Clear Skies over Southern Africa

The importance of air transport liberalisation
for shared economic growth

ComMark
TRUST

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About this publication

THE COMMARK Trust is a regional development initiative, established in 2003 with funding from the UK's Department for International Development (DFID). It is managed by ECI*Africa*, a South African economic development agency.

ComMark stands for *Making Commodity and Service Markets Work for the Poor in Southern Africa.* The purpose of the trust is to reduce poverty in the region by putting into practice the development strategy known as 'making markets work for the poor'.

The Trust works to improve the legal, regulatory, policy, institutional and business service environments in high-growth, pro-poor sectors, as typically reflected in employment, investment, and enterprise development potential. It concentrates on three core areas: textiles and apparel, agribusiness, and tourism.

The regional tourism sector is obvious for ComMark's intervention, in view of its rapid recent growth and its disproportionate importance as a source of job creation, incomes, and foreign exchange earnings for most SADC countries. To date, significant resources in the tourism sector have been directed towards the development of training initiatives, small business support and linkage programmes, and productivity enhancement measures. While important, this has tended to ignore the more fundamental, structural, or systemic reasons for the sector's underperformance in many countries relative to its potential.

One such constraint relates to the highly restricted air service regime which inhibits competition between airlines that operate across the region. This in turn severely limits air traffic and raises its costs, thereby significantly lowering the competitiveness and growth potential of the region's economy.

To address this constraint, ComMark commissioned research that has culminated in this report. The research exercise had two linked objectives: to accurately assess the extent of the prevailing restrictions on the air travel market in Southern Africa; and to precisely quantify – for the first time – the economic costs and consequences of these restrictions for the economies concerned.

The clear message of this report is that the liberalisation of air transport will massively benefit the economies of all the countries in the region.

Contents

Glossary

BASA	bilateral air service agreement
CAB	Civil Aeronautics Board
GDP	Gross Domestic Product
GDS	global distribution system
IATA	International Air Transport Association
LAM	Linhas Aereas do Mozambique
SADC	South African Development Community
T&T	travel and tourism industry
UNWTO	World Tourism Organization
WTTC	World Travel & Tourism Council
WTTC-TSA	World Travel and Tourism Council Tourism Satellite Accounts

Overview

THIS REPORT shows that, should air transport in the South African Development Community (SADC) be liberalised, the entire region will reap the benefits of increased economic growth and employment opportunities.

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 can fly to them. These restrictions make it more expensive to travel by air to SADC, and so reduce the number of tourists who visit the region.

Experiences in other regions, including developing ones, have shown that the liberalisation of air transport invariably leads to significant gains for consumers, and boosts economic activity. More specifically, it results in increased trade, higher levels of foreign direct investment, and increased tourism – all of which directly contribute to job creation.

The results of this research indicate that, should air transport in SADC be entirely liberalised, more than 500 000 additional foreign tourists would arrive in the region by air every year. They would spend more than US$500 million, which would increase SADC's Gross Domestic Product (GDP) by R1.5 billion, or half a percent. Some 35 000 new jobs would be created in the travel and tourism industry alone, and a further 37 000 in the wider SADC

economy. This is a relatively easy way to boost tourism and economic growth in the region, as the changes to regulations this will require are far easier to introduce than many other policy interventions.

Experiences of liberalisation

African countries such as Kenya, Egypt, and Uganda have already liberalised their air transport markets, with generally positive results. Kenya and Egypt's national airlines have done well, and their tourism industries have benefited. Uganda has felt the benefits even though it does not have a national airline.

The benefits of liberalisation are particularly evident on the Nairobi–Johannesburg route. The air service agreement between the two countries was liberalised in May 2000. Limits on additional airlines flying the route were lifted, and the number of flights allowed was increased from four to 14 a day. The agreement was further liberalised in 2003, when the remaining restrictions on the number of flights were lifted. Our research shows that, between May 2000 and September 2005, monthly passenger volumes increased by 69 percent over the pre-liberalisation trend.

The domestic South African air transport market also benefited considerably from

The liberalisation of air transport leads to significant gains for consumers, and boosts economic activity

liberalisation in the early 1990s. During the 1990s and early 2000s passenger volumes on domestic routes increased by more than 80 percent. Liberalisation allowed for the entry of two low-cost airlines: Kulula in 2001, and 1time in 2004. These airlines initially only flew on the more established high-volume routes, but as they grew they started to fly to smaller centres such as George and East London as well. The impact on these routes has been considerable: after Kulula started flying to George, total passenger volumes on that route increased by 159 percent between 1998 and 2005; similarly, within a year of 1time starting to fly to East London in 2005, total passenger volumes on that route increased by 52 percent. The success of South Africa's low-cost airlines has enabled them to start flying to other SADC member states.

The Lusaka–Johannesburg route strikingly demonstrates the benefits of allowing the entry of a low-cost airline. In early 2006 Zambian Airways agreed to let Kulula operate the Lusaka–Johannesburg route on its behalf. The results have been dramatic; in just three months, from April to June, passenger volumes increased by 38 percent (compared with the same period the previous year), and ticket prices dropped by 33–38 percent.

The Lusaka–Johannesburg route strikingly demonstrates the benefits of allowing the entry of a low-cost airline

Policy conflict in Mozambique

Mozambique presents a clear example of a conflict between the interests of tourism and those of the national airline. The Mozambican government has recognised the importance of tourism to its national economy, as reflected in its creation of a Ministry of Tourism in 2000, and the drafting of a number of plans for the development of the tourism sector. However, it continues to protect the national airline by restricting competition on international routes. This artificially reduces the number of tourists visiting Mozambique, thus undermining the government's own tourism objectives.

The effects of these restrictions are discernible in the cost of flying from Johannesburg to Maputo compared with flying from Johannesburg to Durban. The former route is vital to Mozambique's tourism industry, as most tourists enter and leave the region via Johannesburg.

As Durban and Maputo are a similar distance from Johannesburg, the costs of flying to either destination should be more or less the same. However, return flights to Maputo are 163 percent more expensive than return flights to Durban (put differently, a ticket to Durban is 62 percent cheaper than a ticket to Maputo). This clearly influences the decision of South African or foreign tourists who have to decide between the two cities.

Liberalising air transport in Mozambique would allow greater competition between the incumbent airlines as well as the entry of new ones, including low-cost operators. Prices on the Johannesburg–Maputo route should then drop to the same level of those on the Johannesburg–Durban route. Our research shows that this would increase tourist arrivals by 37 percent, increase tourist spend by US$5 million, and add US$9 million to Mozambique's GDP. It would create 1 000 new jobs in the tourism industry, and about 2 000 more in the wider economy. At the moment, Mozambique's national carrier, LAM Mozambique Airlines, has only 645 employees. This highlights the disproportionately high costs of continuing to protect the national airline at the expense of the tourism industry.

Two statistical analyses

To gain a better understanding of the impact of air transport liberalisation on air fares and air traffic volumes in the region, two statistical, or econometric, analyses were conducted. These involved 12 SADC member states, namely Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi,

Mozambique, Namibia, Swaziland, Tanzania, Zambia, and Zimbabwe.

As regards air fares, the impact of liberalisation on air fares on 56 routes in SADC was analysed. The results show that air fares are 18 percent lower on liberalised routes, which, according to the available literature, could have increased passenger volumes by 14–32 percent, with the higher figure more likely. The analysis also shows that the presence of a low-cost airline on a given route has reduced prices by an average of 40 percent, which could have increased passenger volumes by 32–72 percent. The extent to which a low-cost airline can actually increase passenger volumes on a given route will be limited by restrictions on the number of flights on the route, as well as factors such as the capacity of the airports involved.

As regards passenger volumes, the impact of liberalisation on passenger volumes from 1999 to 2004 on 16 routes between Johannesburg and other destinations in SADC was analysed. The results show that, following more liberal bilateral agreements, passenger volumes increased by an average of 23 percent, and that large, once-off increases in capacity allowed by the bilateral agreements further increased passenger volumes by an average of 12 percent.

The case studies, volume analysis, and price analysis all show that liberalisation leads to higher passenger volumes and lower prices. They also show that the effects of liberalisation in SADC would be similar to those in other regions of the world. Indications are that liberalisation would increase passenger volumes in the region by 20 percent (an average of estimates in the price and volume econometric analyses). This is conservative compared to previous studies elsewhere, which found that liberalisation increased passenger volumes in the United States by 33 percent, and in the European Union by 40 percent. The estimates for SADC are lower than international experience suggests, in part reflecting

a conservative approach, but also reflecting the fact that the routes which have been liberalised are long-distance ones for which little substitution away from road transport would be expected; therefore, our figures underestimate the increase in air travel as a result of liberalisation. Furthermore, these results may well be lower because, relative to the United States and Europe, liberalisation in SADC thus far has been modest.

The benefits of liberalisation

The consequences of a 20 percent increase in air travel would be significant. Research shows that this would result in 500 000 more foreign tourists visiting SADC every year. They would spend more than US$500 million on tourism-related activities. This, plus the multiplier effect on the wider SADC economy, would increase the region's GDP by about US$1,5 billion a year, or about half a percent. Some 35 000 new jobs would be created in the travel and tourism industry alone, and a further 37 000 in the wider SADC economy.

Impact on national airlines

The concern that air transport liberalisation may harm national airlines is a legitimate one. Following liberalisation in other parts of the world, many national carriers suffered reduced profits, or became unprofitable. Some major 'legacy' carriers have gone into bankruptcy protection, or become defunct. However, this need not happen to national carriers in SADC. Liberalisation should significantly increase passenger volumes, which would provide opportunities for national airlines to expand and cut costs as a result of operating on a larger scale. Kenya Airways and Ethiopian Airlines are examples of African airlines that are successfully operating in liberalised markets.

Other steps can also be taken to strengthen

The case studies show that the effects of liberalisation in SADC would be similar to those in other regions of the world

national airlines in SADC. Among these is separating the airline from the state bureaucracy. This does not require privatisation but rather that the airline is run on commercial principles. Other alternatives are mergers, alliances, joint ventures and lease agreements, all of which offer win-win solutions for national airlines.

Some governments may well decide that liberalisation will have dire consequences for their national airlines. However, if they decide to support the growth of their tourist industries over the health of their airlines, they stand to reap much greater benefits in terms of economic growth and job creation.

Our research shows that, in numerous SADC countries, the national airline employs far fewer people than those in the tourism sector who provide services to tourists arriving by air. These figures suggest that liberalisation would have to increase the latter category of people by only four percent for the number of *additional* jobs in that sector to outweigh the *total* number of jobs in the national airline.

> For most countries, the benefits of a 20 percent increase in passenger volumes will far outweigh any negative consequences for their national airlines

For most countries, the benefits of a 20 percent increase in passenger volumes will far outweigh any negative consequences for their national airlines. Tourism also has far greater knock-on effects on broader economies than national airlines. Tourism sectors mainly source their inputs from local economies, and the wider economic benefits of tourism are far greater than those of national airlines, which mainly import the goods and services they need, such as aircraft parts, equipment, and fuel.

It is not essential to have a national airline to have a healthy, growing tourism sector. Uganda's tourism sector has thrived in the absence of a national airline. In 2002 Uganda allowed its loss-making national carrier, Uganda Airlines, to go into liquidation. Despite the failure of a number of new private airlines, a liberalised air transport policy has led to substantial growth in tourism traffic and receipts. In 2000 Uganda hosted 193 000 international tourists, who spent US$151 million. By 2004 this figure had increased by 82 percent to 350 000 tourists, who spent US$271 million (a 79 percent increase). Tourism is now Uganda's top foreign exchange earner, substantially outclassing traditional export leaders such as coffee and tea. International passenger traffic at Entebbe airport, having stagnated from 1996 through 2002, increased in both 2003 and 2004.

Regional implications

Continuing to restrict airline markets has important consequences for SADC's attractiveness as a region. When tourists from the region travel to Europe they are able to visit a number of countries on the same trip, and therefore tend to consider the attractions of numerous countries rather than those of just one country. The same should be true in respect of SADC. This requires cost-effective air travel, as using road or rail to visit a number of countries in the region on a single trip is difficult due to the long distances and travel times. Air travel allows tourists to move rapidly from one country to another, thus enabling them to visit a number of countries in a short period. However, regulated air transport regimes makes this costly and difficult to organise on short notice, due to the lack of available seats.

While restrictions on airline markets clearly harm the tourism sectors of individual countries, they also harm the region as a whole, as all its countries become less attractive as tourist destinations. This suggests that SADC should regard liberalising its air transport markets as a priority. With hundreds of thousands of visitors expected to visit the region for the 2010 Soccer World Cup, this mega-event presents SADC countries with a major challenge as well as a major opportunity.

Introduction

NUMEROUS SADC member states continue to restrict their air transport markets. They are still using a system of air transport regulation implemented just after World War 2. For more than 20 years after the war, governments throughout the world placed restrictions on the operation of their air markets. Governments and airlines came together in various forums to agree on the prices that consumers would be charged, and how many tickets would be sold.

Since the late 1970s many countries have overhauled these restrictions, and liberalised their air transport markets. This has allowed prices and the number of seats to be determined through competition for passengers rather than through negotiation between airlines and governments. This has brought air transport in line with other major international industries, and has led to significant gains for consumers and the economies of those countries that have chosen to liberalise (Doganis 2006).

Slow progress in SADC

Liberalisation has progressed rapidly in many parts of the world. However, in some regions, including SADC, progress has been slow. The continued reluctance of many SADC countries to liberalise their air transport regimes is mainly related to concerns that liberalisation and the increased competitive pressures resulting from it will undermine the viability of their national carriers. These concerns overshadow the significant benefits likely to arise from liberalisation. In particular, failing to liberalise has important implications for the tourist industries of SADC member states.

In 2003 Oxford Economic Forecasting (ATAG 2003) concluded that: 'Perhaps the major contribution that air services can make to economic development in Africa is through developing and promoting international tourism. Tourism is the principal export-earner for 30 percent of developing countries, including several SADC states, and it continues to grow. It facilitates poverty reduction by generating economic growth, providing employment opportunities and increasing tax collection, and by fostering the development and conservation of protected areas and the environment in general. Economies with high growth during the last decade (for example, Mauritius, Tunisia, Egypt, Ghana) have tended to be those where the tourism sector is key to economic activity.'

Artificially restricting the growth of airline markets by continuing to impose various restrictions on competition undermines the

Failing to liberalise has important implications for the tourist industries of SADC member states

development of tourism, with implications for economic growth and the ability of countries to generate employment and combat poverty.

Tangible benefits

The risks of liberalisation for national airlines are well known, and the airlines themselves are a dedicated lobby group in this regard. In contrast, the benefits of liberalisation are often underestimated, as they are spread throughout society. This report is aimed at making these benefits more discernible by quantifying them. It evaluates the likely impact of air transport liberalisation on the tourism industries and economies of SADC member states.

This is done in the light of past experiences of liberalisation internationally, in Africa, and within SADC.

The analysis is set out in three sections:
- a review of international experience;
- case studies of liberalisation in SADC, and the likely benefits of liberalisation for Mozambique in particular; and
- two statistical models that demonstrate the impact of liberalisation on air transport markets in SADC. These models are used in conjunction with tourism accounts from the World Travel & Tourism Council (WTTC) and data from the World Tourism Organization (UNWTO) to calculate the likely impact of liberalisation on employment and GDP in SADC.

The role of air transport in enabling growth

In a context of increasing globalisation, air transport plays a vital role in global, regional, and national economies. In 2004 the air transport industry in Africa employed 500 000 people and contributed US$11 billion to the continent's GDP, an amount similar to the GDP of Tanzania (ATAG 2005). While air transport plays an important role in itself, its main role is to facilitate economic activity. If these catalytic effects are included, it is estimated that the air transport industry in Africa contributes US$55 billion to the continent's GDP, and creates jobs for 3,1 million people (Ibid).

The International Air Transport Association (IATA) has found that a 10 percent increase in air transport boosts GDP by 1,6 percent in the long run. Forty percent of this increase comes from additional business investment, and 60 percent from improved productivity (Pearce). This mainly results from increases in trade, investment, and tourism.

Trade: Air transport is central to transporting manufactured goods, with 40 percent of inter-regional trade in manufactured goods (by value) being transported by air. It also allows companies to trade more effectively by enabling face-to-face meetings. Air transport plays a key role in developing countries by expanding their citizens' opportunities to join the global economy. For example, exports by air of agricultural products such as fresh vegetables and cut flowers – mainly to Europe

– are one of Kenya's largest industries, and its second biggest earner of foreign exchange (ibid).

Investment: Good air transport links play a central role in companies' investment decisions. They are especially important for investments in manufacturing and services, where face-to-face contact is important. Foreign investors are wary of making investments in areas where the absence of air links makes short visits, on short notice, difficult and expensive. For this reason, 56 percent of European companies regard international transport links as essential to deciding where to locate new business (Healey & Baker 2003). IATA has found that an increase in air connectivity of 10 percent (number of routes and flights) typically leads to additional investment of 1,4 percent (Pearce).

Tourism: Air transport is certainly vital to tourism. In Africa, 20 percent of jobs in the tourism sector are supported by tourists arriving by air. For many countries in Africa, foreign tourists are an important driver of growth, and these tourists require efficient and effective air services.

Air transport, and by implication air transport liberalisation, also contributes significantly to trade and investment. Air transport has a particularly important role to play in the growth of SADC, whose economies are geographically isolated, sometimes landlocked, and often hamstrung by poor transport infrastructure. ■

International experience

THE REGULATORY framework governing international air transport was established after World War 2. Its building blocks are bilateral air service agreements (BASAs) – trade agreements between states that regulate airline travel between them. Their primary purpose is to control market access (which airports and cities are served) and entry (which airlines service those routes). These agreements play an important role in ensuring safety and other objectives. However, they have also become a mechanism for curtailing competition between airlines.

Until the late 1970s most air service agreements tightly regulated the behaviour of airlines. They typically only allowed one state-owned airline from each country to operate on a given route (single designation). The governments involved either agreed on tariffs between them, or required that tariffs be determined via IATA. Furthermore, the number of seats flown by each airline (capacity) was often agreed on by the respective governments, or split on a 50:50 basis between their national carriers. As a result, these airlines had little incentive to compete with one another, and thus the number of passengers carried and the air fares were effectively determined by agreements between the governments and airlines.

In most markets a single state-owned air-line was allowed to operate. An exception was the American domestic market where a number of private sector airlines were allowed to operate under the aegis of the Civil Aeronautics Board (CAB). The board regulated which routes airlines could serve, and how much they could charge (Borenstein 1992).

Initial steps

The initial drive towards lifting restrictions on air transport developed in the United States. Popular pressure for pro-consumer deregulation led to the 1978 Deregulation Act, which ended the CAB's role as regulator. 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 the hub-and-spoke system of air routes.[1]

As a result of liberalisation, by 1988 passenger volumes had increased by 41 percent (McKenzie 1982). Overall, since 1980 liberalisation has benefited American consumers by US$25 billion a year (in 2006 US dollars).[2]

Domestic liberalisation gave impetus to American initiatives to liberalise international bilateral agreements. From 1978 to 1980 the United States entered into liberal bilateral agreements with a number of European (The Netherlands, Germany, Belgium) and Asian

Domestic liberalisation gave impetus to American initiatives to liberalise international bilateral agreements

(Singapore, Thailand, Korea) countries. These open market agreements lifted restrictions on prices, the number of flights, and the number of seats offered, and allowed airlines to enter additional markets. Airlines had to compete for passengers. Competition determined prices, and the number of passengers carried. While the open market agreements of the late 1970s did lead to significant liberalisation, some routes were less liberalised than others, and even the most liberalised agreements still restricted the routes (city-pairs) that airlines could service. These remaining restrictions were lifted by the open skies agreements of the 1990s.

In the late 1980s and 1990s the European Union followed America's lead with a process of phased liberalisation, culminating in the establishment of the Single Aviation Market in 1992. This was an entirely new air transport regime that ended all restrictions on price and entry (InterVISTAS-ga2 2006). It allowed for greater competition, and passenger volumes rose by 44 million (or 33 percent) from 1993 to 2002.

As a result of these successes, liberalisation spread to other countries. In 1999 African ministers in charge of civil aviation agreed to the Yamoussoukro Decision (a decision to implement the Yamoussoukro Declaration of 1988), which committed their countries to liberalising their air transport markets by amending domestic laws. They agreed to lift all state involvement in setting fares, and end most restrictions on entry and the number of flights or seats that airlines could offer (ECA 1999). In practice, the Yamoussoukro Decision has been mainly implemented through changes in bilateral agreements. Progress has been made in East and West Africa, but implementation within SADC has been slow.

Low-cost airlines

An important contributor to the success of liberalisation in the European Union and the United States was the entry of a new type of

airline: the low-cost or 'no-frills' airline.[3] These airlines dramatically lowered air fares, which significantly increased passenger volumes. In the United States the pioneer in this field was Southwest Airlines. Deregulation in the late 1970s allowed Southwest to extend its services from its base in Texas throughout the country. Southwest has been able to use its low cost base to offer tickets up to 60 percent cheaper than the prevailing prices. In Europe, deregulation facilitated the entry of low-cost airlines such as Ryanair and EasyJet.

The effect on fares is clearly shown by the London-Barcelona route: in March 1998 EasyJet's fares were 60–80 percent lower than those of British Airways, and the number of passengers on this route increased by 400 percent between 1997 and 2006.

The low-cost model has become more and more popular, and the number of passengers flying on low-cost airlines in Europe has grown exponentially, increasing from three million in 1994 to 100 million in 2004.

Low-cost airlines are able to offer cheaper air fares because their operating costs are far lower than those of traditional or incumbent airlines. While low-cost airlines follow different approaches, for the most part they lower their costs by simplifying their operations as well as their services to consumers. They do not provide connecting flights, and passengers are not issued with tickets. Importantly, low-cost airlines put many more seats into their airplanes, and do not offer meals, which means they can have smaller cabin crews. This is one reason why low-cost airlines do not fly routes that take more than five hours. They further reduce their costs by flying single types of aircraft, flying to uncongested airports (thus allowing faster turnaround times), and ensuring that they minimise the amount of time their aircraft are not carrying passengers.

As a result, their costs are often 60–70 percent lower than those of traditional or incumbent airlines. Figure 1 shows where these cost savings are made. Most of these cost savings are

> The number of passengers flying on low-cost airlines in europe increased from three million in 1994 to 100 million in 2004

generic to both low and high traffic routes, and are therefore applicable to all routes in SADC. More recently low-cost airlines have been successfully launched in a number of developing countries including Malaysia (Air Asia), India, and southern Africa (Kulula and 1Time).

International routes

The liberalisation of United States–European Union routes began in the late 1970s as the American government worked to extend the benefits of liberalisation beyond its own borders. During the late 1970s and early 1980s the Netherlands, Belgium, Germany, and Luxemburg entered into more liberal bilateral agreements with the United States. As a result, prices fell, and passenger volumes increased. According to one study, fares dropped by 35 percent (Dresner et al 1992); another (Maillebiau & Hansen 1995) found that fares had fallen by 35–45 percent, and passenger volumes had increased by 40 percent.[4]

The liberalisation agreements of the 1980s were followed by open skies agreements in the 1990s, which ended most of the remaining restrictions on competition in these markets. The first open skies agreement between the United States and a member of the European Union was with the Netherlands, followed by agreements with Austria, Belgium, and France, among others.[5]

A study of open aviation between the United States and the European Union, conducted by the Brattle Group for the European Commission in 2002, found that passenger volumes to Austria and the Netherlands had increased by 102 percent and 80 percent respectively. However, the benefits for the other European countries were less marked, and passenger volumes had only increased by 10 percent on average as a result of the additional liberalisation of the 1990s (significant liberalisation had already occurred in the 1980s). The report estimated that an open aviation area between the

Figure 1: How low-cost airlines save money compared with incumbent airlines
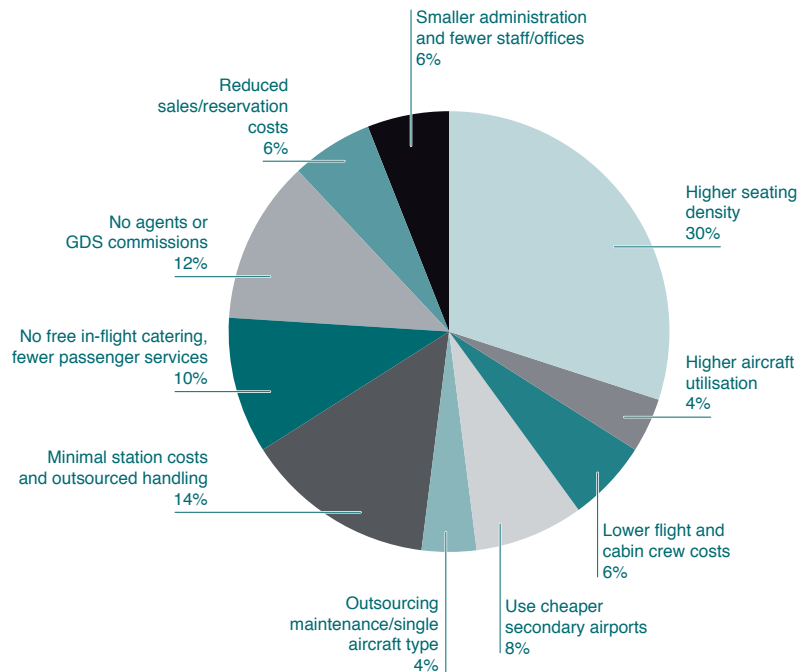
Source: Adapted from Doganis (2006).

United States and the European Union would generate consumer benefits of €2,7 billion to €2,8 billion a year. Between 2 800 and 9 000 jobs would be created in the European Union, and between 2 000 and 7 300 in the United States.

A 2006 study of the impact of restrictive bilateral agreements on 1 400 routes worldwide (InterVISTAS-ga2 2006) found that 'these obstacles operate not only between specific well-studied country pairs such as the United States and the United Kingdom, but also in a huge variety of markets, involving countries of all sizes, stages of economic development, and political systems, in every part of the world', It found that removing restrictions on capacity (the number of flights or seats on a route) would increase passenger volumes by about 25 percent, and allowing additional airlines to enter the market through 'multiple designation' clauses would increase traffic flows by 50 percent. These results suggest that liberalisation has major benefits for countries around the world.

SADC case studies

THE INTERNATIONAL experience of liberalisation has been overwhelmingly positive. This section reviews experiences of liberalisation in SADC member states, and demonstrates that this has generally been in line with experiences elsewhere in the world. It then evaluates the likely benefits for Mozambique of liberalising its bilateral agreements with South Africa.

The Nairobi–Johannesburg route

The impact of liberalisation in southern Africa is clearly demonstrated by developments on the Nairobi–Johannesburg route. In 2000 Kenya and South Africa agreed on multiple designation (allowing many airlines to fly the route), and increased the number of daily flights from four to 14 (increasing capacity). The agreement was further liberalised in 2003, when the remaining restrictions on capacity were lifted.

Figure 2 shows that, after liberalisation, passenger volumes increased by 69 percent.[6] While some of 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 passenger volumes over the period.

Domestic liberalisation in South Africa

The South African domestic market was liberalised in 1990, resulting in an increase in passenger numbers of 80 percent between 1994 and 2004. Liberalisation allowed new airlines to enter the market, and therefore greater

Figure 2: Passenger volumes on the Johannesburg–Nairobi route, 1998–2005

Source: ACSA.

competition. While many failed, two successful entrants to the scheduled air services markets were Comair and Nationwide Airlines. Their success in the domestic market provided them with a platform for launching services to other SADC member states as well as to Europe.

Liberalisation allowed low-cost airlines to enter the South African domestic market in the early 2000s. The first successful low-cost entrant was a subsidiary of Comair called Kulula. It started flying in 2001, and was followed in 2004 by 1time. These low-cost airlines initially concentrated on the more established, high-volume routes in South Africa such as Durban, Cape Town, and Johannesburg. They then extended their services to smaller towns such as George and East London.

The entry of low-cost airlines revitalised these routes, and passenger volumes increased. Figure 3 shows that, partly as a result of Kulula's entry in September 2003,[7] passengers to and from George in the Western Cape increased by 159 percent between 2001 and 2005. This is particularly remarkable as George is a small town with a population of about 160 000 (2005 estimate), 48 percent of whom live on less than R1 600 (US$246) a month. While Kulula's entry did contribute to this increase, it also spilled over on to the incumbent high-frills airlines; between 2001 and 2004, the number of passengers carried by the latter airlines increased by around 60 percent.

The Eastern Cape

East London in the Eastern Cape is another success story (see figure 4). After 1time entered the route in August 2004,[8] passenger numbers increased by 52 percent from 98 500 in the second quarter of 2004 to 150 000 in the second quarter of 2006. This has revitalised the Eastern Cape as a destination for foreign tourists. Before 1time's entry, from the first to

the second quarter of 2004, foreign tourists visiting the Eastern Cape fell by about seven percent. However, immediately after its entry, the number of tourists increased by about 13 percent (SA Tourism: various).

According to Susan Wilson of the Eastern Cape Tourism Board, 'tourism in the Eastern Cape has received a dramatic boost from the entry of low-cost airlines. Sales of holiday

Figure 3: Passenger volumes on the Johannesburg–George route, 2001–2005
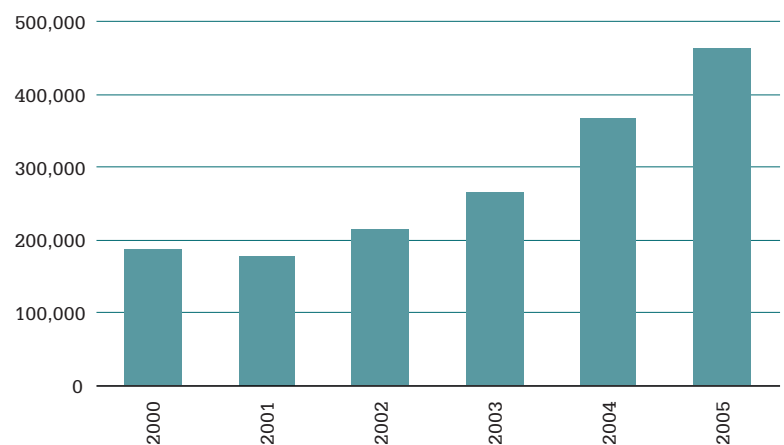
Source: Kulula.

Figure 4: Passenger volumes on the Johannesburg–East London route, 2001–2005
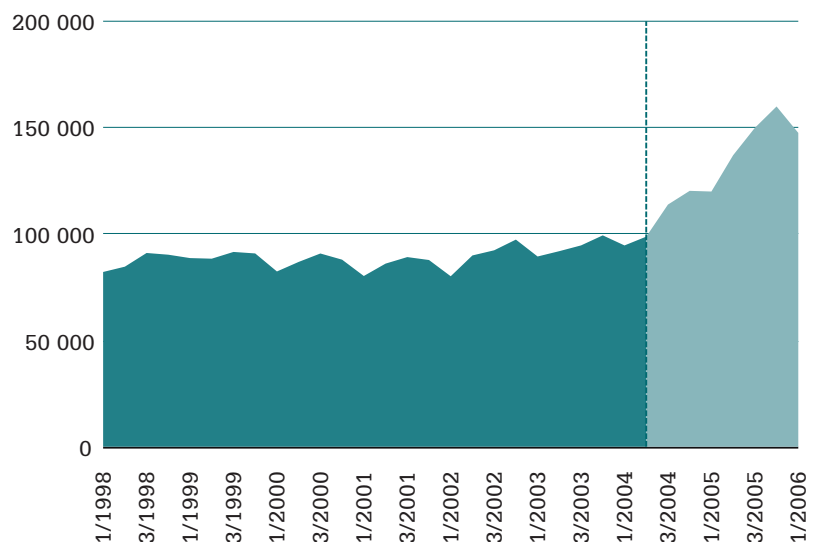
Note: 1time's arrival on the route is marked by a vertical line.
Source: ACSA.

packages to the Eastern Cape have increased by more than 50 percent as a result.' This example emphasises the direct benefits of liberalisation for tourism, and also suggests that the entry of a low-cost airline leads to significant additional tourist arrivals rather than merely redirecting tourists away from road transport.

The entry of low-cost airlines has been particularly important for East London. East London is more than eight hours by road from the two main entry points for foreign tourists to South Africa, namely Johannesburg and Cape Town. These cities are also the main sources of domestic tourism. Tourism is particularly important for the Eastern Cape as it is one of the poorest provinces in South Africa, with a per capita GDP of R9 092 (US$1400) – 48 percent below the national average of R18 727 (US$2 880).[9] The increase in tourism following 1time's entry is probably having a significant impact on the province's economy – a 52 percent increase in foreign tourist arrivals in the Eastern Cape translates into an additional 62 000 foreign tourists a year, and an additional R65,8 million (US$10 million) in tourist spend.[10]

The Johannesburg–Lusaka route

Following its success inside South Africa, Kulula has begun to fly to Harare, Lusaka, and Windhoek. The Johannesburg–Lusaka route demonstrates the potential impact of low-cost airlines even on previously moribund routes. Early in 2006 Zambian Airways signed a wet lease agreement with Kulula that enabled the latter to start flying the Johannesburg-Lusaka route, which Zambian Airways had stopped doing – leaving SAA as the sole operator. A wet lease involves the leasing of aircraft with flight crews, and possibly cabin crews and maintenance support as well. (A dry lease involves just the aircraft without any additional support.)

In just three months there was a spectacular impact on prices and passenger volumes; Figure 5 shows that passenger volumes increased by 38 percent (year-on-year), and air fares dropped by 33 percent at the top end and 38 percent at the bottom end. The likely impact on the Zambian economy is significant. In 2004 some 16 600 tourists arrived in Zambia by air. A 38 percent increase translates into an additional 6 300 tourists a year, and additional tourist spend of US$8,9 million a year.[11]

The Johannesburg–Lusaka route is an anomaly; as Zambian Airways had stopped flying the route, Kulula could start flying using capacity assigned to Zambian Airways. However, in general, SADC routes will only be able

Figure 5: Passenger volumes on the Johannesburg–Lusaka route, April–June 2005 and 2006
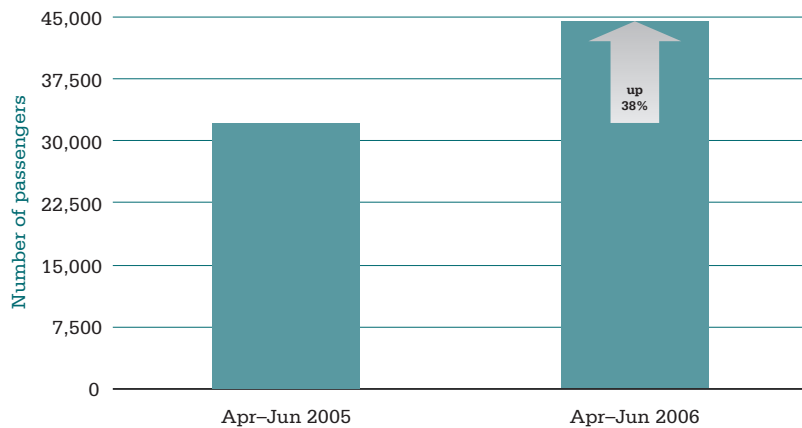
SAA air fares to Lusaka before and after the entry of Zambian Airways (Kulula)
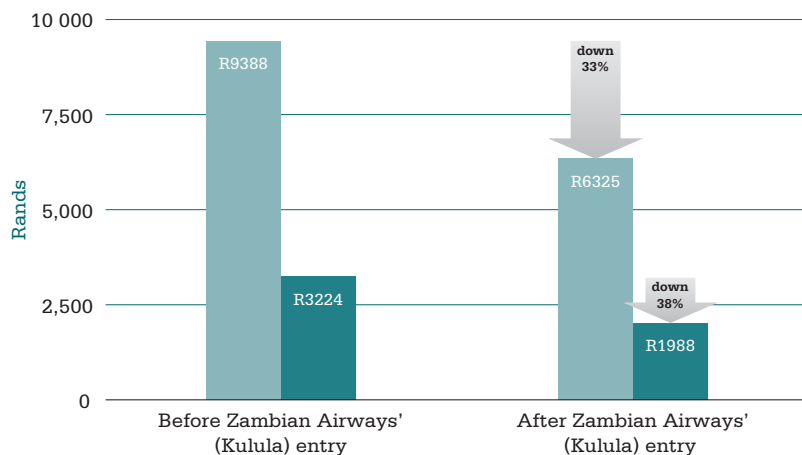
Source: Kulula for data on passenger volumes and prices before the entry of Zambian Airways (Kulula); SAA (www.flysaa.com) for prices after the entry of Zambian Airways.

Policy conflict in Mozambique

Mozambique clearly demonstrates the potential effects of a conflict between a government's tourism policy and its policy towards its national airline. The Mozambican government has recognised the importance of tourism. In 2000 it created a Ministry of Tourism, and it has drafted a number of plans for the development of the sector.[12] However, it continues to protect the national airline by restricting international routes. This artificially reduces the number of tourists visiting Mozambique, and undermines the tourism policy. The costs of supporting the national airline clearly outweigh the benefits of liberalisation in terms of job creation and economic growth.

The government has gradually moved towards liberalisation. The state-owned domestic airline, LAM Mozambique Airlines, previously had a monopoly in both the domestic and international markets. In 2002 the domestic market was partially liberalised, allowing smaller airlines to start flying internal routes. The government attempted to privatise LAM in 1997, but the privatisation agency, Unidade Técnica para a Reestruturaçäo de Empresas, was not satisfied with any of the bids (NORAD 2002).

According to the Economic Intelligence Unit (2003), there are signs that the Mozambican government wants to fully liberalise the country's air transport markets, but it is facing opposition from vested interests within the country. It continues to restrict international routes, which is having a detrimental effect on tourism.

Mozambique has stunning tourist attractions. With 2 500 kilometres of coastline, white beaches, and clear blue water, it is an ideal beach holiday destination. The interior has wildlife and rugged mountains. About 10 percent of Mozambique's land area has been set aside for wildlife management, including national parks, game reserves, and hunting areas (NORAD 2002). This rich natural heritage puts it in an extremely good position to attract tourists. However, its bilateral air service agreements make it expensive for tourists to get there.

The agreement between South Africa and Mozambique does not allow more than one airline from each country to fly a particular route, and restricts the number of seats. The results are evident in the cost of flying to Maputo from Johannesburg compared with flying from Johannesburg to Durban (figure 6). Durban and Maputo are a similar distance from Johannesburg, so flights to either from Johannesburg should cost more or less the same. However, if airport taxes are excluded, the cheapest return fare to Maputo is 163 percent more expensive than to Durban (alternatively, flying to Durban is 62 percent cheaper than flying to Maputo).[13]

Therefore, while Durban and Maputo are both beach holiday destinations, virtually the

Figure 6: The costs of travelling from Johannesburg to Durban and Maputo by various means

same distance away from Johannesburg, flying to Maputo is significantly more expensive. This will clearly influence the decision of a tourist flying in from overseas who has to decide between the two destinations.

The benefits of liberalisation

Liberalisation would allow for greater competition between the incumbent airlines and new airlines, including low-cost ones. This should cause prices on the Johannesburg–Maputo route to fall to the levels experienced on the Johannesburg-Durban route – a drop of 37 percent (assuming that airport taxes do not change).

Table 1 uses two different measures of elasticity to present two different scenarios. Elasticity is the degree to which passenger volumes 'stretch' in response to a given fall in prices.

Table 1: The estimated impact of liberalising air transport between South Africa and Mozambique

	Scenario 1 – (elasticity of 1)[17]	
Impact on passenger volumes	37%	67%[18]
Increase in Tourists arriving by air	9,011	16,220
Increase in tourist spend (US$)	+$5mil	+$8 mil
Multiplier effect on economy (US$)	+$9mil	+$17 mil
Total impact on GDP of economy (US$)	+$14 mil	+$25 mil
Additional direct employment	+1,264	+2,275
Additional indirect employment	+1,934	+3,481
Total impact on employment	+3,198	+5,757

Source: Genesis calculations.
Notes: These calculations are based on 2004 tourism data obtained from the World Tourism Organisation. The level of employment in the tourism sector is a figure for 2003; more recent data was not available.

Scenario one: Assuming that passenger volumes increase by 37 percent,[14] this would increase tourist spend by at least US$5 million, and add an additional US$9 million in GDP for the wider economy (see appendix for

more details). This would increase employment in travel and tourism by 1 000 and in the wider economy by 2 000, making for an overall increase in employment of 3 000 (see appendix for data and method).[15] While these figures are based on studies in other SADC countries, they suggest that the increase in employment as a result of liberalisation is likely to be far greater than the entire number of people employed at LAM, which is 645.[16]

However, even if liberalisation did lead to the failure of LAM, most of these employees would probably be absorbed in an expanded air travel sector (as the number of people flying by air increases), or in the wider travel and tourism industry. Therefore, the impact on the Mozambican economy of restricting this single route probably vastly outweighs any gains in employment or revenue from continuing to support LAM.

Experiences on the Johannesburg to George route suggest that these estimates may be conservative; the entry of low-cost airlines on this route led to a 159 percent increase in passenger volumes.

Scenario two: This is based on an increase in passenger volumes of 67 percent, and demonstrates that the results for scenario one are quite conservative. The economic literature suggests that passenger volumes could increase by up to 67 percent in response to a price fall of 37 percent. This would generate an increase in economic activity of more than $25 million, and result in 5 500 more jobs.

Air transport liberalisation is likely to bring huge benefits to Mozambique. The potential threat to the national airline will be more than compensated for by the increase in employment and GDP.

Conclusion

It is clear that the liberalisation of air services increases passenger volumes, decreases

prices, and allows the entry of new players. The examples in this section illustrate these effects. One of the main benefits of the liberalisation of air transport is its positive impact on tourism. This is clearly illustrated by developments in the Eastern Cape, a province in South Africa characterised by extensive poverty and tourism potential. Here the entry of low-cost airlines has led to the rejuvenation of the tourist industry with significant benefits for job creation. This suggests that countries such as Mozambique are forgoing significant gains for their tourism sectors by continuing to restrict their air transport markets.

The impact of liberalisation on SADC member states

Table 2: The impact of liberalisation on passenger volumes between Johannesburg and 16 SADC member states, 1999-2004

Impact on passenger volumes (per quarter)	Average % change
Moving to a more liberal bilateral agreement	+23%
Large once-off increases in capacity allowed by the bilateral agreement (ie, not including phased increases designed to accommodate increased demand)	+12%

N THIS section, two econometric (statistical) models are used to estimate the drop in prices and increase in passenger volumes that have resulted from the liberalisation of air transport in the region thus far. These estimates are then used to calculate the increase in tourism expenditure likely to accrue from further liberalisation.

The two models involved the use of two different data sets and statistical techniques. However, they support the same conclusion: that liberalisation within SADC has resulted in significant benefits in terms of higher passenger volumes and lower prices.

Volume analysis

The volume analysis estimates the impact of entering into liberalised bilateral agreements,

and the result of large once-off increases in capacity allowed in bilateral agreements. It uses a similar approach to the Brattle Group's 2002 study of the impact of open skies agreements on the United States and the European Union.

Data on passenger volumes from Johannesburg to 16 countries in SADC, Africa (outside SADC), Europe, and Asia were used. The increase in passenger volumes resulting from increased demand was controlled, thus allowing the impact of liberalisation to be isolated.

Table 2 shows the impact of liberalisation on passenger volumes from 1999 to 2004 on 16 routes from Johannesburg to destinations in those 16 countries.[19] After control for the demand for air travel, it shows that liberalised agreements increased passenger volumes by 23 percent. Large once-off increases in capacity increased passenger volumes by 12 percent. Due to inadequate data, the effect of low-cost airlines on passenger volumes was not calculated.[20]

Price analysis

The price analysis evaluates how much lower prices are in markets that have liberalised, and markets in which a low-cost airline operates (for this exercise, cross-sectional data

was used). Data was available for more routes than for the volume analysis, and a bigger set of countries (six countries) and routes (56 routes)[21] was used. The study was limited to SADC member states whose governments / airlines provided information on the status of their bilateral agreements; they are Tanzania, Botswana, Malawi, South Africa, Madagascar, and Mauritius. These countries account for 88 percent of SADC's combined GDP – 78 percent of tourist arrivals to these destinations are by air,[22] and so represent the bulk of economic and tourist activity in the region.

Table 3 shows the impact of liberalisation on 56 routes within SADC.[23] As detailed in the appendix, a number of regressions[24] were conducted, which produced a range of values.[25] Table 3 presents not only the results of the preferred approach, but also the results of the other regressions. The results show that air fares on liberalised routes are 18 percent lower. The economic literature suggests that this reduction can be expected to increase passenger volumes by 14–32 percent, with the higher number more likely.[26]

Furthermore, the results show that the presence of a low-cost airline reduces air fares by 40 percent, which can be expected to increase passenger volumes by 32–72 percent.[27] The extent to which a low-cost airline can actually increase passenger volumes on a given route will be limited by the bilateral agreement's restriction of the number of flights on the route, as well as factors such as the capacity of the airport in question.

Newspaper reports suggest that the bilateral agreements in respect of two of the routes on which low-cost airlines operate (Johannesburg–Harare and Johannesburg–Windhoek) limit the number of extra flights that can be placed on them. This can be expected to limit the number of additional passengers able to take advantage of these lower fares, and so cap the increase in passenger volumes resulting from the operation of these low-cost airlines (Andrew 2005). This suggests that, for

Table 3: The impact on air fares of two factors

Impact on air fares of:	Percentage change in fare	Range of values
An open market agreement governing the route	–18%	–14% to –18%
A low-cost airline present on the route	–40%	–34% to –44%

the full increase in passenger volumes to materialise, these agreements would have to be liberalised.

The results of the case studies, volume analysis, and price analysis all broadly correspond. They all suggest that liberalisation will result in higher passenger volumes, as well as lower prices. This demonstrates that the experience of liberalisation in SADC has been similar to that in other regions of the world. The econometric analysis shows that liberalisation throughout SADC would increase passenger volumes in the region by about 20 percent.[28]

This is a conservative estimate compared to studies which have found that liberalisation has increased passenger volumes by 33 percent in the United States (due to domestic liberalisation), and 40 percent in the European Union. In part, this reflects a conservative approach in the course of the research. It also reflects the fact that the liberalised routes are long-distance ones for which little substitution away from road transport would be expected, and so the numbers underestimate the increase in air travel from liberalisation. Moreover, compared with the United States and Europe, liberalisation in SADC has been modest thus far.

Benefits for the tourism industry

Air transport has significant multiplier effects on the economy or economies concerned, most notably on the tourism sector. This section outlines the data and method used to calculate the impact of liberalisation on the SADC

tourism sector, and gives the results.[29] (A fuller description is given in the appendix.)

The impact of liberalisation on GDP and employment is two-fold. The direct impact of additional foreign tourists on the travel and tourism industry involves airlines, hotels, car rental companies, and so on. The indirect impact involves manufacturing, construction, and additional government expenditure. To calculate these indirect effects, GDP and employment multipliers were applied to the direct impacts. The estimated impacts show the results for 2006 as if these countries had already experienced the full benefits of liberalisation, namely a 20 percent increase in passenger volumes. Two factors that should reduce the impact of liberalisation on SADC were taken into account, namely that some of the growth in volumes of visitors will come from within SADC, and that liberalisation has already happened on some routes.

Table 4 shows the impact of air transport liberalisation on the SADC travel and tourism (T&T) industry as well as the wider economy.[30]

Table 4: The projected economic impact of air transport liberalisation on SADC

	Arrivals by air	Additional arrivals and direct impact on T&T	Impact on wider economy (outside of T&T)	Total impact on economy
Foreign tourists arrivals*	3 736 800	651 271		
Foreign tourists spending by air travellers (US$ millions)**	3 539	708	996	1 704
Employment in the T&T industry**	195 831	34 131	37 010	71 141
Total impact on foreign tourist spending as a % of GDP***				0.60%

Source: Calculated by Genesis.

*Notes: * This estimate is based on WTO data for 2004 – the latest available.*

*** The data is for 2006, and is from the WTTC-TSA.*

**** This was estimated using GDP figures for 2004 obtained from SADC (www.sadc.int), as more recent data was not available for these countries.*

Our calculations show that if SADC[31] liberalised its air transport markets, there would be substantial gains for employment and economic activity. More than half a million additional foreign tourists would arrive by air, and they would spend more than US$500 million in the tourism sector. This, plus the multiplier effect on the wider SADC economy, would increase the region's GDP by about US$1,5 billion a year, or about half a percent. Just fewer than 35 000 new jobs would be created in the travel and tourism industry, and a further 37 000 in the wider SADC economy – a total of more than 70 000 jobs. These calculations demonstrate that countries in SADC are making significant – and, on the face of it, unwarranted – sacrifices by continuing to constrain their air transport markets.

Implications for airlines and airline employment

One obstacle to the liberalisation of air transport within SADC is its potential negative implications for national airlines. This is particularly relevant within SADC as many airlines are state-owned, losing money, and undercapitalised. International experience suggests that this concern is partially justified. Liberalisation in Europe and the United States led to drops in profits for many airlines, and some going bankrupt. However, liberalisation does not inevitably mean that all national airlines will collapse. In Europe and the United States, some national carriers have struggled, but others have adapted to and are thriving in the new, more competitive environment. However, even when a national airline is likely to suffer from liberalisation, it is clear that national governments should not allow this to rule out the development of the tourist industry. Tourism contributes far more to economic development and employment than national airlines.

A previous ComMark Trust study (Richman and Lyle 2005) has shown how national

airlines can benefit from liberalisation along with their countries' tourist industries, with Kenya Airways and EgyptAir being two notable African examples. They show that liberalisation should be seen as an opportunity, not just for tourism but also for the airline industry, as it leads to large increases in passenger volumes at lower yields.

The alternative to liberalisation is likely to prove much more costly to both a national carrier and the economy in the medium term, with a probably increasing need for public subsidy to the carrier, and an increasing opportunity cost for development of the national economy.

Kenya Airways

In 1996 Kenya Airways became the first African national carrier to be privatised, following a process that included a 26 percent capital injection by KLM. Despite setbacks from acts of terrorism in Kenya, and resultant negative travel advisories, air traffic and tourism both continue to grow. Kenya Airways is profitable, and continues to open up new routes, notably to West Africa. This has helped to establish Nairobi as a major intra- and inter-regional hub – including feeder flights to Mombasa, portal to the coastal tourist areas – as well as a destination in its own right.

EgyptAir

In the 1970s and 1980s, Egypt adopted more liberal air transport policies aimed at exploiting its wealth of heritage sites and coastal assets. The results have been impressive. Over the past 20 years, international air passenger traffic and tourist arrivals have grown by eight percent a year (11 percent a year over the past 10 years) despite political uncertainties in the region, and major setbacks from acts of terrorism. This growth has been achieved by a careful co-ordination of aviation and tourism policies. The

market share of foreign carriers has increased, but the national carrier, EgyptAir, has held its own, maintaining a 30 percent share of international passenger traffic.

Key factors for success

For airlines to take advantage of the opportunities offered by liberalisation, they need a competitive cost base and the ability to attract passengers. International experience suggests that, to achieve this, airlines should be run independently of the state bureaucracy. This does not necessarily require privatisation, but does require commercialisation. One example is Ethiopian Airlines, which is successfully run as an independent corporation while still owned by the Ethiopian government.

In general, airlines in SADC should have lower operating costs than their competitors from outside the region, as they benefit from lower labour costs. In the past, these lower labour costs were offset by higher costs of capital due to higher country risk in SADC than in Europe. The Cape Town Convention[32] has provided a mechanism for local airlines to overcome this problem, and access capital at far lower rates.

While a low-cost base is important, airlines must also be able to attract passengers. This is sometimes difficult for SADC airlines as they are often unknown to passengers from outside the region, and therefore struggle to market themselves effectively. Airlines can take steps to overcome this disadvantage. Most importantly, they can enter into alliances. One solution is to join a global alliance such as the Star Alliance or Oneworld. By joining the Star Alliance, South African Airways has been able to market itself more effectively to new and unfamiliar consumers.

Another example of integration is Comair, a private South African airline. It has a franchise agreement with British Airways in terms of which it has taken on that airline's colours

> For airlines to take advantage of the opportunities offered by liberalisation, they need a competitive cost base and the ability to attract passengers

Table 5: Employment by national airlines versus employment generated in the tourism industry by visitors arriving by air

Country	Number of employees in the national airline	Employment in the tourism sector attributable to visitors arriving by air
Botswana	320	4 925
Malawi	450	18 642
Namibia	483	4 483
Zimbabwe	1 200	4 004
Zambia	116	2 838
Mauritius	2 000	68 121
South Africa	10 684	137 697
Tanzania	270	122 689

Source: Survey of airlines and Genesis calculations.

Note: The employment data for SAA has been drawn from its 2005 Annual Report and excludes ± 3000 people employed by its subsidiary SAA Technical, which maintains SAA aircraft as well as those of other airlines. However, to be conservative, we have included this number.

and livery. From a passenger's perspective, this level of integration means that there is little difference between a British Airways and a Comair flight, thus enabling Comair to attract passengers who may otherwise be wary of flying on an unfamiliar airline.

An example of looser integration is Kenya Airways. It has merged its Msafiri frequent flier programme with KLM's Flying Dutchman programme,[33] thus making its services more attractive to KLM's large base of frequent fliers.

Protection against anti-competitive practices

National airlines within SADC may well be concerned that larger airlines could use their bulk to push them out of the regional market. However, a number of larger airlines serving the region, such as South African Airways and various European airlines, are located in countries with effective competition agencies. This provides other airlines in the region with significant protection against anti-competitive conduct. For example, airlines flying out of other SADC countries to South Africa can bring South African Airways before the South African competition authorities. This protects them against anti-competitive practices by this airline. South Africa's competition authorities are quite willing to enforce the Competition Act, as shown by the spate of decisions against South African Airways.

Employment opportunities

Some national governments may well decide that liberalisation will have dire consequence for their national airlines. In these cases, it will be far better for employment and economic growth if they choose to support the growth of their tourism industries over the health of their national airlines. The tourism sector employs many more people than the highly capital-intensive airline industry.

In a number of SADC countries, the national airline employs far fewer people than those directly providing services to tourists arriving by air (see table 5). These numbers suggest that, on average, liberalisation would have to increase the number of people providing those services by only four percent for the *additional* jobs to outweigh the *total* number of jobs provided by the national airline.

In most SADC countries, the benefits of a 20 percent increase in passenger volumes will far outweigh the effects of a decline in the national airline's competitive position. Also, the tourism sector has far greater knock-on benefits for the local economy than the national airline. It mainly sources its inputs locally, while national airlines mainly import the goods and services they need such as aircraft parts, equipment, and fuel.

Uganda's experience

A healthy and growing tourism sector does not depend upon the existence of a national airliner (Richman and Lyle 2005), and Uganda's tourism sector has thrived in the absence of a national carrier. In 2002 Uganda allowed its loss-making national carrier, Uganda Airlines, to go into liquidation. Despite the failure of a number of new private airlines, a liberalised air transport policy has led to substantial growth in tourism traffic and receipts. In 2000 Uganda received 193 000 international tourists, who spend $151 million. By 2004 this had increased to 350 000 tourists (an 82 percent increase), who spent US$271 million (a 79 percent increase). Tourism is now the country's number one foreign exchange earner, substantially outclassing traditional export leaders such as coffee and tea. International passenger traffic at Entebbe airport, having stagnated from 1996 through 2002, increased in both 2003 and 2004.

Conclusion

The benefits for SADC of liberalising its international air transport markets will be highly significant. Over the past 25 years, countries around the world have liberalised their air transport regimes, with considerable benefits for their airline industries in terms of output and employment as well as for their overall economies.

In the European Union, air travel has increased by 33 percent, and in the United States, domestic liberalisation has led to an increase of 41 percent. Similar gains have been seen in SADC and other African countries that have liberalised, even partly so.

Two statistical exercises suggest that liberalisation within SADC could increase traffic volumes by up to 20 percent. Using this estimate to quantify the impact on the tourism industry, calculations suggest that if SADC[34]

liberalised its air transport markets, there would be substantial gains for employment and economic activity throughout the region. Liberalisation would increase GDP by $1,5 billion a year, or about a half a percent, and an additional 70 000 jobs would be created.

These calculations demonstrate that countries in SADC are making significant sacrifices by continuing to restrict their air transport markets. While concerns that the national airline may not prosper in the liberalised environment are valid, there is little to suggest that this warrants giving up the significant economic rewards that arise from a growing tourism industry.

Research methods

THIS SECTION provides a detailed explanation of the econometric analysis of the prices and volumes of air transport involving SADC member states. The two analyses complement each other. However, they are based on different data sets and use different econometric approaches, and we will therefore discuss them separately.

Price analysis

In the price analysis, we estimated the impact of (a) air transport liberalisation and (b) the presence of a low-cost airline on the rates charged by airlines.

Data

We used cross-sectional data that we collected from (a) a Global Distribution System; (b) a survey of national governments and airlines in the region; and (c) two country/city-level data sets. From the Global Distribution System we collected data on air fares, the number of flights flown, and the number of airlines travelling on a given route.[35] Our use of the lowest fare as a measure of the average fare paid by tourists is in line with the approach used by academic authors in this field (particularly Dresner & Thretheway 1992).

We tried to survey all governments in SADC on the contents of their bilateral agreements. We received a positive response from Tanzania, Botswana, Malawi, South Africa, Mauritius, and Madagascar, and were therefore limited to those countries in our analysis. The survey contained questions about the number of airlines allowed to operate on given routes to and from those countries (single or multiple designations), capacity restrictions on those routes (restrictions on the number of flights, etc), and 'fifth freedom' rights (the right to pick up passengers and carry them to another destination).[36] We collected data on GDP, population, and GDP per capita from the World Bank,[37] and data on great circle distances from the CEPII database of distances.[38]

Estimation

We modelled rates charged by airlines as a function of distance, distance squared, the estimated number of flights, the state of liberalisation of the bilateral agreement governing the route in question, and presence of a low-cost airline. In line with Dresner and Tretheway (1992),[39] we

attempted to control for endogeneity between traffic volumes/liberalisation and price by using a two-stage, least-squares regression. As we were unable to obtain passenger volumes for the various routes included in our sample, we used the number of flights per week as a proxy for passenger volumes. We modelled the number of flights as a function of GDP, population, and distance.[40] The two stages are shown below:

Stage 1

$$Flights = \beta_0 + \beta_1 Log(Distance) + \beta_2 Log(GDP) + \beta_3 Log\ (Population) + e$$

Where:

Flights = the number of flights flown per week on the given route

Distance = the Great Circle Distance between the two cities on the route

GDP = the product of the GDP of both countries (ie, the GDP of the destination country multiplied by the GDP of the origin country)

Population = the product of the population of both countries (ie, the population of the destination country multiplied by the population of the origin country)

Stage 2

$$FarePerKm = \beta_0 + \beta_1 Distance + \beta_2 Distance^2 + \beta_3 OpenSkies + \beta_4 LowCost + \beta_5 FlightsFit + e$$

Where:

FarePerKm = the cheapest fare per km for the given route[41]

Distance = the Great Circle Distance between the two cities on the route expressed in 1000 km

Figure 7: Relationship between fare per kilometre (including airport taxes) and distance

Source: Calculations by Genesis; fares obtained from a Global Distribution System.

$Distance^2$ = a squared term for *Distance*

OpenSkies = a dummy variable indicating routes which are not restricted by the bilateral agreements that govern them[42]

LowCost = a dummy which measures the presence of a low-cost airline on the route.[43]

FlightsFit = the predicted value for flights obtained from Stage 1

Distance was included in the regression to capture economies of length. A priori, we expected the coefficient on distance to be negative, as we expected the cost per kilometre to decrease as the fixed costs incurred at terminals were spread over more kilometres.[44] We included a squared term for distance to allow for the possibility that its influence over the fare per kilometre was non-linear. The rationale for this specification is evident when one examines the relationship between the fare per kilometre and distance, as shown in figure 7. Given the strong convex relationship, we expected the coefficient on the squared distance term to be positive.

We obtained the following regression for Stage 1 (standard errors in parenthesis):

$$Flights = -17.53 - 6.44\ Log(Distance) + 2.04\ Log(GDP) - 0.7193\ Log(Population)$$
$$\qquad\quad (7.155)\qquad\quad (1.169)\qquad\quad (0.379)\qquad\qquad (0.297)$$
$$R^2 = 0.45$$

The results of the second stage of the Ordinary Least Squares Regressions (OLS) are shown in table 6.

Table 6: Results of price estimation

	Regression			
	1	2	3	4
	Fare / km (excl. taxes)		Fare / km (incl. taxes)	
Distance	−0.360***	−0.361***	−0.575***	−0.576***
	(0.075)	(0.074)	(0.071)	(0.072)
Distance²	0.023***	0.023***	0.039***	0.039***
	(0.007)	(0.007)	(0.006)	(0.006)
LowCost	−0.640***	−0.497**	−0.589***	−0.523**
	(0.186)	(0.206)	(0.179)	(0.196)
OpenSkies	−0.222*	−0.210*	−0.263**	−0.257**
	(0.119)	(0.108)	(0.117)	(0.113)
FlightsFit		−0.021		−0.010
		(0.016)		(0.015)
Constant	2.278***	2.363***	3.145***	3.184***
	(0.198)	(0.213)	(0.189)	(0.213)
Observations	56	56	56	56
R−squared	0.60	0.61	0.79	0.79

Robust standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

For robustness, we ran the regressions using both the full fare per kilometre (which includes

airport taxes) and the fare per kilometre excluding airport taxes. As is evident, the results of the regressions do not depend on which measure we use. In particular, the coefficients on the parameters of interest, the *LowCost* and *OpenSkies* dummies, do not change considerably across specifications. Assuming that airlines target the final price that consumers face, we believe that using the full fare per kilometre is more appropriate than the fare that excludes taxes. The coefficients on *Distance* and *Distance²* conform to our expectations – they display the expected signs, and are significant at the one percent level. A priori we expected that higher traffic volumes by virtue of economies of density would result in lower average costs, and therefore lower fares. However, this was not reflected in the data, as the coefficient on the predicted values of flights (*FlightsFit*) is insignificant. This may be because the number of flights is a poor proxy for passenger volumes, since we have no knowledge of the size of aeroplane used. As such, we also estimated the price equation excluding the number of flights (Regressions 1 and 3). We note that excluding the number of flights from the estimation marginally increases the magnitude of the coefficients on *LowCost* and *OpenSkies.* Since including the predicted number of flights has no significant impact on the results, we take Regression 3, which uses the full fare per kilometre and excludes the number of flights as the appropriate estimation.

Using Regression 3 as the basis of analysis, the coefficient on *OpenSkies* of – 0.263 suggests that routes governed by liberalised agreements are 26 cents per kilometre cheaper than non-liberalised routes, all else being equal. Given that the mean of the full fare per kilometre is R1,47, this implies a reduction in price of roughly 18 percent. Similarly, if there is a low-cost airline flying the route, we expect fares to be reduced by about 40 percent.

Volume analysis

In the volume analysis we estimated the impact of (a) entering into an open skies agreement; and (b) a once-off large increase in the capacity allowed on the route.

Data

We collected data on (a) liberalisation events between South Africa and other countries in SADC and elsewhere, (b) data from the Airports Company of South Africa on the number of passenger arriving at and departing from Johannesburg International Airport every month from 1998 to 2004,[45] (c) quarterly data on trade volumes,[46] (d) GDP per capita and population data,[47] (d) adverse events affecting air travel to the relevant countries. This gave us a panel data set of quarterly data for 16 countries over seven years.

Estimation

We modelled passenger volumes as a function of (a) demand for air travel (which we modelled as a function of trade flows, GDP per capita, population, adverse events, and the time of the year (seasonal effects); and (b) the status of the bilateral agreement in question, including the existence of a relatively liberalised regime and a significant increase in capacity allowed by the bilateral.[48] Therefore, we used a model with the following specification:

$$Log(Volume)_{it} = \beta_0 + \beta_1 Log(Trade)_{it} + \beta_2 Log(GDP) + \beta_3 Log(Population) + \beta_4 Liberalised_{it} +$$
$$\beta_5 CapacityIncrease_{it} + \beta_6 AdverseEvents_{it} + \beta_7 Seasonal_{it} + e_{it}$$

Where:

Volume = the total number of passengers flying on the route (sum of arrivals and departures at Johannesburg airport)

Trade = the total of imports and exports for the two countries on either side of the route (real 2000 US Dollars)

GDP = the product of the per capita GDP for the two countries on either side of the route (real 2000 US Dollars)

Population = the product of the population for the two countries on either side of the route

Liberalised = a dummy for the period that routes are governed by largely liberalised bilateral agreements[49]

CapacityIncrease = a dummy for the period during which a route is governed by a bilateral that has changed to allow a significant increase in capacity flown on the route[50]

AdverseEvents = a dummy to cover the adverse events affecting the routes[51]

As expected, the Hausmann test suggested that a fixed effects regression was appropriate.[52] The results from the regression are shown in table 7.

We ran the regressions using two different samples. For the country sample, we aggregated

Table 7: Fixed effects analysis of volumes and liberalisation events

	Country sample	City sample
Log (trade)	0.131**	0.106*
	(0.064)	(0.058)
Log (per capita GDP)	0.071**	0.086***
	(0.028)	(0.025)
Log (population)	0.125***	0.121***
	(0.019)	(0.016)
Adverse events	-0.429***	-0.381***
	(0.092)	(0.077)
Liberalisation	0.210***	0.219***
	(0.053)	(0.050)
CapacityIncrease	0.113**	0.091**
	(0.044)	(0.043)
Quarter2	-0.016	-0.007
	(0.036)	(0.031)
Quarter3	0.112***	0.128***
	(0.034)	(0.030)
Quarter4	0.062*	0.073**
	(0.035)	(0.031)
Constant	-31.182***	-30.861***
	(4.726)	(4.016)
Observations	445	529
Number of routes	16	19
R-squared	0.52	0.51

*Robust standard errors in parentheses. * significant at 10%; ** significant at 5%;*

*** significant at 1%*

the volumes on the routes to different cities to obtain a country route. The city sample includes the separate cities. We note that our results do not depend on the sample used. We preferred the country sample because the population and trade data obtained were country-specific and not city-specific. The coefficients on the independent variables display the expected sign. Demand-side factors, captured by the trade, GDP per capita, and population variables are all positive and significant.[53] Adverse events had a negative and significant impact on trade volumes. Because this is a double-log equation, we needed to convert the dummies into percentage differences using the antilog (Gujarati 1995). After taking the antilog we found that liberalised agreements had increased passenger volumes by 23 percent, and that large once-off increases in capacity increased passenger volumes by 12 percent.[54]

The impact of liberalisation on tourism in SADC

This section outlines the data we used, our method, and the results of the analysis of the impact of air transport liberalisation on the wider economy. Data on foreign tourist spending, employment, and multiplier effects on the economy were obtained from the World Travel and Tourism Council Tourism Satellite Accounts (WTTC-TSA), the standardised United Nations measurement of the economic impact of the travel and tourism sector. This data was available for all SADC member countries except Mozambique.[55] Data on the number of foreign tourists and the proportion that arrived by air were sourced from the United Nations World Tourism Organisation (UNWTO).[56] This section also discusses the calculations that underpin the analysis of the impact of Mozambique of liberalising the Johannesburg–Maputo route.

Method

To estimate the impact of liberalisation on tourism in SADC, we measured five different impacts, namely the impact on foreign tourist arrivals, the direct impact of foreign tourist spending, the total impact on GDP, the direct impact on employment in the travel and tourism industry, and the total impact on employment. The following formulae were applied to calculate the impacts:

Impact on foreign tourist arrivals

Impact on foreign tourist arrivals = foreign tourist arrivals by air (excluding intra-SADC tourism) × estimate of impact of liberalisation on passenger volumes

Impact on foreign tourist spending and on GDP

Direct impact on foreign tourist spending = foreign tourist spending × % of tourists that arrived by air x estimate of impact of liberalisation on passenger volumes

Total impact on GDP = direct impact on foreign tourist spending × GDP multiplier

Impact on employment in the T&T industry and on total employment

Direct impact on employment in the T&T industry = direct T&T industry employment × foreign tourist spending of tourists that arrived by air as a % of T&T consumption × estimate of impact of liberalisation on passenger volumes

Total impact on employment = direct impact on T&T industry employment × employment multiplier

The sources of the data used in the calculations are shown in table 8.

Table 8: Calculation of the economy-wide effect of liberalisation

Variable	Source	Calculations (if any)
Foreign tourist spending	WTTC-TSA	
Direct T&T Industry employment	WTTC-TSA	
% of tourists that arrived by air[58]	WTO	Foreign tourists that arrived by air as a percentage of total foreign tourist arrivals
Estimate of impact of liberalisation on passenger volumes	Genesis calculations	
GDP multiplier[59]	WTTC-TSA	Total T&T economy GDP divided by direct T&T GDP
Employment multiplier[60]	WTTC-TSA	Total T&T economy employment divided by Direct T&T employment
Foreign tourist arrivals by air (excluding intra-SADC tourism)	Genesis calculations	Foreign tourist arrivals by air × [1 – (measure of the extent of liberalisation in the SADC region)]
Indirect impact on GDP	Genesis calculations	Total impact on GDP minus direct impact on foreign tourist spending
Foreign spending of tourists that arrived by air as a % of T&T consumption	WTTC-TSA and WTO	Foreign spending of tourists that arrived by air as a percentage of T&T consumption
Indirect impact on employment	Genesis calculations	Total impact on GDP minus direct impact on T&T industry employment
Impact on GDP as a % of GDP	SADC website and Genesis calculations	Total impact on GDP as a percentage of SADC GDP

We took two factors into account that would reduce the likely impact of liberalisation on the tourist industries of SADC countries:

Intra-SADC tourism: in order to remove the diversion of tourism within SADC, we estimated the percentage of tourist arrivals by air from other SADC member states. The origin of tourist arrivals arriving by air is not reported in the WTO data. However, we obtained this data for South Africa from Statistics South Africa (Stats SA), and for Madagascar and Mauritius from the WTO data, as almost all their tourists arrive by air. The percentage of tourists from elsewhere in SADC who arrive by air is 12 percent for South Africa, 9,3 percent for Mauritius, and 5,6 percent

for Madagascar. We therefore assumed that 10 percent of tourists who arrive by air are from elsewhere in SADC, and hence reduced the number of foreign tourists who arrived by air by 10 percent.

The extent of liberalisation in SADC: We took this into account by examining the liberalisation data collected for the price analysis (this reflected the state of liberalisation for six SADC member states). This does not reflect all routes in SADC; however, indications are that the countries for which we do not have this information are more restricted that those for which we do have information – which suggests that we overestimated the extent of liberalisation and therefore underestimated the gains from liberalisation. We weighted the proportion of routes that are liberalised by our estimated impact of liberalisation on passenger volumes, to take into account the fact that that liberalised routes would have higher passenger volumes. Therefore, we reduced our final results for the direct impact of liberalisation on foreign tourist arrivals by air, and the direct and total impact of liberalisation on GDP and employment, by 13 percent.[57]

The Mozambique case study

Due to the absence of a WTTC study for Mozambique, we had to use figures from other SADC studies to estimate the direct impact of tourism on the Mozambican economy, as well the multiplier effects. We assumed that tourists spend US$500 per visit, which is the average for SADC. The actual spend calculated from WTO data for Mozambique for 2004 is US$135; however, this figure is clearly too low for tourists arriving by air. It probably arises because 84 percent of tourists who visited Mozambique in 2004 arrived by road. The US$500 figure is far below that for Madagascar (US$1 157) and Mauritius (US$1 564), both of which have many beach resorts, and where the vast majority of tourists arrive by air. It is also below the average spend of tourist visiting South Africa (US$987) and Tanzania (US$1 046), both of which have significant numbers of tourists arriving by road. Therefore, this figure is likely to be particularly conservative. The multiplier figures used are the averages for SADC, with outliers removed. As the multipliers for SADC fall into a relatively tight band, the result that the impact on Mozambique from liberalisation will outweigh the cost of LAM closing is not sensitive to using these average figures.

Endnotes

1. A good example of a hub and spoke system is Dubai. Passengers flying from Johannesburg can either fly directly to Europe, for instance to Paris, or they can fly to Dubai and then catch a connecting flight to Paris. Passengers flying to India from Johannesburg can also fly to Dubai and then catch a connecting flight to India.

2. Morrison (1995), cited by Viscusi (2001), refers to a figure of $18 billion. According to the US Department of Labor, this is equal to $25.35 billion in 2006 dollar terms. http://data.bls.gov/cgi-bin/cpicalc.pl, accessed on 22 August 2006.

3. This discussion is largely taken from Chapter 6 of Doganis (2006).

4. This is calculated using Maillebiau's and Hansen's (1995) finding that demand for air travel *in their model* had an elasticity of between 0.,8 and 0.95, they acknowledge that this estimate is lower than that of other studies.

5. The EU countries that entered into open skies agreements are Austria (1995), Belgium (1995), Denmark (1995), Finland (1995), France (1998), Germany (1996), Italy (1999), Netherlands (1992), Portugal (2000) and Sweden (1995). The Brattle Group 2002.

6. This estimate applies to the period after liberalisation, and is based on an extrapolation of the pre-liberalisation trend. The percentage reflects the average increase in monthly passenger volumes on the route.

7. 1time was also active in this market from late 2005 to early 2006.

8. 1time was followed by Kulula, which subsequently stopped flying the route in early 2006.

9. This is based on 1999 figures obtained from the Eastern Cape provincial government website, www.ecprov.gov.za.

10. This is based on foreign tourist arrivals of 119 236 for East London in 2004 and the average spend of a foreign tourist of R1 062 (US$163) in the Eastern Cape in 2004. Data sourced from SA Tourism.

11. This is based on the average tourist spend in Zambia of US$312. This analysis is based on data from the World Tourism Organisation on South African tourists in Zambia in 2004.

12. These are the 'National Tourism Policy and Implementation Strategy' (as cited in Bolnick et al 2004), and the 'Strategic Plan for the Development of Tourism in Mozambique for 2004–2013' (as cited in Bolnick et al 2004).

13. These were the cheapest return tickets including taxes for each route obtainable on the SAA website, www.flysaa.com, on 25.08.2006, for travel on 16 September and returning on the 24th. The price of a ticket to Durban was R775 (US$108), and, to Maputo, R2 008 (US$280). Airport taxes on the Johannesburg–Maputo route were R798 (US$111), and, on the Johannesburg-Durban route, R315 (US$44).

14. This assumes an elasticity of −1. Elasticity is a measure of the degree to which passenger volumes 'stretch' in response to a given fall in prices. For example, an elasticity of −1 implies that a 10 percent reduction in prices leads to a 10 percent increase in passenger volumes.

15. The GDP and employment multipliers are based on data obtained from the WTTC Tourism Satellite Accounts (TSA). For these calculations, the average for all SADC countries excluding Mozambique was used, as data for Mozambique was not available.

16. LAM website, www.lam.co.mz.

17. The WTTC Report on the impact of air

transport liberalisation on Egypt used an elasticity of −1.9.

18. The impact on passenger volumes was calculated from the fall in air fares (excluding airport taxes), namely 60 percent, and assuming an elasticity of −1.8. Consumers are likely to see a decrease in air fares (including airport taxes) of 37 percent.

19. As detailed in the appendix, the values of the demand control variables have the correct signs, and the results are robust to various specifications.

20. We do not have data (a) for the period when low-cost airlines entered the regional markets; and (b) for some of the countries where the low-cost airlines entered, principally Namibia.

21. In order to conduct the econometric analysis, we needed information on the status of bilateral agreements, volumes and/or prices. While we had access to *historical* data on (a) volumes and (b) the status of bilateral agreements for South Africa, we only had *current* data on prices and the current status of bilaterals. Therefore, as we did not have data from the same period for prices and volumes, we could not include both prices and volumes in the same analysis.

22. The WTO does not have data on arrivals by air for Botswana, Namibia, the DRC, or Swaziland. If we had figures for Botswana, this would have increased the percentage we reference, but if we had numbers for Namibia and the DRC this would lower the percentage.

23. Tickets prices are for travel on 16 September, returning on 24 September. Three routes of less than 400 kilometres have been excluded from the analyses, This is because the cost of flying these very short routes is different to that of flying a longer route, and we don't have enough routes of this length to model these different cost relationships effectively.

24. Regression is a form of statistical modelling that attempts to evaluate the relationship between one variable (termed the dependent variable, in this case prices) and one or more other variables (termed the independent variables, in this case distance and the presence of a low-cost airline and a liberalised bilateral agreement)

25. As detailed in the appendix, we attempted to control for endogeneity between traffic volumes and price by using a two-stage least squares regression. Several regressions were run; we found that our results were robust to the various specifications.

26. This is a measure of 'elasticity' – or the degree to which passenger volumes 'stretch' in response to a given fall in prices. Maillebiau and Hansen (1995) found that a price reduction of 10 percent would increase passenger volumes by eight percent. However, this result is more common for business class ticket prices, as a meta-analysis shows. It finds that that increases of 18 percent in passenger volumes in response to a price fall of 10 percent is more common for economy class tickets. Furthermore, the elasticity of demand is clearly higher on some routes than on others. See Brons et al 2001.

27. Ibid.

28. This is an average of our estimate of the impact of liberalisation from our price and volume econometric analyses. In order to convert the price analysis estimate to impact on passenger volumes, we assumed an elasticity of −1.

29. Data on foreign tourist spending, employment, and the multiplier effects on the economy was obtained from the World Travel and Tourism Council Tourism Satellite Accounts, which is the United Nations' measurement of the impact of the travel and tourism sector on the broader economy. This data was available for all SADC member countries except Mozambique. Data on the number of foreign tourists and the proportion that arrived by air were sourced from the WTO. The data used are explained further in the appendix.

30. These estimates exclude Mozambique and the DRC, due to a lack of data in the case of Mozambique (see the case study on page 35), and a lack of confidence in the DRC data. The estimates for the individual countries are not reported, as the actual impact of liberalisation on these countries would vary depending on their individual characteristics. However, as Mozambique would likely benefit greatly from liberalisation the implication is that this figure underestimates the benefits of liberalisation to the region.

31. This excludes Mozambique and the DRC.

32. The Convention on International Interests in Mobile Equipment, 2001 and the Protocol on Matters Specific to Aircraft Equipment was held in Cape Town from 29 October to 16 November 2001. To date 32 states have signed the convention, and it entered into force on 1 March 2006, three months after the eighth ratification. The primary objective of both the convention and protocol is to reduce the capital costs involved in buying or leasing aircraft equipment. A legal framework that allows the creation and enforcement of security instruments will provide confidence to lenders and institutional investors both within and outside

the country concerned, making it possible to convert illiquid loans into liquid securities, and attract foreign capital. The main purpose of the convention is therefore to establish an international legal regime for creating, enforcing, registering, and prioritising security interests and interests held by creditors, conditional sellers, and lessors in respect of three categories of high-value, uniquely identifiable equipment, namely (a) airframes, aircraft engines, and helicopters (aircraft objects); (b) railway rolling stock; and (c) space assets.

33. http://www.kenya-airways.com, accessed on on 5 September 2006.

34. This excludes Mozambique and the DRC.

35. This data was collected by Sue Kennedy, MD of Mazista Travel, on behalf of Genesis Analytics.

36. Third and fourth freedom rights constrain a number of factors that are important to competition on airline routes. These can include the number of flights, type of aircraft, number of passengers, how many airlines can fly (single of multiple designation), and from which airports airlines can fly. Fifth freedom rights are rights that allow an airline to pick up passengers and carry them to a next destination.

37. World Development Indicators database. See http://sima-ext.worldbank.org.

38. Centre D'EtudesProspectiveset D'Informations Internationales (CEPII) dataset, available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm.

39. Dresner and Tretheway (1992) ran panel data regressions, as they had prices over time for a set of routes. As we only had current data on prices, we were able to run cross-sectional regressions only.

40. This specification is similar to that of Dresner and Tretheway (1992), who in their first step regressed passenger volumes on mean population, mean income, and distance. The predicted value for passengers from this first stage was then used as a regressor in the second stage.

41. Data on fares was collected on 15 August 2006 for the cheapest ticket available for 16 September 2006, returning one week later on 24 September 2006.

42. The routes from Johannesburg to Addis Abba, Nairobi and Entebbe; Antananarivo to Nairobi; Gaberone to Harare; and Dar es Salaam to Entebbe are all governed by open skies agreements.

43. The routes with a low-cost airline are Johannesburg to Lusaka, Harare, and Windhoek.

44. This is in line with Maillebiau & Hansen (1995: 127). Howsever, they regress the log fare per mile on the log of distance.

45. For reasons of confidentiality we were only provided data for those routes flown by more than one airline. Even though we had passenger data for 2005, we were unable to use it because the data obtained from the World Bank goes up to 2004 only.

46. Commissioner for Customs and Excise. Data can be accessed from http://www.tips.org.za. We did not have data on trade volumes within the SACU area, which means we did not have data for Namibia and Botswana.

47. World Development Indicators database. Data can be accessed from http://sima-ext.worldbank.org.

48. This specification is largely in line with that used in the Brattle Group report (2002), which estimated the relationship between passenger volumes on a given EU-US route and the relevant cost and demand factors. Its basic model specification included age dummies for the routes, real US disposable income, real GDP for the relevant EU countries on the routes, the real exchange rate, and a cost index constructed from fuel and labour proportions.

49. These include Frankfurt (whole period), Dar es Salaam (after the 3rd quarter 2003), and Kenya (after the 4th quarter 2002).

50. These involved once-off increases of capacity of four to seven flights (+75%) for Malawi (4th quarter 1999), DRC (3rd quarter 2004) and Hong Kong (2nd quarter 2002); and an increase in the number of flights from four to 14 for Kenya (2rd quarter 2000).

51. The adverse events we include are (a) political unrest in Madagascar over a presidential election (2nd quarter 2002); (b) period of political unrest in Zimbabwe heralded by the land invasions in 2000 (after 1st quarter 2000); (c) war in the DRC (beginning in 3rd quarter 1998, ending 4th quarter 2000); (d) the SARS virus in Hong-Kong (2nd–3rd quarter 2003); (e) civil war in Angola (ending 2nd quarter 2001); and (f) reductions in flights (SAA to Zurich after 1st quarter 2003, and Air Madagascar to Antananarivo for one month in 4th quarter 1998).

52. A pooled OLS regression model is considered to be inadequate because it assumes that there is neither significant country nor temporal effects. Given our country sample, this is highly unlikely. Fixed effects allows us to isolate route-specific differences, which is appropriate given that we expect variations due to distance differences among the various routes. With fixed effects, time invariant variables (such as distance) can not be included in the regression.

53. Using real GDP instead of GDP per capita does not change our results. Like GDP per capita,

the coefficient on GDP is positive and significant. We also ran other specifications where we included year dummy variables. Once the year dummies were included, the demand variables ceased to be significant. The year dummies, which were positive and significant, essentially captured the increase in demand. The inclusion of the year dummies did not impact the coefficients on the *Liberalisation* and *CapacityIncrease* dummies.

54. These results are not dependent on classifying Frankfurt or Dar es Salaam as liberalised routes.

55. Although data was available for the DRC from the WTTC-TSA, we did not include that country in our analysis as we weren't sure that the data was accurate. Therefore, our estimate of the impact of liberalisation on tourism in SADC excludes Mozambique and the DRC.

56. World Tourism Organisation – Tourism Fact Books for individual countries. This data can be purchased from the WTO at www.wtoelibrary.org.

57. A total of 10.7 percent of the routes in our database were liberalised (six out of 56 routes), ie open skies. We weighted this percentage by 20 percent – our average estimate of the impact of liberalisation on passenger volumes, in order to obtain the 13 percent figure.

58. There were no data for Botswana on the number of tourists that arrived by air. We therefore used the SADC average of the percentage of foreign tourists that arrived by air excluding Mauritius and Madagascar, which are island economies. For Namibia and Swaziland, data for 2004 was not available; therefore, we used the percentage for 2003.

59. For Angola, the GDP and employment multipliers (12.25 and 7.67 respectively) were considerably highier than the multipliers for other SADC countries, which ranged between 2 and 3.3 for the GDP multiplier, and 1.5-3.2 for the employment multiplier. Clearly, the multipliers for Angola were not credible. Therefore, we applied the average of the GDP and employment multipliers for other SADC countries (excluding Angola) to the data for Angola.

60. See the previous endnote.

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