

THE RELATIONSHIP BETWEEN SOUTH AFRICAN AVIATION POLICY IN AFRICA AND AIR PASSENGER TRAFFIC FLOWS

by

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DECLARATION

I declare that the Doctor's thesis, which I hereby submit for the degree DCom Tourism Management at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at another university.

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ABSTRACT

International air transport has been one of the most highly regulated and restrictive industries in the world, governed by bilateral air services agreements (BASAs). More recently progressive liberalisation, through the gradual removal of regulatory restrictions, has taken place in major air markets of the world. In Africa, more than a decade ago, African leaders agreed to liberalise the intra-African aviation market through the Yamoussoukro Decision (YD) of 2000 but its full potential across the Continent has not yet been realised. Many studies worldwide have been done on air liberalisation and its impact on air traffic flows but very few include Africa. This study focuses on the impact on air passenger traffic flows of South Africa's aviation policy in Africa by investigating the link between South Africa's aviation policy, as reflected in the design of its BASAs, and air passenger traffic flows over an 11 year period (2000 to 2010). A mixed research methodology was followed. Qualitatively, a two-round Delphi technique was employed to determine the views of aviation experts from academia, the public and private sectors, on features of BASAs, as well as those unrelated to BASAs, that have an influence on air passenger traffic flows between country-pairs in Africa. Twenty-five BASA features and 48 non-BASA factors were identified from which a conceptual framework was formulated. The quantitative phase aimed at estimating and statistically quantifying the impact of the degree of restrictiveness or liberalisation of the respective BASAs, as measured by four variants of the Air Liberalisation Index (ALI): *STD*, *5th+*, *DES+* and *OWN+*. It also aimed at identifying which specific provisions of BASAs had the most significant impact on air passenger traffic flows. A fixed one-way panel regression technique was applied to the selected 11 year panel data set of 42 African countries, representing five markets: intra-African; the SADC; West African; East African and North African. A number of other predictors were also identified which meant that the impact of the aviation policy on air passenger traffic flows could not be tested in isolation: the degree of liberalisation of the policy as measured by the ALI; the number of years BASAs have been in place; GDP; the presence of a low-income country; the magnitude of services trade flows; and population size. The simultaneous impact of the six predictors was tested in each of the five markets with the various markets showing different predictors as being statistically significant. In the intra-African and SADC regional markets these were *Trade*, *ALI* and *GDP*; in the East African market *Low Income*, *Trade*, *ALI* and *Population* but in the North African market

only *GDP*. Where the impact of the aviation policy was found to be significant, individual provisions such as *fifth freedom traffic rights*, *capacity*, *designation* and *cooperative arrangements* were tested for their impact on air passenger traffic over two time periods: 2000 – 2010 and 2006 – 2010. These also proved to be significantly different for the various regions. The results of this research provide new insights into the relationship between air passenger traffic flows and aviation policy in the South African – intra-African and regional contexts. The research technique used in the South African – intra-African market expands on the established cross-sectional 2005 QUASAR database, laying a foundation for similar studies in other regions where impact of policy over time can be established.

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ACRONYMS

ACAC	Arab Civil Aviation Commission agreement
ACSA	Airports Company of South Africa
AFCAC	African Civil Aviation Commission
AFRAA	African Airlines Association
ALI	Air Liberalisation Index
AMU	Arab Maghreb Union
ANZCERTA	Australia-New Zealand Closer Economic Relations Free Trade Agreement
AOC	Air Operator Certificate
APEC	Asia Pacific Economic Cooperation
ASA	Air Services Agreement
ASEAN	Association of South-East Asian Nations
ASGI-SA	Accelerated and Shared Growth Initiative of South Africa
ASLC	Air Services Licensing Council
AU	African Union
BAG	Banjul Accord Group
BASA	Bilateral Air Services Agreement
BEE	Broad-Based Black Economic Empowerment
CAB	Civil Aeronautics Board
CAGR	Compound Annual Growth Rate
CARICOM	Caribbean Community air services agreement
CEMAC	Economic and Monetary Community of Central Africa
CLMV	Cambodia, Laos, Myanmar, Vietnam agreement
COMESA	Common Market for Eastern and Southern Africa
CRS	Central Reservation System
DES+	Designation-plus (ALI weighting system)
DHA	Department of Home Affairs
DOT	Department of Transport
EAC	East African Community
ECA	Economic Commission for Africa
ECAA	European Common Aviation Area
ECOSOC	Economic and Social Council

ECOWAS	Economic Community of West African States
EU	European Union
FE	Fixed Effects regression method
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GEAR	Growth Employment and Redistribution
IASC	International Air Services Council
IATA	International Air Transport Association
IATA44	International Air Transport Agreement (1944)
ICAO	International Civil Aviation Organisation
L	Low income countries
LAM	Linhas Aéreas de Moçambique
LM	Lower Middle income countries
MALIAT	Multilateral Agreement on the Liberalization of International Air Transportation
MASA	Multilateral Air Services Agreement
MCS	Movement Control System
MIDT	Marketing Information Data Transfer
MOU	Memorandum of Understanding
NEPAD	New Partnership for Africa's Development
OAU	Organisation of African Unity
OLS	Ordinary Least Squares
OWN+	Ownership-plus (ALI weighting system)
PPOB	Principal Place of Business
QUASAR	Quantitative Air Services Agreements Review
REC	Regional Economic Community
RDP	Reconstruction and Development Programme
RPK	Revenue Passenger Kilometre
SA	South Africa
SAA	South African Airways
SACAA	South African Civil Aviation Authority
SADC	Southern African Development Community
SAM	Single Aviation Market
SAT	South African Tourism

SATCC-TU	Southern African Transport and Telecommunication Commission
SCP	Structure-Conduct-Performance
SITA	State Information Technology Agency
SOEC	Substantial Ownership and Effective Control
STD	Standard (ALI weighting system)
TAAG	Transportes Aéreos Angolanos
TGS	Tourism Growth Strategy
UAE	United Arab Emirates
UK	United Kingdom
UM	Upper Middle income countries
UN	United Nations
UNWTO	United Nations World Tourism Organisation
USA	United States of America
WAEMU	West African Economic and Monetary Union
WASA	World Air Services Agreements Database
WDI	World Bank Development Indicators
WTO	World Trade Organisation
WTTC	World Travel and Tourism Council
YD	Yamoussoukro Decision
5 th	Fifth freedom-plus (ALI weighting system)

GLOSSARY OF TERMS

Accelerated and Shared Growth Initiative of South Africa

The Initiative was launched in February 2006 and was a result of the South African government's commitment to halve unemployment and poverty by 2014.

Aircraft operations

The provision and maintenance of aircraft, their operation and other support services.

Air services agreement

See **bilateral air services agreement** below.

Air transport regulatory function and requirements

These are policies, legislations and requirements to enable air transport and to satisfy air transport needs, such as infrastructure planning, licensing of air services, allocation of traffic rights internationally, economic considerations and monitoring of the financial performance of air carriers.

Air transport services

A system for the conveyance of people and goods in an orderly, safe and effective manner both domestically and internationally, while using the aviation infrastructure and aircraft provided for that purpose.

Air transport support stakeholders

These are stakeholders that facilitate the operational aspects of the civil aviation system, such as travel agents, insurance companies, banks and shippers of cargo.

Aviation Infrastructure

Aviation infrastructure includes facilities for take-off and landing of aircraft, the loading and unloading of passengers and cargo, arranging sufficient space for aircraft movement, including required navigation, air traffic services and information services needed for completing flights safely.

Bermuda agreement

In 1946, the United States and the United Kingdom negotiated one of the first air services agreements under the Chicago Convention. The agreement, signed in Bermuda, included capacity and pricing controls. The Bermuda I agreement served as a prototype for many subsequent agreements. In 1977, the Bermuda II agreement, involving the United States and the United Kingdom, was similar to its predecessor in most respects, but included restrictions on multiple designation and provisions for capacity and all-cargo services.

Bilateral air services agreement

A basic document, most often used by states to jointly regulate their international air services relationships, which is likely to consist of a textual body (preamble, articles and signatures), an annex or annexes, possible attachments and any agreed amendments. Such an agreement is often referred to as a “*bilateral*”.

Bilateral regulation

Regulation undertaken jointly by two parties, most typically by two states, although one or both parties might also be a group of states, a supra-state (a community or other union of states acting as a single body under authority granted to it by its member states), a regional governmental body or even two airlines.

Break of gauge

Break of gauge is used in air services agreements to allow an airline that has traffic rights from its own country (A) to country (B) and then 5th freedom rights on to country (C), to operate one type aircraft from A to B and then a different type (usually smaller) from B to C and beyond. This normally involves basing aircraft and crew in country B.

Capacity clause

This clause identifies the regime which determines the capacity (in terms of volume of traffic, frequency or regularity of service and/or aircraft type(s)) that may be carried out on the agreed services. The most commonly used capacity clauses are: predetermination, Bermuda I and free determination. *Predetermination* is the most restrictive capacity clause and requires that the capacity is agreed prior to service commencement. *Bermuda I* gives a limited right to the airlines to set their capacities without prior government approval while *free determination* leaves the capacity out of regulatory control.

Code-sharing

The use of the flight designator code of one air carrier on a service performed by a second air carrier, whose service is usually also identified (and may be required to be identified) as a service of and being performed by the second air carrier.

Commercial stakeholders

These are stakeholders, which are normally associated with buying goods and services, such as aircraft, maintenance and fuel among others. This group includes all air carriers, general aviation enterprises, airport, air traffic and navigational services, aviation training academies, aircraft maintenance organisations and aircraft manufacturers.

Community of interest

ICAO defines this as being present whenever “a party would accept a foreign designated airline to operate the agreed services under the condition that substantial ownership and effective control is vested: a) in one or more countries that are parties to the agreement or by any one or more of the parties themselves, entailing a joint operating organisation or a multinational carrier created by intergovernmental agreement, or b) in one or more countries that are not necessarily party to the agreement but are within a predefined group with a “community of interest”.

Compound Annual Growth Rate

Compound annual growth rate is the rate of increase in the value of quantity, in this study referring to foreign air tourist arrivals, compounded over several years.

$CAGR = (Ending\ Value/Beginning\ Value)^{(1/n)-1}$, where n is the number of years.

Content analysis

Content analysis is a detailed and systematic examination of material for the purpose of identifying patterns, themes or biases.

Cooperative arrangements

Define the right for the designated airline to enter into cooperative marketing agreements, such as code-sharing and alliances. More liberal agreements tend to allow cooperative arrangements between the designated airlines, such as code-sharing. The possibility of

entering into cooperative arrangements confers a number of commercial advantages to the carriers concerned and is considered as an indicator of relative openness in bilaterals.

Core markets

These are markets, which present the greatest opportunity from a Tourism Growth Strategy's perspective.

Cross-sectional data

Employing this type of data, observations on individual units at a point in time are made.

Delphi technique

The Delphi technique or the Delphi is a series of sequential questionnaires or "rounds", interspersed by controlled feedback, that seek to gain the most reliable consensus of opinion in a group of experts.

Designation

This is the right to designate one (*single designation*) or more than one (*multiple designation*) airline to operate a service between two countries. In restrictive agreements each government allows a single airline as national carrier. In more liberal agreements, multiple airlines are designated to operate services between partner countries.

Domestic cabotage

Eighth freedom or "domestic cabotage" is the right of an airline of one country to carry traffic between two points within the territory of a foreign country. Such rights have on occasion been granted when a country has a shortage of aircraft capacity.

Effective control

Defining "effective control" has generally been more difficult than defining "substantial ownership" because, while ownership is usually transparent and can often be determined by public or other records of shareholders, effective control may be exercised in a variety of ways, many of which may not be readily apparent. Moreover, effective control may be exercised by different entities, depending on the activity of the air carrier. The evidence of effective regulatory control may be predicated upon, but is not limited to the following: the airline holds a valid operating licence or permit issued by the licensing authority such as an

air operator certificate (AOC), meets the criteria of the designating party for the operation of international air services, such as proof of financial health, ability to meet public interest requirements, obligations regarding assurance of service; while the designating party has and maintains safety and security oversight programmes in compliance with ICAO standards.

Fixed effects regression method

Fixed effects regression method was used in this study to analyse the relationship between a dependent variable (*traffic*) and predictors, such as the *GDP*, *population*, *trade*, *ALI*, *Low income* and *ASA age* within an African state in the panel data set. It has the attractive feature of controlling for all stable characteristics of the states, whether measured or not. This is accomplished by using only within-state variation to estimate the regression coefficients.

Freedoms of the sky

The concept of “*freedoms of the skies*” or “*the degrees of freedom*” or “*freedoms of the air*” was initiated at the Chicago Convention, and essentially means air traffic rights, which is a set of commercial aviation rights granting a country’s airline(s) the privilege of entering and landing in another country’s airspace. The degrees of freedom have since been the basis of the amount of freedom a country has in operating over another country’s airspace, encompassing eight different freedoms which may be negotiated.

Governance stakeholders

These are the stakeholders, responsible for policy, enabling and regulatory legal instruments, as well as carrying out the requirements of the Chicago Convention.

Gross Domestic Product

The “Gross Domestic Product” (“GDP”) measures the total value of goods and services produced in a country during a specific period of time. It includes exports and dividends paid to foreigners, but excludes imports and dividends or interest received from outside the entity. The GDP is the most common measure of the level of economic activity within a particular area.

Inter-coder reliability

Inter-coder reliability or reproducibility refers to the levels of agreement among independent coders who code the same content using the same coding instrument. If the results fail to achieve reliability, this implies that something is amiss with the coders, the coding instructions, the category definitions, the unit of analysis, or some combination of these.

Intra-coder reliability

Intra-coder reliability or stability refers to the level of replication that can be expected if similar studies are undertaken, basically answering the question: “can the same coder achieve the same results try after try?” The procedure can therefore be repeated and similar groupings of statements into themes or concepts can be expected.

Investment markets

These are markets, where some investment is made for returns in future from the Tourism Growth Strategy’s perspective.

Memorandum of Understanding

Two states with an effective bilateral air services agreement may wish to make incremental modifications to the regime. Such changes could include allowing additional capacity, resolving an ongoing dispute, clarifying any ambiguities or definitions, *inter alia*. A total renegotiation of the agreement could be procedurally difficult for either party or both states might be satisfied with the overall framework. Under such circumstances the countries would agree to retain the original agreement but amend it as necessary. The results of the negotiations would be summarised in a Memorandum of Understanding, Record of Consultations, Exchange of Notes or similar mechanisms. A Memorandum of Understanding is a less formal type of agreement, which, notwithstanding the lesser formality, may be as binding as a formal agreement.

Millennium Development Goals

In September 2000 world leaders came together at the United Nations Headquarters in New York to adopt the United Nations Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets with a deadline of 2015. These targets have become known as the Millennium

Development Goals. They are: 1) to end poverty and hunger; 2) universal education; 3) gender equality; 4) child health; 5) maternal health; 6) combat HIV/AIDS; 7) environmental sustainability; and 8) global partnership.

Multilateral agreement

An agreement undertaken jointly by three or more States, within the framework of an international organisation and/or multilateral treaty.

New Partnership for Africa's Development

This is an African Union strategic framework for pan-African socio-economic development and is both a vision and a policy framework for Africa in the twenty-first century. In particular, the New Partnership for Africa's Development addresses critical challenges facing the Continent, namely poverty, development and Africa's marginalisation internationally.

Non-scheduled international air service

A transport service other than a scheduled service and which is normally associated with a specific flight or series of flights. Such flights are not listed in a published timetable and passenger and cargo capacity may only be offered and sold to a charterer in respect of services on routes currently serviced by scheduled services or directly to the public or through a third party under a series of prescribed conditions.

Open Skies

An "open skies" air services agreement creates a very liberal market between the two signatory nations. It allows any number of airlines from either nation unlimited rights to fly between any city-pair involving the two countries. The airline can carry revenue traffic to and from any third countries, subject to the appropriate provisions in the other agreements. This type of agreement places no restrictions on capacity, tariffs or code-sharing. Most such agreements do not allow a cabotage right, in which one airline of the signatory nation could carry wholly domestic traffic of the other country. The aeronautical and aero political definition relates to the USA liberal capacity BASA programme called "open skies agreements". It is important to note that the international aviation community does not uniformly define the term "open skies"; differences in opinions regarding the level of

freedom allowed by air services agreements will hence result in different categorisations of such agreements.

Panel data

Data are termed “panel data” or “true longitudinal data” when the same units of analysis are studied over different points in time. In addition to capturing aggregate changes over time, panel data enable inferences to be drawn pertaining to changes in individual behaviour.

Passenger air service

A passenger air service is an air service performed primarily for the transport of passengers.

Plurilateral agreement

This is an air services agreement that could initially be bilateral but be capable of being expanded to involve additional parties, or could from the start involve three or more parties; in all cases parties that share similar regulatory objectives, which are not so widely held as to make feasible a typical multilateral negotiation. It would most likely be open to other states which wish to join.

Principal place of business

In relationship to an airline, this denotes an airline that has been established in the territory of the designated party in accordance with relevant national laws and regulation, has a substantial amount of its operations and capital investment in physical facilities in the territory of the designating party, pays income tax, registers and bases its aircraft there and employs a significant number of nationals in managerial, technical and operational positions.

Quantitative Air Services Agreements Review

This is a database developed by the WTO Secretariat which includes 1) regulatory information on bilateral air services agreements and 2) scheduled air passenger traffic data. The regulatory information on bilaterals is drawn from the ICAO’s World Air Services Agreements Database that contains codified summaries of the provisions of around 2 000 bilaterals and covers 184 ICAO contracting States. Scheduled air passenger traffic data by

city-pair were provided by IATA for 2005 on the understanding that exact passenger numbers would remain confidential and that only traffic ranges would be disclosed.

Reciprocity

The granting of a right or a benefit by a state to a foreign entity such as an air carrier when it has no international obligation to do so, on the condition that the same treatment will be accorded to its comparable entity (entities) by the home state of that foreign entity.

Revenue Passenger-Kilometre

One revenue passenger-kilometre is defined as one fare-paying passenger transported one kilometre. This is a measure of an airline's passenger traffic.

Safety and security regulatory functions and requirements

These are policies, legislation and requirements to achieve an appropriate level of safety and security in air transport systems both on the ground and in flight.

Scheduled international air service

This is a series of flights that possesses all of the following characteristics: 1) it passes through the airspace over the territory of more than one state; 2) it is performed by aircraft for the transport of passengers, mail or cargo for remuneration, in such a manner that each flight is open to use by members of the public; and 3) it is operated so as to serve traffic between the same two or more points, either according to a published timetable or with flights so regular or frequent that they constitute a recognisable systematic series.

Society stakeholders

These are stakeholders, which comprise groups outside the civil aviation system, but have a direct interest in what goes on inside the system and what the system produces. This group includes passengers, enterprises which use freight services, environmental groups and residents near airport, organised labour and the news media.

Substantial ownership

In the context of a) South African air carriers, means at least 51% of voting rights (in terms of shares) in respect of such an air carrier to be held by the South African government and/or South African residents, and of b) foreign air carriers, means at least 51% of voting

rights (in terms of shares) in respect of such an air carrier to be held by the government and/or residents of the relevant country.

Tactical markets

These are markets, which should be considered for specific, tactical opportunities from a Tourism Growth Strategy's perspective.

Tariff approval

This refers to the regime which governs the approval of the pricing of air services between two countries. The most restrictive regime is *dual approval*, whereby both parties have to approve the tariff before it can become effective. Semi-liberal regimes are *country of origin* (tariffs may only be disapproved by the country of origin), *dual disapproval* (tariffs have to be disapproved by both countries to make them ineffective) and *zone pricing* (parties agree to approve prices falling within a specific range and meeting certain characteristics). *Free pricing* is the most liberal regime, whereby tariffs shall not be subject to approval by any party.

Time-series data

Employing this type of data, different units of analysis are studied over different points in time.

Tourism

According to the World Tourism Organisation's definition, tourism encompasses the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes.

Tourist

A tourist or overnight visitor is a visitor who stays at least one night in collective or private accommodation in the place visited.

Traveller

A traveller is somebody who moves between different geographic locations for any purpose and any duration.

UNIVISA

This refers to the proposed single visa for SADC.

Watch-list markets

These are markets that need to be watched for value segments from Tourism Growth Strategy's perspective.

Withholding or ownership of airline

This defines the conditions required for the designated airline of the other party to have the right to operate. Restrictive conditions stipulate that the designated airlines have to be "*substantially owned and effectively controlled*" by nationals, entailing that the designated airline is the "flag carrier" of the foreign country. More liberal regimes are those of *community of interest* and *principal place of business*.

Yamoussoukro Decision

Yamoussoukro Decision or Decision means the "Decision Relating to the Implementation of the Yamoussoukro Declaration concerning the Liberalisation of Access to Air Transport Markets in Africa", which entered into force on 12 August 2000 and was ratified by 44 African states. The Decision became fully binding on 12 August 2002.

CHAPTER 1

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

International air transport has, until recently, been one of the most restrictive and highly regulated industries in the world. The Chicago Convention of 1944 laid the foundation that established the international bilateral air services agreements (BASAs) system, which presently continues to govern most of the world's trade in aviation (Button, 2009:59). In essence, BASAs or bilaterals are the building blocks of the bilateral framework that specify market access provisions. Typically, BASAs stipulate which airlines may operate between two countries, the routes they may serve, traffic rights, frequency and capacity (seats) limitations, and they often place controls over airline pricing. Given the restrictive nature of BASAs, their specific design determines the degree of liberalisation of air services between two countries (ICAO, 2004).

Over a number of decades the global aviation industry has moved from a highly regulated environment to a more progressive liberalisation by incrementally eliminating regulatory restrictions and entering into new liberal trading agreements (Department of Transport, 2008:1-3). The changes in the industry have been driven by numerous robust dynamics such as privatisation, regional integration, globalisation, consolidation as well as the deregulation and liberalisation taking place in the major air markets of the world. Examples of air transport policy changes include extensive deregulation in the United States and liberalisation in the European Union, leading to the establishment of the European Common Aviation Area and the EU-US "Open Skies", followed by multilateral intra-regional liberalisation in other regions such as South America, the Caribbean Community, the South-East Asian region, the Trans-Tasman market, the Middle East and Africa (Ssamula, 2008:1).

In the context of Africa, it has been more than a decade since the African leaders agreed to liberalise the intra-African aviation market through the Yamoussoukro Decision (YD), which entered into force in 2000 and became fully binding in 2002. It was acknowledged

that the restrictive and protectionist intra-African regulatory regime, primarily based on bilateral air services agreements, hampered the expansion and improvement of air transport on the Continent (Meshela, 2006:1). However, throughout the years after its inception, the full potential of the Decision has not yet been realised and to date its continent-wide implementation remains pending.

The South African civil aviation policy towards Africa is guided by its international civil aviation policy. From an aviation perspective the South African Government's actions have been directed at accelerating the implementation of the YD objectives with like-minded states and illustrating the importance afforded to the stimulation of trade and tourism on the Continent, by adopting a more liberal approach to the regulation of air transport (Department of Transport, 2008:1-3).

Since the last aviation policy review in South Africa in the early 1990s, the Government has identified new goals and priorities which have impacted on its civil aviation (Department of Transport, 2008:1-2). In particular, the five-year Airlift Strategy of 2006 was developed, to effectively structure regulatory measures in order to increase tourism growth for South Africa and to unblock obstacles through regulatory mechanisms as well as bilateral and multilateral air services negotiations. The Strategy aims to enhance the prospects of South Africa as a preferred air travel destination and to synchronise the basis for bilateral air services negotiations with other national priorities (International Air Services Council, 2008:iii). In addition, the Strategy supports the Millennium Development Goals to increase African connectivity and access through the accelerated implementation of the Decision and takes into account the continental integration initiatives such as those embodied in the African Union (AU) and the objectives of New Partnership for Africa's Development (NEPAD) (Department of Transport, 2008:1-2).

By the end of 2010, only 17 bilaterals had been revised between South Africa and its respective African counterparts, in line with the key elements of the Yamoussoukro Decision. The bilaterals were with: Benin, Botswana, Cameroon, Egypt, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Libya, Rwanda, Senegal, Sierra Leone, Togo and Uganda (Sithole, 2012). The official documentation, pertaining to the intra-African bilaterals and Memoranda of Understanding (MOUs) are grouped into four main regions by the South African Department of Transport, namely, the SADC, West, East and North

African regions. Thus, the regional distribution of the 17 bilaterals between South Africa and the respective African counterparts is: nine (52.9%) bilaterals with the West African region, four (23.5%) with the East African region, two (11.8%) with the North African region and two (11.8%) with the SADC region.

The extent of the intra-African liberalisation or African “Open Skies” may, according to Mills and Swantner (2008:24), potentially exert a significant impact on regional and continental development as this implies greater flight frequencies and increased seat capacity, lower travel costs, a variety of offerings for consumers and more competition among airlines.

In South Africa, the deregulation of the country’s domestic aviation market in the early 1990s resulted in increased passenger volumes and a proliferation of low-cost airlines; thereby increasing airline competition and making air travel more affordable (Myburgh, Sheik, Fiandei & Hodge, 2006:8). Therefore, it is postulated that with air passenger transport liberalisation, similar effects may be experienced in Africa. **The impact of the South African aviation policy in Africa on air passenger traffic flows is the foundation of this study.**

1.2 PROBLEM STATEMENT

Numerous and diverse studies have focused on the progress of aviation liberalisation and its impact around the world, but little research has been conducted on the relationship between aviation policy and air passenger traffic flows in Africa. More specifically, to the knowledge of the researcher, no research has been conducted on the impact of South Africa’s aviation policy in Africa on air passenger traffic flows over any selected time period. This study bridges this gap in the research by selecting an 11 year time period to investigate the link between South Africa’s aviation policy and air traffic flows. The period selected is from 2000 to 2010 which coincides with two major events: the adoption of the YD in 2000 and the final year of the five-year liberalisation plan as set forth in the South African Airlift Strategy of 2006.

There is a scarcity of literature on the subject of the impact of aviation liberalisation in Africa in general and the impact of South Africa’s aviation policy on air passenger traffic flows in particular; this in itself requires that much more research is undertaken. Seven

relatively recent studies which have contributed to the area of the impact of aviation policy and liberalisation are those of InterVISTAS-ga² Consulting, Inc. (2006); Myburgh *et al.* (2006); Warnock-Smith and Morrell (2008); Piermartini and Rousova (2008) and (2009), respectively; InterVISTAS-EU Consulting, Inc. (2009) and finally Schlumberger (2010). Research by Myburgh *et al.* (2006) and Schlumberger (2010) particularly focuses on liberalisation in the African context. These studies are discussed briefly below.

Those studies that have provided an overview on aviation liberalisation have concentrated mainly on: the Single European Union Aviation Market, the status of the EU-US “Open Skies” treaty and its impact on transatlantic and European traffic, the status of the Australia and New Zealand “Open Skies” agreement, an overview of “Open Skies” in the developing regions such as the Association of South-East Asian Nations (ASEAN) and liberalisation attempts in Africa.

A number of studies have examined the benefits of air traffic growth which the US air transport industry has enjoyed from having liberal international air transport and the potential future gains from further liberalisation. Button and Taylor (2000:209-211) focused on the North Atlantic services as an important link between the two major trading blocks, that is, the European Union and the North American Free Trade Area, and concluded that due to the changes in aviation reforms as well as the growth in global economy, US traffic had grown from 93.4 million passengers in 1993 to 126.1 million in 1998. This growth was expected to continue at a 5.1% rate each year reaching 239.4 million in 2011.

A study by InterVISTAS-ga² Consulting, Inc. (2006) found that traffic growth, subsequent to the liberalisation of air services agreements between countries, averaged between 12 and 35%, significantly greater than during the years preceding aviation liberalisation. In a number of situations, the growth exceeded 50% and in some cases reached almost 100% of the pre-liberalisation rates. An examination of 190 countries and 2 000 bilateral air services agreements suggested that there were a number of countries that placed priority on protecting their flag carrier(s) rather than enhancing the overall welfare of the broader public interest (InterVISTAS-ga² Consulting, Inc., 2006:es-2). The majority of the European flag carriers, with the exception of BA and KLM, were initially sceptical of the consequences of an intra-European liberalisation (InterVISTAS-ga² Consulting, Inc.,

2006:36). The results also confirmed that artificial constraints posed by the bilaterals hampered the growth of air traffic (InterVISTAS-ga² Consulting, Inc., 2006:es-2).

Myburgh *et al.* (2006:8) also emphasised the impact that protectionism has had on tourism numbers in Mozambique. This country is a clear example of a conflict between the interests of tourism and those of the national airline, where the government continues to protect the airline by restricting competition on international routes. This, in fact, artificially reduces the number of tourists visiting Mozambique; therefore undermining the government's own tourism objectives. Their research concluded that air transport liberalisation would lead to a 37% increase in tourist arrivals as well as an increase of USD 5 million in tourist spending and would subsequently add USD 9 million to Mozambique's GDP.

In SADC, Myburgh *et al.* (2006) found that liberalised air services agreements had increased passenger volumes by 23% and that large once-off increases in capacity consequently improved passenger volumes by 12%. To date, SADC countries continue to artificially restrict international air travel by limiting the number of flights to their cities as well as the number of airlines that may fly to them. These restrictions make it more expensive to travel to the SADC region and to Africa, thereby reducing the number of tourists who visit the region and the Continent. The results of the research indicated that, based on price and volume analyses, should SADC pursue full air transport liberalisation more than 500 000 additional foreign tourists would arrive in the region by air every year. They would spend more than USD 500 million which would increase the SADC countries' GDP by ZAR 1.5 billion or 0.5%. The authors analysed the impact of liberalisation on passenger volumes from 1999 to 2004 on 16 routes between Johannesburg and other destinations within SADC (Myburgh *et al.*, 2006:33).

The Booz Allen Hamilton study (2007) estimated that around 72 000 jobs would be created across the EU and the US over a period of five years as a result of the "Open Skies" agreement, with a 1 to 2% boost to the cargo market and 26 million more passengers being carried. In economic terms this is translated into a gain of USD 160 to EUR 340 million per annum with fare reductions of 2 to 6% (Button, 2009:68).

Warnock-Smith and Morrell (2008) examined the relationship between air traffic or capacity growth and recent air policy reform pertaining to several Caribbean member states. The hypothesis was tested that changes to extra regional air policy could facilitate traffic growth that might result in substantial tourism growth for the region. A time-trend evaluation for three US-Caribbean markets indicated that the country-pairs which had not made efforts to further liberalise carrier designation rights between 1995 and 2003 saw less traffic growth than those that had done so. A non-linear air traffic model found that a unit increase in air policy liberalisation produced an annual log traffic growth of between 2.55 and 3.02% (Warnock-Smith & Morrell, 2008:82).

In their research, Piermartini and Rousova (2008) and (2009) estimated the impact of liberalising air transport services on air passenger flows for a sample of 184 countries and found robust evidence of a positive and significant relationship between the volumes of traffic and the degree of liberalisation of the aviation market. In particular, the authors concluded that increasing the degree of liberalisation from a 25th to 75th percentile effectively increased traffic by approximately 30%. They also analysed the role of the specific provisions and types of agreements in liberalising the aviation market and found that the removal of restrictions on the determination of prices and capacity, cabotage rights and the possibility for airlines other than the flag carrier of the foreign country to operate a service were the most traffic-enhancing provisions of BASAs.

The results of the research conducted by InterVISTAS-EU Consulting, Inc. (2009) projected that the liberalisation of market access would increase international Origin/Destination traffic to/from the UAE by 7.4 million annual passengers, which is equivalent to an increase of 27%. In addition, liberalising market access and ownership and control in combination was projected to increase Origin/Destination traffic by 48%, which is equivalent to an additional 13.3 million passengers.

The results and conclusions of the above studies clearly indicate the benefits of moving towards greater liberalisation in aviation policy as a result of the effects this has had on passenger traffic in various regions of the world.

Although some researchers have paid attention to the liberalisation of the African skies and its impact on commercial air traffic and tourism (Myburgh *et al.*, 2006; Mills &

Membreno, 2007; Mills & Swantner, 2008; Schlumberger, 2010), little is known about the relationship of the South African aviation policy in Africa and air passenger traffic flows. To date, significant resources in the tourism sector have been directed towards making South Africa and the Continent more affordable and attractive to existing and potential tourists. According to Myburgh *et al.* (2006:i), a highly restricted air services regime, which inhibits competition between airlines that operate across the region, is a serious constraint to increasing numbers of tourists. This in turn severely limits air traffic and raises its costs, thereby significantly lowering the competitiveness and growth potential of the region's economy.

Since the impact of the South African aviation policy in Africa on air passenger traffic flows has not yet been measured and furthermore owing to the benefits of liberalisation, it is necessary to evaluate the dynamics and impacts of prevailing restrictions on such flows in the African context. This is the primary purpose of this study: for specific reasons, which were explained at the beginning of this section, an 11 year time period from 2000 to 2010 has been selected to measure the impact of aviation policy on these flows.

The research problem can thus be formulated as follows: to determine and quantify the impact of the South African aviation policy in Africa, as reflected in the design of its bilateral air services agreements, on air passenger traffic flows over an 11 year time period.

From this research problem, the following hypotheses are formulated:

Null hypothesis

H₀: There is no relationship between South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

Alternative hypothesis

H₁: There is a relationship between South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

The same two hypotheses are tested for each of the four regions, namely, the SADC, East, West and North African regions.

Previous studies of InterVISTAS-ga² Consulting, Inc. (2006); Myburgh *et al.* (2006); Piermartini and Rousova (2008) and (2009), respectively; InterVISTAS-EU Consulting, Inc. (2009) and Grosso (2010) tested the impact of aviation policy and liberalisation on air passenger traffic flows without accounting for the impact of aviation policy and a number of significant factors, *inter alia*, the GDP, trade flows and population sizes, on such flows simultaneously over a period of time. This study bridges this gap by testing the simultaneous impact of aviation policy and a number of key factors, identified through secondary literature and qualitative research. Given that there are numerous factors influencing air passenger demand, it was important to select an approach that would allow for the testing of the interdependent and interlinked nature of the regulatory regime, key factors and air passenger traffic flows. Variations in these factors may imply that identical air policy changes could exert disparate effects on air passenger traffic flows.

1.3 RESEARCH OBJECTIVES

The overall purpose of this study is to determine the relationship between the South African aviation policy in Africa and air passenger traffic flows. Since aviation policy is not the only determinant of these flows, this relationship cannot be tested in isolation as was discussed in the preceding paragraph. In line with this, the following research objectives have been formulated:

- To examine liberalisation of air services in Africa, with particular reference to the Yamoussoukro Decision;
- To review developments in the South African aviation policy overall and also with particular reference to Africa;
- To identify factors that have influenced liberalisation of air services between South Africa and its African air bilateral partners over the selected time period;
- To test the simultaneous impact of the South African aviation policy in Africa and the key influencing factors on air passenger traffic flows between 2000 and 2010. In particular, to measure the overall impact of the South African aviation policy in

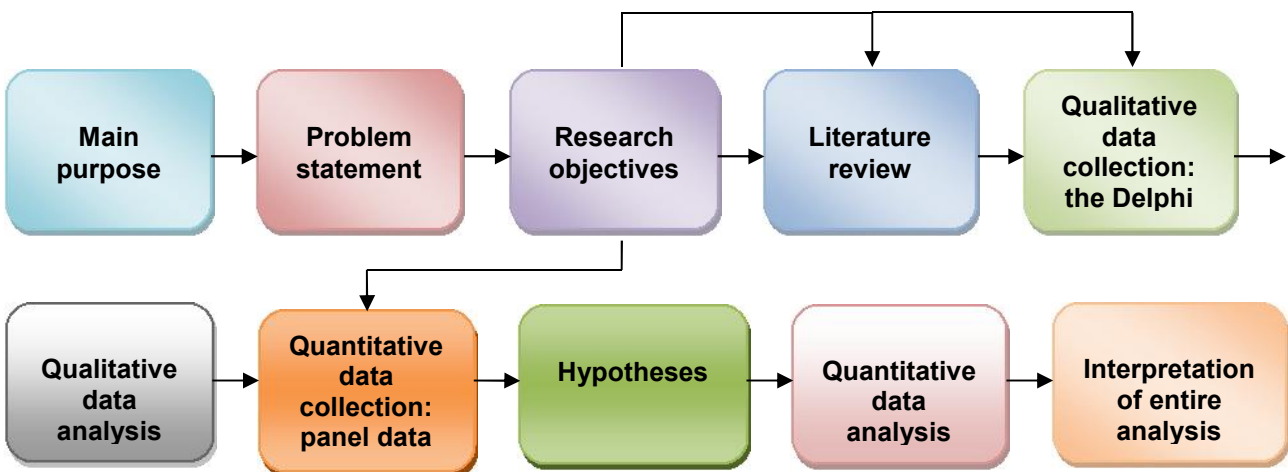
Africa and in each of the four regions as well as the impact of its individual provisions.

A brief overview of the research approach and methodology followed, in order to accomplish these research objectives and to test the hypotheses, is provided in the next section.

1.4 THE RESEARCH METHODOLOGY

A mixed research methodology is followed in this study, wherein both the qualitative and quantitative approaches are utilised. A graphical representation of the entire research approach is depicted in figure 1.1.

Figure 1.1: The research process roadmap



Objectives 1 and 2 are achieved through the literature review. Objective 3 is attained through qualitative and quantitative research with objective 4 being the focus of the quantitative study.

1.4.1 Qualitative methodology

The qualitative data collection and analysis employs a Delphi technique: the main objective is to confirm, based on experts' opinions, features of BASAs as well as factors not related to BASAs that are viewed by the experts as influencing air passenger traffic flows between country-pairs in the African context.

The experts referred to are those who are involved in the aviation industry and who comply with certain requirements which establish the nature of their expertise. The type of information required from the given experts, representing local and international academia as well as public and private sectors, could only be obtained by using qualitative research techniques, because in measuring the opinions and attitudes of the industry experts a spontaneous depth and richness of response is sought.

The respondents are asked to provide their comprehensive opinions on 1) all features of BASAs that they believe directly or indirectly affect air passenger traffic flows between two countries and 2) any other factors that they feel directly or indirectly have an influence on air passenger traffic flows between an arbitrary African country-pair.

A consensus of opinions is derived through the use of a content analysis technique; the results are consolidated and viewed against the factors derived from the literature survey in order to produce an exhaustive list of factors that may impact on air passenger traffic flows between two countries. These data form the foundation of the independent variables that are included in the empirical model. The findings of the Delphi analysis are also utilised as supporting evidence for the quantitative results.

The list of factors that is generated through the results of the Delphi analysis as well as those derived from the literature is plotted to create a conceptual framework for the relevant BASA and non-BASA factors viewed as having an impact on the said flows.

1.4.2 Quantitative methodology

The literature survey and qualitative analysis of expert opinions is followed by the quantitative data collection and analysis, where a fixed one-way panel regression technique is applied to a panel data set of 45 countries covering the selected time period from 2000 to 2010. The aim of the quantitative phase is to estimate and statistically quantify the impact of the liberalisation of air services on air passenger traffic flows in relation to the South African aviation policy in Africa and to identify which specific provisions of air services agreements result in the most significant impact.

The technique considers each country-pair as an independent entity, where its traffic is not affected by changes in other country-pairs. The observations within each panel are dependent, but independent from the other panels or African states. The Ordinary Least Squares method that was utilised in numerous cross-sectional studies (InterVISTAS-ga² Consulting, Inc., 2006; Piermartini & Rousova, 2008; InterVISTAS-EU Consulting, Inc., 2009; Piermartini & Rousova, 2009; Rousova, 2009; Grosso, 2010) to examine the relationship between dependent and independent variables for cross-sections could not be applied in this study due to the unique characteristics of the panel data. Data are termed “panel data” or “true longitudinal data” when the same units of analysis are studied over different points in time. In addition to capturing aggregate changes over time, panel data enable inferences to be drawn pertaining to changes in individual behaviour (Diamantopoulos & Schlegelmilch, 2004:7).

From an analysis point of view, it was important to select an approach which would cater for a change in dynamics over time and allow for the quantification of the restrictiveness or openness of the aviation policy through the design of BASAs. The design of the bilateral agreement is characterised by its main market access features, namely, *designation, grant of rights, tariffs, capacity, withholding/ownership, cooperative arrangements* and *statistics*, which are discussed more comprehensively in Chapter 2. Hence, a bilateral agreement reflects every aspect of the aviation policy of each member of the country-pair. In the case of aviation policy, through the design of the respective BASAs, changes over time are important as the amount of time needed for a market to respond to changes in the underlying regulatory approach could range from a few months to several decades (InterVISTAS-ga² Consulting, Inc., 2006:62). The panel data approach enables the incorporation of an explanatory variable to account for the number of years a particular bilateral air services agreement has been in place.

The quantitative results provide a comprehensive overview of the degree of liberalisation of BASAs, as measured by the four variants of the Air Liberalisation Index (ALI) weighting system between South Africa and 45 African countries at any point in time over the selected 11 year time period. In essence, the ALI is an informed index of the degree of liberalisation of air services for passenger traffic developed by the World Trade Organisation (WTO), whereby different provisions, pertaining to market access features of BASAs, are weighted on the basis of their importance in removing obstacles to trade in air

services, according to the judgements of experts in the sector. There are four variants of the ALI weighing system, namely standard (*STD*), fifth freedom traffic rights (*5th+*), withholding/ownership (*OWN+*) and multiple designation (*DES+*). The latter three were developed by the WTO to accommodate three specific geographic and economic situations that appear to be relatively frequent and that may influence the commercial importance of the different market access features of bilaterals. By categorising the different provisions in BASAs and assessing them within a scoring system, the ALI provides a simple quantification of the regulatory system in place. The value of the ALI ranges between zero for very restrictive agreements to 50 for very liberal ones (World Trade Organisation, 2006). This method of measuring the restrictiveness of regulation has been proved to be consistent with the results of other statistical methods such as factor and cluster analyses (Piermartini & Rousova, 2008).

The results are subsequently further broken down into the four regions mentioned. This regional categorisation is in line with the South African Department of Transport's approach to grouping the African BASAs and Memoranda of Understanding.

All the relevant BASAs and the MOUs that were signed between South Africa and the respective African countries over the selected time period of 11 years are analysed; thus serving as the population of the study. It is evident that the population for this study is small, represented only by the 45 African countries. As the data could be collected from the entire population, there was no need to draw a sample and a census was therefore considered feasible for this study (Cooper & Schindler, 2003:181). Panel data for the 11 year time period allowed for a maximum of 495 observations.

Four steps are followed in compiling the panel data set: 1) collection of BASAs and MOUs pertaining to those bilaterals that covered the time period of the research; 2) identification of variables to be included in the panel data set; 3) assignment of ALI points to each of the market access features; and 4) the collection of data pertaining to the remainder of the identified variables.

The Department of Statistics of the University of Pretoria assisted in the analysis of the data.

1.4.3 Empirical model

The empirical model, which represents the relationship between aviation policy, key influencing factors and air passenger traffic flows in the form of a panel data regression model, is constructed by combining variables that were identified from six main studies, namely: InterVISTAS-ga² Consulting, Inc. (2006), Piermartini and Rousova (2008) and (2009), Grosso (2008) and (2010), InterVISTAS-EU Consulting, Inc. (2009), and also by taking into account the Delphi factors that can statistically be tested through the model. The selection of variables is based on the availability of data over the selected time period as well as the purpose of the research; the main focus being the impact of aviation policy and its individual provisions. Where variables have been excluded, valid reasons have been provided: for example, the price is not included in the model as the database reflecting airfares is extremely expensive and fares were not available for most of the African states over the selected time period.

As mentioned earlier in the chapter, the impact of aviation policy on air passenger traffic flows, as measured by the ALI index, could not be tested in isolation as a number of independent variables or factors also play a role. In line with this, a panel regression model is constructed to test the simultaneous impact of aviation policy and identified factors on air passenger traffic flows in the five markets. In a subsequent step, a second panel regression model is constructed to determine the specific provisions or market access features of BASAs that exert a statistically significant impact on air passenger traffic flows in each of the respective markets, taking into account the simultaneous impact of the factors that were found to be significant in the initial regression analysis.

1.5 RESEARCH CONTRIBUTION

This study aims to make a significant contribution towards the limited academic literature available on the subject and to augment the body of knowledge available with particular reference to the South African – intra-African air transport market, by generating new information from the emerging results of both the qualitative and quantitative research. In particular, the study expands on existing research in this domain. Previous studies relied on a predominantly cross-sectional analysis of the impact of aviation policy and liberalisation on traffic flows. In this study panel data, comprising 45 panels, together with

the ALI weighting system are used to quantify the degree of restrictiveness or openness of the respective BASAs. This approach provides a detailed analysis of the level of liberalisation by looking at the overall South African – intra-African market as well as at each of the four regional markets. To the knowledge of the researcher no similar research methodology has previously been utilised and especially not over the same research time period in the African context.

In summary, the study contributes to the body of knowledge of secondary research and thus to the industry by:

- Providing a comprehensive overview of the developments of the South African aviation policy as a whole and with reference to Africa;
- Testing the impact of the aviation policy, as measured by the ALI, as well as of the individual provisions of the market access features of the ALI on air passenger traffic flows in the five markets statistically. This research should effectively fill the gap in the existing literature pertaining to the empirical evidence of air services liberalisation in the South African – African context by using a panel data technique instead of a cross-sectional approach;
- Generating an extensive list of factors that are viewed by the experts as exerting an impact on air passenger traffic flows to create a conceptual framework of factors;
- Providing a comprehensive summary of the current liberalisation situation in South Africa towards Africa: trends and developments, rationale and impediments;
- Expanding on the cross-sectional 2005 QUASAR database pertaining to the South African – intra-African bilaterals. This valuable information could be utilised by the decision makers, particularly at the Department of Transport, to see what progress has been achieved in terms of the liberalisation of air services agreements in line with the YD and the Airlift liberalisation targets;
- Evaluating BASAs among South Africa and 45 African countries to provide an overview of the degree of liberalisation at any point in time over the 11 year time

period and the types of agreements that are in place in the intra-African market as well as in each of the four regions;

- Providing possible new insights about how passenger traffic flows relate to the changes in aviation policy. These results could be used in further decision making.

This research is expected to generate a number of articles in internationally accredited journals.

1.6 LAYOUT OF THE STUDY

The chapters in this study are arranged as follows:

Chapter 1 provides an overview of the study, furnishes the background and motivation for the latter, addresses the research problem in terms of specific objectives, describes the research methodology and provides the main contributions of the study.

Chapter 2 is an overview of the significant regulation and deregulation developments in the global aviation industry over the last 90 years, the inception of which was marked by the signing of the Paris Convention in 1919. The chapter illustrates the gradual industry transformation over a number of decades, leading to the creation of “open skies” markets in several regions of the world.

Chapter 3 focuses on Africa’s liberalisation progress, highlighting the importance of the Yamoussoukro Decision and discusses the conditions and requirements for the implementation of the Decision on a regional basis, the progress achieved so far and hindrances impeding the progress of the complex intra-African liberalisation process. The chapter provides a summary overview of the various regional and sub-regional organisations and institutions that have been instrumental in moving the Yamoussoukro Decision forward.

Chapter 4 discusses the concepts of the civil aviation system and policy with particular reference to South Africa and considers the development of the South African civil aviation policy to date since the deregulation of the South African domestic air transport market in

1990. The chapter highlights the main aspects of the Airlift Strategy and the Airlift Implementation Plan which have been instrumental in driving air services liberalisation between South Africa and like-minded bilateral air counterparts. The relationship between South African aviation policy in Africa and air passenger traffic flows is also discussed to gain a clear understanding of the trends pertaining to air passenger traffic flows between South Africa and its bilateral air services counterparts in Africa, on an overall and a regional basis.

Chapter 5 considers the qualitative methodology employed and presents the Delphi results. In particular this chapter provides a comprehensive overview of the Delphi method, highlighting its main characteristics and areas of application, strengths and limitations as well as the steps involved. The choice of the qualitative research design for attaining the related research objectives is fully explained and motivated. Data collection and analysis are explained in detail.

Chapter 6 discusses the quantitative methodology utilised, which consists of a one-way fixed panel regression as well as the empirical model used to attain the relevant research objectives. The use and application of the Air Liberalisation Index, developed by the WTO Secretariat, are explained in relation to the South African aviation policy in Africa. The empirical panel regression model and the selected variables accounting for the respective data availability and limitations are comprehensively discussed. The alternative hypothesis is further refined by sub-hypotheses.

In Chapter 7 the results of the empirical research linked to the hypotheses formulated in Chapter 6 are presented.

Finally, in Chapter 8 the conclusions drawn from the study are considered, explaining how the aim of the study has been achieved. Its limitations as well as the recommendations and directions for further research are also described.

CHAPTER 2

AN OVERVIEW OF REGULATION AND DEREGULATION IN THE GLOBAL AVIATION INDUSTRY

2.1 INTRODUCTION

The air transport industry has remained for many years one of the most restrictive and regulated industries in international trade. Deregulation and liberalisation have been progressing at an uneven pace across countries and liberalisation of the international markets has yet to overcome numerous obstacles (Ssamula, 2008:9).

A national regulatory framework is fundamental to the formulation of a country's civil aviation policy, which can be divided into two distinct areas, domestic and international. As domestic civil aviation policy deals with travel inside the country's borders, it will not form part of further discussion, given the study's research objectives.

The focus of this research falls on the relationship between South African aviation policy in Africa and the respective air passenger traffic flows. The said policy is guided by its *international* civil aviation policy. By definition, the international civil aviation policy of a country deals with air travel outside the country to foreign destinations (Department of Transport, 2006:31).

The regulatory bilateral framework¹ governing international air transport was established after World War II. The goal was typically the conclusion, implementation or continuance of some kind of intergovernmental agreement concerning air services between the territories of the two countries (ICAO, 2004). The building blocks of this framework were, and

¹Bilateral regulation is regulation undertaken jointly by two parties, most typically by two states, although one or both parties might also be a group of states, a supra-state (a community or other union of states acting as a single body under authority granted to it by its member states), a regional governmental body or even two airlines (ICAO, 2004:2.0-1).

currently are, bilateral air services agreements or bilaterals negotiated between the two countries.

The BASAs constitute a very important facet of a broader aviation regime and reflect every aspect of the aviation policies of each member in the country-pair (InterVISTAS-ga² Consulting, Inc., 2006:62). The bilaterals generally have in common numerous types of essential provisions, most of which are similar but not identical (ICAO, 2004:2.2-2). The focus of this study is placed on seven quantifiable market access features or provisions of the BASAs, which are briefly defined in this chapter and are comprehensively discussed in Chapter 6. These are: 1) **grant of rights**, which defines the right to carry out services between the two countries; 2) **designation**, which is the right to designate one (*single designation*) or more than one (*multiple designation*) airline to operate a service between two countries; 3) **tariffs**, which refers to the regime which governs the approval of the pricing of services between two countries; 4) **capacity**, which identifies the regime that determines the capacity (in terms of volume of traffic, frequency or regularity of service and/or aircraft type(s)) that may be carried out on the agreed services; 5) **withholding/ownership** defines the conditions required for the designated airline of the other party to have the right to operate; 6) **cooperative arrangements** define the right for the designated airline to enter into cooperative marketing agreements, such as code-sharing² and alliances; while 7) **statistics** typically provides rules on exchange of statistics between countries or their airlines (ICAO, 2004).

Given the restrictive nature of the bilaterals, the development of international air services has been much more a function of a government's policy, rather than a function based on commercial considerations (InterVISTAS-ga² Consulting, Inc., 2006).

Since its establishment, the bilateral regulation of international air transport has not evolved without challenges and persistent issues. This chapter sets forth key milestones of the bilateral regulation of international air services and provides an overview of the regulatory environment governing the global aviation industry. It aims to illustrate the

² Code-sharing is an inter-airline commercial agreement where two or more airlines use their own flight codes or share a common code on flights operated by one of them (Doganis, 2006:295).

origins of the regulatory framework, the challenges facing its participants in the path towards industry liberalisation and normalisation as well as the progress that has been achieved in these respects.

2.2 INTERNATIONAL FRAMEWORK FOR AVIATION REGULATION

The bilateral regulation of international air services evolved over many decades. Although the foundation for the regulation of international air transport services was first laid in the 1920s, few bilaterals were concluded in those early decades, due initially to the small volume of international air transport activities and thereafter to the virtual cessation of many commercial flights during the World War II period (ICAO, 2004:2.0-1). The important milestones in the development of the bilateral regulations of international air transport services are described next.

2.2.1 Paris Convention

The Convention for the Regulation of Aerial Navigation (“Paris Convention”), which was signed on 13 October 1919 to provide the foundation for regulation of the international airline industry, is the pre-eminent multilateral agreement for the international aviation regime, evolving from the Paris Peace Conference of 1919. This Convention recognised the need for every nation to exercise “sovereignty” over airspace above its territory, setting forth the fundamental policy which underlines all aviation negotiations today (Ssamula, 2008:9).

2.2.2 Convention on International Civil Aviation (Chicago Convention)

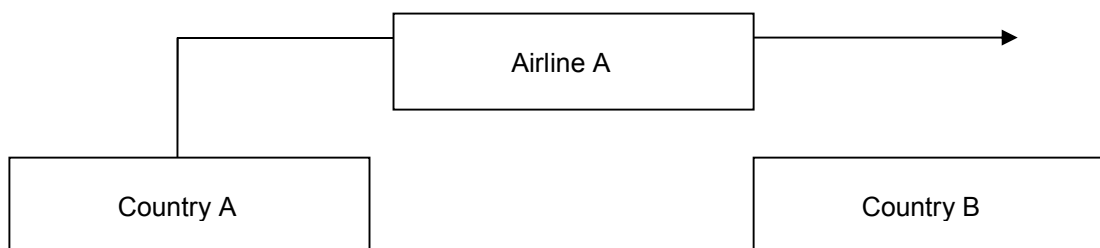
The modern structure of international air transportation controls can be traced back to the failure in 1944 of the Allied powers at the Chicago Convention to reach an agreement on how the post-Second World War air transportation system should operate (Button & Taylor, 2000:210). While representatives from 52 governments managed to agree on the legal and technical framework for the operation of international air services, their inability to reach a consensus on economic regulation meant that it fell to pairs of governments to negotiate the precise terms of air services provision between their countries (Doganis, 2006:27). The hope was that those signing would grant freedom of access, to airports and

to airspace above their territory, to all other signatories (Button & Taylor, 2000:210). Some of the main outcomes of the Chicago Convention involved standardising different types of scheduled operations, categorised according to the various “freedoms of the skies” to be described below. The result was a myriad of BASAs between countries that, in general, stipulated which airlines could fly between them, the capacity of each airline, the fares to be charged and, often, how the revenues generated were to be shared between the carriers (Button, 2009:60).

The concept of “freedoms of the skies” or “the degrees of freedom” was initiated at the Chicago Convention and essentially denotes air traffic rights, in other words a set of commercial aviation rights granting a country’s airline(s) the privilege to enter and land in another country’s airspace (Doganis, 2006:28). The degrees of freedom have since been the basis of the amount of freedom a country enjoys in operating over another country’s airspace, encompassing eight different freedoms which may be negotiated (Button & Taylor, 2000; Doganis, 2006; Ssamula 2008).

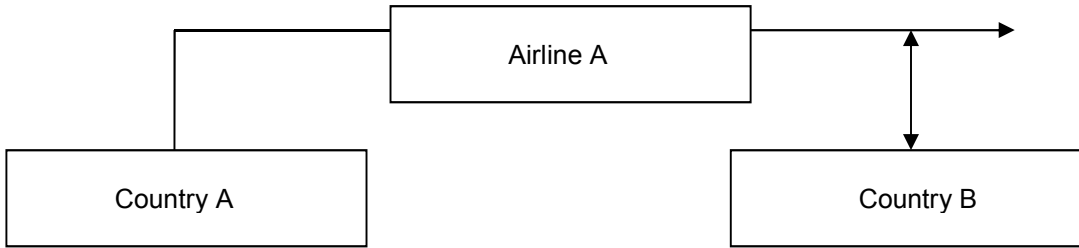
The **first freedom** is the right of an airline A of country A to fly and carry traffic over the territory of country B without landing, as illustrated in figure 2.1

Figure 2.1: First Freedom



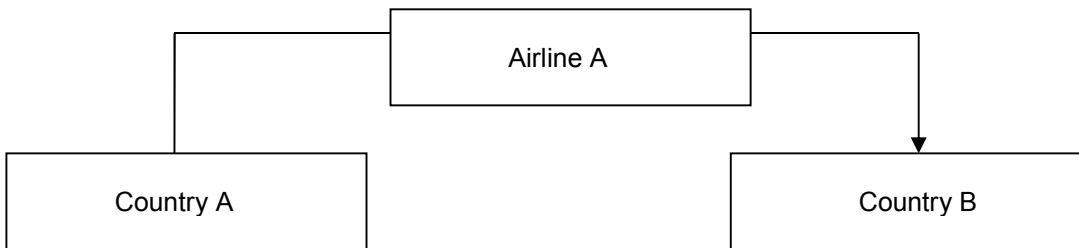
The **second freedom** is the right of an airline A of country A to land in country B for non-traffic reasons, such as maintenance or refuelling while en route to another country, as illustrated in figure 2.2. For example, before the development of long range aircraft this would apply to transatlantic traffic that needed to make a refuelling stop in country B.

Figure 2.2: Second Freedom



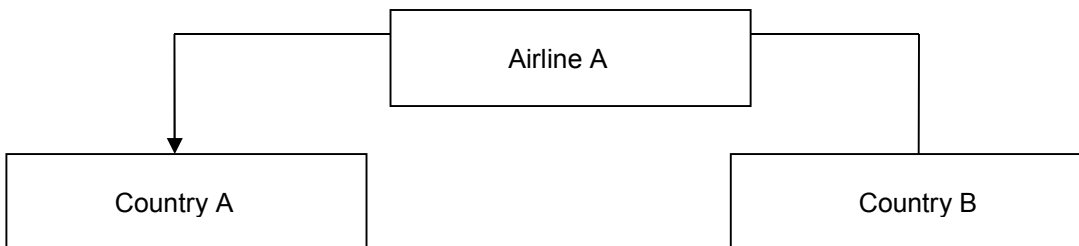
The **third freedom** is the right of an airline A of country A to carry traffic to country B. This is shown in figure 2.3.

Figure 2.3: Third Freedom



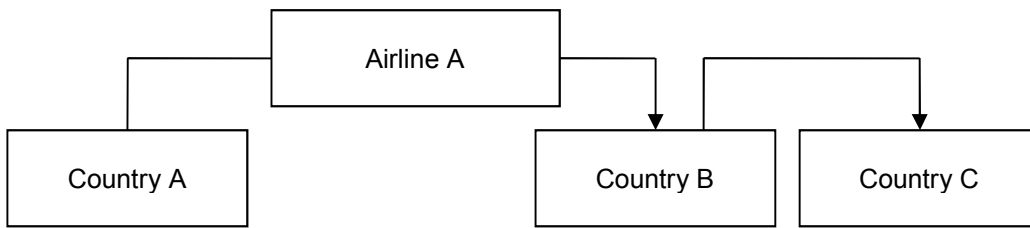
The **fourth freedom** is the right of an airline A of country A to carry traffic from country B to country A. The third and fourth freedoms are usually granted on a bilateral basis.

Figure 2.4: Fourth Freedom



The **fifth freedom** is the right of an airline A from country A to carry traffic between two countries (country B and country C) outside of its own country of registry, as long as the flight originates or terminates in its own country of registry, as illustrated in figure 2.5. For example, Emirates Airlines flies from Dubai to Brisbane, Australia, then picks up passengers and continues to Auckland, New Zealand. This freedom cannot be used unless country C also agrees.

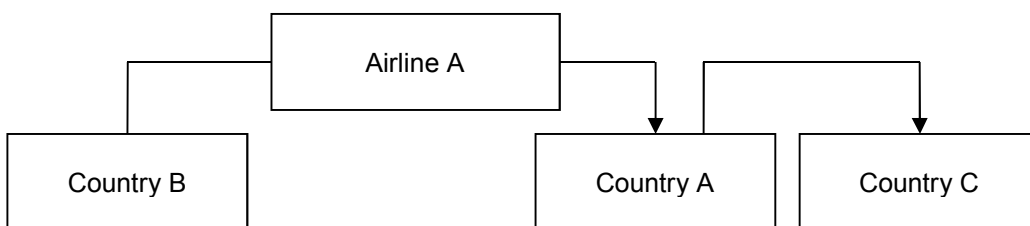
Figure 2.5: Fifth Freedom



The **sixth freedom** is the right of an airline A of country A to carry traffic between two foreign countries (country B and country C) via its own country of registry (country A). This is a combination of the third and fourth freedoms and was not specified as such at the 1944 Chicago Convention. Sixth freedom rights are rarely dealt with explicitly in air services agreements but may be referred to implicitly in a MOU attached to the agreement. In the application of many bilaterals there is also *de facto* acceptance of such rights (Doganis, 2006:293).

Sixth freedom flights from country B to country C are illustrated in figure 2.6 below. Qatar Airways, for example, carries sixth freedom traffic between Johannesburg, South Africa and Moscow, the Russian Federation, which means passengers travel from Johannesburg to Doha for a connecting flight from Doha to Moscow.

Figure 2.6: Sixth Freedom



Two further freedoms are granted in very rare cases, one example of which can be seen in the 1991 US-UK bilateral, whereby the USA granted UK airlines seventh freedom rights from several European countries to the USA. They have never been used nor were they included in the 1944 Chicago agreement (Doganis, 2006:293).

The **seventh freedom** is the right of an airline to operate between points in two countries on services which lie entirely outside its own home country. The European Union-United States “Open Skies” agreement entails the unilateral granting by the United States to a number of non-EU countries of so-called “seventh freedom rights for passengers” to fly to the EU, which comprises the right for non-EU airlines to operate flights between a city in the US and a city in the EU.

The **eighth freedom**, which is also referred to as “domestic cabotage”, is the right of an airline of one country to carry traffic between two points within the territory of a foreign country. Such rights have on occasion been granted when a country experiences a shortage of aircraft capacity.

The Chicago Convention also established the United Nations’ International Civil Aviation Organisation (ICAO) to oversee international air transport agreements (Button, 2009:59). However, ICAO is largely concerned with safety and technical standards and the collection of statistical data among other activities, rather than with detailed economic regulation, although it has become more involved in the latter during recent years (Button & Taylor, 2000:210).

2.2.3 Bermuda type agreements

The Chicago Convention of 1944 laid down a basis upon which the international bilateral air services agreements system was founded. This was a compromise arrangement that attempted to reconcile the very liberal, free market ideas of the United States on the one hand and the more restrictive ones of countries such as Australia that wanted a single global carrier on the other (Button, 2009:59).

In 1946 the United Kingdom and the United States concluded a model bilateral agreement commonly known as Bermuda I, whereby the United States agreed that international tariffs and fares would be set by the International Air Transport Association (IATA). In exchange, the United Kingdom allowed US carriers to determine their passenger capacities and frequency of service. Additionally, the agreement provided for liberal fifth freedom traffic rights for both parties which lasted for the next 40 years, but had to be renegotiated due to

disagreements between the two countries as the industry changed over the years (ICAO, 2004).

Until 1978 all bilateral air services agreements were more or less restrictive in terms of market access through traffic rights granted to carriers; capacity levels that carriers were allowed to offer; fares at which their services were priced as well as which carriers were designated to operate the services. The more liberal bilaterals, frequently referred to as the Bermuda type, differed from the more restrictive predetermination type of agreements in two respects: fifth freedom rights were more widely available and there was no control of frequency or capacity on the routes between two countries concerned. Bermuda type agreements were still restrictive as they often allowed only one airline from each country to operate a route. This also meant that fifth freedom operators could only fly on the routes involved if the authorities at both ends agreed (Button & Taylor, 2000:211).

2.2.4 Deregulation and liberalisation from 1978 to 1991

The initial impetus towards lifting restrictions on air transport developed in the United States. Strong public pressure for pro-consumer deregulation resulted in the 1978 Deregulation Act, which ended the existence of the Civil Aeronautics Board (CAB). This had a profound effect on the American air transport market as it allowed for more competition, the entry of new airlines and the creation of a new hub-and-spoke-system of air routes. Overall, since 1980 deregulation³ has benefited American consumers by USD 25 billion a year (Myburgh *et al.*, 2006:13).

This domestic deregulation pushed the US to liberalise its air transport in international markets through bilateral renegotiations. In a series of negotiations, the United States offered foreign countries an attractive deal: it would give foreign airlines traffic rights to a small number of additional gateway points in the USA in exchange for achieving all or most of the objectives recorded in the 1978 statement on “International Air Transport Negotiations”. It was the United States-Netherlands agreement, signed in March 1978, which became the trend-setter for subsequent US bilaterals. Both sides had set out to

³ Deregulation is very much a US term, while in other parts of the world liberalisation is the more common terminology (Ssamula, 2008:13).

reduce the role of government in matters of capacity, frequency and tariffs and in setting market conditions, making their bilateral a particularly liberal one (Doganis, 2006:32).

From 1978 to 1980 the United States entered into liberal bilateral agreements with a number of European countries (the Netherlands, Germany, Belgium) and Asian countries (Singapore, Thailand, Korea) (Myburgh *et al.*, 2006:14). The key features of the pre-1978 and post-1978 US-type bilaterals are depicted in table 2.1; however it should be borne in mind that there is greater variation in detail amongst the newer bilaterals than in those they replaced (Doganis, 2006:33).

Table 2.1: Main features of US pre-1978 and post-1978 bilateral agreements

Pre-1978 bilateral air services agreements		1978-1991 Open market bilaterals	
		US airlines	Foreign airlines
Market Access	Only to specified points	From any point in the US to specified points in foreign countries	Access limited to a number of US points
	Limited 5 th freedom rights granted to US carriers	Extensive 5 th freedom rights granted, but generally more to US carriers	Unlimited charter rights
	Charter rights not included	7 th freedom rights not granted Cabotage not allowed	
Designation	Single – some multiple	Multiple	
	Airlines must be substantially and effectively controlled by nationals of designated country	Airlines must be substantially and effectively controlled by nationals of designated country	
Capacity	Capacity agreed or shared 50:50. No capacity/frequency controls in liberal bilaterals, but subject to review	No frequency or capacity controls Break of gauge ⁴ permitted in some agreements	
Tariffs	Approval by both governments (double approval) or as agreed by IATA	Double disapproval (filed tariffs become operative unless both governments disapprove) or country of origin rules (less frequent)	
Code-sharing	Not part of bilateral		

Sources: Doganis (2006:34); Button (2009:63)

⁴ Break of gauge is used in air services agreements to allow an airline that has traffic rights from its own country (A) to country (B) and also 5th freedom rights on to country (C), to operate one type aircraft from A to B and then a different type (usually smaller) from B to C and beyond. This normally involves basing aircraft and crew in country B (Doganis, 2006:294).

These open market agreements lifted restrictions on prices, the number of flights, the number of seats offered and also allowed airlines to enter additional markets. Airlines were obliged to compete for passengers because the competition determined prices as well as the number of passengers carried (Myburgh *et al.*, 2006:14).

In Europe, the United Kingdom-Netherlands agreement set the pattern for the renegotiation of several other European bilaterals by the United Kingdom. They varied in detail, but all of them allowed for multiple designation of airlines of each country. While the United Kingdom set the pace, other European countries also began renegotiating their European bilaterals in this period. Two agreements serve as good examples of the most open of the new style bilaterals, namely the UK-Netherlands and the UK-Ireland. These developments were paralleled by the two European Community liberalisation packages, which came into force in 1987 and 1990. The key features of post-1985 open market bilaterals are compared in table 2.2 to those of more traditional European bilaterals (Doganis, 2006:35).

Table 2.2: Traditional and post-1985 open market European bilaterals

Traditional (pre-1984)		New open market bilaterals
Market Access	Only to points specified	Open route access – airlines can fly on any route between two countries
	Very limited fifth freedom sometimes granted	
Designation	Generally single, but double/multiple in some bilaterals	Multiple
	Airlines must be under substantial ownership and effective control of nationals of designating country	
Capacity	Shared 50:50	No capacity control
Tariffs	Double disapproval	Double disapproval

Source: Doganis (2006:36)

Despite the progress achieved, the new open market bilaterals, whether of the United States or European type, failed to fully liberalise aviation markets in several respects. The first was in relation to market access in each country's territory. In most bilaterals, the points to be served by the designated airlines were still listed and limited in number. Second, while fifth freedom rights were granted fairly liberally, in many cases they could not be used because third countries involved were not prepared to give away such rights.

Third, domestic cabotage was excluded from the new bilateral, though some limited domestic cabotage rights had been granted within the European Union. None of the new bilaterals granted the so-called seventh freedom. Finally, the requirement to designate only airlines that were “substantially owned and effectively controlled by nationals of the designated country” remained an essential feature of the new bilaterals. In all these respects, the international air transport industry continued to be treated, and to operate, under severe restrictions, quite unlike most other international industries (Doganis, 2006:36-37).

2.2.5 Movement towards “Open Skies” – from 1992 onwards

By the early 1990s it was clear that international liberalisation, and the open market bilaterals that characterised it, had not gone far enough. The need for further liberalisation became increasingly apparent as a result of several developments. First, there was a growing body of expert opinion that the airline industry should be normalised: it should be allowed to operate like any other major international industry. The second, much stronger argument against bilateralism was that the system, though worldwide, was restrictive. The third factor motivating further liberalisation was that the airline industry had matured during the previous decade. It had undergone structural changes which made it progressively more difficult for airlines to operate within the confines of the bilateral system. Structural changes had been brought about by the following trends (Doganis, 2006:38-39):

- Growing concentration within the US airline industry and the emergence of the US domestic majors as big players in the international markets;
- The search by many international airlines for the marketing benefits of very large-scale operations through mergers with other airlines in their own country and through minority share purchase or strong marketing alliances with airlines in other countries;
- A loosening of government ties with and support for national airlines as a result of partial or full privatisation; the UK Government set the trend here with the successful privatisation of British Airways in 1987; and

- Increased emphasis on reducing governmental direct and indirect support to airlines, and pressure for financial self-sufficiency among airlines, in turn meant less protectionism domestically and in international markets.

All these trends created a critical need for successful airlines, whether private or state-owned, to be able to operate more easily outside the narrow confines of their own national markets while being freed from the remaining constraints imposed by bilateralism (Doganis, 2006:39). The outcome from 1992 was a series of bilateral “open skies” agreements between the EU states and the US (Button, 2009:63). In September 1992 the Netherlands and the United States governments signed what was effectively the first “open skies” agreement and inaugurated a new phase of international deregulation. In brief, the key elements of this bilateral were (Doganis, 2006:40):

- Open route access – airlines from either country can fly to any point in the other country with full traffic rights;
- Unlimited fifth freedom rights;
- Open access for charters;
- No limit on the number of airlines that can be designated by each country (multiple designation);
- No frequency or capacity control;
- Break of gauge permitted;
- No tariff controls (unless tariffs are too high or too low); and
- Airlines are free to code-share or to make other commercial agreements.

Table 2.3 draws attention to the main United States’ “open skies” agreements with countries that signed a standard offer of “open skies” agreement between 1992 and 1998.

Table 2.3: United States’ “open skies” air services agreements

1992	1995	1996	1997	1998
Netherlands	Austria	Germany	Singapore	Japan
	Belgium	Jordan	Malaysia	France
	Denmark		Chinese Taipei	Korea
	Finland		Chile	
	Luxembourg		Costa Rica	
	Norway		Nicaragua	
	Sweden		Honduras	
	Switzerland		El Salvador	
	Czech Republic		Guatemala	
	Canada		Panama	
			Brunei	

Source: Button and Taylor (2000:211)

The “open skies” agreements, generally very similar to the US-Netherlands agreement, were a significant improvement on the open market agreements they replaced. They differed in several respects, most notably in relation to market access and tariff regulation as depicted in table 2.4.

Table 2.4: US open market and post-1991 “open skies” air services agreements

Open market bilaterals, 1978-1991		“Open skies” bilaterals, post-1991
Market Access	Named number of points in each country – more limited for non-US carrier	Unlimited
	Generally unlimited fifth freedom	Unlimited fifth freedom
	Domestic cabotage not allowed	
	Seventh freedom not granted	
	Open charter access	
Designation	Multiple	
	Substantial ownership and effective control by nationals of designated country	
Capacity	No frequency or capacity control	
Tariffs	Double disapproval or country-of-origin rules	Free pricing
Code-sharing	Not part of bilateral	Code-sharing permitted

Source: Doganis (2006:44)

The “open skies” agreements opened route access to any point in either country, whereas the earlier bilaterals had tended to limit the number of points that could be served by foreign carriers in the United States. Also, mutual fifth freedom rights were granted without restraint compared to the more limited fifth freedom in earlier bilaterals. With regards to tariffs, double disapproval or the country-of-origin rules were replaced by a clear decision that governments should not meddle in tariffs except to prevent discriminatory practices, in order to protect consumers from unreasonably high or restrictive prices or to protect airlines from artificially low fares due to government subsidies or support. A further innovation was the inclusion of an article dealing specifically with inter-airline commercial agreements such as code-sharing. The final innovation was the inclusion in the bilaterals of an annex laying down principles regarding the adoption of non-discrimination on the databases and visual displays of the global computer reservations systems, and ensuring open access and free competition among CRS (Central Reservation System) providers in each country (Doganis, 2006:44-45).

2.2.6 The single European market

In parallel to the United States, Europe was also moving towards “open skies”, but the approach was structurally different. The development of a single open aviation market in Europe was to be achieved through a comprehensive multilateral agreement by the member states of the European Union. This multilateral approach to opening up the skies enabled the Europeans to go further in pursuit of deregulation than was possible under the bilateralism in the US.

Within the European Union (previously known as the European Community) the thrust towards multilateral liberalisation of air transport was driven by two complementary lines of approach: the Directorate General for Transport and the Directorate General for Competition. While some liberalisation was taking place in Europe as a result of the revised air services agreements which followed the new UK-Netherlands agreement of 1984, it was not until December 1987 that the first important breakthrough came at a Community level. This was the “December 1987 Package” of measures agreed by the Council of Ministers. It introduced a more liberal fares regime and forced the abandonment of the equal sharing of capacity on routes served by airlines of two countries at either end

of such routes; it also facilitated the entry of new airlines by opening up market access (Doganis, 2006:45-46).

In June 1990 a “Second Package” of liberalisation measures was agreed by the Community ministers. These further loosened constraints on pricing, on capacity restrictions and on market access. They allowed multiple designation of airlines on routes above a certain traffic density as well as opening up third and fourth freedom rights on most inter-Community routes (Doganis, 2006:46).

The “Third Package” of aviation measures came into force on 1 January 1993. This was the inception of a single European Common Aviation Area. The “Third Package” consisted of three interlinked regulations, which have effectively created an “open skies” regime for air services within the European Union. The first is open market access: airlines from member countries can operate with full traffic rights on any routes within the EU and without capacity restrictions, even if these routes are outside their own country. Governments may only impose restrictions on environmental and infrastructure capacity, regional development or public service grounds; however any restrictions have to be justified. The second regulation is that there is no price control: airlines are accorded the freedom to determine their fares and cargo tariffs though there are some limited safeguards to prevent predatory or excessive pricing. The final regulation harmonises the criteria for granting operating licences and air operators’ certificates to be used by the EU member countries. Apart from technical and financial criteria which have to be met, the airline must be majority owned and controlled by any of the member countries or their nationals or companies, but not necessarily nationals or companies of the state in which the airline is registered (Doganis, 2006:46-47).

The “Third Package” went further than the US-style “open skies” bilaterals in two important aspects. First, it was a multilateral agreement to open up the skies covering not just pairs of countries but a whole region, the 15 eventual member countries of the European Union, plus Norway and Iceland which adopted the package measures without joining the EU. Second, the “Third Package” for the first time explicitly allowed cross-border majority ownership.

In parallel with the liberalisation of air transport regulations, the European Commission felt that greater freedom for airlines had to be accompanied by the effective application and implementation of the European Union's competition rules. They were designed to prevent monopolistic practices or behaviour which was anti-competitive or which distorted competition to the detriment of consumers (Doganis, 2006:47). Initially the Common Aviation Area prevailed in 15 member countries plus Norway and Iceland. In 2003 Switzerland joined the European Common Aviation Area by adoption of a draft of the EU measures on aviation without becoming a member country of the EU.

More recently, the ten new countries that joined the EU in May 2004 had all previously adopted the "Third Package" and the competition rules, but with varying transitional arrangements to allow for a gradual opening up of their markets to the full force of competition. As a result a European Common Aviation Area (ECAA) now exists with an "open skies" regime (Doganis, 2006:50).

During the 1990s, the nationality and ownership rules were increasingly regarded by many governments, by airline management and by consumers as imposing unacceptable restrictions on the development of the industry. On the other hand, some governments and a large number of smaller airlines continued to perceive these rules as essential safeguards against the threat of being swamped by mega-carriers. As a result of these pressures the rules began to be relaxed in a series of decisions taken in different parts of the world (Doganis, 2006:59).

In summary, the 1990s witnessed rapid changes in both the regulatory and operating environments of international air transport as well as structural changes to the airline industry. Liberalisation became widespread. To adapt to the changes many countries made regulatory adjustments and adopted more liberal policies, typically by relaxing regulation to varying degrees. Several countries concluded new liberal BASAs which essentially removed all restrictions on market access, capacity and pricing. There was also growing regionalism in international air transport regulation, converting some bilateral regulations to regional and sub-regional multilateral regulations (ICAO, 2004).

2.2.7 Association of South-East Asian Nations (ASEAN)

The above sections have covered important milestones in the development and liberalisation of bilateral regulation that took place in the US and Europe, resulting in the “open skies” bilaterals and the creation of the European Common Aviation Area. These developments were the main pillars that supported the move to liberalisation worldwide. Several liberalisation examples of other regions in the world, namely the ASEAN and the Trans-Tasman markets are considered below. The most significant African air transport reform policy initiative will be discussed in detail in Chapter 3.

The ASEAN was formed in 1967 by Thailand, Indonesia, Malaysia, Singapore and the Philippines. ASEAN serves as a regional bloc, similar to the European Union. It works to harmonise policy and encourages cooperation on trade, tourism and economic growth. ASEAN now includes Brunei, Vietnam, Laos, Myanmar and Cambodia and has established the end goal of full economic integration by 2020. One of the trade areas closely analysed by the ASEAN countries is air transport. In November 2004 all ten ASEAN member countries signed the ASEAN Framework Agreement for Integration of Priority Schedules. This agreement allows for a phased approach to ASEAN Open Skies. The agreement includes unlimited point-to-point operations between ASEAN capital cities from 2008 and unlimited fifth freedom operations from those same cities in 2010 (InterVISTAS-ga² Consulting, Inc., 2006).

2.2.8 Australia – New Zealand (Trans – Tasman) market

The first step towards economic liberalisation between Australia and New Zealand can be traced to 1966 when the New Zealand and Australia Free Trade Agreement was signed. This agreement was in place for 17 years until 28 March 1983 when the Australia-New Zealand Closer Economic Relations Free Trade Agreement (ANZCERTA) was concluded. This has laid a foundation as an innovative agreement which not only created a liberal business and economic regime for goods and services, but also created a collaborative umbrella to deal with customs, transport, regulatory, product standards and business law issues. The ANZCERTA established a market that maintains one of the most open economic trade relationships between any two countries in the world.

Australia and New Zealand have been closely linked through British Commonwealth colonial ties, and due to their comparative geographic isolation have consistently worked to liberalise government aviation policies. On 1 November 1996, they concluded a Single Aviation Market (SAM) agreement. Its goal was to bring the two countries closer together within the elements of ANZCERTA. The main components included the opening of ownership and control regulations in the bilateral market, the introduction of unlimited frequencies for Trans-Tasman services and a provision which allowed airlines of either country to operate domestic flights within the other countries. While the agreement opened up many new opportunities within the Trans-Tasman market, it did not address areas beyond, such as markets to third countries. The Single Aviation Market agreement broke down barriers in the carriage of cabotage traffic, created ownership and control flexibilities and deregulated capacity, designation and frequencies. More importantly, the SAM agreement laid the foundation for a more liberal agreement that would open markets beyond the Trans-Tasman.

The Australia-New Zealand Open Skies agreement entered into force on 8 August, 2002. This agreement removed the last substantive restrictions within the bilateral air services market and served as the culmination of a truly open air services market. There were no longer restrictions on flights to, within and beyond the territory of the other country. New beyond markets brought about greater capacity on the Trans-Tasman as new international connections were created between major cities (InterVISTAS-ga² Consulting, Inc., 2006:45-46).

2.3 DEVELOPMENT OF THE MULTILATERAL AGREEMENTS

It is evident from the above examples that many regions have engaged in initiatives to partially or wholly liberalise their respective air transport markets. According to Lyle (2006) only the EU-related agreements, the CLMV agreement, the MALIAT and intra-ASEAN agreements⁵ are “substantive”, with the remainder being “partly functional⁶”. The list is summarised in table 2.5.

⁵ CLMV - involving Cambodia, Laos, Myanmar, Vietnam; MALIAT – involving Brunei, Chile, New Zealand, Samoa, Singapore, Tonga and the US.

Table 2.5: Multilateral air services agreements and arrangements

Name of agreement	Started	Current participants
Decision in Integration of Air Transport	1991	Five Andean Pact countries
European Union “Third Package”	1993	29 member countries of the EU plus Iceland, Liechtenstein, Norway and Switzerland
Caribbean Community (Caricom) Air Services Agreement	1996	Entry into force for 9/15 countries in 1998
Fortaleza Agreement	1997	Six MERCOSUR ⁷ countries
Banjul Accord	1997	Six countries in West Africa
CLMV Agreement	1997	Cambodia, Laos, Myanmar and Vietnam
ACAC Arab Multilateral Liberalisation Agreement	1999	16 countries in the Middle East and northern Africa, 13/16 signatories, 6/16 ratified
CEMAC Agreement	1999	Six countries of the Common Market and Monetary Community of Central Africa
COMESA Air Transport Liberalisation Programme	1999	20 countries of the Common Market for Eastern and Southern Africa
Yamoussoukro Decision	1999	53 African Union countries
IMT Growth Triangle	1999	Indonesia, Malaysia and Thailand
BIMP East ASEAN Growth Area	1999	Brunei, Indonesia, Malaysia and the Philippines
Multilateral Agreement on the Liberalisation of International Air Transportation (MALIAT)	2001	Brunei, Chile, New Zealand, Samoa, Singapore, Tonga and the US (members of the Asia Pacific Economic Cooperation forum, APEC)
EU “Horizontal Agreements”	2003	27 states, each with bilateral agreements with EU
Liberalisation of Passenger Air Services	2004	Brunei, Singapore and Thailand
Multilateral Air Services Agreement for the Banjul Accord Group (BAG)	2004	Cape Verde, Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone
Agreement on the Liberalisation of Air Transport between the Arab States (Arab League)	2004	Algeria, Bahrain, Egypt, Comoros, Djibouti, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, UAE and Yemen
Euro-Mediterranean Agreement	2005	European Union and Morocco
Multilateral Agreement on the Establishment of a European Common Aviation Area (ECAA)	2005	All member states of European Union, European Community, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the former Yugoslav Republic of Macedonia, Iceland, Montenegro, Norway, Romania, Serbia and United Nations Interim Administration Mission in Kosovo
Air Transport Agreement between EU and the United States	2005	All member states of European Union, European Community and United States
EU-Western Balkans	2006	European Union and six countries
ASEAN Multilateral Agreement on Air Services	2008	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and

⁶ The Decision in Integration of Air Transport between five Andean Pact countries, detailed in the table below, is also substantive, having been in force and existence since 1991.

⁷ South and Central American regional trade agreement with four full members (Brazil, Argentina, Paraguay and Uruguay) and five associate members (Bolivia, Chile, Columbia, Ecuador and Peru).

Name of agreement	Started	Current participants
		Vietnam
Air Transport Agreement between Canada and EU	2008	All member states of European Union, European Community and Canada

Sources: Lyle (2006) and ICAO (2009)

Of the above agreements and arrangements, fewer than half contain provisions which attempt to revise nationality-based ownership clauses, these being the EU-related agreements, the ACAC agreement, the Caricom agreement, the COMESA programme and the MALIAT. Only the MALIAT and the “Liberalisation of Passenger Air Services” agreement displayed in table 2.5 adopt a plurilateral⁸ basis, whereby the agreement is open to other countries, with the remainder being inter-regional in nature, underlying the growing complexity of the liberalisation process (Abuel-Ealeh, 2007:28).

Liberalisation is expected to continue and grow, both under new or revised bilaterals, including collective regulation by groups of States, for example on a regional or sub-regional multilateral basis. It could also include the use of new types of agreements such as a plurilateral agreement among like-minded States (ICAO, 2004:2.0-2).

2.4 CONCLUSION

Over a number of decades the global aviation industry has moved from a highly regulated environment to a more progressive liberalisation by incrementally removing regulatory restrictions as well as entering into new liberal trading agreements (Department of Transport, 2008:1-3). Following the dynamics of the structure of the world economy, fundamental air transport policy changes occurred in major air markets of the world. These include extensive deregulation in the United States, and liberalisation in the European Union as well as the EU – US “Open Skies” (Muinde, 2006:2). Other regions such as South America, the Caribbean Community, the South-East Asian region, the Trans-Tasman market, the Middle East and Africa, also followed the trend towards multilateral intra-regional liberalisation.

⁸ A plurilateral agreement is an agreement that could initially be bilateral but is also capable of being expanded to involve additional parties or could, from the start, involve three or more parties; in both cases parties that share similar regulatory objectives which are not so widely held as to make feasible a typical multilateral negotiation (ICAO, 2004:2.4-1).

Deregulation and liberalisation of the air transport sector has undoubtedly progressed, with certain regions of the world enjoying economic and social benefits, while some regions such as Africa are still lagging behind. Not every stakeholder has gained from liberalisation: certainly some communities have lost airline services, a number of airlines have gone bankrupt and some classes of passengers are now paying higher fares, but for those few that have been negatively affected there are many more that can now fly more cheaply, are offered a greater variety of services to choose from and have found jobs in the extended air transportation value chain (Button, 2009:70).

International framework for aviation regulation has undoubtedly seen many changes over the last 90 years. The humble beginnings of international aviation regulation were marked by the signing of the Paris Convention; over a number of decades numerous factors and events compelled deregulation and liberalisation so as to gradually transform the very restrictive aviation market. Many milestones have been achieved with the creation of “open skies” markets in several regions of the world. BASAs to date remain the building blocks of bilateral regulation in international transport; nonetheless the degree of liberalisation of their design remains uneven throughout the world, with regions such as Africa dominated by very restrictive air policy regimes.

Following on the overview of the move towards deregulation in the global aviation industry, the next section will focus on Africa’s liberalisation progress, highlighting the importance of the Yamoussoukro Decision. The researcher discusses the conditions and requirements for the implementation of the Decision on a regional basis, the progress achieved so far as well as hindrances impeding the progress of complex intra-African liberalisation process. The chapter provides a summary overview of the various regional and sub-regional organisations and institutions that have been instrumental in moving the Yamoussoukro Decision forward.

CHAPTER 3

DEREGULATING AFRICAN SKIES: THE YAMOUSSOUKRO DECISION

3.1 INTRODUCTION

In Africa, where poor road, port and railway infrastructure often constrains the rapid and efficient transportation of both goods and passengers, air transport offers potential for growth and economic development by fostering trade, as well as foreign investment. However, Africa's air transport industry has always been a relatively small player compared to the global one. In terms of revenue passenger-kilometres⁹ flown, the intra-African market represents less than 1% of the global market and total African revenue passenger-kilometres (intra-Africa and intercontinental traffic) account for only 4.12% of the global revenue passenger-kilometres (Schlumberger, 2010). Given a potential market of more than 12% of the world's population, African air traffic is expected to grow at a 5.7% per year, which is considerably faster than the world average of 4.9%. Despite strong expected growth, intra-African markets in particular are still thin and most regions lack a true competitive environment (Schlumberger, 2010:1). Thus, the implementation of the Yamoussoukro Decision across Africa would serve as an effective tool for creating and enabling true competitiveness and homogeneity within the fragmented intra-African air transport market.

The concepts of the Yamoussoukro Declaration and Decision, the chronological progress of events related to the Decision, the role of sub-regional and regional organisations in the Yamoussoukro Decision process, as well as the progress and hindrances in the implementation of the Decision in sub-regional and regional organisations, are discussed below.

⁹ 1 revenue passenger-kilometre is defined as 1 fare-paying passenger transported 1 kilometre (Schlumberger, 2010:1)

3.2 LIBERALISATION IN AFRICA

The Yamoussoukro Decision (YD) remains the single most important air transport reform policy initiative undertaken by African governments to date. It was adopted out of recognition that the restrictive and protectionist intra-African regulatory regime, based primarily on BASAs, hampered the expansion and improvement of air transport on the Continent (Meshela, 2006:1). The BASAs enabled the stakeholders to limit capacity, therefore driving up prices, maximizing profits and creating an expensive air sector. As a result, intra-African air traffic remained costly and inefficient, especially in those cases where the bilateral air services agreements protected a state-owned carrier (Schlumberger, 2010:6).

One of the vital parts of the Decision was intra-African liberalisation, the objective of which was to develop air services in Africa and to stimulate the flow of private capital in the industry (Meshela, 2006:1). As of today, the governments of Africa have not yet fully implemented the YD, although, on a small scale, some like-minded countries apply the principles of the Yamoussoukro; but not, however, on a continental-wide basis. The reasons for not applying the YD, which will be discussed in detail below, range from non-implementation of certain elements of the Decision: for example, establishing competition rules, a dispute settlement mechanism and an operational monitoring body to simply ignoring it by continuing to implement the traditional restrictive bilaterals (Schlumberger, 2010:6). Implementation of the YD would have been the biggest single development in African aviation history. Apart from the benefits to the airlines and passengers, it would have made a significant contribution to the national economies of African countries (Morrison, 2007:7).

3.2.1 Yamoussoukro Declaration

Prior to gaining independence, most African countries had air services that were primarily based on the European relationships and agreements. Only in the 1960s, when many colonies became independent countries, did African states start negotiating and concluding their own air services agreements. During this time, the majority of the newly

independent African states created their own, mostly government-owned, national air carriers, many of which failed (Guttery, 1998).¹⁰ Most African national air carriers pursued a business model that consisted of using profitable international routes to and from the territories of their former colonial masters to cross-subsidise their costly, yet extensive domestic route networks (Guttery, 1998:1). This often resulted in the maintenance of strict bilateral relationships for intercontinental routes, where capacity was limited and controlled to maximise profitability. Governments tended to view the development of regional air services as secondary, especially when they were obliged to maintain a costly domestic network (Schlumberger, 2010:2).

Following the international example at that time, intra-African air transport services became regulated by the traditional framework of bilateral air services agreements. The typical BASAs of 1960s were based on the traditional predetermination model, by which market access and capacity were predetermined. This model controlled the market through effectively restricting competition (Doganis, 2001:16). Whereas liberalisation had been actively pursued in the United States since the late 1970s and in Europe since the late 1980s, African air services remained generally restrictive, costly and inefficient (Schlumberger, 2010:2).¹¹

In November 1984, the Economic Commission for Africa of the United Nations Economic and Social Council (ECA) organised a conference in Mbabane, Swaziland to discuss the reasons why African carriers faced difficulties in obtaining traffic rights in other African states. The conference ended with the Declaration of Mbabane, which called for the creation of a technical committee that would develop “a common African approach for the exchange of third and fourth freedom rights” and “encourage the exchange of fifth freedom rights”. It further proposed an additional set of measures that focused primarily on closer cooperation between African carriers. These measures, which later became the core of the

¹⁰ Examples include Botswana National Airlines (1966-69); Air Burkina (1984); Royal Air Burundi (1960-63); Air Congo-Brazzaville (1961-65); Gambia Airways (1964); Ghana Airways (1958); Air Malawi (1964); Nigeria Airways (1958-2003); Air Rwanda (1975-96); Zambia Airways (1963-94); and many others (Schlumberger, 2010:7).

¹¹ A World Bank Study (1998:30) states that the reasons for this are high operating and capital costs, which include 40% higher airline insurance premiums, 50% higher fuel costs, 15 to 30% higher lease rates for equipment and 100% higher air navigation fees (compared with South America); high handling and maintenance costs; and difficulties in obtaining necessary working capital.

Yamoussoukro Declaration, included a joint financing mechanism, a means of coordination for scheduling air services, a centralised databank and research programme as well as the promotion and creation of sub-regional carriers (ECA, 1988:1).

The need for a continental consensus on how air transport should be used as an important instrument for social and economic development in Africa, as well as on how to speed up liberalisation of African air services, was discussed at length under the auspices of the ECA by the Ministers in charge of Civil Aviation of 40 African states in Yamoussoukro, Cote d'Ivoire. This led to the adoption of the Yamoussoukro Declaration in October 1988. The Declaration, on a new African civil aviation policy, included comprehensive proposals for a general framework of air transport reform in Africa, the unification of the fragmented air transport market and commitment from the governments represented to make all necessary efforts to integrate their airlines within eight years (ECA, 1988:2 & ECA, 2001:2). The following were the salient objectives of the Declaration (Fatokun, 2005:27):

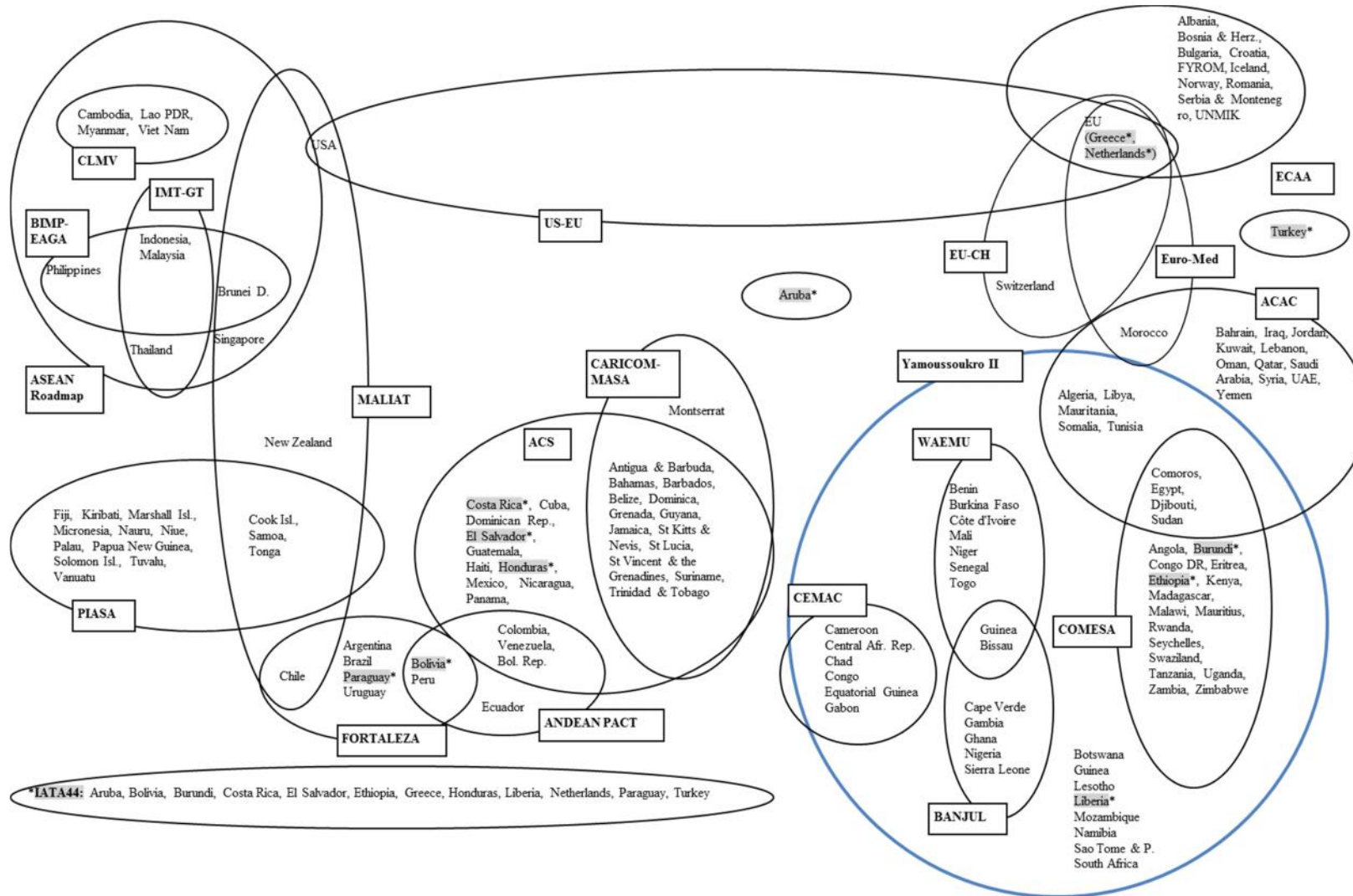
- Ensure flexibility in granting of traffic rights among African countries;
- Encourage joint use of air transport facilities;
- Encourage cooperation and ultimate merger among African carriers;
- Encourage further financing of air transport sector.

The Yamoussoukro Declaration also foresaw the gradual elimination of traffic restrictions, specifically the granting of fifth freedom rights to African airlines during the implementation period. Despite its too ambitious objectives and the weak likelihood of its implementation, the Declaration stimulated further initiatives aimed at liberalising the African air transport market (Schlumberger, 2010:10). In 1994, having evaluated the steps required to implement the Yamoussoukro Declaration, the African Ministers in charge of Civil Aviation met in Mauritius and agreed on a set of measures to facilitate the granting of third, fourth and fifth freedom rights to African carriers (ECA in Schlumberger, 2010:10). Of significance was the fact that the Yamoussoukro Declaration enforced the notion that the air transport sector in Africa needed to be liberalised. This led the ECA to include the liberalisation of air services in its work programme.

3.2.2 Yamoussoukro Decision

In line with the above efforts, a further important step forward towards intra-African air transport liberalisation was taken in November 1999 by African Ministers in charge of Civil Aviation. The conference was held in Yamoussoukro, Cote d'Ivoire, under the auspices of the United Nations' Economic Commission for Africa. After intensive discussions, the Ministers adopted a "Decision Relating to the Implementation of the Yamoussoukro Declaration concerning the Liberalisation of Access to Air Transport Markets in Africa". The Decision, called the Yamoussoukro Decision came into force on 12 August 2000 and was ratified by 44 African countries, and became fully binding on 12 August 2002 (ECA, 2001:2). In accordance with Article 2, the YD takes precedence over all bilateral and multilateral agreements within the regions which are not in conformity with it (ECA, 1999:4). Figure 3.1 presents a stylised map of the YD in the context of existing global plurilateral agreements.

Figure 3.1: YD in the context of existing plurilateral agreements



Source: WTO Secretariat (2006)

In essence, the main aim of the Decision is to provide a continent-wide aviation agreement to liberalise African air transport market and eventually create an “open skies” environment in Africa. The major policies of the new air transport framework agreed upon by African Ministers were:

- Gradual liberalisation of scheduled and non-scheduled intra-African air services (as defined under Article 2 of the YD);
- Free exchange of traffic rights including third, fourth and fifth freedom rights on both scheduled and non-scheduled passenger and air freight (cargo and mail) air services performed by an eligible airline (as defined under Article 3 of the YD);
- Non-regulation of tariffs by government (as defined under Article 4 of the YD);
- No restriction of frequencies and capacities offered on air services linking any city-pair combination (as defined under Article 5 of the YD);
- Multiple designation by each party on a city-pair basis (as defined under Article 6 of the YD);
- Competition regulation (as defined under Article 7 of the YD);
- Settlement of disputes through negotiations (as defined under Article 8 of the YD);
- A monitoring body¹² to oversee the implementation process (in accordance with Article 9 of the YD);

¹² A monitoring body was established composed of representatives of the ECA, OAU, AFCAC and AFRAA, which can be assisted, if necessary, by representatives of sub-regional organisations (ECA, 1999:8).

- Encouragement of commercial and other forms of cooperation between African carriers (ECA, 1999:4-8; ECA, 2001:2-3).

3.2.3 The Abuja Treaty as the legal basis of the YD

It must be noted that the YD has its legal basis in the Abuja Treaty, which entered into force on 12 May 1994. The Treaty was the culmination of more than 30 years of initiatives all aimed at achieving greater economic, social and cultural integration among African countries. Under the Yamoussoukro Decision, signatory member states of the Abuja Treaty are required to liberalise air transport almost immediately to allow African carriers unrestricted access to air transport markets within Africa, thereby enhancing connectivity to promote intra-African trade and tourism opportunities (ICAO, 2010:2). Of the 54 African states¹³, 44 signed and formally ratified the Abuja Treaty and became parties to the YD (Schlumberger, 2010:24). The other ten states can be grouped into three categories: a) states that never signed the Abuja Treaty (Eritrea and Morocco); b) states that signed but never ratified the treaty (Djibouti, Gabon, Madagascar and Somalia); and c) states that ratified and/or deposited the instruments of ratification after the African Union entered into force (Equatorial Guinea, Mauritania, South Africa and Swaziland). The summary of the African countries membership in relation to the YD is presented in Appendix A.

In essence, the YD is a multilateral agreement amongst most of the 54 African states and allows the multilateral exchange of up to the fifth freedom air traffic rights between any African YD-party state using a simple notification procedure (Schlumberger, 2010:6). The Decision is a comprehensive proposal to improve the fragmented regulatory regimes through a unified system that accords African airlines commercial opportunities on an

¹³ The research period selected ends with the year 2010; hence the number of African countries officially recognised is based on this year. The AU has granted membership to the Saharawi Arab Democratic Republic (Western Sahara), which proclaimed itself a country despite territorial claims by Morocco; however, internationally Africa has 53 recognised states. This study therefore assumes a total of 53 countries for the purposes of further discussion.

equal basis within the Continent and ensures that their activities are governed by a common body of air transport rules (Fatokun, 2005:29).

3.2.4 South Africa's position on the implementation of the YD

In July 2006, South Africa adopted a five-year Airlift Strategy which sets out to enhance the air transport sector's contribution to sustainable growth and development. The implementation of the Airlift Strategy supports the government's aim to increase the volume of international air traffic capacity to and from South Africa, as well as the creation of capacity ahead of demand (Department of Transport, 2006). In the context of the Decision, the Strategy recognises the adoption and implementation of the key principles of the YD continentally, as well as the regulation of international markets through BASAs with managed liberalisation. In 2010 at the 37th Assembly of the Economic Commission, South Africa reconfirmed its full support of the common position on the African liberalisation and the principles of an open market in the African region for African operators. South Africa urged African states to strengthen the Regional Economic Communities in the drive to implement the YD (ICAO, 2010:4).

3.2.5 Progress achieved

Despite the fact that the Yamoussoukro Decision has not been fully implemented throughout Africa, progress has been made in the countries involved. Below is a summary of the main developments related to the implementation of the Decision (ECA, 2003; ICAO, 2010):

- **A number of countries**, such as South Africa, Kenya, Ethiopia, Uganda and Tanzania among others, **have taken urgent measures towards the implementation of the Decision**, applying the agreements on the liberalisation of traffic rights on a bilateral basis. In line with these measures, the South African Airlift Strategy of 2006 has set up liberalisation targets to speed up the

implementation of the YD with like-minded African countries (Department of Transport, 2006:59);

- **Development partners** have lent support to the process of liberalisation of air transport in Africa. The World Bank and the European Union have been assisting the sub-regional economic communities to manage liberalisation and strengthen institutional capacities;
- **New routes** have come into use **and frequencies** have been enhanced between African countries, thus streamlining the movement of passengers and goods. Examples include bilaterals signed between Gabon and Ethiopia, allowing operations to any point in either country, any three points within Africa and any five open points beyond; Air Senegal's success on regional fifth freedom sectors, such as Bamako-Abidjan and Bamako-Niamey; a bilateral between South Africa and Botswana virtually creates an "open skies" market, including multiple designations, multiple entry points and unrestricted capacity and frequency (Ndhlovu & Ricover, 2009:23); the impact of liberalisation is particularly evident on the Nairobi-Johannesburg route, which increased frequencies from 4 in 2 000 to an unlimited number in 2003, where research by Myburgh *et al.* (2006:7) indicates that the passenger volumes have increased by 69% over the pre-liberalisation period;
- **The African positions**, as expressed through the regional economic communities or groupings, such as COMESA, SADC, WAEMU, EAC and BAG in relations to air transport regulations **have been properly coordinated and defined** at international forums as African countries are becoming increasingly aware of the importance and the implications of new air transport policies. The progress achieved in regional economic groupings will be discussed below;
- **An element of competitiveness has been introduced**, bringing about an improvement in services and the emergence of a broader range of tariffs. The results of the study by Myburgh *et al.* (2006:9), which analysed the impact of air

fares on 56 routes in SADC, indicate that air fares are 18% lower on liberalised routes and that this reduction in air fares is expected to increase passenger volumes by 14 to 32%;

- **Alliances and cooperation arrangements**, such as SAA and Air Tanzania, have been established among African airlines in certain sub-regions, such as the EAC and SADC.

3.2.6 Hindrances to implementation

It has been more than 20 years since the inception of the Yamoussoukro Declaration and almost ten years since the adoption of the YD. Nevertheless, the main objectives are still far from being realised as their implementation is moving at a slow pace in most African countries. Some of the reasons for the slow pace of progress include (Fatokun, 2005:29-30; ECA, 2001:6-7):

- **Lack of political commitment and unification:** firm political commitment and actions are necessary to unify the liberalisation process at the national level, as well as to make it less heterogeneous in various sub-regions. Strong commitment is required from all member states to implement the Decision as the member states are currently at different levels of the YD implementation. Sections 3.4.1.1 to 3.4.4.2 comprehensively discuss the current heterogeneous and fragmented state of liberalisation within the various regional communities, highlighting the varying degree of liberalisation achieved within these air transport markets. An example of the lack of political commitment is illustrated in the Arab Maghreb Union, in which the need for the liberalisation of air services was only recognised by the Arab Maghreb Union Transport Ministers in 2007, however no liberalisation has to date been initiated. In those regions, where liberalisation has taken place in line with the key elements of the YD, such as the BAG, WAEMU and CEMAC positive impact on air transport services is evident as discussed in section 3.5;

- **Barriers to liberalisation**, such as immigration restrictions and foreign exchange control, *inter alia*, that still exist, need to be relaxed for effective implementation of the liberalisation process. For example, travel between SADC countries requires a visa, which impacts on the ease of travel and the flow of visitors to and within the region. Another example is that of residents of Angola and the DRC requiring a visa to enter Lesotho. In order to mitigate the above, SADC's tourism industry has proposed a single visa (UNIVISA) for the region (RETOSA, not dated);
- **Competition policies and institutions**: the vast majority of African countries do not regulate competition or have institutions that specialise in competition matters. The First Ordinary Session of the Ministers Responsible for Air Transport, held by the African Union in 2005 in South Africa, concluded that harmonisation of the rules for liberalising air transport was necessary as different rules in different sub-regions were hindering full implementation of the Decision (African Union, 2005). Mauritius had informally indicated that it was withdrawing from the YD because of the failure of SADC countries to adopt the competition rules relating to the full liberalisation of air transport. In 2007, the African Union drafted its own common competition rules, including special provisions on air transportation (African Union, 2007). At the Third Session of African Union Ministers Responsible for Air Transport, held in May 2007 in Ethiopia, the Ministers noted the preparation of draft texts concerning the harmonisation of common competition rules. While the objective was to have the heads of state formally adopt these rules at the Ninth Ordinary Session of the Assembly of the African Union, which was held in Ghana in July 2007, this matter is still pending (Schlumberger, 2010:34). This is further inhibited by the fact that no regional or AU competition rules and arbitration procedures have been implemented to support the implementation of the YD. No community treaty has been implemented in Africa that would ensure that competition in the African market is not distorted and that markets operate as efficiently as possible within a single economic market. In addition, no International Convention on Competition Law for across the border trade currently exists, making this hindrance particularly difficult to overcome. Unlike the Directorate

General for Competition in Europe there is also no super national authority to enforce a single set of competition rules within Africa. An important distinction between the YD and the EU regulatory regime is that a single set of EU competition rules apply to air services within the EU whilst intra-African air services within the scope of the YD will remain the subject of treaties between African states by means of BASAs. International air services present complications when considered from the traditional competition Structure-Conduct-Performance (SCP) approach as competition authorities in different jurisdictions may have diverging ideas on how such competition rules would be enforced and under what local laws (Vermooten, 2008). Richman and Lyle (in Myburgh *et al.*, 2006) state that the enforcement of competition rules will prevent unfair competition and ensure that passengers derive ongoing benefit from the liberalisation of air routes;

- **Limited skilled manpower:** currently many civil aviation and airport authorities do not have the appropriately skilled manpower due to lack of financial resources. Although, African aviation is not new to the loss of skilled manpower, there has been a significant upward increase in the loss of professional and skilled manpower in the last five to six years, *inter alia*, pilots, safety inspectors, engineers and aircraft technicians. At the Second Session of the Conference of the Ministers Responsible for Transport held in Angola in 2011 it was highlighted that the current trend of brain drain would continue and get even worse as the demand for highly skilled manpower and professional staff increased with the anticipated growth in the sector. This in turn, would have a negative impact on the overall growth of African air transport. The main factors contributing to the high rate of brain drain were ranging from significant traffic growth in the last decade in certain markets, such as the Asia Pacific and the Middle East resulting in an exodus of professionals and highly skilled employees from Africa; limited training capacity offered on the Continent; continued instability of African airlines to manpower poaching by large airlines, in particular from the Middle East (African Union, 2011c);

- **Infrastructure, safety and security concerns:** the issue of aviation safety and security was considered important by the YD, which made it one of the criteria of eligibility of an air carrier to operate air services. Several articles of the YD address safety and security directly and indirectly. Article 5.1, for example, notes that a state may unilaterally limit the volume of traffic, the types of aircraft to be operated or the number of flights per week for environmental, safety, technical or other special considerations. Article 6.9 declares that the eligibility criteria for a designated airline to operate under the YD are that the airline must be capable of demonstrating its ability to maintain standards at least equal to ICAO and to respond to any query from any state to which it provides air services. The analysis by Schlumberger (2010) on the quality and progress of safety oversight in Africa revealed that the majority of regional economic communities had taken only minor steps in this regard and that most regions of Sub-Saharan Africa rated as poor in relation to safety. Thus, the current situation with respect to safety oversight in Africa could be considered as one of the main obstacles to implementation of the YD (Schlumberger, 2010:52);
- **Excessive protection of national carriers:** the current situation in Africa concerning the liberalisation of intra-African air services reflects a heterogeneous picture. On the one hand there are those states that maintain a small, often struggling carrier and generally remain very protective in their bilaterals. By not applying the principles of the YD, they aim at regulating access, capacity and frequency so as to limit competition, which keeps tariffs at high levels. On the other hand there are two groups of countries that actively support the liberalisation of air services: the first group comprises states that have strong and often market-dominant air carriers, while the second group is represented by states that have lost or have never had a significant national carrier (Schlumberger, 2010:38). Mozambique is a clear example of a conflict between the interests of tourists and those of the national airline. The Mozambican government has recognised the importance of tourism to its national economy, however, it continues to protect the national airline, LAM, by restricting competition on international routes. The

negative effect of these restrictions is seen in excessive fares: return flights to Maputo from Johannesburg are 163% more expensive than return flights to Durban from Johannesburg, despite a similar distance between the country-pairs (Myburgh *et al.*, 2006:8);

- Due to **capacity and bilateral constraints** in certain parts of Africa, points either on a North/South or East/West axis can only be accessed via hubs outside the Continent, which makes no business or economic sense (ICAO, 2010);
- **Lack of an effective enforcement mechanism:** although there is a Monitoring Body, as stipulated under Articles 9.1 to 9.3 of the YD, that assesses and oversees the implementation of the Yamoussoukro Decision, its role in enforcing the Decision has been ineffectual. The Monitoring Body has met only a few times since its legal creation (in Ethiopia, 2004 and South Africa in 2005 among others); its infrequent meetings are thus an indication of the overall slow pace of the implementation of the YD (Schlumberger, 2010:35). It must be noted, that the Monitoring Body relies on the willingness of the states to cooperate as it does not have any enforcement rights on its own. To ensure successful implementation of the YD, Article 9.4 provides that an African air transport executing agency should be established. The AFCAC was entrusted with the functions of the Executing Agency in 2007. To date, it has not enlarged on details of either the competition rules and regulations, or the arbitration procedures and the dispute settlement mechanisms (Schlumberger, 2010:37). It can therefore be concluded that strong intergovernmental institutions, which are practically non-existent in Africa, are essential for the successful continent-wide implementation of the YD; solving this issue may assist in solving many of the hindrances discussed above.

3.2.7 Measures to help accelerate African air services liberalisation

The following measures or conditions play an important role in accelerating the implementation of the Decision. It must be noted that most African countries adopt their own level and pace of incorporating these measures into their policy documents. The

various economic groupings in Africa, such as ECA, the RECs¹⁴ and the African Union among others, have attempted to address some of the measures in an effort to bridge the gaps and accelerate air transport liberalisation (Meshela, 2006:2):

- **Integrated African air transport policy:** the air transport industry in Africa can only survive a fiercely competitive environment if it is backed up by such a policy. A Draft African Common Aviation Policy was presented at the Second Session of the African Union Conference of the Ministers Responsible for Air Transport in November 2011 in Angola (African Union, 2011b);
- **Development and harmonisation of competition rules and dispute settlement mechanisms on a continental basis:** the First Ordinary Session of the Ministers Responsible for Air Transport in 2005 concluded that harmonisation of the rules for liberalising air transport was necessary, as the fragmented state of the Continent was hindering the full implementation of the Decision (African Union, 2005). The first real attempt to enact regional competition law was undertaken by COMESA. COMESA's draft competition regulations and those prepared by SADC were adopted in 2004 as a common draft by the Ministers responsible for Civil Aviation in COMESA, EAC and SADC (COMESA, 2005:3). The formulation of a harmonised set of rules governing competition is necessary at the regional level to avoid the emergence of sub-regional blocks and to enable the uniform implementation of the Decision (Ssamula & Venter, 2005:281). To date, the absence of the competition rules is regarded as a missing element in the implementation of the YD (Schlumberger, 2010:32). As discussed earlier this is a complex issue given that the competition authorities derive their mandates from local legislation and currently no International Convention on Competition Law exists, which can only be applied if markets are "internalised" under the jurisdiction of a single Competition Authority;

¹⁴ REC - Regional Economic Community

- **Provision of the necessary technical assistance:** towards capacity building, including training, development of appropriate policy regulation and setting up of relevant institutional organisations, in the air transport sector at national and sub-regional levels (ECA, 2003:12);
- **Dissemination of information** related to the liberalisation of air transport markets, as well as private sector participation in the development of the air transport industry, should be intensified among the YD countries (ECA, 2003:12);
- **Strengthening the institutional capacity of the Monitoring Body** by allocating enough resources to it should be given due attention so that the implementation of the Decision can be accelerated (Muinde, 2006:4);
- **Infrastructure development:** it is clear from several studies (Myburgh *et al.*, 2006; Velia, Van Bastern & Dykes, 2008; Ndhlovu & Ricover, 2009) that liberalisation will have a significant impact on infrastructure development. A plan of action to achieve balanced regional development needs to be put in place, taking into account the different views on funding, ownership and revenue base for infrastructure within the African Continent.
- **Safety and security:** the complexities of addressing and monitoring safety standards dictate that harmonising an air safety regulatory framework is of paramount importance. Aviation policies should be amended to ensure that only airworthy aircraft are allowed to enter the market (Ndhlovu & Ricover, 2009:78). One of the strong elements of the YD is its focus on safety and security. However, this has become the main obstacle to timely implementation as many African states do not, or only marginally, comply with ICAO's safety and security standards and recommended practices (Schlumberger, 2010:13);
- Steps that can be taken to **strengthen national airlines** include: separating the airline from the state bureaucracy, a step which does not require privatisation but rather the application of commercial principles such as entering into mergers,

alliances, joint ventures and lease agreements; as well as the removal of ownership restrictions (Myburgh *et al.*, 2006:10);

- **Removing barriers to liberalisation** (such as relaxing the immigration formalities and foreign exchange control among others). Three sub-regions, ECOWAS, CEMAC and EAC, have made considerable progress in enhancing the movement of people across regional borders (Ndomo, 2009:20). The latter two have instituted a regional passport. This is a clear example of the fragmented African aviation market, where liberalisation initiatives are driven by a number of economic groupings; however, to effect continent-wide removal of barriers to liberalisation, their efforts should be streamlined and unified to achieve the YD objectives.

To summarise, the Decision is a relatively ambitious framework that aims at opening up air services between African states, thus creating “open skies” in Africa; however, most of the said states have not yet implemented the YD, a decade after its adoption. The implementation has been hampered by numerous obstacles ranging from the excessive protection of national carriers to a lack of competition rules; nonetheless, on a small scale, progress has been made by those like-minded states that have applied the principles of the YD. Tables 3.1 and 3.2 provide an overview of the size of the Yamoussoukro agreement in terms of the traffic covered by its members and its share within total international traffic. Traffic data are for 2005.

Table 3.1: Traffic relations of the individual members of the YD agreement

Members	Traffic with the other members of the YD (pax)	Contribution of each member to the total traffic of the YD agreement (%)	Total international traffic of the member (pax)	Share of the YD agreement within total international traffic of the member (%)
Algeria	222 944	1.2	4 083 938	5.5
Angola	197 771	1.0	495 437	39.9
Benin	450 248	2.4	672 974	66.9
Botswana	276 233	1.5	313 343	88.2
Burkina Faso	232 057	1.2	356 615	65.1
Burundi	94 935	0.5	106 611	89.0
Cameroon	562 863	3.0	950 434	59.2



Members	Traffic with the other members of the YD (pax)	Contribution of each member to the total traffic of the YD agreement (%)	Total international traffic of the member (pax)	Share of the YD agreement within total international traffic of the member (%)
Cape Verde	34 593	0.2	316 256	10.9
Central African Republic	64 976	0.3	102 365	63.5
Chad	125 075	0.7	196 983	63.5
Comoros	128 203	0.7	463 065	27.7
Congo Dem. Rep.	216 926	1.1	380 052	57.1
Côte d'Ivoire	1 078 835	5.7	1 479 501	72.9
Djibouti	126 921	0.7	298 326	42.5
Egypt	589 874	3.1	8 367 133	7.0
Equatorial Guinea	145 084	0.8	230 232	63.0
Eritrea	50 606	0.3	196 512	25.8
Ethiopia	324 847	1.7	901 033	36.1
Gabon	353 746	1.9	596 909	59.3
Gambia	248 450	1.3	299 625	82.9
Ghana	665 476	3.5	1 214 241	54.8
Guinea	256 595	1.4	359 191	71.4
Guinea Bissau	37 744	0.2	68 330	55.2
Kenya	1 285 849	6.8	2 646 410	48.6
Lesotho	36 405	0.2	38 419	94.8
Liberia	106 167	0.6	124 572	85.2
Libya	481 296	2.5	1 415 448	34.0
Madagascar	133 065	0.7	495 468	26.9
Malawi	209 103	1.1	279 114	74.9
Mali	592 871	3.1	815 999	72.7
Mauritania	88 769	0.5	245 745	36.1
Mauritius	296 762	1.6	1 875 972	15.8
Mozambique	276 546	1.5	352 760	78.4
Namibia	360 495	1.9	564 499	63.9
Niger	217 511	1.1	293 223	74.2
Nigeria	991 821	5.2	2 214 913	44.8
Rwanda	208 997	1.1	249 567	83.7
Sao Tome and Principe	26 168	0.1	57 010	45.9
Senegal	662 101	3.5	1 410 482	46.9
Seychelles	78 449	0.4	368 082	21.3
Sierra Leone	224 136	1.2	334 806	66.9
Somalia	65 653	0.3	97 523	67.3
South Africa	2 804 484	14.8	7 891 998	35.5
Sudan	315 885	1.7	1 227 321	25.7
Swaziland	66 728	0.4	69 635	95.8
Tanzania	572 602	3.0	1 079 603	53.0
Togo	644 290	3.4	815 262	79.0
Tunisia	350 884	1.9	3 943 564	8.9

Members	Traffic with the other members of the YD (pax)	Contribution of each member to the total traffic of the YD agreement (%)	Total international traffic of the member (pax)	Share of the YD agreement within total international traffic of the member (%)
Uganda	395 829	2.1	626,431	63.2
Zambia	444 751	2.3	561 946	79.1
Zimbabwe	522 161	2.8	721 888	72.3

Source: WTO (2007)

Table 3.2: Traffic covered by the YD agreement in the context of international traffic

Total traffic covered by the YD agreement (pax)	Total international traffic (pax)	Share of YD agreement within total international traffic (%)
9 472 390	495 343 012	1.9

Source: WTO (2007)

Implementation of the Decision has encountered two opposing realities. Execution in terms of carrying out public policy has seen little progress at the intra-African level; many of the key policy elements are still missing or exist only on paper, such as competition rules and arbitration procedures. At the same time, in terms of operational implementation, many examples can be seen of countries (Uganda, Ethiopia, Kenya, South Africa) opening up by applying the YD at the bilateral level (Schlumberger, 2010:172). According to the World Bank study (2010), about two-thirds of African countries are willing to apply the YD because they see little value in protecting their own markets from outside competition.

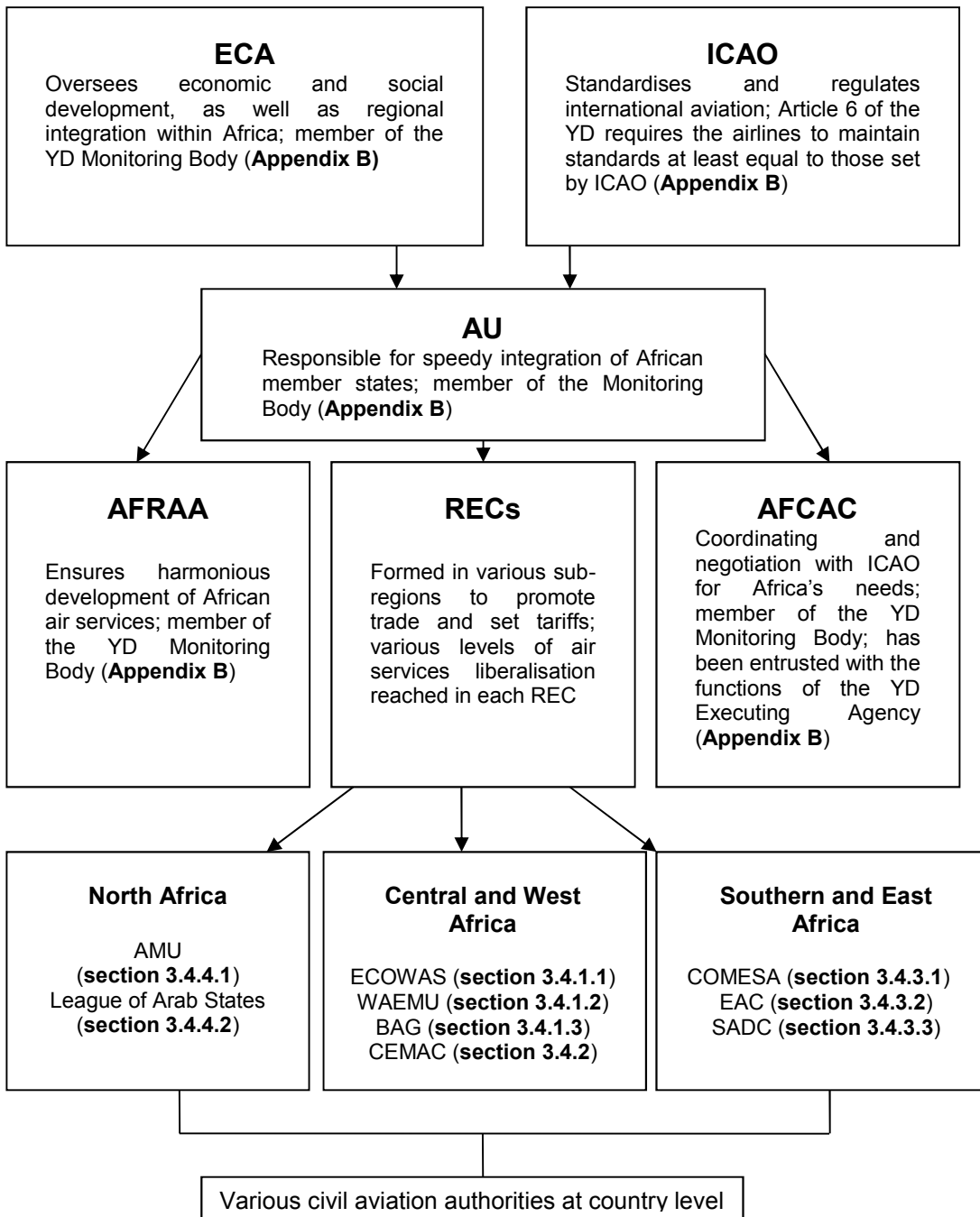
The African states recognised that the implementation of the YD depended mainly on regional initiatives that were to be carried out by the RECs (ICAO, 2003). The next section therefore describes the institutional frameworks that govern the implementation process of the Decision on regional and sub-regional levels, as well as the roles and functions of the organisations that have been instrumental in pushing the implementation of the YD forward.

3.3 ORGANISATIONS INVOLVED IN IMPLEMENTING THE YD WITHIN AFRICA

There are many institutions and regional organisations within the African Continent that govern the progress of the implementation of the Decision. Some of these were set up to regulate and standardise the aviation industry, while others were formed to accelerate the implementation of the YD. The importance of the regional economic groupings in the implementation of the Decision was recognised by the African states in 2004 at the Worldwide Air Transport Conference: Challenges and Opportunities of Liberalisation. It was highlighted there that the implementation of the YD should be carried out through five possible groupings: the AMU, ECOWAS, CEMAC, SADC and COMESA (ICAO, 2003). However, in some instances other regional organisations, such as the League of Arab States, WAEMU, BAG and EAC that play an instrumental role in the liberalisation of air transport in Africa will also be examined.

A description of the institutions and organisations, their respective roles in opening up Africa's skies and the progress that has been made in sub-regional and regional implementation of the YD is presented below. To make this section more logical, figure 3.2 summarises these institutions; table 3.3 presents the various groupings and organisations related to the implementation of the Decision while providing an overview of the membership of the African countries in relation to them.

Figure 3.2: Institutions and organisations linked to the YD



Source: adopted from Ssamula (2008)

Table 3.3 provides an overview of the membership of the African countries in the respective regional groupings, instrumental in the progress achieved in the implementation of the YD, and highlights the overlaps within the groupings. It is important

to note: the South African Department of Transport groups the existing South African – African bilaterals into four mutually exclusive regions, namely, the SADC, West, East and North African regions in all its official documents. These groupings are not based on the regional groupings or geographical location and are also presented in table 3.3. For the purposes of the empirical research, which required mutually exclusive groupings due to the selected research methodology in the form of a fixed one-way panel regression, the grouping of the regions followed the DOT approach.

Table 3.3: Matrix of African countries in the context of regional groupings

Country	Regional groupings and organisations								SA's DOT grouping			
	ECOWAS	WAEMU	BAG	CEMAC	COMESA	SADC	EAC	AMU	SADC Region	West Region	East Region	North Region
Algeria								▲				▲
Angola					▲	▲			▲			
Benin		▲								▲		
Botswana						▲			▲			
Burkina Faso		▲								▲		
Burundi					▲		▲				▲	
Cameroon				▲						▲		
Cape Verde	▲		▲									
Central African Republic				▲						▲		
Chad				▲						▲		
Comoros					▲						▲	
Congo				▲						▲		
Congo, the Democratic Republic					▲	▲			▲			
Côte d'Ivoire		▲								▲		
Djibouti					▲							
Egypt					▲							▲
Equatorial Guinea				▲								
Eritrea					▲							
Ethiopia					▲						▲	
Gabon				▲						▲		
Gambia	▲		▲							▲		
Ghana	▲		▲							▲		
Guinea	▲		▲									
Guinea-Bissau		▲										
Kenya					▲		▲				▲	
Lesotho						▲			▲			
Liberia	▲		▲							▲		
Libya					▲							▲
Madagascar					▲	▲			▲			
Malawi					▲	▲			▲			
Mali		▲								▲		
Mauritania								▲		▲		

Country	Regional groupings and organisations								SA's DOT grouping			
	ECOWAS	WAEMU	BAG	CEMAC	COMESA	SADC	EAC	AMU	SADC Region	West Region	East Region	North Region
Mauritius					▲	▲			▲			
Morocco								▲				▲
Mozambique						▲			▲			
Namibia						▲			▲			
Niger		▲								▲		
Nigeria	▲		▲							▲		
Rwanda					▲		▲				▲	
Sao Tome and Principe												
Senegal		▲								▲		
Seychelles					▲	▲			▲			
Sierra Leone			▲							▲		
Somalia											▲	
South Africa						▲						
Sudan					▲						▲	
Swaziland					▲	▲			▲			
Tanzania						▲	▲		▲			
Togo		▲								▲		
Tunisia								▲				▲
Uganda					▲		▲				▲	
Zambia					▲	▲			▲			
Zimbabwe					▲	▲			▲			

Source: Various¹⁵

Institutions and organisations involved in speeding up the process of the YD implementation, as well as their main functions in relation to the YD, are discussed in Appendix B. In summary, the implementation of the YD has made little progress over the past nine years on a continent-wide basis, given the various challenges and obstacles discussed above. However, varying progress, spearheaded by several key organisations in conjunction with regional groupings, has been achieved on a regional basis. These instrumental organisations and their roles in moving the YD forward are comprehensively discussed in the subsequent section.

¹⁵ Various sources were used to construct the table: AMU (2011); BAGASOO (2011); CEMAC (2011); COMESA (2011); EAC (2011); ECOWAS (2011); SADC (2011) and WAEMU (2011).

3.4 REGIONAL IMPLEMENTATION OF THE DECISION

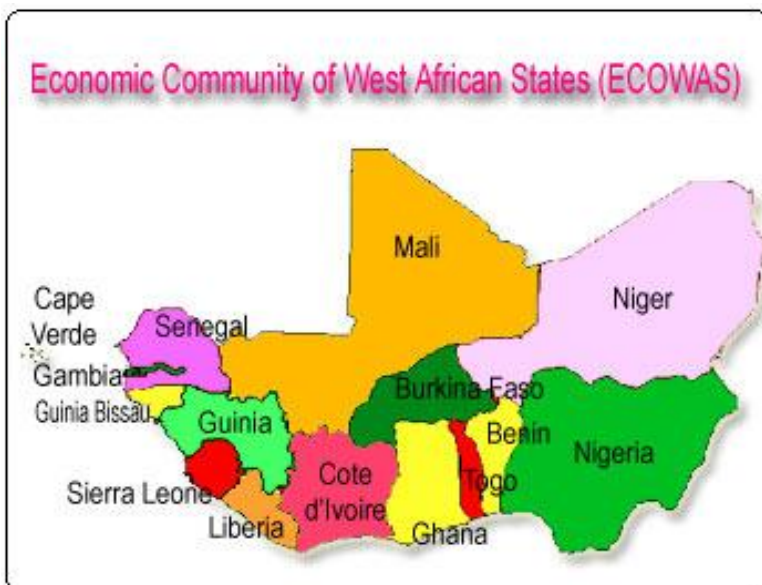
It was stated earlier that the African Union has recognised the importance of each REC or regional economic grouping, as referred to in several documents, in moving forward the implementation of the YD within each REC, as well as between the RECs. For the purposes of this study, the focus will fall on five regional economic groupings, namely the AMU, ECOWAS, CEMAC, SADC and COMESA as well as several other regional organisations that play a role in the liberalisation of air transport in Africa, such as the League of Arab States, BAG, WAEMU and EAC.

3.4.1 West Africa's progress in implementing the Decision

3.4.1.1 Economic Community of West African States

The West African states can be grouped into several economic and/or political organisations. The largest, in terms of the number of members, is the Economic Community of West African States (ECOWAS), which encompasses 15 West African countries as depicted in figure 3.3.

Figure 3.3: ECOWAS member states



Source: ECOWAS (2011)

However, in relation to air transport policy and the implementation of the YD, the West African states have split into two distinct groups: the West African Economic and Monetary Unit (WAEMU)¹⁶ and the Banjul Accord Group (BAG)¹⁷. It is important to emphasise that all three organisations play an instrumental role in driving the implementation of the YD, which will be discussed below.

In March 2001, Ministers responsible for Civil Aviation in the 23 West and Central African countries met in Bamako, Mali to discuss the steps towards the implementation of their air transport policy. This resulted in the Bamako Action Plan which aimed to:

- Strengthen the capacity of civil aviation authorities to enable them to undertake the economic and technical regulation of civil aviation more effectively;
- Harmonise the legal and institutional framework of air transport;
- Explore options for mechanisms to ensure that oversight of the industry is carried out on a cost-effective and sustainable basis at both state and regional levels.

Based on the Action Plan, project secretariats were established at ECOWAS and CEMAC (ECOWAS & CEMAC, 2004:4).

In February 2003, the Council of Ministers for the Implementation of the Yamoussoukro Decision in West and Central Africa met in Lome, Togo. However, in spite of strong declarations in support of the YD, including requests to the ministers of foreign affairs of member states to take urgent practical measures to fast-track the exchange of diplomatic notes on the mutual consent of the designation of airlines, no significant progress was made in taking concrete steps towards implementation. Despite this, the Air Transport

¹⁶ WAEMU comprises eight French-speaking West African states: Benin, Burkina Faso, Ivory Coast, Mali, Niger, Senegal, Togo and Guinea-Bissau (WAEMU, 2011).

¹⁷ BAG comprises seven predominantly English-speaking West African states: Cape Verde, the Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone (BAGASOO, 2011).

Economic Regulation Harmonisation Committee was established to steer the process of developing common air transport economic regulations for West and Central Africa and to periodically monitor the implementation of the YD at state level.

Notwithstanding several inter-ministerial meetings, the various studies and reports prepared, as well as the financial support by international donors, such as the World Bank and the African Development Bank, ECOWAS has not adopted any legally binding legislation or regulation that could be interpreted as a step towards implementation of the YD (Schlumberger, 2010:75).

3.4.1.2 West African Economic and Monetary Union

On 27 June 2002, the statutory Council of Ministers of Transport of the WAEMU adopted the first package of a common air transport programme in Dakar while the final, second package was adopted on 29 November in Lome. The programme focused on four main items:

- Ensuring that infrastructure and equipment are in compliance with ICAO SARP;
- Harmonising air transport regulations;
- Enhancing air transport systems;
- Liberalising air transport services (WAEMU in Schlumberger, 2010).

In the eight years since the inception of the common air transport programme, WAEMU has made progress by instituting several regulations. In summary, the Union has adopted most of the regulations necessary to implement its union-wide air transport liberalisation programme, which at the same time complied with or exceeded the provisions and requirements of the YD (Schlumberger, 2010:80). These are presented in Appendix C.

It is clearly demonstrated, in Appendix C, that WAEMU has established most of the necessary regulatory framework that implements the main provisions of the YD within its territory and even goes beyond the Decision in relation to market access. The integration of WAEMU's air services market into the intra-African market, which is covered by the YD, is not effectively dealt with: even though each regulation related to air transport includes a reference to the YD, it also limits the scope of air transport policy to WAEMU territory. This indicates that WAEMU maintains reservations about embracing the full, continent-wide implementation of the YD (Schlumberger, 2010:81-82).

Nevertheless, WAEMU's full liberalisation of air services within its territory should be considered as a successful step towards the ultimate implementation of the YD. A future regulation by the Council of Ministers of Transport of the WAEMU, which clarifies access by non-WAEMU carriers, would finalise this step (Schlumberger, 2010:82).

3.4.1.3 Banjul Accord Group

On 29 January 2004, seven West African states signed the BAG Agreement (WTO, 2006:20). Article 3.1 explicitly states implementation of the Decision as an objective. However, while the intent of the YD is to liberalise access to air transport markets in Africa, the BAG Agreement seems to emphasise airline cooperation rather than aiming to focus primarily on liberalisation and free competition as stipulated in the YD. In addition to the Agreement, the BAG Plenary produced two documents: the Multilateral Air Services Agreement (MASA¹⁸) and the MOU for the implementation of a technical cooperation project (COSCAP) for BAG (BAG in Schlumberger, 2010). Appendix D summarises the main components of MASA, which is, in essence, an identical application of the YD for BAG member states.

¹⁸ MASA was signed on 29 January 2004 by all seven West African states that signed the BAG agreement (WTO, 2006)

In summary, by means of the Multilateral Air Services Agreement, BAG has established a liberalised regime that is fully compatible with the provisions and obligations of the YD. Its clear obligations and focus on safety and security, as well as the simplified dispute settlement mechanism, should be an inspiration to implement the YD within the Banjul Accord Group region. It also serves as a good example that liberalised air transport markets may not require costly and complicated institutional supervisory mechanisms, such as the executing agency and monitoring body of the YD (Schlumberger, 2010:86). MASA offers a clear example of a liberalised air transport market that did not require institutional supervisory mechanisms to be fully and successfully implemented.

3.4.2 Central Africa's progress in implementing the Decision

Central Africa has one regional economic community, the Economic and Monetary Community of Central Africa (CEMAC), which is made up of six central African states¹⁹. The CEMAC states developed three measures before the YD was signed or took full effect in the CEMAC region, which were aimed at developing the region's air transport sector.

These were:

- The Agreement on Air Transport²⁰;
- The Civil Aviation Code;
- The Joint Competition Regulation (Schlumberger, 2010:88).

¹⁹ The legal basis of CEMAC is a treaty that was signed in 1994 between Cameroon, Central African Republic, Chad, Republic of the Congo, Equatorial Guinea and Gabon (World Bank, 2011a).

²⁰ The Agreement on Air Transport was adopted on 18 August 1999 and is a programme that aims to develop CEMAC's intra-community air transport sector in order to establish greater access within the region and to promote economic and commercial relations between member states (ICAO, 2002:5).

Several provisions of the Agreement on Air Transport are similar, and even identical, to the YD and are presented in Appendix E. In addition, the CEMAC Agreement on Air Transport includes provisions in relation to the implementation of the intra-community liberalisation, such as the establishment of an executing agency responsible for implementing and supervising the liberalised air transport policy (CEMAC Article 21 in Schlumberger, 2010) as well as for granting permission to non-member states to join this framework and to participate in CEMAC's air transport market (CEMAC Article 24 in Schlumberger, 2010).

Given the objective of establishing a coordinated and harmonised legal framework for the air transport sector, in July 2000, the CEMAC Council of Ministers responsible for Transport adopted the CEMAC Civil Aviation Code. The new Code incorporated most of the provisions that had been decided just one year earlier in the CEMAC Agreement on Air Transport. In terms of the YD, all major provisions that have been developed for the CEMAC member states in the Agreement on Air Transport have been included in the Code (Schlumberger, 2010:90), as summarised in Appendix E.

The third element of liberalisation of air services among the CEMAC member states is the Joint Competition Regulation, which was adopted on 25 June 1999 by the CEMAC Council of Ministers responsible for Transport, the main objective of which was to prevent any form of interference with free and efficient competition (CEMAC in Schlumberger, 2010).

It is therefore clear from the summary in Appendix E and the above discussion, that CEMAC, in a manner similar to that of WAEMU, has implemented most of the necessary framework that constitutes the main provisions of the YD.

3.4.3 Southern and East Africa's progress in implementing the Decision

Southern and East Africa contain three regional groupings that address the air transport sector, namely a) the Common Market for Eastern and Southern Africa (COMESA),

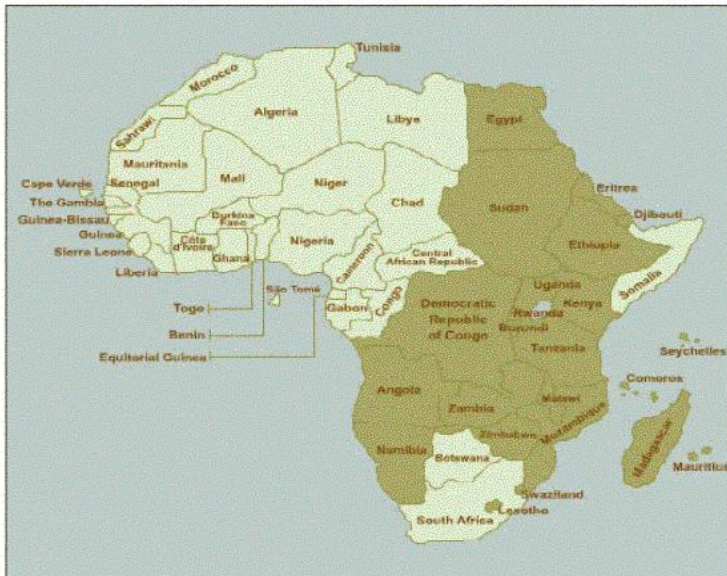
comprising 19 countries; b) Southern African Development Community (SADC), comprising 15 countries and c) East African Community (EAC), comprising five countries as depicted in figures 3.4 to 3.6. The progress that has been achieved in air transport liberalisation pertaining to the implementation of the YD in each of the regional groupings is covered in sections 3.4.3.1 to 3.4.3.3 below.

3.4.3.1 COMESA

COMESA's policy on air transport was already well established in the COMESA Treaty under Article 84, which noted that member states should undertake to develop coordinated and complementary transport and communication policies (COMESA, 1994:45). In 1999, running practically parallel to the YD, COMESA's Council of Ministers issued the Regulation for the Implementation of the Liberalised Air Transport Industry, according to which, air transportation within COMESA had to be liberalised in two phases. Phase I, which was initiated in October 1999, a) agreed to the inception of free movement of air cargo and non-scheduled passenger services within COMESA; b) introduced unrestricted movement of intra-COMESA scheduled passenger services with a frequency limit of up to two daily flights between any city-pair within COMESA and c) adopted multiple designations and the elimination of capacity restrictions (COMESA, 1999).

Figure 3.4: COMESA member states

COMESA
Common Market of Eastern and Southern Africa



Source: Wikipedia (2011)

The air transport liberalisation progress was achieved within one year of the commencement of Phase I. Following this, in October 2000, Phase II became the new policy. This in essence introduced free movement of air transport services within COMESA and liberalised air services far beyond the scope of the YD as summarised in Appendix F.

Despite the clear and concise liberalisation programme, its adoption was stalled in 2001 when COMESA's Council of Ministers decided to "defer the implementation of Phase II, awaiting the preparation of competition regulations" (COMESA, 2005:3). Subsequently, the implementation of liberalised air services within COMESA as specified in Phase II remained pending for several years. By 2004, only 12 member states had implemented Phase I while Djibouti alone had opened its airspace to COMESA carriers in line with Phase II (COMESA, 2004:22).

In November 2006, COMESA, SADC and EAC Ministers responsible for Civil Aviation jointly adopted the Guidelines, Provisions and Procedures for the Implementation of the Regulations for Competition in Air Transport Services within COMESA, EAC and SADC

(SADC, 2008). According to these guidelines, implementation of the competition regulations included the establishment of a joint competition authority that would be responsible for monitoring the implementation of the YD and competition regulations in air transport services within the three regional groupings. To date, the implementation of the joint competition regulations remains pending in all three regional groupings, despite the fact that its establishment was formally agreed upon by the heads of states at the 12th summit of COMESA in May 2007 (Schlumberger, 2010:99).

Thus, almost ten years after COMESA liberalised air services within its territory by instituting Phase II, application of this liberalisation policy is still pending. Currently, the understanding of all COMESA member states is that the establishment of a joint competition authority remains the missing link before liberalisation of air services can be applied (Schlumberger, 2010:100).

3.4.3.2 EAC

The EAC Treaty entered into force on 7 July 2000, initially comprising Uganda, Kenya and Tanzania, and expanded in 2007 when Burundi and Rwanda joined (Schlumberger, 2010:105). The objectives of the EAC civil aviation programme were to harmonise civil aviation policies among partner states and to facilitate the establishment of joint air services (EAC, 1999:73-74). The main steps outlined were:

- Adopting common policies to develop civil air transport in collaboration with other relevant organisations, such as ICAO and airline associations;
- Liberalising the granting of air traffic rights for passenger and cargo operations;
- Harmonising civil aviation rules and regulations;
- Establishing a system of air traffic control for the upper flight levels;
- Coordinating the flight schedules of designated carriers;

- Applying ICAO guidelines to determine user charges for scheduled air services;
- Adopting common aircraft and technical standards.

Some of these steps match elements of the YD, which was signed the same year as the Treaty of the EAC, but the latter is limited to liberalising the granting of air traffic rights for passenger and cargo operations and does not further specify the extent of liberalisation. The concrete objectives of establishing joint air services and facilitating the efficient use of aircraft are elements of the YD (Schlumberger, 2010:107).

Figure 3.5: EAC member states



Source: United Nations Multimedia (2011)

Even though the EAC Treaty did not incorporate all principles of the YD, the EAC's Sectoral Council on Transport, Communications and Meteorology worked continuously on several key measures of the YD. The most important was the application of a liberalised air transport policy for scheduled air services. While other RECs developed specific regulations that liberalised air services within their REC, for example, WAEMU and BAG, the EAC chose to focus on amending the BASAs between the partner states. The 11th Meeting of the Council of Ministers of the EAC formally approved several measures pertinent to air transport (EAC, 2006:61):

- The amendments to the bilaterals between the EAC states towards full implementation of the YD on air transport liberalisation have been approved and must be incorporated into the respective bilaterals;
- The amendments include full liberalisation of air services between any points within the territory of the EAC. Following the principles of the YD, no restriction shall be posted on frequency, capacity or types of aircraft operated by designated EAC carriers;
- The heads of civil aviation and airport authorities of each partner state are authorised and instructed to renegotiate the funding of civil aviation safety and airport projects with their respective ministers of finance and to seek other resources for such projects (ECA, 2006:62);
- The revised civil aviation regulations for the EAC are to be promulgated to facilitate establishment of the East African Civil Aviation Safety and Security Agency;
- The EAC Secretariat must develop a comprehensive funding arrangement for the priority airport projects, for consideration by the Sectoral Council on Transport, Communications and Meteorology.

The EAC took the first step towards implementing these decisions and directives on 18 April 2007, when the Extraordinary Council of Ministers Meeting approved the establishment of the EAC's Civil Aviation Safety and Security Agency. The main objective of the Agency was to promote the safe, secure and efficient use and development of civil aviation by having the partner states meet their responsibilities and obligations under the Chicago Convention (CASSOA, 2011).

The EAC has displayed great interest in and motivation towards liberalising and developing air services within its territory; however the key element of the EAC's

approach towards implementing the YD, namely the amendment of BASAs between EAC states, is still pending. Currently the existing bilateral regime among the EAC partner states is more restrictive than the one established by the YD framework (Schlumberger, 2010:110).

In essence, the creation of the regional Civil Aviation Safety and Security Oversight Agency can be seen as an important step, not only for the implementation of the YD, but also for the development of international air services by any EAC state. However, it is only a tool and the revision of the BASAs remains the more essential step (Schlumberger, 2010:110).

3.4.3.3 SADC

SADC member states signed the Protocol on Transport, Communications and Meteorology in 1996. Its main aim was the establishment of transport and communication systems which were efficient, cost-effective, predictable, environmentally sustainable and meeting the needs of the users. In particular, the Protocol focused on the elimination of the hindrances and impediments to the movement of passengers, goods and services. Liberalisation of air services was mentioned in Article 9.2 of the Protocol, titled Civil Aviation Policy, which noted that member states would develop a harmonised regional aviation policy that included the “gradual liberalisation of intra-regional air transport markets for the SADC airlines” (SADC, 1996:55). While the majority of the other regional economic groupings, as discussed above, have agreed upon or issued legislation aimed at implementing the YD, the SADC did not further define liberalisation in relation to implementation of the YD. Even though the SADC never formally agreed on intra-regional liberalisation of its air services, it has worked continuously to implement the YD, to which all SADC member states are bound, with the exceptions of Madagascar, South Africa and Swaziland (see Appendix A). As discussed previously, the South African government reconfirmed its dedication to the implementation of the YD at numerous meetings and conferences and has, to date, implemented certain YD principles on a

bilateral level with willing states. The Airlift Strategy of 2006 outlined a five-year liberalisation target pertaining to the implementation of the YD principles.

Figure 3.6: SADC member states



Source: Department of Trade and Industry (2011)

The SADC Protocol's sub-regional initiatives on the liberalisation of intra-Africa air transport are aligned with the principles of the YD (Department of Transport, 2006:5). The actions undertaken by the SADC through the Southern African Transport and Telecommunication Commission (SATCC-TU) and COMESA have so far helped to create awareness and facilitated the formulation of the necessary regulatory instruments for the implementation of the Decision. Some of the actions were: a) establishment of COMESA as a follow-up mechanism; b) harmonisation of air transport policies, including the rules governing civil aviation; c) running a number of workshops with the objective of enhancing the understanding of the Decision, as well as effective ways of speeding up its implementation; and d) the establishment of a joint COMESA-SADC unit to monitor the implementation of the YD (ECA, 2003:2-5).

Thus far, COMESA has been very active in creating guidelines for Member States on the implementation of the liberalisation policies in the air transport sector. It has also

established a follow-up and monitoring mechanism and has conducted and participated in numerous joint workshops with the SADC and EAC (ECA, 2003:4-6).

The EAC together with COMESA and SADC has been actively involved in various initiatives directed at speeding up the progress of the Decision. The SADC air transport subcommittee and the EAC transport subcommittee have been working very closely and collaboratively towards the implementation and monitoring of the air transport competition rules in accordance with the terms of the YD (ECA, 2003:5). In 2005, it was decided, by the African Ministers responsible for Air Transport, that the African Union, in collaboration with AFCAC and AFRAA, would assist with the dissemination of competition rules for Africa (African Union, 2005:6).

The only regional aspect of the implementation of the YD is the joint COMESA, SADC and EAC approach toward preparing regulations for competition in air transport services. Even though the three RECs designed a defined road map for implementation on several occasions, the adoption of the joint competition regulations and the establishment of a joint competition authority are still pending (Schlumberger, 2010:103).

In summary, the SADC has not taken any steps towards implementing the YD that can be considered binding for its member states; however it has acknowledged the Decision and its objectives in liberalising air transportation across the Continent. The SADC member states therefore cannot be considered to have liberalised air transport in the spirit of the YD.

3.4.4 North Africa's progress in implementing the Decision

Over the last few decades, two regional organisations have played a role in trying to regulate and liberalise air transport in North Africa, namely the Arab Maghreb Union (AMU) and the League of Arab States.

3.4.4.1 The AMU

The AMU was created on 17 February 1989 by a treaty that was signed in Morocco by the leaders of Algeria, Libya, Mauritania, Morocco and Tunisia and was modelled after the European Community. Its main objectives included integration of the member states and their people with the goals of achieving prosperity and progress, preserving peace, developing a common policy in certain domains and gradually achieving free movement of people and transfer of services, goods and capital (MEDEA Institute, 2011). Since then, the AMU states have not implemented the liberalisation of air services within the Union, even though all of them, with the exception of Morocco, were signatory states of the YD. The initiative to liberalise came from European countries that wanted to harmonize and gradually liberalise their air transport system in the Mediterranean region (Schlumberger, 2010:63). Only later, in 2007, did the AMU Transport Ministers recognise the need for liberalisation in their region and set up a committee at a meeting in Morocco to examine Morocco's proposal for an "open skies" agreement. Despite this, no consideration of the YD and the liberalisation of air traffic to Sub-Saharan Africa are currently in evidence (Schlumberger, 2010:65).

3.4.4.2 The League of Arab States

The League of Arab States or the Arab League was founded in Cairo on 22 March 1945 by a treaty that was signed by the heads of state of seven Arab nations: Egypt, Iraq, Jordan, Lebanon, Saudi Arabia, the Syrian Arab Republic and the Republic of Yemen; the purpose of which was to strengthen relations between the member states, coordinate their policies, safeguard their independence and sovereignty and deal with issues of general concern that were in the interests of the Arab countries (League of Arab States, 2011). Several decades later, the Arab Civil Aviation Commission was created, based on an agreement of the Council of Arab Transport Ministers reached in 1999, which had as its aim the liberalising of intra-Arab air services over a period of five years by gradually reducing restrictions for carriers of member states of the Commission. This resulted in the signing of 17 "open skies" agreements among member states that included Bahrain,

Jordan, Lebanon, Morocco, Oman, Qatar, Syria and the United Arab Emirates (Kotaite, 2006). In 2004, under the leadership of the Commission, several Arab League members, namely Bahrain, Egypt, Iraq, Jordan, Lebanon, Oman, Palestine, Somalia, Sudan, Syria, Tunisia and the Republic of Yemen signed a multilateral agreement on the liberalisation of air transport between the Arab states known as the Arab League Open Skies Agreement (Arab Civil Aviation Commission, 2004). In essence, the Agreement provides the same, or as in the case of seventh freedom rights, even greater liberalisation of air services than the YD. It goes further and defines the competition rules and the conflict resolution procedure. The provisions of the Agreement do not conflict with the Decision however, the Agreement has been ratified only by six Arab states to date, namely Syria, Jordan, Palestine, the Republic of Yemen, UAE and Lebanon (Schlumberger, 2010:70).

In summary, of the six Arab states on the African Continent (Algeria, Egypt, Libya, Mauritania, Morocco and Tunisia) only four are bound by the Decision. Morocco never signed the YD, but has nevertheless since then pursued an “open skies” policy and has called for liberalisation within the AMU. Mauritania, on the other hand, deposited its ratification instruments too late. Nevertheless, the development dynamics of the Arab League towards liberalisation of air services and the Arab League Open Skies Agreement are strong foundations on which the liberalisation of air services among African states can grow (Schlumberger, 2010:71).

3.4.5 Summary overview of the regional progress achieved in the implementation of the YD

The importance of regional and sub-regional organisations in speeding up the process of the YD implementation towards intra-African liberalisation, as well as the progress achieved thus far, was comprehensively covered in sections 3.3 and 3.4. Numerous organisations and regional groupings have been instrumental in moving the Decision forward despite many hindrances and challenges. Nevertheless, the Continent still remains highly fragmented and progress achieved in various regional groupings paints a very heterogeneous picture. Of vital importance is the African Union’s involvement in

ensuring that the liberalisation of air services that had been achieved within each regional grouping should eventually stimulate such liberalisation between these groupings with the main goal of complete continent-wide implementation.

In West Africa, no significant progress has been achieved by the umbrella organisation, ECOWAS, in the implementation of the Decision, despite numerous ministerial meetings, studies and reports prepared, as well as financial assistance from international donors. Small regional organisations within West Africa, on the other hand, have established an air services regime that is in line with key provisions of the Decision. BAG has agreed to the implementation of MASA, which in essence, can be seen as the acknowledgement and reaffirmation of the YD.

WAEMU went beyond the underlying principles of the YD in the liberalisation of the air services regime; in particular, to market access, by granting its members all freedoms including cabotage; however the scope is limited to the WAEMU region. This could be regarded as a possible obstacle towards continent-wide implementation of the YD, but on the other hand, WAEMU's full liberalisation of air services within its territory must be considered a successful step towards the ultimate implementation of the YD. A future regulation by the statutory Council of Ministers of Transport of the WAEMU which clarifies access by non-WAEMU carriers would finalise this step.

In Central Africa, three main measures have been instrumental in the regions' pursuit of air services liberalisation: a) the Agreement on Air Transport; b) the CEMAC Civil Aviation Code; and c) the Joint Competition Regulation. The first element in the form of the Agreement of Air Transport encompasses provisions similar, and in some cases identical, to the ones of the YD. The Agreement promotes intra-African liberalisation by permitting non-member states to join the framework and to participate in CEMAC's air transport market. The second important element, with respect to liberalisation, was the establishment of a coordinated and harmonised framework, namely the CEMAC Civil Aviation Code in which all vital elements of the YD have been incorporated. The third element, the Joint Competition Regulation, was created to prevent any form of

interference in free and efficient competition. It is clear that CEMAC has implemented a regulatory framework that is compliant with the YD provisions.

In Southern and East Africa, COMESA, during 2000, achieved progress by creating a framework that introduced free movement of air transport services within the region and liberalised air services beyond the scope of the YD, in particular with reference to market access that allowed COMESA carriers to operate between any destinations in the region. Currently however, the main stumbling block in the implementation of such liberalisation in the region, which would go further than that of the YD, remains the lack of the establishment of a joint competition authority.

EAC has chosen a strategy of revising bilaterals with its partner states to conform to the YD. The implementation of this strategy is still pending and the current bilateral regime among the EAC partner states is much more restrictive than that which has been established by the YD framework.

Of the three regional groupings, SADC has achieved the least progress and has taken no steps towards implementing the YD that can be considered as binding for its member states. It has however acknowledged the YD and its objectives in liberalising air transportation across the Continent. The SADC member states therefore cannot be considered to have liberalised air transport in the spirit of the YD.

Lastly, no progress in the implementation of the Decision has been made in North Africa. Almost a decade after the adoption of the YD, the Arab states of North Africa have not begun liberalising air services among themselves, even after the conclusion of the Arab League Open Skies Agreement. Morocco, to date, has been the most active country in the pursuit of air services liberalisation.

In his study, Schlumberger (2010) rated the regional economic communities or groupings in terms of their progress towards implementation of the YD, as well as the extent of liberalisation achieved; the results are summarised in table 3.4 below. This indicates that

CEMAC and WAEMU received the highest liberalisation implementation score, followed by BAG.

Table 3.4: Grading of RECs on their liberalisation of air services²¹

<i>Community</i>	<i>General status of Yamoussoukro Decision implementation</i>	<i>Status of air services liberalization</i>	<i>Overall implementation score^a</i>
AMU	No implementation has occurred.	No liberalization within the AMU has been initiated, but the need for liberalization is recognized.	1
BAG	The principles of the Yamoussoukro Decision have been agreed upon in the MASA.	Up to fifth freedom rights have been granted, tariffs are free, and capacity and frequency are open.	4
CEMAC	The principles of the Yamoussoukro Decision have been agreed upon in an air transport program. Some minor restrictions remain.	Up to fifth freedom rights have been granted, tariffs are free, and capacity and frequency are open. A maximum of two carriers per state may participate.	5
COMESA	Full liberalization has been agreed on (Legal Notice No. 2), but application and implementation remain pending until a joint competition authority has been established.	Liberalization is pending. Once applied, operators may be able to serve any destination (all freedoms) and tariffs, capacity, and frequency will be free.	3
EAC	The EAC Council issued a directive to amend bilaterals among EAC states to conform to the Yamoussoukro Decision.	Air services are not liberalized because the amendments to bilaterals remain pending.	3
SADC	No steps toward implementation have been taken, even though SADC's civil aviation policy includes the gradual liberalization of air services within SADC.	No liberalization has been initiated within SADC.	2
WAEMU	The Yamoussoukro Decision has been fully implemented.	All freedoms, including cabotage, have been granted. Tariffs have been liberalized.	5

Source: Schlumberger (2010:120)

In November 2011 the Draft African Common Civil Aviation Policy was presented in Angola at the Second Session of the African Union Conference of Ministers Responsible for Transport. This step could be interpreted as another important milestone in the pursuit of intra-African air liberalisation on the Continent. However, it must be noted that little success has been achieved in the past regarding efforts to improve civil aviation in Africa due to lack of political will, as well as numerous institutional and procedural constraints (African Union, 2011b:10).

²¹ The rating scale ranges from no progress towards liberalisation (1) to full implementation of liberalisation (5).

3.5 IMPACT OF LIBERALISATION

The liberalisation of air services, or as it is referred to in the United States, airline deregulation, has had a significant impact on the growth of air transport markets in the developed world. The African Continent started to liberalise its markets 20 years later with different progress in various regions. Despite slow progress, there are indications that liberalisation has already had an impact on African air transport services (Schlumberger, 2010:115).

3.5.1 General traffic analysis

In his research, Schlumberger (2010:119-121) analyses air traffic to measure the impact of liberalisation, focusing on two main markets for each regional economic community: international traffic in terms of seat capacity within a REC and international traffic between REC countries and countries in Africa that do not belong to the given REC. The traffic data provides an estimated seat capacity for 2001, 2004 and 2007; the change in seat capacity has been measured for two periods: between 2001 and 2004 and between 2004 and 2007. However, it is important to note that most measures to implement the YD were only achieved in recent years and, given the worldwide drop in air traffic after 11 September 2001, the latter dataset provides more evidence on the impact of liberalisation. The change in seat capacity over two periods is indicated in table 3.5.

Table 3.5: Estimated number of seats on international flights within and between the RECs

REC	Number of seats			Growth 2001–07 (percent)	Growth 2004–07 (percent)
	2001	2004	2007		
<i>International flights within RECS</i>					
AMU	799,719	943,345	1,294,189	8.4	11.1
BAG	549,105	425,427	568,306	0.6	10.1
CEMAC	498,708	495,158	152,984	-17.9	-32.4
COMESA	2,952,372	2,745,938	4,484,675	7.2	17.8
EAC	1,384,894	1,458,539	1,751,811	4.0	6.3
SADC	4,033,387	4,465,842	5,663,632	5.8	8.2
WAEMU	983,167	849,818	763,472	-4.1	-3.5
<i>International flights between RECS</i>					
AMU	617,747	879,595	1,641,705	17.7	23.1
BAG	1,911,861	1,573,379	2,130,360	1.8	10.6
CEMAC	1,206,595	1,044,355	1,266,196	0.8	6.6
COMESA	1,675,538	2,075,502	2,961,023	10.0	12.6
EAC	623,131	815,557	1,069,575	9.4	9.5
SADC	1,660,856	1,980,463	2,296,398	5.6	5.1
WAEMU	1,877,875	1,907,297	2,352,456	3.8	7.2

Source: Schlumberger (2010:121). Data was procured from the Airline Data Group and calculated by Schlumberger.

At the first glance, the changes in offered seats could lead to the erroneous conclusion that liberalisation has had a negative effect on traffic. Air traffic within two of the most liberalised regions (CEMAC and WAEMU) dropped significantly between 2004 and 2007, while traffic between the RECs dropped slightly between 2001 and 2004 though it experienced positive growth in the period between 2004 and 2007. However, the second most liberalised region, BAG, saw a healthy growth in traffic, especially during the years when liberalisation took effect (2004 to 2007). The drop in traffic in West and Central Africa was not a direct effect of the YD, but can be attributed to other factors as discussed in sections below (Schlumberger, 2010).

3.5.2 Development in West Africa

As comprehensively discussed above, West Africa has done well in implementing the principles of the YD: WAEMU has fully liberalised its internal market and BAG has applied most of the principles in the MASA. Schlumberger (2010:130-133) examined the regional development of West African countries by grouping small players and reviewing dominant countries separately.

The first group of small countries comprises Benin, Burkina Faso, Guinea, Guinea-Bissau, Mali, Mauritania, Niger and Togo, most of which are members of WAEMU. The development of air transport in these countries has been unstable, consisting only of the entrance of several carriers with low capacities as indicated in table 3.6. In Mali and Togo for example, the air transport industry has completely disappeared after several unsuccessful attempts to develop new operators.

Table 3.6: West Africa fleet analysis, 1997 to 2007

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Benin	0	0	0	1	1	118	1	1	108	1	3	324
Burkina Faso	1	1	85	1	1	85	1	4	369	1	1	189
Cape Verde	1	5	367	2	5	353	1	5	508	1	6	554
Gambia, The	2	12	1,370	3	7	1,040	5	9	1,433	2	7	789
Ghana	1	5	748	1	6	1,312	3	12	1,600	4	8	670
Guinea	3	5	318	2	4	274	3	3	220	2	2	172
Guinea Bissau	1	1	44	0	0	0	0	0	0	1	1	48
Côte d'Ivoire	2	16	2,613	1	11	2,395	1	4	385	3	7	546
Liberia	1	1	40	3	4	409	2	2	100	1	2	96
Mali	1	2	168	1	1	65	1	2	180	0	0	0
Mauritania	1	4	254	1	2	158	1	5	566	1	5	545
Niger	0	0	0	1	0	0	0	0	0	1	0	0
Nigeria	12	83	10,431	15	64	7,316	20	78	10,285	20	98	11,789
Senegal	1	1	37	1	1	50	2	5	452	2	5	452
Sierra Leone	0	0	0	0	0	0	8	24	5,596	4	13	3,731
Togo	1	3	225	1	1	281	1	1	46	0	0	0
Total	28	139	16,700	34	108	13,856	50	155	21,848	44	158	19,905

Source: Schlumberger (2010:131)

The second group comprises Cape Verde and Senegal, where the flag carriers have been able to develop their markets and have performed relatively well. An example is Cape Verde's national carrier, Transportes Aereos de Cabo Verde, which has reduced its focus on the regional market in West Africa to concentrate on long-haul routes to Europe and the United States (Sterling Merchant Finance Ltd in Schlumberger, 2010).

The third group of countries is composed of Gambia, Liberia and Sierra Leone. The flag of convenience²² phenomenon has become particularly important to these countries. In the Gambia, the fleet size and seat capacity has remained at a high level, in excess of the country's market potential from 1997 to 2004. However, it had dropped significantly by 2007 due to authorities efforts to remove the flag of convenience registration from the country's registry.

Three countries, Ivory Coast, Ghana and Nigeria are examples of countries where specific circumstances have influenced market and fleet development. A clear example is Ghana, whose fleet size and seat capacity increased steadily from 1997 to 2004 as seen in table 3.6. Thereafter, fleet size and seat capacity fell significantly, leaving only eight aircraft and 670 seats in 2007. This was followed by the collapse of legacy carrier, Ghana Airways, which suffered a freeze as regards traffic rights with the United States because of safety concerns.

Overall, the region underwent a fundamental change, from a few major national air carriers to various small operators. There is no evidence that liberalisation contributed to the disappearance of unstable flag carriers. However, the YD provided both the political and regulatory basis for several carriers, such as Air Senegal International, to be able to expand into abandoned markets. In addition, several carriers, both from within the West African RECs, as well as from other RECs, have expanded their air services with fifth freedom operations (Schlumberger, 2010:133).

3.5.3 Development in Central Africa

Schlumberger (2010:134-137) categorised the Central African region into two main groups: the CEMAC countries and the Democratic Republic of the Congo, and the small island states of São Tome and Príncipe. The DRC is the largest and most populated

²² All carriers whose head offices are located outside the country of registration and that do not operate listed air services to and from their country of registration (Schlumberger, 2010:125).

country of the region and accounts for approximately half the region's fleet and seat capacity, although the numbers fluctuate erratically. This is mainly attributed to periods of relative peace alternating with internal fighting.

An example of a CEMAC country is Gabon, where initially Air Gabon was a successful operator, but experienced serious financial and operational problems, which later led to its collapse. The disappearance of the national carrier has resulted in the progressive phasing out of wide-body aircraft in the region. The remaining seat capacity is reflected by the few niche carriers operating local routes using smaller aircraft, as depicted in table 3.7.

Table 3.7: Central Africa fleet analysis, 1997 to 2007

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Cameroon	2	5	551	2	7	751	2	6	1,162	2	5	730
Central African Republic	0	0	0	1	3	90	0	0	0	0	0	0
Chad	1	1	44	1	1	44	1	1	87	1	1	72
Congo, Rep. of,	3	9	455	2	7	590	4	10	669	4	13	803
Congo, Dem. Rep. of,	9	22	1,777	2	9	965	12	25	2,871	9	27	2,984
Equatorial Guinea	2	2	64	3	4	212	4	9	447	3	7	301
Gabon	2	8	944	4	11	1,113	7	20	1,692	5	17	1,022
São Tomé and Príncipe	1	1	118	0	0	0	2	3	315	0	0	0
Total	20	48	3,953	15	42	3,765	32	74	7,243	24	70	5,912

Source: Schlumberger (2010:135)

Even though the CEMAC countries are fully liberalised, there is little evidence that the YD has facilitated the establishment of new carriers in the region. However, the Decision has clearly facilitated the ability of carriers from other RECs to operate in Central Africa. An example is the Cameroon-Gabon route operated by Ethiopian Airlines, a carrier registered in Ethiopia (Schlumberger, 2010:136).

3.5.4 Development in East Africa

East Africa's air transport has experienced remarkable growth, as indicated in table 3.8, both in terms of number of carriers and markets. This growth is unevenly distributed as only two countries, Kenya and Ethiopia, represent about two-thirds of the region's seat capacity. Both countries operate strong national carriers. In terms of RECs, Kenya is within the EAC, where Burundi, Rwanda, Tanzania and Uganda are relatively small players in the regional air transport market. COMESA, which includes most East African states, is dominated by Ethiopia.

Table 3.8: East Africa fleet analysis, 1997 to 2007

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Djibouti	1	2	222	3	8	735	1	1	48	3	12	1,443
Eritrea	0	0	0	0	0	0	1	2	412	1	2	403
Ethiopia	1	17	1,668	1	17	1,920	1	25	3,558	2	25	3,547
Kenya	5	17	1,914	7	28	3,894	10	40	4,219	10	56	6,045
Rwanda	0	0	0	1	1	79	1	1	142	1	1	37
Somalia	0	0	0	1	1	164	0	0	0	1	1	48
Sudan	3	12	1,478	3	121	2,213	3	15	1,359	5	21	2,169
Tanzania	2	6	390	2	7	516	4	14	916	4	10	674
Uganda	1	3	249	0	0	0	1	1	103	1	1	103
Total	13	57	5,921	18	73	9,521	22	99	10,757	28	1,29	14,469

Source: Schlumberger (2010:138)

Ethiopian Airlines' fleet experienced steady growth with a 50% increase in the number of aircraft from 1997 to 2007, while the seat capacity doubled over this period. This illustrates Ethiopian's strategic priorities in favour of fostering the development of long-haul routes. At the same time, Ethiopian Airlines continues to establish its intra-African network which, in the past, aimed at playing a feeder role for its intercontinental services (Schlumberger, 2010:139).

Another important example in this region is Uganda, which opened up its air transport market completely after its national carrier was liquidated in 2002. While its own fleet remained stagnant, traffic by other carriers, which have been allowed to operate quite

freely, has risen steadily. Uganda is a clear instance of a country where liberalised air transport policy has led to substantial growth in tourism traffic and receipts, with traffic increasing by 82% to 350 000 tourists between 2000 and 2004 (Myburgh *et al.*, 2006:10).

East Africa has experienced a strong upward growth in its air transport services since 2001. Air services liberalisation has in particular helped two main carriers, Ethiopian Airlines and Kenya Airways, to expand their regional operations. As a consequence, fifth freedom operations from carriers outside of either COMESA or EAC have lost importance in the region, suggesting a lesser influence of the continent-wide YD. On a positive note, the strong growth of intra-regional traffic, including fifth freedom operations, confirms that regional liberalisation of air services is taking place in East Africa (Schlumberger, 2010:140).

3.5.5 Development in Southern Africa

Southern Africa's air transport industry is predominantly located in SADC countries, which have made relatively little progress in implementing the YD on a regional basis. Several SADC states, which are also members of COMESA (Angola, Malawi, Swaziland, Zambia and Zimbabwe), have made far more progress in liberalising their air services. In his research, Schlumberger (2010:140-144) found that one of the prime factors underlying the SADC's progress is the South African carriers' domination of the air transport market, which represented 68% of the region's aircraft in 1997 and more than 80% in 2007.

As stated previously, the South African Airlift Strategy is aimed at accelerating the implementation of the YD. In pursuit of this objective, South Africa has bilaterally liberalised air transport services with a number of African states, where existing bilateral air services agreements have been revised, based on key elements of the Decision. These countries include Benin, Botswana, Burkina Faso, Cameroon, Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Libya, Rwanda, Senegal, Sierra Leone, Togo and Uganda (Sithole, 2012).

At a regional level, as indicated in table 3.9, the number of carriers, aircraft and seats has grown steadily, resulting in a 60% increase in carriers, a 112% increase in aircraft and a 72% increase in seat capacity. These figures reflect stronger growth on regional and domestic routes.

Table 3.9: Southern Africa fleet analysis, 1997 to 2007

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Angola	4	21	2,136	4	20	2,238	4	15	1,976	8	33	2,818
Botswana	1	2	84	1	3	138	1	4	211	1	5	281
Lesotho	1	1	44	0	0	0	0	0	0	0	0	0
Malawi	1	2	177	1	2	177	1	2	177	1	3	287
Mozambique	1	4	654	1	5	613	1	5	520	3	9	886
Namibia	2	6	1,435	2	6	680	2	5	679	2	7	1,044
South Africa	8	85	13,960	16	161	21,853	20	206	27,364	19	220	28,039
Swaziland	1	2	156	2	3	660	2	8	2,275	1	4	503
Zambia	2	4	360	0	0	0	1	1	48	1	2	236
Zimbabwe	2	11	1,374	1	6	836	1	6	836	1	9	968
Total	23	138	20,380	28	206	27,195	33	252	34,086	37	292	35,062

Source: Schlumberger (2010:141)

Botswana's fleet experienced steady growth, with just one carrier operating, but displaying growth in the number of aircraft and its overall seat capacity. In the case of Botswana, the government has legislation in place which gives a monopoly to Air Botswana to operate air services to or from and within the country. The Air Botswana Act of 1988 precludes licensing of any other local airline in the country to operate commercial air services. This is considered a major impediment to the liberalisation process (Ndhlovu & Ricover, 2009:22).

Schlumberger's research (2010:143) indicates that the Southern African region provides little evidence of any impact stemming from the liberalisation of air services. The SADC countries remain dominated by the South African national carrier and as a consequence, fifth freedom operations from both the SADC and other RECs have declined steeply.

3.5.6 Development in North Africa

As pointed out earlier, North Africa has made little progress towards liberalisation and no liberalisation of air services took place within the AMU. Nonetheless, some countries have, achieved a degree of domestic liberalisation by allowing more than one carrier, some of which have begun to serve international destinations (Schlumberger, 2010:127).

In Algeria, the national carrier, Air Algerie, benefited for several decades from a monopoly both in the domestic and international markets. Domestic liberalisation in 2000 resulted in the entry of new carriers with more than a 70% increase in aircraft and seat capacity. By 2004 only two carriers remained in the domestic market while by 2007, Algeria's air transport industry had reverted to a *de facto* monopoly as seen in table 3.10 below.

Table 3.10: North Africa fleet analysis, 1997 to 2007

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Algeria	1	40	5,035	5	68	8,885	2	55	6,692	1	58	7,854
Egypt, Arab Rep. of	9	56	10,289	15	71	12,445	8	63	11,418	12	72	12,229
Libya	1	27	2,346	2	21	2,673	7	58	4,969	9	51	5,369
Morocco	1	28	4,176	1	41	5,617	3	49	7,364	4	73	11,303
Tunisia	3	31	4,533	3	49	7,317	5	59	9,552	4	49	7,692
Total	15	182	26,379	26	250	36,937	25	284	39,995	30	303	44,447

Source: Schlumberger (2010:129)

Libya experienced steady progress towards liberalisation that resulted in the number of carriers increasing from one in 1997 to nine in 2007 with a doubling of the capacity. Libya seems to have focused on a policy of developing the air transport sector that is competing with sixth freedom flights between West Africa and Europe (Schlumberger, 2010:128).

Morocco appears to adopt a more restrictive policy controlling liberalisation by allowing the introduction of only a few new operators. The number of carriers increased from one in 1997 to four in 2007. The policy seems to have succeeded as the fleet size more than doubled during this period with only a slight increase in capacity.

Tunisia's air carrier development, in terms of fleet size and seat capacity, has fluctuated. This seems to be primarily due to the changing relative competitiveness between Tunisian charter operators and their European counterparts in the international market with regard to Europe (Schlumberger, 2010:130).

The Arab Republic of Egypt is not a member of the AMU but of COMESA. As mentioned earlier, COMESA has made some progress towards liberalisation; however several obstacles prevent it from fully implementing the YD. The number of carriers fluctuated between 1997 and 2007, whereas in contrast, seat capacity remained more or less stable. A variety of factors appeared to account for this fluctuation, such as, *inter alia*, the volatility of the international tourist market due to recurrent security problems (Schlumberger, 2010:130).

In summary, Schlumberger (2010:146-147) highlights three different sets of causes that have influenced the general move towards liberalisation of air services in Africa:

- Worldwide trends towards liberalisation, which had a marked impact on African carriers' long-haul operations, especially through increased competition resulting in lower fares;
- Domestic liberalisation policies that caused the end of domestic monopolies and in some cases, the disappearance of state ownership of flag carriers and the arrival of new, mostly privately owned, entrants on domestic markets, who began competing with legacy carriers for international routes. For example, liberalisation of the South African domestic market in the early 1990s allowed for the entry of two low-cost airlines: Kulula in 2001 and 1time in 2004; on the Lusaka-

Johannesburg route, with respect to Kulula's operations, passenger volumes increased by 38% from April to June 2006 in comparison to the same period in the previous year (Myburgh *et al.*, 2006:8);

- Continent-wide liberalisation of intra-African air services, promoted by the YD and already implemented by some regional economic groupings.

3.6 CONCLUSION

This chapter focused on the main principles of the YD, its overall challenges and hindrances, as well as the progress made towards the implementation of the Decision on a regional basis, with the main objective being to realise continent-wide liberalisation.

The incentive for liberalisation on the Continent has been mainly due to world-wide liberalisation initiatives and their success stories, domestic liberalisation in numerous African states and the adoption of the Decision, already supported and implemented in several economic groupings.

As discussed above, the YD to date remains the most liberal intra-African policy regime initiated by the African Ministers in charge of Civil Aviation, with the main objectives of liberalising the very restrictive intra-African air transport market, dominated by rigid and highly regulated BASAs, as well as consolidating the fragmented African air transport industry. Since the adoption of the Decision, liberalisation initiatives to accelerate the continent-wide integration have thus far been driven by the combined efforts of the AU, ECA, AFCAC, AFRAA and the regional groupings. It must be noted that not all the regional groupings have been instrumental in applying the key principles of the YD or moving it forward, which has resulted in different levels of liberalisation being achieved, ranging from non-implementation in the AMU to, in several instances, such as in the WAEMU and CEMAC, implementation that exceeds the key principles of the YD.

Best practices of several RECs' success stories should serve as an impetus for further integration among the RECs to achieve continent-wide implementation of the YD. There is still a great deal of work to be done as the liberalisation achieved within certain RECs is limited to that particular region. The YD explicitly encourages sub-regional and regional organisations to pursue and intensify their efforts towards full implementation of the Decision. This is necessary, given the current fragmented and heterogeneous state of Africa's air transport market, dominated by restrictive BASAs with varying rules and regulations resulting in poor intra-African connectivity, the insignificant impact of air transport on socio-economic development in the majority of African countries, the high cost of air travel and the substandard quality of air services. The consumer in particular is thus negatively affected, where no alternative mode of transport exists.

It is well known that aside from some parts of Northern and Southern Africa, transport infrastructure on the Continent is frequently characterised by being inadequate, inefficient and expensive as well as of low quality. In many instances, limited or non-existent air access to countries has resulted in the necessity of accessing cities between the South and the North of Africa via points outside of the Continent, which makes no economic or business sense. The solution to the operational problems of the fragmented and poorly connected air transport market would have been the full implementation of the YD, which would remove all restrictions on traffic rights (including fifth freedom), capacity and frequency, designation and tariffs.

Although different levels of liberalisation progress have been achieved within the regional groupings, continent-wide implementation of the Decision has been hampered by numerous obstacles in different regions, ranging from lack of political commitment, protection of the national carrier to incomplete institutional, legal and regulatory frameworks. Positive outcomes can be seen in various regions through increased cooperation among airlines, such as: various codeshares, increases in granting fifth freedom traffic rights, better choices for passengers and a gradual decrease in fares due to fair competition as well as the emergence of new national carriers, such as RwandAir and Gabon Airlines.

In the future, it is important for all the RECs to work together on the speedy finalisation of the continental competition rules and dispute settlement mechanism. This step would eradicate one of the major hindrances to the continent-wide implementation of the YD. In 2008, COMESA, EAC and SADC jointly adopted the Guidelines, Provisions and Procedures for the Implementation of the Regulations for Competition in Air Transport Services for their regions. In November 2011, the Draft African Common Aviation Policy was presented, the adoption and implementation of which would serve as a significant stimulus towards continent-wide implementation of the YD.

Many African governments have been resisting and inhibiting the YD implementation in their countries due to lack of evidence of the potential impact of the Decision. At the same time, international and national secondary research confirms the overall positive impact of the liberalisation on air transport markets. To fill the current knowledge gap of the actual and expected benefits, as well as of the negative impact of liberalisation, information should be disseminated through the relevant workshops and channels. The creation of an “open skies” market in Africa would mean better intra-African connectivity through cost-effective management of airspace, as well as infrastructure development by strengthening air transport’s operations, safety, security and protection of the environment.

In the following chapter, the concepts of a civil aviation system and policy, with particular reference to South Africa are discussed and the South African civil aviation policy development since deregulation in the South African domestic air transport market in 1990 to date is examined. The chapter specifically highlights the main aspects of the Airlift Strategy and the Airlift Implementation Plan which have been instrumental in driving air services liberalisation between South Africa and its like-minded bilateral air counterparts. The relationship between the South African aviation policy in Africa and air passenger traffic flows will also be analysed. The aim of the research is to acquire a clear understanding of the trends pertaining to air passenger traffic flows between South Africa and its bilateral air services counterparts in Africa with regard to the overall and the regional basis. As mentioned previously, the study will focus on four key regions, namely

the SADC and West, East and North African regions in line with the DOT's grouping methodology. The relationship between the South African aviation policy in Africa and air passenger traffic flows will be statistically tested and the results comprehensively discussed in Chapter 7.

CHAPTER 4

THE RELATIONSHIP BETWEEN AVIATION POLICY AND AIR PASSENGER TRAFFIC FLOWS

4.1 INTRODUCTION

Chapter 3 focused on Africa's air transport liberalisation progress, highlighting the importance of the YD and discussed the conditions and requirements for the implementation of the Decision on a continent-wide basis, the progress achieved thus far, as well as the hindrances to the progress of implementing the complex intra-African liberalisation process. The chapter also provided a summarised overview of the various regional and sub-regional organisations and institutions that had been instrumental in moving the Decision forward.

It was previously remarked that South Africa's aviation policy in Africa is guided by its international aviation policy. Numerous studies (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Warnock-Smith & Morrell, 2008; Piermartini & Rousova, 2008; Piermartini & Rousova, 2009; Rousova, 2009; InterVISTAS-EU Consulting, Inc., 2009; Grosso, 2010) have emphasised and substantiated the point that civil aviation is vital to international trade and tourism²³. Given this, it is therefore essential to promote an efficient, reliable and sustainable aviation industry and at the same time maintain control over international air transport services within a well-defined regulatory framework flexible enough to accommodate changing needs and circumstances (Department of Transport, 2008:1).

²³ *Tourism*, according to the World Tourism Organisation's definition, encompasses the activities of persons travelling to and staying in places outside their usual environment for at least one night but not more than one consecutive year for leisure, business and other purposes. This excludes same day visitors (World Tourism Organisation, 2008).

The world's economic and aero-political environment has undergone fundamental changes since the last aviation policy review in South Africa during the early 1990s, ranging from gradual deregulation and liberalisation to multilateral intra-regional liberalisation. The major developments and dynamics that have been taking place around the world in the aviation market were covered in Chapter 2, with those pertinent to Africa being dealt with in Chapter 3.

Since the mid-1990s, the South African government has redefined its main goals and priorities, which have impacted on its civil aviation industry. These goals are designed for improving life for all, through, *inter alia*, economic growth, sustainable development, poverty and unemployment reduction, and are guided by the Accelerated and Shared Growth Initiative of South Africa (ASGI-SA). In line with these, the South African civil aviation policy, among others, must promote tourism and trade, as well as job creation. It also has to take into account the continental integration initiatives, such as those embodied in the African Union and the objectives of the NEPAD (Department of Transport, 2008:1-2).

From an aviation perspective, the adoption and enforcement of the YD illustrate the importance accorded to the stimulation of trade and tourism on the African Continent through a more liberal approach to the regulation of air transport (Department of Transport, 2008:1-3).

In this chapter, the concepts of the civil aviation system and policy, with particular reference to South Africa, are explained by looking at the South African civil aviation policy developments since the deregulation of the country's domestic air transport market in 1990 to date. The chapter begins with a brief explanation of the components of the aviation system and their interrelation. This provides the context in relation to the role of the civil aviation policy, as well as stressing its intertwined relationships with the aviation system and the government's broad policy framework. The main aspects of the Airlift Strategy and the Airlift Implementation Plan which have been instrumental in driving liberalisation of air services between South Africa and like-minded bilateral air services

counterparts have been highlighted. In addition to these, the Draft White Paper of 2008 is briefly discussed, and prominence is given to the main aspects directly related to international air transport. In 2006, the South African government adopted a strategic approach whereby the Airlift Strategy was introduced to effectively align the regulatory measures of air transport and those of the Tourism Growth Strategy (TGS). The chapter concludes with a review of the TGS's main areas of focus. This portion of the study will contribute to the body of knowledge of the academic literature on the civil aviation system and policy, and will also bridge a literature gap on the subject with reference to South Africa. To the knowledge of the researcher, no similar overview has been compiled in the context of South Africa.

The relationship between aviation policy, liberalisation and air passenger traffic flows will also be investigated and a brief summary of air transport in Africa, as well as air passenger traffic flow dynamics over the eleven year period, between South Africa and each of the five regional markets will be provided.

4.2 CIVIL AVIATION POLICY AS PART OF THE CIVIL AVIATION SYSTEM

The fundamental objective of civil aviation, as a system, is the safe and efficient conveyance of people and goods from one place to another. Figure 4.1 depicts the functions which together make up the air transport system. The fundamental and interrelated components of this system are: *aviation infrastructure*²⁴, *air transport services*²⁵ and *aircraft operations*²⁶ (Department of Transport, 2008:1-4 & 1-5).

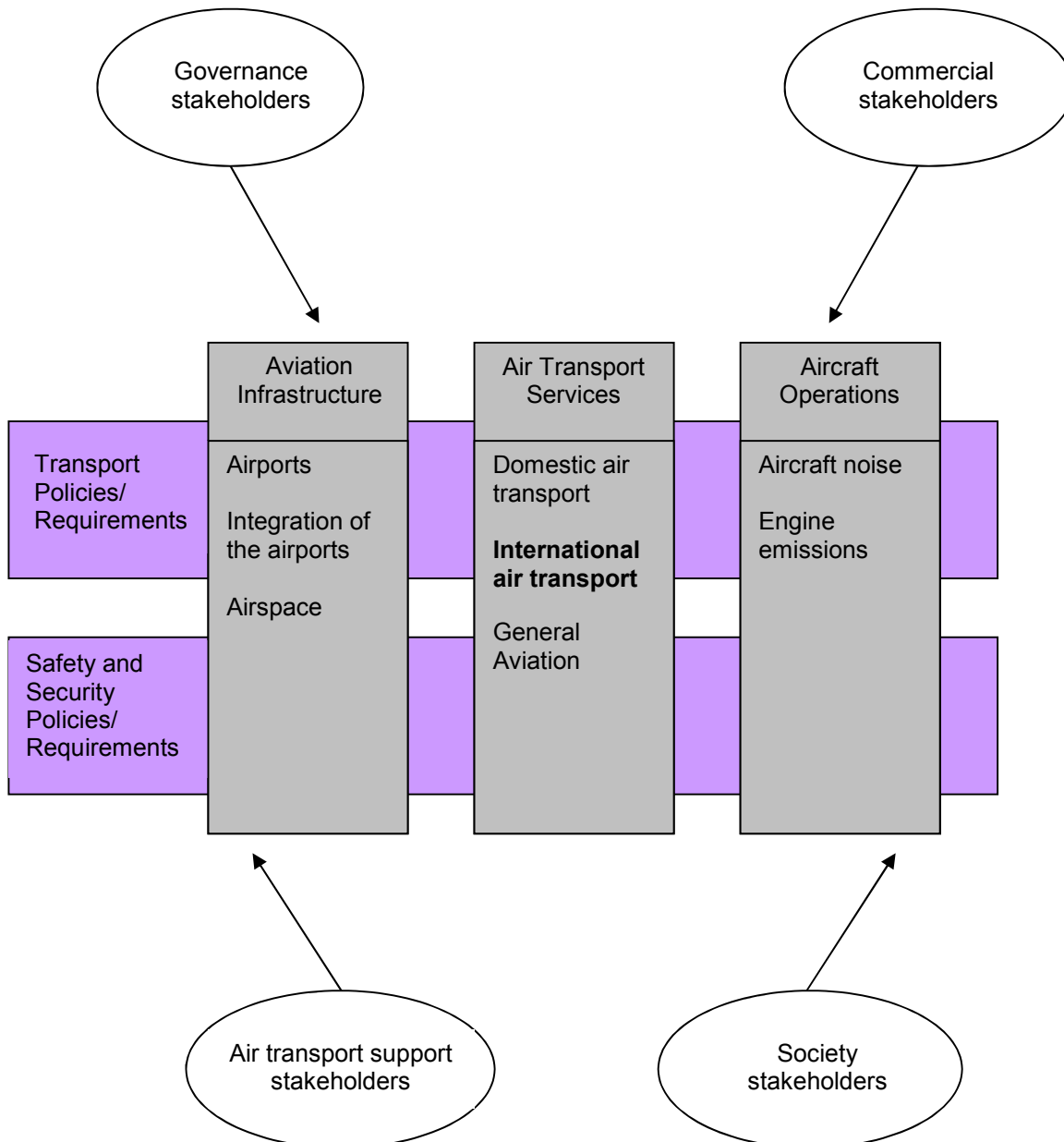
²⁴*Aviation infrastructure* includes facilities for take-off and landing of aircraft, the loading and unloading of passengers and cargo, arranging sufficient space for aircraft movement, including required navigation, air traffic services and information services needed for completing flights safely (Department of Transport, 2008).

²⁵*Air transport services* include the system for the conveyance of people and goods in an orderly, safe and effective manner both domestically and internationally while using the aviation infrastructure and aircraft provided for that purpose (Department of Transport, 2008).

²⁶*Aircraft operations* include the provision and maintenance of aircraft, their operation and other support services (Department of Transport, 2008).

A well-established civil aviation regulatory system is fundamental to the formulation of a country's civil aviation policy. In essence, the regulatory system must govern these three components or subsystems and must be based on the standards and recommended practices of the ICAO, of which South Africa is a founding member (Department of Transport, 2008:1).

Figure 4.1: Civil aviation system



Source: Department of Transport (2008)

Enabling and regulating functions and requirements, *air transport*²⁷ as well as *safety and security*²⁸, affect and govern all three of these components. Additionally, as illustrated in figure 4.1, the air transport system is also influenced by four categories of stakeholders: *governance*²⁹, *commercial*³⁰, *air transport support*³¹ and *society*³² (Department of Transport, 2008:1-5).

The relationship between the South African aviation policy in Africa and air passenger traffic flows, its international air transport policy with particular reference to the intra-African market and the implementation of the YD forms the foundation of this chapter which exclusively examines passenger air services³³.

The above discussion has provided a summarised overview of the civil aviation system, the understanding of which is important as it directly impacts on the country's civil aviation policy. The latter, in turn, cannot be discussed in isolation and should be examined in the context of government's broad policy framework (Department of Transport, 2008:2).

²⁷ *Air transport regulatory function and requirements* comprise policies, legislation and requirements to enable air transport and to satisfy air transport needs, such as infrastructure planning, licensing of air services, allocation of traffic rights internationally, economic considerations and monitoring of financial performance of air carriers (Department of Transport, 2008).

²⁸ *Safety and security regulatory functions and requirements* are policies, legislation and requirements to achieve an appropriate level of safety and security in air transport systems, both on the ground and in flight (Department of Transport, 2008).

²⁹ *Governance stakeholders* are stakeholders, which are responsible for policy, enabling and regulatory legal instruments and carrying out the requirements of the Chicago Convention. In the South African context, these stakeholders are represented mostly by the Department of Transport, as well as the South African Civil Aviation Authority (SACAA), together with the provincial and the municipal government departments responsible for provincial and municipal airports (Department of Transport, 2008).

³⁰ *Commercial stakeholders*, stakeholders associated with buying goods and services, such as aircraft, maintenance and fuel among others. This group includes all air carriers, general aviation enterprises, airport, air traffic and navigational services, aviation training academies, aircraft maintenance organisations and aircraft manufacturers (Department of Transport, 2008).

³¹ *Air transport support stakeholders* facilitate the operational aspects of the civil aviation system such as travel agents, insurance companies, banks and shippers of cargo (Department of Transport, 2008).

³² *Society stakeholders* comprise groups outside the civil aviation system, yet have a direct interest in what takes place inside the system and what the system produces. This group includes passengers, enterprises which use freight services, environmental groups and residents near airports, organised labour and the news media (Department of Transport, 2008).

³³ A *passenger air service* is an air service performed primarily for the transport of passengers (ICAO, 2004:5.3-1).

4.3 CIVIL AVIATION POLICY

4.3.1 Background

Any civil aviation policy can be divided into two distinct areas: domestic and international. “In formulating the South African aviation policy, this distinction has been adopted to emphasise the difference in the policy approach to air travel inside the borders of South Africa and to air travel to foreign destinations. In the case of domestic air transport, Government has the full power of decision over domestic policies, but has to consult or negotiate with other governments on the implementation of international policies” (Department of Transport, 2008:4-3).

The South African domestic civil aviation policy includes issues of transport, aviation safety, airports and airspace. International civil aviation policy focuses on international air transport and relationships with international organisations and other governments or groups of governments (Department of Transport, 1996:31). In dealing with international air transport from a South African point of view, the concept “of national interest” was identified as critical to formulating an international air transport policy that would best serve the people of South Africa. It is recognised that the “national interest” of the country may not necessarily be the same as, or could even be in conflict with, the interests of service providers, consumers, labour or the general public. In particular, the international air transport policy, according to the Department of Transport (2008:6), should provide a trade-off between these various interests:

- “International air transport should facilitate and enhance the expansion of international trade and tourism in general and exports and the tourism industry in particular;
- Economic decisions should, as far as possible, be left to the market to resolve;

- The state’s strategic objective to develop an export-oriented sector, capable of competing in international markets should be pursued;
- An efficient, reliable and sustainable South African aviation industry should be developed and maintained;
- Control should be maintained over international air transport services within a well-defined regulatory framework that is flexible enough to cater to changing needs and circumstances”.

As comprehensively discussed in Chapter 2, the past several decades have been marked by a global trend of moving to a less regulated air transport regime through gradual removal of regulatory restrictions, *inter alia*, covering market access features of BASAs. In line with this trend, the South African government’s policy of protecting SAA’s market share has been relaxed since 2006 as part of the Airlift Strategy in favour of encouraging more inbound tourists to the country. The dynamics in air passenger traffic flows among South Africa and its African bilateral air counterparts over the said time period will be examined in section 4.4.4. To provide a better understanding of the South African aviation policy, the subsequent section provides an overview of its institutional arrangements.

4.3.2 Institutional arrangements of the South African aviation policy

In terms of the Constitution of the Republic of South Africa the President assigns powers and functions to various Ministers. One of the powers vested in the Minister of Transport is the function of policy formulation, with the Department of Transport being responsible for developing and reviewing the national civil aviation policy.

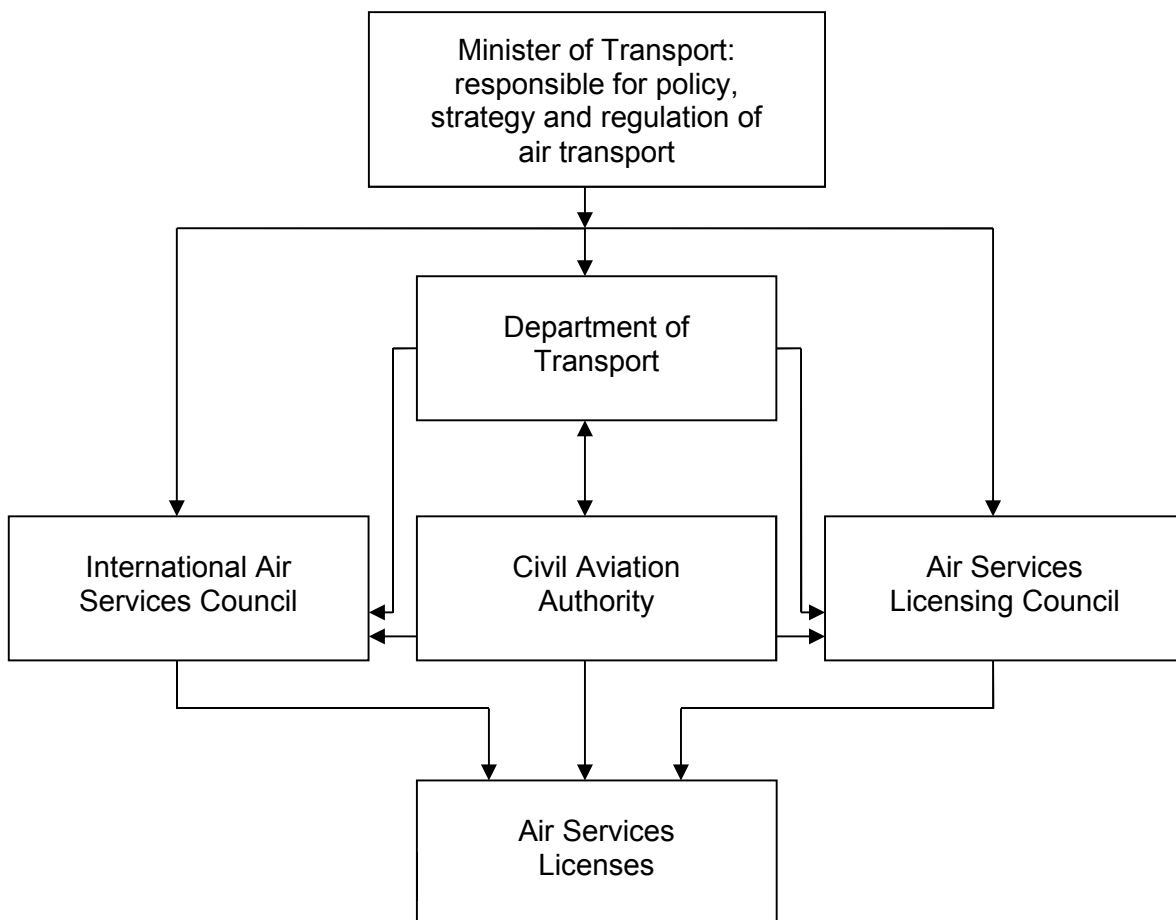
The Air Services Licensing Council (ASLC) and the International Air Services Council (IASC) are responsible for the adjudication of any application to offer air services and for issuing domestic and international air services licenses. Apart from the support that the

DOT provides to the two councils, it is also responsible for the negotiation of bilateral and multilateral air services agreements to enable international air transport services. The South African Civil Aviation Authority is responsible for the regulation of aviation safety and security (Department of Transport, 2008:4-4).

It is important to note that a policy of this nature will of necessity interface with other organs of the state, including areas of concern such as the environment, tourism, national security, the military, local government and regulation of competition (Department of Transport, 2008:1-4).

The relationship between the functional components in the South African context is shown in figure 4.2 below.

Figure 4.2: The functional components of air transport in the South African context



Source: Department of Transport (2008:4-4)

The above preamble provided a brief overview of the complex civil aviation system with its various interrelated and interlinked functional components, as well as highlighting its regulatory function, *inter alia*, in shaping the country's civil aviation policy. The links between civil aviation policy, air transport and tourism, as well as air passenger traffic flows are discussed below.

4.4 CIVIL AVIATION POLICY AND AIR PASSENGER TRAFFIC FLOWS

4.4.1 Introduction

It has long been recognised in the tourism and air transport literature that international air transportation in general, and international air passenger transport in particular, is an important facilitator of travel and tourism (Forsyth, 2008; Papatheodorou, 2008; Warnock-Smith & Morrell, 2008; Warnock-Smith & O'Connell, 2011). The links between tourism and aviation are clear. Many tourists, especially on long distance trips, make use of air transport to travel to and from their destination. By reducing the time required to reach a distant location, air transport is an important determinant of the overall transport cost. Time, on the other hand, is an important determinant of trade and it is a primary factor in determining the mode of transport to distant locations. For this reason, air passenger transport is essential to the development of the international tourism sector, especially to remote locations. At the same time, such transport is critical in setting up and maintaining business relationships between distant economies (Piermartini & Rousova, 2008:1).

The links between tourism and aviation are becoming more explicitly recognised and these influence governments' aviation policy formation, especially in international aviation, which in many countries remains a relatively tightly regulated industry (Forsyth, 2008:73). In South Africa, the government has recognised the importance of tourism and how it is linked to effective air transport development. One of the main objectives of the Airlift Strategy is to align air transport with other national strategies, one of which is the National Tourism Policy. The Airlift Strategy of 2006 will be discussed more comprehensively in section 4.5.2.

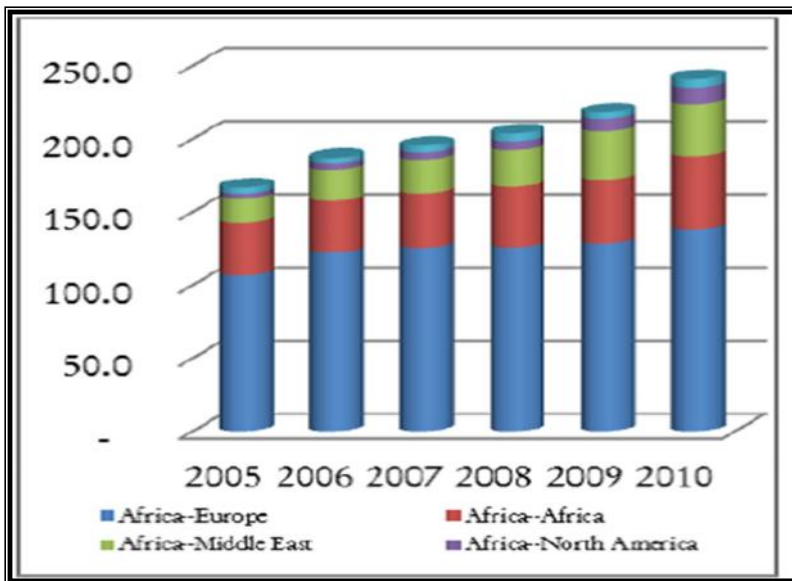
For most of its history, international aviation has been separated from other industries such as telecommunications, financial and maritime services³⁴. International aviation agreements were negotiated between countries with no reference to any impact on other industries, especially tourism. However, cognisance is increasingly being given to the importance of international aviation for tourism, as well as the impact of restrictive aviation policies on air passenger traffic flows and tourism. Many countries are revising their international aviation policies to exploit the benefits of tourism (Forsyth, 2008:73).

4.4.2 Overview of the African air transport market

In Africa, air transport is a crucial mode of transport because of the underdeveloped land transport networks throughout the Continent, where in many instances air transport is the only viable alternative. However, Africa's air transport industry has always been a relatively small player compared to the global industry. In terms of RPKs flown, the intra-African market represents less than 1% of the global market, with the total African revenue passenger-kilometres (intra-African and intercontinental traffic) accounting for only 4.12% of the global RPKs (Schlumberger, 2010:1). Despite this, in 2010, Africa presented the second highest traffic growth region in the world at 12.9% as depicted in figure 4.3 below.

³⁴ Air transport services are excluded from the WTO General Agreement on Trade in Services (GATS). For a discussion on the regulatory environment of the aviation market see Hindley (2004).

Figure 4.3: African traffic growth by regional flow - RPKs (in billions)



Source: Chingosho (2011:8)

The forecast average traffic growth for Africa is projected at over 6% per annum over the next 20 years, with the fastest growth region for Africa projected to be Asia Pacific at 8.1% per annum, followed by North America and the Middle East at 6.4% each. Latin America and intra-Africa are estimated to grow at about 6.0% and 5.1% respectively. The projection indicates that Europe will probably be the slowest growth region at 4.6% (Chingosho, 2011:8).

4.4.3 The impact of air services liberalisation on air passenger traffic flows

The liberalisation of air transport, which has taken place in many regions of the world has, according to numerous studies, demonstrably led to increased levels of air services and lower fares, which in turn stimulates additional traffic volumes and may well induce economic growth and employment (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Piermartini & Rousova, 2008 and 2009; Warnock-Smith & Morrell, 2008; InterVISTAS-EU Consulting, Inc., 2009; Warnock-Smith & O'Connell, 2011). This relationship, illustrated in figure 4.4, has been shown to be causal by a number of studies, described below.

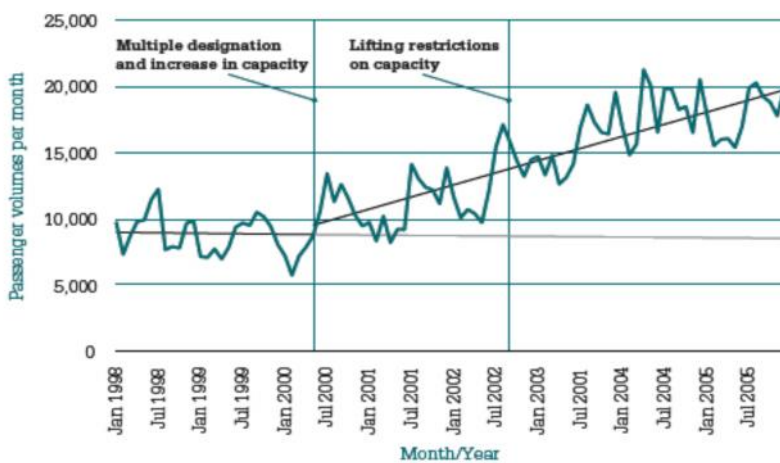
Figure 4.4: Causal relationship between air services liberalisation and economic growth



Sources: InterVISTAS-ga² Consulting, Inc. (2006); InterVISTAS-EU Consulting, Inc. (2009)

Aviation policy is a key determinant of the price and availability of air travel, making it also a central determinant of the total level of tourism and of the patterns of the tourism flows of arrivals by air. Restrictive regulation of aviation has the effect of reducing competition, limiting the availability of seats, the number of routes flown and the scope for lower cost airlines to offer their services. This in turn increases the price of air travel and, since the demand for travel is quite price elastic, it consequently reduces the tourism flows (Forsyth, 2006:4). An example of the impact of liberalisation on air passenger traffic in the SADC is clearly demonstrated on the Nairobi-Johannesburg route, as depicted in figure 4.5. Figure 4.5 illustrates that after liberalisation, air passenger traffic increased by 69%. While this can probably be attributed to an increase in demand arising from accelerated economic growth in both countries and increased trade between them, it is clear that liberalisation contributed to a significant increase in air passenger volumes over the selected time period (Myburgh *et al.*, 2006:16).

Figure 4.5: Passenger volumes on the Nairobi-Johannesburg route, 1998 - 2005

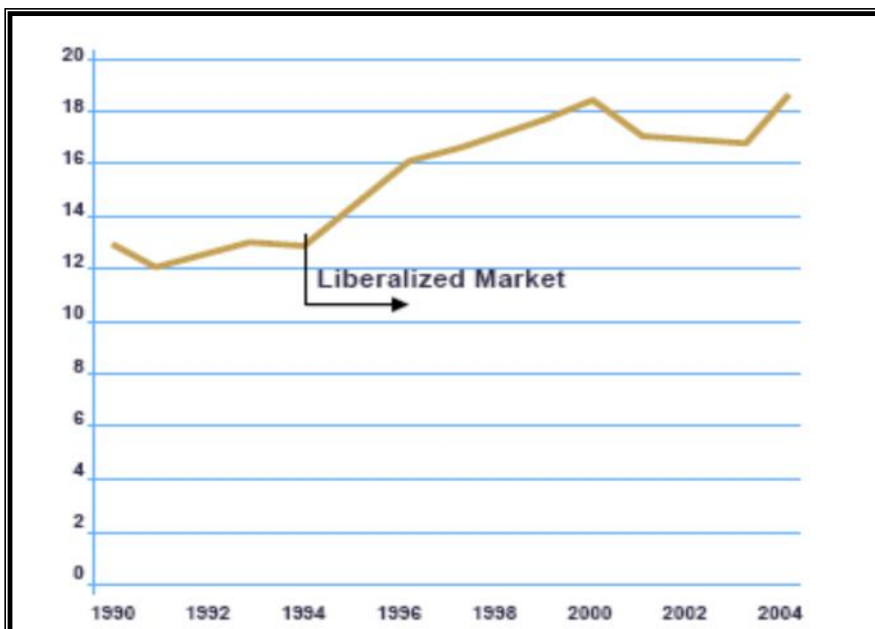


Source: Myburgh *et al.* (2006:16)

Empirical evidence suggests a positive and significant relationship between the volumes of air traffic and the degree of liberalisation of the aviation market (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Piermartini & Rousova, 2008 and 2009; Velia *et al.*, 2008; Warnock-Smith & Morrell, 2008; InterVISTAS-EU Consulting, Inc., 2009; Warnock-Smith & O’Connell, 2011).

InterVISTAS-ga² Consulting, Inc. (2006), on behalf of IATA, carried out one of the most detailed research projects on the impact of liberalisation with respect to air services. They developed a mathematical model that dealt with a variety of regulatory changes affecting numerous nation-pairs and airlines. The model’s overall objective was to estimate the effect of liberalising air services on passenger traffic, air freight movements, employment, GDP and tourism as well as the resulting catalyst effect for any country-pair. The study concluded that it was evident that restrictive bilateral air services agreements between countries stifle air travel, tourism and business and consequently economic growth and job creation. Figure 4.6 depicts the impact of liberalisation on the United States – Canada air passenger traffic.

Figure 4.6: Growth of the United States – Canada traffic, 1999 - 2004



Source: InterVISTAS-ga² Consulting, Inc. (2006)

The specific findings of the research by InterVISTAS-ga² Consulting, Inc. (2006) include:

- The traffic growth after liberalising air services agreements between countries typically averaged 12% to 35%, but in several cases has exceeded 50% and even 100%;
- A simulation run on 320 country-pairs that were not liberalised at the time of the study resulted in an estimated potential traffic growth of 63%, which was significantly higher than the typical world traffic growth of 6% to 8%;
- The growth rate in the EU nearly doubled, as depicted in figure 4.7, from the period 1990-94 to the period 1995-2000, following the creation of the Single European Aviation Market in 1993. This alone produced 1.4 million new jobs.

Figure 4.7: Capacity and traffic growth for Europe, 1990 - 2002

Market	Increase in ASKs			Increase in passengers carried			Increase in operational RPKs		
	1990-1994	1994-1998	1998-2002 ³³	1990-1994	1994-1998	1998-2002 ³⁴	1990-1994	1994-1998	1998-2002 ³⁵
Total Europe	27.5%	34.9%	36.2%	20.4%	37.8%	40.9%	23.6%	42%	35.2%

Source: InterVISTAS-ga² Consulting, Inc. (2006)

Piermartini and Rousova (2008) and (2009), on behalf of the WTO, conducted research to assess the impact of liberalising air transport services agreements on air passenger flows for a sample of 184 countries. The study found robust evidence of a positive and significant relationship between air passenger traffic and the degree of liberalisation of the aviation market. The results estimated that increasing the degree of liberalisation from the 25th to the 75th percentile would increase traffic by approximately 30%. The study also found that the removal of restrictions on the determination of prices and capacity, cabotage rights and the possibility for airlines, other than the flag carrier of the foreign country, to operate services were the most traffic-enhancing provisions of air services agreements.

A study by Warnock-Smith and Morrell (2008) examined the relationship between air traffic/capacity growth and policy reform pertaining to Caribbean member states. The hypothesis tested was that changes to regional air policy could facilitate traffic growth that might result in substantial tourism growth for the region. Case-history evidence indicated that there was a positive relationship between bilateral air policy reform and entry and traffic/capacity growth, suggesting a direct link between air policy and tourism coming into the region.

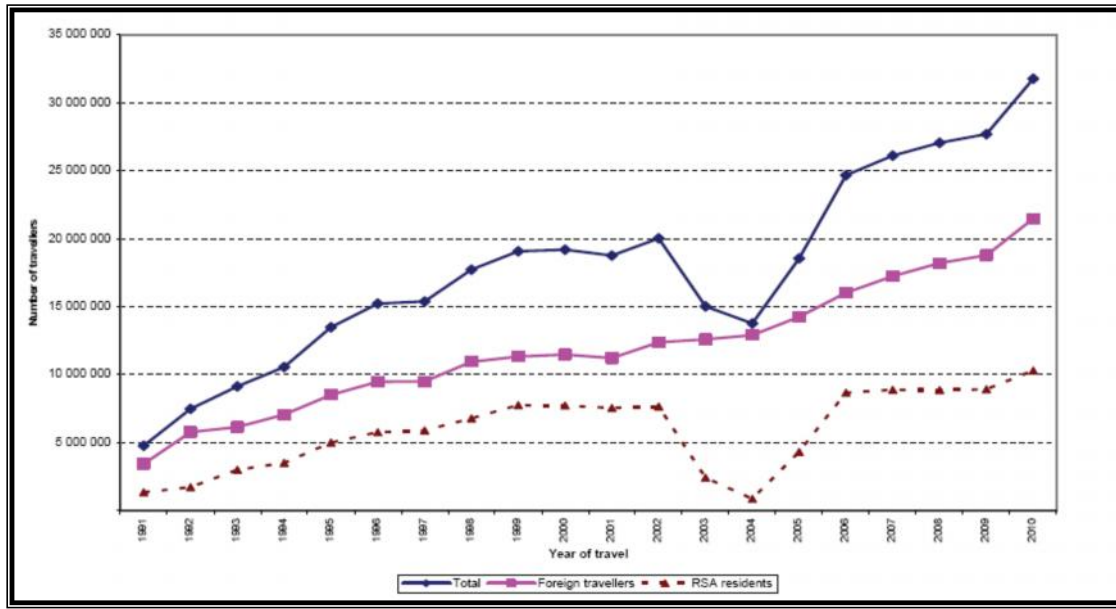
It is obvious from the above discussion and research-based evidence that there is a positive and substantial relationship between more liberal (less restrictive) aviation policies and air passenger traffic flows. The next section provides a concise overview of the air passenger traffic dynamics in the South African – intra-African context over the selected 11 year time period.

4.4.4 Air passenger traffic flows in the South African – intra-African context

As discussed in Chapter 3, the expansion of the airline services in the African region is uneven. This section, *inter alia*, attempts to outline the dynamics of air passenger traffic flows in the South African – intra-African context. Statistics South Africa, the official statistical platform of South Africa, was the only consistent data source available, covering the relevant time period with regard to South Africa and each of the five air transport markets, namely the intra-African, the SADC, West, East and North African regional markets. However, the data are limited to statistics on foreign air tourist arrivals, which in essence excludes same day visitors, but does however include all other passengers who have arrived by air. Another limitation from a bilateral point of view is that the data on the country of final destination of South African residents flying from the country are not available.

Figure 4.8 indicates a positive growth trend, both in the number of total foreign travellers,³⁵ as well as in the number of South African residents (with the exception of 2003 – 2005³⁶), travelling to and from South Africa.

Figure 4.8: Number of foreign and South African travellers by year, 1991 - 2010



Source: Statistics South Africa (2011:8)

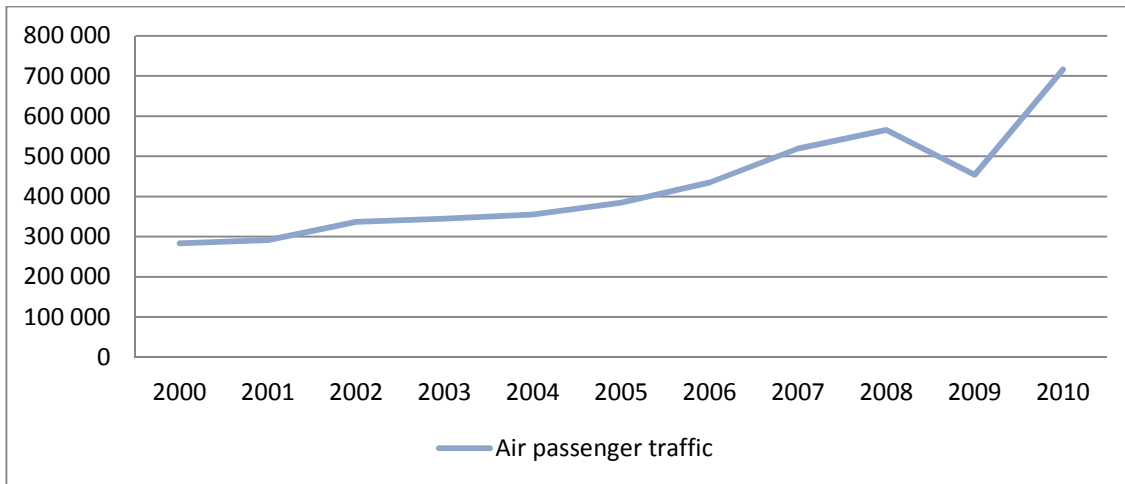
4.4.5 South African – intra-African air passenger traffic flows

Figure 4.9 provides an overview of the South African – intra-African air passenger traffic flow dynamics over the selected period, taking into account the data limitations discussed above. The compound growth annual rate from 2000 to 2010 for the South African – intra-African market was 9.7%.

³⁵ A *traveller* is somebody who moves between different geographic locations for any purpose and any duration (Statistics South Africa, 2011:3).

³⁶ The volume of South African travellers was greatly affected between 2003 and 2005 due to changes in the data collection system (Statistics South Africa, 2011:5).

Figure 4.9: South African – intra-African air passenger traffic flows, 2000 - 2010³⁷



Source: Statistics South Africa (2001 – 2011)

It is evident from table 4.1 that the compound annual growth rate (CAGR₀₀₋₁₀) from 2000 to 2010 in foreign air tourist arrivals to South Africa has been high in all five markets, especially in the West and North African regional ones, reaching 11.1% and 12.8% growth rates respectively. The scores for these two regions were followed by the intra-African market, the SADC and the East African regional markets, achieving 9.7%, 9.6% and 8.7% growth rates respectively.

³⁷ Notes: The data are based on annual foreign air tourist arrivals to South Africa from Africa.

Table 4.1: Annual foreign air tourist arrivals to South Africa, 2000 - 2010

	Intra-African market	SADC regional market	West African regional market	East African regional market	North African regional market
2000	283 135	227 882	29 895	21 465	3 893
2001	291 328	225 625	36 856	23 753	5 094
2002	336 791	252 649	47 721	29 614	6 807
2003	344 881	256 239	49 641	33 436	5 565
2004	355 378	263 879	49 373	35 825	6 301
2005	384 546	284 593	55 593	37 695	6 665
2006	434 574	322 154	64 331	40 981	7 108
2007	519 187	395 426	71 169	44 633	7 959
2008	565 715	430 776	76 637	49 080	9 222
2009	454 114	328 584	72 130	44 865	8 535
2010	715 862	567 636	86 029	49 219	12 978
CAGR₀₀₋₁₀	9.7%	9.6%	11.1%	8.7%	12.8%

Source: Statistics South Africa (2001 – 2011)

It is clear from the discussion that a positive relationship does exist between a “more” liberal (or “less” restrictive) aviation policy and air passenger traffic flows. One must take into account that this relationship is also affected by numerous non-aviation policy related factors, such as the GDP, population size, trade levels, *inter alia*. The purpose of the qualitative phase of the study (described in Chapter 5) is to identify and confirm, from expert sources, the policy and non-policy factors that impact on air traffic flows, many of which have already been identified in the literature phase. The next section discusses the important milestones that have been instrumental in shaping the current South African civil aviation policy.

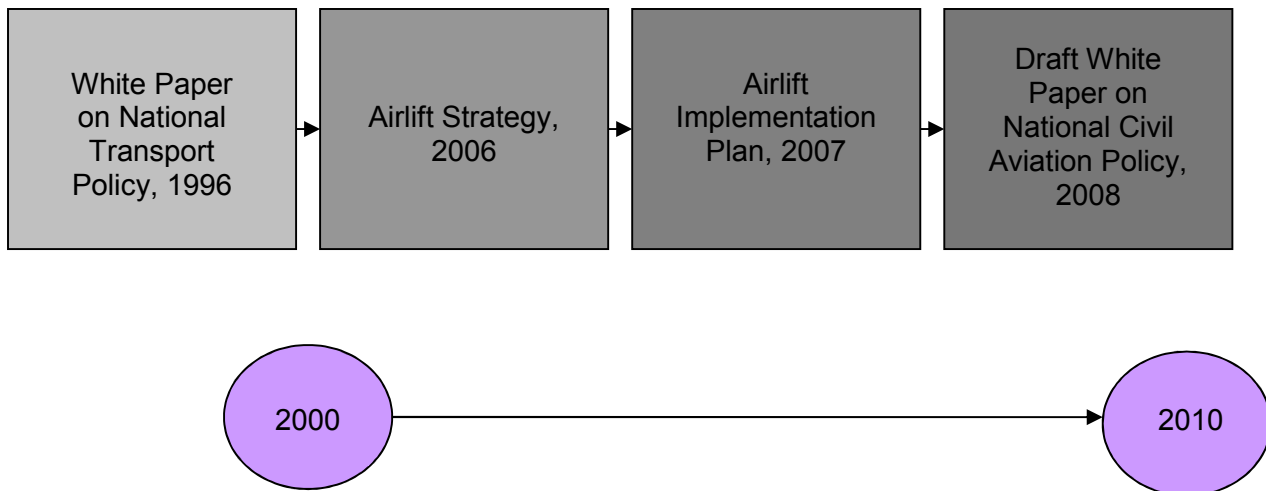
4.5 SOUTH AFRICAN CIVIL AVIATION POLICY DEVELOPMENT SINCE 1990

This policy has gradually developed since 1990 under the guidance of the DOT. The following milestone events exerted a profound influence in shaping the South African government’s current position on international air transport (Department of Transport, 2008:1-9):

- The domestic air transport policy, resulting in the deregulation of the domestic air transport in South Africa in May 1990;
- The international aviation policy of South Africa, enabling liberalisation in international air transport for South Africa, effective from March 1992;
- The South African state airports policy review, confirming the wisdom of the commercialisation process for the two service functions in March 1995;
- The White Paper on National Transport Policy, reiterating the policy positions contained in the domestic and international aviation policy with minor adjustments in 1996;
- Various studies on airline cooperation, air cargo operations and aircraft noise and engine emissions during 1998;
- The restructuring of the Civil Aviation Authority for South Africa into an independent government-owned agency responsible for the regulation of aviation safety and security in South Africa in 1998;
- The White Paper on National Policy on Airports and Airspace Management, 1998;
- Airlift Strategy, 2006;
- Airlift Implementation Plan, 2007;
- Draft White Paper on National Civil Aviation Policy, 2008.

Figure 4.10 illustrates the key milestones achieved in the development of the South African civil aviation policy that have impacted on the selected research period, 2000 to 2010.

Figure 4.10: Key milestones in the South African civil aviation policy development



Sources: Department of Transport (1996); Department of Transport (2006); Department of Transport (2007); Department of Transport (2008)

In line with the structural changes brought about by the implementation of deregulation, liberalisation, globalisation, consolidation and technological advances in the civil aviation system over the past decade, South Africa has opted to align its aviation policy with the following fundamental principles (Department of Transport, 2008:1-2):

- “Liberalisation in the provision of air transport services, in particular to the approach adopted in relation to the Yamoussoukro Decision implementation;
- Coordination of airport development;
- The airspace and airport slot allocation system;
- Participation in global satellite-based air navigation;
- Phasing out of noisy, old generation aircraft”.

The following sections deal with an overview of the development of the South African aviation policy.

4.5.1 White Paper on National Transport Policy

The South African civil aviation policy forms part of the White Paper on National Transport Policy of 1996, which was extensively reviewed and revised over nearly six years (Department of Transport, 1996:31). For the purpose of this research, sections 4.5.1 to 4.5.4 will be focusing exclusively on the South African international civil aviation policy in relation to passenger air services. Table 4.2 summarises the international civil aviation policy of 1996.

Table 4.2: South African international civil aviation policy of 1996

	International air transport		International relations	
	Issues	Policy	Issues	Policy
<p>Mission (South African civil aviation policy as a whole)</p> <p>“To maintain a competitive civil aviation environment which ensures safety in accordance with international standards and enables provision of services in a reliable and efficient manner at improving levels of service and cost while contributing to the social and economic development of South Africa and the region.”</p>	<p>Continued appropriateness of the policy aiming at liberalisation of the international air transport market which was implemented in 1992.</p>	<p>Main objectives:</p> <p>a) To encourage competition in the market place;</p> <p>b) To safeguard, where necessary, national interests;</p> <p>c) To encourage South African participation in the market;</p>	<p>South Africa is and will become a member of various international organisations or groupings of countries, such as the Yamoussoukro Declaration.</p>	<p>Government will support international cooperation in principle within the framework of the strategic objectives of the international air transport policy.</p>
	<p>The provision of non-scheduled air transport services on scheduled routes. This mainly entails the criteria that should apply for allowing these services.</p>	<p>The DOT will evaluate its current policy in respect of non-scheduled services and the implementation thereof, with a view to ensuring its full compatibility with the broad policy framework.</p>		
	<p>World trends in airline cooperation (alliances, equity exchanges, code-sharing,</p>	<p>The DOT will formulate a policy on airline cooperation in general and code-sharing in particular within a</p>		

Mission (South African civil aviation policy as a whole)	International air transport		International relations	
	Issues	Policy	Issues	Policy
	franchising and many others) and their effect on South Africa's policies.	framework of promoting competition and cooperation.		

Source: Department of Transport (1996:35-36)

The White Paper on the National Transport Policy of 1996 reinforced the government's commitment to facilitating South Africa's participation in the international air transport market, while encouraging fair competition and safeguarding the country's national interests.

4.5.2 The Airlift Strategy

The DOT developed the five-year South African Airlift Strategy which was approved by Cabinet in July 2006. The Airlift Strategy was devised in order to introduce effectively structured regulatory measures of air transport in support of the TGS, which is covered in section 4.6.

The Strategy is based on aviation policy directives and contributes to the ASGI-SA by:

- "Aligning with the Tourism Growth Strategy and industry;
- Prioritising tourism and trade markets;
- Unblocking obstacles to growth through regulatory mechanisms and bilateral and multilateral air services negotiations".

In particular, the Strategy supports the Millennium Development Goals and the objectives of NEPAD to increase African connectivity and access through accelerated implementation of the YD. The overall objective of the Strategy is to increase aviation's

contribution towards sustainable economic growth and job creation. It also provides specific guidelines for various unique markets, with the emphasis falling on the needs of intra-African air services, and aims to improve regulation of the supply-side of air transport services particularly (Department of Transport, 2007:1). The focus of this section will only be placed on those parts of the Airlift Strategy which pertain to the intra-African market.

The mission of the White Paper on National Transport of 1996 was reconfirmed by the Airlift Strategy; therefore the mission of air transport, with regard to the TGS in particular, is to ensure an enabling environment, which responds effectively to the needs of domestic and international users and service providers (Department of Transport, 2006:1-2). The Strategy thus concentrates on:

- “Locating the South African civil aviation industry’s growth within the government’s overall policy framework with specific focus on government initiatives, such as the ASGI-SA;
- Contributing towards sustainable economic growth and job creation, with the emphasis falling on the ASGI-SA initiative;
- Ensuring the sustainable growth of the South African civil aviation industry, with the emphasis on introduction of new entrants to the market and expansion of existing markets;
- Creating an enabling framework which allows both consumers and service providers reasonable flexibility and choice;
- Enhancing the prospects for South Africa as a preferred air travel destination;
- Aligning air transport with other national strategies through the common criteria of the “national interest” through interdepartmental participation with specific

reference to the National Foreign Policy, National Tourism Strategy, National Trade and Industry Strategy, as well as general infrastructure requirements of South Africa;

- Improving institutional coordination and alignment between all relevant stakeholders as per the Tourism Sector Plan;
- Addressing airline competition and pricing to reduce total costs to travel to South Africa”.

In table 4.3 major legal mandates for the regulation of international air transport services are summarised.

Table 4.3: Legal mandates for the regulation of air transport services

Legal Mandate	Description
The Convention on International Civil Aviation (Chicago Convention), 1944	Chicago Convention regulates civil aviation worldwide.
Aviation Act, No 74 of 1962	The Act gave the effect to South Africa’s legal adoption of the Chicago Convention.
Civil Aviation Policy	<p>The Policy guides South Africa’s participation in the rapidly changing aviation market.</p> <p>The International Civil Aviation Policy of 1992 was developed with the primary purpose of guiding South Africa’s participation in the international aviation market.</p> <p>Domestic and international policies were revisited in 1996 and reconfirmed with minor additions, through the White Paper on National Transport Policy, 1996.</p> <p>The Airlift Strategy’s main principles are to encourage effective competition, to safeguard national interests and to encourage South African participation in the market. The Strategy of 2006 is aimed at encouraging competition through the implementation of the YD, multiple designation of airlines, double disapproval tariff system, liberal capacity and frequency regime, promotion of all international airports as entry points in South Africa and providing that third and fourth freedom rights (direct services) will form the basis for negotiating the exchange of traffic rights.</p>
International Air Services Act (Act No. 60 of 1993)	The fundamental objectives of the Strategy were embodied in the Act. The latter empowers the Minister to enter into air services agreements with other states, subject to the approval of the President.
Bilateral Air Services Agreements	Since 1992, South Africa has embarked on the review and modernisation of all bilateral air services agreements in terms of the International Aviation

Legal Mandate	Description
	Policy. This was accelerated after 1994, with the establishment of a democratic government and subsequent worldwide support for the country's transformation agenda. By the end of 2010, South Africa had revised BASAs in line with the YD with 17 like-minded states.
Multilateral and Regional Agreements	<ol style="list-style-type: none"> 1) WTO: since the 1990s, regional air transport liberalisation initiatives have enjoyed preference over the World Trade Organisation's multilateral approach. 2) Yamoussoukro Decision: in 2000, African States formally adopted the YD for the liberalisation of intra-African air transport services. South Africa has opted to implement the spirit of the YD on a bilateral level with willing partners as an interim measure, pending full implementation of the YD across Africa. The DOT has also embarked on the development of an approach aimed at accelerating the implementation of YD. 3) South African Development Community: the SADC member states signed the Protocol on Transport, Communication and Meteorology in 1996. The Protocol's sub-regional initiatives on the liberalisation of intra-African air transport services are aligned with the principles of YD.

Source: Department of Transport (2006:2-5)

The Airlift Strategy has identified several challenges potentially impeding economic growth and job creation, which are summarised in table 4.4.

Table 4.4: Challenges identified by the Airlift Strategy of 2006

Challenge	Description
Alignment with macro-economic policies	South Africa has developed several macro policies since 1994: the Growth Employment and Redistribution (GEAR) Strategy, the National Crime Prevention Strategy, the National Tourism Strategy, the Reconstruction and Development Programme (RDP) and the ASGI-SA. The basis for bilateral air services negotiations has not always been clearly synchronised with these national strategies.
National interest criteria	The "national interest" of the country and the interests of the suppliers and consumers seldom coincide.
Policy implementation	The Aviation Policy (1992 and 1996) provides broad guidelines for the conclusion of bilateral air services agreements. Specific guidelines are required for unique markets to effectively respond to global/regional trends and challenges.
Aviation safety and security	The relationship between the global trend towards rapid economic liberalisation and aviation safety and security regulation should be carefully balanced between costs and benefits in order to achieve an optimal level of safety. Measures aimed at strengthening of SA's aviation safety and security regimes are critical to ensure actual and perceived safety and security status of the SA air transport market.
Air services network approach	The current BASAs represent the backbone of the regulatory framework for scheduled air services to and from South Africa. Key stakeholders have not always recognised that all agreements are interrelated.

Challenge	Description
Competitiveness of the SA tourism market	SA is in direct competition with many countries around the world as a preferred tourist destination. Over-restrictive bilateral regimes that provide limited or no consumer choice, few or no mechanisms for airlines to respond to market fluctuations and constrained capacity have a negative impact on tourism to South Africa.
Competitiveness of SA airline industry	SA airlines are often not competitive in various markets, leading to a loss in market share. Traditional governmental protection through capacity limitation may impact negatively on the availability of capacity to meet the requirements of trade and tourism industries.
Role of Government	The role of Government in respect of policy, regulation and operations is not always clearly defined.
Actual or perceived unfair competition	This may be due to various reasons, such as differences in aviation safety and security standards. Government should retain the ability to intervene if and when necessary to ensure that the SA national interest is served at all times.

Source: Department of Transport (2006:26-27)

The Airlift Strategy has identified certain strategic interventions, summarised in table 4.5, required to address the above challenges that are potentially impeding economic growth and job creation.

Table 4.5: Strategic interventions

Strategic Intervention	Description
National interest considerations	To ensure greater alignment with government policies and strategies, in particular with the Tourism Growth Strategy, air services negotiations must be aligned with the “national interest” of South Africa.
Identify and prioritise markets	<p>The important markets in terms of tourism and trade to be identified, monitored and prioritised and their status updated at least twice a year:</p> <ul style="list-style-type: none"> • Primary markets/strategic hubs as defined by South African Tourism: a) <i>core markets</i>³⁸: Kenya, Nigeria, the USA, the UK, Australia, France and the Netherlands; and b) <i>strategic hubs</i>: Egypt, Senegal, the UAE, Malaysia and Singapore. The African countries that have been clustered into this market are: <i>Kenya, Nigeria, Egypt and Senegal</i>. According to the DOT’s regional categorisation of BASAs, Kenya represents the East African regional market, Nigeria and Senegal represent the West African one and Egypt represents the North African one; • Secondary markets/potential growth markets, which include the <i>tactical</i>³⁹ and <i>investment</i>⁴⁰ markets: Botswana, Lesotho, Swaziland, Tanzania, India,

³⁸ *Core markets* are those markets which present the greatest opportunity (South African Tourism, 2008).

³⁹ *Tactical markets* are those markets which should be considered for specific, tactical opportunities (South African Tourism, 2008).

Strategic Intervention	Description
	<p>Angola, Mauritius, Mozambique, Zambia, Zimbabwe, Canada, China, Hong Kong, Brazil and Japan. The African countries relevant to the research in this category are <i>Botswana, Lesotho, Tanzania, Angola, Mauritius, Mozambique, Zambia</i> and <i>Zimbabwe</i>. All of them represent the SADC region according to the DOT's regional categorisation of the BASAs;</p> <ul style="list-style-type: none"> • Tertiary markets, which include the watch-list⁴¹: Ghana, Senegal, New Zealand, Belgium, Ireland, Italy, Sweden and Switzerland. Both <i>Ghana</i> and <i>Senegal</i> represent the West African regional market. It is interesting to note that Senegal has been prioritised in both the primary and tertiary market.
Modernisation of air services framework	<p>a) Capacity determination: to ensure forward planning of sufficient capacity to cater for demand, capacity should be granted based on the principle of providing capacity ahead of demand. On routes governed by the YD, unlimited capacity to be allowed;</p> <p>b) Setting of liberalisation targets: the framework of BASAs is to be liberalised in accordance with the targets as per Appendix G. Chapter 6 will analyse the liberalisation progress that has been achieved in the South African – intra-African market, as well as in each of the four regions;</p> <p>c) Tactical approach to key elements, relating to the modernisation of the air services framework (intra-African liberalisation):</p> <ul style="list-style-type: none"> • Measures aimed at accelerating implementation of the YD to be implemented (implementation of the YD on a bilateral level with willing partners as an interim measure, pending full implementation of the YD across Africa). In particular, prioritisation of negotiations with Angola, Mozambique and Nigeria to ease capacity constraints. The most restrictive capacity clause, that of predetermination, prevailed in the BASAs between South Africa and the three countries over the eleven year time period; • <i>Tariff regulation</i>: tariff control only in respect of tariff increases, subject to regional/continental competition rules, in line with the YD; • <i>Pricing and competition</i>: excessively high/low tariffs will be referred to the Competition Commission for further consideration. Capacity to be increased on constrained routes to ensure provision of adequate number of seats at reasonable prices. In the case of high fares charged by SA airlines on capacity constrained routes, such tariffs to be subjected to a competitive pricing comparison process by the Competition Commission; • <i>Fifth freedom traffic rights</i>: free exchange for 5th freedom traffic rights with due consideration of reciprocity⁴² concerns during the period leading up to full implementation of the YD⁴³;

⁴⁰ *Investment markets* are those markets where some investment is made for returns in future (South African Tourism, 2008).

⁴¹ *Watch-list markets* are those markets that need to be watched for value segments (South African Tourism, 2008).

⁴² *Reciprocity* is the granting of a right or a benefit by a state to a foreign entity such as an air carrier when it has no international obligation to do so, on the condition that the same treatment will be accorded to its comparable entity (entities) by the home state of that foreign entity (ICAO, 2004:1.1-3).

Strategic Intervention	Description
	<ul style="list-style-type: none"> • <i>Ownership and control of all airlines</i>: Ownership of airlines could represent a barrier to entry into the market, impeding Government's policy of broad-based black economic empowerment (BEE). In the interim, South Africa not to agree to the EU ownership clause.
Use-it-or-lose-it principle	This is aimed at preventing one airline blocking another from introducing new air services/expanding current services through retention of unused traffic rights.
Stability and sustainability of network of air services serving South Africa	<p>Air services agreements and routes are interdependent and should not be considered in isolation. The African Union Common External Air Transport Policy in respect of "open skies" arrangements and the EU-Ownership clause are to provide guidance towards enhancing stability of intra-African air services:</p> <ol style="list-style-type: none"> <i>Anti-competitive behaviour/market dominance</i>: threat of capacity "dumping" and predatory pricing to be managed in collaboration with Competition Commission. DOT to actively participate in development of regional and AU-based competition rules and arbitration in terms of the YD; <i>Reciprocity and market share issues</i>: reciprocity in terms of air services agreements may not always be based on the exchange of exactly the same rights. It will be possible to exchange different traffic rights based on the principle of "balance of benefits"; <i>Airline alliances/code-sharing activities</i>: the YD supports the concept of airline cooperation as a means towards maximising economic benefits for the participating airlines; <i>Seasonality and capacity demands due to special events</i>: need for provision of adequate capacity to meet seasonal demand through bilateral frameworks and interface with current SA airlines on the particular route(s) is acknowledged.
The role of Government	Government should at all times ensure that the roles of its various executing arms are clearly defined and executed accordingly.
Aviation infrastructure	Efficient airports and effective airspace management are critical to future development of air transport. Three projects are linked to addressing aviation infrastructure: Air Freight Logistics Project, National Development Plan and project aimed at the establishment of an independent slot-coordinator. The principle of "fair and equal opportunity" enshrined in BASAs to be applied in cases of slot-constrained airports to achieve maximum economic benefits within a pro-competitive environment.
Strategic approach to the "open skies" model for liberalisation	<p>Seventeen African States have concluded "open skies" agreements with the US. Strategic approach to "open skies":</p> <ul style="list-style-type: none"> • <i>"Open skies" intra-Africa</i>: accelerated implementation of the YD through modernisation of BASAs with all like-minded African states; • <i>African Union approach</i>: SA to actively participate in the activities of AU towards the creation of a Common External Air Transport Policy for Africa.

Source: Department of Transport (2006:29-40; 2006:60-68)

⁴³ Granting should be on a reciprocal basis: only where scheduled 3rd and 4th freedom services are not available and only if these services will be phased out over a period of six months if a 3rd and 4th freedom service is introduced in exceptional cases (Department of Transport, 2006:33).

It is quite evident from the above discussion that South Africa's approach to bilateral negotiations in the intra-African context is directly linked to the key principles of the YD. However, as discussed in Chapter 3, no action has been taken by the SADC towards the implementation of the YD within the region that can be seen as binding for its members.

Despite this, South Africa's position in relation to the speeding up of the YD implementation has been very clear, and has been supported by the Airlift Strategy, the Airlift Implementation Plan, as well as the government's pro-YD position at the numerous assemblies. For example, at the 37th Assembly of the Economic Commission, South Africa once again reconfirmed its initial Airlift goals (ICAO, 2010:4).

4.5.3 The Airlift Implementation Plan

While the Airlift Strategy contains guidelines aimed at maximising benefits for South Africa, as well as limiting possible negative effects on other regions, the Strategy requires a tool in the format of an implementation plan, which will guide and give effect to significantly enhanced bilateral air services agreements entered into between South Africa and other states. The Airlift Implementation Plan of 2007 is a particular tool that has adopted an air transport policy clarifying South Africa's position in terms of regional bargaining blocks, as well as South Africa's approach to bilateral negotiations (Department of Transport, 2007:6).

In essence, the said Plan is derived from the Airlift Strategy of 2006 and seeks to achieve the following objectives in relation to international air services, while ensuring that the South African "national interest" is being promoted (Department of Transport, 2007:11):

- "Liberalising international air services agreements;
- Allocating capacity available under existing BASAs in relation to airline business plans;
- Liberalising international aviation multilaterally".

To encourage and allow for future air transportation growth and development, South Africa’s international air transport policy has been driven by the key objectives and principles as set out within the *Vula Sky* document, which is part of the Airlift Implementation Plan (Department of Transport, 2007:7).

Table 4.6 highlights the *Vula Sky*’s main objectives, principles and terms towards ensuring an effective bilateral air transportation negotiation framework for international passenger air services. The *Vula Sky* framework reconfirms South Africa’s recognition of air transportation as a significant facilitator of exchange between countries and continents, because it serves as a catalyst of trade and tourism exchange (Department of Transport, 2007:63).

Table 4.6: Summary of Vula Sky - South Africa’s international air services framework

Objectives	Principles	Terms for BASAs	Comment
<ol style="list-style-type: none"> 1. Encourage, enhance and support SA’s tourism growth; 2. Provide opportunities for SA registered airlines to grow and compete; 3. Provide a framework that stimulates competition and the development of new international air services agreements; 4. BASAs are agreed upon in a manner which enables airports to develop in a managed process; 5. Support and facilitate SA’s trade objectives; 6. Support a safe, secure and economically viable South African aviation industry. 	<ol style="list-style-type: none"> 1. Tourism growth and trade development are directly influenced by effective and efficient air transportation system; 2. Allow for a free market; 3. SA registered airlines are afforded the opportunity to compete in international markets on equal terms; 4. Air liberalisation will be guided by economic benefits; 5. Safety and security standards are not negotiable. 	<ol style="list-style-type: none"> 1. BASAs based on 3rd and 4th freedom rights; 2. 5th freedom may be awarded, provided there is a significant contribution towards achieving an increase in airlift; 3. Multiple designation for airlines to operate; 4. Market-based tariff/pricing regime. 	<ol style="list-style-type: none"> 1. SA will pursue BASA negotiations on the principle of reciprocity. A secondary position adopted by SA will be to seek the most beneficial agreement, which will be in the overall interest of SA; 2. Considerations that could influence SA’s position towards BASAs negotiations: good trading relations; the “willing and able” attitude towards airlift; accelerated economic growth within a region; political stability.

Source: Department of Transport (2007:62-67)

Over the last couple of years, regional air traffic growth has been relatively stable; nonetheless, African countries currently continue to artificially restrict international travel, by limiting the number of flights to their cities, as well as the number of airlines that can fly to them. These restrictions make it more expensive to travel by air to SADC and therefore reduce the number of tourists who visit this region. Focusing on these impediments, the Airlift Implementation Plan incorporates an aggressive format to address the SADC region with a view to enhancing traffic amongst the states (Department of Transport, 2007:47).

Other African states, whilst adopting the YD, have been fairly reluctant to engage South Africa on a full-scale “open skies” arrangement. The Airlift Implementation Plan contains a framework detailing an action plan for engagement with the African states regarding a more liberal air transport agreement between each state and South Africa. The core purpose of the Airlift Plan as set out by the DOT (Department of Transport, 2007:47-49) is:

- “To provide a roadmap for airlift growth for the next five years;
- To provide a framework for aviation capacity development;
- To set out a plan of action for engagement with the SADC, intra-African states and other international regions;
- To provide an understanding of the Airlift Strategy, allowing a range of stakeholders and other interested parties to make well-informed investment decisions”.

The Airlift Implementation Plan for SADC and intra-Africa is summarised in table 4.7 below.

Table 4.7: Airlift Implementation Plan for SADC and intra-Africa

Region	Objective	Hindrances	Plan
SADC	<p>SA's objectives in enhancing growth are purely based on trade, investment and tourism;</p> <p>All negotiations will proceed from an understanding that there will be no limitations to either seating capacity or flight frequencies.</p>	<p>Reluctance from some SADC states based on the premise that liberalisation and increased competitive pressures will undermine the viability of their national carriers.</p>	<p>The plan for increasing airlift capacity within the SADC is to:</p> <ul style="list-style-type: none"> • Engage Angola and Mozambique in 2007 on further bilateral discussions to remove capped passenger seating capacity; • Agree with Angola and Mozambique on an increase in flight frequency between the countries, as well as on the introduction of the principle of multiple designation of airlines. Multiple designation was introduced in 2009 between South Africa and Angola and in 2003 between South Africa and Mozambique; • Engage with the remainder of all SADC states on further bilateral discussions in fourth quarter of 2007; • Engage with the DOT to ensure that YD is fully implemented within SADC region before the end of 2010. Gradual liberalisation progress has been achieved across SADC, although not YD compliant for all member states. Chapter 6 discusses this in more detail.
Intra-Africa	<p>Achieve full-scale "open skies" agreement based on the YD.</p>	<p>Reluctance on the full engagement of the YD within Africa, which is due to the fear factor regarding the viability of the national carrier in the face of increased competitive pressure. Some states have adopted full "open skies" with the USA, but there is still strong reluctance towards engaging with SA. By the end of 2010, only 17 African states had revised their BASAs with SA in line with the key principles of the YD.</p>	<p>The plan for increasing airlift capacity within intra-Africa is:</p> <ul style="list-style-type: none"> • The DOT is to engage with Nigeria on further liberalisation in 2007; full YD with Nigeria by 2009. This has not been achieved by the end of 2010; • The DOT to undertake a full econometric study which quantifies costs of regulatory constraints of air transportation by end of 2007; • Communication campaign with other states on benefits of the YD; • The department to expedite from 2007 the implementation of the YD with like-minded African states; • The DOT to engage with AFCAC, the AU and safety oversight bodies on increased efforts

Region	Objective	Hindrances	Plan
			<p>needed to provide safety related infrastructure and skills with the objective of ensuring that safety is met on the African Continent;</p> <ul style="list-style-type: none"> • To include within the negotiation framework a “strict enforcement of the competition rules”, the same should apply to anti-competitive behaviour; • To expedite the implementation of the YD through the modernisation of BASAs with like-minded states.

Source: Department of Transport (2007:50-52)

In essence, the Airlift Strategy has one clear objective, which is to ensure that the number of passengers entering South Africa is increased. The decisions that airlines make in terms of which routes they fly remain purely commercial ones, in which the government will not interfere. However, as defined by the Strategy, the South African government has a responsibility to ensure that air traffic movements into the country are increased, clearly illustrating the pressing need to increase capacity in existing BASAs, especially where there is demand and there are requests from other nations (Department of Transport, 2007:29).

Whilst the Airlift Strategy focuses on the effort to enhance the growth of tourist numbers, the Airlift Implementation Plan extends this Strategy and sets out an implementation framework to increase domestic, regional and international air traffic (Department of Transport, 2007:55). Given that international air transport between South Africa and its African counterparts is governed by a bilateral regulatory framework, ability and success in removing restrictions in line with the key YD principles are based on the mutual understanding and willingness of the respective states.

4.5.4 Draft White Paper on National Civil Aviation Policy of 2008

The need for a civil aviation policy review arose mainly from changes in globalisation, the changes in South Africa, particularly in relation to civil aviation and the necessity to incorporate and formalise the researched policy issues into a consolidated White Paper.

All of these have been incorporated into the Draft White Paper on National Civil Aviation Policy, 2008, which is consistent with and complements government's broad strategic, economic and social objectives (Department of Transport, 2008:1-9).

The next section focuses on the international transport policy of the Draft White Paper. It is important to note that the said policy is divided into two sections: scheduled and non-scheduled international transport services. Table 4.8 summarises the main aspects of each as related to the YD agreement.

Table 4.8: International transport policy

Scheduled international air transport services			Non-scheduled international air transport services ⁴⁴	
Objectives	Policy Statement	Description	Scenario	Description
International air transport should facilitate and enhance the expansion of international trade and tourism in general and exports and the tourism industry in particular. The development and maintenance of regular international air transport services should be promoted; Economic decisions should be as far as possible left to the market to resolve the strategic objective of the	<i>Designation of airlines</i>	Multiple designation of licensed airlines to provide such services to and from South Africa should be promoted. This is in line with the principles of the YD.	Non-scheduled combination to and from countries bound by the YD	Such services should be allowed freely and would only be subject to safety and security regulation;
	<i>Nature and extent of services</i>	Air services operated in terms of YD will be allowed freely, subject to compliance with the conditions of the YD and applicable competition rules. The granting of capacity and/or flight frequencies in respect of air services not bound by the YD should be considered on the basis of managed	Charters stimulating tourism to SA	Charter flights for the purposes of conveying tourists to SA should be allowed in a controlled manner consistent with the national interest. Charter flights must be part of an inclusive tour into SA and would be subject to special conditions.

⁴⁴ A *non-scheduled international air service* is a transport service other than a scheduled service which is normally associated with a specific flight or series of flights. Such flights are not listed in a published timetable and passenger and cargo capacity may only be offered and sold to a charterer in respect of services on routes currently serviced by scheduled services or directly to the public or through a third party under a series of prescribed conditions (Department of Transport, 2008:4-34).

Scheduled international air transport services			Non-scheduled international air transport services ⁴⁴	
<i>Objectives</i>	<i>Policy Statement</i>	<i>Description</i>	<i>Scenario</i>	<i>Description</i>
<p>state to develop an export-oriented sector, capable of competing on international markets, should be pursued by SA aviation;</p> <p>An efficient, productive and sustainable SA aviation industry should be developed;</p> <p>Control over international air transport services should be maintained within a well-defined regulatory framework that is flexible enough to cater for changing needs and circumstances and to ensure orderly, safe and reliable international air transport services to and from SA.</p>		<p>liberalisation with a view to promoting the national interest.</p>		
	<i>Routes and airports</i>	<p>All designated airports with the necessary and appropriate facilities to accommodate international flights should be promoted as gateways to South Africa. Foreign airlines should be permitted to use the designated airport(s) of their choice, subject to obtaining reciprocal or comparable rights or benefits from SA carriers.</p>		
	<i>Traffic rights</i>	<p>The granting of seat capacity and/or flight frequencies should continue to be based on 3rd and 4th freedom traffic demands. Countries bound by the YD will not be restricted by these limitations.</p>	<p>Non-scheduled international services for developing new air links</p>	<p>Where there is no scheduled air transport service between South Africa and another country, non-scheduled services should be allowed with a view to stimulating the development of new air links and the promotion of tourism to SA.</p>
	<i>Tariff control</i>	<p>Tariffs should be deregulated as far as possible to allow airlines the freedom to set tariffs in response to demand, subject to general control over economic activities which applies to all industries.</p>	<p>Other non-scheduled services</p>	<p>Other services, for which no provision has been made, should be allowed on a selective basis, on scheduled routes, but only when such services would complement the existing</p>

Scheduled international air transport services			Non-scheduled international air transport services ⁴⁴	
Objectives	Policy Statement	Description	Scenario	Description
				scheduled air services.
	<i>Airline commercial cooperative arrangements</i>	SA and foreign airlines should be allowed to enter into cooperative agreements involving different kinds of code-sharing, franchising and wet-lease agreements, subject to the applicable law governing competition.		
	<i>Predatory pricing</i>	Provision should be made in the bilateral air services agreements prohibiting anti-competitive/ predatory practices by airlines.		

Source: Department of Transport (2008:4-35; 2008:4-49-4-73)

4.5.5 The Airlift Strategy progress overview

As mentioned above, in July 2006, Cabinet approved the Airlift Strategy which sets out to enhance the air transport sector's contribution to sustainable growth and development with the aim of achieving an increase in air traffic frequencies ahead of demand. It is also important to note that whilst the capacity may be increased between the relevant countries, the activation and utilisation of these frequencies remain primarily an airline decision and such a decision to utilise available frequencies is normally dictated by the commercial and strategic considerations of the respective airline (Department of Transport, 2010:1). Table 4.9 summarises the changes in the number of total BASAs since the launch of the Strategy.

Table 4.9: Summarised total of the bilateral air services agreements, 2006 to 2010

Year	Total BASAs	Active BASAs	Dormant BASAs	Source
2006	104	58	46	DOT (2006)
2007	106	43	73	DOT (2007)
2008	107	43	64	IASC (2008)
2010	110	58	52	DOT (2010)

By the end of 2010, the Department of Transport had entered 45 BASAs with other African states, of which 17 were in line with the key YD principles. Table 4.10 provides an overview of the changes to the bilateral regulation that has taken place from 1992 to the end of 2010. The bilaterals of the countries highlighted in yellow are all in line with the key principles of the YD.

Table 4.10: Summary changes to the African bilaterals

Country	Regional classification DOT	Initial BASA	MOU	MOU	MOU	MOU	Comments
Algeria	North African region	17/11/1995	-	-	-	-	
Angola	SADC	19/01/1995	19/07/1997	09/04/2009	-	-	
Benin	West African region	30/06/1993	19/10/2010	-	-	-	
Botswana	SADC	23/07/1991	07/05/2004*	12/02/2010	06/07/2010	-	* exchanged and reached consensus on draft BASA and MOU
Burkina Faso	West African region	30/06/1993	-	-	-	-	
Burundi	East African region	06/02/1992	-	-	-	-	
Cameroon	West African region	24/01/1992	07/02/1994	07/02/1994	28/10/2008	-	
CAR	West African region	12/04/1994	-	-	-	-	
Chad	West African region	12/04/1994	-	-	-	-	
Comoros	East African region	17/01/1992	-	-	-	-	
Congo	West African region	15/02/1995	-	-	-	-	
DRC	SADC	20/04/1989	01/09/1992	07/02/1994	24/06/2004	25/06/2009	
Côte d'Ivoire	West African region	30/06/1993	-	-	-	-	
Egypt	North African region	27/01/1994	12/06/1996	26/08/1997	27/10/1998	-	



Country	Regional classification DOT	Initial BASA	MOU	MOU	MOU	MOU	Comments
Ethiopia	East African region	14/05/1997	17/09/2001	16/10/2002	-	-	
Gabon	West African region	27/02/1995	08/07/1993	30/03/2004	-	-	
Gambia	West African region	09/05/2008	-	-	-	-	
Ghana	West African region	02/06/1994	11/08/2000	30/04/2009	-	-	
Kenya	East African region	30/09/1993	29/07/1999	09/05/2000	15/10/2008	-	
Lesotho	SADC	02/11/1990	15/09/1993	26/11/2010*	-	-	* parties adopted draft BASA
Liberia	West African region	30/06/2010	-	-	-	-	
Libya	North African region	31/08/2002	09/03/2005	-	-	-	
Madagascar	SADC	14/09/1990	24/03/2005	-	-	-	
Malawi	SADC	24/07/1992	08/09/1999	20/08/2010	-	-	
Mali	West African region	12/04/1994	-	-	-	-	
Mauritania	West African region	12/04/1994	-	-	-	-	
Mauritius	SADC	08/09/1993	15/11/2005	06/01/2010*	-	-	* signed both the MOU & new BASA
Morocco	North African region	18/02/1994	20/07/1994	-	-	-	
Mozambique	SADC	10/06/1993	16/02/1994	07/03/1996	27/08/1996	01/10/1997	
Mozambique (cont.)	SADC	-	12/01/2001	17/01/2002	10/05/2002	29/08/2003	
Mozambique (cont.)	SADC	-	29/09/2006	02/07/2009	-	-	
Namibia	SADC	25/06/1993	31/08/1993	03/11/1993	12/10/1994	02/02/1995	
Namibia (cont.)	SADC	-	20/03/1998	12/05/1999	28/06/1999	13/03/2009	
Niger	West African region	12/04/1994	-	-	-	-	
Nigeria	West African region	09/06/1994	30/07/2004	19/11/2008	-	-	
Rwanda	East African region	04/09/1992	11/11/1997	23/07/1998	29/06/2010	-	
Senegal	West African Region	30/07/1996	05/08/2008*	-	-	-	* parties adopted draft BASA
Seychelles	SADC	24/01/1996	-	-	-	-	
Sierra Leone	West African Region	20/06/2006	-	-	-	-	
Somalia	East African region	18/03/1990	-	-	-	-	
Sudan	East African region	20/04/1994	-	-	-	-	
Swaziland	SADC	18/01/1993	18/06/1998	-	-	-	
Tanzania	SADC	09/03/1993	19/09/1996	11/03/2003	15/10/2009	-	
Togo	West African	30/06/1993	22/04/2010*	-	-	-	* signed new

Country	Regional classification DOT	Initial BASA	MOU	MOU	MOU	MOU	Comments
	region						BASA
Tunisia	North African region	02/07/1997	09/02/1994	-	-	-	
Uganda	East African region	16/02/1994	23/07/1998	23/09/2003	-	-	
Zambia	SADC	30/10/1992	08/04/1994	26/05/1995	02/07/1999	21/09/2001	
Zimbabwe	SADC	08/05/1992	13/11/1992	15/09/1995	26/11/1997	05/09/2000	
Zimbabwe (cont.)	SADC	-	25/01/2002	-	-	-	

Source: Department of Transport BASAs and MOUs (1992 – 2010)

Note: This table is based on written bilaterals and MOUs only; verbal changes are not incorporated as these were not available to the researcher.

According to the Airlift Strategy liberalisation targets for intra-Africa, as summarised in Appendix G, the target that was planned to be achieved in terms of revising BASAs in line with the YD was set at 65%, representing 34 African states. It is evident from table 4.10 that this was not achieved. The remaining liberalisation targets: multiple designation, tariff liberalisation and code-sharing will be looked at in detail in Chapter 6.

As mentioned above, tourism has been identified as one of the priority sectors for focused intervention by the South African government in line with the ASGI-SA initiative and the Airlift Strategy. It has embarked on the modernisation of BASAs to accelerate the YD implementation with like-minded states, pending full implementation across Africa while at the same time accounting for and focusing on key trade and tourism markets, identified and prioritised in the TGS. Given its importance to the country's socio-economic growth, the next section therefore focuses on the TGS from 2002 to 2010, in line with the selected research period.

4.6 THE TOURISM GROWTH STRATEGY

The TGS was launched in 2002 by South African Tourism (SAT) to market South Africa more effectively in increasingly competitive global tourism and travel markets. SAT has since then updated the 2002 TGS to the 2005 – 2007 Tourism Growth Strategy and thereafter to the 2008 – 2010 TGS. The country's tourism vision did not change in the

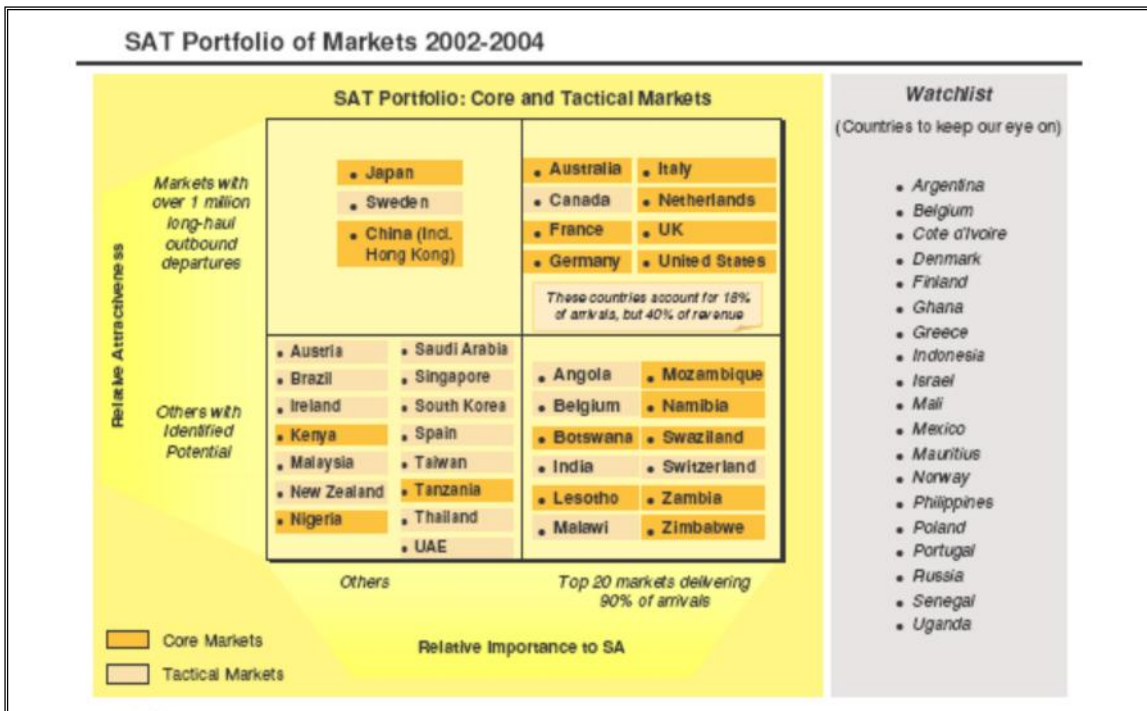
updated versions of the TGS. The Strategy was merely updated and consolidated by means of the knowledge and experience gained over the previous years.

The SAT mandate under the Tourism Act No 72 of 1993 is to increase the contribution of tourism towards GDP growth and job creation as well as to improve the redistribution and transformation of the South African economy. In order to do this, SAT needs to contribute towards attaining six key objectives of the TGS, namely (South African Tourism, 2003:9):

- “Increase tourist volume;
- Improve geographic spread;
- Increase tourist spend;
- Improve seasonality patterns;
- Increase length of stay;
- Promote transformation”.

In order to achieve these goals, the TGS divided the focus markets into portfolios based on their tourism potential for South Africa. Below is a summary of these portfolios as per the TGS 2002 - 2004, 2005 - 2007 and 2008 - 2010. The countries in each of the portfolios are revised every three years by SAT.

Figure 4.11: Country portfolios as per the TGS 2002 - 2004



Source: South African Tourism (2008:103)

SAT's first portfolio review of 2000 – 2002 categorised the countries into a list of core and tactical markets, as well as into a “watchlist” group of countries. As evident in figure 4.11 Kenya, Nigeria, Tanzania, Botswana, Lesotho, Mozambique, Namibia, Swaziland, Zimbabwe and Zambia were all categorised by the SAT as the *core markets* while Angola and Malawi were identified as the *tactical markets*. Ivory Coast, Ghana, Mali, Mauritius, Senegal and Uganda were all categorised by the SAT as the *watchlist markets*.

In the second SAT portfolio review of 2005 – 2007, the core and investment markets were separated, strategic hubs (air links) were introduced and domestic tourism was included for the first time (South African Tourism, 2008).

Figure 4.12: The South African Tourism portfolio countries, 2005 to 2007

SA Tourism Portfolio 2005 – 2007:				
	AFRICA & MIDDLE EAST	UK and AMERICAS	ASIA & AUSTRALASIA	EUROPE
CORE MARKETS	Kenya Nigeria Domestic	USA UK	Australia	France Germany Netherlands
TACTICAL MARKETS	Tanzania Botswana Lesotho Swaziland		India	
INVESTMENT MARKETS	Angola Mauritius Mozambique Zambia Zimbabwe	Canada	China (including Hong Kong) Japan	
WATCH-LIST MARKETS	Ghana Senegal	Brazil	Malaysia New Zealand Singapore	Belgium Ireland Italy Sweden Switzerland
STRATEGIC HUBS	Egypt Senegal UAE		Malaysia Singapore	

Source: South African Tourism (2008:104)

Figure 4.12 illustrates that Kenya and Nigeria were once again identified as the *core markets*. In this review, Tanzania, Botswana, Lesotho and Swaziland were categorised as the *tactical markets*, differing in their categorisation from the first portfolio review. Angola, Mauritius, Mozambique, Zambia and Zimbabwe were all identified as the *investment markets*. Here too, it is interesting to note the change in categorisation of a country when compared to the first SAT portfolio review. The categorisation of Mozambique, Zambia and Zimbabwe alters from *core markets* to *investment markets*. Angola was moved from the *tactical market* to the *investment market* category. Mauritius, which was identified as a *watchlist country* with tourism potential in 2002 – 2004, was grouped in the *investment market* in the 2005 – 2007 TGS. Ivory Coast, Mali, Malawi and Uganda did not appear in any of the categories in this review. Ghana and Senegal remained as *watchlist markets*. Senegal and Egypt were also identified as *strategic hubs* in terms of their importance as air links.

Given that 60% of all tourist arrivals to South Africa came from five neighbouring states, and that South Africa enjoyed a dominant share in these markets, the 2008 – 2010 Strategy for SADC was primarily a defensive one: the retaining of existing tourists and

extracting additional value from them (as opposed to expanding, through acquiring new business). Outside of SADC, the focus was to attract smaller high-end leisure volumes which, in the long term, would provide opportunities for growth, especially from East and West Africa (South African Tourism, 2008:55).

The third portfolio review separated out the markets of strategic importance, as well as the strategic hubs, and included business tourism focus markets for the first time (South African Tourism, 2008). Figure 4.13 indicates that Kenya and Nigeria, once again, were identified as *core markets*. In addition, Botswana was also categorised as a *core market*. Angola, Mozambique and Zimbabwe were again identified as *investment markets*. DRC was also categorised as an *investment market*. Ghana moved from the *watchlist market* to the *tactical market*. Lesotho, Swaziland and Tanzania were again, categorised as *tactical markets*. Egypt remained in the *watchlist market* and Namibia was identified as a new *watchlist* country. Senegal remained in the *strategic hubs market* category. Two new countries that were flagged as *strategic hubs markets* were Ethiopia and Zambia.

Figure 4.13: The South African Tourism portfolio countries, 2008 to 2010

Responsibility		AFRICA	AMERICAS & the UK	ASIA & AUSTRALASIA	EUROPE	
Portfolio Manager	Country Manager	CORE MARKETS	Botswana Domestic Kenya Nigeria	USA UK	Australia India	France Germany Netherlands
		INVESTMENT MARKETS	Angola DRC Mozambique Zimbabwe	Canada	China (incl. Hong Kong) Japan	Italy Sweden
		TACTICAL MARKETS	Ghana Lesotho Swaziland Tanzania	Ireland	Singapore	Switzerland
Stakeholder Manager		WATCH-LIST MARKETS	Egypt Namibia UAE	Brazil	Malaysia New Zealand Rep of Korea	Austria Belgium Denmark Norway Spain
Global Channel Manager		STRATEGIC IMPORTANCE	Bahrain, Oman, Qatar, Saudi Arabia			
		STRATEGIC LINKS/HUBS	Ethiopia, Zambia, Senegal	Argentina	Thailand	Greece

Source: South African Tourism (2008:59)

4.7 CONCLUSION

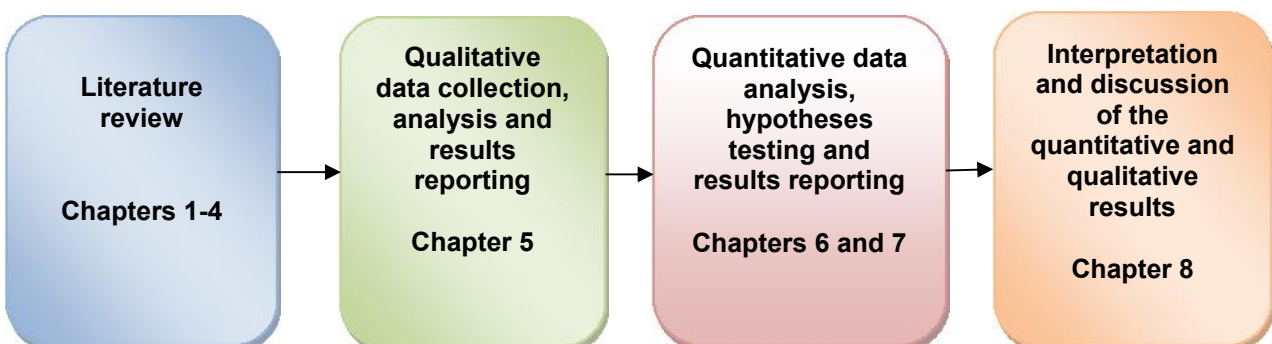
This chapter concentrated on the important milestones in the development of the South African aviation policy, emphasising a number of significant documents that played a role in the formulation and the development of the Airlift Strategy. The importance of air transport to the South African government, as well as its impact on the country's economy, trade and tourism, became evident through an exhaustive analysis of the official documents and policies.

The intertwined relationship of aviation policy, tourism and air passenger traffic flows was discussed. The chapter provided a concise overview of the dynamics of air passenger traffic flows between South Africa and each of the five key markets.

Key focus areas of South Africa's international air transport policy in relation to passenger air services were identified, together with hindrances and the strategies of overcoming these to achieve the main goal, which is increasing tourist numbers into the country by providing capacity ahead of demand.

This chapter also furnished a summary of the changes in African bilaterals, which were an indication of the uneven liberalisation dynamics that have been taking place in the South African – intra-African air transport market. Chapter 4 comprised the final literature review. Figure 4.14 presents an outline of the subsequent chapters.

Figure 4.14: An outline of the subsequent chapters



The next chapter discusses the qualitative methodology in the form of the Delphi technique, the main purpose of which is to identify and confirm, from expert sources, features of BASAs, as well as factors not related to these agreements that impact on air traffic flows, many of which have already been identified in the literature phase. The results of the Delphi will then be viewed against the factors derived from the literature survey in order to produce an exhaustive list of factors that could impact air passenger traffic flows between two countries. These data will form the foundation of the independent variables to be included in the empirical model. The findings stemming from the application of the Delphi technique will also be used as supporting evidence for the quantitative results.

CHAPTER 5

QUALITATIVE METHODOLOGY

5.1 INTRODUCTION

An international as well as a national literature search on the concepts of air transport deregulation and liberalisation, the YD and aviation policy in relation to Africa and South Africa was undertaken and comprehensively discussed in Chapters 1 to 4.

In the first chapter, a number of research objectives were formulated for this study: to examine liberalisation of air services in Africa with particular reference to the YD; to review developments in the South African aviation policy overall and also with particular reference to Africa; to identify factors that have influenced liberalisation of air services between South Africa and its African bilateral air partners over the selected time period; and to test the simultaneous impact of the South African aviation policy in Africa as well as the key influencing factors on air passenger traffic flows between 2000 and 2010. In particular, to measure the overall impact of the South African aviation policy in Africa and in each of the four regions as well as the impact of its individual provisions. Objectives 1 and 2 were achieved in Chapters 1 to 4.

This chapter aims to provide guidelines for attaining the remainder of the specified objectives. To achieve this, a mixed methods approach is followed which implies the use of both the quantitative and qualitative forms. The aim is to attain the following research objectives:

- **To identify factors that have influenced liberalisation of air services between South Africa and its African bilateral air partners over the selected time period;**

- **To test the simultaneous impact of the South African aviation policy in Africa as well as the key influencing factors on air passenger traffic flows between 2000 and 2010. In particular, to measure the overall impact of the South African aviation policy in Africa and in each of the four regions as well as the impact of its individual provisions.**

As was established through a literature review, the impact of an aviation policy on air passenger traffic flows could not be tested in isolation as a multitude of other factors could have had an impact on these flows. Variations in these factors could mean that apparently identical air policy measures could have disparate effects on air passenger traffic flows (Warnock-Smith & O'Connell, 2011).

To ensure that the most significant and imperative factors impacting on air passenger traffic flows have been identified, the study employs a two-round Delphi technique in its qualitative phase. The purpose is to determine the opinions of aviation experts, in academia as well as the public and private sectors, on the features of BASAs and those not related to BASAs that they view as having an influence on air passenger traffic flows between country-pairs in relation to Africa. A list of the experts who participated in the Delphi process can be found in Appendix H. This approach is essential to ensure that factors that are unique to the region from an industry perspective have also been identified.

The quantitative phase of data collection and analysis utilises a fixed one-way panel regression technique which is applied to a panel data set of 45 countries covering the 11 year time period from 2000 to 2010. The aim is two-fold: firstly, to estimate and statistically quantify the impact of key influencing factors, one of which is an aviation policy on air passenger traffic flows with specific reference to South African aviation policy in Africa; and secondly, to identify which specific provisions of the aviation policy have the most significant impact.

The qualitative results generated an extensive list of factors that influence air passenger traffic flows between African country-pairs. These factors were subsequently plotted under factor categories that were identified from the literature in order to create a conceptual framework for the relevant BASA and non-BASA factors. The ten main factor categories that were established are: 1) *government responsibility*, which was further subcategorised into *aviation policy* and *all others*; 2) *external economic factors*; 3) *external political factors*; 4) *supply*; 5) *intangible factors*; 6) *demand*; 7) *socio-economic and geographic factors*; 8) *geo-economic factors*; 9) *external health factors*; and 10) *force majeure*. Given the importance of the aviation policy in this research, the aviation policy subcategory was further subdivided into a) *air services agreements' features* and b) *others*. The results of the Delphi technique (hereafter the Delphi) were essential in bridging the gap between the literature review and the quantitative research.

The next step was to determine all the factors impacting on air passenger traffic flows that had been statistically measured and quantified in the existing secondary research. The subsequent step was to assess all the factors identified through the Delphi and secondary literature, the majority of which were intertwined and interlinked, in relation to their consistent and reliable data availability and the ability of the empirical model to statistically quantify and measure these factors over the 11 year time period in the African context. This step filtered the independent factors or predictors and narrowed them down to 12 in total, which are discussed more comprehensively in Chapter 6.

The quantitative results provide a comprehensive overview of the degree of liberalisation of the respective BASAs, as measured by the four variants of the Air Liberalisation Index (ALI), namely, *STD*, *5th+*, *DES+* and *OWN+*, at any point in time over the selected 11 year time period in the five markets: intra-African; the SADC; West African; East African and North African. In these markets, where the impact of the aviation policy was found to be significant, individual provisions were tested for their impact on air passenger traffic over two time periods: 2000 – 2010 and 2006 – 2010. The results of this research effectively fill the gap in the existing literature, thereby providing further empirical evidence of the liberalisation of the air services in the South African-African context by

using a panel data technique instead of the cross-sectional approach. The selected quantitative technique caters for the change in dynamics of several units under observation over a period of time. In the instance of aviation policy this is a very important aspect to factor in, as the amount of time needed for a market to respond to changes in the underlying regulatory approach could range from a few months to several decades (InterVISTAS-ga² Consulting, Inc., 2006:62).

This chapter focuses on the qualitative research undertaken in the study by explaining the Delphi technique and its application. The chapter concludes with an explanation of how this data was analysed and presents the results in the form of a conceptual framework of factors that are viewed by the experts as having an influence on air passenger traffic flows.

5.2 QUALITATIVE RESEARCH

5.2.1 Introduction

Qualitative research significantly differs from quantitative research. Van Maanen, Dabbs and Faulkner (1982:32) clearly differentiate the two research designs: “Quality is the essential character or nature of something; whereas, quantity is the amount. Quality is the ‘what’ and quantity is the ‘how much’. Qualitative refers to the meaning, the definition or analogy or model or metaphor characterising something, while quantitative assumes the meaning and refers to a measure of it.”

In this study, the Delphi technique, which according to Linstone and Turoff (2002) is a series of sequential questionnaires or “rounds” interspersed by controlled feedback that seek to gain the most reliable consensus of opinion in a group of experts, was utilised to collect and analyse qualitative data from the panel of aviation industry experts; this was purposively selected based on exact criteria such as their specific knowledge and expertise on the subject as well as their respective positions in their selected organisations. It must be noted that the type of information required from aviation experts

could only be obtained through a qualitative research technique which allowed for the gathering of detailed and in-depth information on a specified topic. Another factor that led to the use of this technique was that only a limited number of experts in South Africa, Africa and internationally could give valid opinions on the chosen subject. This was further constrained by a time limitation, distance and other factors that made it difficult for the panel of experts to work together in the same physical location. In addition, many communication barriers could be overcome with the Delphi due to the confidentiality of the individual respondents' opinions. Some of these barriers are: reluctance to voice unpopular views, to disagree with one's associates, or to modify previously stated positions (Barnes in Yousuf, 2007:4). In this way, the heterogeneity of the participants (Linstone & Turoff, 2002) is preserved, which assures the validity of the results, that is, the avoidance of domination by quantity or by strength of personality ("bandwagon effect"). The heterogeneity of responses was important to ensure that the results of the Delphi reflect a multitude of views on different factors that were viewed as having an impact on air passenger traffic flows.

5.2.2 The Delphi method

5.2.2.1 Background and areas of application

The Delphi method was developed during the 1950s by workers at the RAND Corporation, the objective being to forecast future events and possible outcomes based on inputs and circumstances. The earliest use of the Delphi was primarily military (Hsu & Sandford, 2007:1). Slightly later, the technique was described as a procedure to "obtain the most reliable consensus of opinion of a group of experts ... by a series of intensive questionnaires interspersed with controlled opinion feedback" (Dalkey & Helmer, 1963:458). The Delphi is not intended to challenge statistical or model-based procedures against which human judgement is generally known to be inferior, but it is, rather, intended for use in judgement and forecasting situations in which pure model-based statistical methods are not practical or possible because of a lack of appropriate

historical, economic or technical data, and thus where some form of human judgmental input is necessary (Rowe & Wright, 1999:354).

Linstone and Turoff (2002:4) state that besides its traditional application as a forecasting technique, the Delphi has been applied in the following areas:

- Gathering current and historical data not accurately known or available;
- Examining the significance of historical events;
- Evaluating possible budget allocations;
- Exploring urban and regional planning options;
- Planning university campus and curriculum development;
- Putting together the structure of a model;
- Delineating the pros and cons associated with potential policy options;
- Developing causal relationships in complex economic or social phenomena;
- Distinguishing and clarifying real and perceived human motivations;
- Exposing priorities of personal values or social goals.

In summary, the Delphi has successfully been used in various fields of study such as nursing research, programme planning, needs assessment, policy determination and resource utilisation. The aims of the Delphi were, among others, to develop a full range of alternatives, explore or expose underlying assumptions, and correlate judgements on topics covering a wide spectrum of disciplines (Hsu & Sandford, 2007:1). As mentioned

earlier, the Delphi was the best tool to gather in-depth information from a panel of aviation experts who were geographically dispersed, without interfering too much with their very busy schedules.

5.2.2.2 Characteristics of the Delphi

There are four key features that define and characterise the Delphi. These are anonymity, iteration, controlled feedback and the statistical aggregation of group response (McKenna, 1994; Rowe & Wright, 1999; Hasson, Keeney & McKenna, 2000; Okoli & Pawlowski, 2004; Hsu & Sandford, 2007; Yousuf, 2007). *Anonymity* is achieved through the use of questionnaires or other forms of communication where expressed responses are not identified as being from specific members of the panel (Yousuf, 2007:3). By allowing individual members the opportunity to express their opinions and judgements privately, undue social pressure is avoided. Ideally, this should allow individual group members to consider each idea on the basis of merit alone, rather than on potentially invalid criteria such as the status of the proponent of the idea (Rowe & Wright, 1999:354). This key feature was very relevant to the aim of the Delphi study, which was to gather as many views and opinions as possible of the factors impacting on air passenger traffic flows without being biased by the group's responses. Owing to the *iteration* of the questionnaire over a number of rounds, the individuals were afforded the opportunity to change their opinion and judgement without any pressure from the group. In this study, only two rounds were utilised as further rounds would not have added any value to the study and would only have annoyed aviation experts who were already extremely busy. The *controlled feedback* process consists of a well-organised summary of the preceding iteration which was intentionally distributed to the subjects, according each participant an opportunity to gain additional insight and more thoroughly clarify the information developed by previous iterations (Hsu & Sandford, 2007:2). Responses to the round one questionnaire were consolidated into common themes and topics using the content analysis technique, and were subsequently distributed in round two as part of a more structured questionnaire. *Feedback* is often presented as a simple statistical summary of group responses, usually comprising a mean or median value such as the

average “group estimate” of the date by when an event is expected to occur (Rowe & Wright, 1999:354). The results of round two are presented in section 5.6.1. These characteristics are designed to offset the shortcomings of the conventional means of pooling opinions obtained from a group interaction, in particular, influences of dominant individuals, noise and group pressure for conformity (Dalkey, 1972).

5.2.2.3 Strengths

Linstone and Turoff (2002:4) argue that the Delphi is beneficial when other methods are not adequate or appropriate for data collection. Dalkey (1972), Helmer (1983), Dawson and Barker (1995) all assert that one of the major advantages of using the Delphi as a group response is that consensus will emerge with one representative opinion being gained from the experts. McKenna (1994:1222) supports this argument by highlighting that the main advantage of the Delphi is the achievement of concurrence in a given area where none previously existed. This tendency to converge towards agreement is a unique aspect of the Delphi (Sackman, 1975; Lyons, 1981). One of its other main advantages, as indicated, is its confidentiality, with which many of the communication barriers could be overcome (Yousuf, 2007:4). In addition, the feedback between rounds could extend knowledge and stimulate new ideas, and in itself be highly educational (Stokes, 1997).

In line with the above discussion and the study’s third research objective, the Delphi was selected as the qualitative method for the following reasons:

- The Delphi is flexible in its design and amenable to follow-up interviews. This enables the collection of detailed and in-depth data which leads to a deeper understanding of the fundamental research questions;
- The study required an investigation on expert opinions about BASA- and non BASA-related factors that impact on air passenger traffic flows between country-pairs in relation to Africa. This complex issue required knowledge from people who understand economic, social, political and regulatory issues. As mentioned

previously, only a limited number of experts in South Africa, Africa and internationally could express valid opinions on the chosen subject. Thus, the Delphi was the most suitable technique for information-gathering from aviation experts who were geographically dispersed;

- Delphi does not require the experts to meet physically, which could have been very impractical for international experts. The selected experts were in fact constrained by time, distance and other factors that made it unfeasible for the panel to work together in the same physical location;
- The Delphi panel size requirements are modest, which was an important aspect for the researcher as the number of experts on the subject was relatively limited and even more limited in terms of those who were willing to participate in the research;
- The anonymity characteristic of the Delphi could assist with many of the communication barriers discussed above, and therefore the heterogeneity of participants was preserved;
- Delphi serves the dual purpose of: 1) soliciting opinions from the experts and 2) reaching a level of consensus on these opinions.

While there are several clear advantages of this approach, conducting the Delphi can be very time consuming. This was particularly relevant to the current study as the data collection process took six months, from mid-March to mid-August 2011. As with any method, the duration and cost of a Delphi study is related to the scale of the survey (up to 1 000 items may be addressed), the complexities involved in the processing of the questionnaires and the number of rounds (Powell, 2002:377). These and other limitations of the Delphi are discussed below.

5.2.2.4 Limitations and weaknesses

As with any research method, the Delphi displays several limitations:

- **Consensus** - Mitroff and Turoff (2002) argue that the consensus reached in a Delphi may not be a true consensus, but rather a product of specious or manipulated consensus. As a specious consensus does not contain the best judgment, it is viewed as a compromise position. A manipulated consensus was overcome as the two-round Delphi did not require further consensus on the results reached in round two of the Delphi;
- **The potential of a low response rate** that characterises the final rounds of most Delphi investigations is an important limitation of this method (McKenna, 1994:1224). Mason and Alamdari (2007:306) concluded that in studies where the panel was closely concerned with the subject, a very high rate of response was achieved. On the contrary, in studies where the experts were drawn from a larger group and the interest in the findings of the report was less directly related to the experts, the response rate was unsurprisingly lower. In this study the experts were selected based on their subject knowledge. In addition, to increase the response rate in each of the two rounds, the researcher sent follow-up emails after the deadline, which resulted in several of the respondents requesting an extension, thereby highlighting their interest in the research. The response rate in both rounds was also high, which is elaborated on in more detail in section 5.3.2 below;
- **Consumption of large blocks of time** - The Delphi can be very time-consuming and laborious, as mentioned above. The entire process can take 30 to 45 days to complete (Barnes in Yousuf, 2007). The iteration characteristics of the Delphi provide opportunities for investigators and subjects to improve the accuracy of their results. At the same time, these characteristics increase the workload of investigators and the amount of time needed to successfully complete the data collection process (Cunliffe, 2002). Computer-based elicitation of answers,

particularly where experts are geographically dispersed, could reduce the time taken to collect the responses. However, persuading experts in their field to spend time completing repeated rounds of surveys could be difficult and sometimes impractical (Mason & Alamdari, 2007:305). This particular limitation was considered by the researcher given the nature of the expert panel which was geographically dispersed and had extremely busy work schedules. The experts were notified that for the purposes of this research only two rounds of the Delphi would be conducted, both of which were via email;

- **Accountability** - Sackman (1975) argues that anonymity in the Delphi surveys could lead to a lack of accountability for the views expressed, while Goodman (1987) maintains that it encourages hasty ill-considered judgements. Rauch (1979), on the other hand, inclines towards “quasi-anonymity” which implies that the respondents may be known to one another, but their judgements and opinions remain strictly anonymous. Knowing who the other subjects are should have the effect of motivating the panellists to participate. Powell (2002:378) argues that this limitation is not unique to the Delphi but could be applicable to any anonymous postal questionnaire. In this study, several respondents from the same organisation were known to each other, in particular those from the South African Department of Transport and Qatar Airways.

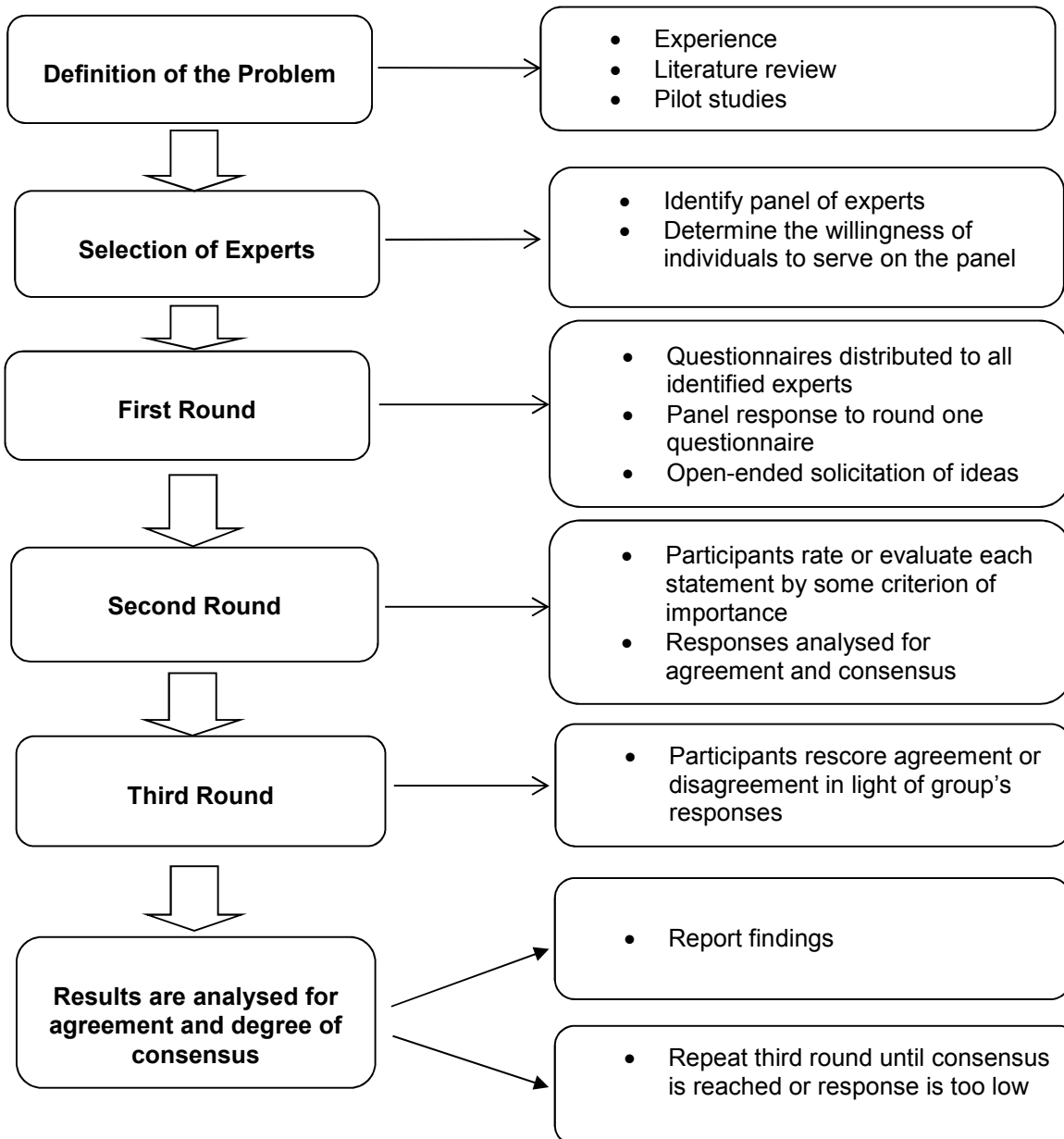
Based on the literature research, one could conclude that there are many different views on what the “proper”, “appropriate”, “best” and/or “useful” procedures for accomplishing various aspects of the Delphi technique are (Rowe & Wright, 1999; Hsu & Sandford, 2007). The classical Delphi process is briefly discussed in the subsequent section followed by a discussion of this study’s expert panel.

5.2.2.5 Classical Delphi process

The first round of the classical Delphi procedure is unstructured, which allows the individual experts relatively free scope to identify and elaborate on those issues that they

deemed important (Martino, 1983). These individual factors are subsequently consolidated into a single set by the monitor team, who then produce a structured questionnaire from which the views, opinions and judgments of the Delphi panellists may be elicited in a quantitative approach during subsequent rounds. After each of these rounds, responses are analysed and statistically summarised (usually into medians as well as upper and lower quartiles) and subsequently presented to the panellists for further consideration. This procedure continues until definite stability is achieved in panellists (Rowe & Wright, 1999:354). In essence, the Delphi is a multi-stage approach, with each stage building on the results of the previous one (McKenna, 1994:1221). However, it should be noted, that there are variations to the classical Delphi. A newer approach is based on an extensive review of the literature (Hsu & Sandford, 2007:2). Figure 5.1 depicts the steps involved in the Delphi method; compiled from and based on a comprehensive secondary literature review.

Figure 5.1: Steps in the Delphi method



Sources: Jones and Hunter (1995); Rowe and Wright (1999); Okoli and Pawlowski (2004); Hsu and Sandford (2007); Yousuf (2007)

5.2.2.6 Expert panel

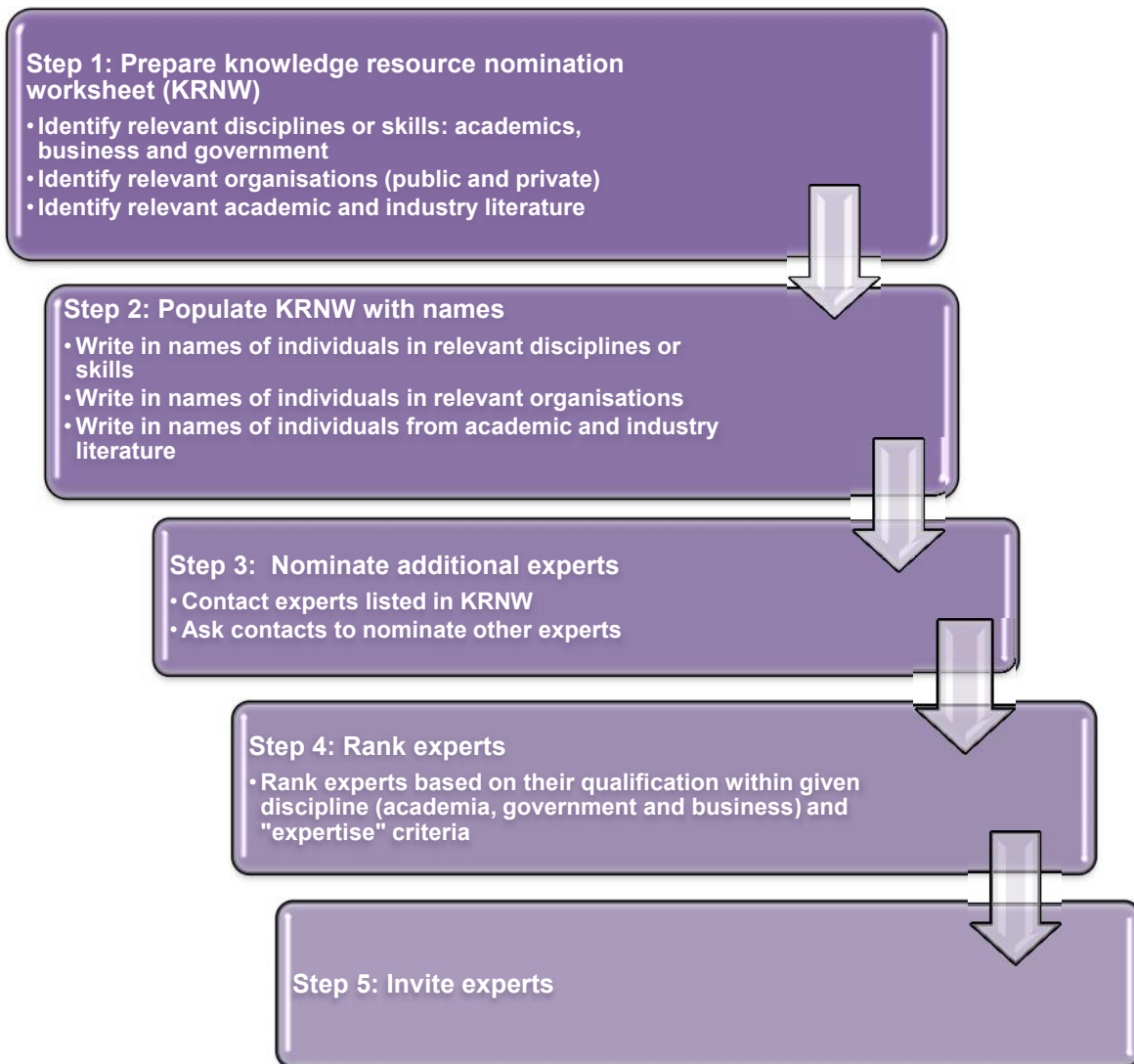
Selecting research participants is a critical component of the Delphi as its output is based on the opinion and feedback of the experts (Skulmoski, Hartman & Krahn, 2007:3). According to Adler and Ziglio (1996), there are four requirements of “expertise”:

1) knowledge and experience with the issues under investigation; 2) capacity and willingness⁴⁵ to participate; 3) sufficient time to participate in the Delphi; and 4) effective communication skills.

This study followed the expert selection procedure of Okoli and Pawlowski (2004), augmented by the four requirements of “expertise” as proposed by Adler and Ziglio (1996). This is illustrated in figure 5.2.

⁴⁵ Although one of the requirements of “expertise”, namely the willingness to participate may be argued to lead to bias, the panel selection process had to account for this as the number of aviation experts on the subject matter was limited and even more limited in terms of their willingness to take part in the Delphi.

Figure 5.2: Procedure for selecting the experts in this study



Sources: Adler and Ziglio (1996); Okoli and Pawlowski (2004)

Steps 1 to 3 generated a nomination list of 82 aviation experts, representing local and international academia as well as public and private sectors, thus ensuring heterogeneity amongst the group. Rowe (in Powell, 2002:379) suggested that experts be drawn from varied backgrounds to ensure a wide knowledge base; Murphy, Black, Lamping, McKee, Sanderson, Askman and Marteau (1998) supported this by concluding that the diversity of the expert panel led to better performance as it allowed for different perspectives and a wider range of alternatives to be considered. In step 4, 55 experts were prioritised based

on the four requirements of “expertise”. In step 5 these experts were approached to participate in the research of which 36 agreed to take part in the Delphi.

From the literature review, it is evident that there is a wide variation in the number of participants that are deemed acceptable to participate in a Delphi. In their study, Rowe and Wright (1999:357-358) summarise a number of Delphi studies where the group size ranged from three to over 100. Witkin and Altschuld (1995) argue that the approximate size of a Delphi panel is generally less than 50, but more members have been employed in some cases. Ludwig (1997:2) on the other hand, documents that the majority of Delphi studies have utilised between 15 and 20 respondents. Clearly, there are no definite guidelines on the number of experts that should be included in a Delphi panel.

Several studies suggest that the number of participants will vary according to the scope of the problem and the resources available (Delbecq, Van de Ven & Gustafson, 1975; Jones, Sanderson & Black, 1992; Hasson *et al.*, 2000). Powell (2002:378) reconfirms that resources in terms of time and money are important and influential; however, an assessment of the magnitude of the problem and the acceptability of the answers are open to interpretation by the researcher and commentator alike.

The impact of the number of respondents has been considered by Boje and Murnighan (1982) and Brockhoff (2002). Neither of these studies found a consistent relationship between the panel size and the effectiveness criteria. Murphy *et al.* (1998:37) concur that there is very little empirical evidence of the effect of the number of participants on the reliability or validity of consensus processes. Thus, the Delphi technique does not call for expert panels to be representative samples for statistical purposes, which is an opinion supported by Rowe and Wright (1999), who stated that representativeness is based on the expertise and knowledge of the expert panel rather than on its size.

The subsequent section describes the two-round Delphi and data collection process applied in this study.

5.3 DATA COLLECTION

5.3.1 Introduction

Data collection techniques may be grouped into two categories: qualitative (collecting data in the form of words or pictures) and quantitative (collecting data in the form of numbers) (Cooper & Schindler, 2003). This study employed both techniques, as indicated. The next section discusses the Delphi process followed in this study, that is, content analysis and the qualitative data analysis technique utilised in the first round of the Delphi. The quantitative data analysis employed in this study is covered in Chapter 6.

5.3.2 The Delphi process in this study

The initial Delphi questionnaire for round one (Appendix I) was pretested using two methods described by Cooper and Schindler (2003:392), namely, researcher pretesting and participant pretesting. The first round questionnaire was pretested with the researcher's study leader to ensure that the open-ended questions were clear and relevant to the research objective. Participant pretesting entailed the questionnaire being field-tested by the sample participants. This was important to ensure the content validity of the questionnaire as well as the unambiguity of the instructions. Three aviation experts pretested the questionnaire; they all confirmed that it was clear and relevant to the research objective and the purpose of the study. The questionnaire that was distributed to the experts as part of the pretesting was identical to the one utilised in the actual Delphi round.

As was mentioned earlier, of the 55 aviation experts who were approached by email to participate in the research, 36 agreed to take part in the Delphi. The panellists were informed that they would be required to complete two rounds of questionnaires, the first of which was included with the email. The panellists were further informed that the time required to complete both rounds would not exceed 30 minutes.

Round one began with an open-ended solicitation of ideas and opinions. The respondents were asked to provide their comprehensive opinions on 1) all features of BASAs that they believed directly or indirectly affected air passenger traffic flows between two countries (any arbitrary country-pair in the context of Africa) and 2) any other factors that they felt directly or indirectly had an influence on air passenger traffic flows between any arbitrary country-pair. Experts were given two weeks to respond to the questionnaire. As a result, 23 responses were received.

Responses to the round one questionnaire were subsequently consolidated into common themes and topics using the content analysis technique. Consolidation of statements through content analysis involved three main steps: 1) listing of respondents' statements; 2) coding of concepts within respondents' statements; and 3) consolidation of concepts. These steps are comprehensively discussed in section 5.6.1 below.

Content analysis is highly recommended by many authors for the analysis of the first round Delphi data and has been applied across various fields (Hasson *et al.*, 2000; Powell, 2002; Douglas, 2008). Such analysis is a detailed and systematic examination of material utilised for the purposes of identifying patterns, themes or biases (Leedy & Ormrod, 2005:142). Mayring (2000) describes qualitative content analysis as an approach to empirical, methodological and controlled analysis of text within the context of communication, which follows content analytical rules and step by step models.

One of the appealing aspects of content analysis is that it recognises the role of the researcher in the construction of the meaning of and in the text (Bryman, 2001). This was an important aspect as the researcher was actively involved with the data collection and analysis. In this study, such an analysis helped to identify and summarise message contents in a systematic manner.

In addition, this type of analysis extends far beyond simple word counts; the reliance of the technique on the coding and categorisation of the data makes it particularly rich and meaningful. It is furthermore unobtrusive in nature and has the ability to reflect trends in

society, which was important for the purpose of this study to ensure that the consolidated concepts based on the round one Delphi reflected the reality of the aviation market in the context of Africa (Stemler, 2001).

A more structured questionnaire for the round two Delphi, found in Appendix I, was constructed using concepts derived from the content analysis technique. Round two involved the new document being distributed to 23 experts, who were asked to agree or disagree with a number of summarised statements from round one. For simplicity's sake, the dichotomous approach was utilised to reach consensus from the experts over two rounds. This could be viewed as a limitation from a Delphi study point of view and the researcher recommends the use of a 5 or 7 point Likert scale for the two-round Delphi studies, so that the strength of the agreement or disagreement of each statement can be measured. However, given that the purpose of the qualitative research was the identification of those factors that were viewed by the experts as having an impact on air passenger traffic flows and would subsequently be assessed for their applicability in the quantitative analysis, the depth of the agreements or disagreements on each of the statements was not of great value. Experts were accorded two weeks to respond to the questionnaire. To increase the response rate in both rounds, the researcher sent out follow-up emails after the deadline, which resulted in several respondents requesting a deadline extension due to their busy work schedules. Seventeen responses were received in round two.

The researcher made a decision not to discard any feedback received from the experts, since their particular views and opinions would have been valid in their respective organisations and in the context of their professional environment. Thus, even if only one of the 17 respondents agreed or disagreed with a certain statement, the researcher included it in the feedback. The Delphi results are presented in section 5.6.

It is evident from the literature that the number of rounds in the Delphi is variable and dependent on the purpose of the research. Delbecq *et al.* (1975) suggest that a two or three iteration Delphi is sufficient for most research. For the purposes of this study, two

rounds were utilised as it was not necessary for respondents to reach further consensus on the factors in consecutive rounds. The response rate was high in both rounds, with a response rate of 64% in round one and 74% in round two. The high response rate could be attributed to the experts' interest on the subject and possibly their motivation to participate in the research.

To summarise, both rounds utilised self-completion questionnaires that were distributed via email. Experts were allowed two weeks to respond to the questionnaire in each of the rounds. Qualitative data was collected from mid-March to mid-August 2011 using the Delphi. No incentives were provided to the respondents for completing the questionnaires.

5.3.3 Validity and reliability of content analysis in the Delphi technique

In relation to qualitative research, reliability indicates that the researcher's approach is consistent across different research and projects (Creswell, 2009:190). Reliability may be discussed in terms of *inter-coder* and *intra-coder reliability* (Stemler, 2001).

Inter-coder reliability or reproducibility refers to the levels of agreement among independent coders who code the same content using the same coding instrument. If the results fail to achieve reliability, it implies that something is amiss with the coders, the coding instructions, the category definitions, the unit of analysis, or some combination of these (Wimmer & Dominick, 2003:156). In this study, the researcher was the only coder of the concepts and therefore there was no confusion regarding coding instructions, category definitions or units of analysis.

The researcher conducted a comprehensive literature review in order to gain an understanding of the topic under investigation, and based on that she defined the categories and units of analysis for this study. It is reasonable to argue that the researcher possessed an adequate understanding of the concepts investigated and has accurately analysed and coded the statements.

Intra-coder reliability or stability refers to the level of replication that could be expected if similar studies were undertaken, basically answering the question: “Can the same coder obtain the same results try after try?” The procedure could therefore be repeated and similar groupings of statements into themes or concepts could be expected (Stemler, 2001). As mentioned earlier, the coder followed a three-step approach in grouping, coding and consolidating statements that were generated in round one of the Delphi into concepts that were utilised in constructing the second questionnaire. The three-step approach is discussed in detail in section 5.6.1.

Considering the above it is concluded that the qualitative instrument in this study was reliable.

In qualitative research, validity does not carry the same connotations as in quantitative research. Qualitative validity means that the researcher validates the accuracy of the findings by employing certain procedures. Validity is one of the strengths of qualitative research and it is based on determining whether the findings are accurate from the perspective of the researcher, the participant or the readers of an account (Creswell, 2009:190-191). The validity of findings or data is referred to as the “correctness” or “precision” of a research reading and is often explained as a concept with two distinct dimensions: internal and external validity (Ritchie & Lewis, 2011:272).

Internal validity is the ability of the research instrument to measure what it is purported to measure whereas *external validity* refers to the data’s ability to be generalised across persons, settings and times (Cooper & Schindler, 2003:231). Factors that threaten the internal and external validity of a research design are influenced by the time dimension of a study which could either be cross-sectional or longitudinal (Du Plooy, 2002:84-85). The qualitative research of this study followed a cross-sectional approach.

In a cross-sectional design, a number of factors contribute to internal validity, namely, constructing reliable measuring instruments, drawing random samples, the unconstructiveness of the measuring instrument and/or the researcher’s behaviour so

that neither the measurement nor the researcher disrupts, directs or intrudes on what is being researched, and the effectiveness of manipulating the independent variables to ensure that it produces an effect on the dependent variable (Du Plooy, 2002:84-85). The researcher carefully coded the concepts and took all reasonable precautions to ensure that the correct statements were entered. The consolidated concepts were then cross-checked by her study leader.

Factors that contribute to the external validity of a cross-sectional design include drawing a representative sample from the population, conducting research in real-world settings and avoiding inference factors such as fatigue (Du Plooy, 2002:84-85).

In the context of the Delphi studies, as already noted the use of participants who are knowledgeable and have an interest in the topic may help to increase the content validity of the Delphi (Goodman, 1987) while the use of successive rounds of the questionnaire helps to increase concurrent validity. It is important to note that the validity of the Delphi results will ultimately be affected by the response rates (Hasson *et al.*, 2000:1012). As previously reported, the response rates for both rounds of the Delphi were high: 64% in round one and 74% in round two. A two-round Delphi was followed in order to avoid respondent fatigue. The research was conducted in authentic environment conditions, which allowed the respondents to take part in the research without leaving their usual place of work.

In line with the above discussion the requirements for external validity were met and all reasonable precautions were taken by the researcher when coding and analysing the data. As the qualitative instrument was considered to be both internally and externally valid and was regarded as being reliable, one could conclude that it had attained validity.

5.4 QUALITATIVE DATA ANALYSIS

Qualitative “raw” data come in various forms but most commonly comprise verbatim transcripts of interviews or discussions, observational notes or written documents. As

regards qualitative data, a researcher has many options on how to change the “raw” data into final patterns of meanings. In most analytical approaches, data management initially involves deciding on the themes or concepts under which the data will be labelled, sorted and compared (Ritchie, Spencer & O’Connor, 2011:221). Due to the methodological frame of inquiry and in line with the aims of the analysis procedure, the Delphi, qualitative coding and categorisation were employed in this study. The data were separated into small units of meaning, which were subsequently methodically “named” per unit and then grouped together in categories that contained related codes. Each category therefore included codes that were semantically related (Henning, Van Rensburg & Smit, 2004). In this research, qualitative content analysis was utilised in round one of the Delphi to analyse the data as it was applied to factors that were identified as having an impact on air passenger traffic flows. The consolidated concepts were subsequently plotted into a conceptual framework, depicted in table 5.4 in section 5.6.1, to establish how the results fit into the context of the existing literature on air transport.

5.5 ETHICAL CONSIDERATIONS

Thirty-six aviation experts voluntarily agreed to participate in the Delphi and were informed that the research was conducted for academic purposes only; the outcome of which was the attainment of a doctoral degree and the publishing of articles in accredited scientific journals. The data collection approach was also approved by the Ethics Research Committee of the Faculty of Economic and Management Sciences at the University of Pretoria.

5.6 DELPHI RESULTS

In the following section, the actual findings resulting from the qualitative two-round Delphi research are reported and discussed. The objective is to explain the Delphi results and to identify various factors which impact on air passenger traffic flows. The research also endeavours to put these factors into the context of existing literature to determine where each one of them fits with regard to identified factor categories in relation to factors

impacting on air passenger traffic flows. The results guided the selection of independent variables for the quantitative research which is discussed in Chapter 6.

5.6.1 Results from the qualitative Delphi

The aim of the first round was to generate a comprehensive list consisting of two main themes: the features of BASAs, and the factors unrelated to BASAs that impact on air passenger traffic flows between an arbitrary African country-pair. To maximise the chances of identifying the most important ones, the respondents were encouraged to submit as many ideas and thoughts as possible. A round one question posed to the experts read: “Please provide your opinion as comprehensively as possible of all those features of bilateral air services agreements that you believe directly or indirectly affect air passenger traffic flows between two countries (any arbitrary country-pair)” and “Please list any other factors that you feel directly or indirectly have an influence on air passenger traffic flows between an arbitrary country-pair”. This questionnaire can be found in Appendix I. The respondents were reminded to provide their thoughts and opinions in relation to Africa in line with the research objective. As stated previously, 23 responses were received in round one.

STEP 1: Listing of respondents’ statements from round 1

Following the classic Delphi approach, no statements were excluded from the list and respondents’ comments were provided verbatim (Hasson *et al.*, 2000:1012). The experts’ statements were listed in no specific order or rank. Examples are found in table 5.1 below.

Table 5.1: Examples of listing of expert statements, derived in round 1

Features of BASAs	Other factors (non-related to BASAs)
A protectionist stance where a government puts the strategic interests of their national airline ahead of other industries and the private sector, usually resulting in very restrictive ASAs which inhibit the creation of new jobs, bilateral trade, etc.	Having a very liberal aviation policy between two countries is very important for profitable airlines to realise the true value of city pairs
A code-sharing agreement helps to overcome regulatory barriers, related to airports, traffic rights, problems caused by constrained capacity. In some circumstances a code-sharing agreement is the only way of entering a new market, creating a new service or increasing competitiveness vis-a- vis the incumbent. On the other hand code-sharing agreements between direct competitors on a fully liberalised market might raise competition concerns. Often used to increase route network without the cost of running a full service.	Social and economic factors, i.e. religion
Freedoms (traffic rights)	Visa requirements
Designating a limited number or even a single carrier which is permitted to operate services between two countries could affect air passenger traffic for a number of reasons, including: abuse of monopoly power in setting fares lower than demand; disincentivising passengers from travelling due to the designation of an airline with poor actual or perceived levels of service/safety; designating a carrier that can offer either very large or only very small levels of capacity.	Geopolitical issues, natural crises, civil unrest, etc. in one country may have an artificial downward effect on ordinarily good demand for travel to that country from another.

Source: Results of the first round of the Delphi

Where respondents submitted a paragraph, individual statements were further identified, separated and listed.

STEP 2: Coding of concepts within respondents' statements

A numerical code (not a value) as seen in the example provided in table 5.2 was subsequently attached to each concept.

Table 5.2: Examples of assigning a numerical code to statements

Features of BASAs - statements	Concept – Numerical code
A protectionist stance where a government puts the strategic interests of their national airline ahead of other industries and the private sector, usually resulting in very restrictive ASAs which inhibit the creation of new jobs, bilateral trade, etc (1).	1 = Protection of national carrier through restrictive agreements
A code-sharing agreement helps to overcome regulatory barriers, related to airports, traffic rights, problems caused by constrained capacity (2). In some circumstances a code-sharing agreement is the only way of entering a new market, creating a new service or increasing competitiveness vis-a-vis the incumbent (2). On the other hand code-sharing agreements between direct competitors on a fully liberalised market might raise competition concerns. Often used to increase route network without the cost of running a full service (2)	2 = Cooperative arrangement clause
Freedoms, i.e. traffic rights (3)	3 = Traffic rights/freedom clause
Designating a limited number or even a single carrier which is permitted to operate services between two countries could affect air passenger traffic for a number of reasons, including (4): abuse of monopoly power in setting fares lower than demand; disincentivising passengers from travelling due to the designation of an airline with poor actual or perceived levels of service/safety; designating a carrier that can offer either very large or only very small levels of capacity (5)	4 = Permitted number of airline designations/designation clause 5 = Capacity clause

Non-BASA related factors - statements	Concept – Numerical code
Having a very liberal aviation policy between two countries is very important for profitable airlines to realise the true value of city pairs (1)	1 = Aviation policy
Historical ties (2)	2 = Cultural affinities/historical relations between countries
Visa requirements (3)	3 = Existence of visa requirements and/or passport regulations
Geopolitical issues: natural crises (4), civil unrest (5), etc. in one country may have an artificial downward effect on ordinarily good demand for travel to that country from another	4 = Natural disasters 5 = Political situation in the country

Source: Results of the first round of the Delphi

STEP 3: Consolidation of concepts

All identified concepts were consolidated into a new document. This listed 25 statements for features of BASAs and 48 statements representing factors that were non-related to BASAs. As part of the second round, the document was distributed to the same respondents who had participated in round one. As noted, 23 aviation experts were requested to either agree or disagree with a number of statements pertaining to the features of BASAs and other factors that may influence air passenger traffic flows. Seventeen responses were received.

The results of the document distributed in round two are summarised in table 5.3 below. The fourth column in the table shows which items from the Delphi study were incorporated into the empirical model for the quantitative analysis. The decision on whether to incorporate or discard any of the items was based on a literature review of gravity-models pertaining to the aviation industry, the availability of consistent and reliable data over the research period, and the ability of the empirical model to statistically quantify and measure an item over the 11 year time period. The justifications for the selection of the independent variables are discussed in more detail in Chapter 6.

Table 5.3: Results of round two of the Delphi

I believe that the following features of bilateral air service agreements directly or indirectly affect air passenger traffic flows between any arbitrary country-pair (Answer sheet 1, Appendix I).	Agree	Disagree	Consensus %	Measured in the quantitative analysis
Capacity clause	16	1	94%	Yes, ALI
Permitted number of airline designation/designation clause	17	0	100%	Yes, ALI
Withholding/ownership clause	12	5	71%	Yes, ALI
Traffic rights/freedom clause	17	0	100%	Yes, ALI
Market access/Named points clause	16	1	94%	Yes, ALI
Tariff/Pricing regime clause	14	3	82%	Yes, ALI
Cooperative arrangements clause	15	2	88%	Yes, ALI
Statistical exchange clause	13	4	77%	Yes, ALI
Double taxation clause	9	8	53%	
Airport slot availability	14	3	82%	



I believe that the following features of bilateral air service agreements directly or indirectly affect air passenger traffic flows between any arbitrary country-pair (Answer sheet 1, Appendix I).	Agree	Disagree	Consensus %	Measured in the quantitative analysis
Strength of national/designated carrier	14	3	82%	
Protection of national carrier through restrictive agreements	17	0	100%	
Break of gauge provision	8	9	47%	
Unstable political situation	14	3	82%	
Degree of lobbying for increased bilateral agreements by the relevant parties in the country	15	2	88%	
State of diplomatic relations between countries	10	7	59%	
Lack or regional/common aviation market with harmonised rules	11	6	65%	
Lack of reciprocity or equal exchange of rights to airlines in each state	15	2	88%	
Propensity to declare disputes and to make use of dispute resolution provisions and ICAO in settling disputes	10	7	59%	
Free riders: <ul style="list-style-type: none"> • Access by non-designated airlines to BASA rights • 5th and 7th freedom rights where 3rd and 4th freedom rights do not exist • 5th and 7th freedom rights where 3rd and 4th rights exist 	15	2	88%	
Development of 6 th freedom carriage by intermediate based African airlines	16	1	94%	
Development of 6 th freedom carriage by intermediate based airlines in the Gulf and Europe	13	4	77%	
Lack of updated treaties on inter-state level as opposed to MOUs on aeronautical authority level	9	8	53%	
Lack of implementation/adherence to agreed conditions by African states	15	2	88%	
National aviation policies	16	1	94%	
I believe that the following factors directly or indirectly influence air passenger traffic flows between any arbitrary country-pair (Answer sheet 2, Appendix I).	Agree	Disagree	Consensus %	Measured in quantitative analysis
Existence or lack of free trade areas (free over border movement of passengers)	16	1	94%	
Business/trade relations between two countries	17	0	100%	Yes, flows of services
Existence of visa requirements and/or	16	1	94%	

I believe that the following features of bilateral air service agreements directly or indirectly affect air passenger traffic flows between any arbitrary country-pair (Answer sheet 1, Appendix I).	Agree	Disagree	Consensus %	Measured in the quantitative analysis
passport regulations				
Scope of competing airlines (reflects aggregate capacity, frequencies, number of city-pairs served, number of airlines offering competitive services)	16	1	94%	
Capitalisation levels of competing airlines	11	6	65%	
National geographic limitation of competition authorities (laws)	14	3	82%	
Existence of precompetitive regulatory frameworks relating to subsidies and predatory conduct of airlines	12	5	71%	
Standards of safety and operational oversight	13	4	77%	
Requirements for local registration of aircraft	11	6	65%	
Concerns for personal safety/fear of crime	14	3	82%	
Disparity in noise and carbon emission requirements	6	11	55%	
Cultural affinities/historical relations between countries	15	2	88%	Yes, colony variable
Level of labour (countries with excess deficient labour capabilities will likely import/export labour)	10	7	59%	
Special events (for example, significant sporting event)	15	2	88%	
International investment by countries in other countries	16	1	94%	
Affordability of air travel/price	17	0	100%	
Language difference	11	6	65%	Yes, language variable
Distance between countries	11	6	65%	Yes, distance variable
Level of aviation-related infrastructure in a country	15	2	88%	
GDP/state of economy in the country	11	6	65%	Yes, GDP variable
Infrastructure development	15	2	88%	
Capacity (as implemented by the airlines)	17	0	100%	
Aviation policy	15	2	88%	Yes, ALI
Political situation in the country	15	2	88%	
Exchange rates (impacts on relative price levels)	14	3	82%	
Personal financial ability to travel	16	1	94%	
Tourism-related demand/touristic attractiveness	16	1	94%	

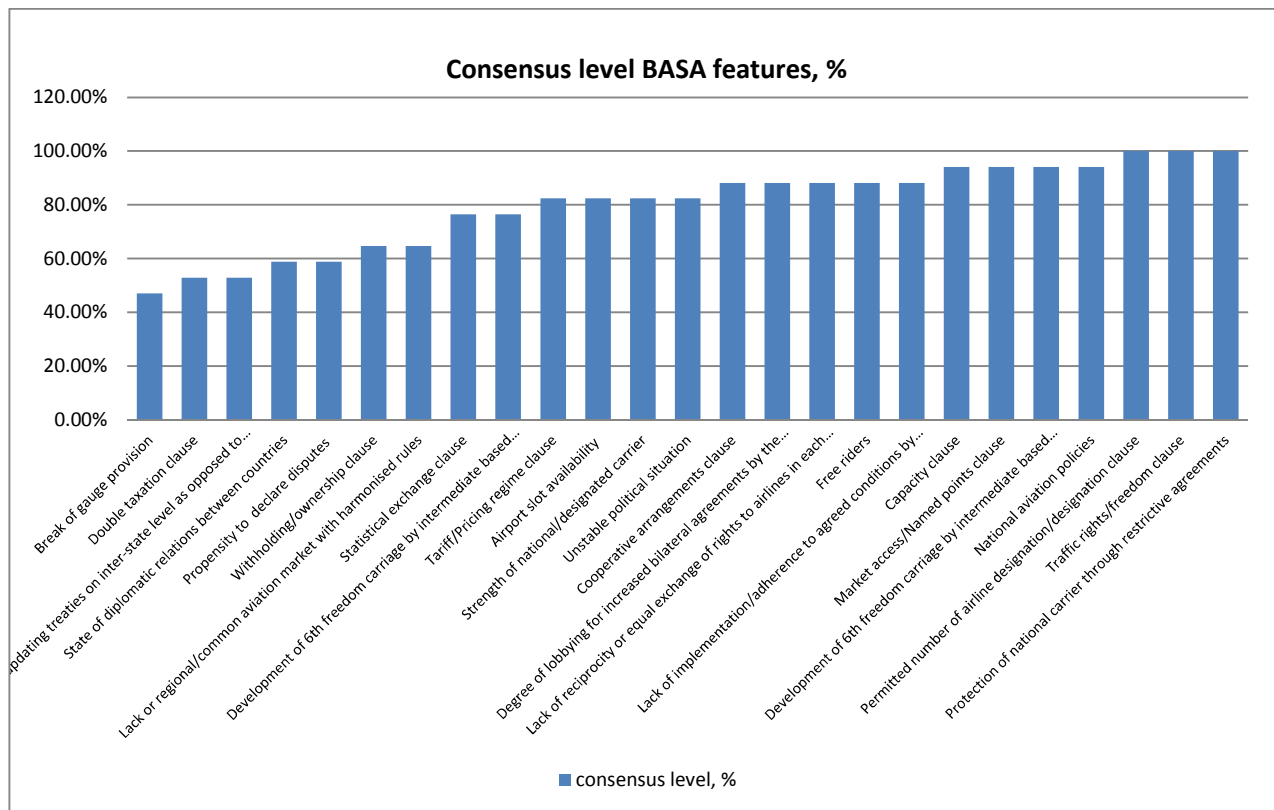
I believe that the following features of bilateral air service agreements directly or indirectly affect air passenger traffic flows between any arbitrary country-pair (Answer sheet 1, Appendix I).	Agree	Disagree	Consensus %	Measured in the quantitative analysis
State of diplomatic relations/foreign policy	10	7	59%	
World economic situation (for example recession)	17	0	100%	
External health factors (such as SARS)	17	0	100%	
Natural disasters	16	1	94%	
Alignment of aviation policy and tourism policy	14	3	82%	
Tax incentives	10	7	59%	
Labour law	6	11	55%	
Availability of other modes of transport	15	2	88%	
Economic policy (interest rates, anti-inflation policies, exchange rate controls, impact of indirect taxation)	16	1	94%	
Reputation/image of the country	14	3	82%	
Existence of a national carrier	10	7	59%	
Population size	13	4	77%	Yes, population
Ease of obtaining permission to exercise the rights granted in terms of BASA	15	2	88%	
Airport slot availability (for example, when not in BASA such as UK)	15	2	88%	
Weather	11	6	65%	
Anti-trust immunity for airline alliances and joint ventures	14	3	82%	
Distribution of income/income inequality	11	6	65%	
Degree of urbanisation/share of urban population	13	4	77%	
Size of conurbation and catchment area of airports in origin and destination	12	5	71%	
Excessive reliance on YD as instrument for liberalisation and the selective and limited adoption of its provisions	11	6	65%	
Lack of African regional agreement to the level of airline participation in competition to internationally and SA-based airlines	13	4	77%	

Source: Results of the second round of the Delphi

Figure 5.3 visually depicts the consensus levels reached on each of the 25 statements pertaining to the features and factors of BASAs. The consensus results, pertaining to BASA factors (answer sheet 1) and generated in round two, indicate that 20% (five items) of the statements fall within the 40 to 60% level of the consensus range, with 16% (four items) falling into the 61 to 80% level of consensus range and 64% (16 items) falling into

the 81 to 100% range. The most frequently occurring level of consensus which is measured by the mode is 88%, with the median being 82% and a mean of 80%. “*Break of gauge provision*” was the only item which reached a consensus level below the threshold level of 51%. Three statements reached a 100% level of consensus: “*permitted number of designations/designation clause*”, “*traffic rights/freedom clause*” and “*protection of national carrier through restrictive agreements*”.

Figure 5.3: Consensus level for BASA features



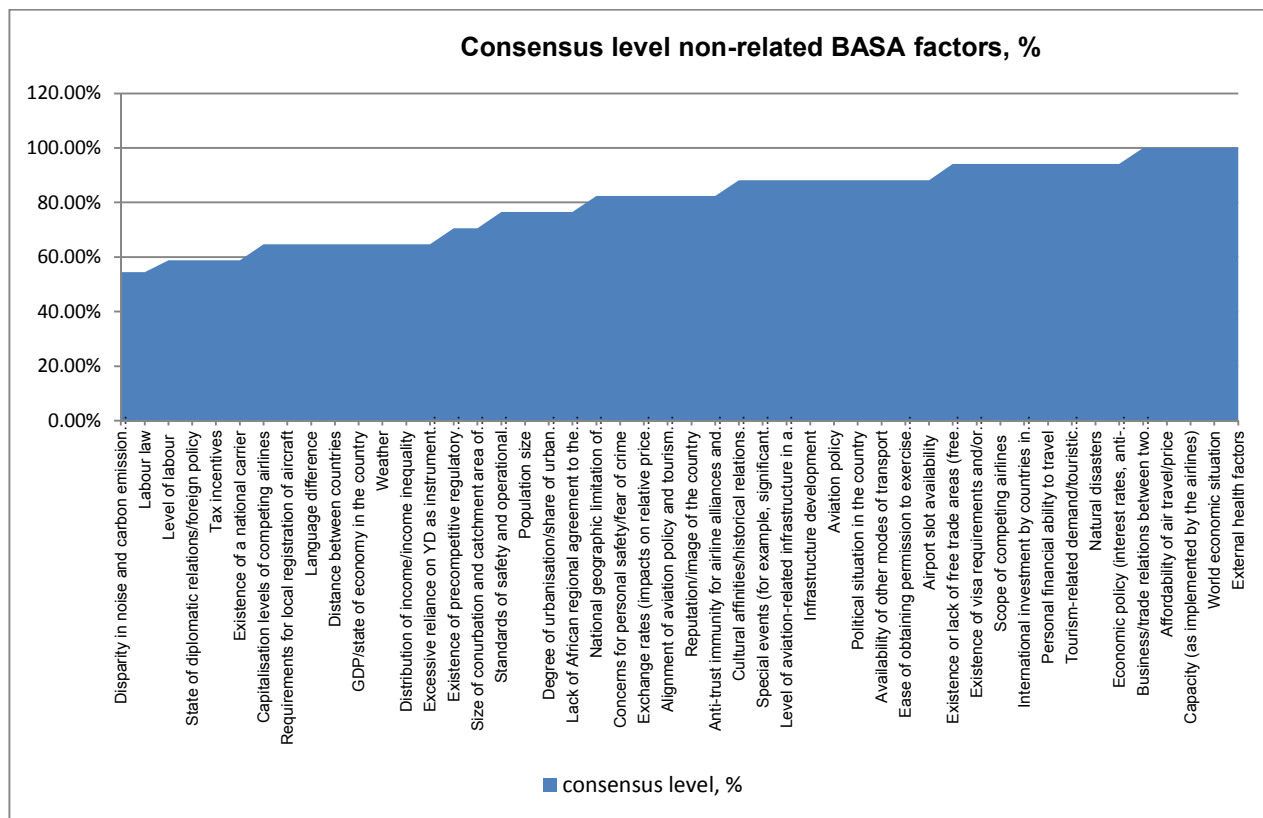
Source: Results of the second round of the Delphi

Figure 5.4 visually depicts consensus levels on each of the 48 respective statements. The consensus results, pertaining to non-BASA related factors (answer sheet 2) and generated in round two, indicate that 13% (six items) of the statements fall within the 40 to 60% level of consensus range, with 29% (14 items) falling into the 61 to 80% level of consensus range and 58% (28 items) falling into the 81 to 100% range. The most frequently occurring level of consensus which is measured by the mode is 88%, with the

median being 82% and a mean of 80%. “Disparity in noise and carbon emission requirements” and “labour law” were the two statements that reached the lowest level of consensus at 55%.

Five statements representing non-related BASA factors that have an impact on air passenger traffic flows between a country-pair reached a 100% level of consensus: “business/trade relations between two countries”, “affordability of air travel/price”, “capacity (as implemented by the airlines)”, “world economic situation” and “external health factors”.

Figure 5.4: Consensus level for non-related BASA factors



Source: Results of the second round of the Delphi

The threshold of an acceptable level of consensus varies in the literature and a universally agreed proportion does not exist for the Delphi as the level utilised depends on the sample numbers, aim of the research and resources (Hasson *et al.*, 2000).

Loughlin and Moore (1979) and McKenna (1994) suggested that consensus should be equated with 51% agreement among respondents. In their study, Park, Kim, Seo and Shin (2011) and Mason and Alamdari (2007) adopt a 75% agreement level. On the other hand, Scheibe, Skutsch and Schofer (2002) argue that the use of percentage measures is inadequate and suggest that a more reliable alternative is to measure the stability of subjects' responses in successive iterations. Given the fact that the purpose of the Delphi in this study was to identify as many factors as possible that impact on air passenger traffic flows between an arbitrary African country-pair, the researcher made a decision not to exclude any items from the results summary. It was decided in line with the above that a 51% consensus was an acceptable level for this study. "*Break of gauge*" was the only item that did not meet an acceptable level of consensus.

STEP 4: Develop a conceptual framework of factors, impacting on air passenger traffic flows

A comprehensive secondary literature review on factors, impacting on demand for air travel and in particular air passenger traffic flows was conducted in order to establish how the Delphi results would fit into the existing framework of research. Main categories for factors were identified and the Delphi results were plotted under each particular category as presented in table 5.4 below. The ten main factor categories identified were: 1) *government responsibility*, which was further subcategorised into *aviation policy* and *all others*; 2) *external economic factors*; 3) *external political factors*; 4) *supply*; 5) *intangible factors*; 6) *demand*; 7) *socio-economic and geographic factors*; 8) *geo-economic factors*; 9) *external health factors*; and 10) *force majeure*. Given the importance of the aviation policy in this research, the aviation policy subcategory was further subdivided into a) *air services agreements features* and b) *others*.

Table 5.4: Factors impacting air passenger traffic flows in the context of the Delphi

Government responsibility			External economic factors	External political factors	Supply	Intangible factors	Demand	Socio-economic and geographic factors	Geo-economic factors	External health factors	Force majeure
Aviation policy		All others									
ASA features	Others		bilateral business and trade relations	political situation	scope of competing airlines	personal safety/fear of crime	affordability of air travel/ price	distance between countries	personal financial ability to travel	external health factors	natural disasters
capacity clause	national geographic limitation of competition authorities/laws	protection of national carrier through restrictive agreements									
designation clause	regulatory framework relating to subsidies and predatory conduct of airlines	degree of lobbying for increased bilateral agreements	visa requirements/ passport regulations	foreign direct investments	unstable political situation	level of aviation related infrastructure	tourism related demand/ touristic attractiveness	availability of other modes of transport	GDP/state of economy	population size	
withholding/ ownership clause	standards of safety	propensity to declare dispute and to make use of dispute resolution provisions and ICAO in settling disputes	capitalisation level of competing airlines	exchange rates		airline capacity	reputation image of the country	weather	cultural affinities/ historic ties	degree of urbanisation/ share of urban population	
traffic rights freedom clause	requirements for local registration of airlines	access by non-designated airlines to BASA rights	requirements for local registration of airlines	world economic situation		existence of a national carrier		special events	language difference	size of conurbation and catchment area of airports	
market access/ named points clause	aviation policy	access to 5 th and 7 th freedom rights where 3 rd and 4 th freedom rights do not exist	state of diplomatic relations/foreign policy	distribution of income/income inequality		airport slot availability					
tariff/pricing regime clause	alignment of aviation and tourism policies	access to 5 th and 7 th freedom rights where 3 rd and 4 th freedom rights exist	state of diplomatic relations/foreign policy	labour capabilities		airport slot availability					

Government responsibility			All others	External economic factors	External political factors	Supply	Intangible factors	Demand	Socio-economic and geographic factors	Geo-economic factors	External health factors	Force majeure
Aviation policy												
cooperative arrangements clause	ease of obtaining permission to exercise the rights granted in terms of BASA	development of 6 th freedom right by intermediate based airlines in Africa, the Gulf and Europe	labour law	non-aviation related infrastructure								
statistical exchange clause	anti-trust immunity for airline alliances and joint ventures	lack of updating treaties on interstate level as opposed to MOUs on aeronautical authority level	economic policy	strength of national/designated carrier								
double taxation clause	excessive reliance on YD as instrument of liberalisation	lack of implementation of/ adherence to agreed conditions by African states	tax incentives	lack of regional/ common aviation market with harmonised rules					A two-round Delphi was conducted, which generated 25 statements of factors related to BASAs and 48 statements non-related to BASAs. These were categorised in the context of the literature review.			
break of gauge provision	limited adoption of YD provisions	national aviation policies										
lack of reciprocity/ equal exchange of rights	lack of coordinated airline competition law in Africa											

Sources: Prideaux, 2005; Doganis, 2006; InterVISTAS-ga² Consulting, Inc., 2006; WTO, 2006; Grosche, Rothlauf and Heinzl, 2007; ICAO, 2008; Ishutkina and Hansman, 2008; Piermartini and Rousova, 2008; Piermartini and Rousova, 2009; InterVISTAS-EU Consulting, Inc., 2009; Rousova, 2009; Grosso, 2010; Vasigh, Fleming and Tacker, 2010

- Non-BASA Factors
- BASA Factors

5.6.2 Discussion of the identified Delphi factors, impacting air passenger traffic flows in relation to secondary literature

Government Responsibilities: “Aviation policy” and “all others”

The manner in which the government manages the domestic economy and external relations may significantly influence the size and structure of bilateral relationships (Prideaux, 2005:786). The government affects air transport system development through changes in the regulatory framework, infrastructure investment, airline ownership and operational incentives (Ishutkina & Hansman, 2008:6). Factors operating at the government level could further be subdivided, and for the purposes of the conceptual framework two main subgroups were identified for government responsibility: “*aviation policy*” and “*all others*”.

Aviation policy in terms of air passenger transport guides the country’s participation in the rapidly changing aviation market. In the context of bilateral regulation, international air transport is regulated by a complex web of bilateral and reciprocal air services agreements. BASAs typically contain common types of essential provisions, which stipulate the ways in which carriers can supply air services (ICAO, 2004). These agreements have also become a mechanism for curtailing competition between airlines (Myburgh *et al.*, 2006:13) and have been utilised as a regulatory tool in protecting the national carrier. As indicated, Mozambique furnishes a clear example where the national airline is protected through restrictive bilateral agreements despite the obvious economic gains. This point was also highlighted by the feedback received from the experts.

WTO (2006) has identified seven provisions of BASAs as key market access features which have been utilised in the secondary literature to assess the overall impact of aviation policy: 1) *capacity clause*, which incorporates the market access/named points clause; 2) *designation clause*; 3) *withholding clause/ownership*; 4) *traffic rights/freedom*; 5) *cooperative arrangements clause*; 6) *statistical exchange clause*; and 7) *tariff/pricing regime clause*. These were briefly highlighted in Chapter 2 and are elaborated on in

Chapter 6. The Delphi respondents have also stipulated these as important features to consider. In addition to these, three more features pertaining or relating to BASAs were highlighted through the Delphi: *double taxation clause*, *break of gauge provision* and *lack of reciprocity of traffic rights*. Of particular importance in the national regulation of international air services is the concept of reciprocity, especially where a commercial activity is not covered by a specific provision in the air transport agreement (ICAO, 2004).

The Delphi also generated an extensive list of factors that were plotted under “*aviation policy-others*” and cover issues ranging from limited adoption of the YD provisions, lack of coordinated airline competition law in Africa, and excessive reliance on the YD as an instrument of liberalisation, which was discussed in earlier chapters with respect to the importance of the alignment between the aviation and tourism policy. The majority of these issues have been emphasised by the South African government in the Airlift Strategy of 2006. Several of the factors are discussed below.

Three factors identified through the Delphi and relating to airline competition and anti-competitive market dominance (“*national geographic limitation of the competition authorities*”, “*regulatory framework relating to subsidies and predatory conduct of airlines*”, as well as “*lack of coordinated airline competition law in Africa*”) have received an extensive review in the secondary literature. With reference to the YD, none of the articles provide clear principles or rules that define fair and unfair competition between operators. The absence of any competition rules is a very important missing element, though essential in the implementation of the YD, which was discussed in Chapter 3. Schlumberger (2010:55) concurs that while certain RECs in Africa have recently adopted competition regulations that apply to air transport, most new bilaterals were negotiated on the basis of the principles of the YD and hence did not benefit from any competition regulation.

“*Standards of safety*” is an important factor that was highlighted by the experts, especially in the context of Africa. Several articles of the YD address safety and security directly and indirectly (articles 5.1, 6.9 to 6.12). In his study Schlumberger (2010:52) evaluated the

current aviation safety situation of African countries and concluded with an overall safety rating: six states were rated “good”, 16 were considered “marginal” while 31 were rated as “poor”. He concluded that the current situation with respect to safety oversight in Africa must be considered the single most important obstacle to the implementation of the YD.

The importance of aligning aviation and tourism policy, which is categorised under “*aviation-others*”, within the conceptual framework of factors is confirmed by the Airlift Strategy of 2006 and the Airlift Implementation Plan of 2007. The Strategy supports national economic growth through greater alignment with the tourism strategy and industry, by prioritising tourism and trade markets and unblocking obstacles to growth through regulatory mechanisms, bilateral and multilateral negotiations within the African Union and internationally (Department of Transport, 2006:28).

“*Excessive reliance on the YD as an instrument of liberalisation*”, “*limited adoption of the YD provisions*” and “*lack of implementation/adherence to the agreed conditions by the African states*” have been highlighted and discussed in numerous articles and presentations and constitute some of the key impediments to the successful implementation of the Decision in Africa. Schlumberger (2010) and Myburgh *et al.* (2006) both conclude that in practice the level of implementation of the YD in different regions paints a very heterogeneous picture. These impediments were extensively discussed in Chapter 3.

Government policy may also be a significant factor in restricting both outbound and inbound flows. This could range from visa restrictions to the amount of currency taken out of the country to the value and quantity of goods imported by returning tourists (Prideaux, 2005). The Delphi generated a list of very important factors that have an impact on air passenger traffic flows. These were plotted under the “*government responsibility all others*” ranging from free trade areas, visa requirements to the state of diplomatic relations/foreign policy.

Ndomo's (2009:19) study highlights that despite the fact that the enforcement of the COMESA free trade agreement has led to a notable rise in intra-COMESA trade, most of the countries in the region still reserve privileged access to markets in Europe, North America or Asia rather than tapping into the COMESA markets.

In terms of the "*visa restrictions/passport regulation*" factor identified by the Delphi experts, three RECs (CEMAC, ECOWAS and EAC) have made progress in enhancing the movement of people across regional borders, with the latter two having instituted regional passports (Ndomo, 2009:20).

The "*capitalisation of competing airlines*" factor was highlighted through the Delphi. For airlines, both domestic and intra-African, to take advantage of the opportunities offered by liberalisation they need a competitive cost base and the ability to attract passengers. This does not necessarily require privatisation, but does require commercialisation (Myburgh *et al.*, 2006:25). One excellent example is Ethiopian Airlines which is successfully run as an independent corporation while still being owned by the Ethiopian government.

External economic factors

A number of "*external economic factors*" also influences the level of arrivals and departures between bilateral partners (Prideaux, 2005:790). Several of these have been highlighted by the Delphi experts and are listed in the conceptual framework. Numerous studies reported a positive and significant impact of trade or flows of services on air passenger traffic flows (Myburgh *et al.*, 2006; InterVISTAS-ga², Consulting, Inc., 2006; Piermartini & Rousova, 2008; Grosso, 2010). This important factor was identified by the experts as that of "*bilateral business and trade relations*". One of the key elements of trade is transport. The development of trade, which leads to economic development, is only possible if the transport services utilised to ship the traded goods grow along with the growth in trade volumes (Schlumberger, 2010:153). In Africa, where road infrastructure in many countries is poor or non-existent, air transport remains an important driver of economic development.

The “*lack of regional/common aviation market with harmonised rules*” factor is related to the slow progress of the Decision, which if fully implemented would entail the improvement of the infrastructure and services as well as the removal of physical and non-physical barriers (Department of Transport, 2006:19). In essence this would entail liberalisation of intra-African air services, as discussed in Chapter 3.

External political factors

Often, “*political factors*” arise that are beyond the control of the countries. The Delphi generated two factors, namely, “*political situation*” and “*unstable political situation*”. These two factors are depicted individually in table 5.4 as they are linked to two different sets of factors: BASA and non-BASA. A very recent example in Africa is the negative impact of civil war in Libya and civil unrest in Egypt on air passenger traffic flows.

Supply

“*Supply factors*” that were identified by the Delphi experts range from the scope of competing airlines to airline capacity and airport slot availability. “*Scope of competing airlines*”, which reflects aggregate capacity, frequency, number of city-pairs served, number of airlines offering competitive service and “*airline capacity*” could be seen as service-related supply factors, which are covered very comprehensively in air transport literature on quality of service (Jorge-Calderón, 1997; Abate, 2007; Grosche, Rothlauf & Heinzl, 2007). “*Level of aviation-related infrastructure*” and in particular “*airport infrastructure*” is imperative in building African airlines. This is not only essential in terms of safety and passenger comfort, but also for the growth envisaged by the African countries (Mills & Swantner, 2008:21).

Intangible factors

There are factors that relate to the built and natural environment as well as to the destination’s image, lifestyle, barriers to flow and culture (Prideaux, 2005:789). These have been grouped under “*intangible factors*”, indicating the difficulties often encountered

in measuring them. The “*personal safety/fear of crime*” factor, identified by the Delphi experts, goes hand in hand with the “*reputation/image of the country*”. South Africa is a prime example of the interaction of these two factors and the impact of crime on the perception of the destination. The link between tourism and air transport suggests that the expanding number of air passengers travelling for touristic reasons is also linked to the expansion of low cost airlines. The “*tourism related demand/touristic attractiveness*” factor generated by the Delphi indicates its importance for air travellers. Secondary literature (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Piermartini & Rousova, 2008; Velia *et al.*, 2008; InterVISTAS-EU Consulting, Inc., 2009; Grosso, 2010) confirms that more liberal transport conditions increase, or are projected to increase growth, employment and government revenues.

Demand

“*Affordability of air travel/price*” and “*availability of other modes of transport*” are common air transport “*demand*” determinants. For many travellers, especially price-sensitive leisure travellers, the price of the flight and the price of the competing flights are probably the most important factors. However, these price factors affect different segments of the population; for time-sensitive business travellers one ticket price versus another competitor’s ticket price may not be as important as for price-sensitive leisure travellers. The availability of substitutes such as “*other modes of transport*” is also an important demand factor. In a situation where there is a lack of other modes of transport and relevant infrastructure, for example, from South Africa to Nigeria, the demand for air travel could be expected to increase (Vasigh, Fleming & Tacker, 2010:56).

Socio-economic and geographic as well as geo-economic factors

The impact of “*socio-economic and geographic*” as well as “*geo-economic factors*” on air transport has been quantified in numerous studies (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Grosche *et al.*, 2007; Abate, 2007; Piermartini & Rousova, 2008; Warnock-Smith & Morrell, 2008; InterVISTAS-EU Consulting, Inc., 2009; Grosso, 2010). Research confirmed that the number of passengers decreases with *distance* and

that air passengers between countries which share a *common border* are fewer than between non-adjacent countries. *Colonial links* and *common language* increase the number of passengers between two countries. *Population size* and the *GDP* both have a significant and positive impact on air passenger traffic flows. The interaction between GDP and air travel is defined by the economy's unique factor conditions and air transportation supply. Government plays an important role in this relationship since its policies can influence both economic and air transportation attributes through regulation and infrastructure investment (Ishutkina & Hansman, 2008).

External health factors and force majeure

The relationship between the supply and demand of air transport determines the allocation of airline resources to a particular route. This relationship is subject to exogenous demand shocks such as wars and acts of terrorism, political and economic sanctions, changes in the entry requirements, perceived health risks, natural disasters, significant shifts in world financial markets or exchange rates and oil shocks (Ishutkina & Hansman, 2008). The Delphi has generated a number of these variables that were grouped under various categories as discussed above. In their study, Myburgh *et al.* (2006) found that adverse events such as health factors, natural disasters and political instability negatively impact on air passenger traffic flows. The Delphi has generated similar factors that have been categorised under “*external health*” and “*force majeure factors*”.

STEP 5: Qualitative – quantitative link

In summary, the main objectives of the qualitative research were achieved. These were: 1) to confirm the features of BASAs and the factors not related to BASAs based on the opinions of experts and viewed by them as having an influence on air passenger traffic flows between African country-pairs and 2) to comprehensively analyse these factors in relation to secondary literature and current trends, and to explore their link to quantitative analysis. The preceding sections have succeeded in clarifying the link between the qualitative and quantitative research applied in this study.

Based on the above discussion of factors generated by the Delphi and their use in secondary research, it is evident that there are numerous factors related to BASAs and non-BASA factors that exercise an influence (positive or negative) on air passenger traffic flows between a country-pair. It was therefore important to select an analytical tool that would allow for quantifiable measures of the impact of the aviation policy on air passenger traffic flows while taking into account other important independent variables, *inter alia*, the GDP, trade flows, population size and common language. The quantitative research, in particular the selection of the empirical model for the panel data set and the choice of independent variables, is discussed in Chapter 6.

5.7 CONCLUSION

In this chapter the qualitative method, in the form of a two-round Delphi, was comprehensively analysed and substantiated, highlighting the important link between the qualitative and quantitative research. The results of the Delphi were presented and discussed, and subsequently plotted in relation to secondary literature. The decisions relating to the selection of the expert panel and its size were fully explained. The use of content analysis as the method best suited to analyse the qualitative data from round one of the Delphi was fully elaborated on.

The next chapter discusses the quantitative methodology in the form of a one-way fixed panel regression as well as the empirical model utilised to attain the relevant research objectives. The use and the application of the ALI, developed by the WTO Secretariat, are explained in the context of the South African aviation policy in Africa. The empirical panel regression model as well as the selected predictors that account for the respective data availability and limitations, are comprehensively discussed. The alternative hypothesis is further refined with sub-hypotheses being generated.

CHAPTER 6

QUANTITATIVE RESEARCH

6.1 INTRODUCTION

Earlier discussions and literature reviews indicate that international air transport is regulated by an intricate web of BASAs that stipulate the ways in which air carriers supply their services, and that air policy liberalisation could be viewed as a supply stimulus which might or might not have an effect on the actual supply levels (ICAO, 2004). This was partly due to specific network characteristics as well as complex supply and demand interactions, which highlighted the fact that the relationship between aviation policy and air passenger traffic flows could also be influenced by a number of other factors, *inter alia*, the GDP, population size, common border and language. In order to achieve its third and fourth objectives, this study followed a mixed methods approach in which two phases were undertaken: the qualitative and the quantitative.

In the qualitative phase, a two-round Delphi technique was employed to ensure that the most significant and imperative factors impacting on air passenger traffic flows had been identified. The opinions of aviation experts from academia as well as the public and private sectors were sought regarding the features of BASAs and those not related to BASAs, which, as mentioned, they viewed as exerting an influence on air passenger traffic flows between country-pairs in Africa. This was essential to ensure that factors from an industry perspective as well as factors which were unique to the region were also identified.

The Delphi process generated an exhaustive list of 25 statements of factors related to BASAs and 48 statements that were not related to BASAs. The consensus level for all statements was above the 51% threshold level with the exception of the “*break of gauge provision*”. To provide a snapshot overview, these factors were subsequently plotted under factor categories identified from the literature in order to create a conceptual framework of the relevant BASA and non-BASA factors (see table 5.4). The ten main factor categories

established were: 1) *government responsibility*, which was further subcategorised into *aviation policy* and *all others*; 2) *external economic factors*; 3) *external political factors*; 4) *supply*; 5) *intangible factors*; 6) *demand*; 7) *socio-economic* and *geographic factors*; 8) *geo-economic factors*; 9) *external health factors*; and 10) *force majeure*. Given the importance of the aviation policy in this research, the aviation policy subcategory was further subdivided into a) *air services agreements' features* and b) *others*. The results of the Delphi were essential in bridging the gap between the literature review and the quantitative research.

In this chapter, the quantitative phase is comprehensively discussed with the aim of estimating and statistically quantifying the impact of the South African aviation policy as measured by the four variants of the ALI: namely, *STD*, *5th+*, *DES+* and *OWN+* on air passenger traffic flows in five key markets (intra-African; SADC; West African; East African and North African) over the 11 year time period, taking into account key influencing factors or predictors. The quantitative phase also aims to identify which specific provisions of the aviation policy, reflected in the respective BASAs, result in the most significant impact on air passenger traffic flows in these markets. It is expected that the results will differ in each of the identified markets.

The chapter begins with an overview of the ALI, followed by a discussion on the progress as regards the liberalisation of air services achieved in each of the five markets over the given period. The empirical model and the quantitative technique as well as the process utilised for the final selection of factors or predictors that would simultaneously be tested together with the aviation policy regarding their impact on air passenger traffic flows are the subjects of a subsequent discussion. The chapter concludes with a null and alternative hypothesis, which will be tested in the subsequent chapter.

6.2 AIR LIBERALISATION INDEX

According to Jomini, Achard and Rupp (2009), there are several possible ways of quantifying the restrictiveness or liberalisation of a BASA:

- Allocating or estimating a score for various clauses of the BASAs, dependent upon the degree to which they constrain carriers' operations;
- Observing the impact of liberalised BASAs on traffic, costs and prices. The impact on prices is the most difficult to establish due to restricted access to commercially sensitive data such as airfares. Assessing the effects of changes in BASAs on traffic requires techniques that will account for extraneous effects such as economic growth; and
- Assessing the effect of regulation on economic activity and welfare.

As stated above, the objective of the quantitative approach was to statistically measure the relationship between the South African aviation policy in Africa and air passenger traffic flows from 2000 to 2010. The selected period is linked to the adoption of the Decision in 2000 and 2010, which is the final year of the air services liberalisation targets (Appendix G) with African states as stipulated by South Africa in its aviation policy. To quantify the impact of the degree of restrictiveness or liberalisation of bilaterals between South Africa and its 45 bilateral air service counterparts regarding air passenger traffic flows, the study utilises the ALI which is a measure employed to assess the degree of liberalisation of air services for passenger traffic. It forms part of the so-called QUASAR explained in the ensuing section.

6.2.1 ALI in the context of QUASAR

The Quantitative Air Services Agreements Review (QUASAR) is a database developed by the WTO Secretariat which includes 1) regulatory information on BASAs and 2) scheduled air passenger traffic data. The regulatory information on BASAs is drawn from the ICAO's World Air Services Agreements Database (WASA) which contains codified summaries of the provisions of around 2 000 BASAs and covers 184 ICAO contracting states. Scheduled air passenger traffic data by city-pairs were provided by IATA for 2005 on the understanding that exact passenger numbers would remain confidential and that only

traffic ranges would be disclosed (WTO, 2006:644). It is noteworthy that IATA data are not a perfect match for the underlying regulatory regimes, but are by far the most complete traffic data set. In summary, QUASAR was constructed by the WTO Secretariat with a base year of 2005 and covers bilateral traffic between more than 180 countries (WTO, 2006).

The ALI is the main feature of the regulatory part of the QUASAR. It is an informed index of the degree of liberalisation of air services for passenger traffic, whereby different provisions pertaining to market access are weighted on the basis of their importance in removing obstacles to trade in air services according to the judgements of experts in the sector. By categorising the different provisions in BASAs and assessing them within a scoring system, the ALI provides a simple quantification of the regulatory system in place. The value of the ALI ranges between zero (for very restrictive agreements), and 50 (for very liberal ones) (WTO, 2006:12), with the most liberal agreement between countries in the European Economic Area scoring 43 points (Rousova, 2009:15). This method of measuring the restrictiveness of regulation has been proved to be consistent with results from other statistical methods such as factor and cluster analyses (Piermartini & Rousova, 2008). The seven market access provisions of the ALI, which were briefly introduced in Chapter 2, are discussed more comprehensively in the subsequent section.

6.2.2 Market access provisions of the ALI

Market access rights are usually granted in exchange for similar rights by means of some agreement(s) or arrangement(s) between countries and are usually limited to scheduled international air services. The market access right fundamentally provides an opportunity to serve a market; however, it also places a limitation on market access because of its specifications. States limit market access for various reasons: to bring about some perceived balance in rights exchanged; to retain leverage for possible future exchanges; to avoid or minimise competitive impacts on their national carriers; to be precise in order to avoid misinterpretation and/or to promote or favour some market segment such as that of a particular city or national region (ICAO, 2004:4.1-2).

The ALI scoring refers to seven market access provisions or features as relevant indicators of restrictiveness or openness for scheduled air passenger services. These are (WTO, 2006:647-648):

- **Grant of rights** defines the right to carry out services between two countries. In particular, WTO has taken *fifth freedom*, *seventh freedom* and *cabotage* rights into account. More basic agreements grant “transit rights” (third and fourth freedoms). More liberal BASAs also include a *fifth freedom right*, which is the right of the designated airline to carry traffic to a third country providing that the flight originates or terminates in the partner country. Few BASAs grant the *seventh freedom right*, that is, the right to operate flights between two foreign countries without the flight originating or terminating in one’s own country. *Cabotage*, or the right of a foreign carrier to operate domestic flights, is usually excluded from BASAs (ICAO, 2004:4.1-10);
- **Designation** is the right to designate one (*single designation*) or more than one (*multiple designation*) airline to operate a service between two countries. In restrictive agreements each government allows a single airline to be the national carrier. In more liberal agreements, multiple airlines are designated to operate services between partner countries;
- **Withholding or ownership** defines the conditions required for the designated airline of the other party to have the right to operate. Restrictive conditions stipulate that the designated airlines must be “*substantially owned and effectively controlled*” by nationals, which entails that the designated airline is the “flag carrier” of the foreign country. More liberal regimes include *community of interest* and *principal place of business*;
- **Capacity clause** identifies the regime which determines the capacity (in terms of volume of traffic, frequency or regularity of service and/or aircraft type(s)) that may be carried out on the agreed services. The most commonly utilised such clauses

are: predetermination, Bermuda I and free determination. *Predetermination* is the most restrictive one and requires that the capacity is agreed prior to service commencement. *Bermuda I* provides limited rights to the airlines to determine their capacities without prior government approval, while *free determination* excludes the capacity from regulatory control;

- **Tariff approval** refers to the regime which governs the approval of the pricing of services between two countries. The most restrictive regime is *dual approval*, whereby both parties have to approve the tariff before it can become effective. Semi-liberal regimes are *country of origin* (tariffs may only be disapproved by the country of origin), *dual disapproval* (tariffs have to be disapproved by both countries to make them ineffective) and *zone pricing* (parties agree to approve prices falling within a specific range and meeting certain characteristics);
- **Statistics** provide rules on the exchange of statistics between countries or their airlines. Restrictive BASAs often contain a provision on the exchange of statistics between the signatory parties to monitor traffic or verify adherence to quantitative restrictions;
- **Cooperative arrangements** define the right of the designated airline to enter into cooperative marketing agreements such as code-sharing and alliances. More liberal BASAs tend to allow cooperative arrangements between the designated airlines such as code-sharing. The possibility of entering into cooperative arrangements confers a number of commercial advantages on the carriers concerned and is considered an indicator of relative openness in bilaterals.

6.2.3 Overview of South African – intra-African BASA provisions in relation to ALI

Table 6.1 provides an overview of the relevant provisions that feature in agreements between South Africa and the respective 45 African countries, based on 2010 data. **Grant**

of rights: *fifth freedom traffic rights* featured in 24 agreements, representing 53% of the intra-African sample. The overall liberalisation target for implementing the YD for 2010 was 65% or 34 states as determined by the Airlift Strategy for South Africa. *Seventh freedom rights* as well as *cabotage rights* did not feature in any of the 45 agreements; this was in line with the YD which did not cater for these provisions. **Withholding/ownership clause:** the most restrictive ownership clause (*substantial ownership and effective control*) was still dominant in the agreements, representing 58% of the sample; however, the remaining 42% of the agreements featured the *principal place of business clause*, which was the most liberal ownership regime. These results indicate significant liberalisation progress in terms of South African – intra-African passenger traffic as the YD caters for the *community of interest clause* which, according to the ALI weighting system, is less liberal than the *principal place of business*. **Tariffs:** only 15 agreements (33%) allowed the most liberal pricing regime (*free pricing*), with restrictive and semi-restrictive provisions still being dominant. The tariff liberalisation target for 2010 as determined by the Airlift Strategy was 85% or 45 African states. **Capacity:** the most restrictive capacity clause, *predetermination*, was included in the majority of the agreements (58%); however, the remainder of the agreements allowed for *free determination*. **Designation:** *multiple designation* was allowed for in 32 agreements (71%); whereas, the designation liberalisation target of the Airlift Strategy for 2010 was set at 97%. **Cooperating agreements** were allowed for in 60% of the agreements against the Airlift's code-share liberalisation target for 2010 which was set at 90%. **Statistical exchange** was stipulated in all 45 agreements, which is viewed as a restrictive feature.

Table 6.1: Number of agreements by feature, based on 2010 data

Feature	Frequency (% of total sample)	Feature	Frequency (% of total sample)
Grant of rights		Withholding/ownership	
5 th freedom	24 (53%)	Substantial ownership and effective control	26 (58%)
7 th freedom	0	Community of interest	0
Cabotage	0	Principal place of business	19 (42%)
Total sample	45	Total sample	45
Tariffs		Capacity	
Dual approval	17 (38%)	Predetermination	26 (58%)
Country of origin	2 (4%)	“Other liberal”	0
Dual disapproval	11 (24%)	Bermuda I	0
Zone pricing	0 (0%)	“Other restrictive”	0
Free pricing	15 (33%)	Free determination	19 (42%)
Total sample	45	Total sample	45
Designation		Statistics	
Single	13 (29%)	Exchange required	45 (100%)
Multiple	32 (71%)	Exchange not required	0 (0%)
Total sample	45	Total sample	45
Cooperative arrangements			
Not allowed	18 (40%)		
Allowed	27 (60%)		
Total sample	45	Total sample	45

Note: the frequencies of 5th freedom, 7th freedom and cabotage do not add up to 45 observations because they are independent provisions, not excluding each other. Percentages may not total 100 due to rounding.

Source: Department of Statistics, University of Pretoria (2012)

6.2.4 The current South African – intra-African air bilateral scene

A more detailed examination of the BASAs between South Africa and its 45 air services counterparts revealed that these could be grouped into 14 types of agreements, defined in terms of the seven market access features. For example, 13 bilaterals (29%) were type A, entailing the following: no *fifth freedom traffic rights* allowed for, *predetermination* of capacity, *dual approval* of tariffs, *substantial and effective control* in terms of ownership, *single designation*, *exchange of statistics* and no *cooperative arrangements* allowed for. Table 6.2 provides an overview of the overall South African – intra-African bilateral

situation (based on 2010 data) in terms of the types of agreements prevailing in the market as well as a regional breakdown of each type of agreement. The regional grouping of countries is based on the methodology of the South African Department of Transport and not on the geographic location of a specific country or on its membership in the Regional Economic Communities. The 45 countries were grouped into four regions: 14 under the SADC region, 18 under the West African region, eight under the East African region and five countries under the North African region. The countries representing their respective region are summarised in section 6.5.2 below. The ALI score was assigned to indicate the degree of restrictiveness or openness of each type of agreement.

Table 6.2: South African – intra-African types of BASAs based on 2010 data

South African – intra-African BASAs									Distribution of BASA type per region					
Type	5th freedom	Capacity	Tariffs	Withholding/Ownership	Designation	Statistics	Cooperative Arrangements	Number of BASAs	SADC	North	West	East	Frequency (% of total sample)	ALI total
A	No	Predetermination	Dual approval	SOEC	Single	Exchanged	Not allowed	13	1	1	7	4	29%	0
B	No	Predetermination	Dual approval	SOEC	Multiple	Exchanged	Not allowed	3	1	1	1		7%	4
C	No	Predetermination	Dual disapproval	SOEC	Multiple	Exchanged	Not allowed	1		1			2%	10
D	No	Predetermination	Free pricing	SOEC	Multiple	Exchanged	Allowed	1			1		2%	15
E	No	Free determination	Dual approval	SOEC	Multiple	Exchanged	Not allowed	1	1				2%	12
F	No	Free determination	Dual disapproval	PPOB	Multiple	Exchanged	Allowed	1		1			2%	29
G	No	Free determination	Free pricing	PPOB	Multiple	Exchanged	Allowed	1				1	2%	31
H	Yes	Predetermination	Country of origin	SOEC	Multiple	Exchanged	Allowed	2	2				4%	16
I	Yes	Predetermination	Dual disapproval	SOEC	Multiple	Exchanged	Allowed	3	3				7%	19
G	Yes	Predetermination	Dual disapproval	PPOB	Multiple	Exchanged	Allowed	2	2				4%	27
K	Yes	Predetermination	Free pricing	PPOB	Multiple	Exchanged	Allowed	1	1				2%	29
L	Yes	Free determination	Dual disapproval	SOEC	Multiple	Exchanged	Allowed	1	1				2%	27
M	Yes	Free determination	Dual disapproval	PPOB	Multiple	Exchanged	Allowed	3	1	1		1	7%	35
N	Yes	Free determination	Free pricing	PPOB	Multiple	Exchanged	Allowed	12	1		9	2	27%	37

Note: Percentages may not total 100 due to rounding.

Source: Department of Statistics, University of Pretoria (2012)

6.2.5 Variants of the ALI weighting system

In addition to the “standard” (*STD*) ALI weighting system, the WTO Secretariat has developed three more variants (*5th+*, *OWN+* and *DES+*), each providing comparably more weight to a specific market access feature: *5th+* to the granting of fifth freedom traffic rights, *OWN+* to the withholding clause and *DES+* to the designation clause; these terms are explained in the subsequent paragraph. These non-standard weighting systems aim to accommodate three specific geographic and economic situations that appear to be relatively frequent and may influence the commercial importance of the different market access features of bilaterals (WTO, 2006).

Fifth freedom traffic rights ALI (5th+) addresses the case of those states where their geographic location may limit the scope of point-to-point traffic or where their remoteness from densely populated areas may make it difficult for them to generate sufficient demand to maintain regular services to points which can only be served by larger aircraft. For such states, it is essential to secure fifth freedom rights for their carriers as these rights will allow their airlines to combine the demand for distant destinations with that of an intermediate stop. In view thereof, the weighting system has been altered to grant more weight to fifth freedom traffic rights.

The *withholding/ownership ALI (OWN+)* weighting system was developed to cater for cases where the liberalisation of withholding provisions is likely to be of particular importance to some states due to the ownership structure of their domestic airlines. In cases where the only airline inclined to utilise the negotiated rights is either jointly owned by a community of states or where the substantive ownership is in foreign hands, greater emphasis is placed on obtaining liberalised withholding/ownership provisions.

The *multiple designation ALI (DES+)* weighting system was devised to increase the importance awarded to the multiple designation clause. This is particularly relevant in cases where countries with more than one operating scheduled airline are likely to be interested in the right to designate more than one airline to fly on the agreed routes.

Table 6.3 summarises the weightings of the seven market access features considered in the four variants of the ALI: *STD*, *5th+*, *OWN+* and *DES+*. Each feature presents a number of alternative variants, with the exception of *grant of rights*, which is presented cumulatively.

Table 6.3: ALI weighting system

Features	Variants	ALI (points)			
		<i>STD</i>	<i>5th+</i>	<i>OWN+</i>	<i>DES+</i>
1. Grant of rights					
a. Fifth freedom rights	Not granted	0	0	0	0
	Granted	6	12	5	5.5
b. Seventh freedom rights	Not granted	0	0	0	0
	Granted	6	5	5	5.5
c. Cabotage rights	Not granted	0	0	0	0
	Granted	6	5	5	5.5
2. Designation	Single	0	0	0	0
	Multiple	4	3.5	3.5	7.5
3. Withholding/Ownership	Substantial ownership and effective control	0	0	0	0
	Community of interest	4	3.5	7	3.5
	Principal place of business	8	7	14	7.5
4. Capacity	Predetermination	0	0	0	0
	Other restrictive	2	1.5	1.5	1.5
	Bermuda I	4	3.5	3.5	3.5
	Other liberal	6	5	5	5.5
	Free determination	8	7	7	7.5
5. Tariffs	Dual approval	0	0	0	0
	Country of origin	3	2.5	2.5	2.5
	Dual disapproval	6	5	5	5.5
	Zone pricing	4 or 7	3.5 or 6	3.5 or 6	3.5 or 6.5
	Free pricing	8	7	7	7.5
6. Statistics	Exchanged	0	0	0	0
	Not exchanged	1	1	1	1
7. Cooperative arrangements	Not allowed	0	0	0	0
	Allowed	3	2.5	2.5	2.5
Maximum total ALI		50	50	50	50

Source: WTO (2006:14, 658-661)

By analysing the ALI standard point allocation summarised in table 6.4 as an example, it could be determined that, cumulatively, traffic rights have been awarded the most weight at 36% or 18 cumulative points by the experts, who have deemed them to represent the essence of a BASA. Third and fourth freedom rights, the most basic access features of a bilateral agreement, have not been assigned any points in the ALI. *Fifth* and *seventh freedom* and *cabotage* have all been assigned equal points or weights. *Withholding*, *capacity* and *tariff* clauses all represent indirect ways to potentially restrict the traffic rights that were exchanged, so that the most liberal variants of each feature have been considered the second most important indicators of openness, with an individual weight of 8 points or 16%. As for the *designation*, the right to designate more than one carrier differs in importance depending on how many scheduled airlines are operating in the territories of the states concerned, but it is indicative of a pro-competitive approach and has been given 4 points or 8% in the standard weighting system. *Cooperating arrangements* and *statistics* have been weighted least, at 6% and 2%, respectively.

Table 6.4: Relative importance of the market access features in the ALI standard system

Features	Maximum points	Relative weight
1. Grant of rights	18	36%
a. Fifth freedom	6	12%
b. Seventh freedom	6	12%
c. Cabotage	6	12%
2. Designation	4	8%
3. Withholding	8	16%
4. Capacity	8	16%
5. Tariffs	8	16%
6. Statistics	1	2%
7. Cooperative arrangements	3	6%
Total	50	100%

Source: WTO (2006:649)

All of the features of market access have also been identified by the Delphi technique as being important factors that could have an impact on air passenger traffic flows between a country-pair.

6.2.6 Evaluating the YD agreement with the ALI

Based on the above discussion, the question is: How do the provisions of the YD agreement score in terms of the four variants of the ALI? The scores are presented in table 6.5 and range from 33 to 36.5 points, depending on the variant of the ALI weighting system utilised.

Table 6.5: Scoring the YD agreement

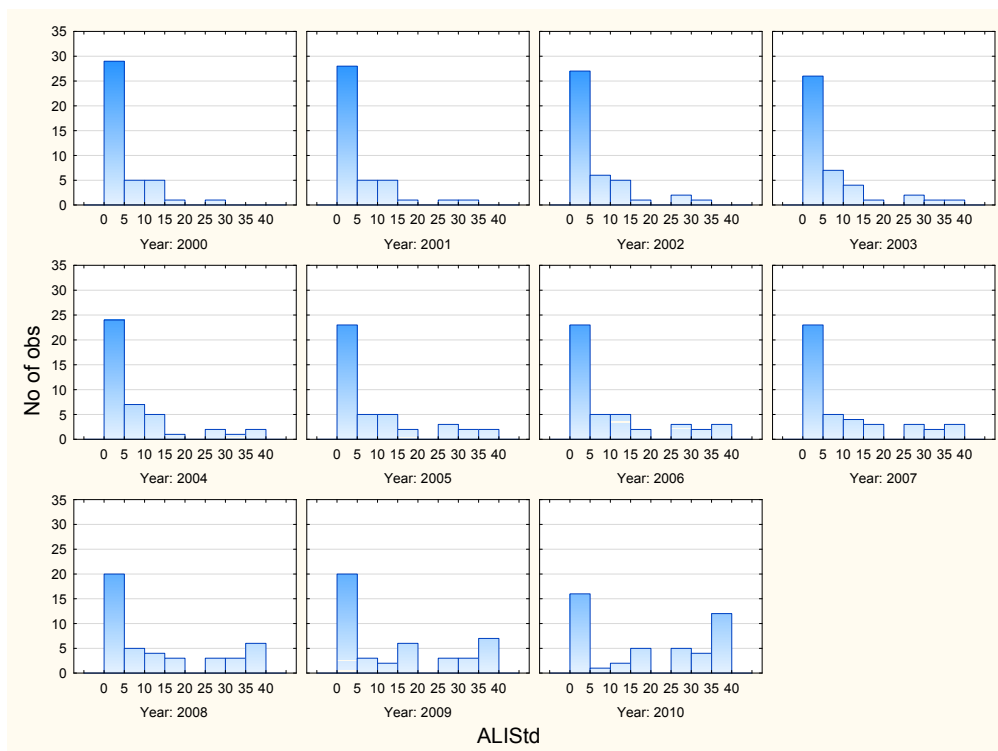
Feature	Comment	STD	5 th +	OWN+	DES+
1. Grant of rights					
a. 5 th freedom	Free exercise of 1 st , 2 nd , 3 rd , 4 th and 5 th freedom on scheduled and non-scheduled passenger, cargo and or/mail flights performed by an Eligible Airline to/from their respective territories (Article 3)	6	12	5	5.5
b. 7 th freedom	No provision	0	0	0	0
c. Cabotage	No provision	0	0	0	0
2. Designation	Multi-designation ("at least one"). Possibility to designate an airline of another party and a multinational airline (Article 6)	4	3.5	3.5	7.5
3. Withholding	Community of interest (Article 6.9 (g))	4	3.5	7	3.5
4. Capacity	Free determination (Article 5)	8	7	7	7.5
5. Tariffs	Free pricing, however filing is required for increases (Article 4)	8	7	7	7.5
6. Cooperative arrangements	Article 11.3	3	2.5	2.5	2.5
7. Statistics	No provision of statistics stipulated	1	1	1	1
Total		34	36.5	33	35

Source: Based on WTO ALI weighting system

6.3 DEGREE OF AIR SERVICES LIBERALISATION IN THE SOUTH AFRICAN – INTRA-AFRICAN AND THE REGIONAL MARKETS

Table 6.1 above indicated that restrictive regimes featured frequently in the design of BASAs between South Africa and its 45 bilateral counterparts in Africa, based on 2010 data. However, this information does not allow for an assessment of the overall degree of restrictiveness or openness of the BASAs or the progress (if any) made over the period studied. To obtain more clarity on this issue, an analysis of the distribution of the ALI was conducted. Figure 6.1 displays histograms for each of the 11 years. The X-axis indicates the ALI scores for the BASAs that are in place while the Y-axis represents the number of BASAs that were already in place. The ALI score is the cumulative score of the seven features of market access and is based on the ALI standard weighting system. All four variants of the ALI distribution can be found in Appendix J.

Figure 6.1: Histograms of the degree of air services liberalisation of the South African – intra-African aviation market



Source: Department of Statistics, University of Pretoria (2012)

The histograms provide a very clear overview of the gradual liberalisation of air services agreements between South Africa and the said 45 African countries over the given period. In 2000, the year when the YD was officially adopted, the ALI scores were highly skewed to the left. As summarised in table 6.6 below, 98% of the 41 agreements that were in place scored below 20 points⁴⁶ in the ALI standard weighting system, indicating a very restrictive air services regime and a minimum level of air services liberalisation. In 2000, South Africa did not have an air services agreement with the following four countries: the Gambia, Libya, Liberia and Sierra Leone, thus making the sample a total of 41. The highest ALI score of 27 points in 2000 was for the bilateral agreement between South Africa and Zimbabwe. The agreement allowed for unrestricted *fifth freedom traffic rights* being exercised at points within Africa in accordance with the YD; *predetermination capacity*; *double disapproval* tariff regime; *principal place of business*; *multiple designation* and *cooperative arrangements*. The *exchange of statistics* clause was incorporated into the agreement.

Table 6.6: Distribution of the ALI scores based on the ALI standard weighting system

ALI score range	2000	2000, %	2006	2006, %	2010	2010,%
0-5	29	71%	23	54%	16	36%
5-10	5	12%	5	12%	1	2%
10-15	5	12%	5	12%	2	4%
15-20	1	2%	2	5%	5	11%
20-25	0	0%	0	0%	0	0%
25-30	1	2%	3	7%	5	11%
30-35	0	0%	2	5%	4	9%
35-40	0	0%	3	7%	12	27%
Sample Size	41	100%	43	100%	45	100%

Note: Percentages may not total 100 due to rounding.

Source: Department of Transport BASAs and MOUs (2000 – 2010)

⁴⁶ Agreements that reach below 20 points on the ALI system entail a very restrictive air services regime; above 20 but below 40 entail an intermediate degree of liberalisation and above 40 points entail a high degree of air services liberalisation (Piermartini & Rousova, 2009).

The five year liberalisation targets in terms of the YD implementation were launched by the South African government in 2006. The distribution of the 2006 ALI scores as depicted in figure 6.1 was skewed to the left; but, to a lesser extent than in 2000, with 83% of the BASAs below 20 points. Eight BASAs introduced an intermediate degree of liberalisation in the range of 20 to 40 points. As discussed earlier in the chapter, the YD scored 34 points in the ALI standard weighting system. Two of the bilaterals fell into the intermediate degree of the liberalisation range, namely Ethiopia and Egypt, with each scoring 35 points. The agreements that exceeded the maximum YD threshold all incorporated a *principal place of business* ownership clause, which is more liberal than the *community of interest* stipulated under the YD agreement. The highest score of 37 points was assigned to the three bilaterals between South Africa and Gabon, Sierra Leone and Uganda. All of them allowed for the exercise of intra-African *fifth freedom traffic rights, unlimited capacity, free pricing regime, principal place of business, multiple designation and cooperative arrangements*. The *exchange of statistics* was requested in these respective BASAs, indicating a restrictive approach. In 2006, the total sample was represented by 43 countries, with no existing BASA in place between South Africa and the Gambia or Liberia.

The end of 2010 marked the end of the five year liberalisation targets of the Airlift Strategy. The histogram for 2010 painted a different picture of the distribution of the ALI scores. The percentage of very restrictive agreements that fell below 20 points decreased to 53%. Twenty-one BASAs or 47% of the sample introduced an intermediate degree of liberalisation in the range of 20 to 40 points for the ALI, of which 12 bilaterals or 27% exceeded the maximum YD threshold of 34 points. All 12 were allocated 37 points in the ALI standard weighting system, which represented a growth of 267% off a very small base of three BASAs in 2006. The bilaterals were between South Africa and each of the following countries:

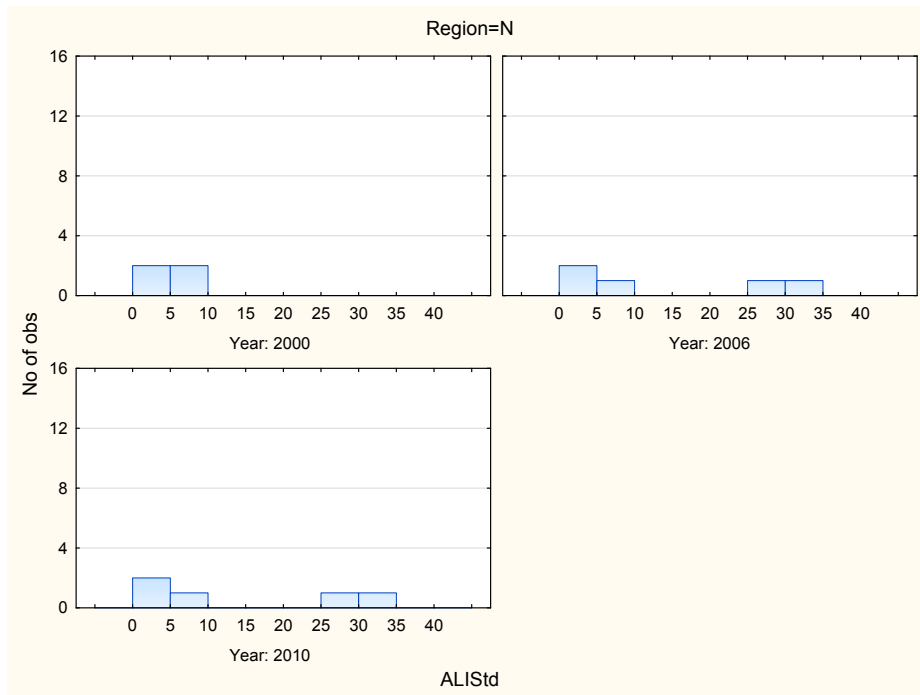
- Benin
- Cameroon
- Gabon

- Ghana
- Lesotho
- Liberia
- Rwanda
- Senegal
- Sierra Leone
- Togo
- Uganda

6.3.1 The depth of air services liberalisation in the four African regions

The above histograms provided a general overview of the degree of openness or restrictiveness of the South African – intra-African bilaterals. The distributions of the ALI scores in each of the four regions were also plotted, to better understand the respective levels of gradual liberalisation achieved over the 11 year time period. Histograms in figures 6.2 to 6.5 depict the degree of air services liberalisation achieved between South Africa and the respective countries in each of the given four regions.

Figure 6.2: Histograms of the degree of air services liberalisation of the South African – North African aviation market

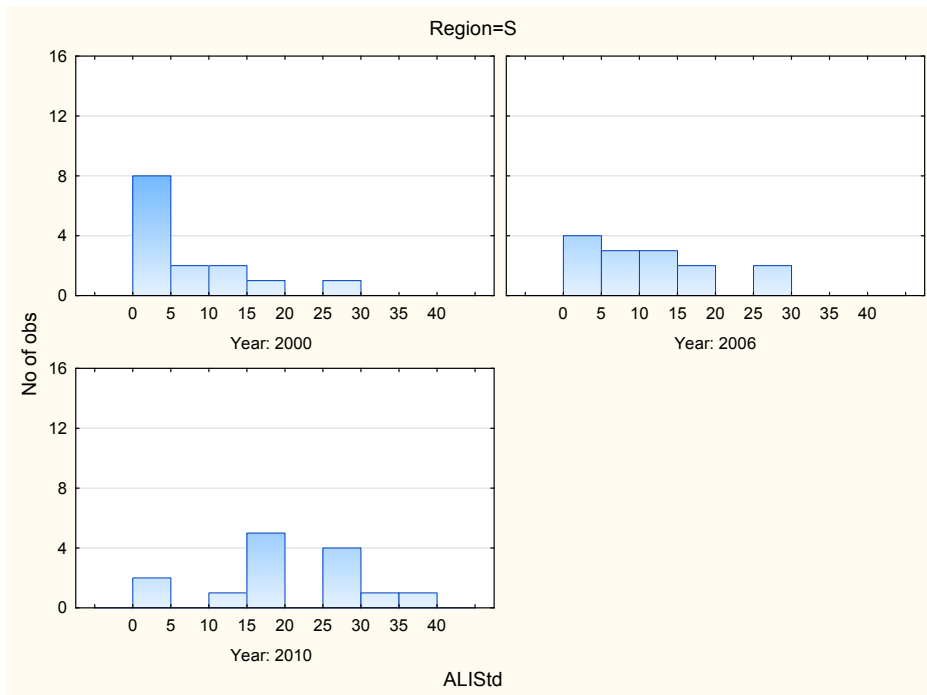


Note: There was no BASA between South Africa and Libya in 2000.

Source: Department of Statistics, University of Pretoria (2012)

The total ALI score of the South African – North African bilaterals has gradually increased since the adoption of the YD in 2000: the progress was already evident in 2006. In 2000, 50% of the agreements scored below 5, and 50% below 10 points in the ALI standard weighting system, thus reflecting a very restrictive regime. In 2006, the level of restrictiveness of the agreements provided a different picture: three (60%) of the BASAs still fell into a very restrictive range of below 20 points in the ALI standard weighting system; however, two (40%) achieved an intermediate level of the degree of liberalisation in the range between 20 to 40 points. No further liberalisation was realised between 2006 and 2010. The bilateral agreement between South Africa and Egypt remained the most liberal agreement in the region in 2010 by scoring 35 points in the ALI standard weighting system.

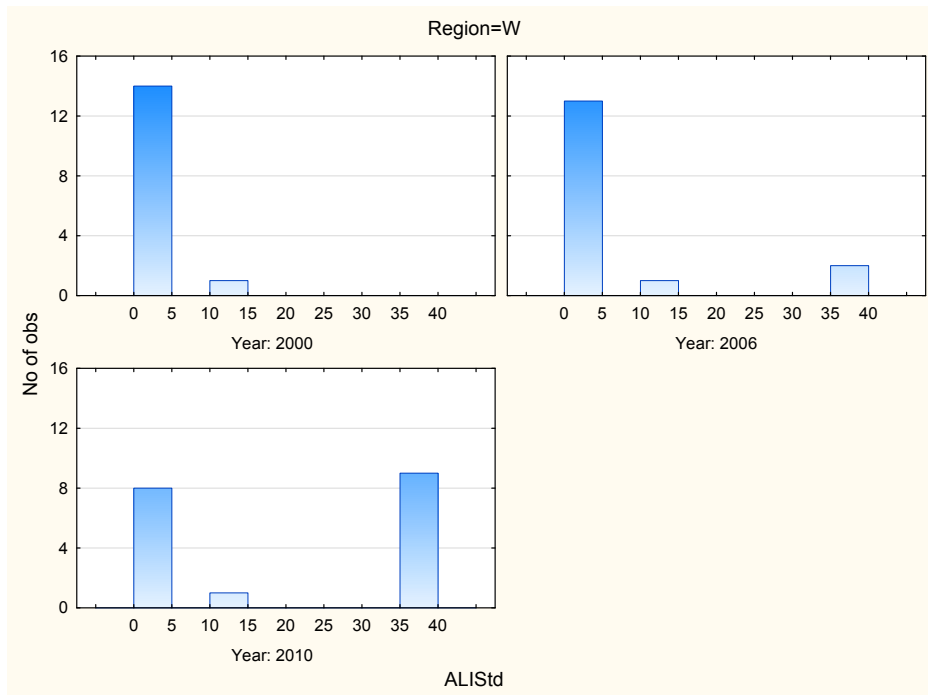
Figure 6.3: Histograms of the degree of air services liberalisation of the South African – SADC aviation market



Source: Department of Statistics, University of Pretoria (2012)

The gradual liberalisation of the South African – SADC bilaterals over the 11 year time period is clearly visible in figure 6.3. The ALI scores were highly skewed to the left in 2000, with only one bilateral falling into an intermediate level of air services openness, above 20 points on the ALI scale. In 2006, the distribution of the ALI scores was less skewed to the left and indicated the positive progress realised in terms of gradual liberalisation. In 2010, eight BASAs fell into a very restrictive range of under 20 points; however, seven (43%) BASAs introduced an intermediate level of liberalisation, in the range between 20 and 40 points in the ALI standard weighting system. In 2010, bilateral agreements between South Africa and Botswana, as well as those between South Africa and Lesotho, exceeded the maximum YD threshold of 34 points.

Figure 6.4: Histograms of the degree of air services liberalisation of the South African – West African aviation market

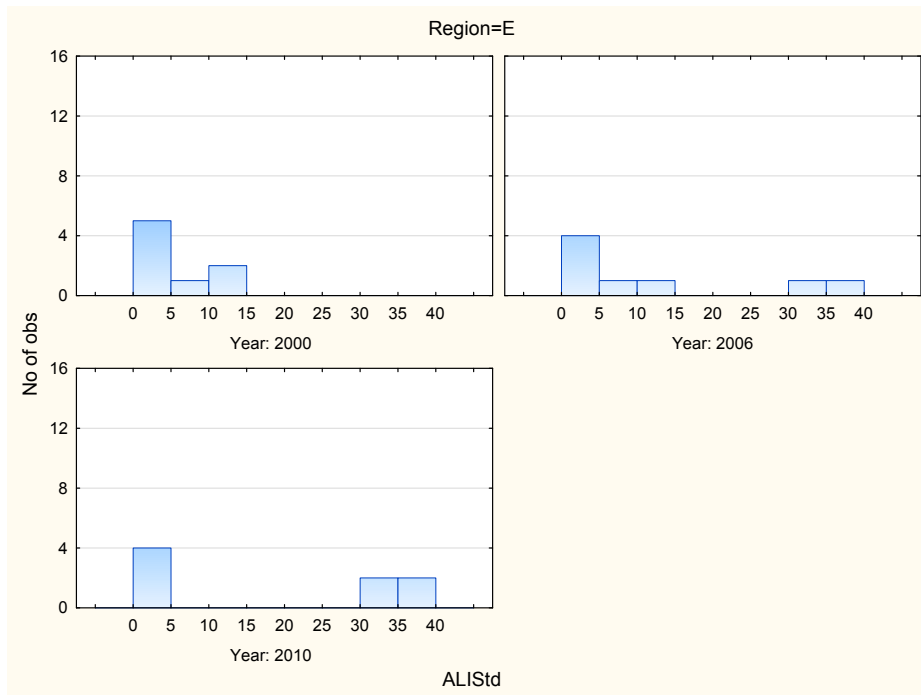


Note: BASAs between South Africa and Sierra Leone, the Gambia and Liberia were signed in 2006, 2008 and 2010, respectively.

Source: Department of Statistics, University of Pretoria (2012)

The liberalisation dynamics of the South African – West African bilaterals are very different to those achieved in the SADC and North African regions. In 2000, the distribution of the ALI scores was very highly skewed to the left, with 93% of the agreements falling below the 5 point range on the ALI scale, indicating an extremely restrictive regime over that period. In 2006, most of the bilaterals fell into the very restrictive range of below 20 points in the ALI standard weighting system; however, two BASAs fell into the intermediate range of air services liberalisation, scoring 37 points on the ALI scale and exceeding the maximum YD threshold. By 2010, liberalisation dynamics had reached a very positive trend: only eight bilaterals (44%) had fallen below 5 points on the ALI scale, with one bilateral agreement in the 15 to 20 point range, and with 50% of BASAs scoring 37 points on the ALI scale (in comparison to two in 2006) and exceeding the maximum YD threshold. The ALI scores were evenly distributed between the very restrictive regime and the intermediate level of liberalisation as depicted in figure 6.4.

Figure 6.5: Histograms of the degree of air services liberalisation of the South African – East African aviation market



Source: Department of Statistics, University of Pretoria (2012)

The liberalisation dynamics of the South African – East African bilaterals in 2000 were very similar to those in the West African region, with the ALI scores highly skewed to the left. All eight BASAs fell into the very restrictive range of below 20 points in the ALI standard weighting system. Some improvements were evident in 2006, with 25% of the bilaterals falling into the intermediate level of liberalisation in the range between 20 and 40 ALI points. The bilateral between South Africa and Ethiopia scored 35 points in the ALI system, with the one between South Africa and Uganda scoring 37 points in the ALI standard weighting system, both exceeding the maximum YD threshold of 34 points. In 2010, the liberalisation picture was different and displayed very positive trends in terms of the progress that had been realised. Four BASAs (50%) achieved an intermediate level of liberalisation on the ALI scale. The bilaterals with Uganda, Rwanda and Ethiopia exceeded the maximum YD threshold. The bilateral agreement between South Africa and Kenya only reached 31 points as the agreement did not allow for an intra-African *fifth freedom* traffic right.

6.3.2 The impact of a country's level of income on the South African – intra-African air services liberalisation

Following the research of Piermartini and Rousova (2008 and 2009), which found that the higher the income of the countries, the more liberal the agreements signed between the countries tended to be, this study also investigated the extent of BASA liberalisation between countries with different levels of income in order to determine whether the global experience was similar to that of the South African – intra-African air transport market. The grouping of the countries by level of income in table 6.7 is in line with the World Bank definition (World Bank, 2010).

Table 6.7: Country grouping based on the level of income, 2010 data

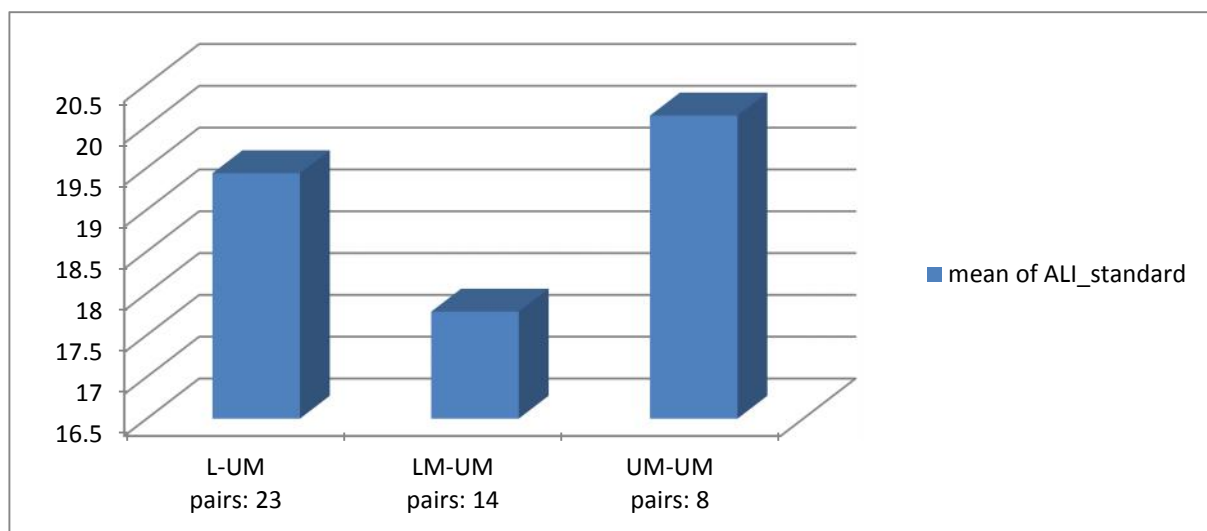
Low income (L)	Lower middle income (LM)	Upper middle income (UM)
Benin	Angola	Algeria
Burkina Faso	Cameroon	Botswana
Burundi	Congo	Gabon
Central African Republic	Ivory Coast	Libya
Chad	Egypt	Mauritius
Comoros	Ghana	Namibia
Democratic Republic of Congo	Lesotho	Seychelles
Ethiopia	Mauritania	South Africa
Gambia	Morocco	Tunisia
Kenya	Nigeria	
Liberia	Senegal	
Madagascar	Sudan	
Malawi	Swaziland	
Mali	Zambia	
Mozambique		
Niger		
Rwanda		
Sierra Leone		
Somalia		
Tanzania		
Togo		
Uganda		
Zimbabwe		

Source: World Bank (2010)

Based on the mean ALI scores of the standard variant, figure 6.6 reveals that the agreements tend to be more liberal between South Africa and 23 low income countries

than between South Africa and 14 lower middle income countries, a finding which differs from those of Piermartini and Rousova (2008 and 2009). The ALI average for the LM-UM group was negatively impacted by the four very restrictive BASAs between South Africa and Ivory Coast, Mauritania, Morocco and Sudan; all of which scored 0 points in the ALI standard weighting system. The restrictive nature of these bilaterals impacted on the liberalisation average of the LM-UM group and could be viewed as the principal reason for its deviation from the worldwide results.

Figure 6.6: South African – intra-African air services liberalisation by income level



Sources: Department of Transport BASAs and MOUs (2000 – 2010); World Bank (2010)

The highest degree of liberalisation was achieved by the eight countries in the upper middle income group. It was expected, in line with the findings of Piermartini and Rousova (2008 and 2009), that the level of liberalisation of the air services regime would be directly proportionate to the level of income of the countries. However, the results for South Africa and its 45 bilateral air counterparts are slightly different from the world average.

6.3.3 Services liberalisation based on regional grouping and level of income

To sum up, gradual liberalisation over the 11 year period between South Africa and its African counterparts is clear from the above figures and discussion, with varying degrees of liberalisation being achieved in each of the four regions. Significant progress has been

realised with 15 BASAs, as summarised in table 6.8, the total ALI scores of which exceeded the maximum threshold for the YD.

Table 6.8: The most liberal bilaterals in the South African – intra-African context

Country	Region	ALI Total	Level of income
Benin	West	37	L
Botswana	SADC	35	UM
Cameroon	West	37	LM
Egypt	North	35	LM
Ethiopia	East	35	L
Gabon	West	37	UM
Gambia	West	37	L
Ghana	West	37	LM
Lesotho	SADC	37	LM
Liberia	West	37	L
Rwanda	East	37	L
Senegal	West	37	LM
Sierra Leone	West	37	L
Togo	West	37	L
Uganda	East	37	L

Note: Although Kenya and Libya agreed to implement the principles of the YD with South Africa, they did not attain the YD threshold as there was no provision for the 5th freedom rights in their BASAs in 2010, while in the case of Libya a dual disapproval tariff regime was in place which is not in line with the YD.

Source: Department of Transport BASAs and MOUs (2000 – 2010)

As evident from table 6.8 above, the extent of liberalisation is linked more closely to the regional groupings and the location of the country, but, to a lesser extent, to the level of income. The most liberal agreements that have exceeded the YD threshold stem predominantly from the West African region (60% of the 15 BASAs), followed by the East African region (20%), SADC (13%) and the North African region (7%).

6.4 AIR SERVICES LIBERALISATION AND AIR PASSENGER TRAFFIC

The impact of liberalisation on an implementing country is significant; however, comparatively few quantitative and economic exercises have been carried out to determine the impact of air transport regulation. As pointed out by the WTO (2006:10), the

literature on air transport contains no comprehensive analysis on the degree of liberalisation of BASAs. Since the introduction of the QUASAR by the WTO in 2006, the ALI index has been utilised in several studies to quantify the restrictiveness or openness of an air transport regime. In secondary literature, liberalisation changes are assessed in many ways. The literature refers to assessment in terms of comparing pre- and post-liberalisation data, for example comparing the situation in more liberal versus more restricted cases; using country specific case-studies; and using the time series, where panel and cross-sectional data are applied to a series of variables and are subsequently utilised to analyse passenger and price, cost or investment changes. Table 6.9 below summarises the empirical research which incorporates the ALI and liberalisation indices that were utilised to measure the impact of liberalisation or air policy regime changes on air passenger traffic.

Table 6.9: Secondary literature review pertaining to the ALI and liberalisation indices

Author	Index	Data type	Sample size	Region	Empirical model	Findings
Myburgh <i>et al.</i> (2006)	A dummy for the period, when routes are governed by largely liberalised BASA	Panel data	445 observations	SA-SADC; SA-Africa (outside SADC); SA-Europe; SA-Asia	Gravity-type model	Liberalised agreements had increased passenger volumes by 23%
InterVISTAS-ga ² Consulting, Inc. (2006)	5 variables pertaining to BASA were assigned an index (1 restrictive provision, 0 liberal)	Time series and cross-sectional data	1 400 country-pairs, 810 observations	World, not broken down per region	Gravity-type model, incorporating dummy variable for each type of the restriction	Artificial constraints posed by BASA constrain the growth of traffic
Warnock-Smith and Morrell (2008)	Unique air policy index (0, 0.5 or 1 per five economic levers)	Panel data and time series	3 country-pairs over 11 years = 33 observations	US-Caribbean	Multivariate model incorporating unique liberalisation index	Positive statistical relationship between air policy reform and traffic growth
Piermartini and Rousova (2008) and (2009)	ALI	Cross-sectional	2 300 country-pairs, 1 294 observations	184 different countries	Gravity-type model, incorporating ALI	Found positive and robust evidence between the volumes of traffic and the degree of liberalisation

Author	Index	Data type	Sample size	Region	Empirical model	Findings
						of aviation market
InterVISTAS-EU Consulting, Inc. (2009)	5 variables pertaining to BASA were assigned an index (1 restrictive provision, 0 liberal)	Time series and cross-sectional data	800 country-pairs,	World, not broken down per region	Gravity-type model, incorporating dummy variable for each type of the restriction	Artificial constraints posed by BASAs constrain the growth of traffic; liberalisation of market access is projected to increase passenger traffic by 27%
Jomini <i>et al.</i> (2009)	ALI	Cross-sectional	266 observations	Routes pertaining to Istanbul declaration	Quantifying the liberalness of routes, pertaining to the Istanbul declaration	Projection of passenger increase based on successful implementation of Istanbul declaration in terms of ALI scores.
Grosso (2008) and (2010)	ALI	Cross-sectional	647 observations	Within and outside APEC	Gravity-type model employing ALI	Ease of air transport restrictions to double the ALI scores, both within and outside the APEC region would result in traffic increase by 4.5%

In this study the simultaneous impact of several key factors or predictors, one of which is aviation policy, on air passenger traffic flows, is statistically tested over an 11 year time period in the five air transport markets: the intra-African; SADC, West, East and North African markets. In addition, the impact of the aviation policy, as well as its individual provisions, is assessed by the ALI over the selected time period which has not previously been explored in secondary research. The main contribution of this study to existing literature is discussed below.

6.4.1 The study's contribution to existing literature

This study further expands on the existing research, which was predominantly cross-sectional and focused on numerous country-pairs worldwide. With the exception of research by Grosso (2008 and 2010) and Myburgh *et al.* (2006), prior studies did not focus on regions. Myburgh *et al.* (2006) focused on South Africa – SADC country-pairs over a period of six years on a quarterly basis, with a sample of 384 observations for SA – SADC. Their model utilised a dummy variable to indicate the period when the routes were governed by a largely liberal BASA.

The current research was motivated by the scarcity of empirical evidence on the impact of liberalisation between South Africa and its African air services counterparts. The most important innovation of the current research compared to that of Myburgh *et al.* (2006), is the use of the ALI to quantify the degree of restrictiveness or openness of BASAs between South Africa and 45 African countries covering the given period. This approach provides a detailed analysis of the level of liberalisation by investigating the overall South African – intra-African sample as well as each of the four regions. To the knowledge of the researcher no similar research has been conducted in the African context. The study therefore contributes to the body of knowledge as well as to the industry by:

- Expanding on the cross-sectional 2005 QUASAR database pertaining to the South African – intra-African bilaterals. The relevant BASAs and MOUs covering the period investigated were collected from the South African Department of Transport to create a unique set of panel data. This data set could be utilised to assess the restrictiveness or openness of air services regime at any point in time over this period (the target population and panel data are discussed in more detail in sections 6.5.1 and 6.6.2 below). This valuable information could also be utilised by the decision makers, particularly at the DOT, to see what progress has been realised in terms of the liberalisation of air services agreements in line with the YD and the Airlift liberalisation targets;

- Evaluating BASAs between South Africa and 45 African countries to provide an overview of the types of agreements that are in place in the intra-African market as well as in each of the four regions; and
- Statistically testing the impact of the aviation policy as measured by the ALI, and the individual provisions of market access features of the ALI on air passenger traffic flows, the results of which will be discussed in Chapter 7.

The subsequent sections describe the methodology used to determine the relationship between the South African aviation policy in Africa and air passenger traffic flows between 2000 and 2010. In particular, the overall impact of the South African aviation policy in Africa and each of the four regions as well as the impacts of the individual provisions of the policy are measured. The discussion begins with the sampling, followed by the panel data set compiled for this study, the empirical model utilised to statistically measure the simultaneous impact of the aviation policy and the identified key factors or predictors on air passenger traffic flows.

6.5 SAMPLING

This section defines the target population for the quantitative phase, describes the sampling method utilised in the form of a census, and provides the details of the census that was undertaken. The implications of applying the census as the sampling method for this study are also briefly discussed.

6.5.1 Target population

The target population was defined as all the relevant BASAs as well as the MOUs between South Africa and the respective African countries over a period of 11 years. Forty-five African countries had an existing signed BASA with South Africa over the selected time period. This period was selected to measure the impact of the South African aviation policy in Africa on the respective air passenger traffic flows: the said policy in Africa is linked to

the implementation of the YD, which was enforced in 2000. The BASAs, without which the quantitative research would have not been possible, as well as the MOUs pertaining to the BASAs for the selected time period, were physically collected by the researcher from the Department of Transport. Data collection took place from February to May 2011 and involved several consultations and discussion meetings with the civil aviation experts at the Department.

6.5.2 Sampling method

In order to collect accurate data, all the elements in a population must be examined. When data is collected from the entire population, it is referred to as a *census*. It is evident that the population for this study was small, represented by only 45 African countries. As the data could be collected from the entire population, there was no need to draw a sample and a census was considered feasible for this study (Cooper & Schindler, 2003:181).

The respective countries are summarised per region in table 6.10. The regional grouping is based on the methodology of the South African DOT, not on the geographic location of a specific country or its membership in the regional economic communities or groupings.

Table 6.10: Quantitative census

SADC region	West region	East region	North region
Angola	Benin	Burundi	Algeria
Botswana	Burkina Faso	Comoros	Egypt
Democratic Republic of the Congo	Cameroon	Ethiopia	Libya
Lesotho	Central African Republic	Kenya	Morocco
Madagascar	Chad	Rwanda	Tunisia
Malawi	Congo	Somalia	
Mauritius	Cote d'Ivoire	Sudan	
Mozambique	Gabon	Uganda	
Namibia	The Gambia		
Seychelles	Ghana		
Swaziland	Liberia		
Tanzania	Mali		

SADC region	West region	East region	North region
Zambia	Mauritania		
Zimbabwe	Niger		
	Nigeria		
	Senegal		
	Sierra Leone		
	Togo		

Source: Sithole (2012)

There was no sampling error because the realised sample was treated as a census. Therefore, it was not necessary to carry out a statistical evaluation of the sampling error, as “true” population values were reflected because the data could be collected from the entire population.

6.6 DATA ANALYSIS

6.6.1 Introduction

In general, given a set of variables, four basic kinds of data can be distinguished according to a) whether the variables concerned are measured once or repeatedly and b) whether the same or different units are studied in each case as depicted in table 6.11 (Diamantopoulos & Schlegelmilch, 2004:7).

Table 6.11: Types of data set

Units studied	Points in time for observations	
	One	Many
Same	<i>Cross-sectional data</i>	<i>Panel data</i>
Different	<i>Cross-sectional replication</i>	<i>Time-Series data</i>

Source: Diamantopoulos and Schlegelmilch (2004:7)

Data are termed “panel data” or “true longitudinal data” when the same units of analysis are studied over different points in time. In addition to capturing aggregate changes over time, panel data enable inferences to be drawn pertaining to changes in individual

behaviour (Diamantopoulos & Schlegelmilch, 2004:7). Panel data may be contrasted with pure cross-sectional data, where observations on individual units at a point in time are made, or with pure time-series, where independent observations are collected over a period of time (Nerlove, 2000:3).

The advantage of using panel data is that one is able to inspect it for inconsistencies in responses, unlike cross-sectional data where no tests can be made and users thus have no choice but to accept the reported values. If inconsistencies are ignored, however this poses the same threat as with pure time-series or cross-sectional estimations.

The concepts of panel data, fixed effect regression methods, gravity-type models and the empirical model are comprehensively discussed in the ensuing section.

6.6.2 Panel data set for this research

Panel data are of special importance to research in developing countries, as they may not have a long tradition of statistical data collection: for which it is therefore generally necessary to obtain original survey data in order to answer many significant questions (Baltagi, 2001:5). This was also relevant to the current study as the raw data pertaining to the market access features of BASAs were not publicly available. The South African Department of Transport kindly granted the researcher access to the BASAs and MOUs.

By the end of 2010, there were 53 internationally recognised states in Africa, 45 of which had a BASA with South Africa. The sample size was limited to the number of African states meeting this criterion. Panel data for the given time period allowed for a maximum of 495 observations.

For this study it was important to establish whether any progress had been made in terms of the liberalisation of BASAs over this period both in line with the YD and the objectives of the South African Airlift Strategy. Four steps were followed in compiling the panel data set: 1) collection of BASAs and MOUs pertaining to those agreements that covered the period

of the research; 2) identification of variables to be included in the panel data set; 3) assigning ALI points to each of the market features; and 4) the collection of data pertaining to the remainder of the identified variables.

Step 2 generated a list of one dependent variable (*air passenger traffic flows or traffic*) and 12 explanatory variables: *GDP, population, distance, border, colony, language, low income, ASA age, Partner Island, Report Island, Trade and ALI*. The variables are discussed in detail in section 6.6.5 below.

In step 3 the researcher had to go through every document collected from the Department of Transport to assign points to each of the seven market access features for every year. Any unclear wording or sections of the documents were checked with the BASA expert at the DOT to ensure exact allocation of the scores.

The data for the other variables in the panel set were readily available. The variables and data sources are discussed later in this chapter. The output of four steps was the compilation of four panel data sets representing four variants of the ALI, namely *STD*, *5th+*, *OWN+* and *DES+*.

From an analysis point of view, it was important to select an approach which would cater for the change in dynamics over time and allow the quantification of the restrictiveness or openness of the aviation policy through examining the design of BASAs. A bilateral agreement reflects every aspect of the aviation policy of each member of the country-pair. In selecting the measurement instrument the cross-sectional approach was considered, but this approach does not address the time factor. In the case of aviation policy through the design of the respective BASAs, this is a very important aspect to factor in, as the amount of time needed for a market to respond to changes in the underlying regulatory approach could range from a few months to several decades (InterVISTAS-ga² Consulting, Inc., 2006:62). Furthermore, the cross-sectional approach does not consider the lengthy history of the relationship. In contrast, the panel data set compiled for the study

incorporated an explanatory variable to account for the number of years a particular agreement has been in place.

In addition to the above, the advantages of using panel data as opposed to cross-sectional or time-series data relevant to this research, as summarised by Baltagi (2001:5), are:

- Panel data analyses can produce more reliable parameter estimates and are less likely to be plagued by the problem of autocorrelation that is common in time-series studies;
- Panel data estimations allow the researcher to control for heterogeneity between units, which were represented by 45 cross-sections or African states in this research;
- Panel data are better able to identify and measure the effects that are not detectable in pure cross-sectional or pure time-series data.

The Department of Statistics of the University of Pretoria captured and analysed the data using the statistical computer package SAS, and advised on the relevant steps and techniques to be utilised in response to the guidelines provided by the researcher, taking into account the nature of the data collected and its limitations.

Three countries: namely, Liberia, Somalia and Zimbabwe had several years of missing data and were therefore omitted from the regression analysis. The final regression output contained 42 cross-sections using a fixed one-way panel regression technique.

6.6.3 Fixed effect regression methods

Fixed effects (FE) regression methods are employed to analyse the relationship between a dependent variable (*traffic*) and predictors such as the *GDP*, *population*, *trade*, *ALI*, *Low income* and *ASA age* within an African state in the panel data set. They have the attractive feature of controlling for all stable characteristics of the states, whether measured or not.

This is accomplished by using only within-state variations to estimate the regression coefficients.

There are two basic data requirements for using the fixed effects methods. Firstly, the dependent variable, which is *traffic*, must be measured for each African state on at least two occasions. Those measurements must be directly comparable: that is, they must have the same meaning and metric. Secondly, the predictor variables of interest must change in value across those two occasions for some substantial portion of the sample (Allison, nd:1).

The fixed one-way panel regression technique was selected to account for 42 cross-sections or panels over the specific period. The model considered each country-pair as an independent entity, where its traffic would not be affected by changes in other country-pairs. The observations within each panel were dependent, but independent of the other panels or African states. The Ordinary Least Squares method that was employed in numerous cross-sectional studies (InterVISTAS-ga² Consulting, Inc., 2006; Grosso, 2008; Piermartini & Rousova, 2008; Piermartini & Rousova, 2009; Rousova, 2009; InterVISTAS-EU Consulting, Inc., 2009; Grosso, 2010) to examine the relationship between dependent and independent variables for cross-sections could not be applied in this study due to the unique characteristics of the panel data.

6.6.4 The gravity model and its use in studying air services regulation

The gravity model was inspired by Newton's "Law of Universal Gravitation" which states that the force attracting two objects depends on their size and on the distance between them (Achard, 2009:28). In the international trade gravity model in its basic form, the amount of trade between two countries or regions is assumed to be directly proportionate to their size and inversely proportionate to the distance between them (Hwang & Shiao, 2011). Linnemann (1966) identified "population" as a measure of country or region size. Gravity-type models have been empirically successful in explaining various interregional and international flows including migration, commuting, international trade and air

passenger services. In transport analysis, models based on intervening opportunities have been as popular as gravity-type models and have been proven to be equally effective. The choice of model over one another reflects the personal preference of the researcher (Taaffe, Gauthier & O’Kelly, 1996). Gravity-type model was selected for the quantitative analysis as it had been proven to be effective in analysing the effects of air services regulation on trade flows in a number of key studies, incorporating air liberalisation indices. Table 6.12 reviews these secondary studies which employed gravity-type models specifically augmented for the degree of regulatory liberalisation of air passenger services as well as the respective explanatory variables utilised in these studies. The dependent variable in these studies is air passenger traffic.

Table 6.12: Overview of the secondary literature and variables utilised in gravity-type models

Variable	Myburgh <i>et al.</i> (2006)	InterVISTAS-ga ² Consulting, Inc. (2006)	Grosche <i>et al.</i> (2007)	Warnock-Smith and Morrell (2008)	Piermartini and Rousova (2008)	Piermartini and Rousova (2009)	InterVISTAS-EU Consulting, Inc. (2009)	Grosso (2008) and (2010)	Empirical model; this study
Read GDP combined				x		x			
LibIndex/ALI/dummy variables for ASA features	x	x		x	x		x	x	x
Terrorism				x					
Distance		x	x		x	x		x	x
Border					x	x		x	x
Colony/historic tie		x			x	x		x	x
Language		x			x	x		x	x
Low income					x				x
ASA age					x	x			x
Trade flows/Flows of services	x	x				x	x		x
GDP per capita (product)/country specific	x	x	x		x		x	x	x
Population	x	x	x						x
Capacity increase	x								
Adverse events	x								
Seasonality	x								
Moment of Inertia		x							
Intervening opportunities		x							
Quality of service		x							
Price		x	x					x	
Catchment area			x						

Variable	Myburgh <i>et al.</i> (2006)	InterVISTAS-ga ² Consulting, Inc. (2006)	Grosche <i>et al.</i> (2007)	Warnock-Smith and Morrell (2008)	Piermartini and Rousova (2008)	Piermartini and Rousova (2009)	InterVISTAS-EU Consulting, Inc. (2009)	Grosso (2008) and (2010)	Empirical model; this study
Average travel time			x						
Buying power index			x						
Existence of direct services								x	
Reporter island								x	x
Partner island								x	x
Degree of urbanisation		x							

From the above summary, it is evident that there are a number of explanatory variables that may be incorporated into the gravity model to measure air services liberalisation.

As mentioned in Chapter 5, the Delphi generated an extensive list of factors, which according to the experts, have an impact on air passenger traffic flows between a country-pair. These factors were plotted into ten main categories. Several of these factors are particular to the gravity-type model. The factors impacting on air passenger traffic flows that had been statistically measured and quantified in existing secondary research were summarised in table 6.12 above. All of the factors identified by the Delphi and secondary literature, the majority of which were intertwined and interlinked, were assessed in relation to the availability of consistent and reliable data and the ability of the empirical model to statistically quantify and measure these factors over the said period in the African context. Price, for example was not included in the model. This step filtered the independent factors or predictors and narrowed them down to 12 in total.

The empirical model was constructed by combining variables from seven main studies: InterVISTAS-ga² Consulting, Inc. (2006); Piermartini and Rousova (2008) and (2009); Rousova (2009); Grosso (2008) and (2010); InterVISTAS-EU Consulting, Inc. (2009) and taking into account the Delphi factors that could be statistically tested by the model. Most of the variables selected for the empirical model had been generated by experts applying the Delphi.

6.6.5 The empirical model

The final data set, as discussed, contained 42 cross-sections over the given time period. Table 6.13 lists the variables utilised to compile the panel data set, as well as the corresponding data sources.

Table 6.13: Description of variables and the data sources utilised

Variable	Description	Source
<i>Traffic</i>	In the context of other studies on air transport liberalisation, traffic has been defined as the yearly two-way origin-destination traffic between the country-pair. Due to data limitation and its availability over the given time period, the study utilised data from the annual Tourism Report published by Statistics South Africa. The data availability and limitation of the “traffic” variable is discussed in detail in section 6.6.6 below.	Tourism Report (Statistics South Africa, 2001-2011).
<i>GDP</i>	The product of the per capita GDP for the two countries on either side of the route (data are in current US dollars).	World Bank Development Indicators (WDI) database (World Bank, 2011b)
<i>Distance</i>	Distance in kilometres between the most populous cities in the country-pair. The distances are calculated following the great circle formula, which uses latitudes and longitudes of the most important cities or agglomerations (in terms of population).	CEPII (2011)
<i>Border</i>	Denotes whether the two countries in the country-pair share a common border. “1” denotes that they share a common border whereas “0” denotes that the country-pair does not share a common border.	CEPII (2011)
<i>Colony</i>	Denotes whether the two countries in the country-pair share a colonial link. “1” denotes that they do while colonial link and “0” denotes that the country-pair does not share such a link.	CEPII (2011)
<i>Language</i>	Denotes whether the two countries in the country-pair share a common official language. “1” denotes that they do, whereas “0” denotes that the country-pair does not share such a language.	CEPII (2011)
<i>Low_Inc</i>	A dummy variable equal to “1” indicates that one and only one country in the country-pair is a low-income country. This variable was introduced to capture the relatively low attractiveness of low income countries for passengers from other countries (Piermartini & Rousova, 2008).	Grouping of the countries by level of income is in line with the World Bank country classification (World Bank, 2010)
<i>ASA_age</i>	A number of years since the first bilateral was enforced. This variable was incorporated following Piermartini and Rousova’s (2008) and (2009) approach.	Researcher’s own calculations based on BASAs collected from the DOT.
<i>Trade</i>	This variable refers to services flows. Service activities usually require a close interaction between the seller and	World Bank Development Indicators (WDI) database

Variable	Description	Source
	the consumer, so that the sale of services is an important determinant of the demand for travel (InterVISTAS-EU Consulting, Inc., 2009). It was not possible to obtain data on services trade data for each potential country-pair. Following the approach of InterVISTAS-ga ² Consulting, Inc. (2006) and InterVISTAS-EU Consulting, Inc. (2009) the model utilises a gravity-type relationship between each nations' services trade with all countries to define a country-pair propensity. The service flows of trade are expressed as: (exports of services by country A x imports of services by country B) + (exports of services by country B x imports of services by country A). Data are in current US dollars.	(World Bank, 2011b)
<i>Partner_island</i>	A dummy variable equal to "1" indicates that a partner country in the country-pair is an island. Partner countries in this study are represented by 45 African countries.	The World Factbook (Central Intelligence Agency, 2011)
<i>Reporter_island</i>	A dummy variable equal to "1" indicates that a reporter country in the country-pair is an island. The reporter country in this study is South Africa	The World Factbook (Central Intelligence Agency, 2011)
<i>ALI</i>	The policy variable is the ALI, which is the cumulative score of the seven features of market access.	Authors' own compilation based on the WTO ALI weighting system (WTO, 2006)

As was discussed earlier, the preliminary empirical equation was formulated taking into account the secondary research on air transport liberalisation and gravity-type models as well as the research objective of the study and included one dependent variable, namely *traffic* and 12 predictor variables.

The main focus of the quantitative research was on the variable *ALI* that denoted the degree of restrictiveness or liberalisation of air services agreements between two countries. Four versions of the ALI were applied to the full panel data set as well as to each of the four regions: 13 states in SADC or 143 observations, seven in East Africa or 77 observations, seven states in West Africa or 77 observations and five states in North Africa or 55 observations. The *region* variable was incorporated into the model to account for the impact of openness on air services agreements between South Africa and the African states in each of the four regions regarding air passenger traffic.

Several time-invariant explanatory variables or predictors, namely *distance*, *border*, *colony*, *language*, *Partner Island* and *Reporter Island*, which had no variation in their

values over the specific period, were omitted from the regression model as they had no power to predict the variation in *traffic*. Previous studies that were able to test the impact of these predictors were all cross-sectional.

Four variables, namely *traffic*, *GDP*, *trade* and *population*, were transformed by a natural logarithmic transformation as the distribution of these variables was highly skewed to the left. Log transformation made the distribution more normal, enhanced the symmetry and stabilised the spread; it also helped the variables to better fit into the model. The transformation helps to reduce heteroscedasticity since it compresses the scale in which the variables are measured. The graphical relationships between the dependent variable and each of the six predictor variables are presented in Appendix K.

Taking the above into account, the final panel data regression model constructed for all four variants of the ALI, namely *STD*, *5th*, *DES+* and *OWN+* incorporated one dependent variable, namely *ln(Traffic)* and six predictors, namely *ln(GDP)*, *ln(Population)*, *low income*, *ASA age*, *ln(Trade)* and *ALI*.

For all four variants of the ALI it was established that there were differences between the states in the overall sample of 42 states, compared to the reference country Zambia, which was selected by default as the last country on the list sorted alphabetically in ascending order. Country differences in each of the four regions were also reported. The focus of the panel regression was to determine which of the predictors had an impact on the air passenger traffic variable, *ln(Traffic)*, for the overall South African – intra-African market and whether there were any commonalities or differences across the regions. The purpose of the selected methodology was not the prediction of *ln(Traffic)*, but rather the determination of the predictors that were statistically significant in explaining their impact on the dependent variable, *ln(Traffic)*.

In the model, the significant predictors for the overall intra-African market for all four variants of the ALI weighting system were found to be: *ln(Trade)*, *ALI* and *ln(GDP)*. Of interest are the regional results which were found to be different from the overall results

and the results between each state. The commonalities and the differences of the results are reported and interpreted in the next chapter.

6.6.6 Data availability and limitations: traffic variable

As mentioned earlier, the majority of the studies on air services liberalisation were cross-sectional with 2005 as the year of the analysis (InterVISTAS-ga² Consulting, Inc., 2006; Piermartini & Rousova, 2008 and 2009; Rousova, 2009; InterVISTAS-EU Consulting, Inc., 2009; Grosso, 2008 and 2010). The data on annual air passenger traffic were provided by the IATA. In Myburgh *et al.* (2006) air passenger panel data from 1998 to 2004 were obtained from the Airports Company of South Africa; however, for reasons of confidentiality, data were only provided for routes flown by more than one airline. This study required two-way origin-destination air passenger traffic data over the said period. The researcher therefore liaised with numerous organisations in pursuit of the data. Table 6.14 summarises the organisations that were approached and the outcome.

Table 6.14: Traffic data collection

Organisation	Outcome
ACSA	Unwilling to provide the country-pair historical data due to reasons of confidentiality.
ICAO	Their data covered the period up to 2009 with numerous missing years for many of the African states. Data for 13 states (29% of the sample) were missing for the entire period (2000 to 2009): Algeria, Burkina Faso, Central African Republic, Comoros, Ethiopia, Gambia, Liberia, Mali, Morocco, Niger, Somalia, Sudan and Togo. Due to the size of the sample limited by the actual number of states, the number of observations had to be as complete as possible. Therefore, this data was useless for the research.
Travelport	Advised to contact ACSA, IATA or MIDT as their data only went back 24 months.
IATA Paxis Portfolio	The data were only available from 2005, for a very unaffordable price (ZAR 110000).
UNWTO	Advised to contact ICAO as they were not able to assist the researcher with the data for the selected period.
WTTC	Advised to contact IATA.
MIDT	The data were only available from 2005 to 2010 and at a fee.
Statistics South Africa	The tourism report was the only report available on an annual basis for the entire period from 2000 to 2010. "Data description: administrative data sources from the DHA, that is, information from all the country's ports of entry and applications for permanent residence constitute the only comprehensive source of information on foreign tourists and

Organisation	Outcome
	<p>departures, documented immigrants and emigrants. The information from this source of data provides the best national coverage (in terms of both space and time) of the population movements of South African residents and foreign travellers. Data routinely collected by immigration officers at all land, air and sea entry ports on all travellers (South African residents and foreign travellers) arriving into or departing from South Africa are captured into the DHA's population Movement Control System (MCS). Generally the data are collected directly from travel documents either by scanning or capturing onto the port's electronic database. Individual ports regularly transmit data into the national database at the head office of the DHA. Statistics South Africa (Stats SA) downloads the data covering a particular calendar month from the mainframe of the State Information Technology Agency (SITA), where the DHA stores its data" (Statistics South Africa, 2011).</p> <p>The Tourism Report provides consistent data on the number of tourists by country of residence and the mode of arrival; hence the researcher was able to use the data to see how many tourists from each of the respective African states arrived in South Africa by air for each of the years.</p> <p>The biggest limitation of this data source was that the information on the total number of arrivals and departures of South African residents is collected through the scanning of their passports. Thus, data on country of final destination and purpose of visit are not available. For example, in 2010 there were 3 404 tourists from Algeria who arrived in South Africa by air. No data is available on how many South Africans flew to Algeria in 2010.</p> <p>Hence the air passenger traffic in this study is limited to the number of foreign tourists arriving by air. This data source was chosen due to its methodological consistency and the fact that the focus of the study fell on the relationship between air passenger traffic and aviation policy. Taking into account the data availability and limitation issues, this was the best source to represent a trend over the selected time period.</p>
<p>Statistical departments of the selected African countries</p>	<p>The statistical departments of the 45 states were researched online but there was no data available on the air passenger traffic over the given time period. The exercise proved that accurate statistics on air passengers between country-pairs in Africa are practically non-existent as such countries' statistical capacity is limited due to lack of training or of funding for adequate staff. Schlumberger (2010) confirms that on several missions to Africa between 2002 and 2008 the data on actual passenger counts were often maintained on paper ledgers with no computerisation. In many cases these data were never submitted to the relevant authorities such as ICAO, leaving exceptionally large holes in the time-series. Many states also believe that they only need to report data on international traffic and that data on intra-African traffic is not a top priority.</p>

6.7 HYPOTHESES

6.7.1 The null and the alternative hypotheses in this study

In classical tests of significance two kinds of hypotheses are employed: the null and the alternative hypothesis. Researchers test to establish whether there has been no change in the population of interest, in which case they do not reject the null hypothesis; or, whether a real difference exists, in which case they reject the null hypothesis. In the first chapter the hypotheses were formulated thus:

Null hypothesis

H_0 : There is no relationship between South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

Alternative hypothesis

H_1 : There is a relationship between South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

The same two hypotheses were formulated for each of the four regions, namely the SADC, East, West and North African regions.

The discussion of the previous chapters and this chapter led to a further refinement of the hypotheses and resulted in the following null and alternative hypotheses:

Null hypothesis

H_0 : There is no simultaneous impact of the degree of liberalisation of air services agreements, the number of years the BASAs have been in place, the size of the GDP, the presence of a low-income country in a country-pair, the magnitude of the services trade flows and the population size on the South African – intra-African air passenger traffic flows.

Alternative hypothesis

H₁: There is a simultaneous impact of the degree of liberalisation of air services agreements, the number of years the BASAs have been in place, the size of the GDP, the presence of a low-income country in a country-pair, the magnitude of the services trade flows and the population size on the South African – intra-African air passenger traffic flows.

The same two hypotheses will be tested for each of the four regions, namely the SADC, East, West and North African regions. The main difference of the hypotheses employed in this study, as opposed to those tested in the secondary literature, and discussed in section 6.6.4 above, is that a relationship between the dependent variable and the six predictors was tested simultaneously and not by focusing on the individual impact of each of the predictors in isolation. It is noteworthy that although the objective of the study was to statistically test the impact of the South African aviation policy in Africa on air passenger traffic flows, one cannot test this relationship in isolation as many other variables impact this relationship such as the GDP, population size and so forth. In this study, the principal of partial correlation was therefore applied.

6.7.2 Hypotheses' assumptions

ALI

It is expected that the degree of air services liberalisation as measured by the *ALI* will have a positive partial impact on air passenger traffic flows, while all other variables remain constant, both in the full sample of 42 country-pairs as well as in each of the four regions. Liberalised air services agreements improve market access, thereby introducing more competition in the sector and allowing for a better rationalisation of the air services, which in turn will yield lower air fares and/or a better quality of air services (Piermartini & Rousova, 2008). Consumers represented by air passenger traffic flows are expected to respond to these changes by flying more often. This expectation is based on the

InterVISTAS-ga² Consulting, Inc. (2006:11) causal chain that links changes in air services regulation to changes in the broader economy as presented in figure 6.7.

Figure 6.7: Causal relationship between air services liberalisation and economic growth



Source: InterVISTAS-ga² Consulting, Inc. (2006)

ASA_age

This predictor attempts to account for the effective implementation of an agreement and it is expected to have a positive partial effect on air passenger traffic flows, while all other variables in the model remain constant, both in the full sample of 42 country-pairs as well as in each of the four regions.

Ln(GDP)

It is expected that the GDP, which measures the total magnitude of economic activity of a nation, will have a partial positive impact on air passenger traffic flows as the propensity to fly is likely to increase disproportionately increase with the levels of income. Most research concludes that traffic grows faster than the GDP.

Low_Inc

This predictor was introduced into the model, following the approach of Piermartini and Rousova (2008) to capture the relatively low attractiveness of low-income countries for

passengers from other countries, and it is expected that the presence of a low-income country will have a partial negative impact on air traffic passenger flows between the country-pair, while all other variables in the model remain constant.

Ln(Trade)

Air passenger traffic flows are expected to be partially positively impacted by the magnitude of air services trade as services trade relations increase the need for face-to-face communication.

Ln(Population)

Air passenger traffic flows are expected to be partially positively impacted by the size of the population. This expectation is based on the results of secondary research (Myburgh *et al.*, 2006; Grosche *et al.*, 2007; Hwang & Shiao, 2011).

6.8 CHAPTER SUMMARY

In this chapter the methodology utilised for the quantitative research, in particular the one-way fixed panel regression was discussed. The use and application of the ALI, developed by the WTO Secretariat, were explained in the context of the South African aviation policy in Africa. This was represented by a panel data set covering an 11 time period. The distribution of the ALI total scores confirmed varying degrees of liberalisation between South Africa and its 45 bilateral air counterparts. Based on the assessment of the ALI scores, it can be concluded that gradual liberalisation has taken place over the given period, with unique progress dynamics prevailing in the overall market and each of the four regions.

Furthermore, the empirical panel regression model and the variables selected, accounting for the respective data availability and limitations, were comprehensively reviewed. The

next chapter discusses the results of the fixed one-way panel regression in each of the five markets, linked to the hypotheses formulated in this chapter.

CHAPTER 7

RESULTS

7.1 INTRODUCTION

In the following sections, the actual findings, resulting from the quantitative research in the form of a fixed one-way panel regression, are reported. The objective was to quantify the impact of the South African aviation policy in Africa on air passenger traffic flows. It was mentioned in the previous chapter that the impact of the aviation policy on air passenger traffic flows, as measured by the ALI index, could not be tested in isolation due to the fact that a number of identified predictors played a role. In line with this, a panel regression model was constructed which was applied to five scenarios: the intra-African market (42 countries), as well as the four regions: the SADC (13 countries), West African (17 countries), East African (seven countries) and North African (five countries) regional markets. Once the significant predictors were identified for each of the five markets, a second model was constructed to determine which of the individual provisions of the ALI have a statistically significant impact on air passenger traffic flows, taking into account the simultaneous impact of the significant predictors.

7.2 THE RESULTS OF THE PANEL REGRESSION MODEL

7.2.1 The null and the alternative hypotheses formulated for the South African – intra-African market

Null hypothesis

H_0 : There is no simultaneous impact of the degree of liberalisation of air services agreements, the number of years the BASAs have been in place, the size of the GDP, the presence of a low-income country in a country-pair, the magnitude of the services trade flows and the population size on the South African – intra-African air passenger traffic flows.

Alternative hypothesis

H_1 : There is such a simultaneous impact of the six predictors on air passenger traffic flows.

The null and the alternative hypotheses can be formulated for each of the four regional markets in a similar way.

7.2.2 The panel regression models

Fixed one-way panel regression was performed on 42 cross-sections or African countries over the 11 year time period. The final panel data regression model, constructed for each of the four variants of the ALI weighting system, namely *STD*, *5th*+, *DES*+ and *OWN*+, is formulated as follows:

$$\ln(\text{Traffic})_{it} = \alpha + \beta_1 \ln(\text{GDP})_{1,it} + \beta_2 \ln(\text{Low_Inc})_{2,it} + \beta_3 \ln(\text{ASA_age})_{3,it} + \beta_4 \ln(\text{Trade})_{4,it} \\ + \beta_5 \ln(\text{Population})_{5,it} + \beta_6 \ln(\text{ALI})_{6,it} + \varepsilon_{it}$$

for $i = 1, 2, 3, \dots, 42$
 $t = 1, 2, 3, \dots, 11$.

where \ln denotes a natural logarithm,

α is a constant,

$\beta = (\beta_1 \beta_2 \beta_3 \beta_4 \beta_5 \beta_6)'$ is a row vector of partial regression coefficients,

ε_{it} is an error term associated with country i and year t .

As already mentioned in Chapter 6, four predictors, namely *traffic*, *GDP*, *trade* and *population*, were transformed through a natural logarithmic transformation as the distribution of these predictors was highly skewed to the left. Log transformation made the distribution more normal, enhanced the symmetry and stabilised the spread, as well as helped the predictors to fit better into the model. Similar models can be defined for each of the four regional markets, namely the SADC, West, East and North African.

7.2.3 The fit and the significance of the panel regression models

The coefficient of determination or R-square value for modelling the South African – intra-African market returned an extremely high value of 0.976, which indicated that, for all four variants of the ALI weighting system, 97.6% of the variability of air passenger traffic flows was explained by the six predictors, as mentioned in the hypotheses. The coefficient of determination was also found to be extremely high for each of the regions, irrespective of the ALI variant, as summarised in table 7.1 below. These statistics confirmed that the estimated model fits the data extremely well for all five markets, irrespective of the ALI variant used.

Table 7.1: Model fitting statistics based on the four variants of the ALI weighting system

Market	Coefficient of determination (R-square)			
	<i>STD</i>	<i>5th +</i>	<i>OWN+</i>	<i>DES+</i>
South African – intra-African (42 countries)	0.9764	0.9764	0.9763	0.9764
South African – SADC region (13 countries)	0.9142	0.9144	0.9148	0.9129
South African – West African region (17 countries)	0.9791	0.9791	0.9791	0.9791
South African – East African region (7 countries)	0.9838	0.9839	0.937	0.9839
South African – North African region (5 countries)	0.9386	0.9386	0.9386	0.9386

Source: Department of Statistics, University of Pretoria (2012)

The results of the F test, testing the significance of the panel regression model for all four variants of the ALI for the five markets, were found to be statistically significant, as summarised in table 7.2. The null hypothesis was thus rejected, indicating that there was a simultaneous impact of the six predictors on the dependent variable $\ln(Traffic)$ for the intra-African market, as well as for the regional markets, irrespective of the ALI variant used.

Table 7.2: F test for the panel regression model for all markets and all ALI variants

Market	ALI variant	F-value	p-value
South African – intra-African	<i>STD</i>	290.02	<.0001
	<i>5th+</i>	292.84	<.0001
	<i>OWN+</i>	300.63	<.0001
	<i>DES+</i>	283.06	<.0001
South African – SADC region	<i>STD</i>	52.62	<.0001
	<i>5th+</i>	53.90	<.0001
	<i>OWN+</i>	55.26	<.0001
	<i>DES+</i>	49.79	<.0001
South African – West African region	<i>STD</i>	103.70	<.0001
	<i>5th+</i>	104.01	<.0001
	<i>OWN+</i>	104.01	<.0001
	<i>DES+</i>	102.73	<.0001
South African – East African region	<i>STD</i>	154.30	<.0001
	<i>5th+</i>	162.59	<.0001
	<i>OWN+</i>	158.62	<.0001
	<i>DES+</i>	147.59	<.0001
South African – North African region	<i>STD</i>	18.04	<.0001
	<i>5th+</i>	18.31	<.0001
	<i>OWN+</i>	18.46	<.0001
	<i>DES+</i>	17.61	<.0001

Source: Department of Statistics, University of Pretoria (2012)

7.2.4 Test for a significant difference between the countries and the reference country Zambia

It was found, for all four variants of the ALI, that there were significant differences between a country in the overall South African – intra-African market and the reference country Zambia, which was selected by default as the last on the alphabetical list of countries. Table 7.3 summarises these countries for all four ALI variants. The shaded parts in the table indicate countries that differ significantly at the 5% level of significance from the reference country Zambia.

Table 7.3: Summary of the p-value of the t-test for a significant difference between a country and the reference country Zambia

Regional market	Country	p-value			
		STD	5 th +	OWN+	DES+
SADC	Angola	0.0014	0.0018	0.0013	0.0015
	Botswana	0.2842	0.2975	0.3021	0.2768
	DRC	0.0006	0.0008	0.0007	0.0006
	Lesotho	0.9201	0.8943	0.8859	0.9233
	Madagascar	<.0001	<.0001	<.0001	<.0001
	Malawi	<.0001	<.0001	<.0001	<.0001
	Mauritius	0.675	0.7148	0.6973	0.6641
	Mozambique	0.0054	0.0075	0.0055	0.0054
	Namibia	0.1054	0.1113	0.1129	0.1041
	Seychelles	0.5701	0.6021	0.5947	0.562
	Swaziland	0.6909	0.7184	0.7207	0.688
Tanzania	0.0001	0.0002	0.0002	0.0001	
West African	Benin	<.0001	<.0001	<.0001	<.0001
	Burkina Faso	<.0001	<.0001	<.0001	<.0001
	CAR	<.0001	<.0001	<.0001	<.0001
	Cameroon	<.0001	<.0001	<.0001	<.0001
	Chad	<.0001	<.0001	<.0001	<.0001
	Congo	0.1185	0.113	0.1086	0.1179
	Gabon	0.5948	0.5703	0.5696	0.6035
	Gambia	0.0083	0.0076	0.0077	0.0084
	Ghana	<.0001	<.0001	<.0001	<.0001
	Ivory Coast	<.0001	<.0001	<.0001	<.0001
	Mali	<.0001	<.0001	<.0001	<.0001
	Mauritania	<.0001	<.0001	<.0001	<.0001
	Niger	<.0001	<.0001	<.0001	<.0001
	Nigeria	0.0391	0.0456	0.0412	0.0388
	Senegal	<.0001	<.0001	<.0001	<.0001
	Sierra Leone	<.0001	<.0001	<.0001	<.0001
Togo	<.0001	<.0001	<.0001	<.0001	
East African	Burundi	<.0001	<.0001	<.0001	<.0001
	Comoros	0.1492	0.1383	0.1387	0.1528
	Ethiopia	0.0004	0.0005	0.0004	0.0004
	Kenya	0.0028	0.0039	0.003	0.0028
	Rwanda	<.0001	<.0001	<.0001	<.0001
	Sudan	<.0001	<.0001	<.0001	<.0001
	Uganda	<.0001	<.0001	<.0001	<.0001
North African	Algeria	<.0001	<.0001	<.0001	<.0001
	Egypt	<.0001	<.0001	<.0001	<.0001
	Libya	<.0001	<.0001	<.0001	<.0001
	Morocco	<.0001	<.0001	<.0001	<.0001
	Tunisia	<.0001	<.0001	<.0001	<.0001

Source: Department of Statistics, University of Pretoria (2012)

The *p-values* of the following nine countries were found to be higher than 0.05, indicating no difference from the reference country Zambia, irrespective of the ALI variant used, as follows:

- **SADC region**
 - Botswana
 - Lesotho
 - Mauritius
 - Namibia
 - Seychelles
 - Swaziland

- **East African region**
 - Comoros

- **West African region**
 - Congo
 - Gabon

7.3 THE IMPACT OF THE SIX PREDICTORS ON AIR PASSENGER TRAFFIC FLOWS

7.3.1 The South African – intra-African market

Six predictors were identified to test the significance of their simultaneous impact on air passenger traffic flows in the context of the South African – intra-African air transport market. The results of the panel regression model, for all four variants of the ALI weighting system, represented by a full panel of 42 African countries over the 11 year time period, are provided in table 7.4 below.

Table 7.4: Panel regression results for the four variants of the ALI weighting system in the South African – intra-African market

Predictor	Partial regression coefficient				t-value				p-value			
	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+
Intercept	-24.93	-24.00	-24.36	-25.09	-1.31	-1.26	-1.27	-1.32	0.192	0.210	0.203	0.189
LowInc	-0.09	-0.09	-0.09	-0.09	-1.19	-1.21	-1.23	-1.17	0.235	0.227	0.219	0.241
ASAage	0.02	0.02	0.02	0.01	0.67	0.70	0.71	0.66	0.501	0.483	0.476	0.513
InTrade	0.32	0.32	0.32	0.32	4.64	4.68	4.64	4.62	<.0001	<.0001	<.0001	<.0001
InPopulation	0.74	0.71	0.72	0.74	1.26	1.21	1.23	1.28	0.207	0.228	0.218	0.203
ALI	0.01	0.01	0.00	0.01	2.21	2.26	2.16	2.27	0.028	0.025	0.032	0.024
InGDP	-0.24	-0.24	-0.24	-0.23	-2.84	-2.88	-2.85	-2.81	0.005	0.004	0.005	0.005

Note: The *p*-value in the table is the *p*-value of the t-test for the significance of a predictor.

Source: Department of Statistics, University of Pretoria (2012)

Only three predictors, namely the *In(Trade)*, *ALI* and *In(GDP)*, were found to be statistically significant at the 5% level of significance, while controlling for all the other variables in the model. The impact of the predictors on *In(Traffic)* was found to be the same for all four variants of the ALI. The partial effect of each of the three significant predictors, while controlling for all the other predictors in the model, is discussed below.

From table 7.4 it is evident that the *p*-value for the *ALI* predictor ranged between 0.024 and 0.032, depending on the variant of the ALI weighting method applied. Thus the *ALI* predictor was found to exert a statistically significant impact on air passenger traffic flows. The positive sign of the *ALI* partial regression coefficient, ranging from 0.00 to 0.01, confirmed a positive partial impact of the *ALI* on *In(Traffic)*, while controlling for all the other variables in the model. This was in line with the expectations that liberalised agreements would lead to an increase in air passenger traffic flows. Thus, for every unit increase in the *ALI*, the *In(Traffic)* would increase by about 1%, irrespective of the ALI weighting system used.

The *p*-value for the *In(Trade)* predictor was less than 0.0001 for all four ALI variants, indicating that this predictor has a statistically significant impact on air passenger traffic flows. The positive sign of the *In(Trade)* partial regression coefficient confirmed a partial positive impact of the predictor on the dependent variable, while controlling for all other

variables in the model. This was in line with the expectations that air passenger traffic flows were positively impacted by the magnitude of the services trade flows. Thus, for every unit increase in the $\ln(\text{Trade})$ predictor, the $\ln(\text{Traffic})$ would increase by 32%, irrespective of the ALI weighting system used.

The p -value for the $\ln(\text{GDP})$ predictor ranged between 0.004 and 0.005, depending on the ALI variant, and was found to have a statistically significant impact on air passenger traffic flows. The negative sign of the $\ln(\text{GDP})$ partial regression coefficient confirmed a partial negative impact of the predictor on the $\ln(\text{Traffic})$, while controlling for all the other variables in the model. It must be noted⁴⁷ however that the partial regression coefficient for the GDP was found to be positive, in line with the assumption that the magnitude of economic activity positively impacted on air passenger traffic flows between two countries. Thus, for every unit increase in the GDP , the $\ln(\text{Traffic})$ would increase by about 79%, irrespective of the ALI weighting system used.

The impact of six predictors on air passenger traffic flows in the South African – intra-African air transport market was discussed above. Three predictors were found to be significant for all four variants of the ALI weighting system.

7.3.2 The South African – SADC regional market

This section reports the panel regression results in the South African – SADC regional market with the objective of answering the following questions: “What are the significant predictors and how do they differ from the overall market and the other three regional markets?”

Three predictors, namely the $\ln(\text{Trade})$, ALI and $\ln(\text{GDP})$, were found to be statistically significant. The significant predictors and the signs of their partial regression coefficients

⁴⁷ $\text{GDP} = \exp(\ln(\text{GDP}))$; therefore the partial negative coefficient of the $\ln(\text{GDP})$ is equivalent to $\exp(-0.23) = +0.79$, a positive GDP coefficient.

were identical to the results of the overall market. The panel regression results for all four variants of the ALI for the SADC regional market, represented by a panel of 13 countries over the 11 year time period, are reported in table 7.5 below.

Table 7.5: Panel regression results for the four variants of the ALI in the South African – SADC regional market

Predictor	Partial regression coefficient				t-value				p-value			
	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+
Intercept	74.40	-67.40	-71.90	-74.10	-2.26	-2.03	-2.19	-2.23	0.025	0.044	0.030	0.027
LowInc	-0.12	-0.12	-0.12	-0.12	-0.73	-0.73	-0.73	-0.74	0.464	0.464	0.467	0.459
ASAage	-0.05	-0.04	-0.05	-0.04	-1.30	-1.20	-1.27	-1.20	0.195	0.231	0.206	0.233
InTrade	0.69	0.72	0.70	0.66	4.85	5.01	4.94	4.62	<.0001	<.0001	<.0001	<.0001
InPopulation	1.88	1.65	1.80	1.90	1.85	1.60	1.77	1.86	0.066	0.112	0.080	0.066
ALI	0.02	0.01	0.02	0.01	2.86	2.92	3.03	2.50	0.005	0.004	0.003	0.014
InGDP	-0.57	-0.58	-0.57	-0.55	-3.37	-3.46	-3.41	-3.22	0.001	0.001	0.001	0.002

Source: Department of Statistics, University of Pretoria (2012)

The partial effect of each of the three significant predictors, while controlling for all other variables in the model, is discussed below.

The *p-value* for the *ALI* predictor ranged between 0.003 and 0.014, as summarised in table 7.5, depending on the variant of the ALI weighting method applied. The *ALI* predictor was found to have a statistically significant impact on air passenger traffic flows. The positive sign of the *ALI* partial regression coefficient confirmed a positive partial impact of this predictor on the *ln(Traffic)*, while controlling for all the other variables in the model. This was in line with the expectations that liberalised agreements would lead to increases in air passenger traffic flows. Thus, for every unit increase in the *ALI*, the *ln(Traffic)* would increase by between 1% and 2%, depending on the ALI weighting system used.

The *p-value* for the *ln(Trade)* predictor was less than 0.0001 for all four ALI variants, and thus the predictor was found to have a statistically significant impact on air passenger traffic flows. The positive sign of the *ln(Trade)* partial regression coefficient confirmed a partial positive impact of this predictor on the *ln(Traffic)*, in line with the expectations that air passenger traffic flows were positively impacted by the magnitude of the services trade

flows, while controlling for all other variables in the model. Thus, for every unit increase in the $\ln(\text{Trade})$, the $\ln(\text{Traffic})$ would increase by between 66% and 72%, depending on the ALI weighting system used.

The p -value for the $\ln(\text{GDP})$ predictor ranged between 0.001 and 0.002, depending on the ALI variant used. The $\ln(\text{GDP})$ predictor was found to have a statistically significant impact on the $\ln(\text{Traffic})$. The negative sign of the $\ln(\text{GDP})$ partial regression coefficient confirmed its partial negative impact on air passenger traffic flows, while controlling for all the other variables in the model. However, it must be noted⁴⁸ that the partial regression coefficient for the GDP was found to be positive, in line with the assumptions that the magnitude of economic activity positively impacted on air passenger traffic flows between two countries. Thus, for every unit increase in the GDP , the $\ln(\text{Traffic})$ would increase by between 56% and 58%, depending on the ALI weighting system used.

In summary, three predictors were found to be statistically significant in the South African – SADC regional market, namely the $\ln(\text{Trade})$, $\ln(\text{GDP})$ and the ALI . The signs of the partial regression coefficients were in line with the expectations. The significant predictors were identical to the ones in the South African – intra-African market.

7.3.3 The South African – West African regional market

The panel regression results for all four variants of the ALI in the South African – West African regional market, represented by a panel of 17 countries over the 11 year time period, are depicted in table 7.6 below.

⁴⁸ $\text{GDP} = \exp(\ln(\text{GDP}))$; therefore the negative partial coefficient of the $\ln(\text{GDP})$ is equivalent to $\exp(-0.55) = +0.58$, a positive GDP coefficient.

Table 7.6: Panel regression results for the four variants of the ALI in the South African – West African regional market

Predictor	Partial regression coefficient				t-value				p-value			
	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+
Intercept	-76.17	-76.17	-76.17	-76.32	-1.81	-1.81	-1.81	-1.81	0.073	0.0723	0.073	0.072
LowInc	-0.08	-0.08	-0.08	-0.08	-0.84	-0.87	-0.87	-0.82	0.403	0.388	0.388	0.414
ASAage	-0.03	-0.03	-0.03	-0.034	-0.67	-0.66	-0.66	-0.67	0.507	0.509	0.509	0.503
lnTrade	-0.02	-0.01	-0.01	-0.01	-0.11	-0.11	-0.11	-0.11	0.909	0.910	0.910	0.911
lnPopulation	2.48	2.48	2.48	2.48	1.86	1.86	1.86	1.86	0.067	0.065	0.065	0.064
ALI	0.00	0.00	0.00	0.00	0.69	0.66	0.66	0.73	0.490	0.508	0.508	0.464
lnGDP	0.07	0.07	0.07	0.07	0.46	0.45	0.45	0.46	0.649	0.652	0.652	0.649

Source: Department of Statistics, University of Pretoria (2012)

Although the F test confirmed that the model was statistically significant in the South African – West African regional market at the 5% level of significance, none of the specified six predictors were found to be significantly different among the countries. Therefore, the null hypothesis cannot be rejected. The significance of the model was due to the considerable differences among countries regarding air passenger traffic flows in this region.

7.3.4 The South African – East African regional market

The results for all four variants of the ALI weighting system in the South African – East African regional market, represented by a panel of seven countries over the 11 year time period, are reported in table 7.7 below.

Table 7.7: Panel regression results for the four variants of the ALI weighting system in the South African – East African regional market

Predictor	Partial regression coefficient				t-value				p-value			
	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+	STD	5 th +	OWN+	DES+
Intercept	211.51	230.90	210.48	208.04	2.07	2.23	2.05	2.06	0.0422	0.029	0.044	0.044
LowInc	-0.58	-0.57	-0.58	-0.58	-3.69	-3.70	-3.68	-3.71	0.001	0.001	0.001	0.000
ASAage	0.22	0.24	0.22	0.21	1.75	1.92	1.73	1.72	0.085	0.059	0.088	0.090
InTrade	0.44	0.44	0.44	0.44	4.07	4.11	4.05	4.08	0.000	0.000	0.000	0.000
InPopulation	-6.36	-6.92	-6.33	-6.25	-2.13	-2.29	-2.11	-2.12	0.037	0.026	0.038	0.038
ALI	0.01	0.01	0.01	0.01	2.73	2.80	2.64	2.81	0.008	0.007	0.010	0.007
InGDP	-0.19	-0.21	-0.19	-0.19	-1.18	-1.29	-1.17	-1.15	0.243	0.203	0.247	0.255

Source: Department of Statistics, University of Pretoria (2012)

Four predictors were found to have a statistically significant impact on air passenger traffic flows, namely the *Low_Inc*, *In(Trade)*, *ALI* and *In(Population)*. The partial impact of the significant variables on the *In(Traffic)* is discussed below.

From table 7.7 it is evident that the *p-value* for the *ALI* predictor ranged between 0.007 and 0.010, depending on the variant of the ALI weighting method applied; thus the *ALI* predictor was found to have a statistically significant impact on air passenger traffic flows. The positive sign of the *ALI* partial regression coefficient confirmed a partial positive impact of the predictor on the *In(Traffic)*, while controlling for all the other variables in the model. This was in line with the expectations that liberalised agreements would lead to increases in air passenger traffic flows. Thus, for every unit increase in the *ALI*, the *In(Traffic)* would increase by 1%, irrespective of the ALI weighting system used.

The *p-value* for the *Low_Inc* predictor ranged between 0.000 and 0.001, depending on the variant of the ALI weighting method applied. The *Low_Inc* predictor was found to have a statistically significant impact on the *In(Traffic)*. The negative sign of the *Low_Inc* partial regression coefficient confirmed a partial negative impact of the predictor on the *In(Traffic)*, in line with the expectations that the presence of a low income country in a country pair had a negative impact on air passenger traffic flows between those two countries. Thus, for every unit increase in the *Low_Inc* predictor, the *In(Traffic)* would decrease by between 57% and 58%, depending on the ALI weighting system used.

The p -value for the $\ln(\text{Trade})$ predictor was 0.000 for all four ALI variants. The $\ln(\text{Trade})$ predictor was found to have a highly significant impact on air passenger traffic flows. The positive sign of the $\ln(\text{Trade})$ partial regression coefficient confirmed a partial positive impact of the predictor on the $\ln(\text{Traffic})$, in line with the expectations that air passenger traffic flows were positively impacted by the magnitude of the services trade flows. Thus, for every unit increase in the $\ln(\text{Trade})$, $\ln(\text{Traffic})$ would increase by 44%, irrespective of the ALI weighting system used.

The p -value for the $\ln(\text{Population})$ predictor ranged between 0.026 and 0.038, depending on the ALI variant used, and thus the $\ln(\text{Population})$ predictor was found to have a statistically significant impact on the $\ln(\text{Traffic})$. The negative sign of the $\ln(\text{Population})$ partial regression coefficient confirmed a partial negative impact of the predictor on air passenger traffic flows, while controlling for all the other variables in the model. It must be noted⁴⁹ however that the partial regression coefficient for the Population was found to be positive, in line with the assumptions that the population size had a positive impact on air passenger traffic flows between two countries. Thus, for every unit increase in the Population , the $\ln(\text{Traffic})$ would increase by 0.2%, irrespective of the ALI weighting system used.

7.3.5 The South African – North African regional market

The results for all four variants of the ALI weighting system in the North African regional market are presented in table 7.8 below. This market is represented by a panel of five countries over the 11 year time period.

⁴⁹ $\text{Population} = \exp(\ln(\text{Population}))$; therefore the negative partial coefficient of the $\ln(\text{Population})$ is equivalent to $\exp(-6.25) = +0.002$, a positive population coefficient.

Table 7.8: Panel regression results for the four variants of the ALI weighting system in the South African – North African regional market

Predictor	Partial regression coefficient				t-value				p-value			
	STD	5th +	OWN+	DES+	STD	5th +	OWN+	DES+	STD	5th +	OWN+	DES+
Intercept	-135.11	-135.12	-135.12	-135.08	-1.38	-1.38	-1.38	-1.38	0.175	0.175	0.175	0.175
LowInc	0	0	0	0
ASAage	0.069	0.069	0.069	0.069	0.80	0.80	0.80	0.80	0.430	0.430	0.430	0.430
InTrade	-0.029	-0.029	-0.029	-0.03	-0.20	-0.20	-0.20	-0.20	0.841	0.841	0.841	0.841
InPopulation	4.39	4.39	4.39	4.39	1.53	1.53	1.53	1.53	0.134	0.134	0.134	0.134
ALI	-0.01	-0.01	-0.01	-0.01	-1.76	-1.76	-1.76	-1.76	0.086	0.086	0.086	0.086
InGDP	-0.35	-0.35	-0.35	-0.35	-2.13	-2.13	-2.13	-2.13	0.040	0.040	0.040	0.040

Source: Department of Statistics, University of Pretoria (2012)

Six predictors were tested for their significance in terms of their partial impact on air passenger traffic flows; only one, the $\ln(GDP)$ was found to have a statistically significant impact on air passenger traffic flows, the partial impact of which is discussed below.

It is evident from table 7.8 that the p -value for the $\ln(GDP)$ predictor was equal to 0.040 for all four variants of the ALI, and thus the $\ln(GDP)$ predictor was found to have a statistically significant impact on the $\ln(Traffic)$, while controlling for all the other variables in the model. The negative sign of the $\ln(GDP)$ partial regression coefficient confirmed a partial negative impact of the predictor on the $\ln(Traffic)$. However it must be noted⁵⁰ that the partial regression coefficient for the GDP was found to be positive, in line with the assumptions that the magnitude of economic activity had a positive impact on air passenger traffic flows between the two countries. Thus, for every unit increase in the GDP , the $\ln(Traffic)$ would increase by 70%, irrespective of the ALI variant used.

In summary, only one of the predictors, namely the $\ln(GDP)$, was found to have a statistically significant impact on air passenger traffic flows in the South African – North African regional market, which paints a picture completely different to that of the South African – intra-African market, as well as to those of the other three regional markets.

⁵⁰ $GDP = \exp(\ln(GDP))$; therefore the negative partial coefficient of the $\ln(GDP)$ is equivalent to $\exp(-0.35) = +0.70$, a positive GDP coefficient.

7.4 OVERVIEW OF THE SIGNIFICANT PREDICTORS

The previous sections discussed predictors that have a significant impact on air passenger traffic flows in the overall South African – intra-African market, as well as in the regional markets. This section provides a snapshot comparison of the significant predictors across the five different markets. The question is: “What are the main predictor commonalities and differences amongst these five markets?”

The results of the panel regression, discussed in section 7.3, confirmed that the predictors and the signs of the partial regression coefficients were the same for all four variants of the ALI weighting system. Thus, the choice of the ALI variant used is of less importance as it did not have an impact on the predictors’ significance. Table 7.9 below summarises the significant predictors and their partial regression coefficients in the five markets. The partial regression coefficients presented are based on the ALI standard system.

Table 7.9: Significant predictors and the respective partial regression coefficients

Significant Predictors	Market					Partial regression coefficient				
	Intra-African	SADC region	West region	East region	North region	Intra-African	SADC region	West region	East region	North region
<i>Ln(Trade)</i>	X	X		X		0.32	0.69		0.44	
<i>ALI</i>	X	X		X		0.00	0.02		0.01	
<i>Ln(GDP)</i>	X	X			X	-0.24	-0.57			-0.35
<i>Low_Inc</i>				X					-0.58	
<i>Ln(Population)</i>				X					-6.4	

Source: Department of Statistics, University of Pretoria (2012)

The absence of crosses (X) in table 7.9 in the West African regional column indicates that none of the predictors were found to have a statistically significant impact on air passenger traffic flows in this market.

The *ln(Trade)* predictor was found to have a significant impact on air passenger traffic flows in the three markets, namely the intra-African market, SADC and East African regional markets. The partial regression coefficients displayed the expected sign and confirmed a positive partial impact of the predictor on the *ln(Traffic)* across the three markets. The partial impact of *ln(Trade)* was most significant in the SADC region (69% increase in *ln(Traffic)* for every unit increase in *ln(Trade)*), followed by the East African region (44%) and the intra-African market (32%).

The *ALI* predictor was also found to have a statistically significant impact in the same three markets. The partial regression coefficient sign was positive across the three markets, in line with the expectations that the degree of liberalisation or openness of BASAs had a positive impact on air passenger traffic flows. The impact of the *ALI* was found to be most significant in the SADC region (2% increase in *ln(Traffic)* for every unit increase in the *ALI*), followed by the East African region (1%) and intra-African market (0.5%).

The *ln(GDP)* predictor was found to have a statistically significant impact on air passenger traffic flows in three markets, namely the intra-African, SADC region and North African region. The negative sign of the partial regression coefficient across the three regions confirmed a partial negative impact of the predictor on the *ln(Traffic)*.

The *Low_Inc* predictor was found to have a statistically significant impact on air passenger traffic flows only in one market, namely the East African region. The partial coefficient sign was negative, in line with the expectations that the presence of a low-income country in a country-pair had a negative impact on air passenger traffic between the country-pair. It was found that for every unit increase in the *Low_Inc* predictor, the *ln(Traffic)* would decrease by 58%.

The $\ln(\text{Population})$ predictor was found to have a statistically significant impact on the $\ln(\text{Traffic})$ predictor only in the East African region. The sign of the partial coefficient thus confirmed a negative impact of the predictor on $\ln(\text{Traffic})$.

The Low_Inc and $\ln(\text{Population})$ were the two significant predictors unique to only one market, namely the East African region.

7.5 THE IMPACT OF THE ALI FEATURES ON AIR PASSENGER TRAFFIC FLOWS

7.5.1 Introduction

As discussed above, the impact of the aviation policy on air passenger traffic flows, as measured through the ALI, was found to be significant in the three markets, namely the intra-African, SADC and East African regional markets. The next step was to determine which of the features of the ALI predictor had significant partial impact on air passenger traffic flows, while controlling for all the other variables in the model. The ALI predictor comprises seven main features, as was comprehensively discussed in Chapter 6. These are: 1) *grant of traffic rights*, which are weighted cumulatively as they are not mutually exclusive: a) *5th freedom traffic right*, b) *7th freedom traffic right* and c) *cabotage traffic right*; 2) *capacity*; 3) *tariffs*; 4) *withholding*; 5) *designation*; 6) *cooperative arrangements*; and 7) *statistics*.

7.5.2 Panel regression results for the two time periods

Panel regression was performed in the respective markets, taking into account only the significant predictors, summarised in section 7.4 above, and “unpacking” the individual features of the ALI predictor. Despite the fact that the ALI predictor was found to be insignificant in the North region, it was decided that for this step the partial impact of each of the individual ALI features on air passenger traffic flows would be tested as the p -value for the ALI was 0.086 for all four ALI variants.

It was also important to run the same panel regression on the data for the five year time period from 2006 to 2010 and to compare these results to the 11 year time period from 2000 to 2010. The five year time period from 2006 to 2010 represents the period over which South Africa embarked on the five year liberalisation campaign driven by the Airlift Strategy.

As mentioned earlier, Somalia, Zimbabwe and Liberia were excluded from the 11 year panel data set as they had missing values for some years in the selected time period. To ensure comparability of the results for the two time periods, these three countries were also excluded from the five year panel data set. *ALI* features which were constant or had a low variation within the countries were excluded from the analyses. Table 7.10 presents the panel regression output for the two time periods in each of the respective markets.

Table 7.10: Summarised panel regression results of the impact of the ALI features on air passenger traffic flows

Market	Predictor	Partial regression coefficient				t-value				p-value				
		STD	5th +	OWN+	DES +	STD	5th +	OWN+	DES+	STD	5th +	OWN+	DES+	
2006 - 2010														
South African – Intra-African	R5th	0.04	0.02	0.04	0.04	2.04	2.02	2.02	2.03	0.043	0.045	0.045	0.044	
	Capacity	0.05	0.06	0.06	0.05	2.72	2.72	2.72	2.75	0.007	0.007	0.007	0.007	
	Tariff	-0.03	-0.03	-0.03	-0.03	-1.34	-1.35	-1.35	-1.34	0.181	0.178	0.178	0.182	
	Withhold	-0.04	-0.05	-0.02	-0.05	-1.96	-1.90	-1.90	-1.96	0.052	0.060	0.060	0.052	
	Design	-0.25	-0.28	-0.28	-0.13	-5.45	-5.45	-5.45	-5.46	<.0001	<.0001	<.0001	<.0001	
	CoopArr	0.36	0.43	0.43	0.43	4.87	4.87	4.87	4.88	<.0001	<.0001	<.0001	<.0001	
	2000 - 2010													
	R5th	0.03	0.01	0.03	0.03	1.49	1.48	1.48	1.49	0.138	0.138	0.138	0.138	
	Capacity	0.02	0.02	0.02	0.02	1.23	1.23	1.23	1.26	0.218	0.220	0.220	0.207	
	Tariff	0.00	0.00	0.00	0.00	-0.24	-0.21	-0.21	-0.23	0.807	0.834	0.834	0.815	
Withhold	-0.01	-0.01	-0.01	-0.01	-0.65	-0.65	-0.65	-0.67	0.517	0.517	0.517	0.501		
Design	0.03	0.03	0.03	0.02	1.21	1.20	1.20	1.20	0.227	0.230	0.230	0.230		
CoopArr	-0.01	-0.01	-0.01	-0.01	-0.33	-0.34	-0.34	-0.33	0.739	0.732	0.732	0.743		
2006 - 2010														
South African – SADC region	R5th	0.04	0.02	0.04	0.04	1.27	1.27	1.27	1.25	0.211	0.211	0.211	0.218	
	Capacity	0.10	0.12	0.12	0.11	3.86	3.87	3.87	3.85	0.000	0.000	0.000	0.000	
	Tariff	0.02	0.03	0.03	0.02	0.55	0.58	0.58	0.59	0.587	0.567	0.567	0.560	
	Withhold	0.00	0.00	0.00	0.00	0.01	-0.02	-0.02	-0.05	0.996	0.984	0.984	0.962	
	Design	-0.14	-0.16	-0.16	-0.07	-2.15	-2.13	-2.13	-2.15	0.037	0.039	0.039	0.037	
	CoopArr	0.21	0.25	0.25	0.25	2.23	2.20	2.20	2.25	0.031	0.033	0.033	0.030	
	2000 - 2010													
	R5th	0.05	0.03	0.07	0.06	2.36	2.35	2.35	2.34	0.020	0.020	0.020	0.021	
	Capacity	0.11	0.13	0.13	0.12	4.85	4.82	4.82	4.87	<.0001	<.0001	<.0001	<.0001	
	Tariff	-0.05	-0.06	-0.06	-0.05	-2.22	-2.13	-2.13	-2.17	0.028	0.035	0.035	0.032	
Withhold	0.04	0.04	0.02	0.04	1.52	1.53	1.53	1.48	0.131	0.130	0.130	0.141		
Design	-0.01	-0.01	-0.01	0.00	-0.18	-0.22	-0.22	-0.24	0.856	0.829	0.829	0.813		
CoopArr	-0.03	-0.04	-0.04	-0.04	-0.73	-0.75	-0.75	-0.69	0.468	0.454	0.454	0.493		
2006 - 2010														
South African – East African region	R5th	-0.03	-0.01	-0.03	-0.03	-0.94	-0.94	-0.94	-0.94	0.359	0.359	0.359	0.359	
	Capacity	0.02	0.02	0.02	0.02	1.25	1.25	1.25	1.25	0.225	0.225	0.225	0.225	
	2000 - 2010													
	R5th	0.01	0.00	0.01	0.01	0.26	0.26	0.26	0.26	0.792	0.792	0.792	0.792	
	Capacity	0.03	0.03	0.03	0.03	1.29	1.32	1.32	1.30	0.203	0.192	0.192	0.198	
Tariff	-0.04	-0.05	-0.05	-0.05	-1.04	-1.04	-1.04	-1.04	0.301	0.301	0.301	0.301		
Design	0.18	0.20	0.20	0.09	2.74	2.73	2.73	2.74	0.008	0.008	0.008	0.008		
2006 - 2010														
South African – North African region														
	2000 - 2010													
R5th	0.02	0.01	0.02	0.02	0.63	0.63	0.63	0.63	0.534	0.534	0.534	0.534		

Source: Department of Statistics, University of Pretoria (2012)

7.5.3 The South African – intra-African market

Time period 2006 – 2010

In the 2006 – 2010 panel regression, four features of the *ALI* predictor, namely the 5th *freedom traffic right*, *capacity*, *designation* and *cooperative arrangements*, were found to have a partial statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model.

It must be noted that, given the nature of the panel data set, it was impossible to determine which of the *ALI* sub-features had a positive impact on air passenger traffic flows. For example, the designation feature has two sub-features, the single and multiple. Seven *ALI* features were mutually exclusive in the panel data set, the impact of which could only be determined through cross-sectional studies.

The *p-value* for the 5th *freedom traffic right* ($R5^{th}$) ranged between 0.043 and 0.045, depending on the variant of the *ALI* weighting system, and thus was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the $R5^{th}$ partial regression coefficient confirmed a partial positive impact of the predictor on the $\ln(Traffic)$, indicating that 5th *freedom traffic rights* lead to increased air passenger traffic flows between the countries. Thus, for every unit increase in the $R5^{th}$, $\ln(Traffic)$ would increase by between 2% and 4%, depending on the *ALI* variant used.

The *p-value* for the *capacity* equalled 0.007, irrespective of the variant of the *ALI* weighting system, and thus was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the *capacity* partial regression coefficient confirmed a partial positive impact of the predictor on the $\ln(Traffic)$, indicating that an increase in the level of openness of this feature leads to increased air passenger traffic flows between the countries. Thus, for

every unit increase in the capacity, $\ln(\text{Traffic})$ would increase by between 5% and 6%, depending on the ALI variant used.

The p -value for the *designation* (*Design*) was $<.0001$, for all four variants of the ALI weighting system, and thus the *designation* was found to have a statistically significant impact on the $\ln(\text{Traffic})$, while controlling for all the other variables in the model. The negative sign of the *Design* partial regression coefficient confirmed a partial negative impact of this predictor on the $\ln(\text{Traffic})$, thus indicating that for every unit increase in the *Design*, the $\ln(\text{Traffic})$ would decrease by between 13%, if using the *DES+* variant of the ALI weighting system, and 28%, if any of the other three ALI variants are used.

The p -value for the *cooperative arrangements* (*CoopArr*) was $<.0001$, for all four variants of the ALI weighting system, and thus was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the *CoopArr* partial regression coefficient confirmed a partial positive impact of this predictor on the $\ln(\text{Traffic})$, indicating that an increase in the level of openness of *CoopArr* leads to increased air passenger traffic flows between the countries. Thus, for every unit increase in the *cooperative arrangements*, the $\ln(\text{Traffic})$ would increase by 36%, if using the *STD* variant of the ALI weighting system, and 43%, if any of the other three variants are applied.

Time period 2000 - 2010

In the 2000 – 2010 panel regression, none of the features of the *ALI* were found to have a statistically significant impact on air passenger traffic flows.

7.5.4 The South African – SADC regional market

Time period 2006 - 2010

In the 2006 – 2010 panel regression, three features of the *ALI* predictor, namely the *capacity*, *designation* and *cooperative arrangements*, were found to have a partial statistically significant impact on air passenger traffic flows, while controlling all the other variables in the model.

The *p-value* for the *capacity* equalled 0.000, irrespective of the variant of the *ALI* weighting system, and thus *capacity* was found to have a highly significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the *capacity* partial regression coefficient confirmed a partial positive impact of this predictor on the $\ln(\text{Traffic})$, indicating that the increase in the level of openness of the *capacity* leads to increased air passenger traffic flows between countries. Thus, for every unit increase in the *capacity*, the $\ln(\text{Traffic})$ would increase by between 10% and 12%, depending on the *ALI* variant used.

The *p-value* for the *designation* (*Design*) ranged between 0.037 and 0.039, depending on the *ALI* variant, and thus the *designation* was found to have a statistically significant impact on the $\ln(\text{Traffic})$, while controlling for all the other variables in the model. The negative sign of the *Design* partial regression coefficient confirmed a partial negative impact of this predictor on the $\ln(\text{Traffic})$, indicating that for every unit increase in the *Design*, the $\ln(\text{Traffic})$ would decrease by between 7% and 16%, depending on the *ALI* variant used.

The *p-value* for the *cooperative arrangements* (*CoopArr*) equalled 0.030, irrespective of the *ALI* variant, and thus the *cooperative arrangements* predictor was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the *CoopArr* partial regression coefficient confirmed a partial positive impact of the predictor on the $\ln(\text{Traffic})$, indicating that an

increase in the level of openness of the *CoopArr* leads to increased air passenger traffic flows between countries. Thus, for every unit increase in the *cooperative arrangements*, the $\ln(\text{Traffic})$ would increase by between 21% and 25%, depending on the ALI variant used.

Time period 2000 – 2010

In the 2000 – 2010 panel regression, three features of the *ALI* predictor, namely the 5th *freedom traffic rights*, *capacity* and *tariffs*, were found to have a partial statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model.

The *p-value* for the 5th *freedom traffic right* ($R5^{th}$) equalled 0.020, irrespective of the variant of the ALI weighting system, and thus $R5^{th}$ was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the $R5^{th}$ partial regression coefficient confirmed a partial positive impact of this predictor on the $\ln(\text{Traffic})$, indicating that 5th *freedom traffic rights* lead to increased air passenger traffic flows between the countries. Thus, for every unit increase in the $R5^{th}$, the $\ln(\text{Traffic})$ would increase by between 3% and 7%, depending on the ALI variant used.

The *p-value* for the *capacity* was $<.0001$ for all four variants of the ALI weighting system, and thus the *capacity* was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The positive sign of the *capacity* partial regression coefficient confirmed a partial positive impact of the predictor on the $\ln(\text{Traffic})$, indicating that the increase in the level of openness of this feature leads to increased air passenger traffic flows between the countries. Thus, for every unit increase in the capacity, the $\ln(\text{Traffic})$ would increase by between 11% and 13%, depending on the ALI variant used.

The *p-value* for the *tariffs* ranged between 0.028 and 0.035, depending on the variant of the ALI weighting system, and thus the *tariffs* predictor was found to have a statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model. The negative sign of the *tariffs* partial regression coefficient confirmed a partial negative impact of this predictor on the $\ln(\text{Traffic})$, indicating that for every unit increase in the *tariffs*, the $\ln(\text{Traffic})$ would decrease by between 5% and 6%, depending on the ALI variant used.

7.5.5 The South African – East African regional market

Time period 2006 - 2010

In the 2006 – 2010 panel regression, none of the features of the *ALI* were found to have a statistically significant impact on air passenger traffic flows.

Time period 2000 – 2010

In the 2000 – 2010 panel regression, only one feature of the *ALI* predictor, namely the *designation*, was found to have a partial statistically significant impact on air passenger traffic flows, while controlling for all the other variables in the model.

The *p-value* for the *designation* (*Design*) equalled 0.008, for all four variants of the ALI weighting system, and thus the *designation* was found to have a statistically significant impact on the $\ln(\text{Traffic})$, while controlling for all the other variables in the model. The positive sign of the *Design* partial regression coefficient confirmed a partial positive impact of this predictor on the $\ln(\text{Traffic})$, indicating that the increase in the level of openness pertaining to this predictor leads to an increase in air passenger traffic flows between countries. Thus, for every unit increase in the *Design*, the $\ln(\text{Traffic})$ would increase by between 9% and 20%, depending on the ALI variant used.

7.5.6 The South African – North African regional market

Time period 2006 – 2010

In the 2006 – 2010 panel regression, none of the features of the *ALI* could be tested for significance as they were constant or had a low variation within the countries.

Time period 2000 – 2010

In the 2000 – 2010 panel regression, only one feature of the *ALI* could be tested; however it was found to be insignificant.

7.6 OVERVIEW OF THE SIGNIFICANT *ALI* FEATURES

The significant *ALI* features for the four markets are summarised in table 7.11 below. In summary, *capacity* was the only feature found to be significant in the South African – SADC regional market, both in the five and 11 year time periods.

In the 2006 – 2010 panel regression, three features were found to have a significant impact on air passenger traffic flows, both in the South African – intra-African market and the South African – SADC regional market. These were: *capacity*, *designation* and *cooperative arrangements*. The *5th freedom traffic right* was the only feature in the 2006 – 2010 time period that was found significant in the South African – intra-African market.

In the 2000 – 2010 panel regression, *designation* was the only *ALI* feature found to have a significant impact on air passenger traffic flows in the South African – East African regional market.

Table 7.11: Summary of the significant ALI features for the selected time periods

Market	ALI features	
	2006 - 2010	2000 - 2010
South African – intra-African	5th freedom traffic rights Capacity Designation Cooperative arrangements	
South African – SADC region	Capacity Designation Cooperative arrangements	5th freedom traffic rights Capacity Tariffs
South African – East African region		Designation
South African – North African region		

Source: Department of Statistics, University of Pretoria (2012)

7.7 CONCLUSION

This research demonstrated that the impact of the South African aviation policy in Africa on air passenger traffic flows, as measured by the ALI index, could not be tested in isolation, due to the fact that a number of identified predictors simultaneously played a key role. The study focused on the simultaneous impact of the six identified predictors on air passenger traffic flows in the five key markets, the intra-African, SADC, West, East and North African regional markets.

The findings indicated that the predictors which were found to have a partial significant impact, while controlling for all the other variables in the model, differed in each of the markets. The results, in terms of the predictor commonalities and differences, proved to be interesting.

In those markets where the *ALI* predictor was found to be significant, the individual features of the predictor were “unpacked” and tested for their significant impact on air passenger traffic flows. To obtain a better understanding and a more detailed comparison of the results, panel regression was performed on the data set for the two time periods, namely the 2006 – 2010 and the 2000 – 2010. Once again, the impact of the significant *ALI* features on air passenger traffic flows was found to be different in each of the identified markets, presenting robust as well as several unexpected dynamics in the intra-African and regional markets.

The final chapter of this study discusses research limitations, as well as the recommendations for managerial actions, and the directions for future research.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

It will be recalled that the aim of the study was to determine and quantify the impact of the South African aviation policy in Africa, as reflected in the design of its BASAs, on air passenger traffic flows over a selected period. The study focused specifically on five air transport markets. The following research objectives were identified:

- To examine liberalisation of air services in Africa, with particular reference to the Yamoussoukro Decision;
- To review developments in the South African aviation policy overall and also with particular reference to Africa;
- To identify factors that have influenced liberalisation of air services between South Africa and its African air bilateral partners over the selected time period;
- To test the simultaneous impact of the South African aviation policy in Africa and the key influencing factors on air passenger traffic flows between 2000 and 2010. In particular, to measure the overall impact of the given policy in Africa and in each of the four regions, as well as the impact of its individual provisions.

In order to achieve these research objectives certain hypotheses were formulated:

Null hypothesis

H₀: There is no relationship between the South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

Alternative hypothesis

H₁: There is a relationship between the South African aviation policy in Africa and the South African – intra-African air passenger traffic flows.

The same two hypotheses were formulated for each of the four other regions, namely the SADC, East, West and North African.

Objectives 1 and 2 were achieved through the literature review. It was also established through the literature survey that the impact of the aviation policy on air passenger traffic flows could not be tested in isolation as a multitude of other factors could also have an impact. Variations in these factors could mean that apparently identical air policy measures could exert disparate effects on such flows (Warnock-Smith & Connell, 2011). In fact, air policy liberalisation can be seen as a supply stimulus which may or may not have an effect on actual supply levels. This is partly due to specific network characteristics and complex supply and demand interactions (ICAO, 2004). To attain objectives 3 and 4, the study followed a mixed research methodology, where both the qualitative and quantitative approaches were used.

To ensure that the most significant and imperative factors impacting on the said flows had been identified, the study employed a two-round Delphi technique. The aim of this qualitative phase was to determine the opinions of aviation experts on features of BASAs, as well as those not related to BASAs, that they viewed as having an influence on these flows between country-pairs in Africa. This was essential to ensure that factors unique to the region from the industry perspective had also been identified.

The Delphi process generated an exhaustive list of 25 statements of factors related to BASAs and 48 statements non-related to BASAs. The consensus level for all statements was above the 51% threshold level with the exception of the “*break of gauge provision*”. These factors were subsequently plotted under factor categories identified from the literature, to create a conceptual framework of the relevant BASA and non-BASA factors. The ten main factor categories established were: 1) *government responsibility*, which was

further subcategorised into *aviation policy* and *all others*; 2) *external economic factors*; 3) *external political factors*; 4) *supply*; 5) *intangible factors*; 6) *demand*; 7) *socio-economic and geographic factors*; 8) *geo-economic factors*; 9) *external health factors*; and 10) *force majeure*. Given the importance of the aviation policy in this research, the aviation policy subcategory was further subdivided into a) *air services agreements' features* and b) *others*. The results of the Delphi were essential in bridging the gap between the literature review and the quantitative research.

The next step was to determine all factors impacting on the given flows that had been statistically measured and quantified in existing secondary research. Following this, all the factors identified through the Delphi and secondary literature, the majority of which were intertwined and interlinked, were assessed in relation to the availability of consistent and reliable data pertaining to them as well as the ability of the empirical model to statistically quantify and measure these over the chosen period in the African context. This step filtered the independent factors or predictors and narrowed them down to 12 in total.

The quantitative phase aimed at estimating and statistically quantifying the impact of the degree of restrictiveness or liberalisation of the respective BASAs, as measured by the four variants of the ALI. It also aimed at identifying which specific provisions of BASAs have the most significant impact on air passenger traffic flows.

Given the above factor filtering process, the preliminary empirical equation was then formulated and included one dependent variable (*traffic*) and 12 predictor variables, discussed comprehensively in Chapter 6. Six time-invariant explanatory variables or predictors, namely *distance*, *border*, *colony*, *language*, *Partner* and *Reporter Island*, which displayed no variation in their values over the 11 year time period, were omitted from the regression model as they had no power to predict the variation in *traffic*. Four variables, namely *traffic*, *GDP*, *trade* and *population*, were transformed through a natural logarithmic transformation. This made the distribution more normal, enhanced symmetry and stabilised the spread, as well as helped the variables to fit into the model better.

The final panel data regression model constructed for all four variants of the ALI, incorporated one dependent variable, namely air passenger traffic flows ($\ln(\text{Traffic})$) and six predictors, namely $\ln(\text{GDP})$, population size ($\ln(\text{Population})$), the presence of a low-income country (*low income*), the number of years BASAs have been in place (*ASA age*), magnitude of services trade flows ($\ln(\text{Trade})$) and the degree of liberalisation of the policy (*ALI*). The *ALI* comprised seven market access features of BASAs.

A fixed one-way panel regression technique was applied to the selected 11 year panel data set of 42 African countries, representing five markets: intra-African; the SADC; West African; East African and North African. The simultaneous impact of the six predictors was tested in all five markets. Results differed for the various regions, demonstrating that different predictors were statistically significant. Where the impact of the aviation policy was found to be significant, individual provisions were tested for their impact on air passenger traffic over two time periods: 2000 – 2010 and 2006 – 2010.

The quantitative results presented in Chapters 6 and 7 are now interpreted, followed by conclusions and implications drawn from these results, with contributions and limitations of the study, as well as recommendations for future research.

8.2 SUMMARY OF THE SIGNIFICANT PREDICTORS IN THE FIVE MARKETS

The objectives and the sophistication of the aviation policies, as well as the ability to implement them, differ across various African countries. As was discussed in previous chapters, South Africa has a well-developed aviation policy, with very clear objectives and clearly defined implementation plan in relation to the intra-African market liberalisation and the YD implementation. The country's aviation policy supports the needs of its trade and tourism sectors, while taking into account the continental integration initiatives, such as those embodied in the African Union and the objectives of the NEPAD. As derived from the literature survey, the enthusiasm evidenced by the African counterparts to liberalise their respective air transport markets with South Africa in line with the YD agreement varies across the Continent. To date, the relationships between South Africa and its

African air counterparts remain heavily reliant on BASAs, which have seen gradual liberalisation over the 11 period.

The analysis of the BASAs and MOUs revealed that *multiple designation* had been adopted in 71% of the agreements by the end of 2010. *Grant of fifth freedom traffic rights* was allowed in 53% of the 45 agreements. In spite of the liberalisation initiatives, capacity remained restricted in 58% of the bilateral agreements; however 42% of the agreements permitted *free determination*, considered as the most liberal regime. Significant liberalisation progress in relation to ownership had been achieved in 42% of the BASAs, allowing for the *principal place of business* clause, which was more liberal than the YD *community of interest* clause. The results also indicated that 33% of the BASAs permitted *free pricing*, in line with the YD. Overall there were permissive policies in 60% of the agreements regarding the various *cooperative arrangements*. The *exchange of statistics* was stipulated in all 45 agreements. From the results it was evident that the most restrictive regimes were the most frequent with pricing, capacity and ownership, as well as the granting of fifth freedom traffic rights. Cooperative arrangements were in general allowed and the exchange of statistics was required in all the bilaterals.

In comparison to the South African – intra-African air bilateral situation, secondary research into 2 300 BASAs by Rousova (2009) representing 184 countries worldwide revealed that:

- 61% of the bilaterals permitted *multiple designation*;
- *Grant of fifth freedom rights* was permitted in 72% of BASAs;
- 57% of BASAs remained highly restrictive in terms of capacity;
- Only 6% of BASAs allowed a *principal place of business*;
- Only 17% of bilateral agreements allowed *free pricing*;
- *Cooperative arrangements* were not allowed in 95% of BASAs;
- The *exchange of statistics* was stipulated in 65% of bilaterals.

From the above it is evident that market access features, pertaining to *fifth freedom traffic rights, cooperative arrangements, capacity and exchange of statistics* are more liberal worldwide than in the South African – intra-African market. On the contrary, other market access features, pertaining to *designation, ownership and pricing* are more liberal in the latter.

It can therefore be concluded that the diversities across African economies, in particular regarding real incomes, population sizes, the size of the aviation and tourism sectors as well as the varying degrees of aviation policy development and implementation, lead to heterogeneous views and approaches towards intra-African air transport liberalisation, *inter alia*, hindering and slowing down its progress. Although gradual progress has been achieved in easing the South African – intra-African restrictions within the bilateral framework since the adoption of the YD, more needs to be done with respect to granting liberal traffic rights, removing capacity, tariff and ownership restrictions. For example, the *substantial ownership and effective control* clause is still predominant in the majority of the South African – intra-African BASAs and can be regarded as a major inhibitor of foreign investment and regional cooperation. The absence of the *fifth freedom* traffic rights in many BASAs can also be perceived as an impediment to further liberalisation and improved intra-African connectivity, by contributing to distortion in competition and irrational use of aircraft utilisation.

As stated earlier, the fixed one-way panel regression results differed in each of the five markets, identifying different predictors as having a statistically significant impact on air passenger traffic flows. The results of the F test, testing the significance of the panel regression model for all four variants of the ALI for the five markets, were found to be statistically significant. The null hypothesis was thus rejected, indicating that there was a simultaneous impact of the six predictors on the dependent variable *ln(Traffic)* for the intra-African market, as well as for the regional markets, irrespective of the ALI variant used. The predictors that were found to be statistically significant in each of the five markets are discussed in more detail in the subsequent sections.

8.2.1 Discussion of the significant predictors in the South African – intra-African air transport market

The results of the panel regression model, represented by a full panel of 42 African countries over the 11 year time period, indicated that three predictors had a statistically significant simultaneous impact on air passenger traffic flows for all four variants of the ALI, while controlling for all the other variables in the model. These were $\ln(\text{Trade})$, ALI and $\ln(\text{GDP})$, the results of which are summarised in table 7.4. The coefficient of determination or R-square value for modelling the South African – intra-African market returned an extremely high value of 0.976, which indicated that, for all four variants of the ALI weighting system, 97.6% of the variability of air passenger traffic flows was explained by the six predictors, namely $\ln(\text{GDP})$, population size ($\ln(\text{Population})$), the presence of a low-income country (*low income*), the number of years BASAs have been in place (*ASA age*), magnitude of services trade flows ($\ln(\text{Trade})$) and the degree of liberalisation of the policy (ALI), as mentioned in the hypotheses. These findings support the notion that liberalisation of air services as reflected through the design of the BASAs is a necessary but not a sufficient condition for traffic growth. No new services will result if there is no underlying demand to support them. For example, if income levels in source countries decrease, demand may still decline even if fares are reduced and service levels increase (Warnock-Smith & O’Connell, 2011).

The results confirmed a partial positive impact of the $\ln(\text{Trade})$ predictor on air passenger traffic flows, while controlling for all the other variables in the model. This was in line with the expectations that such flows were positively impacted by the magnitude of the services trade flows; it was also supported by secondary research, the results of which indicated an increase of traffic by between 13% and 35% for every unit increase in services trade flows (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; InterVISTAS-EU, Consulting, Inc., 2009; Rousova, 2009). The panel regression results showed that for every unit increase in the $\ln(\text{Trade})$, the $\ln(\text{Traffic})$ would increase by 32%, irrespective of the ALI weighting system used.

Unlike goods, services are perishable because they are consumed at the same time and place as they are produced and therefore cannot be stored in inventory. As services usually imply a close interaction between the seller and the consumer, the sale of services increases the need for face-to-face communication and is an important determinant of the demand for travel (InterVISTAS-ga² Consulting, Inc., 2006:65). From the panel data, the CAGR₀₀₋₁₀ for services trade flows between South Africa and the 42 African countries was found to be +26%, indicating the sector's notable growth and increased movement of people. This growth might possibly be attributed to: 1) the South African government's commitment to foster trade as one of the priority sectors in line with its aviation strategy and 2) the various regional economic communities, such as WAEMU, CEMAC, EAC, COMESA and SADC *inter alia*, which have been working on increasing inter- and intra-community trade, investment and movement of goods and people.

The panel regression results confirmed a positive partial impact of the *ALI* predictor on air passenger traffic flows, while controlling for all the other variables in the model. This was in line with the expectations that liberalised BASAs, reflecting the key policy levers of South Africa's aviation policy in Africa, lead to an increase in the South African – intra-African air passenger traffic flows. In Africa, where road and rail infrastructure is practically non-existent and air traffic is often extremely expensive, introducing such agreements may be the only viable alternative for improved market access, more competition, increased frequency and capacity, leading to better air service quality, variety of choice for consumers and a decrease in prices. It can therefore be concluded that the artificial constraints posed by BASAs hamper the growth of the South African – intra-African air traffic flows, represented by a diversity of air transport markets with different levels of economic, social and political development.

The panel regression results indicated that for every unit increase in the *ALI*, the $\ln(\text{Traffic})$ would increase by about 1%, irrespective of the *ALI* weighting system used. These findings were supported by secondary research (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh *et al.*, 2006; Warnock-Smith & Morrell, 2006; Grosso, 2008; Rousova & Piermartini, 2008; InterVISTAS-EU Consulting, Inc., 2009; Rousova & Piermartini, 2009;

Rousova, 2009; Grosso, 2010), the results of which showed an increase of air passenger traffic by between 1% and 7% for every unit increase in the *ALI*.

The quantitative results indicated that some progress had been achieved in relaxing the South African – intra-African BASA restrictions over the 11 year time period. By the end of 2010 only 17 bilaterals had been revised between South Africa and its respective African counterparts, in line with the key elements of the Yamoussoukro Decision. They were with: Benin, Botswana, Cameroon, Egypt, Ethiopia, Gabon, the Gambia, Ghana, Kenya, Lesotho, Liberia, Libya, Rwanda, Senegal, Sierra Leone, Togo and Uganda (Sithole, 2012). Thus, the regional distribution of the 17 bilaterals between South Africa and the respective African counterparts was as follows: nine (52.9%) bilaterals with the West African region, four (23.5%) with the East African, two (11.8%) with the North African and two (11.8%) with the SADC region. The liberalisation target of the YD implementation for 2010 as set by the Airlift Strategy was 34 BASAs. It must be noted that the successful implementation of the liberalisation target was linked to the readiness and willingness of the African states to implement the key elements of the YD with South Africa. It should also be recognised that while air transport liberalisation could bring many potential benefits to this air transport market, ranging from wider consumer choices to the growth of trade, tourism and international investment, many inherent structural, institutional and protectionist hindrances to liberalisation still exist within several member states. The partial impact of the *ALI* predictor on air passenger flows in each of the respective regions will be discussed in the subsequent sections.

As expected, the results of the panel regression confirmed a positive partial impact of the *GDP* predictor on the said flows, in line with the assumption that the magnitude of economic activity had a positive impact on such flows between two countries. Most research concluded that these flows grew disproportionately faster than the level of income. Thus, for every unit increase in the *GDP*, the $\ln(\text{Traffic})$ would increase by about 79%, irrespective of the *ALI* weighting system used. The positive relationship was supported by secondary literature, indicating between 7% and 68% increases in air passenger traffic flows for every unit increase in the *GDP* (InterVISTAS-ga² Consulting, Inc., 2006; Myburgh

et al., 2006; Warnock-Smith & Morrell, 2006; InterVISTAS-EU Consulting, Inc., 2009; Rousova, 2009; Grosso, 2010).

The following sections discuss the significant predictors in each of the four regional markets.

8.2.2 Discussion of the significant predictors in the South African – SADC regional air transport market

In the South African – SADC regional market, represented by a panel of 13 countries over the selected period, three predictors, namely the magnitude of services trade flows ($\ln(\text{Trade})$), key aviation policy levers as reflected by the respective BASAs (ALI) and the size of the economy ($\ln(\text{GDP})$), were found to be statistically significant. The significant predictors and the signs of their partial regression coefficients were identical to the results of the overall market. As evident from table 7.5, the extent of their impact on air passenger traffic flows differed, for each of the significant predictors, from the ones in the overall market.

In particular, the results confirmed that for every unit increase in the $\ln(\text{Trade})$, the $\ln(\text{Traffic})$ would increase by between 66% and 72%, depending on the ALI weighting system used. The partial impact of this predictor on the South African – SADC air passenger traffic flows was more substantial than in the South African – intra-African air transport market. This relationship was also substantiated by the CAGR_{00-10} for services trade flows between South Africa and the 13 SADC countries of +25%, indicating the sector's notable growth and increased movement of people.

As mentioned earlier, trade, together with tourism, are instrumental for economic growth through the increase in the GDP and employment. The South African government identified them as the priority sectors and aligned air transport with them. In terms of BASA negotiations in line with the YD key principles the SADC region had been prioritised both in the Airlift and the *Vula Sky* Implementation Plan and was flagged in the Tourism Growth

Strategy. In his research, Negasi (2009) found that on the intra-community level South Africa contributed the highest share (44%) in intra-SADC trade, followed by Zimbabwe (16%) and Namibia (11%).

Aligned with the principles of the YD, the free movement of people, goods and services within the community has been supported by various initiatives, such as the UNIVISA initiative, the SADC Trade Protocol signed in 1996, the SADC Protocol on Transport, Communications and Meteorology and harmonisation of trade liberalisation created by SADC, COMESA and EAC, as well as the Millennium Development Goal on air transport. The main objective of the latter is to improve air transport services, reduce fares and facilitate the movement of goods and services in the community as well as in all African countries by 2015.

The UNIVISA, if implemented, would considerably improve the ease of travel and increase flows to and from the region, as a number of countries within the community still require a visa. For example, it is currently required between South Africa and Angola or the Democratic Republic of the Congo or Madagascar or Tanzania and even between Zimbabwe and South Africa. One may therefore conclude that various instruments and tools are required to achieve deeper integration between the services that already exist in the SADC; the success of which lies in their effective implementation, which over the last decade has seen challenges as the various members are at different stages of development.

A breakdown of the number of tourist arrivals to South Africa indicated that a high proportion (69%) of 8 073 552 tourists were residents of the SADC, 10% of whom arrived by air (Statistics South Africa, 2011). The use of road transport as a preferred mode can be attributed to good road infrastructure and the proximity between South Africa and the SADC member states. In the South African – intra-African context, foreign air tourist arrivals from SADC represented the majority of traffic flows (80%), clearly highlighting the importance of this regional air transport market for South Africa.

The panel regression results also indicated that for every unit increase in the *ALI*, the air passenger traffic flows would increase by between 1% and 2%, depending on the *ALI* weighting system used. This indicates that less restrictive bilateral agreements in the South African – SADC air transport market do lead to increases in flows of this type, similar to liberalisation experiences achieved in other regions of the world.

Over the selected period, gradual liberalisation has been taking place between South Africa and the SADC, as depicted in figure 6.3. By the end of 2010, the BASAs between South Africa and Botswana as well as Lesotho were fully compliant with the main YD principles, which can be regarded as a success story. In certain instances, less restrictive BASAs may have been signed to stimulate further bilateral traffic. Overall, the South African – SADC air transport market represented a heterogeneous picture. On the one hand, some governments and airlines substantially funded such as SAA clearly perceived the benefits of further liberalisation in existing markets on a less restrictive basis. On the other hand, certain governments were extremely protectionist towards their national air carriers, safeguarding them from competition through very restrictive BASAs. For example, in Mozambique and Angola the governments opposed rapid liberalisation, but were willing to agree to gradual liberalisation if it was accompanied by measures which strengthened their weak airline industries and allowed them to participate in and benefit from the process.

BASA negotiations for Angola and Mozambique were prioritised in the Airlift Strategy and the Implementation Plan. By the end of 2010, gradual progress had been achieved in relaxing the restrictive bilaterals with Angola and Mozambique; however capacity and ownership restrictions prevailed in the former BASA, while capacity, ownership and pricing restrictions controlled the latter. In Angola and Mozambique, the national carriers TAAG and LAM Mozambique airlines are weak and cannot effectively participate and benefit from the liberalisation. Restrictive BASAs are therefore seen as a means of protecting the national carrier by controlling capacity and limiting competition.

Despite the efforts made by those SADC countries who have been gradually revising their bilaterals with South Africa, restrictive regimes were still dominant by the end of 2010, although to a lesser extent than in 2000. In summary:

- *Capacity* restrictions prevailed in BASAs with Madagascar, Malawi and Zimbabwe;
- *Ownership* restrictions prevailed in the BASA with Mauritius;
- *Capacity* and *ownership* restrictions prevailed in BASAs with Namibia and Tanzania, where the governments were protecting their weak national airlines. In the instance of Air Tanzania, the national air carrier would have not been competitive enough in a fully liberalised environment; therefore the government approached liberalisation with South Africa by gradually removing restrictions on *rights, tariffs, designation and cooperative arrangements*;
- Restrictive clauses in relation to *capacity, ownership and cooperative arrangements* prevailed in the BASA with Zambia;
- The two most restrictive bilaterals in this region were with Seychelles and Democratic Republic of the Congo.

The panel regression results also found that for every unit increase in the *GDP*, the air passenger traffic would increase by between 56% and 58%, depending on the ALI weighting system used. This was in line with secondary research indicating that countries with a larger economic size are anticipated as having a larger volume of passenger air transport services due to higher spend on foreign travel (Endo, 2007). The magnitude of the impact of this predictor in the South African – SADC air transport market was not as substantial as in the South African – intra-African one.

8.2.3 The significant predictors in the South African – West African regional air transport market

Although the F test confirmed that the model was statistically significant in the South African – West African regional market, represented by a panel of 17 countries over the 11 years, none of the specified six predictors were found to be significantly different among the countries. Therefore, the null hypothesis could not be rejected. The significance of the model was due to the significant differences among countries regarding air passenger traffic flows in this region. These findings were unexpected for two major reasons:

- Significant liberalisation progress had been achieved over this period in relaxing the very restrictive South African – West African regional BASAs as discussed in section 6.3.1 so that, by the end of 2010, nine BASAs (53%) were YD-compliant, removing *capacity, tariff, ownership, designation, cooperative arrangements* and *5th freedom traffic rights* restrictions. The nine BASAs were with Benin, Togo, Senegal, Cameroon, Gabon, the Gambia, Sierra Leone, Liberia and Ghana and represented three RECs, CEMAC, BAG and WAEMU. In Chapter 3, the liberalisation progress achieved in these RECs was discussed comprehensively and they were identified as the most progressive in terms of implementing the YD within their respective RECs. It is clear that the governments of the nine countries have taken the implementation of the YD further by signing YD-compliant BASAs with South Africa, outside of their RECs. The air transport situation in these nine West African countries is very diverse: for example, in Togo the air transport industry has completely disappeared after several unsuccessful attempts to develop new operators, whereas in the Gambia, Liberia and Sierra Leone, the flag of convenience phenomenon has become particularly important;
- The share of air arrivals from West Africa to South Africa was substantial with 11% in 2000 and 12% in 2010 of total intra-African air traffic, representing the second highest African air transport regional market for South Africa. Air arrivals represented 90% of total arrivals from West Africa and highlighted the importance of

air transport as a means of access to South Africa and *vice versa*. A number of West African countries, such as Ivory Coast, Ghana and Mali were flagged in the TGS as *watch-lists markets*. Nigeria in particular was prioritised in the TGS, the Strategy and in the Implementation Plan. Although the BASA between Nigeria and South Africa had been gradually relaxed over the specified period in relation to *pricing, designation and cooperative arrangements*, artificial *capacity, ownership and traffic rights*, restrictions still prevailed by the end of 2010. The absence of an effective air transport hub airport in the West African region together with limited intra- and inter-regional air links contributed to poor air availability and access, which could possibly be improved through the exchange of fifth freedom traffic rights and the effective use of cooperative arrangements, such as code-sharing.

It is therefore recommended that further research is undertaken to establish the impact of the selected predictors on the South African – West African regional air passenger traffic flows, either by looking at sub-samples within the region or by selecting a different time period.

8.2.4 Discussion of the significant predictors in the South African – East African regional air transport market

In the South African – East African regional market, represented by a panel of seven countries over the same period, four predictors, namely the presence of a low income country in a country-pair (*Low_Inc*), the magnitude of services trade flows (*ln(Trade)*), key aviation policy levers as reflected by the respective BASAs (*ALI*) and population size (*ln(Population)*), were found to result in a statistically significant impact on air passenger traffic flows. The presence of a low income country in the country pair and the size of the population were unique to the South African – East African regional air transport market. The panel regression results are summarised in table 7.7.

The results confirmed that the presence of a low income country in a country-pair had a partial negative impact on the given flows between those two countries. Thus, for every

unit increase in the *Low_Inc*, such flows would decrease by between 57% and 58%, depending on the ALI weighting system used. This predictor captured the relatively low attractiveness of low income countries for passengers from other countries, as well as the impact of low income on travel and demand patterns. These results were substantiated by Rousova and Piermartini's study (2008) which found that a unit increase in the *Low_Inc* predictor would decrease air passenger traffic flows by between 19% and 74%. This was particularly relevant as the East African region was represented by six low income countries and one lower middle income country.

As in the other two markets, the results confirmed that flows of this kind were partially positively impacted by the magnitude of the services trade flows. Thus, for every unit increase in the *ln(Trade)*, *ln(Traffic)* would increase by 44%, irrespective of the ALI weighting system used. From the panel data, the $CAGR_{00-10}$ for services trade flows between South Africa and the seven East African countries, which are members of the COMESA and EAC, was found to be +27%. This figure indicated the sector's notable growth and its increased strategic importance. Of note is that in 2008 at the Tripartite Summit involving the SADC, COMESA and the EAC, discussions centred on achieving acceleration of economic integration on the Continent, in line with the Abuja Treaty and the African Union's objective of the formation of one continental economic bloc. The summit provided a platform for the three blocs to join forces in forming a larger Free Trade Area (Kalaba & Tsedu, 2009). These blocs have been actively working on the creation and implementation of the joint competition regulations, which were adopted in 2006; their implementation, however, still remains pending in all three regional groupings. Nonetheless, by the end of 2010, four BASAs (57%) with Ethiopia, Rwanda, Uganda and Kenya, were in line with the YD key principles: all four allowed for the *principal place of business*, a clause more liberal than the YD's *community of interest*. The TGS also flagged three East African countries and classified them as a *strategic hub* (Ethiopia), *core market* (Kenya) and a *watch-list market* (Uganda).

The panel regression results confirmed a partial positive impact of the *ALI* predictor on the *ln(Traffic)*, while controlling for all the other variables in the model. The relationship was

similar to the South African – intra-African and South African – SADC air transport markets. This finding confirmed worldwide evidence, in line with the expectations, that liberalised bilateral air services agreements lead to an increase in air passenger traffic flows. Removal of constraints in relation to capacity, tariffs, traffic rights and cooperative arrangements *inter alia*, imposed by restrictive BASAs, allows airlines to compete more effectively and operate more efficiently. The panel regression results found that for every unit increase in the *ALI*, the $\ln(\text{Traffic})$ would increase by 1%, irrespective of the *ALI* weighting system used. By the end of 2010, significant liberalisation progress had been achieved with Ethiopia, Kenya, Uganda and Rwanda; with restrictions in relation to *tariffs*, *designation* and *cooperative arrangements* gradually relaxed in the bilateral between South Africa and Sudan.

In the East African region, Kenya and Ethiopia represent about two-thirds of the region's seat capacity (Schlumberger, 2010). Both countries operate strong national carriers which have significantly benefited from air services liberalisation through expansion of their regional operation. The use of fifth freedom operations has successfully positioned these two countries as a convenient connection to West and Central Africa. In line with their massive expansion drive, Kenya Airways and Ethiopian Airlines, being two of the five dominant operators on the intra-African routes, have significantly improved their service quality through increased capacity and frequencies as well as access to new routes (Chingosho, 2011). In contrast, Burundi, Rwanda and Uganda are relatively small players in the regional air market with Uganda completely opening up its air transport market after its national carrier was liquidated in 2002. While its own fleet remained stagnant, traffic by other carriers, which have been allowed to operate quite freely, has risen steadily. Uganda, as previously highlighted, is a clear example where liberalised air transport policy has led to substantial growth in tourism traffic and receipts, with traffic increasing by 82% to 350 000 tourists between 2000 and 2004 (Myburgh *et al.*, 2006:10).

As expected, a positive relationship between the size of the population and air passenger traffic flows was established, indicating that for every unit increase in the *Population*, air passenger traffic flows would increase by 0.2%, irrespective of the *ALI* weighting system

used. The results of the secondary research proved to have a more substantial impact on air passenger traffic flows, ranging between 13% and 26% increase (Myburgh *et al.*, 2006; Abate, 2007; Grosche *et al.*, 2007).

8.2.5 Discussion of the significant predictors in the South African – North African regional air transport market

During the selected period, in the South African – North African regional air transport market, represented by a panel of five countries, only one predictor, *GDP*, was found to be statistically significant and positive, in line with the assumptions that the magnitude of economic activity had a positive impact on air passenger traffic flows between two regions. Thus, for every unit increase in the *GDP*, South African – North African regional air passenger traffic flows would increase by 70%, irrespective of the ALI variant used. As previously discussed, this predictor was also found to have a statistically significant impact in the South African – intra-African and the South African – SADC air transport markets. This finding is also supported by Boeing in Fu, Oum and Zhang (2009), which attributes about two-thirds of traffic growth to the GDP growth and the rest to other factors, such as increasing trade, lower costs and improved services. By the end of 2010, the bilaterals with Egypt and Libya were YD compliant. This can possibly be attributed to the success of EgyptAir, which has established itself as a dominant carrier on intra-African routes, as well as to the fact that both Egypt and Libya are members of COMESA.

The impact of the South African aviation policy was not found to be statistically significant in this market which may possibly be ascribed to two main factors:

- Three of the five countries that had an existing BASA with South Africa over the selected period were members of the AMU, within which no YD implementation has occurred;

- In Egypt and Libya, a variety of factors appeared to account for traffic fluctuation, such as the volatility of the international tourist market given recurrent security and political problems.

8.2.6 Summarised overview of the significant predictors in the respective markets

To summarise, the following significant relationships, while controlling for all the other variables in the model, were established in the five air transport markets over the given time period:

- There was a statistically significant and partial positive impact of the magnitude of services trade flows on air passenger traffic flows in the South African – intra-African, South African – SADC and the South African – East African regional air transport markets. The scale of the impact on air passenger traffic flows ranged between a 32% and a 72% increase for every unit increase in services trade flows, depending on the air transport market and the variant of the ALI weighting system;
- There was a statistically significant and partial positive impact of the key air policy levers, as measured through the design of the respective BASAs, on air passenger traffic flows in the South African – intra-African, South African – SADC and the South African – East African regional air transport markets. The size of the impact on the said flows ranged between 1% and 2% increase for every unit increase in the key policy levers, depending on the air transport market and the variant of the ALI weighting system;
- There was a statistically significant and partial positive impact of the GDP, reflecting the size of the economic activity on air passenger traffic flows in the South African – intra-African, South African – SADC and the South African – North African regional air transport markets. The extent of the impact on such flows ranged between a

56% and a 79% increase for every unit increase in the size of the economic activity, depending on the air transport market and the variant of the ALI weighting system;

- There was a statistically significant and partial negative impact of the presence of a low income country in the country pair on the given flows in the South African – East African regional air transport market. The scale of the impact ranged between a 57% and a 58% decrease for every unit increase in the *Low_Inc* predictor, depending on the variant of the ALI weighting system;
- There was a statistically significant and partial positive impact of the size of the population on air passenger traffic flows in the South African – East African regional air transport market. It equalled a 0.2% increase for every unit increase in the size of the population, irrespective of the variant of the ALI weighting system.

As discussed above, the impact of the aviation policy on flows of this type, as measured through the *ALI*, was found to be significant in the three markets. The next step was to determine which of the seven features of the *ALI* predictor had a significant partial impact on air passenger traffic flows in the three air transport markets, while controlling for all the other variables in the model. Despite the fact that the *ALI* predictor was found to be insignificant in the North African region, it was decided that for this step, the partial impact of each of the individual *ALI* features on these flows would be tested as the *p*-value for the *ALI* was 0.086 for all four ALI variants.

The impact of the significant features of the *ALI* on these flows in the four air transport markets is discussed in the following section.

8.2.7 Significant *ALI* features in the four air transport markets

As the focus of the study was placed on the impact of the South African aviation policy in Africa on air passenger traffic flows, it was important to run the same panel regression on the data for the five year period from 2006 to 2010 and to compare these results to the 11

year period from 2000 to 2010. The first period represented that during which South Africa embarked on the five year liberalisation campaign driven by the Airlift Strategy and the Airlift Implementation Plan. The results of the panel regression for both periods in each of the respective markets are summarised in table 7.10. The individual *ALI* features which were found to exert a statistically significant impact on the given flows are presented in table 8.1 below.

Table 8.1: Summary of the significant *ALI* features for the selected time periods

Market	<i>ALI</i> features	
	2006 - 2010	2000 - 2010
South African – intra-African	5th freedom traffic rights Capacity Designation Cooperative arrangements	
South African – SADC region	Capacity Designation Cooperative arrangements	5th freedom traffic rights Capacity Tariffs
South African – East African region		Designation
South African – North African region		

Source: Department of Statistics, University of Pretoria (2012)

In summary, *capacity* was the only feature found to have a statistically significant and partially positive impact on air passenger traffic flows in the South African – SADC regional air transport market, both in the five and 11 year periods. The results established that for every unit increase in the *capacity*, such flows would increase by between 10% and 12% for the five year period, and by between 11% and 13% for the 11 year period, depending on the *ALI* variant used. This was in line with the expectation that the increase in the level of openness of the *capacity* leads to increased air passenger traffic flows between countries and that restrictive regimes in relation to the *capacity* feature of bilateral air

services agreements inhibit air passenger traffic growth. In their study, Rousova and Piermartini (2008) found that a restrictive *capacity* regime decreased air passenger traffic flows by between 4% (Bermuda I regime) and 13% (predetermination), while a liberal capacity regime, such as free determination, increased these flows by as much as 36%. InterVISTAS-ga² Consulting, Inc. (2006) forecast a 25% air passenger traffic increase if the capacity regime was changed from predetermined to free determination and an increase by 18%, if it was changed from the Bermuda I regime to free determination.

In the 2006 – 2010 panel regression, three features were established to have a significant impact on air passenger traffic flows, both in the South African – intra-African market and the South African – SADC regional market: *capacity, designation and cooperative arrangements*. The impact of the *capacity* feature on flows of this type was once again found to be partially positive and significant; the results confirmed that for every unit increase in the *capacity*, the said flows would increase by between 5% and 6% in the South African – intra-African market, depending on the ALI variant used.

The results indicated a negative partial impact of the *designation* feature on air passenger traffic flows both in the South African – intra-African and South African – SADC air transport markets, which was unexpected and contradictory to secondary research findings. It is therefore recommended that further research is conducted in these two markets. However, in the South African – East African air transport market, the results confirmed a statistically significant and partially positive impact of the *designation* feature on these flows over the 11 year time period. Thus, for every unit increase in the *designation*, the given flows would increase by between 9% and 20%, depending on the ALI variant used. The results once again confirmed that restrictive features of the BASAs did not stimulate flows of this kind. Secondary research (Rousova & Piermartini, 2008 and Rousova, 2009) confirmed this positive impact and reported that a liberal *designation* regime (multiple designation) increased passenger traffic flows by between 15% and 21%. In addition a study by InterVISTAS-ga² Consulting, Inc. (2006) established that restrictive *designation* regimes, in particular those with a single designation, lead to a 21% decrease

in such flows and also forecast a 51% growth if the *designation* regime was changed from single to multiple.

The impact of the *cooperative arrangements* on such flows over the five year time period was found to be partially positive both in the South African – intra-African and South African – SADC air transport markets. This is in line with the expectation that *cooperative arrangements*, when allowed in the BASAs, stimulate air passenger traffic through additional tools such as code-sharing and cooperation by maximising the route opportunities available. According to AFRAA (2012), code-sharing can be perceived as an effective tool for African airlines to widen their reach, increase frequencies and minimise costs. The panel regression results found that for every unit increase in the *cooperative arrangements*, air passenger traffic flows would increase by between 36% and 43% in the South African – intra-African air transport market and by between 21% and 25% in the South African – SADC regional air transport market over the five year time period, depending on the ALI variant used.

The panel regression results confirmed a partially positive impact of the *fifth freedom traffic rights* on air passenger traffic flows in the South African – intra-African air transport market over the five year period, as well as in the South African – SADC regional air transport market over the selected 11 year period. Thus, for every unit increase in the *fifth freedom traffic rights*, air passenger traffic would increase by between 2% and 4% in the South African – intra-African market and by between 3% and 7% in the South African – SADC regional air transport market, depending on the ALI variant used. In a study by InterVISTAS-ga² Consulting, Inc. (2006) air passenger traffic flows were forecast to increase by 9% when *fifth freedom traffic rights* were stipulated in the BASAs. This is in support of the notion that such rights establish new air services and expand the network, thereby providing increased access, consumer choice and encouraging competition, which should lead to lower airfares. For South Africa, *fifth freedom traffic rights* could benefit South African airlines through the creation of additional opportunities to convey traffic, provided that *fifth freedom traffic rights* can also be obtained from the relevant third

countries (Department of Transport, 2006:63). In essence, *fifth freedom traffic rights* will mainly benefit strong and effective African air carriers.

A partial negative impact was found between the *tariffs* feature and air passenger traffic flows in the South African – SADC regional air transport market over the eleven year time period, indicating that for every unit increase in the *tariffs*, such flows would decrease by between 5% and 6%, depending on the ALI variant used. The result was unexpected; it contradicted the expectations and evidence from secondary literature. It is therefore recommended that additional research is undertaken to investigate this relationship more comprehensively, as more liberal pricing regimes lead to a decrease in airfares, in turn stimulating additional passenger traffic. Secondary research established a 53% increase in air passenger traffic flows when free pricing, the most liberal tariffs regime, prevailed in BASAs (Rousova & Piermartini, 2008).

As evident from tables 7.10 and 8.1, none of the *ALI* features were found to be significant in the South African – North African regional air transport market.

Based on the above discussion, it is therefore concluded that the most traffic-enhancing provisions were:

- *Fifth freedom traffic rights, capacity and cooperative arrangements* in the South African – intra-African air transport market over the five year period;
- *Capacity and cooperative arrangements* in the South African – SADC regional air transport market over the same period;
- *Fifth freedom traffic rights and capacity* in the South African – SADC regional air transport market over the 11 year time period;
- *Designation* in the South African – East African regional air transport market over the latter period.

8.3 MANAGERIAL IMPLICATIONS AND OVERALL RECOMMENDATIONS

According to ICAO (2004), air policy liberalisation can be perceived as a supply stimulus which may or may not have an effect on the actual supply levels. This is partly due to specific network characteristics and complex supply and demand interactions. Hence, the panel regression analysis in this study captured the simultaneous impact of the relevant predictors on air passenger traffic flows, one of which was aviation policy. In Africa, the national aviation policies vary, reflecting the balance between objectives and strengths of different constraints. In addition, the sophistication of the aviation policies adopted and the ability to implement them effectively differ across African countries.

Based on the above statement, the comprehensive literature review (in particular with respect to the South African aviation policy and the impact of air transport liberalisation around the world and in Africa), as well as the empirical results of this study, the following recommendations are made:

- In any further research, the impact of the South African aviation policy on air passenger traffic flows over a number of years should be assessed in conjunction with the relevant socio-economic and geo-economic factors. In particular, the simultaneous impact of the predictors should be considered as demonstrated in the five air transport markets, given that variations in these can have disparate effects on such flows;
- The analysis of the South African – intra-African, as well as the South African – SADC and the South African – East African markets, confirmed the positive impact of a more liberal aviation policy on air passenger traffic flows. It is therefore recommended that further negotiations, pertaining to gradual liberalisation of the regulatory restrictions, should be pursued and prioritised in these markets, with the aim of becoming fully YD-compliant. In particular, the following approaches are recommended:

- **South African – intra-African and South African – SADC air transport markets**
 - Priority focus should be accorded to countries that have substantial services trade flows with South Africa or to those that show the potential to generate increased services trade flows, as well as to those with a sizeable economic growth potential as reflected through their GDPs.
 - Liberalisation initiatives should be focused on the following features: *grant of fifth freedom traffic rights, capacity and cooperative arrangements* as they were found to be the most traffic-enhancing provisions in the two markets. *Cooperative arrangements* were found to have the most significant impact on air passenger traffic flows both in the South African – intra-African (36 – 45% traffic increase) and South African – SADC air transport markets (21 – 25% traffic increase). *Cooperative arrangements* can be regarded as an interim measure in counteracting market access restrictions in relation to capacity and foreign ownership.
- **South African – East African regional air transport market**
 - Priority focus should be given to countries that have substantial services trade flows with South Africa or to those that demonstrate the potential to generate increased services trade flows, to those with a considerable economic growth potential as reflected through their GDPs, as well as to those with a sizeable population, while taking into account the impact of their status as low income East African countries.

- Liberalisation initiatives should in particular be focused on the *designation* feature as the most traffic-enhancing one in this market.
- The coexistence of different market regimes in the South African – intra-African and the regional air transport markets may create an environment in which traffic is diverted from the regulated routes to the liberalised ones. In this scenario, the third country will benefit from the restrictive market regime governing air transport between South Africa and its bilateral air counterpart. It is therefore recommended that the threat of increased traffic diversion is accounted for by the policy-makers. The best strategy for South Africa in counteracting the diversion effect is to remove, where feasible, the regulatory restrictions;
- As the influence of the six predictors was found to exert a simultaneously significant impact on air passenger traffic flows in the five markets, it is recommended that the net economic benefits of liberalisation are used as a negotiating tool for a pro-YD approach. South African negotiators and air transport officials could be instrumental in making the bilateral policy-makers more aware of the benefits and costs expected from further liberalisation in line with the YD, given that the losses in the airline industry may be outweighed by gains in other industries, such as services trade flows and tourism;
- As South Africa and its bilateral air service counterparts move forward in the pursuit of the YD implementation, it is recommended that a consistent and reliable database on air transport is developed in the five markets. This will guide the airlines in identifying priority markets, as well as assist policy-makers in their evaluation of the impact of further liberalisation;
- Those countries that inhibit air transport market liberalisation in line with the YD may at a later stage find themselves in an uncompetitive situation. A mechanism should be established to assist countries with less developed air transport sectors to better integrate themselves into the liberalised air transport market. In addition, there should be regulatory measures designed to create a healthy and fair

competition environment in which strong and less strong carriers can coexist on a sustainable basis;

- Further air transport liberalisation in line with the YD is recommended as a means of improving air accessibility and fostering trade and business activity as well as tourism in the South African – intra-African and regional contexts, as well as on a continent-wide basis.

8.4 LIMITATIONS

The quantitative research required air traffic data for 45 African country-pairs over the selected period. The air traffic data that were available for a fee from ICAO, IATA, MIDT or Travelport was not suitable for the following reasons: 1) incomplete set of data; 2) exorbitant data costs; and 3) the data did not cover the given period. The data sources consulted and their main limitations were discussed in section 6.6.6.

The study used yearly data published by Statistics South Africa, as the only consistent and reliable source of statistics available for the given country-pairs over the 11 year period. The greatest limitation of these data was that the information on the total number of arrivals and departures of South African residents was collected through the scanning of their passports. Thus, data on country of final destination were not available.

The air passenger traffic in this study was thus perforce limited to the number of foreign tourists arriving by air. This data source was chosen due to the consistency of its methodology and the fact that the focus of the study fell on the relationship between air passenger traffic and aviation policy. Taking into account the data availability and limitation issues, this was the best source to represent a trend over the 11 year period.

In addition, the statistical departments of the 45 states were researched online but no air traffic data were available on a country-pair level over the 11 year time period. The exercise proved that accurate statistics on air passengers between country-pairs in Africa are practically non-existent as the statistical capacity of the African countries was limited.

Schlumberger (2010) confirms that on several missions to Africa between 2002 and 2008 the data on actual passenger counts were often maintained on paper ledgers with no computerisation. In many cases these data were never submitted to the relevant authorities, such as the ICAO, leaving exceptionally large gaps in the time-series. Many states also believe that they only need to report data on international traffic and that data on intra-African traffic is not a priority.

The lack of consistent and reliable statistical data on intra-African air passenger traffic flows by country-pairs is therefore highlighted as an important area requiring urgent attention at country level. The full impact of air services liberalisation in Africa on flows of this nature can only be accurately assessed provided that such a database is established and closely monitored.

In the second round of the Delphi the dichotomous approach was used for reasons of simplicity to reach consensus from the experts over two rounds. This could be seen as a limitation from a Delphi study point of view; the researcher therefore recommends the use of a 5 or 7 point Likert scale for the two rounds of Delphi studies so that the strength of the agreement or disagreement of each statement can be measured. However, given that the purpose of the qualitative research was the identification of those factors which the experts regarded as having an impact on air passenger traffic flows, and that these factors were then assessed for their applicability in the quantitative analysis, the depth of the agreements or disagreements on each of the statements was not of great value for the purposes of this study.

Despite these limitations, the study generated significant findings and provides a solid foundation for future studies.

8.5 CONTRIBUTION OF THE THESIS

This study makes a significant contribution towards the limited academic literature available on the subject of air transport policy liberalisation in Africa. At the same time, it

contributed by generating empirical evidence on the relationship between aviation policy and air passenger traffic flows in relation to the South African – intra-African and the four regional air transport markets over the 11 year period. To the knowledge of the researcher no such research has been previously carried out.

From an aviation policy point of view, the study closed the existing gap in the limited empirical research available which dealt with the impact of the aviation policy and air services liberalisation on air passenger traffic flows in the African context. It also confirmed the lack of evidence in relation to South Africa's aviation policy in Africa. The findings of the study could assist the relevant decision- and policy-makers in assessing the impact of the gradual liberalisation in line with the YD key principles from a South African – bilateral air services partners' perspective, as well as in evaluating the effectiveness of the Airlift Strategy and the Airlift Implementation Plan in the South African – intra-African and the four regional air transport markets at any point in time over the given period.

While previous studies relied on a predominantly cross-sectional analysis of the impact of aviation policy and liberalisation on traffic flows, in this study panel data, comprising 42 panels, together with the ALI weighting system, was used to quantify the degree of restrictiveness or openness of the respective BASAs. In addition, the panel data approach allowed for testing the simultaneous impact of the six key predictors on air passenger traffic flows, which can be considered a methodological contribution.

In summary, the study contributes to the body of knowledge of secondary research and the industry in the following ways, by:

- Providing a comprehensive overview of the developments in the South African aviation policy as a whole and particularly with reference to Africa;
- Furnishing empirical evidence of the impact of the aviation policy, as measured by the ALI, as well as the individual provisions of market access features of the ALI, on air passenger traffic flows in the five markets. The quantitative results should

effectively fill the gap in the existing literature, pertaining to the empirical evidence of air services liberalisation in the South African – African context using a panel data technique instead of a cross-sectional approach;

- Creating a conceptual framework of factors, viewed by the experts as having an impact on the flows investigated;
- Expanding on the cross-sectional 2005 QUASAR database, pertaining to the South African – intra-African bilaterals. This valuable information could be used by the decision- and policy-makers, particularly at the Department of Transport, to establish what progress has been achieved in terms of the liberalisation of air services agreements in line with the YD and the Airlift liberalisation targets;
- Evaluating BASAs among South Africa and 45 African countries to provide an overview of the degree of liberalisation at any point in time over the 11 year period and the types of agreements in place in the intra-African market, as well as in each of the four regions;
- Offering new insights about how passenger traffic flows relate to the changes in key predictors, one of which is the aviation policy. The results could be used in further decision-making.

8.6 DIRECTIONS FOR FURTHER RESEARCH

Further research could be directed at assessing the impact of the aviation policy in Africa of any of the YD-member states or assessing the impact of the South African aviation policy in any of other regions, such as the Asia-Pacific, European, North American, South American and the Middle Eastern regions. Such research might be further directed at evaluating the overall impact of the South African aviation policy on air passenger traffic flows between the country's bilateral counterparts worldwide over the five year time period,

coinciding with the five year liberalisation plan as guided by the Airlift Strategy and the Airlift Plan.

The methodological approach of testing the simultaneous impact of predictors, one of which is the aviation policy, measured by the ALI index, over a number of years on air passenger traffic flows is one specific area which could be used in other regions of the world.

8.7 CONCLUDING REMARKS

The researcher argues that the results and findings should be carefully considered, while taking into account the limitations and the scope of the study. The objectives of the study were successfully achieved and the research problem addressed. The intra-African and the regional approach of evaluating the simultaneous impact of the six predictors, led to the identification of factors, other than the aviation policy, that significantly impacted on air passenger traffic flows. The relevant decision- and policy-makers in further bilateral air services negotiations should take account of these.

The findings also confirmed that artificially restricting key air policy levers hampers air passenger traffic growth in the South African – intra-African, South African – SADC and the South African – East African air transport markets. From an aviation policy point of view, the most traffic-enhancing features of the BASAs were identified in those regions where the impact of the aviation policy on air passenger traffic flows was found to be statistically significant. In particular in the South African – intra-African and the South African – SADC air transport markets the most traffic-enhancing features or provisions were found to be the *grant of fifth freedom traffic rights, capacity and cooperative arrangements*, while in the South African – East-African region *designation* was found to be the most significant traffic-enhancing feature. The identification of individual BASA features in the relevant markets will assist with informed and factual decision-making and provide direction for further air transport negotiations.

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APPENDIX A

AFRICAN COUNTRIES' OVERVIEW OF AIR TRANSPORT AND THE YAMOUSSOUKRO DECISION

Source: Schlumberger (2010:192-198)



Country	Date Abuja Treaty signed	Date Abuja Treaty ratified	Date Abuja Treaty instruments deposited	Yamoussoukro Declaration member	REC membership	REC Yamoussoukro Declaration membership ^a	National airline ^b	Remarks and observations about implementation of the Yamoussoukro Decision
Algeria	6.Mar.91	21.Jun.95	18.Jul.95	Yes	AMU	No	Yes	One fully state-owned airline and one private carrier; the government is considering opening up, but is still quite restrictive.
Angola	6.Mar.91	11.Apr.92	23.Jun.92	Yes	COMESA, SADC	Pending	Yes	One fully state-owned airline; restrictive bilaterals policy
Benin	27.Feb.92	10.May.99	31.May.99	Yes	WAEMU	Yes	No	Three small operating carriers
Botswana	6.Mar.91	27.Jun.96	3.Jul.96	Yes	SADC	No	Yes	One 100% state-owned carrier
Burkina Faso	6.Mar.91	19.May.92	17.Jun.92	Yes	WAEMU	Yes	No	One privately owned operator
Burundi	6.Mar.91	5.Aug.92	6.Oct.92	Yes	EAC, COMESA	Pending	No	One privately owned operator
Cameroon	6.Mar.91	20.Dec.95	8.Apr.96	Yes	CEMAC	Yes	Yes	Liquidation of national airline in progress
Cape Verde	6.Mar.91	12.Apr.93	11.May.93	Yes	BAG, ECOWAS	No	Yes	Restructuring of national airline in progress
Central African Republic	6.Mar.91	18.Jun.93	22.Jun.93	Yes	CEMAC	Yes	No	No known operator
Chad	6.Mar.91	26.Jun.93	24.Aug.93	Yes	CEMAC	Yes	No	National carrier Air Chad is 98% state owned, but no longer operating.
Comoros	6.Mar.91	6.Jun.94	20.Jun.94	Yes	COMESA	Pending	Yes	Majority state-owned carrier
Congo, Dem. Rep. of	6.Mar.91	19.Jun.93	21.Jun.93	Yes	COMESA, SADC	Pending	No	Five small operators, all banned in Europe
Congo, Rep. of	6.Mar.91	30.Jul.96	15.Jan.97	Yes	CEMAC	Yes	No	Three small private operators
Côte d'Ivoire	6.Mar.91	22.Feb.93	11.May.93	Yes	WAEMU	Yes	No	Air Ivoire is 49% state owned and 34% owned by Air France.
Djibouti	6.Mar.91	N.A.	N.A.	No	COMESA	Pending	Yes	One small state-owned and one small private operator
Egypt, Arab Rep. of	6.Mar.91	18.Dec.92	26.Jan.93	Yes	COMESA	Pending	Yes	Dominant state-owned carrier and one small private operator
Equatorial Guinea	N.A.	20.Dec.02	19.Feb.03	No	CEMAC	Yes	No	Several small private operators all banned in Europe
Eritrea	6.Mar.91	N.A.	N.A.	No	COMESA	Pending	No	Two private operators
Ethiopia	6.Mar.91	5.Nov.92	6.Nov.92	Yes	COMESA	Pending	Yes	One state-owned operator; government pursues a very open policy; most new bilateral air service agreements conform to the Yamoussoukro Decision.



Country	Date Abuja Treaty signed	Date Abuja Treaty ratified	Date Abuja Treaty instruments deposited	Yamoussoukro Declaration member	REC membership	REC Yamoussoukro Declaration membership ^a	National airline ^b	Remarks and observations about implementation of the Yamoussoukro Decision
Gabon	6.Mar.91	N.A.	N.A.	No	CEMAC	Yes	No	Two private operators
Gambia, The	6.Mar.91	20.Apr.93	14.May.93	Yes	BAG, ECOWAS	No	No	Three private operators
Ghana	6.Mar.91	25.Sep.91	25.Oct.91	Yes	BAG, ECOWAS	No	No	State-owned carrier ceased operations in 24; one private operator.
Guinea	6.Mar.91	17.Jul.92	21.Sep.92	Yes	BAG, ECOWAS	No	No	One private operator
Guinea-Bissau	6.Mar.91	24.Jun.92	30.Jun.92	Yes	WAEMU	Yes	No	One private operator
Kenya	6.Mar.91	18.Jun.93	22.Jun.93	Yes	COMESA, EAC	Pending	Yes	Government pursues an open policy toward the Yamoussoukro Decision; it retains only 23% of Kenya Airways, while KLM owns 26%; five other private operators.
Lesotho	6.Mar.91	12.Aug.97	11.Feb.98	Yes	SADC	No	No	No known operators
Liberia	6.Mar.91	23.Jun.93	29.Jun.93	Yes	BAG, ECOWAS	No	No	Two private operators, both banned in Europe
Libya	6.Mar.91	2.Nov.92	28.Jan.93	Yes	COMESA	Pending	Yes	Three state-owned and three private carriers
Madagascar	6.Mar.91	N.A.	N.A.	No	COMESA, SADC	Pending	Yes	One majority state-owned carrier
Malawi	6.Mar.91	26/0693	22.Jul.93	Yes	COMESA, SADC	Pending	Yes	One fully state-owned carrier
Mali	6.Mar.91	13.Nov.92	27.Jan.93	Yes	WAEMU	Yes	Yes	One majority state-owned carrier and two private carriers
Mauritania	6.Mar.91	20.Nov.01	4.Jul.02	No	AMU	No	Yes	One fully state-owned carrier
Mauritius	6.Mar.91	14.Feb.92	27.Feb.92	Yes	COMESA, SADC	Pending	Yes	Reservations concerning the Yamoussoukro Decision were expressed at the African Union because of missing competition regulation; strong majority state-owned carrier.
Morocco	N.A.	N.A.	N.A.	No	AMU	No	Yes	Not a member of the African Union; strong majority state-owned carrier and one private operator
Mozambique	6.Mar.91	14.May.92	9.Jul.92	Yes	SADC	No	Yes	Majority state-owned carrier and one small private operator
Namibia	6.Mar.91	28.Jun.92	1.Jul.92	Yes	SADC	No	Yes	Fully state-owned carrier
Niger	6.Mar.91	22.Jun.92	22.Jul.92	Yes	WAEMU	Yes	No	No known operators
Nigeria	6.Mar.91	31.Dec.91	9.Jan.92	Yes	BAG, ECOWAS	No	No	Eleven privately owned carries
Rwanda	6.Mar.91	1.Oct.93	15.Nov.93	Yes	COMESA, EAC	Pending	No	One privately owned operator

(continued)



Country	Date Abuja Treaty signed	Date Abuja Treaty ratified	Date Abuja Treaty instruments deposited	Yamoussoukro Declaration member	REC membership	REC Yamoussoukro Declaration membership ^a	National airline ^b	Remarks and observations about implementation of the Yamoussoukro Decision
Saharawi Arab Democratic Republic (Western Sahara)	6.Mar.91	25.Aug.92	23.Oct.92	Yes	N.A.	No	No	No known operators; not an International Civil Aviation Organization contracting state, which renders aircraft registration and international airline operations difficult
São Tomé and Príncipe	6.Mar.91	2.Jun.93	22.Jun.93	Yes	N.A.	No	No	One 35% state-owned and majority privately owned carrier
Senegal	6.Mar.91	26.Feb.92	18.Mar.92	Yes	WAEMU	Yes	No	One private carrier that is fully owned by Royal Air Maroc
Seychelles	6.Mar.91	11.Oct.91	7.Nov.91	Yes	COMESA	Pending	Yes	Fully state-owned carrier
Sierra Leone	6.Mar.91	15.Mar.94	12.Apr.94	Yes	BAG	No	No	Four privately owned carriers three of which are banned in Europe
Somalia	6.Mar.91	N.A.	N.A.	No	N.A.	No	No	One known private carrier
South Africa	10.Oct.97	31.May.01	25.Jun.01	No	SADC	No	Yes	One majority state-owned carrier and at least twelve private operators; the government has declared an open skies policy and has started to apply the Yamoussoukro Decision in bilaterals.
Sudan	6.Mar.91	8.Feb.93	15.May.93	Yes	COMESA	Pending	Yes	One fully state-owned carrier and three private operators
Swaziland	29.Jun.92	6.Jun.01	22.Jun.04	No	COMESA, SADC	Pending	No	Two private operators of which one is banned in Europe
Tanzania	6.Mar.91	10.Jan.92	3.Feb.92	Yes	EAC, SADC	No	Yes	One fully state-owned carrier and five private operators; the government has displayed a relatively open skies policy, especially within the EAC and the SADC.
Togo	6.Mar.91	5.May.98	18.May.98	Yes	WAEMU	Yes	No	Two private operators of which one is for cargo only
Tunisia	6.Mar.91	3.May.94	10.Jun.94	Yes	AMU	No	Yes	One majority state-owned carrier and two private operators
Uganda	6.Mar.91	31.Dec.91	9.Mar.92	Yes	COMESA, EAC	Pending	No	Two private operators; since its national carrier was liquidated in 2001, the government has been applying an open skies policy within the Yamoussoukro Decision framework.

(continued)



Country	Date Abuja Treaty signed	Date Abuja Treaty ratified	Date Abuja Treaty instruments deposited	Yamoussoukro Declaration member	REC membership	REC Yamoussoukro Declaration membership ^a	National airline ^b	Remarks and observations about implementation of the Yamoussoukro Decision
Zambia	6.Mar.91	26.Oct.92	9.Nov.92	Yes	COMESA, SADC	Pending	No	One private operator; the government protects its market in view of the possible start-up of a new national carrier.
Zimbabwe	6.Mar.91	6.Nov.91	26.Nov.91	Yes	COMESA, SADC	Pending	Yes	One fully state-owned carrier

Source: Author's compilation.

Note: NA. = not applicable, AMU = Arab Maghreb Union, BAG = Banjul Accord Group, CEMAC = Economic and Monetary Community of Central Africa, COMESA = Common Market for Eastern and Southern Africa, EAC = East African Community, ECOWAS = Economic Community of Western African States, REC = regional economic community, SADC = Southern African Development Community, WAEMU = West African Economic and Monetary Union.

a. Some RECs have implemented the Yamoussoukro Decision with binding regulation within their communities. This column answers the question whether a given state, based on its membership in a REC, is currently bound to the Yamoussoukro Decision.

b. The state owns and controls at least 51 percent of its national carrier.

c. The case of Mauritius is unclear. According to an interview with the African Union's legal counsel, Fafré Camara, on 25 April 2007, in Addis Ababa, the African Union's depository did not receive a letter indicating that Mauritius had withdrawn from the Yamoussoukro Decision in 24. The government of Mauritius is aware that it never submitted a formal notification of withdrawal. Apparently, the situation provided some diplomatic advantages according to an interview with Deputy Prime Minister C. G. Xavier Luc Duval on 17 September 2007, in Montreal. However, this is in contradiction to a recommendation in an African Union report (2005b, p. 13), which clearly mentions that Mauritius withdrew and recommends 'necessary action to bring Mauritius to reconsider its position.' In the absence of any formal document of withdrawal, Mauritius should still be considered a member of the Yamoussoukro Decision (African Union 2007c).

APPENDIX B

INSTITUTIONS AND ORGANISATIONS LINKED TO THE IMPLEMENTATION OF THE YAMOUSSOUKRO DECISION

Economic Commission for Africa

The Economic Commission for Africa (ECA) was established by the Economic and Social Council (ECOSOC) of the United Nations (UN) in 1958 as one of the UN's five regional commissions (ECA, 2011). The ECA is directly involved in implementing the YD at regional and sub-regional levels and has the duty of ensuring that all regional organisations concerned follow the same procedures. Article 9.2 of the YD stipulates that the Monitoring Body, whose main task is the overall supervision, follow-up and implementation of the Yamoussoukro Decision, is composed of the ECA, OAU, AFCAC and AFRAA (ECA, 1999:8). The overview of these organisations, as well as their role in the process of the YD implementation, is discussed in the sections below.

The ECA assists with funding of the workshops and seminars to clarify the articles of the Decision; it also provides technical assistance on the establishment of the necessary mechanisms for the implementation of the YD. At the Eighth Conference on Aviation and Allied Business Leadership, held in Johannesburg in 2002, the ECA proposed the establishment of a ministerial committee to spearhead the implementation of the Yamoussoukro Decision. The committee was formed by the Nigerian and South African Ministers responsible for Civil Aviation (ECA, 2003:8).

International Civil Aviation Organisation

The International Civil Aviation Organisation (ICAO) is a United Nations specialised agency for civil aviation. The major aim of ICAO is to ensure the safe, efficient and orderly evolution of international civil aviation (ICAO, 2011). ICAO's role in the implementation of the YD, as reconfirmed in Article 6 of the Decision, is to ensure that all policies related to the Decision are in accordance with the international civil aviation safety standards and practices as recommended by ICAO (ECA, 1999:7). In addition, Article 8 of the YD provides for conflict resolution on the basis of ICAO practices (ECA, 2003:11). To date, safety oversight in Africa can be regarded as one of the main obstacles to the YD implementation, which was elaborated in Chapter 3 section 3.2.5.

African Union

The African Union (AU), previously known as the Organisation of African Unity (OAU), is a body that was set up with its main aim being to accelerate the process of integration on the Continent. The aim was supported by several objectives: to rid the Continent of the remaining vestiges of colonisation and apartheid, to promote unity and solidarity among African countries, to coordinate and intensify cooperation for development, to safeguard the sovereignty and territorial integrity of Member States and to promote international cooperation within the framework of the United Nations (African Union, 2011a).

The YD has been adopted by the AU in such a way that all Member States of the African Union are automatically expected to take part in implementing the Decision. By the end of 2010, there were 53 internationally recognised members.

The activities of the AU are integrated into the regional follow-up organ for the implementation of the Decision, which comes under its presidency. The regional follow-up organ, also known as the Monitoring Body, was established in accordance with Article 9 of the Yamoussoukro Decision and consists of the AU (President), ECA (Secretariat), AFCAC (Rapporteur), and is assisted by the AFRAA and representatives of sub-regional organisations (ECA, 1999; ECA, 2003).

African Civil Aviation Commission

The African Civil Aviation Commission (AFCAC) was established in 1969 as a specialised agency of the OAU. AFCAC aims to encourage cooperation in all civil aviation activities in Africa (Department of International Relations and Cooperation, 2004). Its main objectives, *inter alia*, are: a) the provision of civil aviation authorities with a framework to discuss and plan all the required measures of coordination and cooperation in all their aviation activities and b) the promotion of the coordination, better utilisation and orderly development of African air transport systems (OAU, 1975).

AFCAC has established a follow-up committee on the implementation of the YD. This committee has been actively involved in addressing the problems encountered by its members (Ssamula, 2008:20). At the Third African Union Conference of Ministers Responsible for Air Transport in 2007, a resolution was adopted in which the duties and functions of the Executing Agency of the Yamoussoukro Decision were entrusted to AFCAC. It was decided that the Executing Agency would be responsible for the economic supervision of the liberalised air transport industry in Africa with a view to hastening the implementation of the YD (Kajange, 2009:1).

African Airlines Association

The African Airlines Association (AFRAA) was established in 1968 in Ghana as a Trade Organisation open to airlines of African states, with the objective of harmoniously developing African air services. AFRAA's current membership stands at 40 carriers from 35 different countries, including national airlines, and provides a platform for its members to exchange vital information concerning the industry (AFRAA, 2011).

AFRAA actively continues supporting the Decision and has been creating awareness amongst its members through seminars and workshops, highlighting the potential benefits of the YD to airlines. In conjunction with the AFCAC, IATA and ICAO, the association embarked on a campaign on improving the perception and standards of air transport safety on the Continent as part of the overall strategy of implementing the Decision (African Union, 2005:5). AFRAA has conducted studies on the effects of code-sharing and franchising within the context of liberalisation of air transport markets in Africa. It has also participated in meetings organised at country and sub-regional levels on competition rules, merits of the Decision, implications of the European Union external air policy and US Open Skies policy on African carriers, among others (ECA, 2003:6; African Union, 2005:8).

APPENDIX C

SUMMARY OF WAEMU'S MOST SIGNIFICANT AIR TRANSPORT PROGRAMME REGULATIONS

Regulation	WAEMU air transport programme	Yamoussoukro Decision
<i>Traffic rights</i>	Regulation No 20/2002 on conditions for market access of air carriers within WAEMU grants all freedoms, including cabotage after entitlement by member states.	This regulation clearly exceeds the requirements of the YD under Article 3, which includes third, fourth and fifth freedom traffic rights.
<i>Tariffs</i>	Regulation No 07/2002 on tariffs on air services for passengers, freight and mail within WAEMU allows carriers to freely fix tariffs, which need to be filed only 24 hours in advance.	The YD under Article 4 requires filing at least 30 days in advance.
<i>Competition regulation</i>	Regulation No 24/2002 on conditions for market access by carriers makes the exercise of traffic rights subject to competition legislation. Enforcement actions may be taken by the WAEMU Commission.	Article 7 of the YD notes that state parties shall ensure competition, which is accomplished by the implementation of WAEMU regulation.

Source: Schlumberger (2010:80-81)

APPENDIX D

MAIN COMPONENTS OF THE MULTILATERAL AIR SERVICES AGREEMENT

Component	Multilateral Air Services Agreement	Yamoussoukro Decision
<i>Traffic rights</i>	First and second freedom rights are granted without conditions or restrictions; third, fourth and fifth freedom rights are granted to any scheduled and non-scheduled passenger, cargo and mail flights that are conducted in the territory of the contracting states. Each contracting state will enjoy fifth freedom traffic rights with respect to other African states in accordance with the YD.	All BAG members are full YD member states; therefore this membership can be interpreted as an acknowledgement and reaffirmation of the YD by BAG.
<i>Designation of carrier</i>	Each contracting state may designate one or more airlines to operate on the specified route in accordance with MASA.	The carriers may be from another contracting state and the designation may be refused only if the chosen airline does not conform to the eligibility criteria defined in Article 6.9 of the YD.
<i>Tariffs</i>	Tariffs are to be freely established based on commercial considerations and are not subject to approval.	In line with Article 4 of the YD
<i>Capacity and frequency</i>	Except for considerations concerning safety, security and environmental requirements, no restrictions shall be imposed on the frequency, capacity, and/or types of aircraft used on air services under the agreement.	In line with Article 5 of the YD

Source: Schlumberger (2010:84-85)

APPENDIX E

CEMAC AGREEMENT ON AIR TRANSPORT AND CIVIL AVIATION CODE

Provision	CEMAC Agreement on Air Transport	Yamoussoukro Decision
<i>Designation of carrier</i>	Each member state designates two carriers to participate in the intra-community air services market; the member states must grant access to all carriers and may not give preference to their own carriers.	Similar to Article 6 of the YD
<i>Traffic rights</i>	First and second freedom rights are granted without conditions; third and fourth freedom rights are granted for any scheduled passenger, cargo and mail flights that are conducted within the CEMAC region. Fifth freedom rights became fully liberalised for community operators in August 2001; eighth freedom rights (cabotage) are possible if a member state specifically grants this right to a designated carrier of another member state.	Similar to Article 3 of the YD
<i>Tariffs</i>	Tariffs are freely determined on commercial considerations.	Same as Article 4 of the YD
<i>Capacity and frequency</i>	The member states must grant a maximum number of frequencies, but the designated carriers must coordinate their schedules; no restriction of capacity and types of aircraft shall be imposed.	Similar to Article 5 of the YD

Source: Schlumberger (2010:88-89)

Provision	CEMAC Civil Aviation Code	Matching Article of the YD
<i>Market Access</i>	Liberalisation of first to fifth freedom rights for scheduled air services within the community and full liberalisation of cargo and on-demand traffic.	Article 3
<i>Tariffs</i>	Free, but "reasonable" tariff fixing by carriers to be filed 60 days in advance and interdiction of anticompetitive practices.	Article 4
<i>Frequency and capacity</i>	No restriction on frequency and capacity, but commercial activities must be coordinated among operators and their programmes must be approved by the civil aviation authorities.	Article 5
<i>Designation and establishment</i>	Single or multiple designation of operator by each member countries with requirements for community nationality in relation to ownership and minimum standards for technical, financial and managerial qualifications.	Article 6
<i>Competition regulation</i>	Code of conduct for carriers that aims at developing a sound competitive environment by prohibiting all forms of price and capacity dumping.	Article 7

Sources: Schlumberger (2010:90-91); CEMAC in Schlumberger (2010)

APPENDIX F

PHASE II COMESA AIR TRANSPORT LIBERALISATION

Provision	Phase II COMESA air transport liberalisation	Yamoussoukro Decision
<i>Market access</i>	Any air carrier is eligible, provided it is substantially owned and effectively controlled by a COMESA member state or its nationals.	In contrast to Article 6 of the YD where traffic rights are granted on a bilateral basis between two or three countries (fifth freedom right), COMESA carriers are able to operate between any destination within COMESA.
<i>Traffic rights</i>	Unrestricted movement of air transport within COMESA.	Article 3
<i>Tariffs</i>	All COMESA member states have agreed on the removal of all tariff and non-tariff barriers to facilitate the establishment of a free trade area, implying that air services are free from any tariff regulation.	Article 4
<i>Capacity and frequency</i>	No restrictions shall be imposed during Phase II.	Article 5

Sources: COMESA (1999); Schlumberger (2010:95-96)

APPENDIX G

LIBERALISATION TARGETS

Element	Current situation	Targets 2006 - 2010				
		2006	2007	2008	2009	2010
Implementation of the YD	17 African states have agreed to implement the key elements of the YD with SA, representing approximately 32% of YD states. Note: implementation of targets is subject to readiness of African states to implement the YD.	15%	25%	35%	50%	65%
Multiple designation	Provided in 76% of total agreements	80%	85%	90%	95%	97%
Tariff liberalisation	Provided in 57% of total agreements	65%	70%	75%	80%	85%
Code-share	Provided in 40% of total agreements	50%	60%	70%	80%	90%
Non-scheduled passenger services	Safety/security major consideration. Potential impact on low density routes served by scheduled airlines to be considered.	Research to be conducted re impact				

Source: Department of Transport (2006:59)

APPENDIX H

LIST OF PARTICIPANTS IN THE DELPHI

LIST OF THE DELPHI EXPERTS

Name of expert	Position	Organisation
Vuwani Ndwamato	Director: Air Transport	South African Department of Transport
Professor Peter Morrell	Director of Research	Department of Air Transport Cranfield University
Pritt Chibole	Manager Offline Sales: Eastern, Central, West and North Africa	Qatar Airways
Kendy Phohleli	Country Manager: South Africa	Qatar Airways
Sharmla Dharamalingam	Assistant Director: Bilateral Affairs Air Transport	South African Department of Transport
Ahmed Bassa	Project Executive: Aeronautical	Dube TradePort
Jean-Francois D'Amours	Country Manager: Nigeria	Qatar Airways
Mr. Ketso Moeketsi	Director: Lesotho Civil Aviation	Lesotho Civil Aviation Authority
Manuela Goldman	Manager: Southern Africa offline	Qatar Airways
Nikki Samuels	Manager: Pricing South Africa and Offline	Qatar Airways

Name of expert	Position	Organisation
Bella Sithole	Assistant Director: Bilateral Affairs Air Transport	South African Department of Transport
Saamer Abuel-Ealeh	Executive: Pricing and Inventory	British Airways
Rosemary Adogo	Area Manager: South Africa	Kenya Airways
Mikhail Andriyanov	Consultant	Lufthansa Consulting
Vadim Vilgelmi	Director: Business Development	Lufthansa Consulting
Mr. Biseko Chiganga	Senior Air Transport Officer	Ministry of Infrastructure Development: Tanzania
Ranaivoarison Voairana	Air Transport Director	Civil Aviation of Madagascar
Darren Hay	Manager: International Affairs	South African Airways
Sameer Butt	Business Analyst: Kenya	Qatar Airways
Jonathan Minnett	Business Development Manager: Africa	Qatar Airways
Andrew Stern	Country Manager: Kenya	Qatar Airways



Name of expert	Position	Organisation
Dr Andreas Papatheodorou	Assistant Professor in Industrial Economics with emphasis on Tourism	University of Aegean Department of Business Administrations
Dr Joachim Vermooten	Aviation expert	Department of Public Enterprises
Ramesh Motilal	Head of Department: Statistics and Billing	Airports Company South Africa

APPENDIX I

THE DELPHI



19 March 2011

Dear Colleague

An important research project on the relationship between South African aviation policy in Africa and air passenger traffic flows is currently being undertaken as part of a doctoral research programme. The main aim of the research is the development of a model that can be used by aviation authorities to test the relationship between changes in bilateral air service agreements and air passenger traffic flows between any arbitrary country-pair.

Current research on aviation policy in the context of further liberalisation has shown that various factors ranging from more liberal bilateral air service agreements such as increased capacity, allowance of fifth freedom rights, multiple designation to exogenous variables (for example, tourism demand, cultural affinities, price) amongst others, have a direct or indirect influence on air passenger traffic flows between arbitrary country-pairs. However, we need to ensure that we take your views as an expert on aviation into consideration. Thus, to enable us to achieve the most comprehensive results we need your views on:

- those features of bilateral air service agreements that you believe directly or indirectly affect air passenger traffic flows between two countries (any arbitrary country-pair)
- other factors that you feel directly or indirectly have an influence on air passenger traffic flows between an arbitrary country-pair.

Please feel free to either briefly list the features and factors or to describe your views more fully. This should take approximately **20 minutes** to complete. After receiving your feedback we consolidate the opinions of all the respondents. The consolidated list is then returned to you for a second round. In this round you may agree or disagree with your colleagues. This should take no longer than **10 minutes** to complete. Kindly respond to this email by **31 March 2011**.

Please be assured that your individual response remains confidential.

We realise that 30 minutes of your time is no small request and we would like to express our appreciation for your cooperation. All respondents will receive a complimentary executive summary of the final report.



Answer sheet

Dear respondent

Please provide your view in the table below. Please feel free to either briefly list the features and factors or to describe your views more fully.

Please provide your opinion as comprehensively as possible of all those features of bilateral air services agreements that you believe directly or indirectly affect air passenger traffic flows between two countries (any arbitrary country-pair)	Please list any other factors that you feel directly or indirectly have an influence on air passenger traffic flows between an arbitrary country-pair.



28 July 2011

Dear Colleague

I would like to thank you for your cooperation thus far in the important research project on the relationship between South African aviation policy in Africa and air passenger traffic flows.

We have reached the second round of the questionnaire. As previously communicated the results of the first round have been consolidated for your further feedback. In this round the cumulative responses have been listed, with which you may agree or disagree. This should take you no longer than 15 minutes to complete.

Two answer sheets are attached for your convenience. The first one summarises the responses related to features of bilateral air service agreements that in your expert opinion may directly or indirectly affect air passenger traffic flows between an arbitrary country-pair. The second answer sheet summarises the responses related to any other factors that based on your expert opinion have an influence on air passenger traffic flows between an arbitrary country-pair.

Kindly respond to this email by 10 August 2011. Please be assured that your individual response remains confidential.

We realise that 15 minutes of your time is no small request and we would like to express our appreciation for your cooperation. All respondents will receive a complimentary executive summary of the final report.

Please send your feedback to the following address: ssurovitskikh@gmail.com

This research is for academic purposes only, the outcome of which is the attainment of a doctoral degree and the publishing of articles in accredited scientific journals.

Please feel free to contact me or my supervisor Prof. Berendien Lubbe at berendien.lubbe@up.ac.za or tel: +27 12 420-4102 with any queries or problems.

We thank you for your kind co-operation.

Yours faithfully

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Please indicate with an “X” whether you agree or disagree with the following responses.

I believe that the following features of bilateral air services agreements directly or indirectly affect air passenger traffic flows between any arbitrary country-pair:

	AGREE	DISAGREE
Capacity clause		
Permitted number of airline designations/Designation clause		
Withholding/ownership clause		
Traffic rights/freedoms clause		
Market access/Named points clause		
Tariff/Pricing regime clause		
Cooperative arrangements clause		
Statistical exchange clause		
Double taxation clause (for example, respective airlines being reciprocally exempted from double taxation)		
Airport slot availability		
Strength of national/designated carrier		
Protection of national carrier through restrictive agreements		
Break of gauge provision		
Unstable political situation		
Degree of lobbying for increased bilateral agreements by the relevant parties in the country		
State of diplomatic relations between countries		
Lack of regional internal/common aviation market with harmonised rules		
Lack of reciprocity or equal exchange of rights amongst airlines of each state		
Propensity to declare disputes and to make use of dispute resolution provisions and ICAO in settling disputes		
Free riders: <ul style="list-style-type: none"> • Access by non-designated airlines to BASA rights • 5th and 7th freedom rights where 3rd and 4th freedom rights do not exist • 5th and 7th freedom rights where 3rd and 4th 		

	AGREE	DISAGREE
freedom rights exist		
Development of 6th freedom carriage by intermediate based African airlines		
Development of 6th freedom carriage by intermediate based airlines in the Gulf and Europe		
Lack of updating treaties on inter-State level as opposed to MOUs on aeronautical authority level		
Lack of implementation/adherence to agreed conditions by African States		
National aviation policies		

Please add any other features of bilateral air service agreements that were not mentioned above but that you feel might have an influence on air passenger traffic flows between two countries.



Please indicate with an “X” whether you agree or disagree with the following responses.

I believe that the following factors directly or indirectly influence air passenger traffic flows between any arbitrary country-pair:

	AGREE	DISAGREE
Existence or lack of free trade areas (free over border movement of passengers)		
Business/trade relations between two countries		
Existence of visa requirements and/or passport regulations		
Scope of competing airlines (reflects aggregate capacity, frequencies, number of city-pairs served, number of airlines offering competitive services)		
Capitalisation levels of competing airlines		
National geographic limitations of competition authorities (laws)		
Existence of precompetitive regulatory frameworks relating to subsidies and predatory conduct of airlines		
Standards of safety and operational oversight		
Requirement for local registration of aircraft		
Concerns for personal safety/fear of crime		
Disparity in noise and carbon emissions requirements		
Cultural affinities/historical relations between countries		
Level of labour (countries with excess of deficient labour capabilities will likely import/export labour)		
Special events (for example, significant sporting events)		
International investment by countries in other countries		
Affordability of air travel/Price		
Language differences		
Distance between countries		
Level of aviation-related infrastructure in a country		
GDP/state of economy in the country		
Infrastructure development		
Capacity (as implemented by the airlines)		
Aviation policy		
Political situation in the country		
Exchange rates (impacts on relative price levels)		
Personal financial ability to travel		
Tourism-related demand/Touristic attractiveness		

	AGREE	DISAGREE
State of diplomatic relations/Foreign policy		
World economic situation (for example recession)		
External health factors (such as SARS)		
Natural disasters		
Alignment of aviation policy and tourism policy		
Tax incentives		
Labour law		
Availability of other modes of transportation		
Economic policy (interest rates, anti-inflation policies, exchange rate controls, impact of indirect taxation)		
Reputation/Image of the country		
Existence of a national carrier		
Population size		
Ease of obtaining permission to exercise the rights granted in terms of BASA		
Airport slot availability (when not in BASA such as UK)		
Weather		
Anti-trust immunity for airline alliances and joint ventures		
Distribution of income/income inequality		
Degree of urbanisation/share of urban population		
Size of conurbation and catchment area of airports in origin and destination		
Excessive reliance on Yamoussoukro Decision as instrument for liberalisation and the selective and limited adoption of its provisions		
Lack of African regional agreement to the level of airline participation in competition to internationally and South African based airlines		

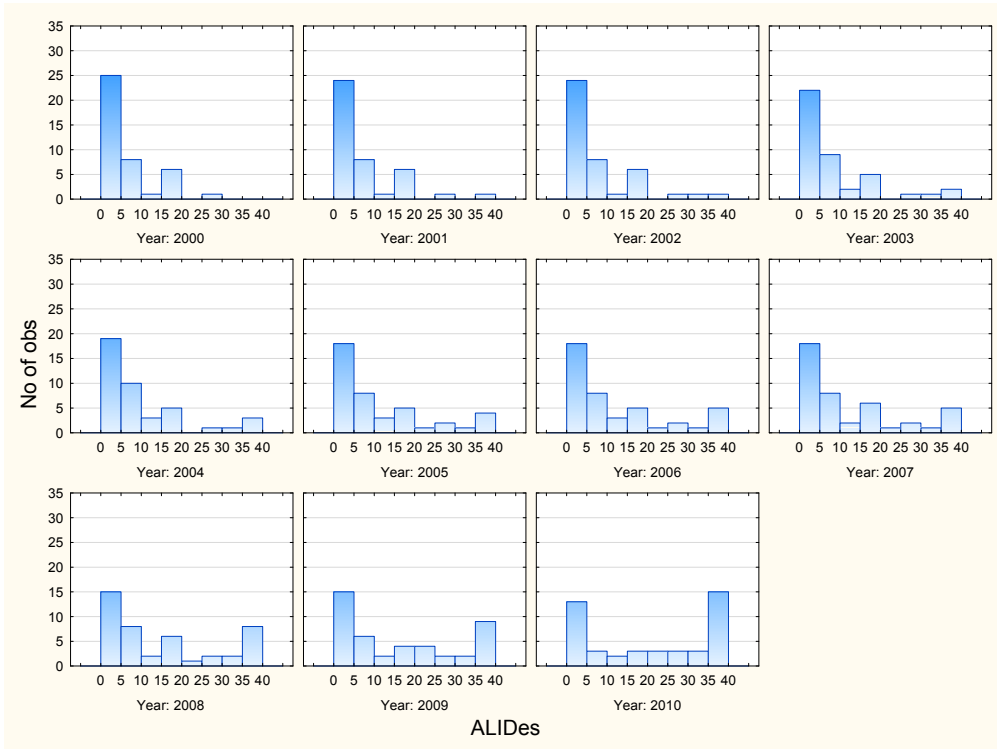
Please add any other factors not related to BASAs that were not mentioned above but that you feel might have an influence on air passenger traffic flows between two countries.

APPENDIX J

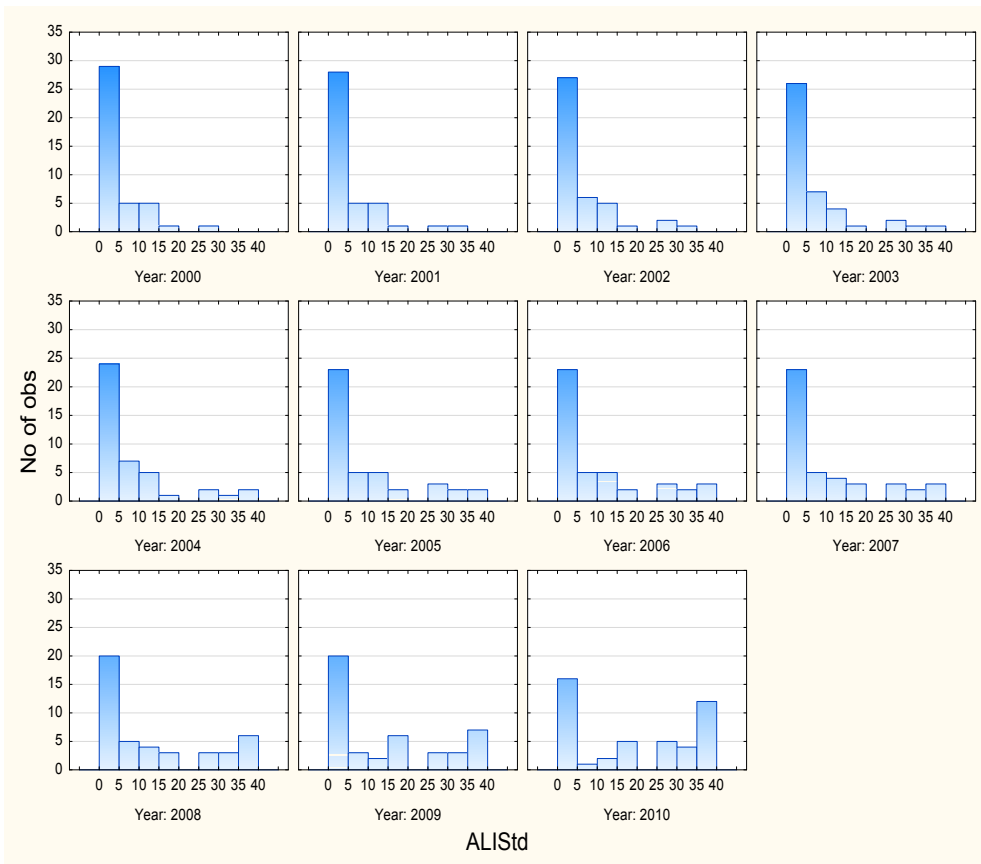
HISTOGRAMS OF THE DEGREE OF AIR SERVICES LIBERALISATION OF THE SOUTH AFRICAN – INTRA- AFRICAN AVIATION MARKET

(FOUR VARIANTS OF THE ALI WEIGHTING SYSTEM)

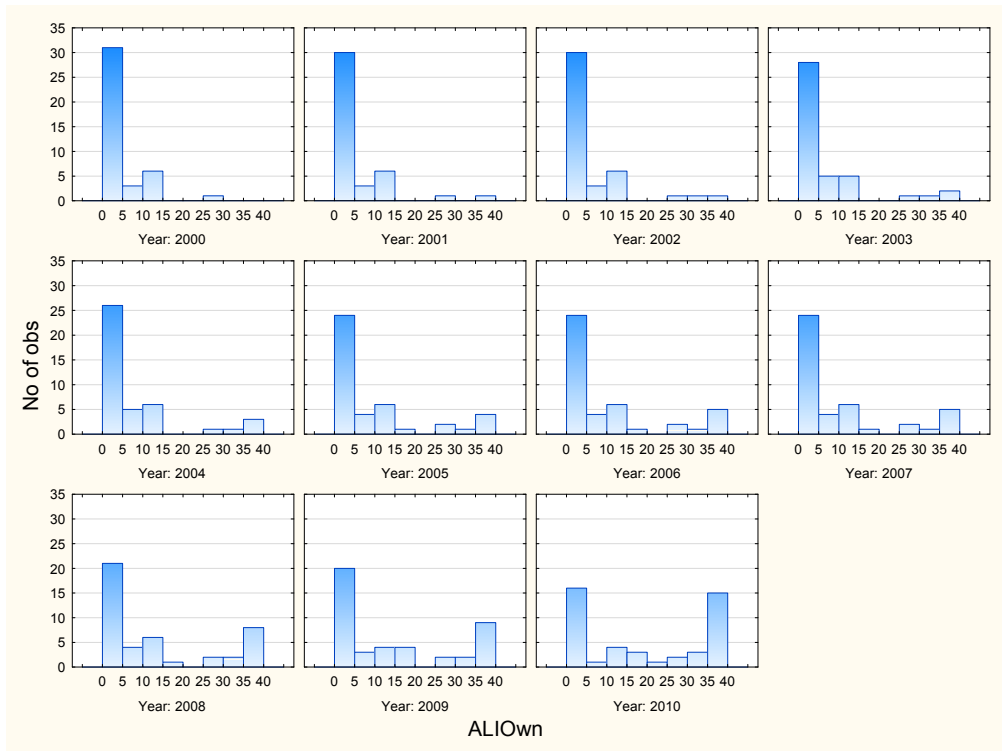
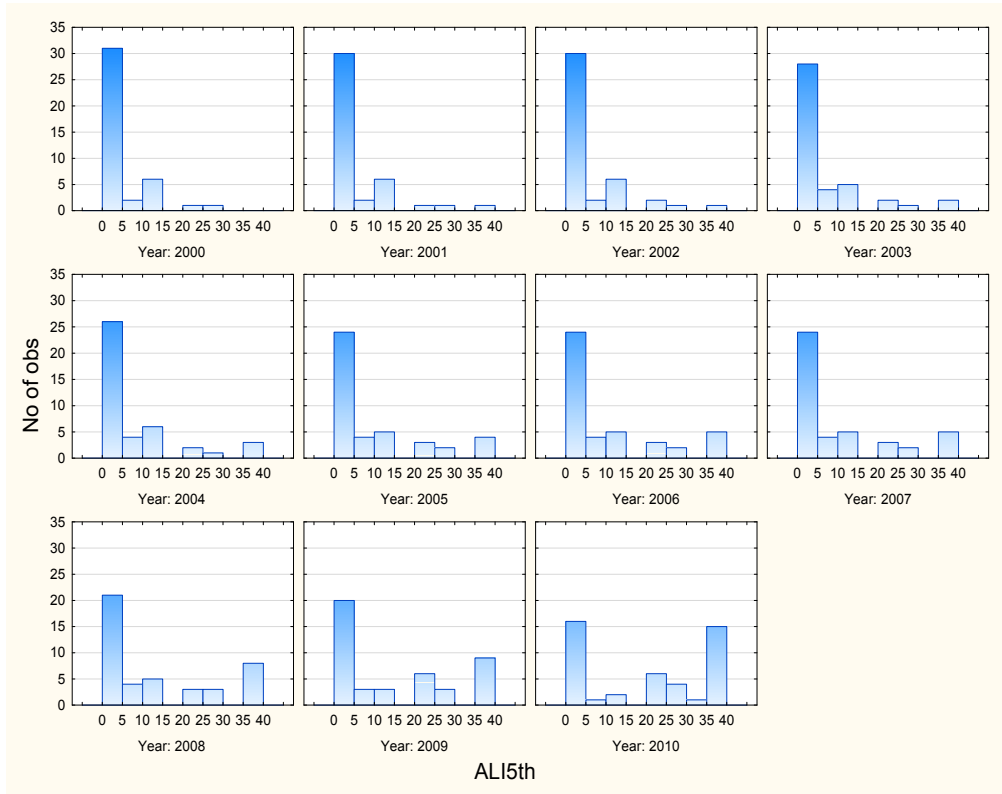
Source: Department of Statistics, University of Pretoria (2012)



ALIDes



ALIStd



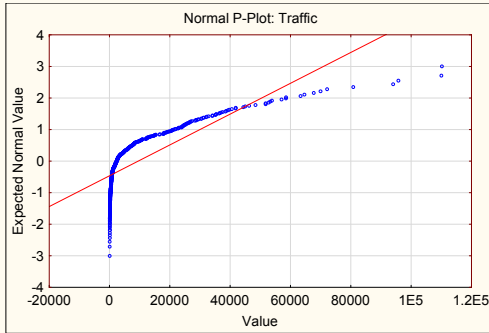
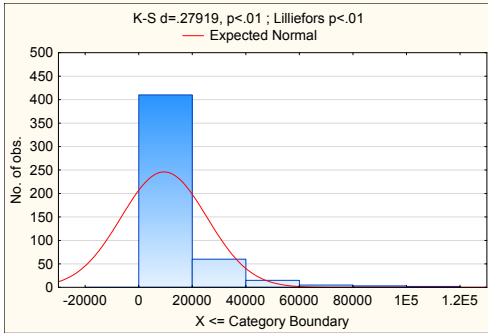
APPENDIX K

STATISTICAL SUMMARIES OF LOG TRANSFORMATIONS

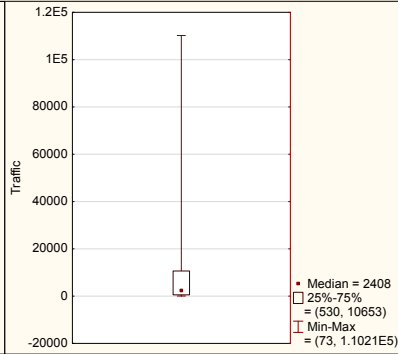
Source: Department of Statistics, University of Pretoria (2012)



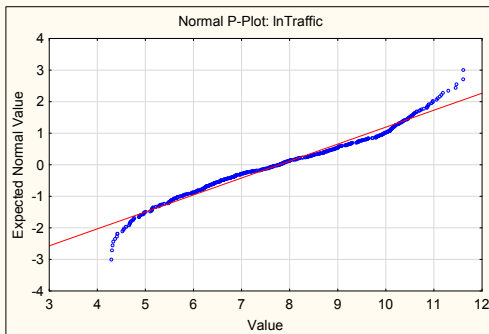
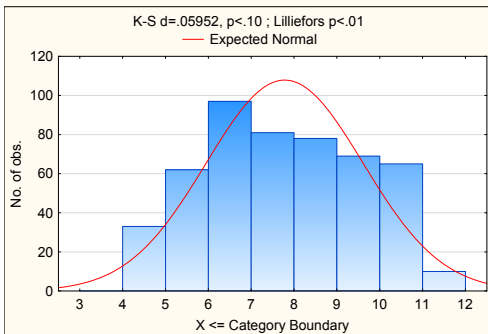
Summary: Traffic: Traffic



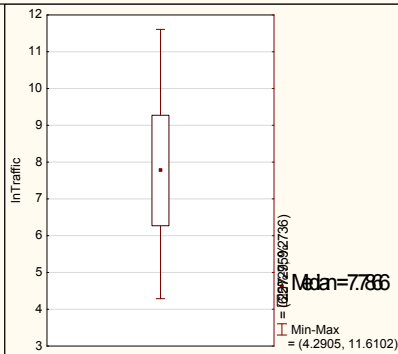
Summary Statistics:Traffic
Valid N=495
Mean=9465.678788
Median=2408.000000
Minimum= 73.000000
Maximum=110213.000000
Std.Dev.=16048.864617
Skewness= 2.950437
Kurtosis= 10.990482



Summary: InTraffic

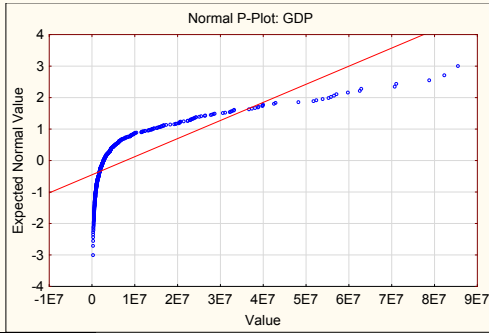
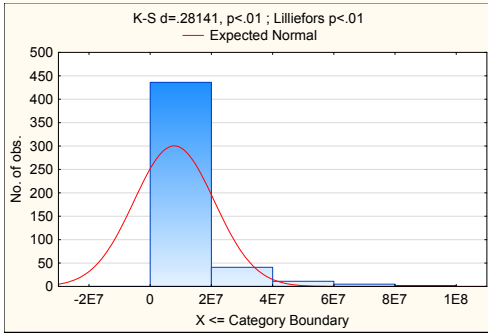


Summary Statistics:InTraffic
Valid N=495
Mean= 7.781330
Median= 7.786552
Minimum= 4.290459
Maximum= 11.610170
Std.Dev.= 1.830514
Skewness= 0.031863
Kurtosis= -1.033849

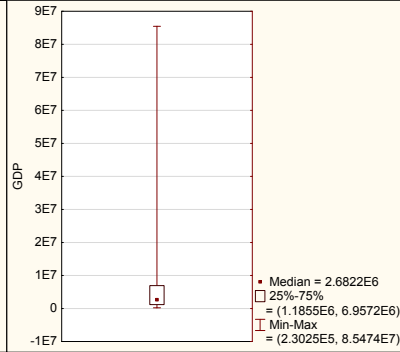




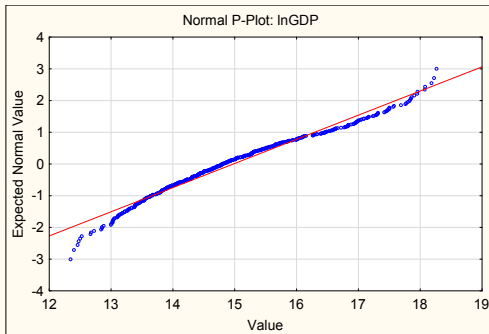
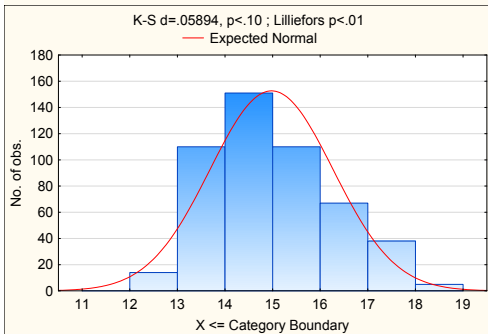
Summary: GDP: GDP



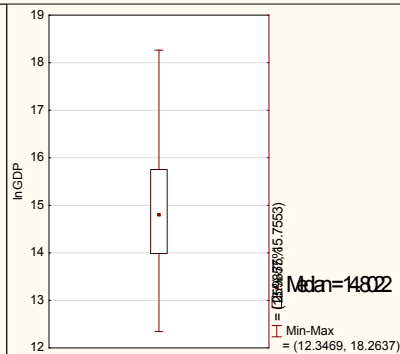
Summary Statistics:GDP
Valid N=495
Mean=7837352.505677
Median=2682222.910000
Minimum=230248.300000
Maximum=85473606.410000
Std.Dev.=13146259.046844
Skewness= 3.103851
Kurtosis= 10.793560



Summary: lnGDP

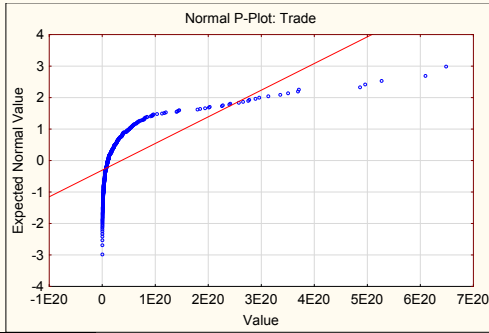
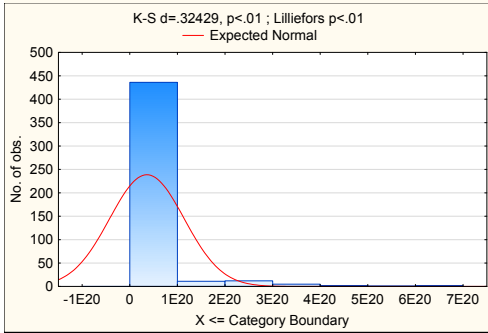


Summary Statistics:lnGDP
Valid N=495
Mean= 14.977830
Median= 14.802156
Minimum= 12.346914
Maximum= 18.263718
Std.Dev.= 1.293348
Skewness= 0.443360
Kurtosis= -0.437548



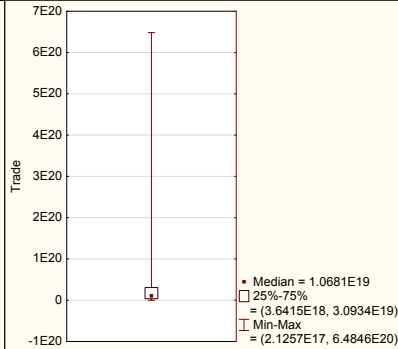


Summary: Trade: Trade

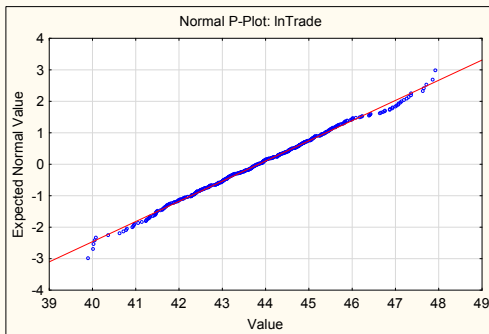
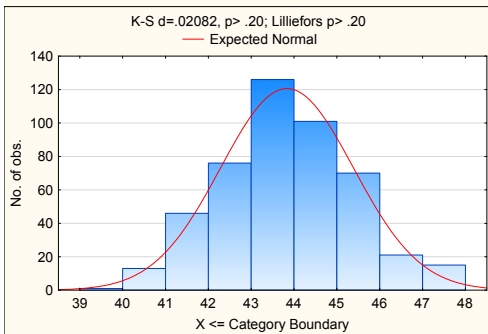


Summary Statistics:Trade

Valid N=469
 Mean=35933890426439246000.000000
 Median=10681000000000000000.000000
 Minimum=21257000000000000000.000000
 Maximum=64846000000000000000.000000
 Std.Dev.=78383120297058583000.000000
 Skewness= 4.524639
 Kurtosis= 24.081549

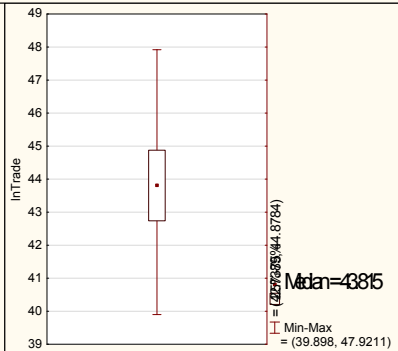


Summary: lnTrade



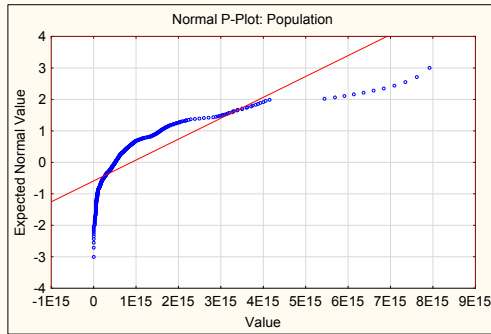
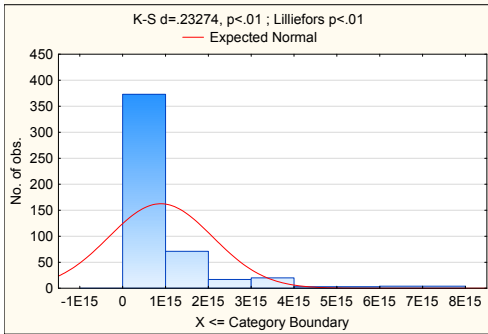
Summary Statistics:lnTrade

Valid N=469
 Mean= 43.836586
 Median= 43.814998
 Minimum= 39.898048
 Maximum= 47.921132
 Std.Dev.= 1.551467
 Skewness= 0.097207
 Kurtosis= -0.193183



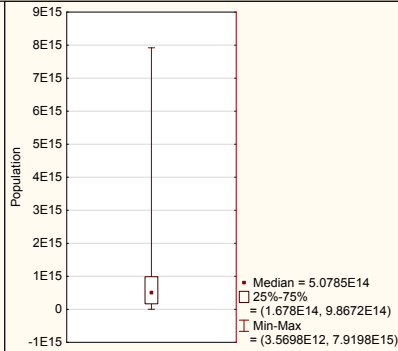


Summary: Population: Population

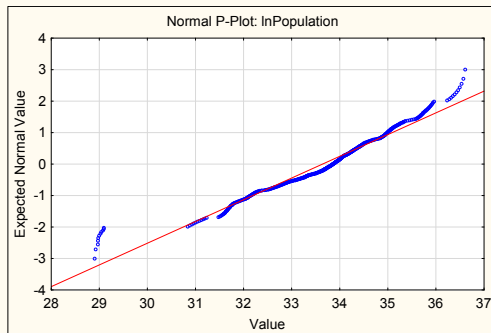
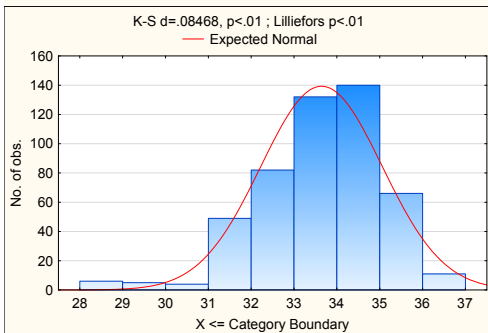


Summary Statistics:Population

Valid N=495
 Mean=890170024444444.750000
 Median=50785000000000.000000
 Minimum=356980000000.000000
 Maximum=79198000000000.000000
 Std.Dev.=1214739067439882.000000
 Skewness= 2.987451
 Kurtosis= 10.811163



Summary: InPopulation



Summary Statistics:InPopulation

Valid N=495
 Mean= 33.642578
 Median= 33.861207
 Minimum= 28.903531
 Maximum= 36.608142
 Std.Dev.= 1.417673
 Skewness= -0.712328
 Kurtosis= 1.011472

