, focusing on road transport (both passenger and freight), rail transport and maritime transport, as defined in section 2.

5.1 Road Transport

Road transport tend to represents between 2 and 6 per cent of countries' Gross Domestic Product (GDP) and employment, depending on their geography, the structure of their transport network and their level of development. The figures vary considerably even between neighbouring countries with a comparable level of development.

Because of the downstream nature of road transport activity, the steadily increasing complexity of production methods (the increasing numbers of plants involved in the manufacture of a single product) and the generalisation of just-in-time production, road transport has an impact on GDP and employment which far exceeds these figures. For instance, in the United Kingdom, an econometric study showed that an increase of £1 of road transport costs led to a reduction of £1.66p in GDP.[10]

Road transport covers three large subsectors, namely passenger transport (urban and interurban) and freight transport.

5.1.1 Passenger transport

The principal means of passenger transport by road is the car with 53 per cent of the 25,000 billion passenger/kilometres of motorised journeys completed throughout the world in 1995. The GATS do not apply to this type of transport that mainly involves individuals travelling on their own account in their own vehicle. GATS, and there are no world statistics that would make it possible to isolate their share which, however, must be very small. It should be noted that taxis are covered by the GATS. However, there are little reliable statistics on taxis in South Africa.

Road passenger transport represents about 25 to 30 per cent of world passenger transport consisting of the 24 per cent accounted for by buses and coaches, the tramways' share of the tram and subway item, and the indeterminate but small share corresponding to individual vehicle and two-wheel transport.

The distribution of the demand among the various means of road passenger transport (private car, taxi, bus, tram and subway) depend on such factors as the level of development (as far as private cars are concerned), congestion, the existence or non-existence of a subway network (only 93 cities globally have subways) or a tramway system (350 cities), the number of buses and their condition, the existence or non-existence of dedicated lanes, the fares charged, and feeder networks.

[10] "Barriers to Road Transport", the Hague Consulting Group, Cambridge, January 1998.

Table 10: The world-wide transport capacity for passenger transport

Type of transport	Vehicle fleet	Capacity (in thousands)	Share of total capacity
Buses	850,000	68,000	66.7%
Trolleybuses	20,000	1,600	1.6%
Shared taxis	350,000	5,250	5.1%
Taxis	1,000,000	5,000	4.9%
Suburban trains	100,000	10,000	9.8%
Subways	40,000	6,000	5.9%
Trams	45,000	5,850	5.8%
Total	2,405,000	101,700	100%

These services are often operated on a mixed or public basis, particularly in the developed countries. There is a very marked disparity in the rates of utilisation of the fleet, productivity, cost per passenger and fares. Operation seems to be profitable in only eight cases out of 27, seven of these eight operations being private (all profitable in the sample) and one mixed.

Interurban passenger transport is mainly supplied by buses, and marginally by taxis in the rest of the world. In South Africa interurban passenger transport is dominated by taxis. Globally, the market for interurban passenger transport is characterised by poor economies of scale and low access costs. Sector concentration is very uneven depending on the country – in South Africa it is very high.

Control of bus stations and terminals is important in terms of GATS. It is possible for rules on access to and non-discriminatory use of this infrastructure being developed, where necessary, along the lines of those that already exist in maritime transport and, to a lesser extent, in telecommunications. It may also be introduced in rail transport or indeed in connection with the allocation of slots in air transport.

Although it has often taken over from the railways when loss-making lines have been closed, the interurban passenger transport sector appears to be in long-term decline due to the steady increase in private car ownership.

Interurban passenger transport covers transport of several types: regular services (providing passenger transport accessible to all over a specified route according to a timetable for a set fare with passengers being picked up and set down at predetermined stopping points), shuttle services (organised transport of previously formed groups of passengers, by means of repeated outward and return journeys, from a single place of departure to a single destination) and occasional services which do not fall within the definition of either a regular or a shuttle service.

Occasional services and shuttle services are generally run as purely market activities (although in international traffic they are often required to operate within a certain regulatory framework), whereas regular services are more strictly regulated and sometimes operated by a public authority or under a concession arrangement. This is because local regular services, especially in rural or mountain areas, are not always profitable and therefore can only be financed by equalisation (cross subsidisation) or by subsidies.

In interurban passenger transport, the World Bank has focussed on reducing the barriers to the informal supply of transport and on devising effective subsidy programmes for the "social service" of public transport by defining public service obligations and establishing fiscally sustainable contractual compensation arrangements.

The effect of this internal liberalisation has been a reduction in prices, a reduction in wages, a fall in profits and an in increase in employment. The effect on traffic has been extremely varied, partly because it depends on external factors such as intermodal competition. Thus, in the United Kingdom traffic almost doubled in five years, rising from 9 to 15 million passengers, before falling back almost to its initial level after another five years. Similarly, in the United States deregulation increased the number of carriers and led to sharp growth in the areas of charter and tour or special operations, whereas regular route traffic experienced a decline.

Most interurban trade takes place within the frontiers of a single State and thus mainly involves the commercial presence mode.

The international traffic is by nature intra-continental and dominated by links between areas at different levels of development (for example, from North Africa and Southern Europe to Northern Europe for immigrant workers, from Eastern Europe to Western Europe for tourists), since it provides a cheaper alternative to rail or private car transport.

This international traffic is generally regulated by bilateral agreements that establish tariffs and quantitative restrictions and divide the traffic between the two States concerned. It too has begun to be liberalised, mostly at the regional level. Thus, in the European Community, shuttle services, occasional services and cabotage were liberalised in the context of the construction of a single transport market. Similarly, passenger transport was included in the model bilateral agreement of the European Conference of Transport Ministers which brings together the countries of Western Europe, on the one hand, and those of Central and Eastern Europe, on the other. This model bilateral agreement constitutes a first step towards the multilateralisation of bilateral agreements and endeavours to limit the number of cases in which authorisation is required and to extend the period of validity of authorisations (up to five years). Similarly, passenger road transport falls within the scope of NAFTA, with limited reservations mainly concerning cabotage traffic.

Apart from the general barriers to road transport (IRTU) the International Road Transport Union have only identified one barrier specific to passenger transport: the bans and restrictions on coach movements and parking in cities and tourist centres.

5.1.2 Freight Transport

Freight transport by road is the principal mode of freight transport world-wide. In the European Community for example its modal split share is 72.3 per cent (1995, in tonne/kilometres) and increased by 155 per cent between 1970 and 1995, i.e. almost tripled in volume, whereas during the same period rail transport recorded a decline in absolute value (-22 per cent) and a halving of its share.

In South Africa, freight transport by road has become the dominant mode (80%), exceeding that of rail (20%). Freight transportation by road also plays an essential role in the developing countries, particularly in those which did not develop an extensive rail network during the 19th century and at the beginning of the 20th century (generally speaking, this applies to Latin American countries and African countries lacking cross-rail links).

A method to estimate the relative importance of road freight transport is to compare the numbers of trucks duly registered in the various countries. Africa has 5.62 million goods vehicles, or 3.33 per cent of the total (the largest fleets being in South Africa: 1.73 million, in Egypt: 1.28 million, in Algeria: 0.87 million, in Zaire: 0.55 million, in Libya: 0.31 million, in Tunisia: 0.28 million, and in Morocco: 0.27 million), America has 80.43 million goods vehicles or 47.64 per cent of the total (United States: 65.46 million, Mexico: 4.22 million, Canada: 3.72 million, Brazil: 2.76 million, Argentina: 1.23 million, and Chile: 0.81 million), Asia has 45.22 million goods vehicles or 26.8 per cent of the total (Japan: 21.93 million, China: 6.22 million, Thailand: 4.13 million, South Korea: 2.65 million, India: 2.2 million, Indonesia: 2 million, and Saudi Arabia: 1.17 million), Oceania has 2.63 million goods vehicles or 1.56 per cent of the total (Australia: 2.24 million and New Zealand: 0.35 million), the whole of Europe has 34.78 million or 20.6 per cent of the total, including 22.99 million for the European Community (France: 5.25 million, Germany: 3.74 million, Spain: 3.48 million, United Kingdom: 3.19 million, and Italy: 2.88 million), 5.01 million for the Russian Federation, 1.79 million for Turkey, and 1.47 million for Poland.

The road freight transport sector is generally characterised by easy entry and poor economies of scale. Generally it is characterised by low concentration: for example, in 1985 in Sweden, 60 per cent of operators were owners driving their own vehicle. In France, 76 per cent of enterprises had less than five employees but accounted for only 18 per cent of the market, whereas companies with less than 50 employees held two thirds of the market and, at the other extreme, the 20 largest enterprises held 19 per cent of the market. It is also possible to observe in United States an apparent movement of de-concentration with the large enterprises converting their employees into independent

pseudo-entrepreneurs ("owner-operators"), advancing them some of the money they need to purchase a vehicle and benefiting, in return, from reduced social security contributions and other social charges.

Road transport is essentially short-haul (for example, in the European Community 66 per cent of loads - measured in tonnes - are delivered within a radius of less than 50 kilometres), and thus most traffic, particularly in large countries, is confined within the boundaries of the State. In South Africa, a significant part of the sector is involved in longer distances, connecting Gauteng with the harbours such as Richardsbay and Durban.

As regards cross-border supply, the international regulations have also begun to be liberalised mainly, in view of the "intra-continental" nature of this mode of transport, through regional agreements. Thus, outside the single road transport market of the European Community, the European Conference of Transport Ministers (ECTM), an organisation linked to the OECD but which has for many years included the countries of Central and Eastern Europe, administers a multilateral licence quota, which even includes "green" and "greener and safe" categories, and as a first step towards complete multilateralisation has undertaken to standardise the bilateral agreements on a recommended model. Moreover, road transport is included in NAFTA where it is the subject only of limited reservations concerning mainly cabotage traffic. Finally, several regional agreements in Central America and South America concern road transport and have been the subject of MFN exemptions.

The IRU has recognised as barrier, inefficient and uncoordinated border-crossing procedures, asks all the States concerned to accede to the international agreements and UN conventions governing international road transport and apply them in an efficient and harmonised manner[11], and also recommends the development of co-operation between national control services on each side of the border and the introduction of "one-stop" technology, improved training of border personnel and improved quality and capacity of border infrastructure, with international financing institutions and private investors being invited to finance them. These border-crossing problems seem to be universal, as evidenced, for example, by a recent Southern African Development Community document [12]which estimates that these delays cost its members $48 million every year.

A further barrier identified by the IRU concerns the issuing of visas for professional drivers. In this connection, the IRU calls for the introduction of a driver identification document similar to the "seaman's passport" which would exempt drivers from having to obtain a visa. In the event of it not being possible to abolish visas, the industry proposes the creation of a multilateral visa system, the acknowledgement of the role of national road transport associations in acting as intermediaries to obtain visas for their members, the development of multi-entry visas, the simplification of the procedures, and the reduction of the time needed to obtain a visa, the number of documents required and the prices of visas.

5.2 Rail Transport

The provision of rail transport is in most countries characterised by "classic" public monopolies. Due to this, there are only few commitments in GATS on rail transport. Globally however the trends are towards deregulation, privatisation and the granting of concessions.

[11] The list of United Nations conventions, drawn up by the IRU is as follows: European Agreement on main international traffic arteries (AGR) of 15 November 1975; Convention on road traffic of 8 November 1968; European Agreement supplementing the Convention on road signs and signals (1968); Agreement on minimum requirements for the issue and validity of driving permits (APC) of April 1975; Agreement concerning the adoption of uniform conditions of approval and reciprocal recognition of approval for motor vehicle equipment and parts of 20 March 1958; European Agreement concerning the work of crews of vehicles engaged in international road transport (AETR) of 1 July 1970; Convention on the contract for the international carriage of goods by road (CMR) of 19 May 1956; Customs Convention on the international transport of goods under cover of TIR carnets (TIR Convention) of 14 November 1975; International Convention on the harmonisation of frontier controls of goods of 21 October 1982; European Agreement concerning the international carriage of dangerous goods by road (ADR) of 30 September 1957; and Agreement on the international carriage of perishable foodstuffs and on the special equipment to be used for such carriage (ATP) of 1 September 1970. To these should be added, at the regional level, the Final Act of the Conference on Security and Co-operation in Europe (Helsinki, 1975), the Consolidated resolution of the European Conference of Transport Ministers (ECTM) of 1994 recognising the principle of reciprocity in bilateral road transport operations, and the Declaration of Helsinki of 1997 adopted by the European Conference of Transport Ministers (ECTM) providing for the principle of non-discrimination as regards regulatory measures and confirming the duty of carriers to make an appropriate contribution to infrastructure investment and maintenance costs

[12] SADC "Transport and Communications", Maputo Conference, 29-30 January 1998

Rail transport is a natural monopoly with high infrastructure costs, indivisibility and substantial externalities. Because of these features, governments in most countries have imposed controls over entry, withdrawal, technology, operating practices, capital formation, pricing, frequency, the financial structure and accounting practices. In South Africa Transnet is an example. Such companies are often vertically integrated; one single entity is responsible for the infrastructure, operation and marketing. The focus is on production and the company is centralised and tightly organised into a hierarchy, which has its counterpart in the high rate of trade union membership. A company may be State-owned (this was the case in Europe, Latin America, Africa and nearly always in Asia), or private (New Zealand, United States, Japan for certain companies). It may have national or regional geographical coverage (Japan, United States) with possible variations on sectorial monopolies (passengers in the United States, freight in Japan) or regional monopolies (passengers in Japan) that may sometimes compete (freight in the United States where several companies only involved in freight may compete on the same routes). It has traditionally been recognised that the advantage of this model of vertical integration is its capacity for planning, but practice has shown that its disadvantages are failure to respond to the market, sometimes questionable investment decisions, absence of any incentive to control costs and poor financial performance.

Since at least the 1970s, the growth in road carriage of goods and passengers and, to a lesser extent, air transport of passengers has significantly eroded the market share of the railways. To take an example, in the European Union the railway's share in terms of passenger/kilometres fell from 10.3 per cent in 1970 to 8.5 per cent in 1980 and 6.2 per cent in 1994, whereas the figure for automobile traffic rose over the same period from 75.1 per cent to 79.7 per cent and for air transport from 2.1 per cent to 5.8 per cent.

This downward trend is even more noticeable in the freight sector, where the modal split share of railways in tonne/kilometres in the European Community fell from 31.7 per cent in 1970 to 24.9 per cent in 1980, 18.9 per cent in 1990 and 14.9 per cent in 1994, whereas the share of road transport rose from 48.9 per cent to 71.9 per cent. This trend is omnipresent, but the degree varies according to the country, the initial modal split ratio and the structure of the networks.

The trend is even more noticeable in terms of value because the nature of the goods transported has changed and there is a much larger proportion of light goods with a high unit value that have to be delivered rapidly. The railways' share has therefore gradually been confined to bulk and heavy traffic, although since the early days of containerisation in the United States and later in Europe, they have tried to win back the high value-added traffic by establishing transnational freight corridors for container-only trains (for example, Gioia Tauro-Antwerp) with a guaranteed date of arrival and computerised tracking of the goods.

The development of combined transport remains marginal, particularly piggy-back transport, and is highly dependent on subsidies or sometimes restrictive transit measures by government authorities, which utilise railways as an ecological and energy-saving alternative to the growing congestion on major highways.

In developing countries, railways are particularly important because they constitute the main form of mass passenger transport at a price accessible to the majority of the population. In 1995 China alone accounted for 18 per cent of passenger/kilometres carried in the world and India 18 per cent (for purposes of comparison, the figure for the 15-member European Community was 14 per cent, for Russia 9 per cent, and for the United States 1 per cent). Railway companies in these countries also face competition from road transport and problems in financing the maintenance and renewal of the infrastructure and rolling-stock.

Faced with growing financial losses towards the end of the 1970s, governments in many countries tried to improve the traditional rail model. This led in the first instance to free fixing of prices, often followed by the creation of specialised departments (freight, passengers, long distance, regional passengers, maintenance) as profit-making centres each responsible for its commercial policy but sharing common costs with the other departments on the basis of analytical accounting (a typical example is the organisation of British Railways from 1980 to 1994).

In parallel with this development, there was growing concern to identify more clearly the public service constraints and a consensus emerged that government authorities, particularly local or regional authorities, should be called on to finance the obligation to provide regular train services in a clearly-defined way adapted to each situation: depending on the country, the financing could be in the form of concessions or contract-plans with a single operator.

In the course of a third phase, a new model separating operating activities from management and maintenance of the infrastructure gradually started to be imposed. The theoretical inspiration for this model is similar to that for the telecommunications, electricity and gas sectors. In the case of railways, the idea was that, even if the costs of the infrastructure could not be recovered, the gains in efficiency obtained by separating operating/traction activities, no longer hampered by the financial burden of the infrastructure, would alone justify the State writing off the debt incurred by investment in infrastructure in its profit and loss account.

In parallel with this movement to separate the infrastructure from operations and to allow marginal opening up of access rights, more radical privatisation initiatives have been tried out in developed countries, as well as in countries with economies in transition and developing countries under the auspices of the World Bank.

Up until now, the United Kingdom has perhaps gone the furthest along this road. As this experience in some respects constitutes a form of international liberalisation of rail transport, it may be worthwhile to summarise. In the United Kingdom, the principle of separating the two activities has been taken to extremes: the infrastructure has been given to a company, Railtrack, which was privatised in May 1996; passenger rolling stock was divided up among three companies subsequently sold to the private sector which lease it to the operators. The system was intended to reduce the entry costs for concession-holders. Passenger services were handed over to 25 companies, some of them controlled by foreign interests, in the form of concessions for periods of seven to 15 years. Track renewal and maintenance was also given to companies sold to the private sector, which compete in order to win contracts.

Two government bodies, the Office of Passenger Rail Franchising (OPRAF) and the Office of the Rail Regulator (ORR) grant the concessions, regulate prices and the terms of access to the tracks, specify minimum service levels and, for certain categories of fare, maximum fares. In order to protect the concession holder, open access to passenger services is limited to routes where there is no service or which account for a very small part of the concession holder's income. There is open access for freight, as mentioned above, but with even more limited results.

The immediate effect of privatisation was a sharp rise in subsidies given to operators because they had to meet costs not faced by integrated operators: the charges for using the infrastructure and rolling stock (grants to the British Railways Board: 1993/4: £1,121 million; 1994/1995: £1,984 million. Subsidies to concession holders, 1996/1997: £2,090 million; estimated subsidy for 2003: £1,169 million.) Operators have nevertheless undertaken to reduce the subsidies by half within seven years and some routes could even become profitable. It is as yet too early to draw any lessons from this experience. Some competition can be seen on certain routes, the level of services has improved and operators have started to renew the stock, but the OPRAF is still critical of the level of services provided by certain concession holders and Railtrack has not reached the investment objectives fixed.

As part of its loan activities for restructuring railways, the World Bank, after having for a long time promoted autonomous operators rather than the government (in Pakistan, Colombia,

Korea, Senegal, Mali, Yugoslavia) now encourages the granting of concessions. This was recently the case in Argentina, Côte d'Ivoire and Burkina Faso.

Concessions are based on government procurement rather than that of market access within the framework of the GATS. It should nevertheless be noted that no member of the Plurilateral Agreement on Government Procurement has made any commitment on rail transport services.

The relative importance of different modes of supply and obstacles to trade are fairly closely linked to the structure of railway companies and their evolution as described above. In the case of mode 1, for a long time international transport of passengers and freight only consisted of joining successive national segments from the point of view of both fares and the technical and legal responsibility for transport. No single entity was responsible for an international journey, the freight or the passenger being passed on from one monopolistic network to another. In mode 1, therefore, there was no competition, except in the case of transit between the same two points using different routes (Rotterdam-Genoa through Germany and Switzerland or through Belgium and France). It was only following the arrival of high-speed trains, on the one hand, and freight corridors, either freightways or freeways, on the other, that basic commercial concepts emerged; for instance: the one-stop shop, harmonised commercial policy, the pooling of revenue or even more simply common accounting methods to allow the profitability of an international transport operation to be assessed. In spite of the noteworthy efforts made over the past 40 years, national operators still face many technical obstacles when operating beyond their own borders, even when such operations are allowed and they have an ad hoc path: the type of electric power, different gauges, signalling systems, braking systems, commercial speed limits, height of railway wagons, axle load and technical standards for wagons.

With regard to mode 2, there does not appear to be any restrictive legislation anywhere. On the contrary, there is cross-border co-operation among railway companies to attract certain customers and incite them to use rail transport services in mode 2 (young peoples' rail passes, Eurorail cards, for example).

There was no trade under mode 3 as long as rail transport remained a government monopoly – as in South Africa. The establishment and development of private companies (provided that a majority shareholding by a foreign company is allowed), together with the gradual introduction of access rights, or even eventually cabotage rights, subject to establishment in the country concerned, now make rail transport under mode 3 increasingly possible. One example of this type of trade is the recent purchase of minority shares in the largest Mexican railway by several American railway companies and the planned purchase of minority shares in another Mexican network by another American railway company. In both cases, however, these are minority shareholdings. The increase in concessions, which are often given to foreign groups that then have to become established in the country concerned, also allows the development of trade under mode 3, but in this particular case the concession holder is given a monopoly, at least a regional monopoly, which restricts access by third parties and the issue concerns government procurement rather than market access.

As far as mode 4 is concerned, there is always a marginal flow of technicians and engineers, particularly to developing countries. The increased number of concessions has seen this flow broadened to include managers.

Land transport was not given much attention during the Uruguay Round negotiations. The liberalisation of passenger and freight transport by road is only of interest to countries that are neighbours, and is therefore more often dealt with bilaterally or at a regional level.

GATS Members have so far chosen to maintain the bilateral route by taking exemptions from the MFN obligation for existing bilateral and plurilateral land transport arrangements. For the same reason there was little demand for negotiations to open up rail transport because it is closely linked to a country's infrastructure, and in most instances provided by public entities and monopolies.

Potentially it is important however that the GATS disciplines also apply to land transport (by rail, inland waterways and road), because these activities play a crucial role in the supply of multi-modal transport services. By means of commitments in this sector, the previous negotiations on maritime transport aimed at ensuring that a multi-modal transport operator will be able to rent or lease lorries, railway trucks, barges, and related equipment, for inland cargo transport. They should also have access to, and the use of, these facilities on reasonable and non-discriminatory terms and conditions.

5.3 Maritime Transport

Maritime transport is a major global service sector. Bulk cargo accounts for 80% by volume of total world trade – for instance the transport of oil, liquid gas, coal, ores, chemicals, and grain. The ships operate between specialised ports often owned by their customers: it is virtually all cross-border trade (mode 1). There is intense competition among the major shipping companies. Over 90% of all South Africa's exports are carried by ship. The majority is bulk.

The other 20% of world trade consist of the carriage of intermediate and finished goods. This is mostly carried by shipping companies that sail according to set schedules, and charge published rates: the so-called liner trade. Nowadays little of the liner trade carries people, this activity mostly consisting of charter holiday cruises and short-crossing ferries. An important part of the liner trade is carried in containers, and often relies on state-owned port facilities and services. There is even stronger international competition here than in bulk trade. Only a handful of privately owned ports are open to general trade. Often container trade is carried by multi-modal firms, which own or lease transport between the manufacturer and the export port, and between the import port and the final customer. These links are on road and rail, and form an integral part of the service.

During the Uruguay Round negotiations, it was proposed to divide maritime services into three categories, referred to by the negotiators as the "three pillars", which are:

- international (or deep sea, blue water) traffic of freight and passengers
- commercially-related auxiliary services (e.g. cargo handling, storage and warehousing, customs clearance, container stations and depots, agency and freight forwarding)
- port services (e.g. pilotage, towing, fuelling, garbage, port captain, navigation aids, utilities, emergency repairs, anchorage and berthing).

If commitments on the first two pillars are to have any value, the provision of port services by public authorities has to be made available to international maritime transport suppliers, these being mostly private firms. These services should be supplied on the basis of reasonable and non-discriminatory terms and conditions, in accordance with the GATS provisions on monopolies and exclusive service suppliers. It should also be noted that the definition of a measure affecting trade in services includes "the access to and use of, in connection with the supply of a service, services that are required by those Members to be offered to the public generally". It is important therefore that port services are part of the commitments in maritime transport. What is sought here is not the supply of these services by a foreign service supplier, but for foreign shipping companies and commercially related firms to have access to these facilities on a reasonable and non-discriminatory basis.

The environment for international shipping is generally liberal and competitive, and some of the restrictions which exist could not be curbed by the multilateral disciplines being newly developed. But in order to ensure additional liberalisation and to prevent the risk of "back-tracking" from the existing open access to cargo markets, the previous negotiations focused both on the elimination of cargo-sharing and unilateral cargo reservation practices (the "first pillar"), and on facilitating the multi-modal integration and free marketing of shipping services (the "second pillar"). The "third pillar", access to and use of port facilities, was considered the indispensable technical complement to guarantee the effectiveness of any liberalisation undertaken. Many countries indicated the likely extent of their specific commitments using a "draft model schedule" based on the three pillar approach, but many offers of commitments,

including those of the EC and its Member States, were withdrawn as a signal of dissatisfaction with the generally insufficient position, and this left only a few commitments on the table. Indeed, various countries, mainly the developed, tried to build a balanced package, expecting all countries with substantial shipping fleets to undertake the obligations. However, the US was sceptical and reluctant to abandon its unilateral practices, which prevented the formation of a "critical mass" of countries committed to meaningful liberalisation.

On 28 June 1996, the Council for Trade in Services (CTS) adopted the Decision on Maritime Transport Services that was proposed by the Negotiating Group on Maritime Transport Services (NGMTS). This decision essentially provides for:

- the suspension of the negotiations on maritime transport services and their resumption with the commencement of comprehensive negotiations on Services in accordance with Article XIX of the GATS on the basis of existing or improved offers;
- the suspension of the application of the MFN obligation until the end of the resumed negotiations;
- a standstill clause to be observed until the end of the resumed negotiations.

As a conclusion, maritime transport services are covered by the GATS and will be further negotiated in the framework of the next GATS global round. Until the conclusion of these negotiations, the application of the MFN obligation is suspended and a standstill clause must be observed.

6. TRANSPORT SERVICES IN SOUTH AFRICA

6.1 Macro-economic Contribution of Transport Services

6.1.1 Contribution to GDP, GDFI and Employment

The services sector in South Africa makes the largest contribution to national output, namely 65%. In 1997 the transport sector contributed 5.3% to South Africa's GDP and 3.7% to total formal employment. Table 11 below places this in context with the other services sectors in the economy.

Table 11: Services Sector Contributions to South Africa's GDP

SERVICES SUB-SECTOR (SIC 71, 73)	% OF GDP (1997)	% OF GDFI (1997)	% OF FORMAL EMPLOYMENT (1995)
Utilities	3,8%	7,5%	1,1%
Construction	2,8%	0,5%	4,9%
Internal Trade Services (Distribution)	14,5%	4,8%	15,6%
Catering & Accommodation	0,9%	N/A	1,9%
Transport	**5,3%**	**13,5%**	**3,7%**
Communication	2,1%	N/A	1,8%
Financial Services	6,1%	20,4%	3,4%
Business Services	11,1%	N/A	3,9%
Community Services	18,6%	27,5%	27,1%
TOTAL SERVICES SECTOR	**65,1%**	**74,2%**	**63,3%**

(Source: SARB Quarterly Bulletins; CSS OHS, 1995)

Table 11 shows that transport services, whilst contributing 5.3% to GDP, and 3.7% to employment, one more important in terms of its contribution to fixed investment, contributing 13.5% to South Africa's total fixed investment in 1997. This suggests that the transport services sector is relative capital intensive, compared for instance to distribution services or community services. It should be noted however that if one takes informal sector employment into consideration, the transport sector's total contribution to employment is significantly higher than 3.7% (rising to 7.5%) due to the fact that it incorporates the minibus taxi industry.

Table 12 below shows that the share of transport, storage and communication in GDP has been increasing over time to over 8%.

Table 12: R million contribution of transport an as % of GDP (At constant 1990 prices)

Year	Transport, storage and communication	GDP at factor cost	As % of GDP
1971	9751	163424	5.97%
1972	10137	166585	6.09%
1973	10917	172938	6.31%
1974	12260	182233	6.73%
1975	12648	185889	6.80%
1976	12965	191221	6.78%
1977	13220	191184	6.91%
1978	13799	196633	7.02%
1979	15018	204338	7.35%
1980	16075	216901	7.41%
1981	17093	227767	7.50%
1982	16564	226213	7.32%
1983	15592	221282	7.05%
1984	16817	232868	7.22%
1985	17027	232020	7.34%
1986	16735	232042	7.21%
1987	16850	235676	7.15%
1988	17655	244627	7.22%
1989	18343	249905	7.34%
1990	18377	247315	7.43%
1991	17975	244549	7.35%
1992	18316	238711	7.67%
1993	18748	242485	7.73%
1994	19444	248575	7.82%
1995	20351	255497	7.97%
1996	21109	263694	8.01%
1997	21637	268142	8.07%
1998	22123	268182	8.25%

The nature of employment in the service sectors of South Africa is summarised in Table 13.

TABLE 13: Employment Profile of SA's Services Sectors, 1995

SECTOR	CAPITAL: LABOUR RATIO (R'000)	AVERAGE EARNINGS	% HIGH SKILLED	% LOW SKILLED	% AFRICAN
Utilities	1216	2660	19%	16,3%	51,2%
Construction	17	1582	10,4%	20,8%	56,1%
Distribution	45	1688	13,5%	15,8%	51,3%
Catering & Accommodation	45	1026	15,5%	70%	N/A
Transport	**430**	**2101**	**14,2%**	**16,6%**	**52,1%**
Communication	430	2579	30,5%	9,3%	52,1%
Financial Services	482	2748	21,1%	5,%	32,1%
Business Services	482	2616	32,2%	28,6%	32,1%
Community Services	171	2179	42,7%	37%	64,3%
TOTAL	**199**	**2049**	**27,9%**	**26,9%**	**55,1%**

(Source: SARB Quarterly Bulletins : CSS OHS 1995)

Table 13 suggests that average annual earnings in the transport services sector (R2101) are just over the average for the whole services sector in SA (R2049 p/a). The sector is relatively capital intensive, as was suggested before, with a capital:labour ratio of 430:1. It is only utilities and financial services where production tend to be more capital intensive. The transport service sector in South Africa furthermore tend to employ mainly medium-skilled employees, with more low-skilled employees than highly-skilled employees.

6.1.2 Contribution to Trade

In terms of the transport sector's contribution to imports and exports, Table 14 below indicates that transport service exports accounted for 5.6% of South Africa's total in 1996 and 7.9% of imports. Important in light of the upcoming WTO-negotiations is the fact that the 7.9% share in imports is the largest of any service sector in South Africa. Most of these imports are currently in mode 1 (cross-border trade) or mode 4 with some scope to increase mode 2 (commercial presence) given the capital-intensive nature of transport services and the structure of transport services (particularly railways and ports – see below).

Table 14: Services Sector Shares in South Africa's Imports and Exports

SERVICES SUB-SECTOR (SIC)	IMPORTS SHARE %	IMPORT GROWTH % (1988-96)	EXPORT SHARE %	EXPORT GROWTH % (1988-96)
Utilities	0	N/A	0,1	6,7
Construction	0,1	4,3	0,0	2,2
Distribution, Catering & Accommodation	4,7	7,9	6,2	28,8
Transport Services	**7,9**	**6,5**	**5,6**	**1,8**
Communication Services	0,8	7,0	0,6	14,9
Financial Services	1,0	1,5	1,9	10,1
Business Services	1,2	7,2	0,9	34,5
Community Services	0,1	-6,3	0,3	9,4
TOTAL SERVICES	**17,8**	**2,7**	**16,8**	**5,7**

Table 14 also shows that the export share of transport services (5.6%) in 1996 was the second largest (after distribution & tourism). However, the average annual growth rate in transport services exports has been the lowest (1.8%) of all the sectors. This suggests that the sector is perceiving/experiencing significant export growth constraints. (e.g. high transport prices, inefficiencies, etc. - see later).

Trade in transport services is dominated by freight transport and the auxiliary services that surround it (73.7% of transport exports and 86.7% of imports) as is made clear in table 15 and table 5. As noted by Hodge (1998a:20) this implies that export and imports of trade services are significantly defendant on the levels of South Africa's merchandise trade - particularly of bulk and breakbulk commodities. The volume of exports of these and the degree to which South Africa's transport sector benefits in turn defends on commodity prices, bilateral shipping agreements and the relative competitiveness of South Africa's transport sector.

Table 15: Breakdown of Transport Services Exports in SA (% of Total)

YEAR	PASSENGER TRANSPORT	FREIGHT TRANSPORT	AUXILIARY TRANSPORT SERVICES	TOTAL
1972				
1973				
1974				
1975				
1976				
1977				
1978				
1979				
1980				
1981				
1982				
1983				
1984				
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1992				
1993				
1994				
1995				
1996				
1997				

(Source: SARB, Quarterly Bulletins)

Table 16: Breakdown of Transport Services Imports in SA (% OF TOTAL)

YEAR	PASSENGER TRANSPORT	FREIGHT TRANSPORT	AUXILIARY TRANSPORT	TOTAL
1972				
1973				
1974				
1975				
1976				
1977				
1978				
1979				
1980				
1981				
1982				
1983				
1984				
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1992				
1993				
1994				
1995				
1996				
1997				

(Source: SARB Quarterly Bulletins)

6.2 Competitiveness of the South African Transport Services Sector

The share of transport in the economy has been increasing, and is more representative of a middle to high-income economy than of a low-income economy, as table 17 makes clear. This reflects the "stylised fact" finding of Francois and Reinert (1996:1) that "the share of value added originating in services, including both private services and trade, transport and communications services, is positively linked to the level of development".

Table 17: Percentage share of Transport, Storage and communications GDP : A Comparative View

Economy	Transport, storage and communications
South Africa annual average, 1994-7	6.8%
South Africa annual average, 1960-97	8.4%
Low -income economies	5.3%
Middle-income economies	6.8%
High-income economies	9.5%

From tables 15 and 16 can be seen that transport services have one of the highest trade deficits of any service sector. Hodge (1998a:20) uses the Revealed Comparative Advantage (RCA) method of Balassa [(x-m)/(x+m)] to determine that South Africa has a definite comparative disadvantage in trade in transport services. This is mainly ascribed to uncompetitive freight transport and auxiliary services. According to Hodge (1998a:20) South Africa has a slight revealed comparative advantage in passenger transport.

A broadly similar finding was obtained by an analysis of the transport sector by the Department of Transport (DOT) as part of its "*Moving South Africa*" document (DOT,1999). This analysis found that the South African transport system is competitive only in bulk exports where it may provide both cost and service advantages to customers. By contrast, the general cargo transport system is deficient on both grounds. Maasdorp (1999:40) also finds that domestic freight costs are high - exceeding inter-national transport costs.

Customer demand for freight transport services is currently highly concentrated on two bulk export flows, one large general cargo export flow between Gauteng and Durban and a limited number of other midsized flows, including those into the SADC region. The majority of customers are geographically concentrated requiring transport from dense industrial locations to destinations fed by relatively dense transport corridors. There is significant evidence that the freight system is further consolidating around these high volume corridors. Customers revealed a significant level of dissatisfaction with key aspects of the system, particularly with rail general freight prices and service and with service and prices in the ports. Other than in export bulk freight, performance against international benchmarks was poor. Customers articulated overall goals for higher reliability on almost all modes, and better pricing for rail and ports. The strategic challenges identified were consolidated into two specific areas of concern:

- Lack of support for export competitiveness; and
- Low levels of system sustainability

The former issue boiled down to a lack of alignment for value-added ocean-bound exports and barriers to cross-border SADC traffic. The system sustainability challenge was focused on the high non-user cost of domestic freight – principally in the form of externality costs like safety and environmental costs and road building and maintenance – and the deterioration of overall system quality.

6.3 Sectoral Importance of Transport Services

According to Francois and Reinert (1996:1) " some of the most striking aspects of service sector growth relate to the relationship of services to the production structure of economies, and particularly the relationship of the services sector to manufacturing".

Transport services are an important intermediate input in the South African economy. For agricultural, mining and manufacturing it is the most important service input after distribution services - accounting for between 23% of total intermediate inputs for these sectors. It is notable that transport and distribution services make up more than 90% of the service inputs of the South African economy.

The importance of transport as an intermediate input can also be seen from its total multiplier effect (i.e. the increase in total output due to an R1 increase in the output of transport) of 1.88. According to the 1993 South African input-output table multiplier is only higher in financial services, catering and accommodation (tourism) and construction services in the South African service sector.

Table 18: Transport as % of total inputs in South African Industries

Sector	as % of total inputs '71	as % of total inputs '81	as % of total inputs '84	as % of total inputs '88	as % of total inputs '89	as % of total inputs '93
Food Processing						
Meat	4.23%	3.56%	4.94%	1.13%	2.68%	4.24%
Dairy	3.05%	2.54%	3.07%	0.61%	1.73%	2.24%
Fruit & Vegetable	2.53%	2.14%	2.47%	0.52%	1.54%	1.95%
Fish	2.86%	2.50%	2.33%	0.49%	2.03%	2.61%
Oils & Fats	2.77%	3.82%	3.63%	0.81%	1.64%	2.29%
Grain Mill	4.18%	3.64%	4.53%	1.05%	2.72%	3.74%
Bakery	1.48%	3.19%	2.80%	0.56%	1.93%	2.85%
Sugar Mills	4.07%	3.83%	4.72%	1.30%	2.65%	3.36%
Confectionary	20.83 %	2.69%	2.77%	0.58%	1.56%	2.02%
Other Food Products	2.52%	2.52%	3.17%	0.67%	1.68%	2.18%
Prepared Animal Feeds	2.31%	2.59%	3.00%	0.66%	1.66%	2.22%
Beverages						
Distilleries & Wineries	1.77%	2.16%	1.76%	0.32%	1.14%	1.42%
Malt beverages	2.33%	1.86%	2.34%	0.28%	1.10%	1.37%
Soft drinks	1.94%	0.79%	1.69%	0.36%	1.22%	1.49%
Tobacco products	2.44%	3.57%	3.60%	0.70%	1.86%	2.55%
Textiles						
Spinning & Weaving		1.23%	1.63%	0.28%	1.22%	1.41%
Made-up textiles	0.97%	1.36%	1.28%	0.20%	0.65%	0.69%
Garment knitting	0.69%	1.47%	1.37%	0.16%	0.61%	0.65%
Other knitting Mills	0.91%	1.32%	1.24%	0.17%	0.56%	0.57%
Carpets & Rugs	2.12%	2.39%	1.72%	0.25%	0.72%	0.76%
Cordage & Rope	1.60%	1.55%	1.09%	0.15%	1.36%	1.72%
Other Textiles	1.48%	2.11%	2.43%	0.42%	0.68%	0.89%
Clothing	0.71%	0.88%	1.02%	0.14%	0.57%	0.69%
Leather Products						
Tanneries & Leather	1.62%	1.32%	1.68%	0.19%	0.52%	0.87%
Leather Products	1.17%	1.07%	1.52%	0.22%	0.42%	1.75%
Footwear	1.23%	1.13%	1.09%	0.15%	1.79%	0.45%
Wood & Wood Products	1.97%	2.00%	2.81%	0.59%	1.79%	2.02%
Furniture	1.32%	1.25%	1.75%	0.32%	1.29%	1.45%
Paper & Paper Products						
Pulp & Paper	2.77%	3.39%	3.91%	0.61%	1.67%	1.92%
Containers	2.89%	4.56%	4.70%	0.63%	2.02%	2.62%
Other Paper Products	2.27%	3.18%	4.09%	0.60%	1.50%	1.90%
Printing & Publishing	1.38%	1.87%	2.37%	0.36%	0.95%	1.18%
Chemical Products						
Basic chemicals					1.45%	1.48%
Fertilisers	7.03%	3.00%	8.21%	2.23%	4.95%	5.47%
Resins & Plastics	1.87%	2.85%	3.08%	0.43%	2.48%	2.86%
Paints & Varnishes	3.76%	2.12%	2.80%	0.43%	16.02%	1.76%
Pharmaceutical Products	1.61%	1.70%	1.96%	0.26%	1.15%	1.44%
Soap & Cosmetics	2.22%	1.84%	2.49%	0.39%	1.10%	1.32%
Other Chemical Products	2.35%	2.16%	2.87%	0.48%	0.23%	1.55%
Petroleum Products	7.24%	3.09%	10.03%	4.45%	6.72%	11.31%
Rubber Products						
Tyres & Tubes	1.97%	1.88%	2.26%	0.36%	1.54%	1.84%
Other Rubber Products	2.21%	1.41%	2.17%	0.35%	1.14%	1.29%
Plastic Products	2.65%	1.65%	1.58%	0.20%	1.11%	1.33%
Non-Metallic Mineral Products						
Pottery	2.05%	1.30%	4.26%	0.67%	1.80%	1.69%
Glass	2.41%	1.93%	13.47%	0.43%	1.50%	1.58%
Clay Products	4.98%	2.27%	5.39%	0.86%	2.94%	2.80%
Cement	4.98%	2.72%	5.34%	1.57%	3.67%	4.44%
Other Non-Metallic Minerals	5.65%	4.92%	8.05%	1.65%	5.74%	5.86%

Iron & Steel Basic Industries	4.37%	3.81%	5.92%	1.16%	3.69%	3.48%
Non-Ferrous Metal Basic Industries	3.09%	2.25%	6.38%	1.34%	2.82%	3.16%
Metal Products						
Cutlery & Hardware	1.22%	1.26%	1.82%	0.27%	1.65%	1.92%
Furniture & Fixtures	1.71%	2.33%	3.72%	0.66%	2.37%	2.88%
Structural Metal Products	2.18%	2.17%	3.07%	0.45%	2.46%	2.96%
Other Metal Products	2.25%	2.21%	3.23%	0.49%	1.89%	3.33%
Machinery						
Engines & Turbines	1.25%	0.38%	0.73%	0.08%	0.59%	0.60%
Agriculture Machinery	1.80%	2.63%	2.71%	0.34%	2.21%	2.96%
Woodworking Machinery	2.14%	0.79%	1.72%	0.28%	1.00%	1.04%
Special Machinery	1.94%	1.67%	2.93%	0.43%	1.89%	2.06%
Office Machinery	0.47%	0.58%	1.37%	0.11%	1.36%	1.39%
Other Machinery	1.20%	1.39%	1.80%	0.22%	1.31%	1.49%
Electrical Machinery						
Electrical Industrial Machinery	1.08%	1.03%	1.80%	0.21%	1.06%	1.00%
Radio, TV & Communication Equipment	0.82%	0.49%	0.66%	0.07%	0.72%	0.70%
Electrical appliances	1.41%	2.55%	2.19%	0.29%	2.50%	3.18%
Other Electrical Apparatus	1.54%	1.85%	1.95%	0.34%	1.84%	2.15%
Motor Vehicles & Motor Vehicle Parts						
Motor Vehicles	1.74%	1.32%	1.66%	0.17%	0.83%	0.88%
Motor Vehicle Parts	1.59%	1.71%	2.26%	0.27%	1.20%	1.42%
Other transport equipment						
Railroad equipment	2.07%	1.97%	2.19%	0.17%	1.32%	1.46%
Transport equipment	1.79%	1.84%	2.43%	0.19%	0.71%	0.99%
Other Manufacturing						
Jewellery	0.32%	0.36%	0.56%	0.15%	0.84%	0.98%
Other Manufacturing	1.08%	0.88%	1.90%	0.25%	1.02%	1.24%

7. INSTITUTIONAL AND REGULATORY FEATURES OF SOUTH AFRICA TRANSPORT SECTOR

7.1 General Overview of the Sector

Government, through the state-owned Transnet group dominates transport in South Africa. However, since 1983 road/land transport as well as air transport has been deregulated. State monopolies such as Transnet are operated along commercial principles, although privatisation has not proceeded as rapidly as could have been expected. The result of the deregulation of the road transport sector had resulted in a both intramodal and intermodal level of competition e.g. between road and rail and also between road freight hauliers. The major structural shifts that have occurred in land transport are reflected in the fact that road transport now occupies 80% and rail only 20% of the overland freight transport market.

Freight transport are made up mainly of tanker transport (e.g. chemicals, cement, milk) - (13%), furniture and other household goods (13%), building materials (10%), fresh and frozen foods (5%), ores and minerals (5%) and parcels (6%).

Due to growing intermodal competition, a significant shift has also taken place recently in rail transport. Traditionally this sector has been moving mainly high volume, low value goods of mining and agriculture. In recent years, however, containers have become an important and growing segment in transport and harbour activities. This makes low volume, high value transport more feasible.

All of South Africa ports are owned and operated by Portnet, a division of Transnet. As far as South Africa's ports are concerned, it has well-established infrastructure and has implemented the latest world shipping laws and safety processes (Maasdorp, 1999:41). For containers, petrochemicals and bulk cargo the South African ports are deemed competitive[13]. However, South Africa ports have been argued to lag behind the world as far as facilities for breakbulk cargo are considered. The opening up of the South African economy after 1994 has resulted in growing volumes of goods passing through South African ports, and Portnet has recently drawn up a 20-year plan for expanding the capacity of South Africa's ports through careful capital-investment program. This would for instance entail a new coal terminal at Richards Bay and improvements to the container port at Durban. Further steps to improve the productivity of South Africa's ports include the introduction of a helicopter service for harbour pilots in Durban. Also, exporters are no longer obliged to use Portnet transport to deliver containers to the port - freight forwarders and exporters may use their own vehicles or specialist cartage companies (Maasdorp, 1999:41).

Exports of transport service mainly consists of the transport of goods to harbours and to about 92% of South Africa's exports (bulk traffic) final destination arrives at harbours by rail.

7.2 Transport Service Producers in South Africa

As indicated above, government involvement in transport service provision has been highly significant in South Africa, and South Africa's particular transport policy has had definite impact on the sector historically.

The main divisions of Transnet are Spoornet, responsible for rail transport; Autonet, for passenger, cargo and tanker services; Portnet which operates South Africa's seven main ports; Petronet which is responsible for pipeline transport of petroleum gas; and South African Airways. The PX division is a road parcel service for door to door or specialised delivery.

Transnet, currently in preparation for privatisation, faces significant competition in the areas of road freight transport services, passenger transport as well as air transport. Sea transport is open to competition from carriers around the world. Various foreign shipping companies are active in the South African trade, such as the Mediterranean shipping company. (Recently South Africa's major shipping group, Safren, sold its business to Maersk of Denmark and Restis of Greece.) Competition in this sector is restricted by international maritime agreements.

Currently, rail transport services remain the sole domain of the state. Metrorail operates urban passenger transport and Spoornet long-distance freight and passenger services.

7.3 Transport Infrastructure in South Africa

7.3.1 Development of South Africa's Transport Infrastructure

While several economic and political imperatives influenced the types and location of South Africa's infrastructure stock, the main initial force for infrastructure development in South Africa has been the needs of the mining industry. This started with diamonds in the late 19860s, moved on to gold from the late 1880s, and then expanded into coal, iron ore and a range of other minerals during the 20th century. Investors initially provided their own infrastructure or purchased services from small private providers. The state later took over infrastructure provision when the latter's economic viability was more firmly based and network expansion became necessary.

Houghton (1976) expresses this clearly in relation to transport: "It was only after the mining industries had justified themselves and had generated sufficient income that a modern

[13] The Port of Richards Bay is claimed to be the lowest cost coal export terminal in the world. (Maasdorp, 1999:41)

transport system was embarked upon". Railway construction started before the discovery of diamonds and by 1891, 6 680km of railways had been built. Given the scale involved, railway construction involved the public sector from the outset, but railways only became more firmly established in tandem with the gold mines.

Also, as gold mining moved from open-cast to deep-level technologies, the need for power increased. Initially, mining companies provided their own power. As mining demands grew, a power-generating industry emerged, involving private and municipal suppliers regulated by government. In 1900, steam power generation in Kimberley used coal mined in Wales, transported by sea to Cape Town, by rail to Beaufort West, and by ox wagon for the remainder of the journey. This was expensive power costing 21.5 pence per unit. After De Beers installed a turbo generator in 1903, and local coal began to be used, the price of electricity dropped to sixpence per unit in 1904 and twopence by 1913. The drop in price of over 95 % in a dozen years provides a clear indication of the positive externalities of efficient infrastructure provision.

Given the capital requirements for power generation, potential commercial suppliers were prepared to enter the industry only once it was certain that gold-mining industry was securely established, which occurred only after the Boer War of 1899-1902. Capital and technology for the power industry came from abroad, as it did for the mining industry itself. The most important company was the Victoria Falls and Transvaal Power Company (VFTPC), established in 1906 by Rhode's British South Africa Company, the German equipment supplier, AEG, and German banks. The initial idea was to use the Victoria Falls to generate hydroelectric power, but this was quickly discarded as unfeasible and coal-fired energy was subsequently produced on the Highveld. The company grew rapidly as the gold mines' demand for energy rose with mechanisation.

In 1923, the VFTPC sold more electricity to the mines than was consumed in the cities of London, Sheffield and Birmingham combined. In 1992, the Electricity Supply Commission (Escom, later renamed Eskom) was established as a public sector entity, with the objective of supplying electricity at cost. Over the next four decades Escom became a monopoly as the VFTPC was nationalised in 1948 and municipal generation of power stopped in the 1960s. The establishment of the Free State goldfields in the 1950s led to a new surge in the demand for power and frequent shortages resulted in a substantial expansion of Escom's capacity by 1960.

While mining made it possible the fixed cost hurdle to setting up transport and power systems, it was not only mining which benefited. Infrastructure provision preceded considerable growth of secondary manufacturing industry and services. Mining nevertheless tended to go into heavy industry, which was similarly energy-intensive and often produced inputs for the mining sector (such as explosives) or, alternatively they were involved in downstream processing of mineral products such as chemicals. The Eskom policy of pricing to cost provided substantial support to these sectors, while freight transport pricing was also influential. Hence, Fine & Rustomjee (1996) identified as the driving force of South African industrialisation, a 'minerals-energy complex' – a core set of industries exhibiting multiple backward and forward linkages.

The economy grew reasonably rapidly during the 1960s, but the manufacturing sector was both import-intensive and oriented almost exclusively to domestic markets. This created growth difficulties, especially as the collapse of the international fixed exchange rate system at the beginning of the 1970s introduced volatility into world prices of gold and other commodities. This affected South Africa's export earnings.

The decline in long-term growth was exacerbated as the government's development strategy became dominated by political considerations, with apartheid under growing threat from domestic and international opposition. In 1994, the new government shifted to a new outwardly orientated development strategy. Targeted infrastructure programmes came to form a key part of the post-1994 strategy.

Today transport infrastructure such as rolling stock and rail infrastructure and the ports are owned by Spoornet and Portnet, whilst all airports in South Africa are state-owned through the Airports Company (although 30% in the latter have been sold to the Italian Airport Company).

The direct control for national roads now rests with the National roads Agency (NRA), a registered company of which the Minister of Transport is the only shareholder. The NRA is responsible for national road development, and also concessions and lets contracts for toll roads. The major toll road operators are Tolcon and Intertoll.

7.3.2 State of infrastructure

The *World Competitiveness Report* of 1998 rates South Africa's infrastructure 35th out of 46 countries for its overall ability to satisfy business needs. The ratings of different sectors varied sharply. Whereas transport infrastructure (rail, road, port and air) seemed largely to satisfy business needs, with a rating in the top 25 % of surveyed countries, telecommunication infrastructure was much less satisfactory in the eyes of investors.

As far as roads are concerned, estimates are that R15.2 billion a year for ten years is needed to overcome the backlog in rural roads, prevent deterioration of South Africa's road network and meet new demands. Of this, R2.4 billion and R5.5 billion are needed each year for the backlogs on primary and secondary rural roads respectively. R4.1 billion is needed to prevent the deterioration of roads and R3.2 billion for new road expenditure. It is further estimated that roads carry 90% of all passengers and freight, but treasury funds are adequate for only 60% on maintenance needs. In 1993, 25% of the road network was considered to be in good condition. It is estimated that this figure decreased to 5% in 1997. The number of cars on the roads currently stands as 5.5 million and should reach 8.7 million in the year 2020.

Table 19: South Africa's Roads (estimates), 1997

Network type	Km	% distribution
Total	488 000	100
National	20 000	4
Provincial	162 000	33
Urban roads	85 000	18
Rural roads (unproclaimed)	221 000	45

Road networks have been improved and SDIs have seen public and private resources being combined to improve transportation, while ensuring multisectoral development around major national and cross-border routes.

As far as airports are concerned, in 1997 South Africa had 150 licensed public airports, including nine operated by the Airports Company and 14 provincial airports. There were 60 licensed private airports. Of the nine airports of the Airports Company, three, namely Johannesburg, Cape Town and Durban, have international status. During 1996/7 more than 8.1 million passengers departed from these airports. Air traffic movements during the same period numbered 172 000.

The seven commercial ports along the South African coastline are managed by Portnet, a division of Transnet. During 1996/7 a new record was set with the movement of 178.8 millions tonnes of cargo. Vessel calls numbered 14 098. Container tonnage handled amounted to 20.9 million tonnes. The number of TEUs (twenty-foot equivalent units) handled was 1.5 million.

Spoornet, a division of Transnet, has 20 324 km of railways (33 000 km single track), 3 600 locomotives and 143 000 wagons. The total volume of freight transport during 1997 amounted to approximately 175 million tonnes. Mainline passenger services play an important role in the transport industry. During 1997/8 approximately 7 012 trains transported some 5 million passengers.

A recent analysis of infrastructure need in the South African tourism sector (KPMG, 1998)highlights that South African airports, while carrying some 155 million passengers per annum, are in dire need of upgrading. Access by air covers a comparatively high 69% of major world destinations and roads and railways are relatively well developed but do not get tourists effectively to the full range of attractions the country can offer. There exists very little sea access for passengers; and that amenities and services off the main transport routes are inadequate.

A summary of how stakeholders perceive South Africa's tourism infrastructure provision:

Table 20: Stakeholder perception about tourism-related infrastructure and services

Mode	Strengths	Weaknesses	Opportunities	Threads
Airports	Well located	Inefficiencies in the system	Capital expenditure program in place	Safety
Air access	Highly competitive and profitable	Increased demand will lead to insufficient capacity	Continued profitability will increase capacity	Expensive domestic air travel
Roads	National roads are excellent	Relative poor quality of rural goods	Marketing strength	Reinforce existing sector polarisation
Public Transport		Insufficient	Area for investment and growth	Fragmentation and poor returns
Coach system	Good quality in national network	Low profile and expensive (patchy)	Economical option	Unlicensed operators
Railway system	Extensive network	Lack of recent investment and safety problems	Privatisation	Lack of investment
Sea access	Good port infrastructure	Emphasis on freight	Investment and growth through cruising	Lack of investment
Utilities	Adequate in most areas	-	-	-
Amenities	General coverage	Crime and safety	National campaign and awareness initiative	Lack of intervention

7.4 Prospects for South Africa's Transport Infrastructure

7.4.1 Roads

South Africa is pursuing a policy of commercialisation of its national road network. A South African National Roads Agency became operational in April 1998. Its current assets consist of the existing 7 000 km of proclaimed national roads, together with the financial balance sheet associated with those roads. Financing will initially be achieved through a 5 cents per litre portion of the fuel levy, increasing in 1999 to 6 cents and in 2000 to 7 cents. This will generate about R750 million per annum, increasing to R900 million in 1999. Thereafter the intention is to proceed towards incorporating an overall total of the 20 000 km of national rural roads which, together with the rail network, carry 80 % of the country's economic traffic. It is envisaged that this rural road network will be financed and managed jointly by the private sector, the Roads Agency and the provinces. The concessioning program, in particular, is proceeding apace with bids having been invited and granted for the N4 road to Maputo, Bids for the N3 to Durban and the N4 West to Botswana are being evaluated. Build-Operate-Transfer (BOT) of public-private partnership (PPP) arrangements are also being considered

for the N2 along the KwaZulu-Natal coast, as well as on the Garden Route , and portions of the remainder of the N1 and other national routes.

South Africa currently spends approximately R3.4 billion per annum on its 183 000 km of proclaimed rural roads. This averages out at R18 580 per km per annum. The Roads Agency will be able to spend R51 560 per km per annum on its network, excluding the concessioned roads, which are funded as separate and individual entities. But while the economic importance of the primary road system is recognised, this approach may lead to an imbalance in resource allocation towards the national network, to the possible detriment of the rest of the rural network.

The provinces of Gauteng, KwaZulu-Natal and the Western Cape are proposing roads agencies of their own, funded by increased license fees and provincial taxes and centrally apportioned budgetary allocations.

7.4.2 Railways and ports

South Africa is well endowed with an extensive rail network and port system, as its strategic importance for export and food production has long been recognised. The legacy of this core system is, however, a fairly inflexible institutional arrangement that supports a variety of non-core activities ranging from property development to telecommunications. While the White Paper implicitly supports a strategy of restructuring Transnet, movement in this direction remains slow. This could negatively affect rail-against road-based modes, as the efficiencies of rail transport for low-value, high-bulk goods are not reflected in tariff structures. This observation extends to southern Africa's ports, where a monolithic institutional structure militates against cost-efficient transport for both exports and imports.

As the role of the port system becomes even more pronounced in the wake of SADC trade strategies, the restructuring of Transnet into manageable core units that can operate efficiently, particularly in meeting southern Africa's export and bulk food handling needs will become an even greater priority. The Moving South Africa study also highlighted that only a few rail routes are currently financially self-sustaining. These routes in effect subsidise all others, which places a financial burden on the entire railway network. Commercialised management, accurate pricing and, in general, market-driven approaches will need to form key elements of a strategy to rectify these problems

7.4.3 The commercialisation of transportation in South Africa

The South African cabinet has adopted a policy supporting the commercialisation and privatisation of infrastructure provision, operation and maintenance, where possible. In the transport sector this policy is, in general, endorsed.

A lead was taken by the Department of Transport through its creation of agencies to handle the administrative functions inherent to its work, leaving only the functions of policy and its monitoring within a substantially smaller department. These agencies cover civil aviation, maritime matters, cross-border control, and liaison and, of course, national roads. Concerning roads, considerable efforts have been devoted to inviting and evaluating concession bids for the rehabilitation and operation of rural roads carrying in excess of 4 500 vehicles per day. Attention is also being focused on consolidating the 20 per cent of the country's road network which is under the jurisdiction of the South African Roads Agency and which carries 80 per cent of its traffic. Roads of national importance which do not carry sufficient traffic to be financially justifiable as concessions will be funded through a dedicated levy on fuel, managed by the Agency, possibly augmented by shadow tolls.

Many engineers, contractor, merchant banks, corporate lawyers and insurance brokers went through a learning curve, with international assistance, in finalising the Maputo toll road concession. It is however unlikely that a general standard concession document for roads will emerge in the near future. More likely we will see agreements tailor-made for individual projects as they are identified and developed. This has led to the Roads Agency developing a 'Policy in respect of unsolicited bits' as guidance for prospective consortia.

As the constitution currently stands, provincial governments, while accorded responsibility for non-national rural road provision in their areas of jurisdiction, have not yet been accorded all of the powers, particularly borrowing powers, necessary for them to exercise their responsibility. The result is that private sector involvement in the provinces remains a process of commercialisation of the various functions of road provision. This difference in approach, and particularly the magnitude of the approach, will possibly aggravate the differences between levels and standards of road provision, particularly in the poorer provinces. The busy roads in the more developed regions of the country are the most attractive to the private sector for funding on a concession basis.

The most recent annual report issued by Transnet does show firm policy movement in the direction of private sector involvement in port operation in particular, and in non-core activities such as property development and parcel distribution.

It is apparent that the different players interpret and apply government policies differently. An overarching legislative framework permitting uniform concessions in the interests of the state and its taxpayer will help address such differences

Urban passenger customers were segmented on the basis of specific needs, and specific issues were generated in respect of each segment. A large number of "Stranded" passengers were identified, projected to grow to well over 3 million by 2020. Significant system performance gaps were identified affecting other segments as well. The core challenges that emerged were:

- The lack of affordable basic access;
- The ineffectiveness of the public system for commuters and other users;
- The increasing dependence on cars within the system; and
- The impact of past patterns of land use and existing planing and regulation of public transport.

Research into rural passenger needs yielded two core challenges: The lack of integrated provision of infrastructure and the absence of a framework for rural roads prioritisation. For long-distance and tourist customers, the key strategic challenges were to clarify the transport capacity requirements emerging from the nascent tourism strategy and to prevent transport from bottlenecking tourism growth. Special needs customers confront the challenge of balancing the cost of improvements required to make the system accessible with the goal of providing full access on a basis of equal risk and equal opportunity to that of fully-abled people.

Cutting across all customer segments are the challenges of :

- Building the long term financial sustainability of the roads network,
- Balancing the risk alignment and affordability in the critical areas of environmental concerns and transport safety,
- Enabling the system to create human capacity for new roles in the sector, and aligning training to this, and
- Dealing with the lack of sustainability in the system.

The guiding premise of the strategy is the satisfaction of the customers of transport in the service of fulfilling the national objectives. The strategy works to propagate a detailed vision for transport, a set of ideas that integrates the needs of transport customers and policy makers, while ensuring that the system can deliver on these needs in a sustainable fashion into the future. This integrated vision is critical to guide implementation in the decentralised delivery environment in South Africa, yielding a system which is aligned around its core choices. The choices break into three tiers – those about the breadth and reach, or density of the system, those about the desired scale of the system and the optimal role of modes, and those about enhancing the platform for transport providers.

Decisions about density and optimal role of mode, taken together, will determine the extent and size of the fixed cost backbone of the transport system. These choices constitute the principal output of the strategy since they pertain to the task of overcoming the enormous challenges created by the dispersed spatial industrial and residential economies. The strategy to consolidate the core transport assets in the economy such that they provide a low cost, high quality and affordable backbone for the system, set the stage for the service of the social goals of the nation. MSA seeks to create a flow of benefits that provides firms with a basis for improved levels of service underpinned by long term sustainability.

In principle, the systems benefits must be reinvested in bringing lower cost and higher service transport to customer segments. Institutional and regulatory structures are viewed as an outcome of choices made around the density and scale of the system, as a consequence of choices which require a playing field within which they can become effective. The critical issue, faced with these choices, is that those that relate to the system itself – density and scale – and which operate across the system, have no specific body responsible for decisions in relation to them. Given their complexity and consequences, it is critical to ensure that the decisions are taken and then signalled clearly to the players in the sector. To this end, there is a need for a locus of strategic integration which can deliver the system level decisions required, negotiate the mandates deriving from the national objectives, integrate the players responsible for managing the strategic agenda with those who act on the ground, and have the capacity to negotiate agreements between providers of transport infrastructure and operations to ensure that individual decisions which have system impacts are taken not only in the interests of the individual player, but also other players and the system as a whole.

In defining these principles, MSA recognises that an activist, developmental government has a funding role in respect of investments in pursuit of national objectives. The social returns from various investments must properly be viewed as economic returns in pursuit of key national objectives. Investments of this nature – key strategic allocative choices – must be transparent, measurable and accountable for specific asset allocation decisions. It is critical that the impact of decisions of this order be limited to their particular development arena, and that clear signals of value are transmitted into the system, and in no way distort customer decision making elsewhere in the system.

The term 'ring-fencing' is used on occasion in this report to refer to such clearly defined allocative choices in order to emphasise the point that such choices – while valid and important in meeting specific national objectives – do not compromise the sustainability of other parts of the system.

Combining analysis of the customer needs and optimal modal economics suggests an asset configuration around the flows of goods and people modeled out to 2020. These flows move along high volume corridors for freight and passenger transport that constitute the basis of the low cost backbone for the system. The goals for the vision are to recreate a system that has the lowest practical systems cost at maximum affordability, with improved reliability and increasingly differentiated services, set upon a dynamic platform. Three key thrusts ground the vision:

- High volume corridors,
- Sustainable operations,
- Improved efficiency.

The logic of volume concentration to drive down national transport systems cost and improve service underpins the vision. Volume concentration increases capacity utilisation and lowers unit cost. The reduction in the complexity of the system to a limited number of high volume corridors allows for higher levels of service to customer segments through the focus and concentration of limited skills and financial resources and leverages investments in the system. Further, the focusing of passenger and freight traffic facilitates the deployment of assets in an appropriate and sustainable fashion, while the integration of the corridors and their feeders further reduces cost and increases responsiveness to customer needs.

The critical lack of sustainable transport service operations must be turned around. This necessitates deploying the appropriate modes in the right places in the economy. Individual modes are currently deployed pursuant to the old national objectives, and with scant regard for evolving customer needs. Levels of utilisation of public transport assets are low, resulting in high fixed costs in the system, and within the corridor vision, these fixed costs will be brought down, and utilisation levels driven upwards. Flows within corridors must be enhanced, and modes redeployed at their point of best economic utilisation. Flexibility in the system should be built by moving to a greater mix of higher variable cost options in order to accommodate identifiable trends into the future, avoiding new high fixed cost options other than commuter rail line extensions within corridors. Providers will be encouraged to identify their target customer segments, and invest behind them to satisfy their specific needs.

At the level of the platform itself, the role of government is more circumscribed – to facilitate and enable high quality firm level choices. This involves removing the obstacles blocking the logic of the system. Government must unwind the legacy by removing the inappropriate old order institutions and rules currently in place and build the transport platform by resetting the playing field to the new rules, thereby creating a sustainable and actionable base for the inherent economic logic of high volume corridors and their feeders. This is a process which is best thought about as the 'creative destruction' of the old order, simultaneously replacing it with a new set of rules that delimit the new playing field for firms. Once this is done, the goals and intent of the vision must be clearly signalled by resetting the rules of the game, creating transparent economics within transport and enforcing the new rules. All of this informs and enables appropriate firm level choices.

7.5 Legal Framework for Transport in South Africa

The growing trend towards private sector participation (PSP) in infrastructure services provision has highlighted the need for clear, consistent and enforceable regulatory frameworks.

Table 21: Regulatory frameworks for infrastructure service provision

	Sector norms and standards	Government policy on PSP in the sector	Removal of legal obstructions to PSP needed	Purpose-made regulatory body	Suitable resolution mechanisms
Transport-Roads	Very comprehensive	Very supportive on the rural network; less so in the urban	Published policy on unsolicated bills	Roads Board at national level; no others	None
Transport-Rail	Spoornet application of the Cape Gauge	Supportive, with some reservations	SATCC draft legislation; nothing yet in SA	None. Spoornet reports to parliament	None
Transport-Air	Civil Aviation Act; IATA	Supportive, not yet to open skies	National Freedoms still controlled	NTS, applying IATA agreements	IATA agreements
Transport-Ports	Portnet standards	Supportive from government; not yet from Transnet	No legal obstructions	None yet; possible future Ports Authority	None
Transport-Public	Road Traffic Act and contractual standards	Very supportive – numerous initiatives	Some problems re legal definition of vehicle types	NTC	None. A tribunal is proposed
Transport-Maritime	Maritime Bill; international agreement	A maritime agency exists to monitor shipping regulation and needs	None needed	None at present but NTC may be nominated	International Agreements
Transport-Cross-border	Cross Border Transport Bill	Supportive in principle, with an agency recently formed	Constraints in customs, immigration and international regulation	NTC / SATCC	Not generally, although some bilateral agreements exist
Transport-Pipelines	Petro standards	Until now fuel and gas pipelines were regarded as strategic in nature	None apparent, provided perceived obstacles of the strategic nature of popelines can be overcome	None. Pipenet reports to parliament	None
Transport-Overall(SA)	Co-ordination of Transport Act	Supportive, with some resistance from the non-road status quo	SATCC draft legislation will address any that may exist	NTC or proposed tribunal	None; commercial law

Besides White Papers on energy, transport, telecommunications, water and sanitation, a range of other policy documents and frameworks has been produced. One of the most ambitious initiatives is the Moving South Africa project, spearheaded by the Department of Transport. Most policy documents have attempted to address either backlogs or misplaced infrastructure. Thus extensive expanding or upgrading strategies have been favoured in transportation routes and certain urban and rural roads. In addition, the appropriateness of existing infrastructure has been the subject of considerable analysis and policy development. For instance, many roads and railway lines have either never had or have recently lost their economic base. After heavy public investment in railways, it now appears that only a few railway lines operate on a financially sustainable basis.

After a few experiments with different urban and rural infrastructure framework, the guiding framework for managed investment in infrastructure for basic services are now integrated Municipal Infrastructure Investment Framework (MIIF).

8. SELECTED ISSUES IN TRANSPORT SERVICES IN SOUTH AFRICA

In light of the imperative for transport service liberalisation and the current market structure and infrastructure for transport services in South Africa, the purpose of this section is to set out certain driving issues and trends in South African transport services. These are (a)

regional integration, (b) the moving South Africa report and strategy and (c) transport cost reductions.

8.1. Regional Integration and Transport Services

Transport has been a policy and investment priority in the Southern African region since the inception of the Southern African Development Community (SADC) in the early 1980's. The heavy dependence of the countries of the region on apartheid South Africa's shipping routes was an issue of primary importance. In the 1980's as much as 80% of total SADC project financing went towards the rehabilitation of existing regional infrastructure. The SADC transport and communication sector's Southern African Transport and Communication Commission (SATCC) based in Mozambique, is the only permanent commission in SADC.

Given South Africa's membership of SADC and the conclusion of the SADC Trade Protocol that will further regional integration in the SADC region, South Africa may be argued to possess a higher stake from an improved transport and communications network than most countries in SADC. This is due to present trade patterns in the region, with most SADC countries heavily dependent on imports from South Africa as Table 22 makes clear:

Table 22: SADC Trade with South Africa, 1993

COUNTRY	EXPORTS TO SA	IMPORTS FROM SA
Angola	0,1	58,1
Botswana	115,0	980,8
Lesotho	55,9	712,0
Malawi	48,8	181,6
Mozambique	18,6	280,5
Namibia	N/A	N/A
Swaziland	422,9	714,9
Tanzania	6,7	17,9
Zambia	12,4	293,9
Zimbabwe	203,3	535,0

(Source: SADC 1996:18)

The implication from South Africa's dominance of trade in the region, and the importance of the region as a destination for South Africa's exports (especially of manufactured exports) it is vital that SA play a leading role in liberalisation of transport services in the region. It is important to note that the benefits of regional service integration may be more easily internalised (Hoekman & Braga, 1997:22). This is because transport service activities typically generate network externalities that are subject to scale economies - this is accepted for multi-modal transport, warehousing, etc. These factor suggest that a preferential agreement for liberalising trade in transport services - particularly land transport - may be more attractive than a multilateral effort such as GATS - although the latter may be more important in terms of attracting a commercial presence and for air and maritime transport.

Saasa (1998:177-178) discusses a number of constraints that limits region efforts in the area of transport services. There are (briefly):

- Installed transport infrastructure capacities are under-utilised. In rail transport this is due to under-utilisation of unit trains; poor information on train movements and wagon location due to unreliable freight wagon tracking and control systems; insufficient signalling systems which has resulted in reduction in train posted speed.
- Port-related problems such as poor rail-port interface, inadequate shunting locomotives, insufficient cargo handling equipment, absence of reliable shipper information and port congestion.
- Border formalities, slowness in clearing international transit traffic and short border opening hours. SATCC estimates that the cost of delays at border of commercial road transporters to be about US $48 million annually.
- Only about 15% of SADC's 890000km road network is comprised of primary roads.

Saasa (1998:178-179) further identifies a number of issues to improve the effectiveness of transport services and infrastructure in the region:

- The rehabilitation of existing transport infrastructure should focus more on the improvement of existing capacities. Herein supportive investments such as management sup-port, logistics, supply chain management practices and IT systems are vitally important[14].
- Better co-ordination and harmonisation are essential, especially in areas of equipment standardisation, national transport legislation, the ratification of international conventions and customs practices and clearance documentation.
- Regional countries should deregulate and commercialise their domestic transport policies by way of privatisation and restructuring of companies in this sector. The adoption of commercial principles and introduction of competition is vital.
- The reorientation of the Southern African region's transport sector beyond the current regional concerns to encompass international perspectives. According to Saasa (1998:179) *"the integration of the southern African region into the global trading system would depend on such regional organisations as SADC and Comesa departing form their present preoccupation with regional transport development strategies"*.

It should be noted that the transport policies adopted by the SADC region in the past aimed at circumventing South Africa to such a degree that the relationships between the region's prime movers in the transport sector are currently too weak to confront the emerging transport market challenges of the new millennium (Saasa, 1998:179).

South Africa has a regional comparative advantage in transport. Spoornet's rail network handles 172 million tons in traffic annually, compared to annual SADC rail traffic of approximately 25 million tons. The Port of Durban alone handles on average 24 million tons annually, exceeding the combined SADC ports throughput of approximately 10 million tons.

Table 23 below summarises the total cargo handled by the main SADC ports. It shows that the largest regional port is the port of Richards Bay, which handled 81 million tons in 1997. Outside of South Africa, the largest ports are Dar Es Salaam (4 million tons) and Beira (3.8 million tons). Most principal ports in SADC are still geared to serving their respective national markets, and have not grown into export platforms for regional producers.

Table 23: Total Cargo Handled at Main SADC Ports, 1997

PORT	COUNTRY	MILLIONS OF TONS 1997	MILLIONS OF TONS, 1996
Dar Es Salaam	Tanzania	4112	3535
Ncala	Mozambique	373	346
Beira	Mozambique	3899	2971
Maputo	Mozambique	3108	3177
Port Louis	Mauritius	3820	3717
Luanda	Angola	1360	903
Walvis Bay	Namibia	1815	1782
Richards Bay	South Africa	81 083	71 619
Durban	***South Africa***	30 346	31 510
Port Elizabeth	South Africa	5523	5300
Cape Town	South Africa	7445	6767
Saldanha Bay	South Africa	21874	20 350

(Source: SATCC Annual Report, 1999)

8.2 The MOVING SA Strategy

Moving South Africa: The action agenda is the South African National Department of Transport's (DOT) 20-year strategic framework for the transport sector. The MSA strategy departs from the National Transport Policy vision contained in the 1996 White Paper on Transport which stated that the vision is to "Provide safe, reliable, affective, efficient, and full

[14] Since 1978 SA Ports have computerised their clearing infrastructure so that South Africa's operators dominate the forwarding business.

integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost, in a fashion which supports government strategies for economic and social development, whilst being environmentally and economically sustainable".

The MSA strategy recognises that global and national trends require that the structure, nature, and efficiency of the SA transport should change significantly. Specifically the Report states that "*Globalisation has involved the particular phenomenon of falling tariff and non-tariff barriers to trade. These trends are especially relevant to South Africa's transport sector. Falling barriers to trade impact not only on the volumes of trade, but also on the patterns of trade. Such changes can potentially have major impacts on National and international transport systems*" (DOT, 1999:7)

The MSA strategy envisaged far reaching changes to the South African transport system since it finds that "the current transport system no longer meets many of the needs of the country or its customers" (DOT, 1999:9). The question therefore is whether the GATS offers South Africa an opportunity to improve the nature and efficiency if the South African transport system in the direction required in MSA, and how it may contribute to MSA.

The MSA-report identifies six major trends in the global transport sector that should underpin South Africa's specific GATS commitments (DOT, 1999:9). These are:

- Liberalisation and deregulation of transport systems world-wide. Related to this trend is reduced reliance on government operating subsidies. It is furthest in aviation.
- Intense competition in Maritime transport. Global shipping lines compete intensely and are searching for greater economies of scale. As a result they are:
    - Integrating with other modal partners in key countries.
    - Moving toward bigger ships that require bigger harbours and fewer ports of call.
- Globalisation of customers and carriers.
- The rise of information technology - with improvements in IT, just-in-time manufacturing process has increased. This has increased the demand for high-precision transport and logistics.
- Increasing awareness of safety and environmental consequences. This will be likely to raise overall transport costs to users - especially in road and aviation.
- Global manufacturing sourcing. Global manufacturers are increasingly sourcing their production from multiple sources around the world. This creates further demand for flexible, integrated transport services that deliver not only to domestic factories, but to multiple foreign locations.

In order to position the South African transport sector to benefit from these trends, the GATS can play an important role. To identify this role, the following shortcomings in South Africa's transport system can be noted:

- South Africa are located geographically distant form its major trading partners
- There is a backlog of spending of about R20 billion on South Africa's roads.
- Capital re-investment is below required levels for almost all modes of transport
- South Africa has an old national vehicle fleet - operating at above 80% of its useful economic life. The majority of freight trucks in South Africa is older than 14 years.
- South Africa's port turnaround times tend to be up to 5 times slower than that of competitors.
- South Africa's transport sector is characterised by a lack of modal integration and a lack of "*seamless" transportation* - especially in SADC.
- Shipping costs are high: it makes up to 60% of transport costs for exports.

8.4. The Impact of Transport Costs on Exports

8.4.1 Issues in the Theoretical Literature

There is a growing body of literature advocating the benefits of an outwardly-oriented economic growth strategy (e.g. Edwards, 1997; Sala-i-Martin, 1997;Sachs & Warner, 1997; Collier & Gunning, 1997). The South African government adopted an outwardly - oriented economic growth strategy in 1996 in its Growth, Employment and Redistribution (GEAR) strategy. Accordingly, various supply-side measures and incentives were introduced in 1996, following on a program of tariff reductions and reforms, and the relaxation of exchange controls commenced in 1994 (Coetzee, *et al*, 1997). Although the Asian crisis impacted negatively on South Africa's export performance since 1997 (see IDC, 1998) concerns have been expressed about whether an export-led growth strategy would succeed in South Africa – at least over the short term- given the country's relative low level of international competitiveness (add).

Typically, analyses of the reasons for South Africa's relative low competitiveness in world markets tend to centre around the country's low level of human skills and productivity, outdated technology and dependence on primary exports, and high levels of concentration (add). Only very recently have concerns began to be raised about the fact that South Africa's geographic location might adversely impact on the success of its exports by imposing relative large transport costs on exporters[15] (Pretorius, 1997; Van Rensburg, 1999).

South Africa's Department of Transport (DOT) released a report in May 1999 entitled "*Moving South Africa*" in which it maps out a 20-year strategy for transportation in South Africa (DOT, 1999). This report expressed concern about the possible negative impact of relatively high international transport costs, i.e. shipping costs, on the success of an export-led growth strategy. The report states with reference to the GEAR-strategy that "*This new industrial strategy- prioritising export-led growth built on the foundation of value-added exports, integration with SADC and a focus on correcting the spatial legacy of apartheid development – presents major challenges for transport*" (DOT, 1999:2). A major challenge is in keeping shipping costs down or compensating for it. According to the DOT, about 60% of the transport costs in the value-added chain of exporters in South Africa, is generated by shipping "*which is currently charged at a discount due to spare capacity on the backhaul leg. This backhaul discount is projected to disappear within the next 7 to 10 years as our trade flows begin to balance – leading to increased tariffs in the largest costs generator within the transport chain*" (DOT, 1999:7).

8.4.2 Shipping and Exports

South Africa is a major exporter of primary products (like many other developing countries), especially of breakbulk and bulk raw materials. Precious metals, diamonds, base metals and mineral products comprised on average more than 40% of South Africa's annual exports (in value) between 1994 and 1998. A significant number of South Africa's manufacturing industries (mostly also labour-intensive industries) is dependent on these products, such as fabricated metals, non-metallic mineral products, etc.

Approximately 98% of the volume of South Africa's exports are conveyed by sea.[16] The nature and volume of shipped exports from South Africa is shown in Table 24 below (using most recently available figures).

[15] The Reynders Commission of Enquiry, reporting in 1972, did however identify transportation costs, particularly high domestic transport costs, as a possible obstacle in the way of export success in South Africa. Van Rensburg (1999) however, argues that it is not domestic transport costs in South Africa which are relatively high, but rather shipping costs to and from South Africa.

[16] In this, South Africa is very similar to most developing countries. Sachs and Warner (1997:339) note that "…only certain goods can be economically shipped by air, and most countries still import and export the majority of goods by the sea".

Table 24: South African Exports Conveyed by Ship, 1991/2

COMMODITY	TOTAL TONNAGE	
	1991	**1992**
Coal & coke	47097	
Iron ore	15345	
Steel	4303	
Wood chips	2920	
Manganese ore	1534	
Rock phosphate	1421	
Sugar	1267	
Ferro-Alloys	1243	
Other timber	1237	
Deciduous fruit	1232	

(Source: Pretorius,1997:2-6)

About 90% of South Africa's exports per sea are shipped through foreign registered vessels. More than 40 foreign shipping lines are currently offering regularly scheduled services to and from South Africa, making use of seven commercial ports. These ports are Richards Bay, Durban, East London, Port Elizabeth, Cape Town, Saldanha Bay and to a lesser extent, Mossel Bay.

Some specialisation in the handling of goods have occurred at South African harbour over the past decades. Table 25 shows the main commodities that are exported through the different ports, as well as the approximate distance from the source of extraction or final production of the goods in question. The latter measure is to provide an indication of the likely importance of domestic transport infrastructure and costs for exporters.

Table 25 : Bulk Commodities exported through South Africa's Ports and Distances from Sources

PORT	MAIN COMMODITIES	TON ('000)	MAIN SOURCE	APPROXIMATE DISTANCE FROM SOURCE
Richards Bay	Coal & Coke	49	Welkom	703km
	Wood chips	3.6	Nelspruit	585km
	Rock & phosphate	1.3	Palaborwa	806km
	Chrome ore	1.1	Rustenburg	721km
Durban	Steel	3.2	Middelburg	856km
	Timber	1.9	Pinetown	30km
	Coal & Coke	1.7	Welkom	546km
	Chemicals	1.2	Vereeniging	569km
East London	Copper	0.1	Prieska/Okiep	1420km
Port Elizabeth	Manganese ore	1.4	Meyerton	952km
	Fruit	0.3		
Cape Town	Prepared fruit	0.3	Ceres	110km
Saldanha Bay	Iron ore	16.6	Sishen	993km
Mossel Bay	Various	N/A	-	-

(Source : Pretorius, 1997:2-6; own calculations)

From table 25 can be seen that the principal port for coal and coke is Richards Bay, for steel Durban, for copper East London, for manganese ore Port Elizabeth, for prepared fruit Cape Town and for iron ore, Saldanha Bay. The approximate distances from the location or source of extraction can be seen to be in most cases (with the exception of prepared fruit) to be in excess of 500 km from the nearest port. Export industries in South Africa may thus be subjected to locational disadvantages. Dehlen (1993:x) thus remarks that "*South Africa has no navigable rivers, there are long distances inland between raw material sources, manufacturing facilities, and harbours, and there are long distances between the harbours and airports and the places of consumption overseas. Inappropriate past policies of decentralisation have exacerbated the problem*". Transport infrastructure and transport costs

may thus have a significant impact on the competitiveness of these commodities in international markets, and are possibly significant variables to take into account in regional manufacturing/decentralisation incentives of the nine newly created provinces (see also Kleynhans, Naudé & Suleman, 1998:3).

Little attention has been paid to shipping costs from South Africa as a factor inhibiting the competitiveness of exports. The major focus of attention, also in the official Reynders Commission Report (RSA, 1972) has been on domestic transport costs. The question of shipping costs as a factor impacting on South Africa's exports is relevant in light of South Africa's (and many other developing countries') adoption of trade liberalisation measures and regional integration (such as South Africa's Free Trade Agreement with the EU and its signing of the SADC Free Trade Protocol). The adoption of trade liberalisation measures in Africa especially stems much from the example set by the East Asian economies. However, as suggested by Radelet and Sachs (1998:2) geographically remote countries (such as South Africa) may not realistically be able to replicate the East Asian model of rapid growth based on the export of labour-intensive manufactures.

Radelet and Sachs (1998:6-7) state that the most important consequence of high shipping costs are the detrimental impact on firms' competitiveness in international markets. Firstly, for small countries such as South Africa that exert little impact on world prices, the higher shipping costs, the more firms in that country will have to pay for imported intermediate goods, and the less they will receive for their exports. More specifically, if a country faces a perfectly elastic supply of imports or a perfectly elastic demand for its exports, changes in shipping costs will be translated one-for-one into changes in domestic prices. In competitive global markets, higher transport costs would have to be offset either by lower wages or by reduced costs somewhere else in the production process (e.g. through better logistics management) to allow firms to compete.

Secondly, countries with higher shipping costs would be less likely to attract foreign investment in export activities (Radelet & Sachs, 1998:7).

Thirdly, for exporters of primary products, such as South Africa, higher shipping costs would reduce the rents earned from natural resources thereby lowering aggregate investment and thus growth.

Fourthly, shipping costs would increase the price of all imported capital goods, which would reduce investment, the rate of technological transfer and thus reduce economic growth.

Due to a lack of better data, it has become customary to use the CIF-FOB band on import costs as a proxy of shipping costs (see Radelet and Sachs, 1998). The FOB (free on board) costs of imports measures the costs of an imported item at the point of shipment by the exporter. The CIF (cost-insurance-freight) price measures the costs of the imported item at the point of entry into the importing country, inclusive of the costs of transportation. Using the CIF-FOB band as a proxy, Radelet and Sachs (1998:4-5) finds that for a sample of 97 developing countries, the mean CIF-FOB band in 1965 was 12.9%. For coastal economies in their sample this average was 11.8%, while for the 17 fully landlocked economies the average was 17.8% - this implies that the costs of international transport for landlocked developing countries was on average 50% higher than for coastal economies. If one takes into consideration that more African countries tend to be landlocked than elsewhere, then regional integration to promote seamless transportation (as in SADC) may be important to improve the attractiveness of investment in export oriented industries in these countries.

Table 26 compares shipping costs from/to South Africa with those of other regions in the world for which data is available. Here shipping costs are proxied by the CIF-FOB band as discussed above.

Table 26 : South Africa, Relative Shipping Cost (Margins on Imports, 1988-1991)

	1988	1989	1990	1991	Average
EU	-0.01	-0.01	-0.01	0.00	-0.01
Industrialised Countries	0.01	0.01	0.02	0.02	0.02
Developing Countries	0.05	0.05	0.06	0.04	0.05
World	0.03	0.03	0.03	0.04	0.03
South Africa	**0.07**	**0.08**	**0.06**	**0.07**	**0.07**

(Source : IMF International Financial Statistics)

Table 26 shows that the CIF-FOB band on imports to have been on average 0.07 (7%) in South Africa over the period 1988-1991. This compares very unfavourably with the world average of 0.3, and even the average for developing countries of 0.05. Indeed, the table suggests that shipping costs to and from South Africa are almost 50% higher than the average for developing countries!

Having established that shipping costs are a potential significant obstacle to South African exporters, the next section attempts to quantify the impact of shipping costs on exports from South Africa by incorporating it into a typically reduced-form export supply function.

From the results in the table of appendix B can be seen that the significant determinants of export supply for South Africa are the real exchange rate, the value of imports (fob) and shipping costs (CIF-FOB band). The changes of the coefficients for the real exchange rate and shipping costs are of the right sign (negative) – indicating that an appreciation of the real exchange rate and an increase in shipping costs to South Africa will have a significant negative effect on South African exports. Due to a lack of available data, the effect of domestic transport costs could not be modelled. It can also be seen from the appendix that the value of imports has a significant negative effect on exports. This may seem counterintuitive when one considers the anti-export biases of import restrictions in other countries. However, in the present case it may be reflecting increases in domestic demand. Increases in domestic demand would give rise to increased import demand, and a shifting of production for foreign markets towards domestic markets.

Although shipping costs are statistically significant in reducing South African exports, the magnitude of the effect is relatively small (the elasticity of changes in exports with respect to changes in shipping costs is around 0.08%). Changes in exports react more substantially to changes in the real exchange rate (-0.76% elasticity)[17] and imports (-0.34% elasticity). In a developing country such as South Africa, high shipping costs may thus be compensated for through appropriate exchange rate management. This finding supports the views of Yeats and Finger (1976) and Milner (1997) that trade policy barriers may be more significant barriers to international trade (and thus a country's openness) than transport costs.

[17] The price elasticity of exports of –0.76 can be compared to averages for developing countries found in the literature. For instance, Reinhart (1995) estimated the price elasticity of exports to be on average –0.44 for developing countries, while Senhadji & Montenegro (1998) estimate it to be on average around –1.44. The latter study makes use of a much larger sample (37 countries vs. 10) and also includes more Asian countries where the export price elasticities tend to be higher than in other countries.

9. CONCLUSIONS AND RECOMMENDATIONS

This document contains the preliminary and independent results of an investigation into South Africa's trade in *transport services*. In light of the imperative to provide a sound and consistent negotiating base for the South African government the objectives of the present study were to:

- Identify the extent of the (potential) comparative advantage of South Africa in transport services –particularly land and maritime transport services;
- Indicate how far the transport services sector (excluding aviation) can be liberalised (deregulated);
- Identify the possible impediments to the exports of transport services from South Africa.

The findings pertaining to the above can now be summarised.

9.1 South Africa's Comparative Advantage in Land and Maritime Transport Services

South Africa, being geographically distant from its most important international markets, is a maritime economy, but are not competitive as far as the overall land (road and rail) and maritime transport services are concerned. Specifically, rail transport and port services are in need of improvement – through commercialisation, infrastructure investment and adoption of cutting-edge practices. Furthermore, both domestic as well as international shipping costs to and from South Africa is relatively high, and initiatives to lower transport costs and improve logistics management is needed. The following point substantiate these findings:

- Transport services are the most important service input after distribution services in the South African economy. It accounts for between 2-3% of total intermediate inputs for most manufacturing sectors.
- Transport and distribution services make up more than 90% of the service inputs of the South African economy.
- The total multiplier effect of transport (i.e. the increase in total output due to an R1 increase in the output of transport) is 1.88. (The multiplier is only higher in financial services, catering and accommodation (tourism) and construction services in the South African service sector.)
- Government, through the state-owned Transnet group dominates transport in South Africa.
- All of South Africa ports are owned and operated by Portnet, a division of Transnet.
- Exports of transport service mainly consists of the transport of goods to harbours and to about 92% of South Africa's exports (bulk traffic) final destination arrives at harbours by rail.For containers, petrochemicals and bulk cargo the South African ports are deemed competitive.
- South Africa ports lag behind the world as far as facilities for breakbulk cargo are considered
- The result of the deregulation of the road transport sector since approximately 1983 had resulted in a both intramodal and intermodal level of competition e.g. between road and rail and also between road freight hauliers.
- The major structural shifts that have occurred in land transport are reflected in the fact that road transport now occupies 80% and rail only 20% of the overland freight transport market. This is broadly similar to the position in the EU.
- The *World Competitiveness Report* of 1998 rates South Africa's infrastructure 35th out of 46 countries for its overall ability to satisfy business needs.
- Transport infrastructure (rail, road, port and air) seemed largely to satisfy business needs, with a rating in the top 25 % of surveyed countries, telecommunication infrastructure was much less satisfactory in the eyes of investors.
- In 1993, 25% of the road network was considered to be in good condition. It is estimated that this figure decreased to 5% in 1997.

- It is estimated that roads carry 90% of all passengers and freight, but treasury funds are adequate for only 60% on maintenance needs.
- Only a few rail routes are currently financially self-sustaining. These routes in effect subsidise all others, which places a financial burden on the entire railway network.
- South Africa has a definite comparative disadvantage in trade in transport services. This is mainly ascribed to uncompetitive freight transport and auxiliary services.
- South Africa has a slight revealed comparative advantage in passenger transport.
- "*Moving South Africa*" found that the South African transport system is competitive only in bulk exports where it may provide both cost and service advantages to customers. By contrast, the general cargo transport system is deficient on both grounds.
- Customer demand for freight transport services is currently highly concentrated on two bulk export flows, one large general cargo export flow between Gauteng and Durban and a limited number of other midsized flows, including those into the SADC region.
- The majority of customers are geographically concentrated requiring transport from dense industrial locations to destinations fed by relatively dense transport corridors.
- Customers revealed a significant level of dissatisfaction with key aspects of the system, particularly with rail general freight prices and service and with service and prices in the ports.
- Performance against international benchmarks was poor. Customers articulated overall goals for higher reliability on almost all modes, and better pricing for rail and ports.

9.2 Potential for Further Deregulation of South Africa's Transport Sector

Since the late 1980s most developing countries have significantly liberalised trade in goods - either unilaterally, through bilateral agreements on regional level or through multilateral agreement such as GATT. Underpinning these liberalisation efforts are a growing recognition that outward-oriented, open economies perform better than closed, inward-orientated economies.

Consequently, as tariffs and related "traditional" trade barriers on trade in goods decline in importance, industries have now started to focus on the consequences of differences in regulatory regimes across countries for their ability to compete (Hoekman & Konan, 1999:3). There is now a greater recognition that producer services play a crucial role in a country's development and growth. Here transport facilities are important for agricultural markets and the international competitiveness of manufacturing.

The move towards greater liberalisation of trade in services is further strengthened due to the fact that even if a country were to engage in tariff reforms on goods, if it were not extended to services, distortions would continue to persist and resource allocation would be affected. Especially in the case of South Africa, as tariffs and other barriers to goods trade are reduced significantly, effective rates of protection may become negative (or very low) for manufacturing industries as they lose protection on their goods but continue to be confronted with higher transport (input) prices than they would have if the transport services markets were fully opened up.

South Africa should therefore carefully scrutinise its GATS strategy in order to ensure that the manufacturing sector obtain the necessary transport service quantity as well as quality to be competitive. This should be done with a prime view to increase the exports of manufacturing, and also of transport services itself.

9.3 Impediments to exports of Transport Services

Transport services have one of the highest trade deficits of any service sector. The following are shortcomings in South Africa's transport system that impedes exports of transport services (and of other goods, especially manufacturing) :

- South Africa are located geographically distant form its major trading partners so that exports of transport services may be more important in the SADC context.

- There is a backlog of spending of about R20 billion on South Africa's roads which increases the external costs of using roads as well as the efficiency of transport services provided.
- Capital re-investment is below required levels for almost all modes of transport, so that capital tend to be outdated.
- South Africa has an old national vehicle fleet - operating at above 80% of its useful economic life. The majority of freight trucks in South Africa is older than 14 years.
- South Africa's port turnaround times tend to be up to 5 times slower than that of competitors.
- South Africa's transport sector is characterised by a lack of modal integration and a lack of "*seamless" transportation* - especially in SADC.
- Shipping costs are high: it makes up to 60% of transport costs for exports.
- Installed transport infrastructure capacities are under-utilised. In rail transport this is due to under-utilisation of unit trains; poor information on train movements and wagon location due to unreliable freight wagon tracking and control systems; insufficient signalling systems which has resulted in reduction in train posted speed.
- Port-related problems such as poor rail-port interface, inadequate shunting locomotives, insufficient cargo handling equipment, absence of reliable shipper information and port congestion.
- Border formalities, slowness in clearing international transit traffic and short border opening hours. SATCC estimates that the cost of delays at border of commercial road transporters to be about US $48 million annually.
- Only about 15% of SADC's 890000km road network is comprised of primary roads.

9.4 Recommendations

As far as transport services are concerned South Africa has made commitments only for road transport services. Within road transport, commitments for GATS treatment is made only for passenger and freight transport; with exemptions for market access and national treatment on the presence of natural persons (mode 4). Road transport is also exempted from MFN treatment in light of the SADC transport protocol which provides for the transport rights to carry goods and passengers to and from South Africa and between third countries, to be reserved.

The latter can be understood in light of the fact that South Africa has a regional comparative advantage in transport. Spoornet's rail network handles 172 million tons in traffic annually, compared to annual SADC rail traffic of approximately 25 million tons. The Port of Durban alone handles on average 24 million tons annually, exceeding the combined SADC ports throughput of approximately 10 million tons.

South Africa's further commitments to GATS should be seen in this light and the fact that overall, the transport services sector is not very competitive and in need of significant restructuring. GATS commitments should be used to strengthen South Africa's position in the SADC region and increase exports of transport services to the SADC market. In this regard, the attraction of FDI to update capacity for service delivery may be important. For instance, it should be kept in mind that currently as far as South Africa's trade in transport services is concerned, the most important modes of supply are cross-border supply and consumption abroad. Commercial presence (through e.g. FDI) and the presence of natural persons are as yet relatively unexploited due to government dominance in the domestic market - especially in rail and ports. However, the movement towards privatisation of Transnet is likely to lead to commercial presence as an important mode of supply of imported transport services. Furthermore, regional trade integration through SADC is likely to lead to higher FDI by South African transport through service providers in African countries. Currently the African market is also an important market for the export of transport services (especially rail) through cross-border supply.

The further liberalisation of the transport services market, particularly in expanding opportunities for FDI in the sector, is likely to have positive effects in terms of transfer of

technology, introduction of new products, price reductions and quality improvements. Moreover, intersectoral linkages will be large, as a myriad of sector from other services and manufacturing will gain from these.

The argument is strengthen from considering that the liberalisation of transport services in South Africa through greater FDI (commercial presence) may from a political-economy point of view easier than goods liberalisation. This is because the establishment of foreign-owned firms may reduce employment losses in the sector as well as the fact that regulatory agencies prefer establishments by foreign firms since it is easier to control than cross-border trade.

Thus, to improve the effectiveness of transport services and infrastructure (particularly in the SADC region) and raise the exports of South Africa's transport services the GATS negotiations in 2000 should focus on achieving the following:

- The rehabilitation of existing transport infrastructure should focus more on the improvement of existing capacities. Herein supportive investments such as management sup-port, logistics, supply chain management practices and IT systems are vitally important. Herein FDI (commercial presence – mode 3) is important.
- Better co-ordination and harmonisation are essential, especially in areas of equipment standardisation, national transport legislation, the ratification of international conventions and customs practices and clearance documentation.
- Regional countries should deregulate and commercialise their domestic transport policies by way of privatisation and restructuring of companies in this sector. The adoption of commercial principles and introduction of competition is vital.
- The reorientation of the Southern African region's transport sector beyond the current regional concerns to encompass international perspectives.
- Reduced transit. Transit times for containers could be reduced by 3 to 4 days if exported to Europe from a West Coast port.
- Reduce the number of ports of call. The average container travelling to or from South Africa does so on a vessel that makes three calls along the coast. If all export or import containers were to be channelled through either an East coast or a West-coast port a real cost saving of 11% per TEU could be realised.
- Increase average ship size. The average container vessel calling at South African ports has a capacity of about 1900 TEU's. Modelling carried out by Moving SA suggested that an increase in average vessel size to 3100 TEUs would reduce the unit cost by some 17% in real terms.

As a final remark, there may seem to be an imperative to lower overall transport costs and increase service delivery (particularly at ports), steps which would benefit both exports of manufactured goods as well as exports of transport services. A higher level of specific commitments towards transport services to the GATS could benefit the former, but possibly erode the slight comparative advantage that South Africa currently enjoys within SADC.

APPENDIX A
LIST OF ACTS AND BILLS ON TRANSPORT IN SOUTH AFRICA

Regulations - 1999

Road Traffic Act 29 of 1989, Amendment of Road Traffic Regulations 30 April

Draft National Road Traffic Regulations

Prohibition on use of communication device (cell phones); and special classification of vehicle in relation to motor vehicle licence fees 9 April

Road Traffic Act 29 of 1989, Amendment of Road Traffic Regulations 30 January

Bills

1999

- Administrative Adjudication of Road Traffic Offences Amendments Bill, No.4
- Administrative Adjudication of Road Traffic Offences Amendment Bill, No.4b
- National Road Traffic Amendment Bill, No.5
- Road Traffic Management Corporation Bill, No.6
- Select Committee Amendments to Road Traffic Management Corporation Bill, No.6a
- Road Traffic Management Corporation Bill, No.6b

1998

- Portfolio Committee Amendments to Cross-Border Road Transport Bill, No.10a
- Cross-Border Road Transport Bill, No.10
- Airports Company Amendment Bill, No.11
- South African Maritime Safety Authority Levies Bill, No.18
- The South African National Roads Agency Limited and National Roads Bill, No.19
- National Road Traffic Amendment Bill, No.20
- Transport Appeal Tribunal Bill, No.29
- Select Committee Amendments to Transport Appeal Tribunal Bill, No.29a
- Transport Appeal Tribunal Bill, No.29b
- Portfolio Committee Amendments to Transport Appeal Tribunal Bill, No.29c
- Transport Appeal Tribunal Bill, No.29d
- Shipping Laws Amendment Bill, No.38
- South African Civil Aviation Authority Levies Bill, No.52
- South African Civil Aviation Authority Bill, No.55
- Portfolio Committee Amendments to South African Civil Aviation Authority Bill, No.55a
- South African Civil Aviation Authority Bill, No.55b
- National Land Transport Interim Arrangements Bill, No.58
- Road Traffic Laws Rationalisation Bill, No.70
- Select Committee Amendments to the Road Traffic Laws
- Rationalisation Bill, No.70a
- Road Traffic Laws Rationalisation Bill, No.70b
- Administrative Adjudication of Road Traffic Offences Bill,No.74
- Ship Registration Bill, No.77
- Road Accident Fund Commission Bill, No.93
- Portfolio Committee Amendments to Road Accident Fund
- Commission Bill, No.93a
- Road Accident Fund Commission Bill, No.93b
- Road Transport Appeal Matters Amendment Bill, No.104

1997

- Shipping General Amendment Bill, No.11
- Aviation Laws Amendment Bill, No.110
- South African Maritime Safety Authority Bill, No.116
- Portfolio Committee Amendments to South African Maritime Safety
- Authority Bill, No.116a
- South African Maritime Safety Authority Bill, No.116b
- Civil Aviation Authority Bill

1996

- International Convention for the Prevention of Pollution from Ships Amendment Bill, No.51
- Aviation Laws Amendment Bill, No.50

Draft Bills

- Draft Transitional Land Transport Bill
- Draft Transitional Land Transport Bill Civil Aviation Authority Draft Bill
- Administrative Adjudication of Road Traffic Offences Draft Bill
- National Land Transport Interim Arrangements Bill, 29 May 1998
- Road Traffic Management Corporation Bill, 1998

Acts

- Road Traffic Management Corporation Act, No.20 of 1999
- National Road Traffic Amendment Act, No.21 of 1999
- Administrative Adjudication of Road Traffic Offences Amendment Act, No.22 of 1999
- Road Accident Fund Commission Act, No. 71 of 1998
- Road Transport Appeal Matters Amendment Act, No. 70 of 1998
- Ship Registration Act, No.58 of 1998
- Shippings Laws Amendment Act, No.57 of 1998
- Road Traffic Laws Rationalisation Act, No.47 of 1998
- Administrative Adjudication of Road Traffic Offences Act, No.46 of 1998
- National Land Transport Interim Arrangements Act, No.45 of 1998
- South African Civil Aviation Authority Levies Act, No.41 of 1998
- South African Civil Aviation Authority Act, No.40 of 1998
- Transport Appeal Tribunal Act, No.39 of 1998
- National Roads Traffic Amendment Ac, No.8 of 1998
- South African National Roads Agency Limited and National Roads Act, No.7 of 1998
- South African Maritime Safety Authority Levies Act, No. 6 of 1998
- South African Maritime Safety Authority Act, No. 5 of 1998
- Cross-Border Road Transport Act, No.4 of 1998
- Airports Company Amendment Act, No. 2 of 1998
- Shipping General Amendment Act, No.23 of 1997
- International Air Services Amendment Act of No.10 of 1996
- National Roads Amendment Act, No.24 of 1996
- Transport Advisory Council Abolition Act, No.9 of 1996
- Road Accident Fund Act, No.56 of 1996
- National Road Traffic Act, No.93 of 1996
- Wreck and Salvage Act, No.95 of 1996
- Aviation Laws Amendment Act, No.98 of 1996
- South African Roads Board Amendment Act, No.15 of 1995
- Transport General Amendment Act, No.16 of 1995
- Legal Succession to the South African Transport Services Amendment Act, No.43 of 1995
- Transport Second General Amendment Act, No.82 of 1995
- Air Services Licensing Amendment Act, No.83 of 1995

- National Roads General Amendment Act, No.27 of 1994
- Shipping and Civil Aviation Laws Rationalisation Act, No.28 of 1994
- Marine Traffic Amendment Act, No.38 of 1993
- Road Traffic Amendment Act, No.39 of 1993
- Airports Company Act, No.44 of 1993
- Air Traffic and Navigation Services Company Act, No.45 of 1993
- Convention on the International Recognition of Rights in Aircraft Act, No.59 of 1993
- International Air Services Act, No.60 of 1993
- Road Traffic Second Amendment Act, No.66 of 1993
- National Roads Amendment Act, No.100 of 1992
- Urban Transport Amendment Act, No.14 of 1992
- Air Services Licensing Amendment Act, No.15 of 1992
- Aviation Amendment Act, No.16 of 1992
- Road Traffic Amendment Act, No.17 of 1992
- Merchant Shipping Amendment Act, No.18 of 1992
- Road Traffic Second Amendment Act, No.40 of 1992
- Legal Succession to the South African Transport Services Amendment Act, No.47 of 1992
- Transport General Amendment Act, No.86 of 1992
- Transnet Limited Second Amendment Act, No.110 of 1991
- Transnet Limited Amendment Act, No.52 of 1991
- Road Traffic Amendment Act, No.73 of 1991
- Air Services Licensing Act, No.115 of 1990
- Urban Transport Amendment Act, No.77 of 1990
- Road Traffic Act, No.29 of 1989
- Merchant Shipping Amendment Act, No.3 of 1989
- Legal Succession to the South African Transport Services Act, No.9 of 1989
- South African Transport Services Amendment Act, No.11 of 1988
- South African Roads Board Act, No.74 of 1988
- Transport Deregulation Act, No.80 of 1988
- Carriage of Goods by Sea Act, Act No.1 of 1986
- South African Transport Services Amendment Act, No.46 of 1986
- International Convention for Safe Containers Act, No.11 of 1985
- Merchant Shipping Amendment Act, No.25 of 1985
- National Roads Amendment Act, No.58 of 1985
- Aviation Amendment Act, No.1 of 1984
- National Roads Amendment Act, No.10 of 1983
- Marine Traffic Amendment Act, No.5 of 1983
- Second National Roads Amendment Act, No.79 of 1983
- Road Transportation Amendment Act, No.8 of 1983
- Merchant Shipping Amendment Act, No.3 of 1982
- Aviation Amendment Act, No.4 of 1982
- National Roads Amendment Act, No.5 of 1982
- Black Transport Services Amendment Act, No.76 of 1982
- Transport Services for Coloured Persons and Indians Amendment Act, No.77 of 1982
- Road Transportation Amendment Act, No.78 of 1982
- Marine Traffic Act, No.2 of 1981
- Merchant Shipping Amendment Act, No.3 of 1981
- Civil Aviation Offences Amendment Act, No.4 of 1981
- Aviation Amendment Act, No.63 of 1981
- Road Transportation Amendment Act, No.64 of 1981
- National Roads Amendment Act, No.93 of 1981
- Aviation Amendment Act, No.64 of 1980
- National Roads Amendment Act, No.66 of 1980
- Road Transportation Amendment Act, No.91 of 1980
- National Roads Amendment Act, No.3 of 1979
- Railways and Harbours Acts Amendment Act, No.80 of 1979

- Carriage by Air Amendment Act, No.81 of 1979
- Road Transportation Amendment Act, No.93 of 1979
- National Roads Amendment Act, No.38 of 1978
- Merchant Shipping Amendment Act, No.62 of 1978
- Civil Aviation Offences Amendment Act, No.63 of 1978
- Merchant Shipping Amendment Act, No.70 of 1977
- Transport (Co-ordination) Amendment Act, No.73 of 1977
- Road Transportation Act, No.74 of 1977
- Urban Transport Act, No.78 of 1977
- Railway and Harbour Purchase Amendment Act, No.97 of 1977
- Merchant Shipping Amendment Act, No.5 of 1976
- Sishen-Saldanha Bay Railway Construction Amendment Act, No.72 of 1976
- Saldanha Bay Harbour Construction Amendment Act, No.77 of 1976
- Saldanha Bay Harbour Acquisition and Equipment Act, No.99 of 1976
- Railways and Harbours Acts Amendment Act, No.46 of 1975
- Merchant Shipping Amendment Act, No.24 of 1974
- National Roads Amendment Act, No.26 of 1974
- Railways and Harbours Acts Amendment Act, No.44 of 1974
- Black Transport Services Amendment Act, No.47 of 1974
- Sishen-Saldanha Bay Railway Construction Act, No.28 of 1973
- Saldanha Bay Harbour Construction Act, No.29 of 1973
- Civil Aviation Offences Act, No.10 of 1972
- Black Transport Services Amendment Act, No.11 of 1972
- Harbour Construction Act, No.28 of 1972
- Railway Purchase Act, No.25 of 1971
- National Roads Act, No.54 of 1971
- Transport (Co-ordination) Amendment Act, No.59 of 1971
- Merchant Shipping Amendment Act, No.42 of 1969
- Aviation Amendment Act, No.83 of 1969
- Aviation Amendment Act, No.12 of 1965
- Merchant Shipping Amendment Act, No.13 of 1965
- Carriage by Air Amendment Act, No.5 of 1964
- Merchant Shipping Amendment Act, No.40 of 1963
- National Roads and Transport (Co-ordination) Amendment Act, No.19 of 1962
- Aviation Act, No.74 of 1962
- Merchant Shipping Amendment Act, No.30 of 1959
- Merchant Shipping (Certificates of Competency) Amendment Act, No.48 of 1957
- National Roads and Transport (Co-ordination) Amendment Act, No.51 of 1957
- Merchant Shipping Act, No.57 of 1951
- Transport (Co-ordination) Act, No.44 of 1948
- Carriage by Air Act, No.17 of 1946

APPENDIX B
ESTIMATION OF THE IMPACT ON SHIPPING COSTS ON SA EXPORTS

Methodology and Data

In order to estimate the impact of shipping costs on South Africa's merchandise exports, a standard export demand function for South Africa will be estimated. Quarterly, time series data spanning the period 1972(1) to 1998 (2) will be used. Data was obtained from the IMF's International Financial Statistics (IFS) as well as the Quarterly Bulletins of the South African Reserve Bank. As in Radelet and Sachs (1998) shipping costs (ITC) are proxied by the CIF-FOB band on imports. Thus

$$ITC = \left(\frac{CIF}{FOB} \right) - 1$$

Although shipping costs apply in both export and import directions, imports are used here since data on imports CIF and imports FOB are generally available from the IMF. Although subject to shortcomings, Radelet and Sachs (1998:3) maintain that "…*this data are relatively consistent and complete, and provide a good starting point for examining the general costs of international shipping for almost all countries in the world*".

Time Series Model

The determinants of countries' trade (and exports) have generated a voluminous theoretical literature dating back to the time of Adam Smith and David Ricardo. In these classical models trade was unambiguously beneficial to all countries, and the extent and type of a country's exports and imports was essentially determined by cost advantages (both absolute and comparative) enjoyed by a country in production. Under the assumption of perfect competition a country's real exchange rate would reflect the relative prices between its traded and non-traded goods and indicate the welfare-maximising allocation of resources between the production of tradables (including exports) and non-tradables. In light of many countries' practice of determining or fixing nominal exchange rates the real exchange rate is seen as a crucial determinant of exports. Perkins (1997:512-513) explain the importance of the real exchange as determinant of exports by stating that it will be profitable for domestic firms to export if their domestic resource cost ratio is less than the real exchange rate.

Adam Smith saw exports as a "vent" for surplus domestic production implying that firms may export due to a lack of sufficient demand in domestic markets. Domestic capacity utilisation in manufacturing as well as the world demand for a country's goods are hereby implied as possible significant determinants of a country's exports.

Extensions to the classical trade model by Hecksher and Ohlin emphasised the importance of the availability of production factors for trade patterns between countries, and brought the distributional consequences of international trade under increasing scrutiny. From this followed the Stolper-Samuelson theorem and the idea of factor-price equalisation which proposed that trade liberalisation (i.e. the removal of import restrictions) would be beneficial for a country's exports as it will benefit the input used most intensively in its production. In addition Lerner's symmetry argument described the removal of import protection as symmetrical to an export subsidy reinforcing the notion that a country's access to imports at world prices is an important determinant of its exports.

In more recent times the effects of imperfect competition, economies of scale and geography on trade patterns have been analysed, mainly as part of the co-called endogenous growth literature and the strategic trade policy. The gist of this literature is that a country's integration into the world economy, and share of its exports in world trade, is a significant determinant of its level of prosperity. As far policy is considered, the recent literature is making significant departures from the classical and neoclassical models in that successful integration of a country into the world economy (and increasing export shares) is seen to require increasing competitiveness of products which may depend on strategic government intervention, for

instance to enhance the productivity of domestic manufacturing firms through protection which could result in lower per unit costs[18] and greater investment by firms in new technology. It was shown in section two that the "new economic geography" literature has recently been incorporation transportation costs as a significant variable to explain regional economic integration, the location of firms as well as the international business cycle (see e.g.also Amadji & Winters, 1997; Frankel, Stein & Wei, 1995). Moreover, it is shown by Radelet and Sachs (1998) that international transport costs (as measured by shipping costs) have a significant impact on the exports of manufactured goods.

There has also recently been a debate, following many developing countries' adoption of more flexible exchange rate regimes, as to the effect of exchange rate volatility on exports. In this regard it has been argued that a stable exchange rate is the best single explanation of successful exports in the medium term. However, as discussed by Smit (1991:23) both the theoretical arguments and the empirical evidence on the effect of exchange rate volatility on exports is ambiguous. Moreover, for the case of South Africa Smit (1991:24) "found no proof of any systematic negative relationships between the variability of the external value of the rand and South Africa's non-gold export volumes".

Based on the above discussion the following general export supply function for South Africa may be justified.

$$EXP_t = \Phi(REER_t, QSA_t, QUS_t, IMP_t, CIF/FOB_t, DUMMIES) \qquad (1)$$

Where the six relevant variables are:

EXPt = Real value of merchandise exports FOB (excluding therefore gold and other mining exports) from South Africa in year t.
REERt = Real effective exchange rate of the rand in year t
QSAt = Real GDP in South Africa in year t.
QUSt = Real GDP of the United States as proxy for world demand in year t.
IMPt = Real value of imports FOB of South Africa in year t.
CIF/FOBt = A proxy for international shipping costs given by the imports CIF/imports FOB differential.
DUMMIES = Various indicator variables to account for structural breaks in the data as well as seasonal and trend dummies.

Testing for Stationarity

Since the contributions by Granger and Newbold (1974), Dickey and Fuller (1979) and Nelson and Plosser (1982) and others it is known that estimation of an equation such as (1) using data in levels may be subject to spurious regression results if the data is non-stationary. If a data series in stationary, it may be described as integrated of order zero, denoted ~I(0). If however, a data series is not stationary but requires to be differenced d times in order to become stationary, then it is said to be ~I(d). A special case, which is however found most often in economic time series (see Nelson & Plosser, 1982) is when a data series is ~I(1). In this case the data series is said to contain a unit root.

Due to the inability to draw valid inferences if data is used that contain unit roots, it has become customary to pre-test all data for unit roots. The Augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller (1979) and the Perron-test (Perron, 1988) are the most widely used tests for this purpose.

The ADF test is used in this paper to detect the possible existence of unit roots in the variables that enter into equation (1) above. However, the simple ADF test need to be expanded to allow for seasonality and structural breaks in the data. For the latter, the

[18] Ocampo and Taylor (1998:1525) refer to Scitovsky's (1954) earlier arguments that export growth may be stimulated through the establishment of domestic industries with scale economies, especially when transport costs and other factors drive wedges between border prices of imports and exports.

extension of the ADF as proposed by Perron (1989) is used. This consist of estimating the following equation for each of the variables in the model:

$$\Delta X_t = \gamma X_{t-1} + \alpha_j \sum_{j=1}^{n} \Delta X_{t-j} + \mu_0 + \mu_1 t + dummies + \varepsilon_t \qquad (2)$$

In the present case n= 5 was found to be adequate to ensure that ξ_t is white noise.

The dummies in (2) will consist of D=t for (t>k) and D = 0 (for t ≤k) if there is a structural shift in the trend of a series (where k is the time of the break) and/or D=1 (for t>k) and D=0 (for t≤k) if there is a structural shift in the mean of the series. Furthermore, seasonal dummies will be included in (2) since quarterly data is used. Ghysels, Lee and Noh (1994) show that the usual ADF test is still valid, as long as sufficient number of lagged terms are included in the test equation to take account of the seasonal terms in the data. Osborn (1990) found that seasonal unit roots are not encountered often in macroeconomic time series.

If the coefficient γ in equation (2) is significant the null hypothesis of a unit root is rejected and it may be concluded that the data in question is ~I(0). If however, the estimated value of γ is insignificant, then it may be concluded that the levels data contains a unit root, i.e. it is ~I(1). In such a case the appropriate modelling strategy is to take first-differences of the data and repeat the above test.

The critical values for the ADF t-test on γ with dummies for structural breaks are contained in Banerjee, Lumsdaine and Stock (1992).

Before equation (2) could be estimated, it was necessary to identify for each of the variables in (1) the appropriate structural breaks. Through visual inspection the following periods for structural breaks in each of the series' was established. From visual inspection it was also be established that all variables exhibited shifts in means rather than shifts in trends.

Defining the appropriate dummies as indicated above for structural shifts in the means, equation (2) was estimated for each of the variables in the model. The results from the OLS estimation of (2) for the variables in (1) with lags of up to order 4 are available from the author on request.

The results from the stationarity tests shows that hat for the series in equation (1), all the variables – with the exception of CIF/FOB that is stationary - are non-stationary in levels, and integrated of order 1, - i.e., first differencing is generally required to achieve stationarity.

However, a drawback of estimating an equation only in differences is that potentially valuable long-run information contained in the levels of the variables may be lost. In first-and second differences, equation (1) will only be able to estimate the short-term dynamics of export supply in South Africa and long-run adjustments of exports to changes in its determinants will not be modelled.

Testing for Cointegration

This drawback may be avoided if equation (1) can be estimated in the form of an error-correction model. An error correction model contains a term in levels to capture long-term adjustments. However, in order for the levels term to be stationary, would require that the variables in the model be cointegrated.

In cases such as the present, involving more than two variables, there may be more than one cointegrating vector. In such a case the Engle and Granger (1987) two-step procedure has no systematic way for the separate estimation of the multiple cointegrating vectors. Furthermore, the two-step Engle-Granger procedure is open to the criticism that any errors introduced in the first step may be carried into the second step (Enders, 1995:385). The Johansen (1988) and Johansen and Juselius (1990) maximum likelihood estimator circumvent the use of two-step estimators and can estimate and test for the presence of multiple cointegrating vectors.

Testing for multivariate cointegration commences from the following vector autoregressive (VAR) model :

$$\mathbf{X}_t = \Pi_1 \mathbf{X}_{t-1} + \Pi_2 \mathbf{X}_{t-2} + \ldots \Pi_n \mathbf{X}_{t-k} + \mathbf{e}_t \qquad (3)$$

In the system denoted by (3), a bold-faced variable indicates a vector. Here X_t is a vector of m endogenous variables and e_t a vector of identically and independently distributed errors. In the present case X_t = ($\ln EXP_t$, $\ln REER_t$, $\ln IMP_t$, $\ln CIF/FOB_t$ and $\ln QSA_t$, $\ln QUS_t$)'. Since it has been established in table 7 that the variables in X_t are all ~I(1), it is necessary to estimate (3) in its first-differenced form. However, as has been remarked above, first-differencing removes much of the valuable information about the equilibrium relationship between variables. Following Johansen (1988) and Johansen and Juselius (1990) an error correction representation of equation (3) can be obtained by re-writing equation (3) to obtain the following equation :

$$\Delta \mathbf{X}_t = \Gamma_1 \Delta \mathbf{X}_{t-1} + \Gamma_2 \Delta \mathbf{X}_{t-2} + \ldots \Gamma_{k-1} \Delta \mathbf{X}_{t-k-1} - \Pi \mathbf{X}_{t-k} + et \qquad (4)$$

This differs from the first-differenced version of the VAR in equation (5) only by the presence of ΠX_{t-k}. This term contains information about the long-run equilibrium relationship between the variables in X_t.

The rank of Π is equal to the number of independent cointegrating vectors. If rank(Π) = 0 then the matrix is null and it will be necessary to estimate the VAR only in first-differences, i.e. if rank(Π) = 0 then all the variables contain unit roots in levels. If Π is full rank (in the present case if rank(Π)=6) then the vector process is stationary.

The rank of Π is equal to the number of its eigenvalues that are significantly different from zero. The Johansen methodology allows one to determine the number of eigenvalues that are stastistically different from zero. There are two related test statistics proposed by Johansen (1988), namely the trace-test (λ_{trace}) and the maximum-eigenvalue test (λ_{max}). Given in the present case that Π can contain six eigenvalues, λ_1, λ_2, λ_3, λ_4, λ_5 and λ_6, these test statistics are calculated as follows :

$$\begin{aligned} l_{trace} &= -T \sum \ln(1 - \hat{l}_i) \\ l_{\max} &= -T \ln(1 - \hat{l}) \end{aligned} \qquad (5)$$

Where T = the number of observations.

The critical values for the λ_{trace} and λ_{max} statistics are provided in Johansen and Juselius (1990).

The λ_{trace} statistic tests H_o : p cointegrating vectors , where p = 0, 1, 2, 3, 4 or 5 in the present case, against H_1 : > p cointegrating vectors.

The λ_{max} statistic tests H_o : p cointegrating vectors against H_1 : p+1 cointegrating vectors.

Using the econometric package PCFIML, the VAR in equation (4) was estimated and the eigenvalues of the Π - matrix calculated. These are respectively λ_1 = 0.262791, λ_2 = 0.230999, λ_3 = 0.183824, λ_4 = 0.166546, λ_5 = 0.0789124 and λ_6 = 0.00639366. The calculated values of the test statistics and their 95% critical values are shown in table A1.

Table A1: Johansen tests for Multivariate Cointegration

Ho:rank = p	λ_{max}	95% critical value	λ_{trace}	95% critical value
P=0	96.86	104.9	28.35	42.5
P≤ 1	68.5	77.7	24.43	36.4
P≤ 2	44.07	54.6	18.89	30.3
P≤ 3	25.18	34.6	16.94	23.8
P≤ 4	8.241	18.2	7.645	16.9
P≤ 5	0.5965	3.7	0.5965	3.7

Table A1 shows that according to both test statistics the null of rank (Π) =0 cannot be rejected – the tests thus fail to reject the null of no cointegration. Accordingly there exists no cointegrating relationship between the variables and no error correction representation of equation (1) is possible. The results of estimating equation (1) in first differences are set out in the next section.

Regression analysis

The regression results from estimating equation (1) in first differences are contained in table A2. First it should be noted that all data were logarithmically transformed. Furthermore, a general-to-specific modelling strategy was followed, and the results in table 5 reflect the most parsimonious fit obtained (see Doornik & Hendry,1994:224-229). It should be noted that only in the case of shipping costs were lags (two periods) found to be statistically significant. A trend and seasonal dummies were also included in the model but likewise found to be statistically insignificant. The diagnostic results are available on request but indicated no evidence of misspecification (including autocorrelation).

Table A2: Regression Results: Export Supply Equation for South Africa, 1975(2) – 1998(1) (Dependent Variable : First difference of Real Merchandise Exports)

VARIABLE	COEFFICIENT	STD. ERROR	t-VALUE
Constant	0.0309	0.01228	2.518*
$\Delta REER_t$	-0.76044	0.19652	-3.869*
ΔIMP_t	-0.34705	0.088477	-3.915*
ΔQSA_t	0.10721	0.084773	1.265
ΔQUS_t	0.06639	0.80419	0.083
$\Delta CIF/FOB_t$	-0.0484	0.023477	-2.064*
$\Delta CIF/FOB_{t-1}$	-0.0114	0.0209	-0.545
$\Delta CIF/FOB_{t-2}$	-0.03266	0.022759	-1.435**
R^2=0.27 SE = 0.0934			

(An asterisk ,, indicates significance at a 95% level of confidence and ** significance at a 90% level of significance)*

From table A2 can be seen that the significant determinants of export supply for South Africa are the real exchange rate, the value of imports (fob) and shipping costs (CIF-FOB band). The changes of the coefficients for the real exchange rate and shipping costs are of the right sign (negative) – indicating that an appreciation of the real exchange rate and an increase in shipping costs to South Africa will have a significant negative effect on South African exports. Due to a lack of available data, the effect of domestic transport costs could not be modelled. It can also be seen from table A2 that the value of imports has a significant negative effect on exports. This may seem counterintuitive when one considers the anti-export biases of import restrictions in other countries. However, in the present case it may be reflecting increases in domestic demand. Increases in domestic demand would give rise to increased import demand, and a shifting of production for foreign markets towards domestic markets. In other

words, the finding in table A2 provides some indication of the possible validity in the South African case of the vent-for-surplus theory of Adam Smith.

From table A2 can also be seen that, although shipping costs are statistically significant in reducing South African exports, the magnitude of the effect is relatively small (the elasticity of changes in exports with respect to changes in shipping costs is around 0.08%). Changes in exports react more substantially to changes in the real exchange rate (-0.76% elasticity)[19] and imports (-0.34% elasticity). In a developing country such as South Africa, high shipping costs may thus be compensated for through appropriate exchange rate management. This finding supports the views of Yeats and Finger (1976) and Milner (1997) that trade policy barriers may be more significant barriers to international trade (and thus a country's openness) than transport costs.

[19] The price elasticity of exports of –0.76 can be compared to averages for developing countries found in the literature. For instance, Reinhart (1995) estimated the price elasticity of exports to be on average –0.44 for developing countries, while Senhadji & Montenegro (1998) estimate it to be on average around –1.44. The latter study makes use of a much larger sample (37 countries vs 10) and also includes more Asian countries where the export price elasticities tend to be higher than in other countries.

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