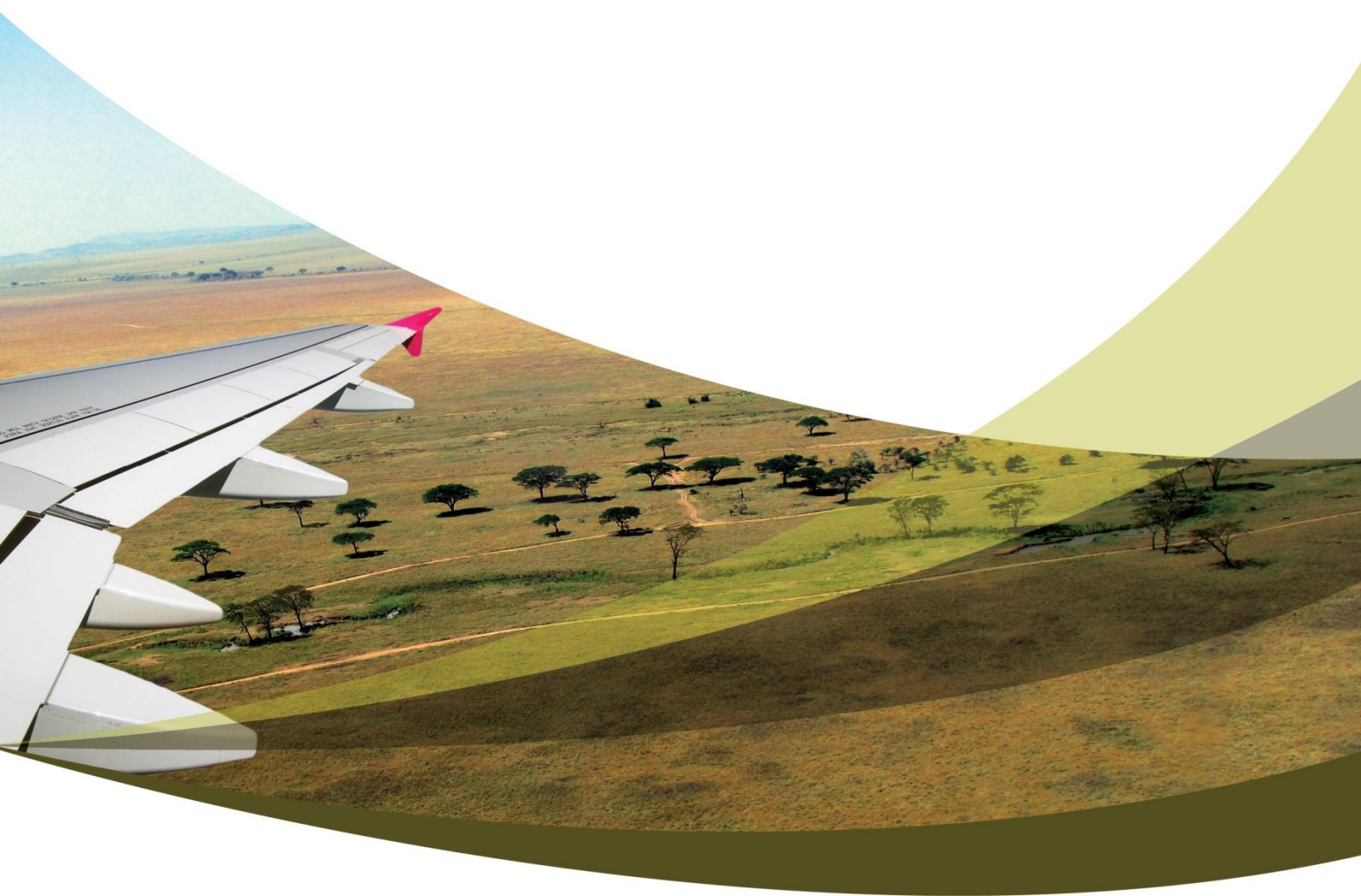
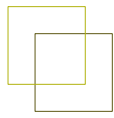


Costs and Benefits of 'Open Skies' in the East African Community (EAC)

KEY FINDINGS





What are the Costs and Benefits of 'Open Skies' in the East African Community (EAC)?

Executive Summary



KEY FINDINGS

- A substantial body of research has repeatedly found that liberalisation has led to increased traffic volumes, greater connectivity and choice and lower fares. Furthermore, the benefits of air service liberalisation extend well beyond the aviation industry and passengers – it contributes to greater trade and tourism, inward investment, productivity growth, increased employment and economic development.
- Quantitative analysis, based on data from East Africa, provided robust and compelling evidence that liberalisation leads to **9% lower average fares** and a **41% increase in frequencies**, which in turn stimulate passenger demand.
- It is estimated that liberalisation between the five EAC countries could result in an additional **46,320 jobs** and **US\$ 202.1 Million per annum in GDP**.

Research Objectives

In 1999, the Yamoussoukro Decision (YD) was adopted out of recognition that the strict regulatory protection that sustains national carriers has detrimental effects on air safety records, while inflating air fares and dampening air traffic growth. The Eastern Africa Community (EAC) has elected to revise Bilateral Air Service Agreements (BASAs) to align with the principles of the YD.

However, implementation of YD remains pending although there has been tangible progress in other relevant matters, such as the establishment of joint air safety and security agencies. One of the factors contributing to the slow take-up of YD's principles is a lack of clear and specific information regarding the impacts of enacting such liberalisation.

As such, this study aims to close some of the information gaps around the impact of implementing the YD in East Africa.

Research Methodology

To address the research problem, the study is comprised of three elements:

1. **Synthesis of Evidence** - a comprehensive literature review was conducted on the aviation and economic impacts of air service liberalisation, with particular focus on research and papers specific to East Africa and the African continent.
2. **Stakeholder Consultations** – wide ranging qualitative interviews with stakeholders were conducted across the five study countries including representatives of the air industry and tourism associations, aviation authorities, airlines, investment authorities, tourism operators, government ministries, hotel associations and cargo representatives.
3. **Economic Modelling** - using data collected for the EAC region, quantitative analysis was undertaken to quantify the impacts of liberalisation. This analysis provided a unique insight into how previous liberalisation (of BASAs) in East Africa had impacted the local aviation market. From this analysis, it was possible to estimate the aviation sector and wider economic impacts of liberalising the remaining BASAs using a model specific and tailored to the EAC.

DISCLAIMER: This material has been funded by UK aid from the UK government; however the views expressed do not necessarily reflect the UK government's official policies.

Key Results & Implications for the Region

The *synthesis of evidence* demonstrated fairly consistently that BASA liberalisation resulted in increased frequencies, routes and connectivity, increased traffic and supported economic growth

A substantial body of evidence has developed over the last 10-15 years examining the impacts of BASA liberalisation for both the aviation sector and the wider economy. Repeatedly, these studies from around the globe found that liberalisation allowed new carriers to enter the market and existing carriers to better respond to demand. This resulted in lower fares for passengers and more travellers being able to access air services. However, more recently, research has found similar effects occurring in Africa where governments have chosen to remove restrictions on air services.

The benefits of air service liberalisation extend well beyond the aviation industry and passengers – it contributes to greater trade and tourism, inward investment, productivity growth, increased employment and economic development. A body of research has developed demonstrating a clear linkage between aviation growth and growth in tourism, trade, investment and the economy (i.e., growth in employment and GDP).



The *qualitative stakeholder interviews* revealed widespread dissatisfaction with current air services in EAC and general support for BASA liberalisation as a means to improve air services

Stakeholders frequently cited examples of where the current aviation services are limiting trade, tourism and business, and many recognised that BASA liberalisation would help remove these limitations and benefit the economy. There was unanimous agreement amongst stakeholders that trade and tourism would be significant beneficiaries from liberalisation. Tourism in particular is an industry dependant on good air access to a country and its associated offerings. Respondents noted that the ease with which goods could move through the EAC region would significantly boost trade and unlock additional opportunities and markets. Business development and investment is another area that would grow since it would allow for easy and affordable movement. One of the main challenges in many East African countries is poor transport infrastructure, which hinders swift movement and increases costs of doing business and limits investment. Improvements in air service from liberalisation would lead to savings in time and ultimately catalyse trade and investment.

Some respondents raised potential dis-benefits that may come along with liberalisation. Some stakeholders expressed a concern that liberalisation could lead to larger, better-capitalised foreign carriers “squeezing out” smaller, less-well-funded local carriers. However, it was generally viewed that the introduction of greater competition would ultimately be beneficial by offering existing carriers new market and investment opportunities and encouraging them to undertake greater efficiencies.

“When it comes to tourism, we are still operating with a system not designed to offer affordable services and products to EAC residents. It is time to recognize the potential of East Africans as a viable source market; they should be encouraged to travel within their own country and region.”

- Tourism Association

Quantitative analysis, based on data from East Africa, provided robust and compelling evidence that liberalisation leads to lower fares and higher frequencies, which in turn stimulate passenger demand

The empirical analysis of the impacts of air service liberalisation used a gravity model approach to modelling air traffic between nations, based on data collected for each of the five study countries. The analysis allowed an examination of the factors affecting air traffic between nations including market factors, economic and, of most interest to this research, the degree of liberalisation of the BASAs. In terms of the key results for liberalisation, the following significant results were found:

- Fully liberalising restricted routes reduces average fares by 9% on average (all else being equal).
- Fully liberalising restricted routes increase frequencies by 41% on average (all else being equal).

Furthermore, the results showed that that partial liberalisation in not effective in achieving equivalent impacts. Only once all the major restrictions are removed from BASAs is there a substantially impact on fares and frequencies.

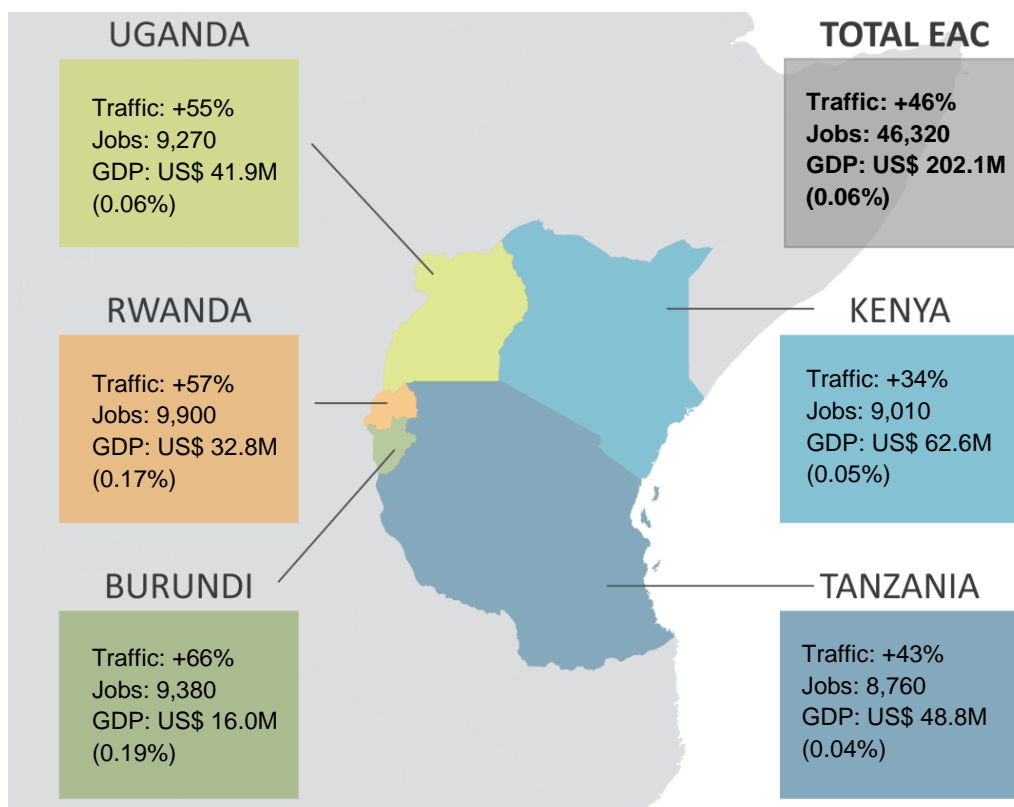
DISCLAIMER: This material has been funded by UK aid from the UK government; however the views expressed do not necessarily reflect the UK government’s official policies.



Economic Impact of Liberalisation within the EAC

The gravity model was used to estimate the impact resulting from complete liberalisation of BASAs from the five EAC countries. This includes not just the impact on traffic and air services but also on the wider economy. The analysis assumes that all five countries are able to sign 'open skies' BASAs, along with improvements in taxation and infrastructure to fully maximise the benefits of liberalisation. The resulting impacts on traffic volumes, employment and GDP and are summarised in the diagram below.

Across the five EAC countries, liberalisation between the countries is projected to result in an additional 46,320 jobs and US\$ 201.1 Million additional GDP each year (0.06% of the total GDP of these countries).



Key Conclusions and Recommendations

- The synthesis of evidence consistently demonstrates that BASA liberalisation has resulted in increased frequencies, routes and connectivity. Frequently, liberalisation has allowed new carriers to enter the market and existing carriers to better respond to demand.
- The economic analysis demonstrates that increased air service and traffic resulted in positive benefits for the total EAC economy – it contributes to greater trade and tourism, inward investment, productivity growth, increased employment and economic development; and is supported by a range of regional stakeholders.
- While there are concerns in some corners that liberalisation may harm existing air carriers, liberalisation also offers a means to restructure the carriers and increase profitability by expanding into new markets, accessing a wider pool of investment and through consolidation.
- Given the conclusions of the study, we recommend the following actions:
 1. **Implement Open Skies Policy.** The EAC must fully implement YD and enable a multilateral 'open skies' policy.
 2. **Enhance the benefits of liberalisation** by ensuring the taxation of air passengers and air service charges is harmonised across the EAC. Additional recommendations include improving aviation infrastructure, security and facilitating the training of aviation professionals.
 3. **Attract private sector investment.** Remove foreign ownership restrictions to open up access to capital and financing so airlines can refresh fleets and airports can appropriately invest in infrastructure upgrades and capacity expansions.

DISCLAIMER: This material has been funded by UK aid from the UK government; however the views expressed do not necessarily reflect the UK government's official policies.

Contents

1	Introduction and Research Methodology	2
2	Synthesis of Evidence: Impacts of Air Service Liberalisation	4
2.1	Impact of Liberalisation on Aviation	4
2.2	Impact of Liberalisation on the Economy.....	5
2.3	Liberalisation in Africa.....	6
2.4	Conclusions	7
3	The Context: Current Air Services in East Africa	8
3.1	Traffic and Air Services.....	8
3.2	Summary of Current Regulatory Environment.....	14
4	Stakeholder Consultations: Current Air Service and Impacts of Liberalisation.....	18
4.1	Data Collection	18
4.2	Key Themes.....	18
5	Econometric Analysis: The Impact of Liberalisation in East Africa	30
5.1	Indicative Findings	30
5.2	Econometric Analysis	32
5.3	Results from the Econometric Analysis	33
6	The Economic Impact of Liberalisation	34
6.1	Passenger Traffic and Fares	34
6.2	Broader Economic Impacts.....	38
6.3	Summary of Impacts, Conclusions and Recommendations	43
	Appendix A: Backgrounder on Bilateral Air Service Agreements.....	46
	Appendix B: Literature Review	50
	Appendix C: Stakeholder Consultations - Summary by Country	76
	Appendix D: Gravity Model Econometric Analysis.....	92
	Appendix E: Estimating the Economic Impacts of Liberalisation	100
	Appendix F: Impact of Liberalisation on Home and Incumbent Carriers.....	105
	Bibliography	111

1 Introduction and Research Methodology

In 1999, the Yamoussoukro Decision (YD) was adopted out of recognition that the strict regulatory protection that sustains national carriers has detrimental effects on air safety records, while inflating air fares and dampening air traffic growth.¹ However, implementation of YD remains pending, in part due to a lack of clear and specific information regarding the impacts of enacting such liberalisation. As such, the East Africa Research Fund (EARF) has commissioned InterVISTAS Consulting (InterVISTAS) to conduct a study to attempt to close some of the information gaps around the impact of implementing the YD in East Africa. The Eastern Africa Community (EAC) has elected to revise Bilateral Air Service Agreements (BASAs) to align with the principles of the YD.²

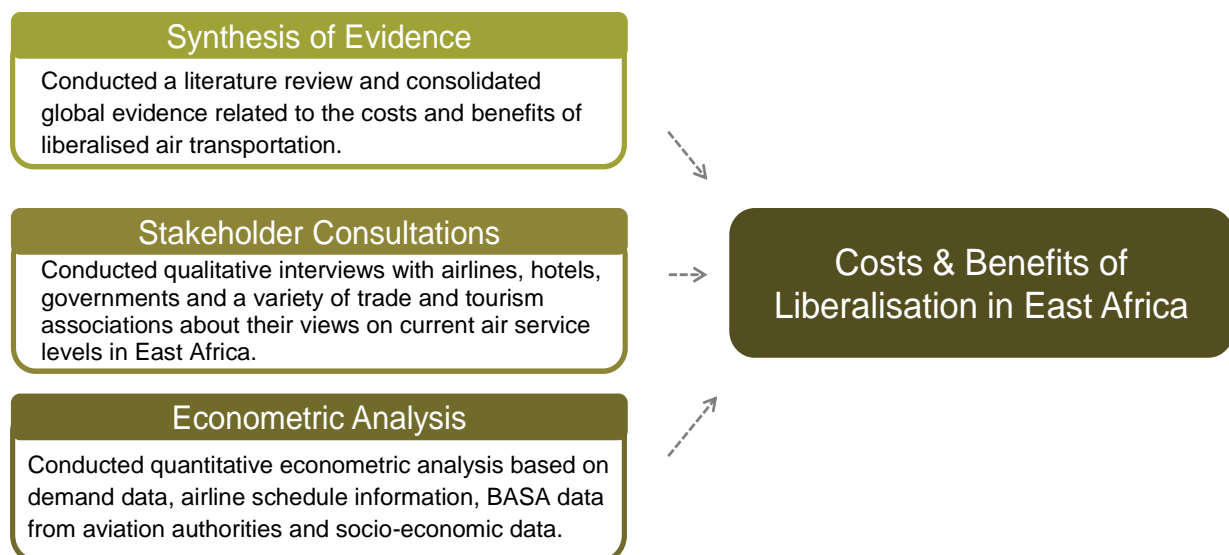
This liberalisation of BASAs will complement another initiative, the Northern Corridor Integration Projects (NCIP), involving Kenya, Uganda, Rwanda and South Sudan which aims to speed up infrastructure development in the region. One of the most significant achievements of NCIP so far is the implementation of the East Africa Tourist Visa, which allows the free movement of individuals within the member countries.

This report summarises the finding from the study, which combines global evidence on the impacts of liberalisation with local data, analysis and understanding to provide a robust examination of the costs and benefits of liberalisation.

1.1 Research Methodology

The following research methodology was taken in order to derive meaningful and robust results and recommendations:

Research Methodology



¹ The Yamoussoukro Decision committed 44 signatory African countries to fully liberalise intra-African air services including capacity, frequencies, tariffs and route access.

² For further information on Bilateral Air Service Agreements, see Appendix A.

1.1.1 Data Collection

Synthesis of evidence:

A comprehensive literature review was conducted, with particular focus on research and papers specific to East Africa and the African continent. Approximately 100 papers in total were examined and vetted across multiple sources including:

- Academic journals, papers and textbooks (e.g., peer-reviewed journals such as the Journal of Air Transport Management, Transport Policy, the Journal of Transport, Economics and Policy, etc.);
- Papers published by private public policy institutes and industry trade associations; and
- Governmental sources including filings, submissions, policy statements, carrier selections, docket and other policy documents on issues related to air service liberalisation and its impacts.

Qualitative interviews with stakeholders:

InterVISTAS worked with EARF to create a list of target stakeholders in the EAC that would be asked a variety of questions concerning air service liberalisation. The high level questions asked were:

- How would you assess the current level of air service in your country and in East Africa generally?
- To what extent is air transport connectivity a barrier to business and economic growth in your country and in East Africa?
- What are the main challenges/impediments facing the development of air service within East Africa?
- What do you think would be the key benefits of air service liberalisation within East Africa?
- What do you think would be the dis-benefits of air service liberalisation within East Africa?

Stakeholders from across the five study countries included air industry and tourism associations, aviation authorities, airlines, investment authorities, tourism operators, government ministries, hotel associations and cargo operators

The stakeholder consultations interviews ran from March 2016 through to July 2016 and took place either in person or via teleconference.

Quantitative econometric analysis:

The empirical analysis was based on panel data of traffic flows between the five EAC study countries plus Ethiopia and other countries in Africa (as listed in **Chapter 4**). The data collected comprised:

- Origin/destination traffic volume data and average fare data for each country pair, sourced from Sabre Market Intelligence data. This data source provides global passenger traffic data from over 40 industry sources including all three of the major global distribution systems (GDS) and other government sources. It provides a robust set of data on ticket bookings including passenger volumes and fares paid.
- Data on characteristics of the BASAs collected by survey from the Civil Aviation Authorities and Ministries of Transportation of the five study countries. The surveys collected information on the date of signing, designated airlines, capacity/frequency restrictions, fare regulation, 5th freedom rights and named airports.
- Airline frequency and aircraft size sourced from Diio Mi airline schedule data.
- Socio-economic variables including GDP, population, and trade were sourced from World Bank Development Indicators online database. Data sourced from the World Bank is considered robust and reputable.

2 Synthesis of Evidence: Impacts of Air Service Liberalisation

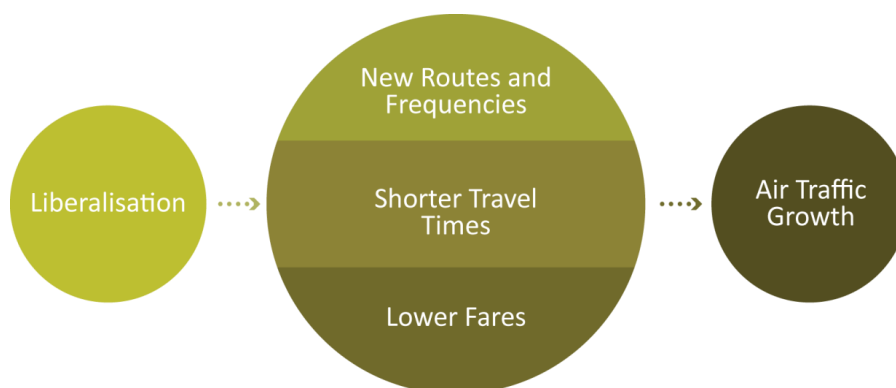
This chapter provides a synthesis of the evidence from the literature review in three areas: 1) The impact of air service liberalisation throughout the world, 2) The economic benefits of aviation development and liberalisation, and 3) Research on liberalisation impacts in Africa. Details on the individual papers are provided in **Appendix B**.

2.1 Impact of Liberalisation on Aviation

There have been many studies researching the impacts of air service liberalisation on aviation markets. Repeatedly, these studies from around the globe found that liberalisation led to:

- Increased number of air carriers competing in the market, improving the service offering and pricing for passengers. In particular, the growth of low cost carriers is closely linked to air service liberalisation.
- Increased routes and connectivity. Liberalisation led to new routes being operated and to higher frequencies on existing routes, improving connectivity, choice and travel times for passengers.
- Reduced fares. In many cases, liberalisation has led to lower fares for passengers, due to greater competition and improved air carrier efficiencies.
- The combination of increased competition, new services and lower fare led to significant increases in air traffic volumes, reflecting the greater accessibility of aviation for business and personal purposes, as summarised in the diagram below.

Figure 2-1: Impacts of Air Service Liberalisation on the Aviation Sector



In particular, the following summarises key findings from major studies:

- Research on liberalisation in 27 OECD countries (Gonenc and Nicoletti, 2001) found that air fares tend to be lower in markets where regulatory impediments to competition are lowered (i.e., liberalised markets). For example, analysis of 100 international routes found that for Northern European routes, business fares were 20-40% lower than the OECD average with liberalisation.
- One study (Piermartini and Rousová, World Trade Organization, 2008) found that full or largely liberalised agreements between country-pairs led to a 30% increase in traffic on average; in some cases, growth was larger than 50%.

- A global study for Boeing and others (InterVISTAS, 2006) analysed the impacts of liberalisation, finding on average, post-liberalisation, traffic growth between countries was between 12% and 35%; in some cases, growth was as much as 100%.
- Research on air transport liberalisation in Europe (Burghouwt et al., 2015), for the International Transport Forum, found that passengers have benefited from liberalisation through lower air fares, increased route choices and increased frequencies; some airlines have not prospered, but low cost carriers in Europe did expand post-liberalisation.
- One study (Cristea et al., 2014) examining the various U.S. open skies agreements found that after five years, countries that signed open skies agreements with the U.S. had, on average, 18% higher traffic over countries that had not signed; fares were also lower after signing an open skies agreement.

2.2 Impact of Liberalisation on the Economy

An extensive body of research has found that the impacts of liberalisation extend beyond just reduced fare levels and increased traffic volumes. Increased air services and traffic volumes have been found to increase employment and benefit the wider economy. This arises through a number of mechanisms:

- **Tourism** – aviation facilitates the arrival of larger numbers of tourists to a country. This includes business passengers and leisure tourists. Tourist spending can support a wide range of tourism-related businesses: hotels, restaurants, entertainment and recreation, car rentals, and others.
- **Trade** – aviation provides connections to export markets for both goods and services.
- **Investment** – the availability of air services is a key factor company's take into account when making decisions about the location of offices and manufacturing plants.
- **Productivity** – aviation facilitates access to new markets, enabling businesses to achieve greater economies of scale. It also enables companies to attract and retain high quality employees.

A body of research has documented and quantified the linkage between aviation and economic development:

- A study by PWC (2013) for the UK Airports Commission found that for the UK, a 10% increase in international seat capacity led up to a 7% increase in trade; the impact on goods exported was larger than services exported, while service imports would grow more than service exports.
- One study (Poole, 2010) found that a 10% increase in business travel by non-U.S. residents led to a 1.2% increase in the volume of exports from the U.S.
- A survey of 625 businesses in five countries (China, Chile, United States, Czech Republic and France) found that 25% of sales were dependent on the availability of sufficient air transport links and 30% of Chinese firms reported that they had changed investment decisions because of constraints on air services (IATA, 2006).
- Empirical research by Bel and Fageda (2008) found that a 10% increase in supply of air service was associated with a 4% increase in the number of large firm headquarters located in the corresponding urban area.
- Research by the UK Civil Aviation Authority (2001) found employment in the aviation sector in the UK increased by 38% when comparing pre-and post- liberalisation.
- In the United States, Brueckner (2003) found that a 10% increase in departing passengers leads to an approximate 1% increase in service industry employment.

- Another study (InterVISTAS, 2006) found that a 10% increase in a nation's air connectivity increased GDP by 0.07%.

2.3 Liberalisation in Africa

The literature review on aviation and liberalisation in Africa uncovered papers generally published at or following the Yamoussoukro Decision (YD) in 1999. The intent of most of these papers was to survey the impacts of liberalisation across the African continent following this important policy directive.

2.3.1 Progress in Liberalisation

The literature has generally found that, while liberalisation of Africa's air transport industry has progressed since the signing of the YD in 1999, progress varies widely across the continent and the Regional Economic Communities (RECs). Many African states still retain restrictive BASAs with other African nations in an effort to protect their national carriers (Kuuchi 2013). These restrictive policies continue to make international travel within Africa difficult, while at the same time many African states have signed highly liberalised agreements with European, Asian, Middle Eastern nations and the United States, making intercontinental travel more accessible than ever before (ICAO 2003).

Barriers to reaping the benefits of a more liberalised air traffic market have also been identified. As early as 2003, submissions by African states to ICAO indicated that African airlines face difficulties in accessing intercontinental markets due to a combination of growing congestion at major international gateways and agreements between African airlines and foreign carriers where passengers are 'handed over' to foreign carriers for transport on intercontinental routes (ICAO 2003). While physical aviation infrastructure across Africa has improved, it still remains poor by international standards (Bofinger and Gwilliam 2010). There also remains a deficit of human talent and safety oversight hampering the continued development and expansion of the aviation industry (Schlumberger and Weisskopf, 2014).

Other factors also continue to hinder the growth of the African aviation industry even as liberalisation efforts progress. Air transportation in Africa remains expensive relative to global standards, with intra-African international travel found to be significantly more expensive per mile than in other world regions (Bofinger and Gwilliam, 2010). The authors also noted that aeronautical fees and passenger charges in Africa remain high, due in part to the lack of airport non-aeronautical revenues which, in other world regions, are used by airports to reduce the direct cost to carriers and passengers. Dr. Elijah Chingosho corroborates this assertion in a 2012 AFRAA presentation paper by benchmarking passenger tax and charges in East Africa versus other African and global regions.³ Taxes and charges in East Africa were significantly higher than other comparator regions including North Africa, Middle East, Asia/Pacific and Europe. Through the course of liberalisation and deregulation, many state-owned or state-supported carriers in Africa have failed while a handful of airlines (notably Ethiopian, Kenya Airways, and South African Airways) have prospered to varying degrees. Schlumberger (2010) asserts that lowering the cost of aviation in Africa, especially to the point where it is more accessible to a wider range of African travellers will provide increased economic benefits across the continent.

2.3.2 Impacts of Liberalisation

Empirical research on the industry and economic impacts of liberalisation in Africa has been limited. However, a few papers have quantitatively analysed the impacts of liberalisation on air travel in Africa:

³ <http://www.afcac.org/en/documents/conferences/october2012/afra.pdf>

- A study in 2006 (ComMark Trust), found that after BASA liberalisation in 2000, passenger volumes on the main route between South Africa and Kenya (Johannesburg-Nairobi), increased by 69%. In 2003, the BASA was further liberalised, removing all restrictions on capacity. While some growth can be attributed to accelerated economic growth in both countries, it is clear that liberalisation contributed to a significant increase in passenger volumes over the period.
- Myburgh, Sheik, Fiandeiro and Hodge (2006) studied air service liberalisation within the South African Development Community. The authors found that air fares were, on average, 18% lower on liberalised routes than non-liberalised routes, and that liberalised routes to/from Johannesburg experienced a 23% increase in passenger volumes. The authors concluded that the employment benefits to the tourism and hospitality industries would far outweigh any negative impacts on direct jobs to air carriers due to liberalisation efforts.
- Abate (2013) examined the impact of bilateral restrictions on fares and frequency on 20 routes between Addis Ababa, Ethiopia and destinations in Africa using traffic data from 2000 to 2005. The analysis found that routes operating under liberal bilaterals had 35-38% higher frequency levels than restrictive bilaterals, all else being equal.
- Similarly, Ismaila, Warnock-Smith and Hubbard (2014) analysed traffic data from 2009 and 2010 for Nigeria and found that continued liberalisation of Nigeria's air bilaterals could result in significant increases in air passenger traffic.

2.4 Conclusions

There is clear and robust evidence that air service liberalisation leads to increased air service levels and lower fares, which in turn stimulates additional traffic volumes, and can bring about increased economic growth and employment, as illustrated in **Figure 2-2**.

Figure 2-2: The Economic Impacts of Air Service Liberalisation



The literature specific to Africa confirms that, while there has been some progress, the principles of the YD have not been fully implemented across the continent. Where it has, there is some evidence that it has had a positive impact on air markets. However, other factors may have impeded the full benefits being realised, such as infrastructure, cost levels, taxes and skills levels.

3 The Context: Current Air Services in East Africa

3.1 Traffic and Air Services

This chapter provides an overview of the current air market in EAC before later chapters discuss the impacts of liberalisation. A summary is provided of both historical and current air services in the region, with a focus on intra-EAC traffic. The information and analysis provided in this section is based on passenger demand data sourced from established data providers such as Sabre Market Intelligence, and airline schedule details from Diio Mi.⁴

Figure 3-1 shows the origin-destination (OD) traffic flows between study country pairs. Kenya-Tanzania draws the largest volume of passenger demand out of all the country pairs. The total existing demand in the EAC market, excluding domestic services, sums to over 2.6 million origin-destination passengers.

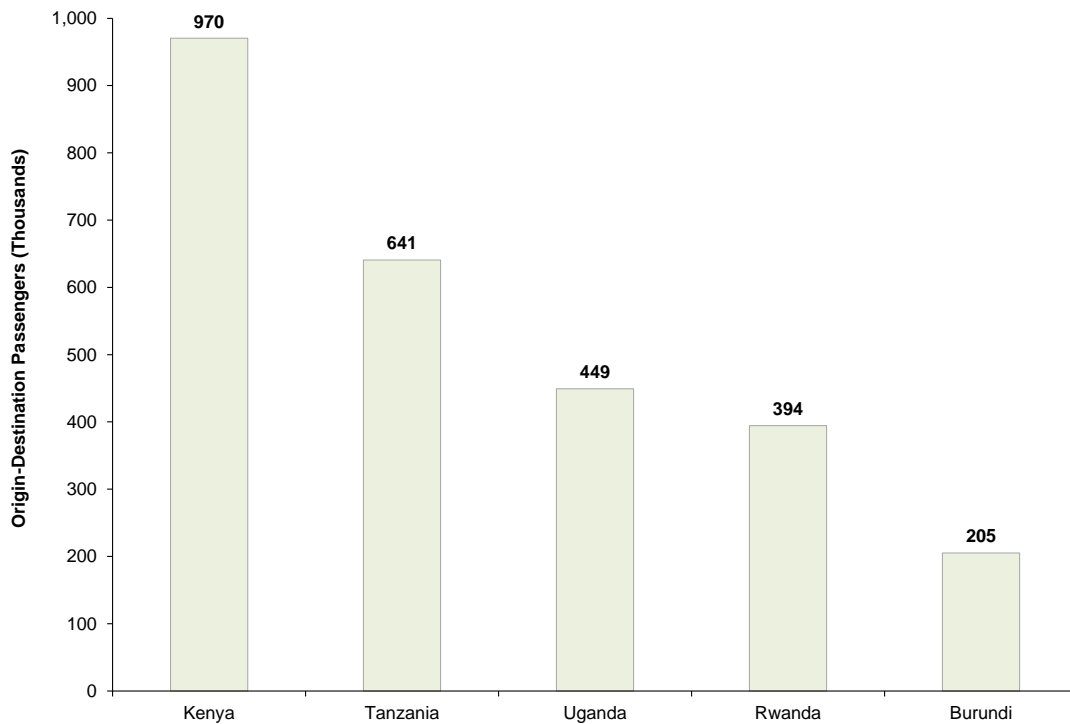
Figure 3-1: Traffic Demand between Country Pairs (2015)

Country Pair	Passenger Traffic Demand
Kenya - Tanzania	913,700
Kenya - Uganda	614,500
Kenya - Rwanda	263,900
Tanzania - Uganda	240,400
Uganda - Rwanda	220,100
Burundi - Uganda	113,000
Kenya - Burundi	95,400
Burundi - Rwanda	92,700
Rwanda - Tanzania	75,400
Burundi - Tanzania	31,200
Total	2,660,300

⁴ <http://www.sabreairlinesolutions.com/>; <https://www.diio.net/>.

Figure 3-2 illustrates the volume of origin-destination (OD) passenger traffic from each EAC country to partner EAC states. Kenya has the largest share of traffic with nearly 1 million OD passengers in 2015 (35% of all traffic), indicating that a lot of the intra-EAC is centred on Kenya. Tanzania has the next largest traffic volumes, followed by Uganda, Rwanda and Burundi.

Figure 3-2: Intra-EAC Total Origin-Destination Passenger Traffic of Study Countries (2015)



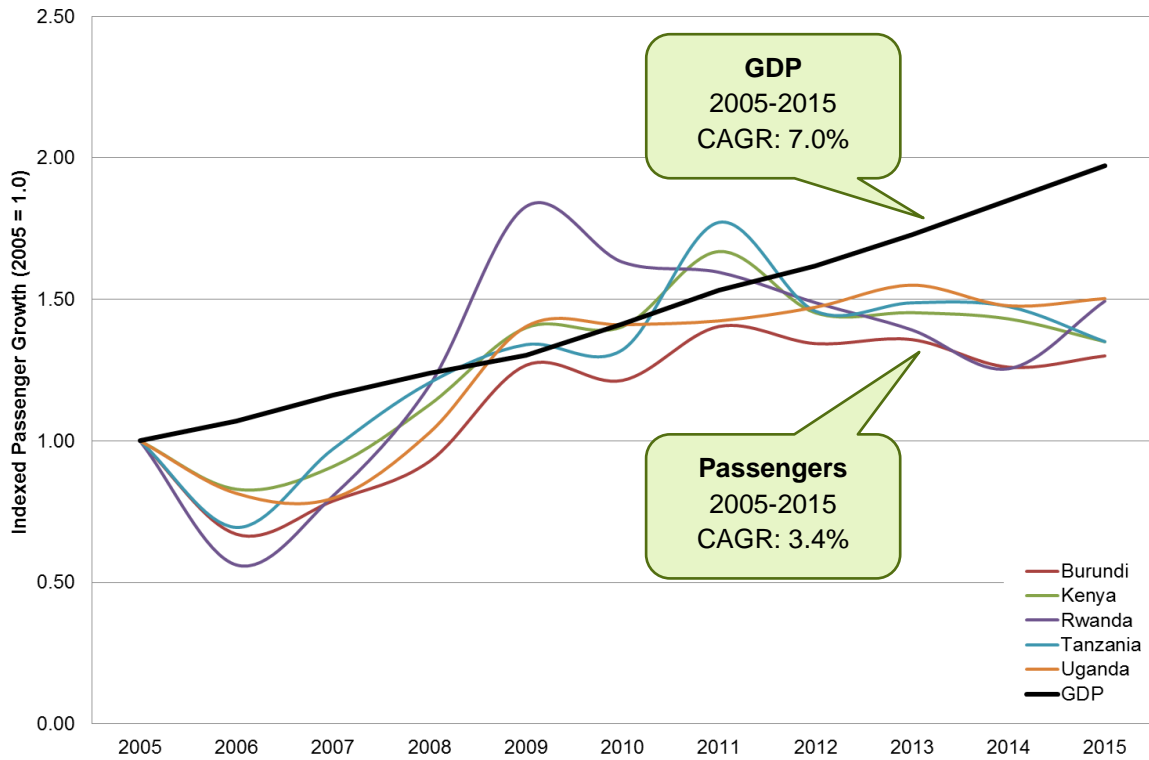
Source: Analysis of Sabre Market Intelligence data.

Figure 3-3 shows indexed intra-EAC traffic between 2005 and 2015. Over the last ten years, intra-EAC traffic has grown by a compound annual growth rate (CAGR) of 3.4% (ranging from 2.7% for Burundi to 4.2% for Uganda). Also shown is the growth of the combined GDP of the five EAC countries over the same period, which has averaged 7.0% per annum (in real terms) over the same period.

This means that intra-EAC traffic growth has been less than half the level of economic growth. This is unusual, especially for developing economies, as typically air traffic growth at 1.5x to 2.5x economic growth.⁵ This relatively low growth of traffic suggests that other factors are impeding traffic growth – regulation, taxes, infrastructure, etc. Chapters 5 and 6 examine the impact of some of these factors in more detail.

⁵ See for example: http://www.iata.org/whatwedo/Documents/economics/InterVISTAS_Elasticity_Study_2007.pdf.

Figure 3-3: Intra-EAC Indexed Origin-Destination Passenger Traffic Growth (2005 = 1.0)

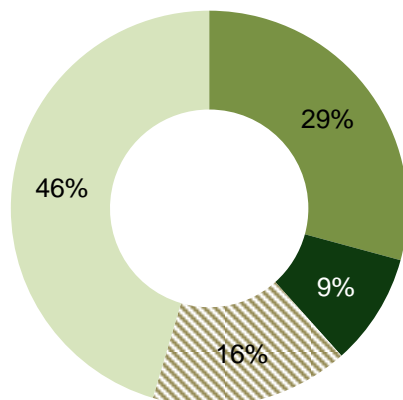


Source: Analysis of Sabre Market Intelligence data and World Bank GDP data.

Figure 3-4 shows intra-EAC traffic as a share of total traffic volumes across the five EAC countries. Only 9% of OD passenger traffic in the region is intra-EAC, compared with 16% travelling to/from other African countries and 46% flying to/from international destinations outside of Africa and 29% flying domestically.

Figure 3-4: Share of Origin-Destination Traffic by Sector (2015)

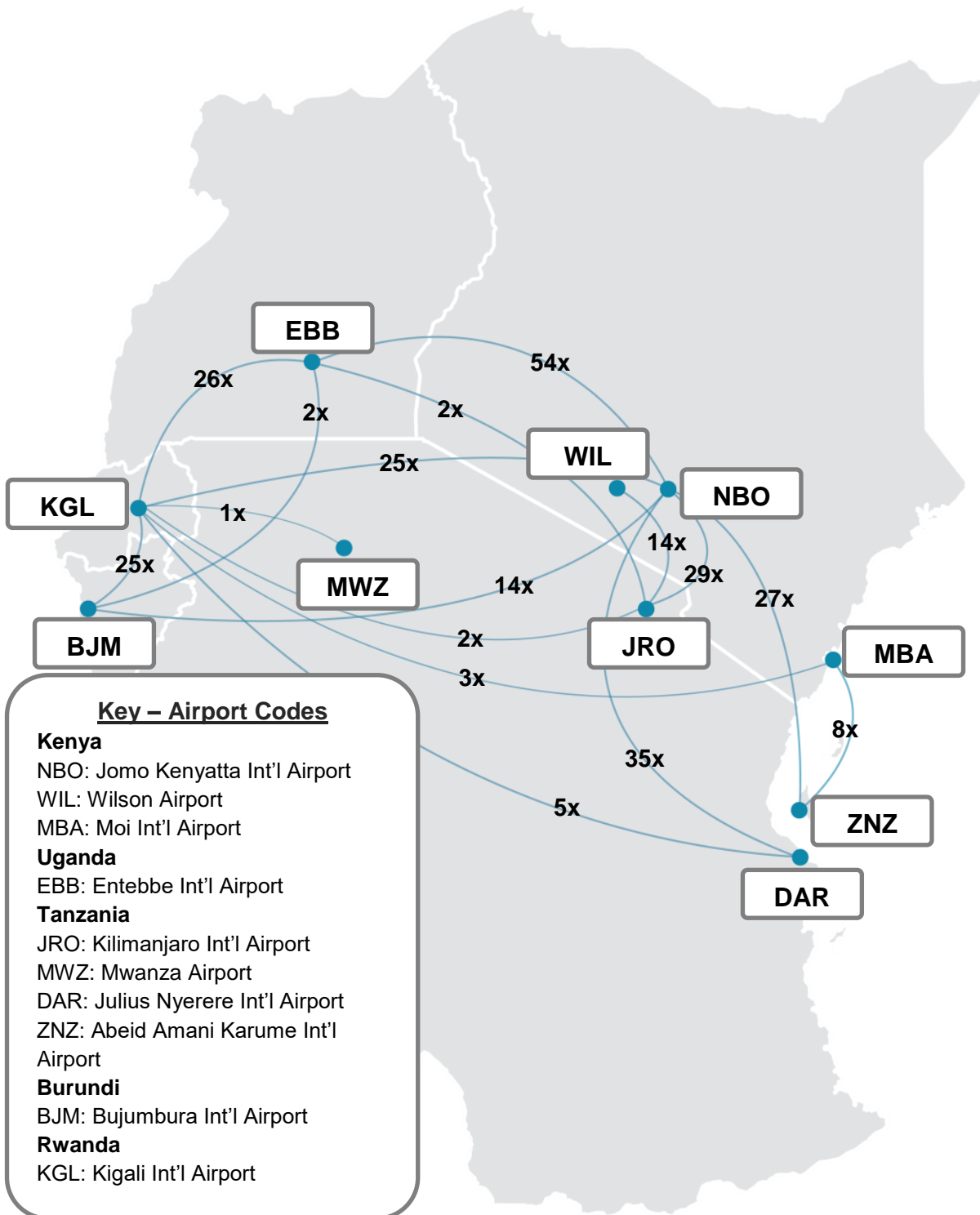
■ Domestic ■ Intra-EAC ■ Other Africa ■ International



Source: Analysis of Sabre Market Intelligence data.

Figure 3-5 shows the 22 routes operated between EAC countries in 2015. Kenya and Tanzania have services at multiple cities; Burundi, Rwanda and Uganda have services to their capital cities. Burundi has services to only three points in the EAC, while Rwanda has 7, Uganda 4, Kenya 9 and Tanzania 9.

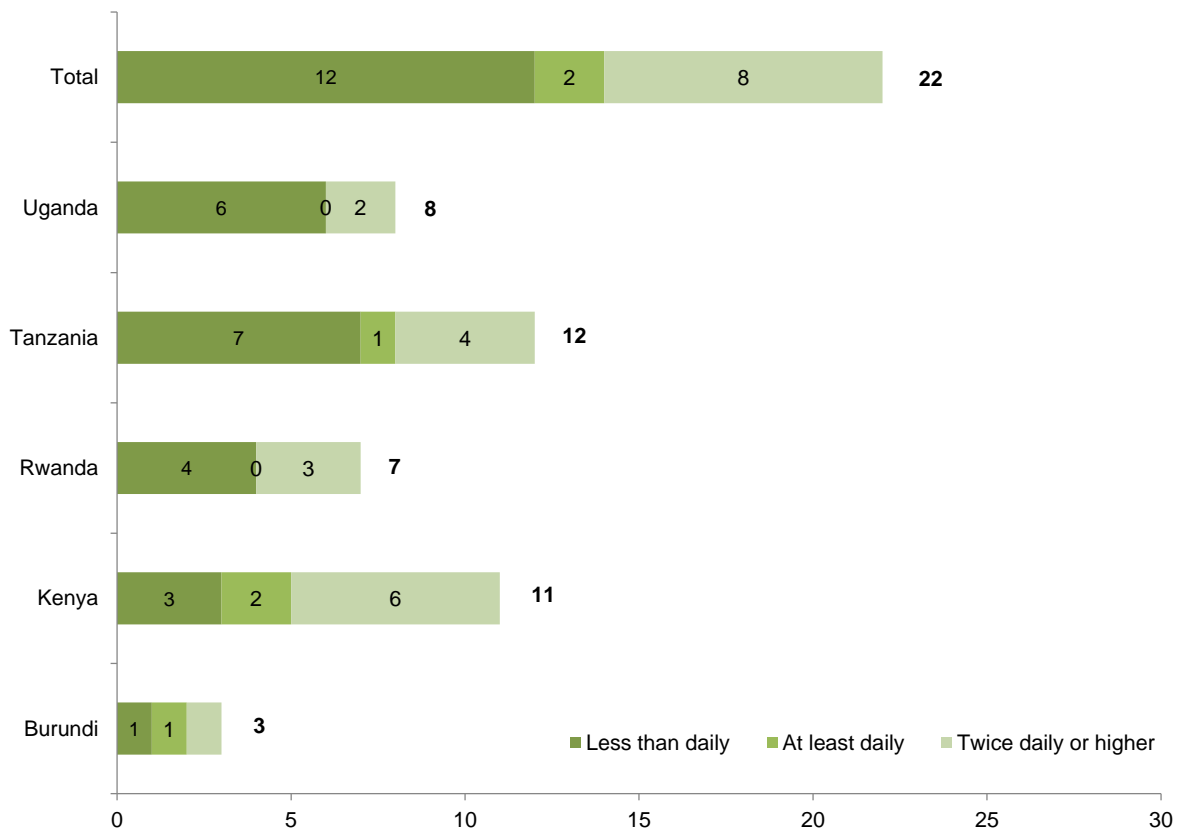
Figure 3-5: Route Map of East Africa with Weekly Frequencies (2015)



Source: Innovata Schedules extracted via Diio Mi.

Figure 3-6 shows the frequencies operated on routes between EAC countries. Just over half the routes (12 out of 22) are operated at less than daily frequency and just over a third (8 out of 22) are operated at twice daily or higher. This low level of frequency makes short-duration trips (departing and returning the same day) very difficult, which is particularly important for business trips, as discussed further in Chapter 4. The situation varies by country – while nearly half the routes from Kenya operate at twice daily or higher, no routes from Burundi operate at that frequency and very few do so in the other EAC countries.

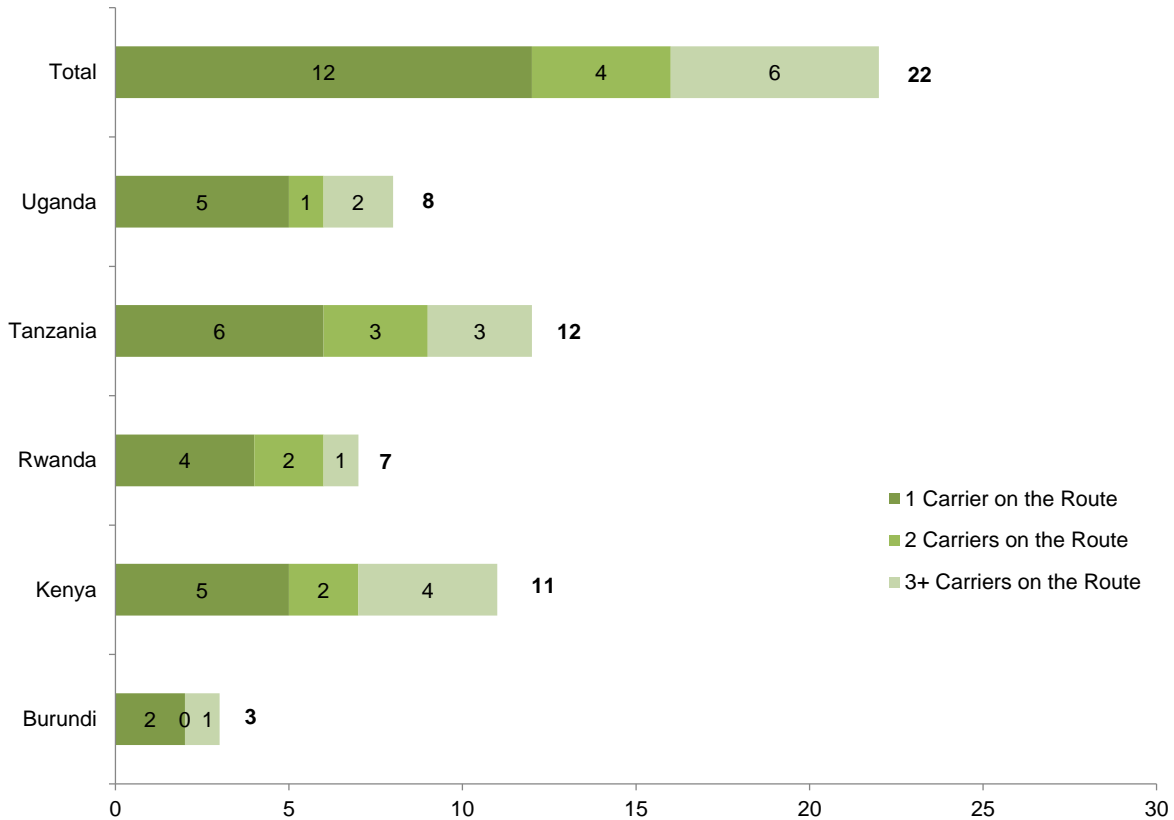
Figure 3-6: Proportion of Total Routes Operated Daily (Intra-EAC) (2015)



Source: Diio schedule data accessed via Diio Mi

As shown in **Figure 3-7**, the majority of routes (12 of 22) in the EAC, with the exception of Kenya, are operated by a single carrier, limiting the potential for competition.

Figure 3-7: Number of Carriers Serving Intra-EAC Routes (2015)



Source: Diio schedule data accessed via Diio Mi

Summary

Air traffic growth between the EAC countries has been relative low compared with economic growth, suggesting that other factors, such as regulation, taxes, infrastructure, are impeding growth. This is reflected in the relatively low number of routes operated and the low frequencies on those routes. Over half the routes in the region are operated less than daily, limiting passenger choice and making short duration trips difficult. This compounded by the fact that the majority of routes are served by only one airline, giving the airlines a monopoly on those routes.

3.2 Summary of Current Regulatory Environment

As part of the data collection process, Civil Aviation Authorities and/or Ministries of Transportation in each of the five study countries were asked about the regulatory environment in their country. Some of this data was used in the econometric analysis described in Chapter 5. A summary of the information collected is provided below, as well as an overview of EACs policy goals, initiatives and key projects.⁶

Overview of EAC Initiatives and Regulations

Many stakeholders in the EAC community recognize the importance developing the region's economy and fostering an environment that supports the growth of businesses and industries across all sectors. For example, the EABC operates with the objective of creating a more conducive business environment that facilitates both global and regional trade and investment.

A key initiative broadly supporting this objective is the Northern Corridor Integration Projects (NCIP). This initiative represents the combined efforts of Uganda, Kenya, Rwanda and South Sudan to co-operate and speed up development of the region. In particular, focus is currently being placed on facilitating the quicker movement of goods throughout the region, and to reduce the cost of doing so.⁷ For example, tariff issues and non-tariff barriers (NTBs) continue to remain a focus for the EABC in advocacy efforts. In addition, a single visa allowing free movement amongst some countries in the EAC (Kenya, Rwanda and Uganda) has been finalized, but more progress can be made to include additional member states.⁸

The EAC as a regional intergovernmental organisation has identified itself as one of the fastest growing regional economic blocs in the world. Its efforts continue to push ahead for full regional integration, as evidenced by the continued development of initiatives such as the East African Customs Union, the Common Market and the East African Monetary Union Protocol.⁹ Their mission statement reflects the underlying motive for the initiatives and projects mentioned previously: "To widen and deepen economic, political, social and cultural integration in order to improve that quality of life of the people of East Africa".¹⁰

Specifically within the aviation sector, work is currently underway to finalize and implement a new set of liberal regulations to manage the regional air transportation system in the EAC (EAC Liberalisation Regulations). Unlike the current regulatory framework, the document outlines the ability of member state to grant rights (1st through 5th freedoms of the air) that are associated with unlimited capacity and frequency options. In general, member states have agreed to the contents; however, issues such as foreign ownership and protectionist ideals have hindered additional progress.

Despite the efforts of these initiatives, air service agreements between EAC countries are currently for the most part restrictive, constraining traffic rights and the frequency with which carriers can operate between certain points.

⁶ <http://www.eac.int/about/overview>.

⁷ <http://www.nciprojects.org/about/about-us>.

⁸ <http://www.visiteastafrica.org/visa-2/>.

⁹ <http://www.eac.int/about/overview>.

¹⁰ http://www.eac.int/sites/default/files/docs/eac_vision_2050-_web.pdf.

Private Sector Involvement

From the surveys of Civil Aviation Authorities and/or Ministries of Transportations, it was indicated that private sector is permitted to participate in the air transport industry; however, the extent of its allowed involvement varies between countries.

Kenya, Tanzania and Uganda indicated that they allow private sector investment to most of their air service areas including: scheduled and non-scheduled cargo and passenger services, airport operations and ground handling services. The one exception which was indicated by all of the study countries was air navigation services, which are operated and overseen by each country's respective aviation authority.

Rwanda is slightly more restrictive than Kenya, Tanzania and Uganda in that it prohibits the private sector involvement in airport operations. Burundi restricts most private involvement with the exception of international cargo and charter passenger operations. A breakdown of the responses is provided in **Figure 3-8**.

Figure 3-8: Private Sector Involvement by EAC Country

Private Sector Area	Country				
	Burundi	Kenya	Tanzania	Rwanda	Uganda
Scheduled international passenger air transport services		✓	✓	✓	✓
Scheduled domestic passenger air transport services		✓	✓	✓	✓
Non-scheduled international passenger air transport	✓	✓	✓	✓	✓
Non-scheduled domestic passenger air transport		✓	✓	✓	✓
Scheduled international cargo operation	✓	✓	✓	✓	✓
Scheduled domestic cargo operation		✓	✓	✓	✓
Non-scheduled international cargo operation	✓	✓	✓	✓	✓
Non-scheduled domestic cargo operation		✓	✓	✓	✓
Air navigation services					
Ground handling		✓	✓	✓	✓
Airport operation		✓	✓		✓

Source: East Africa Research Fund BASA Questionnaire.

Regulation and Restrictions on Domestic Air Services

The regulations and restrictions to domestic air services vary across each of the EAC study countries. Rwanda was the most heavily regulated, with tariffs, capacity and fuel (Jet A1) receiving varying levels of restrictions. Both Burundi and Tanzania have their domestic air services restricted only in terms of capacity, while Kenya and Uganda limit only market access.

Foreign Ownership and Control of Airlines

The maximum foreign ownership permitted for carriers operating domestically and internationally in all five EAC countries is 49%.

It should also be noted that there are requests from EAC stakeholders to encourage the partnering of local and foreign investment to establish and upgrade transportation networks (including investment in airlines), as discussed in Chapter 4.

BASA Status

The surveys collected detailed information on the BASAs between the five study countries and with other countries in Africa, namely: Ethiopia, Sudan, Eritrea, Somalia, DC Congo, Mozambique, Zambia, South Africa, Nigeria, Egypt, Morocco and Angola.¹¹ Details were provided on the year of the agreement, designated airlines, capacity and frequency restrictions, fare regulations, 5th freedom rights and named routes.

Each BASA was categorised as either:

- Liberalised - no restrictions on capacity/frequency, pricing or 5th freedoms.¹²
- Restrictive - restrictions applied on some or all of capacity/frequency, pricing or 5th freedoms.

These categorisations are summarised in **Figure 3-9**.¹³ As can be seen, the vast majority of BASAs signed between the EAC countries and with other Africa countries are restrictive with partial or full restrictions on aspects of the BASA. Only two out of ten BASAs between the EAC countries are fully liberalised: Kenya-Burundi and Kenya-Uganda.

These restrictive BASAs have implications for the level of service, fare levels and overall level of traffic between the countries. This is illustrated in **Figure 3-10**, which compares the average annual growth rate on the two liberalised country pairs (Kenya-Burundi and Kenya-Uganda) since liberalisation with traffic growth all the other country pairs in the EAC (which are subject to restrictive BASAs). As can be seen, traffic growth on the liberalised country pairs is double that on the other country pairs (+5.5% vs +2.6%). Other factors may have contributed to this differential (e.g., economic growth) and so the analysis in Chapter 5 takes the analysis further by controlling for these other factors.

Figure 3-10: Passenger Demand Growth Following Liberalisation

Country Pair	Traffic Demand CAGR (2008-2015)
Kenya-Burundi	+5.5%
Kenya-Uganda	+6.3%
All Other EAC Country Pairs	+2.6%

Source: Analysis of Sabre Market Intelligence data

¹¹ These additional countries were included to ensure sufficient size and variation in the dataset, and included the largest economies in Africa and selected countries close to the EAC.

¹² Fifth freedom is the right to carry traffic between two foreign countries with services starting or ending in the airline's own country (also known as beyond rights). For example, for a Kenyan airline to carry passengers between Uganda and Tanzania as part of a service that started in Kenya. See Appendix A for more details.

¹³ For further information on the categorisation of the BASAs, see Appendix A.

Figure 3-9: Status of Negotiated BASAs in EAC Region (as of 2015)

Country	Burundi	Kenya	Rwanda	Tanzania	Uganda
Burundi		Liberalised	Restrictive	Restrictive	Restrictive
Kenya	Liberalised		Restrictive	Restrictive	Liberalised
Rwanda	Restrictive	Restrictive		Restrictive	Restrictive
Tanzania	Restrictive	Restrictive	Restrictive		Restrictive
Uganda	Restrictive	Liberalised	Restrictive	Restrictive	
Angola	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive
Congo DC	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive
Egypt	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive
Eritrea	Restrictive	Liberalised	Restrictive	Restrictive	Restrictive
Ethiopia	Restrictive	Liberalised	Liberalised	Liberalised	Liberalised
Morocco	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive
Nigeria	Restrictive	Restrictive	Liberalised	Restrictive	Liberalised
Sudan	Restrictive	Liberalised	Liberalised	Restrictive	Restrictive
Somalia	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive
South Africa	Restrictive	Restrictive	Liberalised	Restrictive	Restrictive
Zambia	Restrictive	Restrictive	Restrictive	Restrictive	Restrictive

Source: East Africa Research Fund BASA Questionnaire.

4 Stakeholder Consultations: Current Air Service and Impacts of Liberalisation

4.1 Data Collection

The following section provides an overview of the responses broken down by themes. Detailed feedback from each country can be found in **Appendix C**. In some areas, additional commentary has been provided to validate or augment the stakeholder feedback.

4.2 Key Themes

Stakeholders provided detailed feedback highlighting their thoughts on the liberalisation of air service in the EAC region. Some common themes arose across the responses and are summarised in the following sections. Quotes from some stakeholders are provided in pull-quotes to further illustrate the key points.

4.2.1 Current Air Service Level Assessment

Stakeholders from all study countries felt that international and domestic air service levels are both inadequate and cost prohibitive. In many cases, travellers choose to take ground transportation to reach bigger cities in the region, due to cost and lack of direct service, adding unnecessary time and inconvenience to their journey.

Domestic networks are underdeveloped and the frequency with which regional airports are served was considered low. One respondent noted that connectivity from this standpoint simply does not serve the EAC population in terms of trade and tourism. An example of this is the untapped potential of game reserves located in south and west Tanzania. Poorly maintained roads to these locations from the city require a drive time of eight to 10 hours, instead of a 30 minute flight. Currently, charter flights are available for tourists but these are very costly and severely limit the potential market for tourism. Specific requests were placed for air service to Selous, Katavi and Ruaha, as well as service between the Serengeti and Masai Mara. Traffic between these two locations must currently connect through Nairobi and Kilimanjaro.

Service between EAC countries were also raised as a concern. Air service within the EAC was seen as inadequate providing poor connectivity to many parts of the regions. It was also felt that there

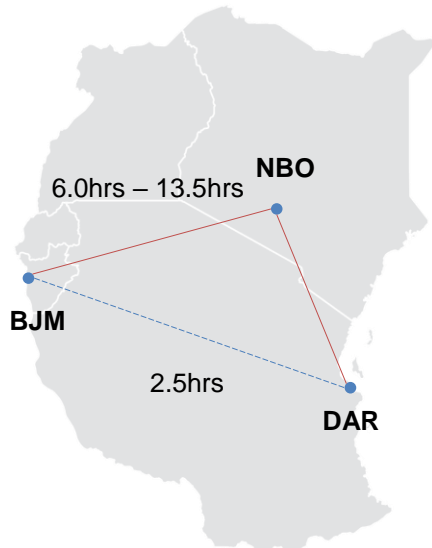
was limited competition and, as a consequence, high fares. For example, there is still no direct flight connecting Burundi with Tanzania (which is corroborated by Innovata schedule data extracted from Dii Mi). To fly between these two countries, a connection must be made by passengers in Kenya. These connections add several hours to the journey, sometimes more, which is unattractive for business travellers and reduces the potential for tourism to develop. Similarly, flying Kigali to Arusha can take

“Air transport services are hard on traders in Rwanda. It is difficult to keep business schedules because of connectivity issues. Many traders find it difficult to keep business appointments throughout the EAC when relying on Air Transport. This also affects inward investment.”

- Government Ministry

about 9 hours as direct flights are not always available. Delays, cancellations and overbookings also contribute to poor connectivity.

Illustrative Example: BJM - DAR



Flying from **Bujumbura** non-stop to **Dar es Salaam** is not possible and this journey must be made with the use of timely connections. A dummy booking made via Google Flights indicates that the journey can be made with a minimum of one connection via Nairobi, resulting in a trip time of **six hours**. Additional itineraries make use of two, sometimes three connections that can take as long as **13 hours**.

Should direct service start between these two cities, a regional turboprop could serve the route in approximately **2.5 hours** or less.

Demand for specific routes was noted by stakeholders. In the case of Rwanda, it was requested that service commence between Kigali and Mwanza, while the frequency of flights increase between Kigali and Arusha. Ugandan regional routes have potential to be expanded, and some individuals expressed interest in seeing service to both Hoima and Masindi from Entebbe, as well as new routes to South Sudan and Central/Western Uganda in general.

Stakeholders in Uganda pointed out that the high costs and low service levels force many travellers living in Uganda to drive to Nairobi, Dar Es Salaam or Mombasa instead of less economical air travel. This leakage of passengers to surrounding countries was felt to be harmful to Uganda as it drives money away from local airports and government, limiting the ability to invest in Ugandan aviation.

Air cargo was seen as particularly problematic, with high costs and connectivity. Cargo capacity was reliant on passenger services which meant some cargo was off-loaded at peak times to meet the needs of passengers. Some stakeholders felt there was a need to introduce new air cargo players into the industry, as exporters found existing carriers expensive and sometime unreliable, partly due to their monopolist position.

Stakeholders felt the need for cargo and passenger access to improve to several international markets both within Africa and to Europe, China, North America and Asia. It is noted that there are plenty of goods available for export from the EAC (e.g., flowers, produce, minerals, etc.) but the cost of moving these goods out of the country remains high. Additionally, there is some demand within Africa, in particular Namibia and Nigeria, for Kenyan goods and products

“When it comes to tourism, we are still operating with a system not designed to offer affordable services and products to EAC residents. It is time to recognize the potential of East Africans as a viable source market; they should be encouraged to travel within their own country and region.”

- Tourism Association

instead of the South African ones that are currently imported.

Respondents noted that the state of air service in the region has significant implications for the broader EAC economy and well-being. Trade, tourism and business development were three areas commonly listed as being particularly affected by poor air access:

- **Trade.** Flower and agricultural exporters generally have goods to export, but are simply unable to economically do so due to the cost and lack of air cargo options available. Lack of adequate logistics and aviation transportation infrastructure increases time to market resulting in increased holding costs and also degrades the quality of the product. An example cited was goods from Kilimanjaro and Arusha, which are often transported to Nairobi on the ground before being shipped on to international markets, rather than being shipped direct by air. Improved cargo networks due to liberalisation in the region are expected to open up many more export opportunities for producers, as most of the valuable cut flower trade between Kenya and the EU is carried on passenger aircraft versus dedicated freighters.¹⁴ Increased aviation and cargo handling infrastructure at airports outside of major hubs may allow for new markets to open up for regional air cargo transport, thus further allowing perishable goods from EAC nations to flow to key markets in the EU, Asia, and the Americas.
- **Tourism.** Air access to remote game reserves and attractions in the EAC is too costly and inconvenient for many international tourists. Road access is often the only sensible option, and while ground infrastructure is slowly improving, it is noted that some roads are still prone to traffic jams and poor conditions. Stakeholders also noted that tourism and investment has been hampered due to poor air service levels. For example, inbound tourists are forced to land in Nairobi and take a shuttle into Tanzania instead of a more convenient connecting flight itinerary. In addition, lack of air service was seen to be hampering the development of tourism in emerging markets such as Burundi and Rwanda. Currently connectivity does not allow tourists to travel around the region easily or cost effectively, negating the NCIP initiative that enables foreign travellers to move freely between Rwanda, Kenya and Uganda with a single visa.
- **Business Development.** This has been hampered in the region due to the inconvenience and time it takes to conduct business trips in the EAC. Same-day business trips are not possible in most cases due to the lack of flight frequencies and connections. The result is a need to stay overnight, adding unnecessary costs to the trip. As was shown in the previous example of flights between Bujumbura and Dar es Salaam, it would simply not be possible to conduct same day business if the one-way time flying between both cities is at minimum six hours.

4.2.2 Impacts of Liberalisation

Implications for Aviation

Regulation and protectionism were discussed as being a major barrier to the growth of the air service industry in the EAC. One element of this includes the negotiation of BASAs, many of which are restrictive and limit capacity to protect the interests of national carriers.

Stakeholders expected liberalisation to reduce fares, increase passenger and cargo traffic, and generate significant employment benefits for each country. Liberalisation of air services within East Africa was expected to promote competition among the players which would benefit the customer through improved service levels and lower airline fares.

¹⁴ Charles E. Schlumberger, *Open Skies for Africa: Implementing the Yamoussoukro Decision*, 2010.

Implications for the Economy

There was unanimous agreement amongst stakeholders that trade and tourism would be significant beneficiaries from liberalisation. Tourism in particular is an industry dependant on good access to a country and its associated offerings. With more airlines entering the market, spurring competition and likely reducing fares, it was expected that there would be an increase in tourism arrivals, as more people would be able to travel. This would lead to growth in the tourism sector and the further development of tourism facilities, which in turn leads to revenue generation and economic growth. Respondents indicated that following liberalisation, they would expect a growth in hotel development and tourism facilities, jobs, and overall revenue due to increased domestic, regional and international visitation.

Respondents note that the ease with which goods could move through the EAC region would significantly boost trade and unlock additional opportunities and markets. Export oriented industries overseeing the movement of fresh produce such as fish, flowers, vegetables and fruits would likely develop and grow given the ability to move their goods at a lower cost and more efficiently. Distance to market challenges currently faced at, for example, Mbeya and Iringa in Kenya could be overcome if goods can be moved via air instead of costly and time-inefficient ground services.

Business development and investment is another area that would grow along with an expanded air transport market, driven by liberalisation, would allow for easier and more affordable movement. One of the main challenges in many East African countries is poor transport infrastructure, which hinders swift movement, increases costs of doing business, and limits investment. Improvements in air service from liberalisation would lead to saving by reducing time wastage and ultimately catalyse investment. The pace and speed of business is expected to increase substantially. For example, it could be possible for a business person in Kigali to complete a business transaction in Nairobi and be home within five hours. Via ground transportation, this scenario takes approximately 26 hours.

A number of stakeholder comments that increase air services would support the development of new industries. An example offered by one stakeholder is the opportunity for African aircraft manufacturing and product development, which is currently achieved only through importing. The increase in air services among member countries could lead to an expansion in the size of the market and purchasing power, which is a stimulant for growth of the manufacturing and tourism industry. The catering industry is also likely to experience a boom due to the increase in demand for food stuffs. The financial services sector could also be enhanced to cater for the international needs. It could also ease existing challenges associated with oil manufacturing and processing and business.

A request from stakeholders was to call for greater 5th freedom traffic rights as a means to boost connectivity. One example is to give RwandAir permission to pick up passengers between Kigali and Nairobi at Kilimanjaro. This permission is expected by many to reduce fares, increase connectivity and increase the efficiency with which airlines utilise their planes.

“In the East African region the only way to bring the cost of air travel down, affordably, is by liberalising air transport services ... This will bring in innovative products and allow many more people to travel by air, increasing access to new locations/markets, increasing frequencies on existing routes and enable airlines to make more money through economies of scale. In the end, everyone will benefit”

- Government Ministry

“The NCIP is considered an important stepping stone towards the implementation one air space in the EAC. The introduction of travel without the need to have a passport in Uganda, Kenya and Rwanda is an example towards liberalisation, with freedom of movement being fundamental.”

- Trade & Investment Association

The Northern Corridor Integration Projects (NCIP) efforts were recognized by respondents, but it was suggested that the Multilateral Air Services Agreement (MASA) must be finalised so that competition, frequencies and fares can all be improved. Some benefits associated with this initiative have already been observed. For example, a directive was given to Kenya to allow RwandAir 40% of the capacity between Entebbe and Nairobi. The result was a significant reduction of fares. Additionally, the NCIP introduced travel without the need for a passport amongst member states, but stakeholder emphasised that efforts must continue to fully liberalise.

Potential Dis-Benefits

Some respondents pointed to dis-benefits that may come along with liberalisation. Some stakeholders expressed a concern that liberalisation could lead to larger, better-capitalised foreign carriers “squeezing out” smaller, less-well-funded local carriers. However, it was generally viewed that the introduction of greater competition would ultimately be beneficial by encouraging existing carriers to undertake greater efficiencies. African stakeholder carriers also feel they are at a disadvantage when it comes to the negotiation of bilateral agreements with partner states. It was indicated that some countries are more liberal with their BASA agreements with foreign airlines compared to African carriers, thereby creating discriminatory and unfair practices. For example, 17 foreign airlines currently benefit from 5th freedom rights between African cities, compared to 11 African carriers.

“The dis-benefit one might expect is that protection of home carriers would be eliminated, which means that monopoly over certain markets would cease, thus requiring airlines to do a lot more to maintain or gain market share. However, this has a benefit on the other side since the competition created would encourage airlines to improve their services, efficiency and lower costs, which leads to sustainability in the long run.

Ultimately, the threat only exists to carriers not adopting changes to meet the new market conditions.”

- National Airline

There were concerns raised that liberalising 5th freedom rights would allow larger, foreign carriers to dominate major routes at the detriment of smaller local carriers and the development of regional air services. An additional effect of this, noted by one stakeholder association, is a multiplier effect loss of local jobs, business and investment. They also noted that the loss of jobs and carriers in some cases was observed in the case of liberalising South African skies.

In regards to the impacts on incumbent or home carriers, there is very little empirical research into the impact of liberalisation on these carriers. This is due, in part, to the widely varying circumstances of the home carriers (in terms of ownership, financial strength, managerial excellence, etc.) making it difficult to produce generalised findings from the research.

Undoubtedly, liberalisation exposes the home/incumbent carriers to greater competition. Many of the benefits of liberalisation discussed previously, such as fare reductions and increased services levels, are driven by the competitive forces unleashed when markets are deregulated. While this increased competition has the potential to weaken the market position and profitability of the home/incumbent carrier, liberalisation also offers a number of offsetting benefits:

- Access to new markets – liberalising BASAs can offer the home carrier access to new routes that previously were unavailable. In addition, 5th freedom rights can provide opportunities to serve markets that previously had been uneconomical.
- Improved access to capital – removing ownership restrictions will allow home carriers to access a wider range of investment options at lower cost.

- Access to world-class expertise – removal of ownership and control restrictions will provide home carriers with greater access to managerial and technological knowledge and best practice.
- Increased efficiency – liberalisation will enable home carriers to achieve efficiencies through greater access to investment and expertise, and through consolidation and mergers (providing economies of scale and scope benefits). This will aid home carriers in remaining competitive and to exploit new opportunities in the deregulated market.

A number of historical case studies are provided in Appendix F to provide insight into the impact of liberalisation on home and incumbent carriers. It should also be noted that consulted carriers such as RwandAir and FastJet were supportive for further liberalisation in the EAC.

Some stakeholders raised concerns regarding the management of environmental impacts, in particular the level of noise and air pollution to be generated by new market entrants. However, it was also noted that should this growth be managed and planned effectively, it may not be a problem at all. Some concern was raised by stakeholders that a loss of control of air services could lead to the mismanagement of some airlines operating in the region.

Another issue raised by multiple respondents was the issue of safety oversight amidst potential liberalisation. Open skies would invite many more carriers into the region, thereby requiring CASSOA (East African Community Civil Aviation Safety and Security Oversight Agency) to significantly broaden their responsibility and governance.

4.2.3 Other Issues Affecting Aviation

The stakeholders raised a number of issues facing the regional aviation industry:

Costs and Taxes

Many stakeholders felt that the industry suffered from high costs and high taxation. Taxes/charges mentioned in particular included: 16% VAT on air tickets and on spare parts in Kenya, taxes on jet fuel, high airport departure tax and generally high airport landing fees. Taxes and airport charges are high and non-uniform within the region. For example, departure taxes in Rwanda are US\$37, in Kenya are US\$50 and Burundi US\$20 per passenger. In the case of Tanzania, it was pointed out that domestic and international flights shared the same tax rate, which is likely to hamper the growth of regional EAC traffic. Some stakeholders have indicated government taxation on tickets can amount to upwards of 40% of the ticket price, which is borne out by the analysis below.

Figure 4-1 benchmarks the government departure taxes and other airport taxes and charges in the EAC and selected countries in Africa and overseas.¹⁵ As can be seen, the charges applied at EAC airports are generally higher than the benchmark countries in the rest of Africa and overseas. Furthermore, the fees represent a significant proposal of the average return fare for travel between the EAC countries, especially as they are applied by the origin and destination countries. For example, someone purchasing a return ticket from Burundi to Rwanda will pay \$60 in taxes charges in Burundi and \$42 in Rwanda. The total amount, US\$102, equates equivalent to 42% of the average total return ticket price. Other destination EAC countries have lower tax levels, hence the range in the percentages.

Figure 4-2 and **Figure 4-3** benchmark landing fees and air navigation charges (both en-route and terminal navigation charges, where applicable) at select EAC airports and international comparator airports using three representative aircraft types: ATR42-600 turboprop (~50 seats); A320 narrowbody jet (140-180 seats) and Boeing 777-300R widebody jet (350-500 seats).

In general, landing and air navigation fees within the EAC nations are within a similar range but there are significant variations in the structure of landing and navigation fees across the countries. Kenya is notable in charging relatively lower landing fees for small and medium aircraft than its EAC neighbours, but charges a higher air navigation fee as it is distance-based versus a flat rate seen in the other EAC countries. However, given the limited airport infrastructure at some EAC airports (compared to other major international airports), fees may be considered to be relatively high and cannot be offset adequately by concession revenue.¹⁶ Compared to the benchmarked international airports, EAC and other African airports tend to charge relatively high landing fees. While Nice does impose high landing fees it, like many other airports in the EU, consider emissions and noise in their landing charges thus increasing the price. O. R. Tambo International Airport in Johannesburg charges very high landing fees by global standards, but these are offset by relatively lower air navigation charges resulting in a total cost to operators similar to European or North American airports.

EAC countries generally impose lower air navigation charges than the international comparators for small and medium-sized aircraft, but higher fees for large widebody aircraft.¹⁷ However, the benchmarking analysis shows that the system of charges is not uniform across the five EAC nations, with en-route fees in Kenya being nearly double those of Burundi or Rwanda. However, the variation in

¹⁵ Other per-passenger taxes and charges may include: security fees, airport service charges, civil aviation tax, airport improvement fees, etc.

¹⁶ Bofinger and Gwilliam, 2010.

¹⁷ Note that the FAA does not charge en route or terminal navigation fees, instead levying per passenger per flight segment fees and an *ad valorem* ticket tax of 7.5%..

fees is likely linked to the differences in geography and ANSP coverage across the EAC nations. Nonetheless, stakeholder consultation has indicated that the relatively high level of landing and air navigation fees pose a significant financial burden on the airlines and reduce their ability to sustainably operate in a high operating cost environment.

Figure 4-1: Benchmarking Analysis of Passenger Taxes, Fees, and Charges
(Prices are in U.S. Dollars)

Country	Departure Tax	Other Taxes and Service Charges	Total Passenger Charges	Charges as % of Average EAC Fare [#]
Burundi	\$20.00	\$40.00	\$60.00	28-42%
Kenya	\$50.00	-	\$50.00	19-24%
Rwanda	\$37.00	\$5.00	\$42.00	18-42%
Tanzania	\$40.00	-	\$40.00	11-21%
Uganda	\$40.00	\$10.00	\$50.00	11-33%
Ethiopia	\$30.00	-	\$30.00	N/A
South Africa	-	\$41.20	\$41.20	N/A
France	-	\$29.01	\$29.01	N/A
Norway	\$9.73	\$13.38	\$23.10	N/A
United Arab Emirates	\$9.52 ¹⁸	\$31.28	\$40.80	N/A
United States	\$17.80	\$10.10	\$27.90	N/A

Source: Relevant airport authority and civil aviation authority websites. All charges listed in U.S. Dollars, converted at August 2016 exchange rates for fees listed in local currency (e.g. DXB and JNB).

#: Total passenger charges applied on the outward and return tickets as a percentage of average 2015 return fare for flights from the stated EAC country to other EAC countries. The percentage is a range as it depends on the exact country pair (Source: Sabre Market Intelligence data).

¹⁸ 35 AUD departure tax instituted as of 1 July 2016 for international enplanements. Transfer passengers are exempt.

**Figure 4-2: Benchmarking Analysis of Landing Fees
(Prices in U.S. Dollars)**

Country	Airport	ATR42-600	Airbus A320	Boeing 777-300ER
Burundi	Bujumbura International	\$84.30	\$429.90	\$1,934.56
Kenya	Jomo Kenyatta International, Nairobi	\$65.00	\$223.00	\$1,750.00
Rwanda	Kigali International	\$83.70	\$387.15	\$1,719.90
Tanzania	Julius Nyerere International, Dar es Salaam	\$93.00	\$390.00	\$1,422.53
Uganda	Entebbe International	\$93.00	\$468.00	\$1,755.00
Ethiopia	Addis Ababa Bole	\$108.26	\$453.98	\$2,042.89
South Africa	O. R. Tambo, Johannesburg	\$227.12	\$841.77	\$3,745.64
France	Nice Cote d'Azur	\$67.08	\$415.01	\$2,937.65
Norway	Oslo Gardermoen	\$144.75	\$303.51	\$546.32
United Arab Emirates	Dubai International	\$69.31	\$316.12	\$1,422.53
Canada	Vancouver International	\$39.82	\$295.50	\$1,329.73
United States	Southwest Florida International ¹⁹	\$85.95	\$382.52	\$658.38

Sources: Landing charges sourced from relevant national civil aviation authorities and airport authorities. All charges listed in U.S. Dollars, converted at August 2016 exchange rates for fees listed in local currency (e.g. DXB and JNB).

¹⁹ Southwest Florida International Airport (RSW) handled approximately 8.4 million passengers in 2015 with a mix of domestic and long-haul international services. The airport is similar in layout and terminal space to NBO in Nairobi.

Figure 4-3: Benchmarking Analysis of Air Navigation Charges, International Flights, En Route and Terminal Charges (Prices in U.S. Dollars)

Country	ATR42-600	Airbus A320	Boeing 777-300ER
Burundi	\$25.32	\$56.38	\$225.27
Kenya	\$167.33	\$351.70	\$819.99
Rwanda	\$35.00	\$100.00	\$310.00
Tanzania	\$72.00	\$180.00	\$360.00
Uganda	\$40.00	\$125.00	\$330.00
South Africa	\$159.08	\$319.59	\$671.35
France	\$355.63	\$817.96	\$2,003.01
Norway	\$155.16	\$343.10	\$896.73
United Arab Emirates	\$60.00	\$60.00	\$105.00
Canada	\$240.53	\$702.48	\$2,216.66

Sources: Air navigation charges sourced from relevant national civil aviation authorities. For nations not instituting a flat rate based on aircraft maximum take-off weight (MTOW), a 500 km flight segment was assumed. En route navigation charges for Ethiopia not available.

Infrastructure

Many stakeholders pointed to a need for further infrastructure improvement both at airports and for road access to airports. For example, lack of lighting and better navigational aids at some airports limits the times services can be offered to only daylight hours. This means travellers are forced to spend nights at destinations unnecessarily, which again adds to their overall travel costs.

Research conducted for the African Development Bank indicated that across Sub-Saharan Africa airports suffer from a lack of “hard” infrastructure, such as adequate night lighting or aids to air navigation, and “soft” infrastructure in limited human resources and skilled professionals required for an efficient and safe aviation industry. Bofinger and Gwilliam, in a 2010 report for the World Bank focusing on aviation infrastructure in Africa, highlight this dual deficit in their discussion of the lack of adequate air traffic control and air navigation service infrastructure. Many African airports, outside of major airports such as Jomo Kenyatta International Airport in Nairobi, lack constant air traffic control radar while in other nations infrastructure has fallen into disrepair due to lack of funding and available personnel. These issues hinder both the security of air transport in Africa as well as the efficiency. Without adequate surveillance radar technologies or precision approaches, air traffic controllers must space aircraft at greater distances, reducing the overall capacity of African airports.

Air navigation infrastructure, such as instrument landing systems (ILS) and traditional navigation infrastructure, can become limited outside of major airports.²⁰ The lack of adequate aviation navigation infrastructure hinders the ability for pilots and carriers to operate safely, in inclement weather, and at night. However, improving airspace navigation infrastructure may be accomplished through less costly satellite-based systems such as GNSS/RNAV precision approaches and ADS-B aircraft surveillance, as opposed to older, and more expensive, radio-navigation and radar surveillance technologies.²¹ These less capital intensive solutions are being widely adopted across the world and present an immediate opportunity for EAC nation' civil aviation authorities to improve the air navigation system.

Safety and Security

Stakeholders, in particular tourism associations, frequently cited safety as a top concern. There were worries associated with terrorism threats and health concerns related to Ebola. These issues are clearly stated on widely distributed travel advisories, sometimes resulting in travel bans, which negatively impact the volume of inbound visitors into the region. It was noted that safety audits are improving the reliability of EAC fleets, but efforts must be made to train and retain maintenance staff.

Following liberalisation, the increased levels of air traffic will necessitate a larger safety oversight community than what currently exists. An EAC committee is in place to monitor aviation safety and security harmonisation and implementation amongst the member states, due to the inability of individual member states to be self-sufficient. For example, safety oversight was a significant factor in the closure of Uganda's national airline. Additional resources and manpower are required for safety and security to be handled effectively, either at the regional or country level.

There is some prevailing concern of safety issues at the infrastructure level. In the case of Kenya, stakeholders suggest that while most airports are equipped with safe airside facilities, the associated terminal infrastructure (where key pre-board screening takes place) is antiquated, insufficient in capacity and inadequate to process current and future levels of passenger throughput. A specific recommendation to increase security was to employ currently available technology, although this is dependent on available investments from airports and carriers.

Airline Ownership and Investment

There is evidence that the removal of both control and ownership restrictions brings benefits to the broader aviation industry, in particular passengers, employees and the carriers themselves.²² The injection of cash from well financed investors gives carriers the ability to refresh fleets and quickly expand route networks, thereby providing immediate gains to consumers in the form of more destination choices. This is of particular importance to air transportation passengers in the EAC, who are currently faced with limited route choices and poor connectivity.

However, each of the EAC countries maintains a restrictive policy for foreign investment in airlines, with foreign investors allowed up to a 49% ownership stake. As a result, carriers are often low on cash and unable to fund on-going operations and expansion efforts. Currently, a Rwandan cabinet directive is in place asking for the removal of foreign ownership limitations. However, efforts to adjust these limitations are often challenging as the major carriers in the EAC region are either completely or majority government-owned and therefore maintain an interest keeping foreign investment limitations.²³ An

²⁰ *Ibid.*

²¹ Bofinger and Gwilliam, 2010.

²² http://www.icao.int/meetings/atconf6/documents/workingpapers/atconf6-wp046_en.pdf

²³ *Ibid.*

additional implication of this ownership model is that its inclusion in negotiated BASAs inherently limits the access of East African carriers to world markets.²⁴

It is unfortunately the case that Uganda and Burundi are countries in the East Africa region that do not currently have active national carriers. Although there exists a mixture of reasons for this, undoubtedly if access to foreign capital were available they may be able to resume operations once again.

The experience of other world regions where foreign ownership restrictions have been relaxed or removed as part of aviation liberalisation policies, such as the EU and in Australia/New Zealand, has shown that it can bring benefits to air markets. The liberalising of foreign ownership restrictions allowed for the creation and successful expansion of new domestic and international air carriers, such as EasyJet in the UK (through Greek investment) and Virgin Australia (originally Virgin Blue, founded through investment from UK airline Virgin Atlantic). These carriers flourished in their domestic and regional markets and their founding and expansion was enabled through the availability of foreign capital, the regulatory right of establishment, and wider access to human resources.

Home carriers may also see benefits from liberalised investment regimes with new access to credit and talent to drive efficiencies and expansion which would not otherwise be available. The relaxing or removal of airline investment limits has allowed incumbent carriers to expand into other markets, such as Qantas (through both Qantas New Zealand and later Jetstar) entering the New Zealand domestic market and breaking Air New Zealand's near-monopoly. At the same time, Air New Zealand has successfully invested in domestic Australian carrier Virgin Australia to counter Qantas in its domestic market. The liberalisation of ownership restrictions also allows for strategic consolidation, mergers, and network strengthening in ways which would not otherwise be possible. Liberalised ownership restrictions present a 'first best' option for regional network expansion compared to 'second best' solutions such as airline alliances and revenue-sharing joint ventures.²⁵

Human Resources

Some respondents raised the issue of ensuring there is a skilled work force to meet the growing requirements of the aviation industry and ensure safety. Some raised concerns of a "brain drain", whereby Middle Eastern carriers were attracting talent from the EAC region.

²⁴ *Ibid.*

²⁵ Tae Hoon Oum, Anming Zhang and Xiaowen Fu, "Air transport liberalization and its impacts on airline competition and air passenger traffic", *Transportation Journal*, Fall 2010.

5 Econometric Analysis: The Impact of Liberalisation in East Africa

This chapter provides a summary of the econometric analysis conducted on the impacts of liberalisation in East Africa. Further details on the analysis are provided in **Appendix D**.

5.1 Indicative Findings

Prior to conducting the econometric analysis, simple plots of the data provided some evidence of the effect of liberalisation on fares and traffic. **Figure 5-1** shows the average return fare in U.S. dollars on country pairs with restrictive BASAs and those with liberal BASAs since 2005.²⁶ There is a clear gap between fares on country-pairs with restrictive BASAs and those with liberal BASAs, with fares on restrictive BASAs nearly 80% higher than with liberalised BASAs. A contributing factor to this difference is distance – fares increase with distance. **Figure 5-2** shows fare divided by distance (referred to as yield) to control for this – as can be seen, the gap between restrictive and liberal country-pairs has declined, although there remains a 20-25% difference. Similarly, **Figure 5-3** shows average passenger volumes on restricted and liberal country-pairs, showing considerably larger volumes (3.5 times as much) on country-pairs subject to liberal BASAs.

While these plots illustrate a clear effect from liberalisation, they should be treated as indicative only, as there are a number of other factors that affect fares and traffic. The econometric analysis controls for these other factors, allowing the effect of liberalisation to be isolated and quantified.

²⁶ Based on all country-pairs in the dataset.

Figure 5-1: Average Fares on Country-Pairs Subject to Restrictive and Liberal BASAs

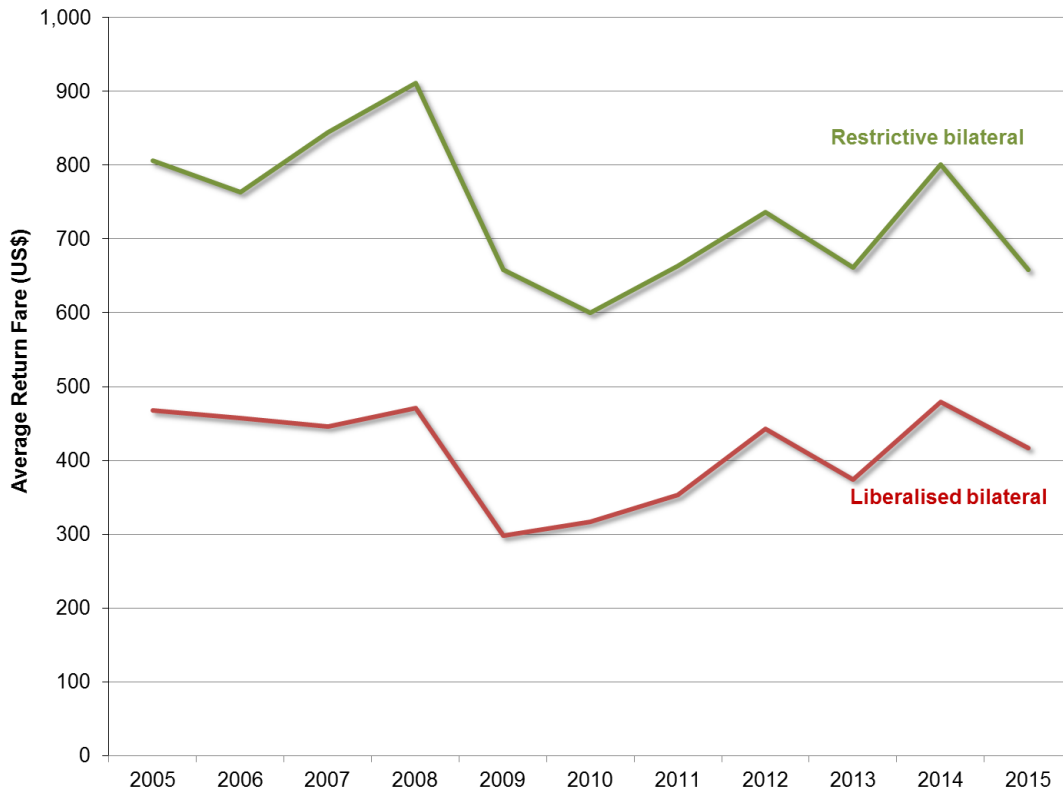
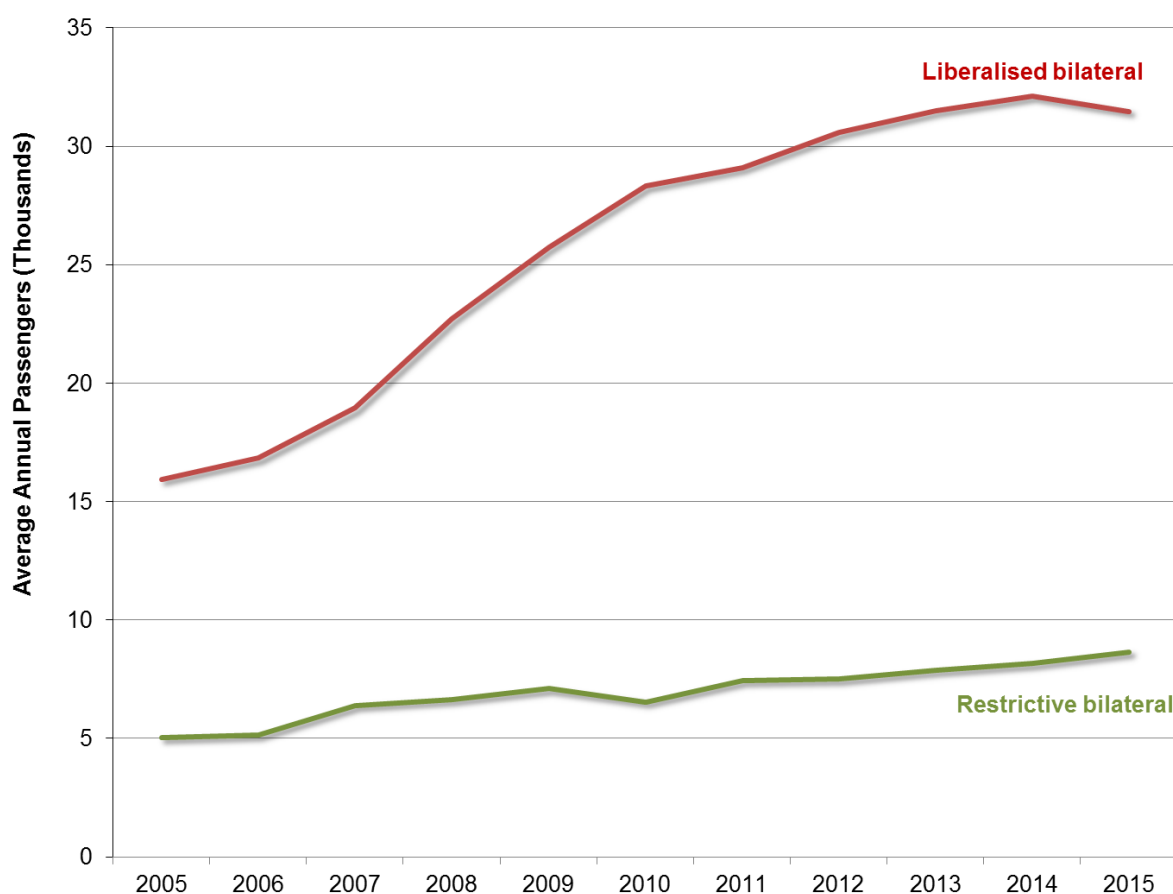


Figure 5-2: Average Yield (Fare/Distance) on Country-Pairs Subject to Restrictive and Liberal BASAs



Figure 5-3: Average Annual Traffic on Country-Pairs Subject to Restrictive and Liberal BASAs



5.2 Econometric Analysis

The empirical analysis of the impacts of air service liberalisation used a gravity model approach to modelling air traffic between nations, based on data collected for each of the five study countries. In the field of economics, gravity models have been widely used to model both trade and transport (in the latter case, for all modes of transport). The gravity equation has been widely used to explain the flow of bilateral trade between two trading partners (see Tinbergen, 1962 and Anderson and van Wincoop, 2003). It has been successfully applied to analyse policy effects in bilateral air transport flows (Cristea et al., 2014; Yan and Winston, forthcoming; Schipper et al, 2002; Dresner and Tretheway, 1992) as well as other economic activities, such as foreign direct investments (Brainard, 1997), financial flows (Portes and Rey, 2005), and migration (Karemera et al., 2000).

The attraction of using a gravity model is that it can capture “attractor” factors (economic growth, population, etc.) and “impedance” factors (distance, cost, etc.). In transportation, the gravity model is the basis for the classic “four stage” model used to model and forecast urban and inter-urban transport in road, rail and public transport systems.

The gravity model in this report is based on the proposition that the liberalisation of the air transport market affects two supply side variables: fares and frequency. Liberalisation reduces fares by introducing greater competition and also leads to greater capacity (frequencies) in the market as carriers are not restricted by the terms of the BASA.

The analysis comprised of three related models (the full specification is provided in **Appendix D**):

Demand Model

The primary gravity model, which relates passenger traffic between two countries to two key supply-side variables, *fare* and *service frequency*, as well as standard attractor and impedance factors such as GDP/capita, population, trade, distance, continuity (whether the countries share a border) and language commonality.

Fare Model

The fare model captures how air fares respond to the degree of openness of the BASA while controlling for other factors. As well as the BASA, fares were specified as a function of passenger volumes, fuel prices, distance and GDP/capita.

Frequency Model

The model captures how service frequency responds to the BASA conditions along with other factors such as passenger volumes, distance, number of carriers and average aircraft size.

The models allow analysis of how liberalisation effects both fare and frequency and, through the demand model, the resulting impact on passenger volumes.

The econometric analysis involved a two-stage least squares (2SLS) regression as described in **Appendix D**.

5.3 Results from the Econometric Analysis

Full details of this econometric analysis are also provided in **Appendix D**. The analysis produced plausible results in terms of the relationship between the variables. For example, there was a positive relationship between passenger volumes and GDP/capita – passenger volumes increase as GDP increases – and negative relationship between passenger volumes and fares – passenger volumes decline as fare increases.

In terms of the key results for liberalisation, the following significant results were found:

- **Fully liberalising restricted routes reduces average fares by 9% on average (all else being equal). Partial liberalisation (i.e., where some restrictions have been removed but not all) was found to have a smaller but statistically insignificant effects on fares**
- **Fully liberalising restricted routes increase frequencies by 41% on average (all else being equal). Partial liberalisation was again found to have a smaller effect but the effect was not statistically significant.**

The results provide robust and compelling evidence that open skies liberalisations leads to lower fares and higher frequencies, which are expected to stimulate demand. Furthermore, the results show that partial liberalisation is not effective in achieving equivalent impacts. Only once all the major restrictions (on capacity, frequency, fares and 5th freedom rights) are removed from BASAs is there a substantial impact on fares and frequencies.

The impacts of traffic volumes and the wider economy are described in the next chapter, using modelling results from the estimated gravity model.

6 The Economic Impact of Liberalisation

The econometric model described in Chapter 6 and **Appendix D** was used to estimate the impact resulting from complete liberalisation of BASAs from the five study countries. This includes not just the impact on traffic and air services but also on the wider economy.

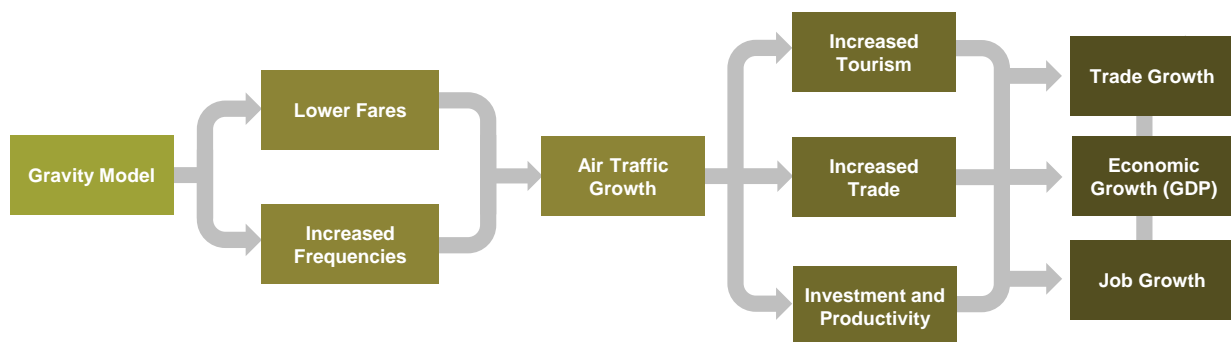
The analysis assumes that all five countries are able to sign “open skies” BASAs with each other (any already fully liberalised BASAs are assumed to remain the same). The analysis is based on 2015 traffic volumes. Two sets of analysis were conducted:

- Analysis based on just changes in the BASAs, and assuming taxation, infrastructure, and other factors within the EAC remain the same.
- Analysis which assumes that in addition to BASA changes, there are changes to taxation and infrastructure that further benefit the air transport section (*Liberalisation Plus*).

In the latter case, the analysis assumes that additional policy changes are made to full exploit the benefits of liberalisation. These includes: a reduction of the passenger charges on flight within the EAC to an average of US\$20 (from currently levels of US\$40-60, see Section 4.2.3); reductions in landing fees, navigation charges and other costs, resulting in a 5% reduction in fares; infrastructure improvements at EAC airports leading to a 10% increase in the services operated in the region.²⁷

Further details on the analysis are provided in **Appendix D and E**. The analytical methodology is set out in the diagram below and described in more detail in the following sections.

Modelling Methodology



6.1 Passenger Traffic and Fares

The econometric model was applied to each country-pair to estimate the increase in frequencies and reduction in fare resulting from liberalisation. This, in turn, stimulates increased passenger volumes, estimated using the demand model. The results are presented in **Figure 6-1** for only liberalisation between the EAC countries and **Figure 6-2** with additional policy changes (*Liberalisation Plus*). Each table shows the increase in traffic on all the affected country-pairs from each EAC country, the average fare reduction, the total savings to existing air passengers (the fare saving x the number of passengers travelling in 2015) and the increase in consumer surplus. Consumer surplus is a concept frequently used in economics that refers to the benefits to existing passengers as well as the additional passengers that are now able to travel. The concept is described in more detail in **Appendix E**.

²⁷ The infrastructure improvement allow carrier to access additional airports and optimise aircraft sizing, leading to an increased supply of services and the stimulation of currently unserved demand.

The traffic increases are a function of how much liberalisation has already taken place, the conditions of the aviation sector and general economic conditions. The results from the model suggest that liberalisation between the five EAC countries would increase traffic by 15% and 52% in each of the countries, and by 29% for total traffic between the EAC countries. The scale of the change is a function of the level of existing services and the BASA restrictions. The highest traffic growth is forecast for Burundi (52%) as it currently has very limited service to the other EAC countries and only one of its BASAs is liberalised. With liberalisation, it is expected that new routes will develop along with additional frequencies on existing routes. On the other hand, Kenya (15% increase) already has relatively high levels of air service and has signed liberal BASAs with two of the other EAC countries, so the impacts are smaller in percentage terms (although in terms traffic volumes, the increases are higher).

With liberalisation between the five EAC countries, passengers benefit from an average 6.4% fare reduction, providing a total saving of US\$ 20.2 Million for all air travellers between the EAC countries. The consumer surplus benefits is US\$ 24.5 Million, reflecting not just the fare savings for existing passengers but the benefits to new travellers being able to access air services.

Figure 6-1: Traffic and Fares Impacts of Liberalisation within the EAC Countries

Country	Passenger Traffic			Average Fare Reduction	Total Savings (US\$ M)	Consumer Surplus (US\$ M)
	Before	After	% Increase			
Burundi	205	313	+52%	-5.4%	1.2	1.7
Kenya	970	1,114	+15%	-4.9%	5.1	5.8
Rwanda	394	560	+42%	-8.6%	2.9	3.5
Tanzania	641	803	+25%	-8.6%	8.0	9.0
Uganda	449	634	+41%	-4.8%	2.9	4.4
Total	1,330	1,712	+29%	-6.4%	20.2	24.5

Passenger traffic volumes are both arrivals and departures. The total is half the sum of the individual countries to avoid double counting (an arrivals in one EAC country is a departures from another).

The impacts of Liberalisation *Plus* (Figure 6-2) are larger since it involves the additional policy initiative stimulate greater traffic volumes. Liberalisation *Plus* is projected to result in a 46% increase in traffic volumes with the EAC, fare savings of US\$ 72.2 Million and a consumer surplus benefit of US\$ 90.0 Million.

Figure 6-2: Traffic and Fares Impacts of Liberalisation *Plus* within the EAC Countries

Country	Passenger Traffic			Average Fare Reduction	Total Savings (US\$ M)	Consumer Surplus (US\$ M)
	Before	After	% Increase			
Burundi	205	341	+66%	-25.4%	5.8	7.8
Kenya	970	1,299	+34%	-22.6%	23.7	27.9
Rwanda	394	619	+57%	-28.8%	9.7	12.5
Tanzania	641	916	+43%	-22.2%	20.6	25.0
Uganda	449	698	+55%	-20.4%	12.4	16.8
Total	1,330	1,936	+46%	-23.2%	72.2	90.0

Passenger growth resulting from liberalisation opens the opportunity for carriers to increase the frequency of operations on existing routes, as well as open new ones. **Figure 6-3** illustrates this with a potential scenario considering the changes to air services (additional frequencies, new services) that might occur following liberalisation. The scenario is based on the results from the liberalisation gravity model augmented by analysis of existing traffic flows between the countries. The scenarios are data-led assessments of the type of service developments that may arise following liberalisation, based in part on experiences elsewhere. However, every market is unique, and other political, industry or economic factors may affect the outcome. Thus, the scenarios are designed to illustrate the potential air service developments, but it cannot be guaranteed that services will develop in this way.

Figure 6-3 shows the 10 country pairs in the EAC and the associated frequency of routes operated between countries. For example, the increase in traffic between Burundi and Uganda could allow for scheduled flights to increase from 2x weekly to at least 9x weekly. In the case of Burundi-Tanzania, there is an opportunity to open a new route between Bujumbura and Dar Es Salaam, to be served daily with a regional turboprop.

Figure 6-3: Illustrative Frequency Increases and New Routes Due to Liberalisation

Country Pair	Current Routes	New Routes & Frequency Increases Post-Liberalisation
Burundi-Uganda	Bujumbura-Entebbe: 2x Weekly	Bujumbura-Entebbe: 9x Weekly
Kenya-Rwanda	Nairobi-Kigali: 28x Weekly Mombasa-Kigali: 3x Weekly	Nairobi-Kigali: 35x Weekly Mombasa-Kigali: 7x Weekly
Uganda-Rwanda	Entebbe-Kigali: 26x Weekly	Entebbe-Kigali: 35x Weekly
Rwanda-Tanzania	Kigali-Dar Es Salaam: 7x Weekly Kigali-Kilimanjaro: 2x Weekly	Kigali-Dar Es Salaam: 10x Weekly Kigali-Kilimanjaro: 5x Weekly Kigali-Mwanza: 1x Weekly
Burundi-Rwanda	Bujumbura-Kigali: 25x Weekly	Bujumbura-Kigali: 35x Weekly
Tanzania-Uganda	Kilimanjaro-Entebbe: 2x Weekly Dar Es Salaam-Entebbe: 1x Weekly	Kilimanjaro-Entebbe: 6x Weekly Dar Es Salaam-Entebbe: 2x Weekly Bukoba-Entebbe: 1x Weekly
Kenya-Tanzania	Nairobi-Dar Es Salaam: 35x Weekly Nairobi-Kilimanjaro: 29x Weekly Nairobi-Zanzibar: 27x Weekly Wilson-Kilimanjaro: 14x Weekly Mombasa-Zanzibar: 8x Weekly	Nairobi-Dar Es Salaam: 35x Weekly Nairobi-Kilimanjaro: 35x Weekly Nairobi-Zanzibar: 27x Weekly Wilson-Kilimanjaro: 21x Weekly Mombasa-Zanzibar: 10x Weekly
Burundi-Tanzania	None	Bujumbura-Dar Es Salaam: 7x Weekly
Kenya-Uganda*	Nairobi-Entebbe: 54x Weekly	Nairobi-Entebbe: 54x Weekly (unchanged)
Burundi-Kenya*	Bujumbura-Nairobi: 14x Weekly	Bujumbura-Nairobi: 14x Weekly (unchanged)

* Kenya-Uganda and Burundi-Kenya are already subject to liberal BASAs, so limited to no additional impact expected. Data based on Sabre and Diao Mi.

6.2 Broader Economic Impacts

Air passengers are not the only beneficiaries of liberalisation. The increased air traffic and air services generates new economic activity and employment and facilitates other sectors of the economy:

- **Direct Economic Impact**

This is the employment and GDP associated with the operation and management of activities at airports including firms on-site at the airport and airport-related businesses located nearby.

- **Indirect and Induced Economic Impact**

The employment and GDP of down-stream industries that supply and support the activities at airports.

- **Catalytic Impacts**

While the economic impact described above can be seen as down-stream impacts resulting from activities at the airports, catalytic impacts capture the way in which the airport facilitates the business of other sectors of the economy. As such, air transportation facilitates employment and economic development in the economy through a number of mechanisms:

- *Tourism effects* - air service facilitates the arrival of larger numbers of tourists to a region or country. This includes business as well as leisure tourists. The spending of these tourists can support a wide range of tourism-related businesses, including: hotels, restaurants, theatres, car rentals, etc.
- *Trade effects* – air transport provides connections to export markets for both goods and services (the actual export of goods and services) and to facilitate trade development, such as by marketing, training, repair and financing activities.
- *Investment effects* – a key factor many companies take into account when making decisions about the location of offices, manufacturing plants or warehouses is proximity of an international airport.
- *Productivity effects* – air transportation offers access to new markets which in turn enables businesses to achieve greater economies of scale. Air access also enables companies to attract and retain high quality employees.

The sections below provide estimates of the broader economic impacts associated with BASA liberalisation.

6.2.1 Aviation Sector: Direct, Indirect and Induced Impacts

As more aircraft take-off and land, additional staff will be needed to crew, clean and maintain the aircraft, to service passengers and transport their luggage, and to process, load and unload air cargo (i.e., the direct impacts). Air carriers and other businesses at the airport will order additional goods and services from their suppliers (indirect impacts), and the increased employment will stimulate spending in the general economy (induced impacts).

The estimated direct, indirect and induced impacts in each of the study countries is provided in **Figure 6-4** and **Figure 6-5**, based on the methodology and data described in **Appendix E**. Liberalisation of BASAs within the five EAC countries is projected to result in an additional 2,540 jobs in the aviation sector across the five countries. Including indirect and induced jobs, the total aviation-related incremental employment is estimated to be 8,060 jobs. Furthermore, an additional US\$33.7 Million is projected to be generated annually in GDP across the five countries.

Liberalisation *Plus* is forecast to generate 3,870 aviation related jobs in the five EAC countries and US\$ 53.6 Million in annual GDP (direct, indirect and induced impacts combined).

Figure 6-4: Aviation Related Employment Impacts from Liberalisation within the EAC Countries

Country	Employment (Jobs)			GDP (US\$ Millions)		
	Direct	Indirect+ Induced	Total	Direct	Indirect+ Induced	Total
Burundi	500	1,210	1,710	1.4	2.5	3.9
Kenya	350	570	920	2.6	3.9	6.5
Rwanda	610	1,460	2,070	2.3	4.7	7.1
Tanzania	450	750	1,200	2.8	3.9	6.7
Uganda	630	1,530	2,160	3.2	6.3	9.5
Total	2,540	5,520	8,060	12.4	21.3	33.7

Figure 6-5: Aviation Related Employment Impacts from Liberalisation *Plus* within the EAC Countries

Country	Employment (Jobs)			GDP (US\$ Millions)		
	Direct	Indirect+ Induced	Total	Direct	Indirect+ Induced	Total
Burundi	630	1,520	2,150	1.8	3.2	5.0
Kenya	790	1,300	2,090	6.0	8.9	14.9
Rwanda	830	1,990	2,820	3.2	6.4	9.6
Tanzania	770	1,260	2,030	4.7	6.6	11.3
Uganda	850	2,060	2,910	4.4	8.4	12.8
Total	3,870	8,130	12,000	20.1	33.5	53.6

6.2.2 Tourism

Additional air traffic in the five EAC countries will bring in additional non-local visitors, spending money on items such as accommodations, food and beverage, retail and local transportation, etc. Not all of the forecast incremental traffic is tourism – some will be outbound traffic. The analysis is based on the historical inbound/outbound split of traffic in each of the five countries. Economic multipliers were applied to estimate the direct and indirect employment and GDP generated by the incremental tourism, as outlined in **Appendix E**.

As shown in **Figure 6-6**, liberalisation with the five EAC countries is forecast to stimulate an additional 188,500 tourism visits in total with an associated spend of US\$ 92.3 Million. This spend is projected to support an additional 7,510 jobs and US\$ 32.3 Million in annual GDP. Liberalisation *Plus* (**Figure 6-7**), is forecast to generate US\$ 150.5 Million in additional tourism spend, 11,510 incremental jobs and US\$ 53.2 Million in annual GDP.

Figure 6-6: Tourism Impacts from Liberalisation within the EAC Countries

Country	Additional Tourism Visits	Additional Tourism Spend (US\$ Million)	Direct + Indirect Employment (Jobs)	Direct + Indirect GDP (US\$ Millions)
Burundi	29,400	10.9	1,350	3.2
Kenya	29,800	18.6	980	7.2
Rwanda	45,800	16.6	1,950	7.0
Tanzania	38,400	26.8	1,650	8.4
Uganda	45,100	19.3	1,580	6.5
Total	188,500	92.3	7,510	32.3

Figure 6-7: Tourism Impacts from Liberalisation *Plus* within the EAC Countries

Country	Additional Tourism Visits	Additional Tourism Spend (US\$ Million)	Direct + Indirect Employment (Jobs)	Direct + Indirect GDP (US\$ Millions)
Burundi	37,100	13.7	1,700	4.1
Kenya	68,400	42.7	2,240	16.6
Rwanda	62,200	22.6	2,650	9.5
Tanzania	65,200	45.5	2,800	14.2
Uganda	60,700	26.0	2,120	8.7
Total	293,600	150.5	11,510	53.2

6.2.3 Trade

Liberalisation opens new markets to many businesses as a result of higher frequencies, better flight connections and lower fares offered. This leads to a broader demand for existing products. The increase in trade in goods resulting from liberalisation was estimated based on the existing trade flows and the projected increase in air traffic. The methodology is summarised in **Appendix E**.

The estimated increase in trade flows is provided in **Figure 6-8** and **Figure 6-9**. The tables show the increase in imports and exports for each of the five EAC countries, and the percentage increase relative to total trade among the countries. The percentage growth in trade is partially a function of existing cargo capacity and each country's current trade volumes. The balance between exports and imports for each country is a result of the type of goods each country exports and imports. This may change in the future as the economy develops and air services develop, and therefore these estimates should be considered conservative.

Figure 6-8: Trade Impacts from Liberalisation within the EAC Countries

Country	Increased Imports (US\$ Million)	Increased Exports (US\$ Million)	Combined Imports+Exports (US\$ Million)	% Growth in Trade (Imports+Exports)
Burundi	1.1	5.4	6.5	2.1%
Kenya	26.5	4.1	30.6	0.4%
Rwanda	3.5	17.9	21.4	2.5%
Tanzania	16.6	32.9	49.5	0.7%
Uganda	16.2	3.4	19.7	0.7%
Total	63.8	63.8	127.7	0.7%

Figure 6-9: Trade Impacts from Liberalisation *Plus* within the EAC Countries

Country	Increased Imports (US\$ Million)	Increased Exports (US\$ Million)	Combined Imports+Exports (US\$ Million)	% Growth in Trade (Imports+Exports)
Burundi	1.2	6.4	7.6	2.5%
Kenya	37.2	9.2	46.4	0.6%
Rwanda	4.2	19.6	23.9	2.8%
Tanzania	20.6	40.3	60.8	0.9%
Uganda	20.8	8.6	29.4	1.1%
Total	84.1	84.1	168.1	0.9%

6.2.4 Catalytic Impacts - Trade, Investment and Productivity

Chapter 2 describes the linkage between air services and the growth of the economy (catalytic effects). Air transportation facilitates employment and economic development in the national and regional economy through increased trade, attracting new businesses to the region, and encouraging investment. Quantifying the business impacts that aviation provides to the economy is difficult. To do so in detail would require a massive survey covering the majority of businesses in a country. Even with such a survey, some aspects of the impacts would be impossible to ascertain reliably. While measuring the trade transported by air cargo would be fairly easy, it is far more difficult to determine and value aviation's role in affecting business location decisions, investment and expansion decisions, facilitating corporate mobility, and attracting international talent. Furthermore, determining how future changes in aviation regulation will impact businesses is even more problematic.

An alternative approach is to use generalised parameters drawn from statistical analysis of historical data. This analysis seeks to determine the contribution of air transport to economic growth by examining the relationship between these factors over time or compared between different countries (or both). The analysis attempts to control for other factors that also contribute to economic growth (education spending, government policies, investment, research and development spending, etc.), in order to isolate the impact of air transport. This and similar approaches have been used in other studies examining the catalytic impact of aviation in Europe and North America.²⁸

The catalytic impact of liberalisation on productivity, trade and investment in the EAC was estimated in this way, using a parameter estimated from previous research. This parameter was taken from a study undertaken by InterVISTAS on behalf of IATA, described in Section 2.2.²⁹ It was selected because it is one of few studies that is based on global data – most studies have used U.S. data. Details of the analysis are provided in **Appendix E**.

The employment and GDP impacts resulting from increased trade, investment and productivity are provided in **Figure 6-10** and **Figure 6-11**. The catalytic impacts of liberalisation between the five EAC countries are projected to result in an additional 15,140 jobs and US\$ 58.0 Million in annual GDP. Liberalisation *Plus* is forecast to result in an additional 22,810 jobs and US\$ 95.4 Million in annual GDP.

Figure 6-10: Catalytic Impacts from Liberalisation within the EAC Countries

Country	Employment (Jobs)	GDP (US\$ Million)
Burundi	4,380	5.5
Kenya	2,040	13.6
Rwanda	3,260	10.1
Tanzania	2,310	13.7
Uganda	3,150	15.1
Total	15,140	58.0

²⁸ For example see: <http://www.airport-business.com/2015/04/new-study-reveals-real-economic-impacts-airports/> and https://www.eurocontrol.int/eec/see/gallery/content/public/documents/workshop_2005_Adrian_Cooper.pdf.

²⁹ InterVISTAS Consulting Inc., "Measuring the Economic Rate of Return on Investment in Aviation", December 2006.

Figure 6-11: Catalytic Impacts from Liberalisation *Plus* within the EAC Countries

Country	Employment (Jobs)	GDP (US\$ Million)
Burundi	5,530	7.0
Kenya	4,680	31.1
Rwanda	4,430	13.7
Tanzania	3,930	23.3
Uganda	4,240	20.4
Total	22,810	95.4

6.3 Summary of Impacts, Conclusions and Recommendations

Figure 6-12 and **Figure 6-13** show the total traffic, trade, employment, and GDP impacts of liberalisation within the five EAC countries and with the wider African countries. These combine the impacts in the aviation sector, tourism, and the catalytic impacts.

Across the five EAC countries, just liberalisation between the countries is projected to result in an additional 30,710 jobs and US\$ 124.0 Million additional GDP (0.04% of the total GDP of these countries). In terms of employment and percentage contribution to GDP, the impacts of liberalisation is largest in Burundi (7,440 additional jobs and 0.15% increase in GDP) and Rwanda (7,280 additional jobs and 0.13% increase in GDP), reflecting the relative underdevelopment of aviation in these countries and the potential for aviation to be a catalyst for economic growth.

Liberalisation *Plus* is forecast to results in 46,320 additional jobs across the EAC countries and US\$ 202.1 Million in GDP (0.06% of total GDP).

Figure 6-12: Total Impacts from Liberalisation within the EAC Countries

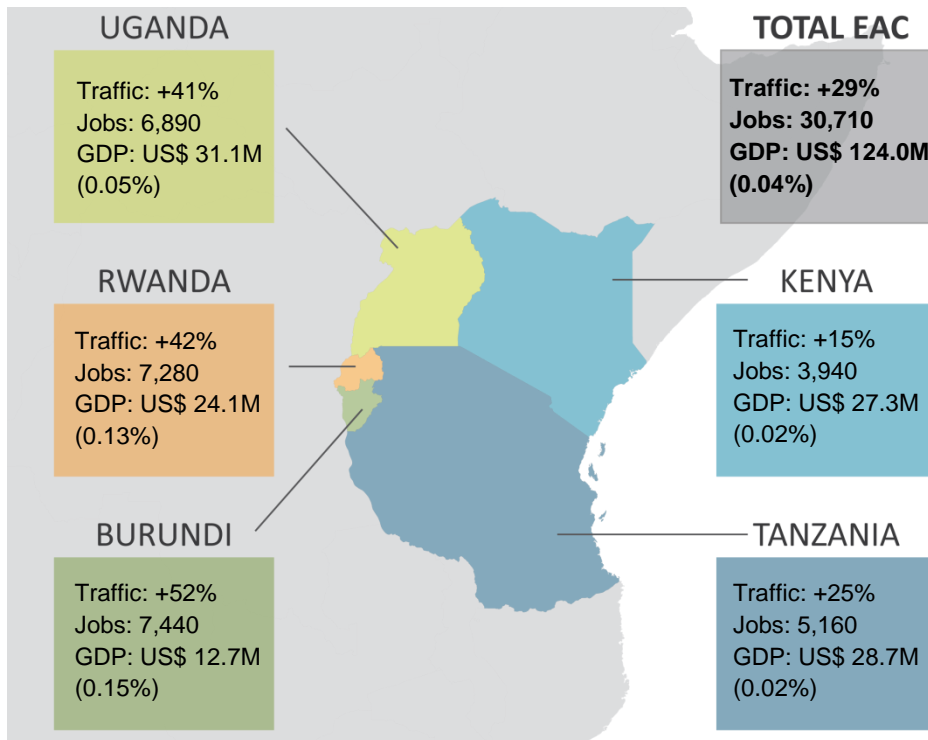
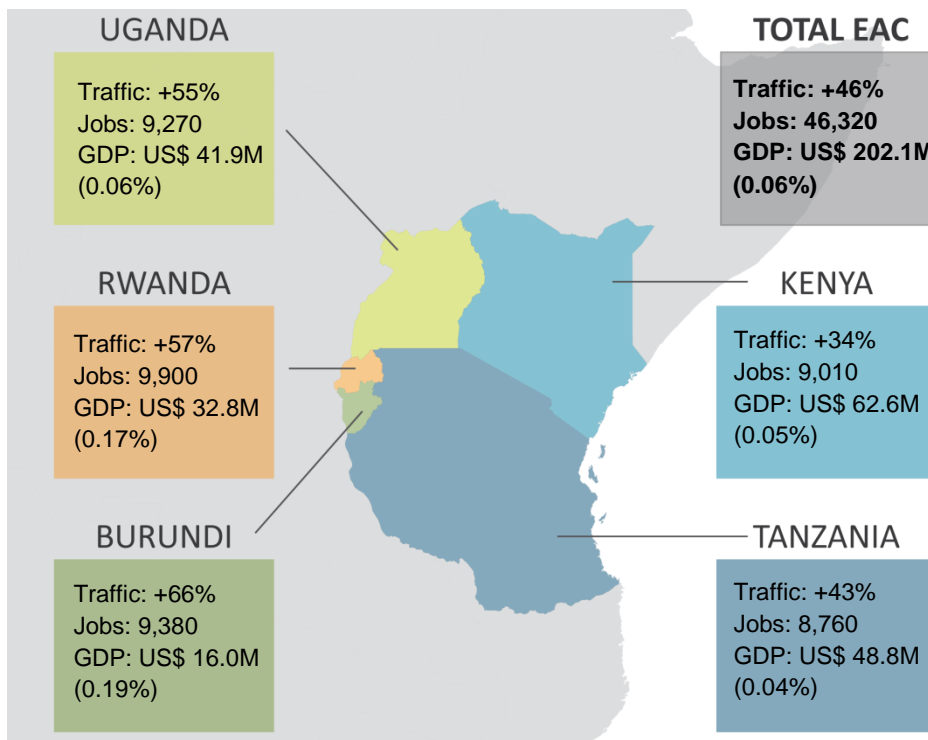


Figure 6-13: Total Impacts from Liberalisation *Plus* within the EAC Countries



The synthesis of evidence consistently demonstrates that BASA liberalisation has resulted in increased frequencies, routes and connectivity. Frequently, liberalisation has allowed new carriers to enter the market and existing carriers to better respond to demand. The increased demand for air travel as a result of liberalisation opens up the opportunity for both new routes and frequency increases between cities within the EAC. Below summarises illustrative routes for new service and/or frequency increases:³⁰

- **New Routes.** The following routes are illustrative potential candidates for new service due to increased demand from liberalisation and/or strong recommendations from key stakeholders:
 - Kigali – Mwanza
 - Entebbe – Bukoba
 - Entebbe – Hoima
 - Entebbe – Masindi
 - Bujumbura – Dar Es Salaam
 - Dar Es Salaam / Kilimanjaro – Selous, Katavi, Ruaha, Serengeti and Masai Mara
- **Frequency Increases.** The following routes are illustrative potential routes for frequency increases following liberalisation:
 - Bujumbura – Entebbe
 - Nairobi – Kigali
 - Mombasa – Kigali
 - Entebbe - Kigali
 - Kigali – Dar Es Salaam
 - Bujumbura – Kigali
 - Kilimanjaro – Entebbe
 - Nairobi – Kilimanjaro
 - Wilson – Kilimanjaro

The economic analysis demonstrates that increased air service and traffic resulted in positive benefits for the total EAC economy – it contributes to greater trade and tourism, inward investment, productivity growth, increased employment and economic development; and is supported by a range of regional stakeholders.

While there are concerns in some corners that liberalisation may harm existing air carriers, liberalisation also offers a means to restructure the carriers and increase profitability by expanding into new markets, accessing a wider pool of investment and through consolidation.

As such, it is recommended that the EAC community seek to full implement YD liberalisation, enabling a multilateral ‘opens skies’ policy to operate across the five EAC countries. Additionally, the benefits of liberalisation can be further enhanced by reforms to the taxation and charging of air passengers and air carriers and to improvements to aviation infrastructure.

³⁰ The potential new routes and frequencies are data-led assessments of the type of service developments that may arise following liberalisation, based in part on experiences elsewhere. However, every market is unique, and other political, industry or economic factors may affect the outcome. Thus, these routes are designed to illustrate the potential air service developments, but it cannot be guaranteed that services will develop in this way.

Appendix A: Backgrounder on Bilateral Air Service Agreements.

Bilateral Air Service Agreements

Across the world, international air transportation is governed by a network of bilateral air service agreements (BASAs) which dictate air transportation rights between two nations. These BASAs are generally of treaty status and are enforceable in international law (although some operate under, or are modified by, a less formal Memorandum of Understanding arrangement).³¹

Bilateral air services agreements/arrangements contain provisions on;

- Traffic rights - the routes airlines can fly, including cities that can be served within, between and beyond the countries. These rights include the so called “Freedoms of the Air” - commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace and to carry passengers and cargo. A summary of the freedoms of the air are provided in the box overleaf.
- Capacity - the number of flights or seats that can be operated, or passengers that can be carried between the countries.
- Airline designation - the number of airlines the countries can nominate to operate services and the ownership criteria airlines must meet to be designated under the bilateral agreement. This clause sometimes includes foreign ownership restrictions.
- Tariffs or fares - some agreements require airlines to submit ticket prices to aeronautical authorities for approval.
- Named routes or airports that can be used for air service.
- Many other clauses addressing competition policy, safety and security.

Historically, many of the BASAs have been fairly restrictive. One of the earliest agreements was the “Bermuda I” agreement between the United States and the United Kingdom signed in 1946. This BASA specified limits on pricing, capacity, designated airlines and routes operated. This restrictive agreement has acted as a template for a great number of subsequent BASAs between various countries.³² As a result, the development of international air service has been as much a function of government policy as it has been a function of commercial considerations.

³¹ The framework for these bilateral air service agreements was established towards the end of World War II in 1944, when 52 countries came together at the International Civil Aviation Conference held in Chicago, USA, which established the Chicago Convention

³² Bermuda I was replaced by a slightly less restrictive Bermuda II agreement in 1977. Bermuda II has now been replaced by the U.S.-EU Open skies agreement which came into force in 2008.

Freedom of the Air

When countries negotiate BASAs, they grant traffic rights to airlines that are referred to as "freedoms of the air." These rights are:

First Freedom. The right to fly over another nation's territory without landing.

Second Freedom. The right to land in a foreign country for non-traffic reasons, such as maintenance or refuelling, without picking up or setting down revenue traffic.

Third Freedom. The right to carry people (or cargo) from the airline's own country to the other country.

Fourth Freedom. The right to carry people (or cargo) from the other country to the airline's own country.

Fifth Freedom. The right to carry traffic between two foreign countries with services starting or ending in the airline's own country (also known as beyond rights).

Sixth Freedom. The right to carry traffic between two countries via the airline's own country.

Seventh Freedom. The right to carry traffic between two foreign countries on a service that does not involve the airline's own country.

Eighth Freedom. The right to carry traffic between two points within a foreign country (i.e., domestic traffic) as an extension of a service starting or ending in the airline's own country (also known as tag-on or fill-up cabotage).

Ninth Freedom. The right to carry traffic between two points within a foreign country with no requirement to start or end the service in the airline's own country (also known as pure or standalone cabotage).

Virtually all BASAs will allow freedoms one to four. However, they differ in their treatment of 5th freedom rights — the ability of a carrier from Country A to carry traffic from Country B to a third country as an extension of a service between Countries A and B. Some BASAs do not permit this type of traffic while others do, or some variant of it.

Sixth freedom clauses rarely appear in the BASAs (it is essentially an airline using the 3rd and 4th freedom rights of two separate agreements).

Freedoms seven to nine are less frequently granted within most BASAs.

Liberalisation of International Air Services

Starting the 1970s, it began to be recognised that these restrictive BASAs were holding back the aviation sector and harming other sectors of the economy. BASAs were unresponsive to market demand, as they had to be changed through diplomatic negotiation, and they did not serve the interests of passengers, shippers and the wider economy (tourism, trade, etc.).

Recognising these shortcomings and the potential economic benefits of a more liberal aviation sector, many governments have moved to deregulate various aspects of aviation. This has included the privatisation of airlines and airports, deregulation of domestic markets and liberalisation of BASAs.

Governments started to pursue “open skies” BASAs that allowed the carriers of the two nations to operate any route between the two countries without restrictions on capacity, frequency, or price. Some also allowed carriers to operate “tag-on” services to third countries (5th freedom rights) and a few removed foreign ownership restrictions.

The first major open skies agreement was between the United States and the Netherlands in 1992. The term “open skies” is somewhat loosely defined within the industry, but the U.S. government defines it as allowing the carriers of the two nations to operate any route between the two countries without restrictions on capacity, frequency, or price and to have the right to operate 5th and 6th freedom services. It also allows cooperative marketing arrangements such as code-sharing and liberal all-cargo operations (e.g., seventh freedom operations). The U.S. definition of “open skies” does not include 7th freedom passenger services, cabotage, or liberalisation of ownership and control restrictions, although other definitions of “open skies” do (e.g., the European Union considers cabotage to be part of open skies). As of the end of 2015, the U.S. has signed 118 open skies agreement (Source: U.S. State Department).

More recently, there has been movement towards multilateral agreements between groups of countries. The most notable of these has been the European single aviation market covering the European Union (EU). Between 1987 and 1993, the EU introduced three packages of reforms that almost fully deregulated the EU air market. Carriers from within the EU are now free to operate any route within the EU without restriction on price or capacity, including cabotage (i.e., domestic air travel within a member state), which has been permitted since 1997. In addition, all restrictions on airline ownership have been removed for EU citizens (e.g., an air carrier operating from Italy can be 100% owned by investors from the UK; however, investment by non-EU citizens is restricted to 49%). The EU is also negotiating open skies bilateral agreements as a block with other countries, for example the EU-U.S. Open Skies Agreement in 2008.

Other multilateral agreements include the ASEAN agreement in Asia or the MALIAT agreement covering Pacific countries and the Yamoussoukro Decision in Africa.

The Yamoussoukro Decision

In 1999, the Yamoussoukro Decision was adopted out of recognition that the strict regulatory protection that sustained national carriers in Africa had detrimental effects on air safety records, while inflating air fares and dampening air traffic growth. It followed up on the Yamoussoukro Declaration of 1988, in which many of the same countries agreed to principles of air services liberalisation. The Decision commits its 44 signatory countries to deregulate air services and promote trans-national competition in regional air markets. It promotes the removal of all restrictions on access, capacity, frequency, and tariffs and the exercise of 1st, 2nd, 3rd, 4th and 5th freedom rights and was viewed as a means to develop air services in Africa and stimulate the flow of private capital in the industry. Specifically, the Yamoussoukro Decision calls for: a full liberalisation of intra-African air transport services in terms of access, capacity, frequency, and tariffs; the free exercise of 1st, 2nd, 3rd, 4th and 5th freedom rights of passenger and freight air services by eligible airlines; fair competition on a non-discriminatory basis; and, compliance with international safety standards.

Recognising that Africa is a fragmented continent with assorted economic and political organisations, the Yamoussoukro Decision encourages regional and sub-regional organisations to pursue policy implementation. As a result, much of the progress towards liberalisation has been facilitated by regional communities. In East Africa, the Eastern Africa Community (EAC) has elected to revise bilaterals to align with the principles of the Yamoussoukro Decision. While implementation remains pending, tangible progress has been made in other relevant matters, such as the establishment of joint air safety and security agencies.

While some states have relaxed BASAs in line with the Yamoussoukro Decision, allowing more flights and frequencies, full liberalisation is far from achieved. One of the impediments to the full implementation of the Yamoussoukro Decision is a protectionist policy towards national airlines. A number of countries continue to restrict market access under the pretext that their national airline is not ready to compete in a liberalised market. This reflects the desire by each country to have a national airline and the absence of a mechanism to form and jointly own airlines on the continent is a major impediment to liberalisation.³³

³³ Kuuchi, R., "An Assessment of African Open Skies", African Airlines Association, 2013.

Appendix B: Literature Review

Liberalisation in Africa and Aviation in Africa

Title	The Future of African Civil Aviation
Author(s)	Abeyrante, Ruwantissia I. R.
Publication/Year	1998, <i>Journal of Air Transportation World Wide</i> , 3(2), 30-48.
Description	This paper, published following the 1998 meeting of the African Civil Aviation Commission but prior to the Yamoussoukro Decision, focuses on three key points for the furthering of Africa's aviation industry: the need for new aircraft in the fleets of African airlines, market access and liberalisation, and aviation safety. The author draws on the experiences of other nations in these areas and makes recommendations for action by African nations to help improve the continental aviation industry.
Methodology and Data	Qualitative analysis focused on policy recommendations, legal research, and trends/forecasts for air traffic.
Key Findings	<ul style="list-style-type: none"> • African airlines should modernize their fleets if they are to compete with European, Asian, and American carriers for trans-continental access to these markets. • Cautions that, in the growing trend of carrier mergers and airline alliances, African carriers may be unable to fairly find opportunity to participate in international air transportation. That ICAO member states consider a number of preferential treatment provisions for carriers of developing nations to assist them in entering the international market and expanding until they have the capacity to fairly compete and operate (e.g. flexibility with regard to ASA provisions, liberalisation on a trial basis, preferential aircraft leasing agreements). • Developing countries could be released from the obligation for airlines to be primarily nationally owned and controlled, suggesting that developing countries should allow for expanded right of establishment to give their nations the benefit of reliable air transportation services until such time as a home-grown carrier may be sustainable. • Safety and modernization must be a priority of African airlines to ensure that they conform with ICAO standards.
Coverage	Africa.

Title	Background to the Experiences of Liberalisation in Africa
Author(s)	International Civil Aviation Authority
Publication/Year	March, 2003
Description	Memorandum from ICAO summarizing the experiences of African states on liberalisation of the air transport industry four years following the Yamoussoukro Decision. Reporting states indicated that liberalisation has had a positive impact on expanding the size of their aviation industry, enhanced consumer choices, and greater economic benefit from private sector investment and job creation. Input from the states also identified a number of areas in which progress remains to be made and concerns for the evolution of the African air transport industry.
Methodology and Data	Qualitative input from African states. No data or empirical analysis.
Key Findings	<p>The memorandum highlighted the following issues requiring closer attention to achieve more complete success of the liberalisation policy:</p> <ul style="list-style-type: none"> • The pace of liberalisation has been varied across African states and regions and in many location still lags far behind global standards. • African airlines face difficulties accessing global markets due to slot congestion at many international airports outside of the Global continent. Agreements between African and foreign airlines have also led to situations where African carriers must 'hand over' passengers to their foreign partners, further impeding access to global markets by African airlines. • While competition was seen to have generally increased, there are concerns that Africa's major airlines, as well as major foreign carriers, are exerting their market dominance in a way that is not in the interest of users and medium and small airlines. • Infrastructure financing and safety remain a concern. Liberalisation has allowed for greater market entry by new African airlines but inadequacies in operational and infrastructure safety must be addressed. • Regulations and a structured dispute settlement system were seen as lacking at the time of publication.
Coverage	Africa.

Title	Open Skies for Africa: Implementing the Yamoussoukro Decision
Author(s)	Schlumberger, Charles E.
Publication/Year	2010, <i>The International Bank for Reconstruction and Development/The World Bank</i> .
Description	Schlumberger's work reviews the implementation and progress of liberalisation in the African air transport industry in the decade following the adoption of the Yamoussoukro Decision.
Methodology and Data	Quantitative analysis of airline schedule and fleet data from 2001, 2004, and 2007. The analysis was centred on assessing the progress and impacts of post-Yamoussoukro liberalisation on the African air

	transportation industry. The work comprehensively covers the background and path to liberalisation in Africa, its implementation in Africa's regions, the impacts on traffic, and the economic aspects of liberalising air traffic.
Key Findings	<ul style="list-style-type: none"> • The liberalisation of traffic rights and privatization of some carriers has led to the consolidation of networks, as low-density and unprofitable routes have been phased out in favour of routes to and from the main hubs (mostly evident in East Africa) • With the development of 5th freedom traffic in regions without a strong local carrier, some dominant carriers have entered the market at lower cost, adding to service levels and putting pressure on regional carriers to reduce fares. • On a regional basis, only West and Central Africa have fully achieved liberalisation. These regions have seen a large turnover in carriers and no strong local carrier has emerged in the region, with much of the service coming from 5th freedom traffic from other African carriers. • Lowering the cost of air transport to make it more accessible will drive further economic benefits within the aviation industry and wider benefits across the continent. Subsidies to non-competitive or unviable carriers in the poorest countries are a strong argument for liberalisation as those funds may be more wisely used to support a nation's economic growth. • Full liberalisation of air services would facilitate connectivity to remote countries and regions to international trade, opening up new opportunities for economic growth.
Coverage	Africa.

Title	Africa's Infrastructure: A Time for Transformation Chapter 13 Airports and Air Transport: The Sky's the Limit
Author(s)	Bofinger, Heinrich and Gwilliam, Kenneth (eds. Foster, Vivien and Briceño-Garmendia, Cecilia)
Publication/Year	2010, The World Bank.
Description	A wide-ranging work, the book is a comprehensive study of Africa's infrastructure. The analysis focuses on nearly all major aspects of infrastructure development and governance, from public utilities to transportation. Chapter 13 focuses on airports and aviation infrastructure and assesses the historical and current levels of air traffic, physical infrastructure, safety, government regulation and policy within African nations and across the continent.
Methodology and Data	Quantitative analysis of airline seat capacity and fleet data, 1997-2010. Data sourced from the World Bank with estimated traffic levels sourced from Seabury's Airline Data Group.
Key Findings	<ul style="list-style-type: none"> • The authors make two primary recommendations. First, African states must complete the recommendations of the Yamoussoukro Decision to liberalise international intra-Africa air travel and remove or reduce protectionist policies relating to air carriers. Second, air safety must be increased through better training, safety administration, and regulatory oversight. • Intra-African international seat capacity is highly concentrated into

	<p>a handful of carriers, highlighting the relative scarcity of capacity on many international African routes and the relative lack of competition for international transport within the continent.</p> <ul style="list-style-type: none"> • Air travel within Africa remains considerably more expensive per flown mile than intercontinental travel. By international standards, aeronautical fees are high in Africa, partly because of the absence of non-aeronautical revenues from airport concessions. • As of 2010, approximately two-thirds of air transport service within Africa had been liberalised. Liberalisation levels vary by region with certain states remaining holdouts or retaining restrictive ASA provisions for other African states while liberalising agreements with European, Asian, and North American states. • Physical and air navigation infrastructure in sub-Saharan Africa is generally adequate, but lags behind the infrastructure found in North African airports. Operational capacity constraints and terminal capacity constraints are few and limited to the handful of major hub airports in East and Southern Africa.
Coverage	Africa, sub-Saharan Africa.

Title	An Assessment of African Open Skies
Author(s)	Kuuchi, Rahpael
Publication/Year	2013, African Airlines Association.
Description	The author, Director of Commercial/Corporate & Industry Affairs for the African Airlines Association, developed a position paper on the current state of liberalisation in Africa. Kuuchi notes that, despite the slow pace of liberalisation, the aviation industry contributes nearly US\$70bn in GDP to Africa and supports 6.7 million jobs. He calls for African nations to push forward with liberalisation initiatives and to implement the Yamoussoukro Decision (YD) to further aid the economic and social growth of the African continent.
Methodology and Data	Policy analysis of the status of liberalisation efforts in Africa.
Key Findings	<p>The author asserts that:</p> <ul style="list-style-type: none"> • The lack of full liberalisation is being partly driven by the governments of a number of African nations determined to retain protectionist policies to benefit their national carriers. The lack of a mechanism to form and jointly own a carrier (across countries) impedes the process of liberalisation. • While some African states remain rigid in their adherence to restrictive ASAs, many are more liberal in their relations with other non-African nations. This is especially true in West/Central Africa, where intra-African travel remains difficult but trans-continental travel (particularly on European and Middle Eastern airlines) has become much easier due to ASA liberalisation. • The more advanced state of liberalisation with non-African nations has created an un-level playing field. Restrictive intra-Africa ASAs hinder the development of the African aviation industry while foreign carriers transport more than 80% of intercontinental traffic to/from Africa.

	<ul style="list-style-type: none"> While physical aviation infrastructure in Africa has improved, numerous non-physical barriers remain that slow the development of the air transport industry, e.g. visa requirements, cumbersome immigrations/customs, high taxes, fees, and charges levied on airlines and passengers. The African Union and the Regional Economic Communities must mobilize their resources to execute their mandates of the YD. Individual states and RECs should not wait to enact liberalisation until other countries or RECs have done so.
Coverage	Africa.

Title	Economic Effects of Air Transport Liberalisation in Africa
Author(s)	Abate, Megersa A.
Publication/Year	2013, presented at the 2013 African Economic Conference.
Description	Following the Yamoussoukro Decision in 1999, Africa's nations committed to liberalising their air transportation industries and removing restrictive covenants from bilateral agreements for intra-Africa traffic. The paper empirically measure the economic effects of air transport liberalisation in Africa by using econometric analysis on a panel data set of passenger volumes, fares, frequencies, and liberalisation metrics on international travel to/from Addis Ababa in the six years following the Yamoussoukro Decision.
Methodology and Data	Quantitative econometric analysis using a two-stage least squares random effects model using a panel dataset of 20 routes to/from Addis Ababa between 2000-2005. Data used includes: enplaned-deplaned passengers to/from Addis Ababa, aircraft, size and costs from Ethiopian Airlines and the Ethiopian Civil Aviation Authority. Fares are sourced from OAG.
Key Findings	<ul style="list-style-type: none"> A 40% increase in departure frequency on international, intra-African routes that experienced some form of liberalisation versus those still governed by restricted bilateral agreements. Additionally, the effect on departure frequencies was estimated to be even greater on partially liberalised routes, likely due to the diminishing marginal effects of full liberalisation versus partial liberalisation from a highly regulated market structure. No evidence of fare reducing effects has been seen in other liberalised markets across the globe. The analysis did not reveal the presence of market dominance over the 20 routes analysed.
Coverage	Africa, Ethiopia.

Title	Opportunities and Challenges for LCC Development: The Case of East Africa
Author(s)	Schlumberger, Charles E. and Weisskopf, Nora
Publication/Year	2014, in <i>Ready for Takeoff? The Potential for Low-Cost Carriers in Developing Countries</i> , 95-168.

Description	The chapter provided an overview of the aviation industry in the East African Community and assessed the opportunities and barriers to LCC airlines entering the market in this African region. The focus of the author's analysis was on domestic and intra-regional markets. While the region has only seen one true LCC entry (Fly540 later renamed Fastjet) the authors contend that there is potential in this region for additional LCC entry, but many barriers in both the market and infrastructure remain.
Methodology and Data	Qualitative analysis of airline schedule and fleet data, sourced from OAG, 2009-2012. Analysis centred describing trends and market composition.
Key Findings	<ul style="list-style-type: none"> • The air transport market in EAC nations appears to still be in the early stages of development. While economic growth is occurring in these states, income inequality is still very high dampening potential demand for air transport and for LCCs despite the presence of tourism opportunities and rising urbanization. • The majority of intra-regional routes are dominated by a single carrier, with less than half being contested by two or more carriers. • Aeronautical fees remain high in the region, but the burden has been placed primarily on passengers hindering the entry and growth of potential LCCs. • Aviation infrastructure, from airside facilities to air navigation services, remains poor
Coverage	Global, Developing Nations, East Africa.

Title	The Impact of Air Service Agreement Liberalisation: The Case of Nigeria
Author(s)	Ismaila, Danjuma Adamu; Warnock-Smith, David and Hubbard, Nick
Publication/Year	2014, <i>Journal of Air Transport Management</i> , 37, 69-75.
Description	This study analyses the progress of Nigeria's air transport industry in the wake of liberalisation stemming from the Yamoussoukro Decision including liberalising traffic rights with African nations, an Open Skies agreement with the U.S. and easing of market access regulations with several other countries. The econometric analysis involved using the WTO-standard classification for liberalisation progress on each of the country-pairs in the sample. Following the formulation and estimation of an econometric model, potential gains to international traffic were forecast if the level of liberalisation was increased on a country-pair <i>ceteris paribus</i> .
Methodology and Data	Cross-sectional econometric model of 112 country-pairs of passenger traffic to/from Nigeria including predictors for air service liberalisation over the sample period 2009-2010. Traffic, fares, and route distances data sourced from IATA PaxIS. Traffic is origin-destination passengers.
Key Findings	<ul style="list-style-type: none"> • Liberalisation effects in the econometric model were found to be statistically significant and of the correct sign indicating a positive effect on international traffic to/from Nigeria. • Removing ownership and control restrictions on any Nigerian international route could stimulate passenger traffic by approximately 33%. This finding is in line with a 2006 estimate by

	<p>the WTO.</p> <ul style="list-style-type: none"> Potential increases to trans-continental traffic from Nigeria, should full YD recommendations be implemented, range from 35% to 137% per country based on existing air service agreements. The largest traffic increases could be obtained from liberalising the most restrictive agreements to YD standards.
Coverage	Nigeria.

Title	African Decolonisation and Air Transportation
Author(s)	Button, K., Martini, G., and Scotti, D.
Publication/Year	2015, <i>Journal of Transport Economics and Policy</i> , 49(4) 626-639
Description	<p>This research examines how the lingering effects of historical colonisation have formed the current geographical distribution of air transportation growth in the region. Air service patterns, also shaped by colonisation, are observed and reported on.</p> <p>The study includes countries located south of the Sahara, and focuses on the air-services trade between those countries.</p>
Methodology and Data	<p>The data sourced for this study is from the Official Airline Guide (OAG) for the period between 1998 and 2011. It includes information on seats and does not consider demand for air services.</p> <p>The model, which aims to pinpoint the major determinants of the sub-Saharan aviation network throughout 1998 to 2011, is estimated by using the least squares dummy variable (LSDV) econometric methods. The model uses a number of different variables such as distance between airports, former British/French colonies, landlocked countries, observation year and whether or not the origin-destination pair in the data is a signatory of the Yamoussoukro Air Liberalisation Agreement.</p>
Key Findings	<ul style="list-style-type: none"> There is indication that the growth of African air transportation is growing, undoubtedly helped by a reduction in civil war and growing economies in the region. There exist positive residual effects of colonialism on airline network development. Contrary to previous research of African colonialism, being a former French colony proves more advantageous compared to a former British colony, in particular with regards to intra-block flights. In each of the study's four models, the Yamoussoukro coefficient previously mentioned was estimated as being negative (with varying levels of significance), suggesting that signatory countries of <i>The Decision</i> have experienced a negative impact on capacity.
Coverage	Sub-Saharan Africa.
Title	Africa's single aviation market: The progress so far
Author(s)	Eric Tchouamou Njoya
Publication/Year	May, 2015

Description	This paper, qualitative in nature, reviews some of the relatively recent developments in the African aviation sector and their role in the overall implementation of YD. There is some level of focus placed on the distribution of 5 th freedom rights, as well as the obstacles facing the EAC that are preventing full buy-in of multilateral open skies.
Methodology and Data	This is a policy analysis, supported in part by weighted air liberalisation index data prepared by the WTO Secretary.
Key Findings	<p>Njoya observes some of the benefits enjoyed by countries in which YD has been implemented:</p> <ul style="list-style-type: none"> • Increase in frequencies, air traffic and aircraft movements; • Competition leading to an improvement in quality of service; • Increase in private sector interest of air transport sector through capital investment or airline creation; • Increase in African carrier alliances; and, • Higher foreign direct investment; <p>Njoya reiterates that YD buy-in has been particularly slow, with individual countries and sub-regions taking the lead on its uptake. Some of this hesitancy is because of pressure felt by airlines on post-liberalisation costs due to the increased competition. The paper concludes by suggesting the formation of regional airline groupings could serve as one option of overcoming the challenge of integration in Africa.</p>
Coverage	Africa.

Title	African Airlines in the Era of Liberalisation
Author(s)	Chingosho, Elijah
Publication/Year	2009, Amazon Digital Services LLC
Description	Dr. Elijah Chingosho, Secretary General and CEO of the African Airlines Association, authored a book on reviewing the progressive liberalisation taking place throughout the African airline industry. The book covers a wide range of topics including a review of the African airlines (as of 2009), some of the liberalisation programmes and carrier responses, information on airline alliances and consolidation, legal and regulatory issues, financing, actions to be taken by carriers and a forward looking summary of the African aviation industry.
Methodology and Data	The book draws on an expansive set of data sources from publically available databases such as aircraft manufacturer forecasts, Wikipedia, tourism reports, industry associations including IATA and ICAO, U.S. Bureau statistics, African carrier websites and a number of academic papers.
Key Findings	<p>The author asserts that:</p> <ul style="list-style-type: none"> • The African aviation industry must restructure through joint ventures, consolidations, acquisitions and other means of forming large industry units to achieve economies of scale. • More focus must be placed on serving fewer markets at a higher frequency instead of a large number of markets at a low frequency. A continued challenge is the aging fleet of many carriers resulting in poor aircraft utilization and unreliable services.

	<ul style="list-style-type: none"> • African airlines do not realize the benefits and advantages of consolidation, as evidenced by the acquisition of stakes by larger operating businesses of smaller airlines in the region. • Regulatory challenges such as visa requirements, punitive regulations on denied boarding compensation in the EU, unfair EU competition rules, and the lack of Africa to speak as one entity with larger regional bodies such as the EU. • Poor liquidity amongst African airlines and undercapitalization post a challenge when looking for debt financing as a means to replace and/or upgrade ageing fleets. • Commitment from all players in the EAC is necessary to realize the full benefits of YD.
Coverage	Africa.

Title	Transforming Intra-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision
Author(s)	InterVISTAS
Publication/Year	2014
Description	This study examines the impacts of liberalising intra-African air markets. Analysis includes modelling the transmission mechanisms by which liberalisation leads to greater air connectivity, thereby resulting in wider economic benefits and increased air traffic volumes.
Methodology and Data	The methodology employed by this paper assumes that all 12 study countries sign “open skies” bilateral agreements in accordance with YD. A gravity model, the foundation of which includes the economic characteristics of countries, forecasts traffic between any two pairs of countries. The economic characteristics include variables such as GDP and trade sources from both public and subscription databases. Actual impacts of liberalisation are estimated by specifying changes to the term of the bilateral (through the use of a dummy variable), after which the gravity model calculates forecast growth of international traffic.
Key Findings	<p>Findings of this paper include:</p> <ul style="list-style-type: none"> • Increased air service levels and lower fares, leading to higher traffic volumes, increased tourism, trade, and investment, as well as improved productivity, employment and economic growth. • Specifically, increases in passenger traffic in a number of EAC countries were calculated: Ethiopia (56%), Kenya (60%), and Uganda (115%). • Benefits born by passengers include fare savings of 25-35%, improved connectivity, time savings due to new routes and greater frequencies, and greater convenience. • Overall economic benefits of liberalisation to the 12 study countries includes passenger growth of up to 4.9 million, consumer benefits of over USD \$1 billion, over 155,000 generated jobs and an increase in GDP of USD \$1.3 billion.
Coverage	Algeria, Tunisia, Egypt, Senegal, Nigeria, Ethiopia, Ghana, Uganda, Kenya, Angola, Namibia, South Africa.

Title	Clear Skies Over Southern Africa
Author(s)	Myburgh, Andrew; Sheik, Fathima; Fiandeiro, Fatima; and James Hodge of Genesis Analytics.
Publication/Year	<i>ComMark Trust</i> , 2006.
Description	The report uses a combination of case studies and econometric analysis to assess the impact of air service liberalisation within the South African Development Community consisting of 15 member states. The authors assessment of the impacts of liberalisation up to 2006 drives their thesis that continued liberalisation will allow for greater economic growth in the SADC, especially with respect to foreign tourism. The authors also consider the potential negative economic impacts on state-subsidized national airlines which, the authors contend, have protected their home carrier's markets by retaining restrictive bilateral air service agreements and maintaining artificially high fares.
Methodology and Data	Two pieces of econometric analysis were conducted on the SADC market: <ol style="list-style-type: none"> 1) Cross-sectional econometric analysis of fare data on 56 routes between six countries. Analysis included both two stage least squares and ordinary OLS and used a dummy variable for 'Open Skies' to indicate the presence of a liberalised bilateral agreement. 2) Fixed effects panel regression model of passenger volumes on 16 routes from Johannesburg between 1998 and 2004, including dummy variables for liberalised bilateral agreements and capacity increases in bilateral agreements. <p>Additional case studies were conducted on specific markets in the SADC reviewing fares, capacities, frequencies, and operating carriers.</p>
Key Findings	<ul style="list-style-type: none"> • Econometric analysis of air fares on 56 routes in the SADC showed that fares were, on average, 18% lower on liberalised routes than non-liberalised routes. The presence of a low-cost carrier on a given route reduced fares by an average of 40%. • Econometric analysis of passenger volumes on SADC routes from Johannesburg found that liberalised agreements induced a 23% increase in passenger traffic and that increases to allowable capacity in bilateral agreements increased volumes by 12%, on average. • Full liberalisation of the SADC countries' aviation markets could allow for: 500,000 incremental foreign tourists a year spending more than US\$500 million, potentially increasing SADC's regional GDP by one half percent. • Additional tourist visits and the expansion of the aviation industry could generate 35,000 jobs in the travel and tourism industries, and a further 37,000 jobs in the wider SADC economy. • The authors assert that the positive liberalisation impact on the SADC economy from increased passenger volumes would outweigh the negative economic impacts on currently protected air carriers. They point to the orders of magnitude difference between direct employment by national airlines and employment generated by the tourism and hospitality industry by visitors arriving by air as evidence that losses to national airlines would be vastly outweighed by increased employment in the much larger tourism industry.
Coverage	South African Development Community .

Title	The Contribution of Air Transport to Sustainable Development in Africa
Author(s)	Oxford Economic Forecasting
Publication/Year	<i>Air Transport Action Group, 2003</i>
Description	<p>This wide-ranging policy report, produced for the Air Transport Action Group, assess the contribution and economic impact of the air transport industry to Africa’s economy. The authors assert that the aviation industry has a vital role to play in the sustainable development of African economies. They argue that improved air access both within African nations and between Africa and the world will help raise living standards and alleviate poverty in Africa by lowering transport costs, supporting more rapid and stable economic growth, and improving personal mobility.</p> <p>The authors’ industry analysis focuses closely on the linkage between aviation and tourism, and in particular nature tourism. They identify the growth of nature tourism to be particularly beneficial to the growth of a sustainable economy in Africa, both through an increase by foreign tourists and the continued preservation of protected natural areas.</p>
Methodology and Data	Quantitative analysis of Africa’s aviation industry and its relation to the overall economy, with a particular focus on the relationship between aviation, tourism and nature tourism. Qualitative analysis focuses on current government policy and surveys of agents in the African air transportation industry.
Key Findings	<ul style="list-style-type: none"> • There is significant potential to boost the African economy by increasing the size and scope of the African air transport industry, with particular respect to facilitating growth in the tourism and nature tourism industries. To do so, the Yamoussoukro Decision should be fully implemented and governments should refrain from extracting excessive fees and taxes from the aviation industry which would ultimately hinder growth of the industry and the African economy as a whole. • Improvement to Africa’s air transportation industry has the potential to produce many positive impacts on the African economy, from reduced poverty, increased mobility, and furthering business investment and investor confidence in the continent. • Infrastructure and safety deficits must be addressed for air transport to grow and to attract foreign visitors. • Transportation costs, especially air fares, in Africa are well above global norms, making the continent an expensive place to travel. This reduces both foreign tourism as well as intra-African and African domestic air travel, which place additional burdens on personal mobility within the continent. • To fully realize the potential poverty alleviation effects from an expanded air transport and tourism industries, local communities must be involved by emphasising education and employment opportunities. Governments must play a role in encouraging the private sector to adopt poverty reduction strategies. Tourism and nature tourism are industries in which experiences within Africa have shown this type of cooperation to be beneficial.
Coverage	Africa.

Impacts of Air Service Liberalisation Generally

Title	Modelling and Testing the Effect of Market Structure on Price: The Case of International Air Travel
Author(s)	Dresner, M. and Tretheway, M.
Publication/Year	1992, <i>Journal of Transport Economics and Policy</i> , 26(2) 171-184
Description	With the introduction of the first liberal bilateral for the United States in 1978, the United States (and its bilateral partner the Netherlands) began a movement towards more liberal bilateral agreements between nations. By 1982, the United States had more than 20 liberal agreements in place. The authors look to assess whether or not liberal bilateral agreements were able to successfully increase price competition on international flights from the United States.
Methodology and Data	Two-stage Least Squares Model. The data used was panel data from 1976 to 1981 on 51 non-directional North Atlantic routes. Data was on both the discount fares and full-fares available for each route.
Key Findings	<ul style="list-style-type: none"> • Liberalisation increased competition in the market, which ultimately led to some airfare reductions. • The liberalised policy of the U.S. was successful as discount fares were reduced up to 35% on competitive routes. • No evidence of an effect on full-fares was found. • Welfare gains from liberalisation may have been up to \$325 million in 1981, approximately \$45 per passenger.
Coverage	Northern Atlantic Routes.

Title	Regulation, Market Structure and Performance in Air Passenger Transportation
Author(s)	Gonenc, R. and Nicoletti, G.
Publication/Year	2001, <i>OECD Economics Department Working Papers, No. 254.</i>
Description	Investigated the impact of liberalisation on OECD countries by analysing the implications of airline competition on airfares on 100 major international routes between 27 countries between 1996 and 1997. The study took into consideration how liberalisation may not only increase connectivity, but also liberalise entry into a market in the presence of highly dominant carrier.
Methodology and Data	Cross-sectional OLS model estimating potential fares and occupancy rates (i.e. load factors) on the route level. Data covers 100 international routes with additional analysis conducted to quantify the level of competition, liberalisation, ownership, and market efficiencies.
Key Findings	<ul style="list-style-type: none"> • On liberalised northern European routes, business fares were between 20-40% lower than OECD average. • Where routes were restricted by existing air service agreements, government control of route carriers and infrastructure (e.g. slots or access) impediments, fares were more than 20% higher on some Atlantic and Europe-Asia routes than their predicted level. • Industry and route efficiency is sensitive to actual competition pressures suggesting that potential entry or liberalisation of barriers

	to competition has a disciplining role on prices. However, there is evidence to indicate that fares react to changes in regulation independently from changes to market structure.
Coverage	Global, OECD nations.

Title	The Effect of Liberalisation on Aviation Employment
Author(s)	UK Civil Aviation Authority
Publication/Year	16 March 2004
Description	A Study to examine the impacts of liberalisation of the EU market on employment in the aviation sector. The research was motivated by fears of potential job loss from liberalisation between the EU and the U.S.
Methodology and Data	Review of employment data in Europe from 1992 to 2001. No econometric computations, just data comparisons (i.e., growth rates).
Key Findings	<ul style="list-style-type: none"> • Between 1991 and 2001 (i.e., before and after liberalisation) employment in the aviation sector had increased by 38% in the UK. • Similar results were found across Western Europe with employment increasing by 6-84%, except in a few countries where the national carrier had collapsed or been restructured as a result of government policy (e.g., Switzerland, Belgium, Greece)
Coverage	Europe.

Title	The Impact of International Air Transport Liberalisation on Employment
Author(s)	NERA Economic Consulting, for IATA
Publication/Year	2008
Description	A study to analyse the impacts of liberalisation on employment in the United States and Europe. Study looked at two areas of liberalisation, ownership and control restrictions and market liberalisation (i.e., new routes). The authors also looked at employment effects in other industries as a comparison.
Methodology and Data	The authors use ICAO Traffic Forecasts and 2007 employment data to construct forecasts of employment growth. They then use price elasticities from IATA to compute potential impacts.
Key Findings	<ul style="list-style-type: none"> • Employment in the U.S. aviation industry increased substantially following the liberalisation of its domestic market in 1978. Employment rose by 22% between 1975 and 1985 (prior to 1975, aviation employment had been declining), and then rose by a further 51% between 1985 and 1993. • In Europe, employment in the 15 EU member states that liberalised in the 1990s grew by 6% between 1997 and 2007, despite a

	significant traffic downturn in 2001 (due to recessionary effects and the impact of the 9/11 terrorist attack).
Coverage	United States and Europe.

Title	The European and Southeast Asian Single Aviation Markets
Author(s)	Dexter Lee
Publication/Year	Background Brief No. 15, The EU Centre in Singapore, July 2015
Description	This paper gives an overview of the policy changes to the aviation industry in the European Union with the emergence of the single aviation market. It also reviews the Association of Southeast Asian Nations (ASEAN) in its pursuit of a single aviation market, reviewing policies in place, and progress made (and not made) at market integration.
Methodology and Data	Qualitative analysis focusing on the historical regulations, new policies and comparative analysis of the two aviation markets.
Key Findings	<ul style="list-style-type: none"> • The groundwork for aviation liberalisation in Europe began in the late 1950's but did not gain any momentum until the early 1980's, after deregulation in the United States market. • The majority of liberalisation took place between 1987 and 1992, with a series of three packages, all introducing different areas of liberalisation. <ul style="list-style-type: none"> ○ Reduced fare restrictions ○ 3rd, 4th and 5th freedoms granted; fare and capacity restrictions greatly reduced ○ Community carriers introduced (common licensing); almost full pricing freedom; cabotage rights for community license carriers • The single aviation market meant that member states were no longer allowed to provide state aid to its flag carriers (as this could distort the market). • The regulations behind the single aviation market also allowed for carriers to make decisions based on commercial outcomes, without government interference, reducing the issue of protectionism. • Liberalisation aided the rapid growth of low-cost carriers in Europe. • Liberalisation provided consumers lower prices, more travel options and stimulated tourism in the European Union. • Other aviation industries have benefited, including small and medium airports, ground handling and ANSPs. • In the ASEAN market, the single aviation market outline is not quite as liberal as the EU model, and has not had as much success. • The ASEAN Single Aviation Market (ASAM) agreement allows for 3rd, 4th, and 5th freedom rights and lessened ownership restrictions. • Some member countries have slowed the progress of ASAM as they have refused to ratify the agreements. • Unlike the European Commission (which can set policies) the ASEAN Secretariat cannot control the member countries, which continue to act separately in terms of bilateral agreements with 3rd countries. • ASEAN airlines have benefited from the partial adoption of ASAM, particularly low cost carriers.

Coverage	European Union, ASEAN.
-----------------	------------------------

Title	Opening the Skies: Put Free Trade in Airline Services on the Transatlantic Trade Agenda
Author(s)	Kenneth Button
Publication/Year	<i>Policy Analysis</i> , No. 757, CATO Institute, September 2014
Description	Qualitative review of the Transatlantic Trade and Investment Partnership (TTIP) between the European Union and the United States and the proposition of including commercial aviation, specifically including domestic air transportation services and further relaxed ownership laws.
Methodology and Data	Qualitative analysis of the merits of including commercial aviation in the TTIP and potential benefits.
Key Findings	<ul style="list-style-type: none"> • Restrictions on cabotage shelter U.S. carriers from competition from foreign carriers, which creates incentives that lead to inefficiencies. • Deregulation and liberalisation have created large benefits in both Europe and the United States, for both the industry (though not for all members) and consumers. • Deregulation and reforms in the United States have left a gap for service where neither low cost nor legacy carriers operate. • By not allowing cabotage, the author asserts there are benefits from competition being suppressed: <ul style="list-style-type: none"> ○ Competition is generally beneficial to consumers (firms tend to respond better to consumer product demand) ○ Opening domestic markets would help reduce the issue of market and pricing dominance, reducing the regulatory burden associated with this ○ Foreign investment has been historically beneficial to American firms • The author also notes that current U.S. airlines and labour unions have lobbied against cabotage, successfully thus far.
Coverage	United States and Europe; Transatlantic

Title	The Economic Impact of Air Service Liberalisation
Author(s)	InterVISTAS-ga2
Publication/Year	June 2006
Description	Examined the impacts of liberalisation were estimated using a gravity model that forecasts traffic between any two countries (or groups of countries). Also examined case studies of liberalisation around the world.
Methodology and Data	The analysis involved cross-sectional data on over 800 country pairs. The cross-sectional analysis assumes that traffic between the two countries was a function of the economic conditions of the two countries, trade between the countries, distance, and socioeconomic conditions and the restrictions of the air service agreement.

Key Findings	The analysis found that traffic growth subsequent to liberalisation of air services agreements between countries typically averaged between 12% and 35%, significantly greater than during years preceding liberalisation. In a number of situations, growth exceeded 50%, and in some cases reached almost 100% of the pre-liberalisation rates.
Coverage	Global.

Title	The Link Between Air Services Liberalisation and Canadian Trade
Author(s)	David Boileau and Mykyta Vesselovsky
Publication/Year	Global Affairs Canada, Government of Canada, 2013
Description	This paper aims to measure the link between liberalised air service agreements and Canadian trade. Looking at whether the effects of signing new ASAs is different than further liberalising ASAs already in place, and how this effects trade flow of merchandise and services to/from Canada. Past research has found a positive relationship between liberalisation and increased cargo and passenger traffic, among other benefits.
Methodology and Data	Quantitative analysis of the effects of liberalising air service agreements (ASAs). The analysis uses data on total trade between Canada and its trade partners (annual data from 1998-2008) and regresses it against variables including GDP, distance, indicator variables and variables which represent the ASA between Canada and its trade partner. The ASA variables were created based on research on the bilateral agreements available and the World Trade Organizations QUASAR methodology, which gives a weighting to specific areas of an ASA (i.e., how liberal the capacity clause is). Regression analysis was done using a gravity model, using Ordinary Least Squares, Poisson Pseudo-Maximum likelihood and a demeaned GDP estimator method. Regressions were run separating merchandise and services trade, as well as commercial services.
Key Findings	<p>Using a gravity model, the authors find a significant and positive relationship between trade and Air Service Agreements.</p> <ul style="list-style-type: none"> • A new ASA leads to 53% more merchandise trade and at least double the value of services trade. • If an ASA is already in place, the results for merchandise trade do not find a significant effect of further liberalising the existing ASA. There is a positive and significant effect of further liberalising an ASA on services trade though, • There is a positive and significant relationship between both the presence of and further liberalisation of an ASA on commercial services trade as well. Signing an ASA increases commercial services trade by a factor of 2.7, while further liberalisation of an existing ASA increases commercial services trade by roughly 27% for each 5 point increase in the weighted ASA measure. <p>The results show the movement of Canada towards signing more liberal ASAs is a positive choice.</p>
Coverage	Canada.

Title	EU Air Transport Liberalisation: Process, Impacts and Future Considerations
Author(s)	Guillaume Burghouwt, Pablo Mendes De Leon and Jap De Witt
Publication/Year	International Transport Forum, Discussion Paper No. 2015-04, January 2015
Description	The authors review the history and regulative process to leading to the creation of the liberalised single aviation market in the EU. They discuss the changes that have occurred in the industry and the overall impact it has had on the industry (including airports) and its customers. Changes to the industry include the emergence of low cost carriers and how that has changed the market. They also discuss the impacts of the single aviation market on external aviation policy.
Methodology and Data	Qualitative analysis of liberalisation in the European Union. Reviews the process of creating the single aviation market, the impacts liberalisation has had on the aviation industry and its customers as well as potential paths that the industry could face based on consolidation, congestion and competitive landscape.
Key Findings	<ul style="list-style-type: none"> • In the early years of liberalisation (the early to mid- 1990s), many of the member states' flag carriers performed well, expanding their networks, moving to a hub-and-spoke system and profiting from increased market share. Some carriers did not prosper, requiring state aid (which the commission eventually banned for anti-competitive reasons). • As low cost carriers began to emerge and grow quickly (gaining market share), the market became more competitive for the flag carriers, as yields were declining and growth rates stalled. • There was consolidation in the market as mergers began to take place for some of the legacy carriers as well as bankruptcies. • Although there was a mixture of outcomes for the airlines, consumers benefited from liberalisation through lower fares and increased routes and frequencies. • In the future, there may be issues of overcapacity as some low cost carriers continue to grow. • The legacy carriers will face stronger competition from both Gulf carriers and low cost carriers, which may lead to additional consolidation (bankruptcies are possible). • Issues around fair competition will be an important for EU external aviation relations (when signing ASAs).
Coverage	Europe.

Title	Estimating the Gains from Liberalising Services Trade: The Case of Passenger Aviation
Author(s)	Anca D. Cristea, David Hummels and Brian Roberson
Publication/Year	Working Paper, March 2014 http://pages.uoregon.edu/cristea/Research_files/osa.pdf
Description	The United States has taken a strong stance on liberalisation over the past 22 years with the signing of over 100 open skies air service agreements. The authors aim to study the effects of liberalisation on consumer welfare and market structure, as airlines adjust their networks and prices in the

	wake of liberalisation.
Methodology and Data	<p>Two main data sources are used for both market structure and traffic figures on international travel from the United States. The data used is quarterly data from 1993-2008. The first dataset is the DB1B Origin Destination Passenger Survey, which is a 10% sample of airline tickets with at least one end-point being the United States. The dataset contains at the ticket level complete itineraries (airports, carriers, fares, distance, etc.). The second dataset is the T100 International Segment dataset, which includes capacity and traffic data for all non-stop international flights. This dataset does not include fare information and only includes the segment of a flight leaving the United States (does not represent O/D travel).</p> <p>To measure the effects of liberalisation on growth in passenger and traffic, a difference –in-difference methodology is used. To measure the price and quality effects, instrumental variable estimation is used.</p>
Key Findings	<p>Regression results show:</p> <ul style="list-style-type: none"> • After 5 years, countries that sign an open skies agreement with the United States have an 18% higher growth in traffic compared to countries that do not sign. <ul style="list-style-type: none"> ○ Part of the growth is based on the introduction of new routes • For the network, carriers will both enter and exit hub airports, but this will spread out capacity across routes. • Prices decrease after signing an open skies agreement (approximately 2%), but the magnitude varies based on route characteristics. • There is an increase in the number of gateway exit cities, on average. • Customers flying from the U.S. and transiting through a country with an open skies agreement, onward to a third country without an open skies agreement will also benefit from decreased prices and increased quantity (quality) of route options.
Coverage	United States International Routes.

Title	Liberalisation of Air Transport: Summary – Policy Insights and Recommendations
Author(s)	International Transport Forum
Publication/Year	ITF/OECD Research Report , May 2015
Description	This report summarises the current status of liberalisation in air transportation globally. It provides background on some of the current impediments to implementing full liberalisation, including ownership and control restrictions and fair competition.
Methodology and Data	Qualitative overview of liberalisation in the air transportation industry globally. Reviews the state of regulation/deregulation, ASAs, connectivity, environmental impacts, markets, ownership and competition.

Key Findings	<ul style="list-style-type: none"> • Deregulation of the air transport industry is still relevant and an ongoing process. The ASEAN single aviation market is an example of deregulation to still take place, among many other countries. • China, being one of the largest potential growth markets, is being watched to see how they choose to deal with air service agreements, and whether or not they begin to have more liberal agreements put in place. • There is general consensus that liberalisation has been beneficial in terms of lower prices, higher demand, improved connectivity and wider economic benefits through trade and tourism. <ul style="list-style-type: none"> ○ There are large gains from liberalisation when it allows for growth of low cost carriers. • While direct connectivity may fall in some countries, for the consumer this may be okay (increased indirect connectivity paired with lower prices may leave the consumer better off). <ul style="list-style-type: none"> ○ Changes in connectivity reflect carriers adjusting their networks, not necessarily directly from liberalisation • Environmental issues from aviation are starting to be included in air service agreements, as the increased traffic leads to increased pollution. • Many countries are starting to form aviation blocks, acting as one area for liberalisation. This includes the EU, ASEAN, and Africa with the Yamoussoukro Decision. • Ownership and control restrictions need to be reviewed as there are gains from removing these restrictions. It will allow capital to flow to airlines for growth as in other industries. • Fair competition in the industry is a major topic of discussion. The authors note that the discussion should not include competitive advantages from geography though, and rather there needs to be a clear message from ICAO as to what are acceptable level of subsidies.
Coverage	Global.

Title	Open Skies Over the Middle East
Author(s)	Anca Cristea, Russell Hillberry and Aaditya Mattoo
Publication/Year	World Bank Policy Research Working Papers, April 2015, http://pages.uoregon.edu/cristea/Research_files/osa_wb.pdf
Description	The authors aim to estimate the benefits from a more liberal air service agreement between Turkey and the Arab countries that surround it (those that are part of the Intra-Arab Freedom of the Air Programme). They begin by estimating generally the impact of ASAs, both bilateral and plurilateral. They then simulate the potential benefits from the liberalisation of the ASAs between Turkey and the other Arab countries that surround it.
Methodology and Data	The passenger data is the on-flight origin destination dataset from ICAO, which covers scheduled international flight segments. The data is for the year 2010. To measure liberalisation, the authors use the Air Liberalisation Index, based on the WTO database. The authors also use control variables such as GDP, distance and route specific characteristic variables. The regression analysis is based on a gravity model using Ordinary Least Squares estimation. They use data on both the country-pair and city-pair level, looking at both traffic volumes and number of

	markets with direct service.
Key Findings	<ul style="list-style-type: none"> • Based on country-pair level regressions, there is a positive and significant effect on passenger traffic from liberalisation. <ul style="list-style-type: none"> ○ The regression results do not show a significant difference from the impact of a bilateral agreement versus a plurilateral agreement. ○ Had a liberal policy been in place at the time, there is potential for up to 30% more traffic between Turkey and its neighbours. • Based on the city-pair level regressions, there is a positive and significant effect on passenger traffic from liberalisation on routes that are already in place. • If the agreement between the Arab countries was fully liberalised (similar to the UK), there is potential for traffic to increase up to 30%. • Adding Turkey to the agreement between the Arab states would also have a positive impact on passenger traffic and increased city-pair options.
Coverage	Middle East.

Economic Benefits of Aviation Generally

Title	Open Skies: Estimating Travelers' Benefits from Free Trade in Airline Services
Author(s)	Winston, C. and Yan, J.
Publication/Year	2015, <i>American Economic Journal: Economic Policy</i> , 7(2) 370-414
Description	The U.S. negotiation of open skies bilateral agreements has led to the deregulation of airline competition on international routes. However, a research gap exists concerning the potential benefits to the welfare of travellers should additional agreements be reached between the US and other countries.
Methodology and Data	The data used includes monthly summaries of passenger travel during between 2005 and 2009. Data includes origin-destination pairs, average fares plus taxes for five fare classes, number of passengers, number of non-stop and connecting flights, and the associated carriers. Parameters for the resulting model are produced using the Generalized Method of Moments (GMM).
Key Findings	<ul style="list-style-type: none"> • Open sky agreements on U.S. international routes have generated at least \$4 billion in annual gains to travelers. • Travelers would gain an additional \$4 billion if the U.S. negotiated agreements with other countries that have significant international traffic. • Resulting increase in passenger demand and flights should increase employment in the U.S. airline industry, although competition on U.S. international routes may cause wages to drop.
Coverage	U.S. International Routes.

Title	Airline Traffic and Urban Economic Development
Author(s)	Jan K. Brueckner
Publication/Year	<i>Urban Studies</i> , Vol. 40 No.8, 1455-1469, July 2003
Description	This paper provides new evidence linking airline traffic and employment in US metropolitan areas. There have been only a few research studies to date in this area. The author attempts to improve further on these prior studies, using empirical evidence on the link between airline traffic and economic development. It is noted that the level of airline traffic is assumed to effect metro-area employment in the same year rather than over subsequent years.
Methodology and Data	Econometric analysis was conducted to estimate the relationship between airline traffic and employment. Data from a sample of 91 US metropolitan areas was used in the analysis. Analysis is controlled for reverse causality between employment and traffic.
Key Findings	<ul style="list-style-type: none"> • This evidence confirms that good airline service is an important factor in urban economic development. A 10% increase in passenger enplanements will lead to an approximate 1% increase in employment in service-related industries. • There is no effect, however, on manufacturing and other goods-related employment. • Based on these findings, the author validates the claim that the expansion of O'Hare airport is a powerful economic development tool.
Coverage	United States.

Title	Airline Network Benefits
Author(s)	IATA
Publication/Year	Economic Briefing No. 3, 2006
Description	The purpose of the study was to analyse the wider economic benefits of air transportation. This was done through a survey of businesses from different countries and industries. The aim was to show evidence of wider economic benefits (economic development and growth).
Methodology and Data	Survey based research from 625 businesses across 5 different countries. Survey was focused on impact of air transportation on their industries. The businesses surveyed were from the following countries: China, Chile, United States, Czech Republic, and France.
Key Findings	<ul style="list-style-type: none"> • The survey found that 25% of their sales were dependent on good air transport links. This percentage rose to 40% for High Tech companies. • In regards to access to effective air transport links, 63% of firms stated that it was vital or very important to investment decisions, while a further 24% said it was somewhat important. • On average, 18% of firms reported that the lack of good air transport links had affected their past investment decisions, while 30% of Chinese firms reported that they had changed investment decisions because of constraints on air services.

Coverage	Select countries – global.
-----------------	----------------------------

Title	Measuring the Economic Rate of Return on Investment in Aviation
Author(s)	InterVISTAS Consulting Inc.
Publication/Year	2006
Description	<p>InterVISTAS Consulting Inc. was commissioned by the International Air Transport Association (IATA) to develop a detailed statistical analysis of the relationship between a country's connectivity to the global air transport network and its level of productivity. The analysis encompasses a wide range of 48 countries – including both developed and developing economies – and across a ten-year period, 1996 to 2005. The results are applied to specific investment examples to show the significant wider economic returns that can be created through the development of aviation infrastructure.</p> <p>The analysis shows that a positive relationship exists between productivity (in particular, labour productivity) and aviation connectivity (such as, economic importance of destinations, frequency of service, and number of onward connections available), wherein countries with higher levels of productivity have higher levels of connectivity on average. An econometric analysis verifies that the relationship between connectivity and productivity is significant. A 10% increase in national connectivity resulted in a 0.07% increase in national productivity. Furthermore, the estimated economic rate of return on aviation investments ranges from 16% to 59%. This indicates that substantial economic benefits are generated when aviation investment results in an increase in connectivity.</p>
Methodology and Data	A detailed statistical analysis of the relationship between a country's connectivity to the global air transport network and its level of productivity is conducted, encompassing a wide range of 48 countries – including both developed and developing economies – and across a ten-year period, 1996 to 2005.
Key Findings	<ul style="list-style-type: none"> • A positive and significant relationship exists between productivity (in particular, labour productivity) and aviation connectivity (such as, economic importance of destinations, frequency of service, and number of onward connections available), wherein countries with higher levels of productivity have higher levels of connectivity on average. • A 10% increase in national connectivity resulted in a 0.07% increase in national productivity. The estimated economic rate of return on aviation investments ranges from 16% to 59%. • Thus, the increase in connectivity created by aviation investments generates substantial economic benefits.
Coverage	Global.

Title	Analysis of the interaction between air transportation and economic activity: a worldwide perspective
Author(s)	Ishutkina M.A. and Hasnman R.J.
Publication/Year	PhD thesis, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, 2009
Description	This study analyses the interaction between air transportation and economic activity on a worldwide basis. The study uses a feedback model, literature reviews, aggregate data, and case study analyses. The authors concluded that a feedback relationship between air transport and economic activity exists. Air transportation provides employment and supports economic activities which are dependent on the availability of air transportation services. In turn, economic activity drives the demand for air transportation services
Methodology and Data	Using a feedback model, aggregate and individual country-level data was analysed in terms of the relationship between air transportation passengers and GDP. The data was for 139 countries over a time period of 30 years (1975 and 2005)
Key Findings	<ul style="list-style-type: none"> • In the majority of the countries with positive growth rates, significant changes were observed. • For the air transportation supply side, changes in the regulatory framework and infrastructure capability, and on the air transportation demand side, changes such as economic liberalisation reforms and supporting infrastructure investment led to positive growth rates.
Coverage	Global.

Title	The Catalytic Effect of the Accessibility to Air Cargo Services
Author(s)	Cech, P.
Publication/Year	TIACA Graduate Research Paper Competition (2004)
Methodology	The author used a cross-section statistical comparison method to investigate how air cargo services affect local economies, including: 1) the attractiveness of an area for the creation of new jobs and retention of existing jobs (measured by employment), 2) the impact on economic growth (measured by earnings) and 3) the impact on added value created by employees and subsequent improvement of efficiency and competitiveness (measured by earnings per employee). The author grouped 125 U.S. counties with similar population size into seven groups depending on the number of airports to which they connected, the volume of cargo handled and the frequency of flight service.
Key Findings	The author concluded that there is a positive catalytic effect related to accessibility to air cargo services. More specifically, the catalytic effect can lead to an increase in the number of jobs and increased employee earnings. The transportation sector is most influenced by the accessibility of air cargo services. However, construction, retail and wholesale trade industries were also positively influenced.

Coverage	United States.
-----------------	----------------

Title	Business Travel as an Input to International Trade
Author(s)	Poole, J.
Publication/Year	UC Santa Cruz Working Paper (2010)
Methodology	Econometric analysis of U.S. trade and travel data from 1993 to 2013.
Key Findings	A 10% increase in business travel to the U.S. by non-residents led to a 1.2% increase in the volume of exports from the U.S. and 0.3% increase in export margins. The effect was strongest for travel from non-English speaking countries, suggesting that business travel help overcome language barriers in trade relationships.
Coverage	United States.

Title	Econometric Analysis to Develop Evidence on the Links Between Aviation and the Economy
Author(s)	PWC
Publication/Year	Report for the UK Airports Commission, December 2013
Methodology	PWC examined the relationship between the UK's international air seat capacity and international trade. Controlling for other factors affecting trade, the analysis found that increases in seat capacity were associated with increases in both the export and import of goods and of services.
Key Findings	A 10% increase in seat capacity increased the UK's goods exports by 3.3% and its goods imports by 1.7%; the same seat capacity increase was associated with a 6.6% increase in service imports and a 2.5% increase in service exports.
Coverage	United Kingdom.

Title	Getting There Fast: Globalization, Intercontinental Flights and Location of Headquarters
Author(s)	Bel, G. and Fageda, X.
Publication/Year	Journal of Economic Geography, Vol. 8, No. 4, 2008.
Methodology	2008 analysed the relationship between international air service and the location of large firm's headquarters across major European urban areas.
Key Findings	The research found that the supply of non-stop intercontinental flights was a significant factor in determining the location of headquarters (along with

	other economic, business, labour and tax factors). Empirical research indicated that a 10% increase in supply of intercontinental air service was associated with a 4% increase in the number of large firm headquarters located in the corresponding urban area.
Coverage	Europe.

Title	Air Passenger Linkages and Employment Growth in U.S. Metropolitan Areas
Author(s)	Irwin, M. and Kasarda, J.
Publication/Year	American Sociological Review, Vol. 56, No. 4, August 1991.
Methodology	Examined the relationship between the structure of airline networks and employment growth at 104 metropolitan areas in the United States using data for a 30-year period.
Key Findings	Found that expansion of the airline network serving a region had a significant positive impact on employment in that region, particularly in service sector employment. In addition, the analysis found changes in the airline network position was a cause rather than a consequence of this employment growth. The paper concludes that the reorganisation of the airline network has been a critical factor transforming and integrating the spatial economy of the U.S.
Coverage	United States.

Title	Airline Traffic and Urban Economic Development
Author(s)	Brueckner, J.
Publication/Year	Urban Studies, Vol. 40, No. 8, 1455–1469, July 2003
Methodology	Examined the impact of air service on employment in the U.S. The author regressed employment in 94 metropolitan areas in the U.S. against a number of factors including measures of air service.
Key Findings	The analysis found that a 10 percent increase in departing passenger in a metropolitan area leads to an approximately 1 percent increase in employment in service-related industries. Frequent service to a variety of destinations, reflected in the high levels of departing passengers was found to both attract new firms to the metro area and stimulate employment at established enterprises. However, the analysis found that there was no impact on manufacturing and other goods-related employment, suggesting that air travel is less important to these industries than it is to service-related industries. The analysis included instruments to control for reverse causality between employment and traffic.
Coverage	United States.

Title	High-technology employment and hub airports
Author(s)	Button, K., Lall, S., Stough, R. and Trice, M.
Publication/Year	Journal of Air Transport Management, Vol. 5, Issue 1, January 1999.
Methodology	The authors examined empirically the link between high-tech employment in a region and whether the region is served by a hub airport. Using data from 321 U.S. metropolitan areas in 1994, the authors regressed high-tech employment against a number of controlling factors including a dummy indicating that the region was served by a hub airport.
Key Findings	The analysis found that the presence of a hub airport increased high-tech employment by an average of 12,000 jobs in a region. An additional case study of medium sized hub and non-hub cities also determined that the effect of a city being a hub, irrespective of the total volume of airline traffic passing through it, attracts more high-technology employment than a comparable non-hub city. Finally, the authors addressed the issue of causality (i.e. does the presence of a hub airport lead to more employment, or does higher employment in a region increase the likelihood of a hub airport being developed?). Using the Granger causality test, the authors found that there was statistically significant evidence that the presence of a hub airport caused an increase in high-tech employment, rather than airlines selecting cities as hubs simply because they are already economically dynamic.
Coverage	United States.

Appendix C: Stakeholder Consultations - Summary by Country

This appendix provides a summary of the stakeholder consultation conducted in Burundi, Kenya, Rwanda, Tanzania and Uganda. The text below reflects the views of the stakeholders interviewed.

Burundi

The responding stakeholders were:

- Burundi Civil Aviation Association
- Air Burundi
- Burundi Tourism
- Federal Chamber Of Commerce and Industry of Burundi
- Burundi Freight Forwarding Association
- Burundi Investment Promotion Authority

A number of key themes arose from the stakeholder's responses, and are summarised in the following sections below.

Air Service and Costs

Stakeholder consistently reported that the current level of air service in Burundi is extremely limited. For example, flight training constitutes the majority of domestic services, and the limited routes that are available to other countries in the EAC are served by other national carriers in the region. Despite existing BASAs, there is still no direct flight connecting Burundi with Tanzania. To fly between these two countries, a connection must be made by passengers in Kenya. These connections add several hours to the journey, sometimes more, which is unattractive for business travellers and reduces the potential for tourism to develop.

It was noted that the current flight between Bujumbura and Nairobi is very costly. In other cases, it is simply more economical to travel by road. For example, a flight between Kigali and Bujumbura costs USD \$200, while travel by road amounts to USD \$10. However, the journey takes 5-7 hours compared with a direct flight of less than an hour.

Impact of Air Transportation on Other Sectors of the Economy

Stakeholders outlined several key areas affected by the lack of air service:

- Trade
- Tourism
- Inward Investment

Trade in particular is hampered due to the time sensitive nature of many products leaving Burundi destined for Europe. Goods such as flowers and fresh produce are often subject to delays due to poor air connectivity, thus lowering the quality and value of the product being shipped.

Some stakeholders identified specific export opportunities - fresh produce is available for shipping to Gabon, along with fish to Rwanda and Ethiopia. However, air cargo capacity is limited in the country and so these goods do not get exported as transport by road is generally not possible.

Lack of connectivity is hampering tourism – for example, to travel from Kudoichi resort in Tanzania to Burundi passengers must make the flight connection in Kenya. Very few tourists are likely to be willing to do that. With better air connectivity, Burundi could form part of regional tourism itineraries.

Challenges Facing Air Service Development

The lack of a national carrier is a major challenge facing air service development. Many hurdles remain to re-activate Air Burundi such as certification, finalizing an AOC (Air Operator's Certificate), audit queries, capacity to supervise operations, knowledge of international standards, and access to investment. Investors are needed but foreign ownership restrictions are limiting the necessary inflow of cash and capital.

Some stakeholders feel the country generally lacks the correct governance structure and associated leadership. In addition, trade and tourism stakeholders must work more closely with the transportation industry to ensure that travel needs are met.

Expected Benefits of Liberalisation

The flow of goods and people would increase due to the ease and efficiency with which business transactions can be conducted.

The EAC attracts visitors from around the world due to its tourism offering; however, the industry would most certainly improve should air access improve, and in turn subject international travellers to lower fares.

Being land-locked, air service is critical to connecting Burundi with the global economy. Liberalisation will lead to great regional and international air service, boosting tourism, trade and business development.

Expected Dis-benefits of Liberalisation

Increased competition from non-national carriers could threaten the profitability of airlines in the region, especially the Burundian national carrier should it receive funding to resume operations again. Some concern was raised by stakeholders that a loss of control of air services could lead to the mismanagement of some airlines operating in the region.

Kenya

The responding stakeholders were:

- Ministry of Transport - Air Transport Directorate
- East Africa Tourism Platform
- Fresh Produce Exporters Association
- Kenya Flower Council
- Kenya Association of Manufacturers
- Safarilink
- Jambojet
- Titan Tours & Travel
- Destination Africa
- Kenya Association of Air Operators
- Acacia Safaris

A number of key themes arose from the stakeholder's responses, and are summarised in the following sections below.

Air Service and Costs

Stakeholders provided mixed feedback on domestic services within Kenya. While some felt the travel options were well coordinated and suitable, others felt regional travel in the country was too limited with few options for smaller towns.

However, there was agreement that within the broader EAC region, services were low and costly to the point where the level of connectivity available does not serve the needs of trade or tourism. Air service within the EAC was seen as inadequate providing poor connectivity to many parts of the regions. It was also felt that there was limited competition and, as a consequence, high fares. Air service within the EAC was seen as inadequate providing poor connectivity to many parts of the regions. It was also felt that there was limited competition and, as a consequence, high fares.

Many stakeholders called for additional European service, citing a need for more carrier choice so fares can decrease. This also applied to cargo services as it is often the case that exporters will use competing international carriers to ship goods out of the region due to cheaper and more reliable service. It was noted by most respondents that both passenger and cargo fares were too high due to the taxes and fees imposed by governing bodies.

There are minimal charter flights serving Kenya and the EAC as a whole due to the prevalence of restrictive travel laws and terrorism threats.

Impact of Air Transportation on Other Sectors of the Economy

It was suggested by many that the tourism industry is hampered significantly due to limited direct access to Europe. One stakeholder noted that national services to the European region have been quite good historically, but now passengers have access to only a fraction of the number of countries. As part

of a long-term tourism strategy, it was requested that these services return, with the addition of cabotage rights between Mombasa and Nairobi. As it currently stands, accessing many of the popular tourism destinations requires the use of private companies that charge extremely high fees for their services. Furthermore, the current level of regional air service was seen to be hampering tourism as international tourists have limited regional connectivity – have to rely on charters that not all tourist can afford.

Air cargo was seen as particularly problematic, with high costs and connectivity. Cargo capacity was reliant on passengers services which meant some cargo was off-loaded at peak times to meet the needs of passengers.

Opportunities for investment are limited due to poor connectivity. One solution offered was to expand Mombasa and Kilimanjaro's international services to a broader number of international airlines and destinations.

Challenges Facing Air Service Development

Dated bilateral air service agreements pose a major challenge to the growth of air service in the EAC region. Many bilaterals are dated and restrictive, limiting the market's ability to service demand. Some bilaterals restrict the number of carriers that can operate on a route to 1 or 2, reducing competition and leading to high fares and low frequency levels. In addition, some bilaterals specify the maximum number of frequencies and seats that operate on a route so that not all demand can be met and prices are pushed up. It was viewed that many countries in the EAC are not allowing carriers from other countries to operate, sometimes to protect the home carrier. Respondents recognised that addressing this issue forms part of the broader discussion around fully implementing the Yamoussoukro Decision. The licencing of carriers is also an issue – Kenya is fairly liberal but other EAC countries are very restrictive.

All stakeholders felt that taxes on the industry are too high, as well as taxes imposed at country borders in the region. Taxes/charges mentioned in particular included: 16% VAT on air tickets and on spare parts, taxes on jet fuel, high airport departure tax and generally high airport landing fees.

The inability of carriers to borrow money effectively makes it tough to renew fleets and make necessary capital investments. This issue has led to poor safety records for carriers, something highlighted by several Kenyan stakeholders as a major problem.

Most stakeholders agreed that airport and general transport infrastructure in both the country and region was needed upgrading in order to handle current and future expected passenger flows. Kenya has upgraded its main airport but infrastructure improvements are needed across the region (road access to smaller airports also an issue, especially for cargo).

Some respondents raised the issue of ensuring there is a skilled work force to meet the growing requirements of the aviation industry and ensure safety. High security measures required to meet requirements for international services were also raised. Other challenges facing the development of air service within East Africa include travel bans related to Ebola and terrorism, politics, corruption and bribery.

Expected Benefits of Liberalisation

There was unanimous agreement amongst respondents that a boost in trade would follow the liberalisation of EAC skies. It was noted that the community currently relies heavily on road, railway and maritime transportation to the extent that 'open skies' would likely unlock a number of new trade and business opportunities.

New industries and markets are expected by many to open up across the entire EAC region which was previously unreachable in any convenient manner (e.g., South Sudan). The ability to migrate more quickly and cheaply makes it easier to work in the region. Specifically, providing the opportunity for firms to conduct same-day business across cities such as Kigali, Entebbe and Nairobi is expected to bring significant economic benefits for the region.

Stakeholders expect tourism to be a key beneficiary of liberalisation, in particular domestic tourism due to competitive routes, lower prices, a larger pool of jobs and new product offerings. Deregulation is expected to open new direct routes to Europe and the U.S., thereby increasing the volume of inbound visitors to tourist markets in the country.

Certain industries, in particular aircraft manufacturing, would be expected to develop their own products and technology instead of importing from foreign countries.

Expected Dis-benefits of Liberalisation

Stakeholders noted that competition in general would grow to the extent that both revenues and profit margins of many industry players would fall. This in turn would force out a number of firms (at least in the short term), causing a loss of jobs. However, this could be offset by increased aviation sector activity. It was also commented that more efficient firms should be able to prosper in a more competitive market.

Some concern was voiced regarding the management of environmental impacts, in particular the level of noise and air pollution to be generated by new market entrants. However, it was also noted that should this growth be managed and planned effectively, it may not be a problem at all.

One stakeholder noted that there is a need to achieve a "buy in" to the idea of air space liberalisation by Kenya Airways in particular. Perhaps the key to achieving this is the by clearly showing that under liberalisation with lower air fares passenger numbers will ensure survival into the future rather than relying on government bail outs.³⁴

³⁴ Kenya Airways declined to participate in the stakeholder consultations.

Rwanda

The responding stakeholders were:

- Ministry, East Africa Community
- Rwanda Civil Aviation Authority/ Rwanda Airports Authority
- Ministry of Infrastructure
- Rwanda Tours & Travel Association
- Private Sector Federation – Rwanda
- Rwanda Chamber of Commerce
- Rwanda Hospitality Association
- Rwanda Hotels, Restaurants, & Bars Association
- Rwanda Chamber of Tourism
- RwandAir
- East Africa Business Council

A number of key themes arose from the stakeholder's responses, and are summarised in the following sections below.

Air Service and Costs

The level of domestic air service and the associated travelling population is growing due to an expanding national carrier and continual improvement of airline and airport infrastructure. For example, Kigali, Kamembe and Rubavu airports have all either received upgrades and/or expansions, or plan to in the near future.

However, domestic air travel is still limited and costly to the average Rwandan, and it is more affordable to take buses within the country (e.g., a flight from Nairobi to Kigali is similar in cost to a direct flight to Europe). The lack of carriers to choose from remains problematic. For example, on a business trip in early 2016 conducted by 29 business leaders from Rwanda, the only practical option was Turkish Airlines. Additional feedback outlines the lack of direct service between Kigali and Mwanza, and the limited number of flights available between Kigali and Arusha.

Air fares are very high in part due to taxation, but also due to lack of competition. Insurance and fuel surcharges were introduced to mitigate rising costs and fuel shortages during the Iraq and Iran wars. Unfortunately, both remain part of ticket costs today. Some stakeholders have indicated government taxation on tickets can amount to upwards of 40% of the ticket price. RwandAir noted that the cost of air travel was high due to high fuel costs, taxes and traffic rights limitations, making the operating environment very costly for airlines, before their on cost are factored in.

Stakeholders also raised the issue of poor connectivity. For example, flying Kigali to Arusha can take about 9 hours as direct flights are not available always. Delays, cancellations and overbookings also contribute to poor connectivity.

RwandAir provides access to each of the EAC member states, and it is expected to add flights to both Asia and Europe soon (delivery of A330s expected in 2016 Q2).³⁵ However, their connectivity in Africa is limited, and 5th freedoms should be awarded to improve this. Fifth freedom rights were granted between Nairobi and Entebbe, which reduced fares from \$800 to \$400. However, air service agreements are still generally restrictive.

Currently, the domestic flights mainly serve Kamembe, where passenger traffic connects through from Kinshasa to Kigali, and eventually on to international destinations. It was hoped by stakeholders that additional regional locations are added to the network.

Progress towards liberalisation has been made incrementally via the Northern Corridor initiative (NCIP). Travel without the need for a passport in Uganda, Kenya, Rwanda and South Sudan has been mandated and recognized as an important step, but work must continue for additional deregulation.

Impact of Air Transportation on Other Sectors of the Economy

The cost of exporting via air is prohibitive for producers in the country. As a result, the quality of fresh produce, flowers and other agricultural goods moved out of the country is not as good as it could be. It should also be noted that some respondents indicated concern with the volume of goods available for export. Most of air freight is moved by passenger aircraft which limits available capacity although brokers in Entebbe are able to use to the maximum.

Several efforts have been made to open up the airspace in the East African Region most notably through the Northern Corridor Integration Projects initiative, however there still remain many restrictions on rights to access more destinations in the region (5th freedom traffic rights in particular), the number of frequencies and capacity airlines are allowed to offer. As a result, the airlines' costs are spread over fewer passengers, making it costly to travel by air.

Tourism by the nationals of the East African countries is limited, as most people will then find it more affordable to travel by road which takes long periods and is exhausting. Reduction on restrictions for airlines would induce a comparable increase in air travel and connectivity within the EAC region, which ultimately leads to more trade and economic growth.

Agriculture is another highly affected area. With lack of enough cargo capacity, especially shortage of scheduled cargo freighters, it is difficult and costly for producers to export their fresh products.

Challenges Facing Air Service Development

The main challenges facing air service development in the region is a lack of infrastructure, and a high cost of travel. It was noted that taxes on air fares are not harmonised throughout the EAC region.

RwandAir indicated that the biggest impediment to the development of air service within the EAC are restrictive BASAs and non-implementation of the Yamoussoukro decision. Even though airlines have the will to grow their networks to improve connectivity within the region, this remains the biggest impediment. This affects how well the airlines can use their limited capacity to offer more to the market.

Taxes and airport charges are high and non-uniform within the region. For example taxes in Rwanda are US\$ 20, in Kenya is US\$ 40 and Uganda US\$ 15 per passenger. These are costs imposed on a

³⁵ <https://worldairlinenews.com/2015/09/09/rwandair-firms-up-its-order-for-one-airbus-a330-200-and-one-a330-300/>.

traveller even before the airline adds its operational cost, leaving very little room for profits. Without profitable airlines, there is no sustainability and as such these taxes are harming airline viability.

There is a prevailing need to achieve consensus amongst airlines that liberalisation is a step in the right direction. Some suspect that achieving this requires one to show that lower air fares stimulate passenger numbers such that revenues will be increased, instead of just relying on capital injections from respective governments to stay operational.

Airport and supporting infrastructure was also cited as another limitation. Lack of lighting and better navigational aids at some airports, for example, limits the times services can be offered to them to only daylight hours. This means travellers are forced to spend nights at destinations unnecessarily, which again adds to their overall travel costs. Travellers have a strong preference for having an early morning flight into a destination, conduct their business or meetings and travel back the same day, allowing them to go about their ordinary business the following day. Improved infrastructure, though costly, will benefit an area by improving the long term connectivity within the region.

Expected Benefits of Liberalisation

Stakeholders expected liberalisation to reduce fares, increase passenger and cargo traffic, and generate significant employment benefits for the country. Some of these benefits have been enjoyed by Rwandans already. For example, fares recently dropped between Kigali and Kamembe, which resulted in fully booked flights. The pace and speed of business is expected to increase substantially. For example, it could be possible for a business person in Kigali to complete a business transaction in Nairobi and be home within five hours. Via ground transportation, this scenario takes approximately 26 hours.

The addition of air operators is expected to support the tourism industry due to an improved transportation network. As it stands, well known hotel brands are currently being constructed in Kigali, but more can be expected following liberalisation.

The transportation of cargo would see a reduction of costs under liberalisation. Currently, there are plans in place to remove cabotage associated with land transport in Rwanda which is landlocked and requires access to the ocean.

The Ministry of EAC stated that in the East African region, the only way to bring the cost of air travel down, affordable, is by liberalising air transport services and therefore bringing about competition. This will bring in innovative products and allow many more people to travel by airlines, increasing access new locations/markets, increase frequencies on existing routes and make more money for airlines. The airline industry will benefit from economies of scale and in the end everyone will benefit. Under the Northern Corridor, Partner States should endeavour to conclude the Multilateral Air Services Agreement (MASA) which is currently being negotiated. This will improved competition and increase the number and frequency of flights to different destinations and in the process reduce air fares which are still high today.

RwandAir did not necessarily see a need for more carriers in East Africa, as it is a very small area. Instead, liberalisation would bring about structural change, consolidation/mergers, similar to the U.S. Liberalisation would allow greater cooperation, joint ventures, equity sharing, mergers, etc. This would improve the long term viability of the airline industry in East Africa.

Expected Dis-benefits of Liberalisation

Increased air traffic following liberalisation will require regulation to control; however, no specific suggestions were given on the potential regulatory framework.

There were concerns raised that liberalising 5th freedom rights would allow larger, sometimes foreign carriers to dominate major routes at the detriment of smaller local carriers and the development of regional air services.

Some raised the issues that terrorism is expected to be more prevalent as air traffic increases. Consideration must be given to improving existing security measures and technology.

Should liberalisation take place, there is concern that safety standards may be compromised due to the increased number of air operators in the country.

RwandAir noted that the dis-benefit one would expect is that protection of home carriers would be eliminated, which means that monopoly over certain markets would cease, thus requiring airlines to do a lot more to maintain or gain market share. However, this has a benefit on the other side since the competition created would encourage airline to improve their services, efficiency and lower costs, which leads to sustainability in the long run. Ultimately, the threat only exists to carriers not adopting changes to meet the new market conditions.

Tanzania

The responding stakeholders were:

- Air Tanzania
- Precision Air
- Fastjet
- Kilimanjaro Airports Development Company
- Tanzania Civil Aviation Authority
- East African Community
- Hotels Association of Tanzania
- Tourism Confederation of Tanzania
- Coastal Aviation
- Tanzania Investment Centre
- Tanzania Horticulture Association (TAHA)

A number of key themes arose from the stakeholder's responses, and are summarised in the following sections below.

Air Service and Costs

In general, Tanzanian stakeholders felt that air service in the region was costly, lacks competition, and is perceived by many to be unsafe. The limited number of air carriers currently in operation lack the regional network needed by travellers, which results in an under-utilization of the country's airports.

It is noted that the removal of restrictions on 5th freedom flights would form an important step in addressing these issues. Most international flights into Dar Es Salaam are connecting through Nairobi without a negotiated 5th freedom. It was indicated that wide body planes (e.g., Swiss Air) are flying into Nairobi with a 60% load factor, offloading the majority of passengers, and then flying empty into Dar Es Salaam. Respondents suggest that deregulating air services will likely eliminate inefficient routings such as this.

Stakeholders feel that many regional points in Tanzania are not served due to restrictive regulations, as well as the lack of basic services such as immigration and ground handling. It was also stated that airports struggle to generate revenue that would be spent on facilities to support such services.

Feedback concerning air cargo capacity varied amongst respondents, with some noting that current capacity is sufficient, while others felt it was lacking. Those finding it insufficient indicated that while there are plenty of agricultural goods available for export, the cost of doing so is extremely high due to the low availability of capacity. In most cases, horticultural products will be shipped via road to Nairobi for export to Europe instead of to Kilimanjaro due to the cost of air freight service. Previous efforts have been successful in attracting freighters to Kilimanjaro, but taxation by the Tanzanian government caused newly welcomed foreign freighters to withdraw from service. The result had a devastating impact on horticulture producers and exporters who had left previous air cargo agreements in favour of the new (and brief) service. There is also prevailing demand for goods within the EAC that are suitable for air freight transport. Agro-chemicals to Kenya and onions to Juba are two such examples.

Impact of Air Transportation on Other Sectors of the Economy

The fresh produce industry in the country is particularly affected by limited air service and high airfreight costs as they cannot move their goods effectively within and out of the country. Often, these goods are forced to travel by road, which reduces the freshness and quality of product. In some cases, produce is exported via Dar-Es-Salaam, which is costly for producers and limits revenue for firms. Goods from Kilimanjaro and Arusha tend to be transported on ground to Nairobi before moving onwards to international markets. Because of these constraints, respondents unanimously felt that trade is severely hampered.

Stakeholders also noted that tourism and investment has been hampered due to poor air service levels. For example, inbound tourists are forced to land in Nairobi and take a shuttle into Tanzania instead of a more convenient connecting flight itinerary. Additionally, the country recently lost service from British Airways which has been a huge blow to tourism and hotel workers. This flight was particularly crucial as UK nationals represent the single largest tourism market for Tanzania, as well as Kenya. Air France recently withdrew service as well, and there are suspicions that the business environment is a leading cause.

Challenges Facing Air Service Development

While safety concerns at airports are being continually addressed, airport stakeholders note that they operate with old terminals resulting in limited and insufficient capacity. This hinders both air travel growth and the generation of new carrier routes.

Much of the area in southern Tanzania, particularly in the tourism circuit, requires attention due to poor accessibility. For example, a drive from Arusha to the Selous Game Reserve could take up to 12 hours, while a flight would reduce the travel time to approximately an hour. As a result, tourism in this area of the country has remained largely untapped, as locals in the EAC region are unable to afford expensive charter aircraft used by foreign tourists. Three specific routes to be further developed in the country were identified as: 1) Selous, 2) Katavi and 3) Ruaha. Each of these locations offer large wildlife game reserves, but are underutilized due to inadequate access.

Of particular concern is service to regional points in the country, which is low due to the lack of competition and an unwillingness by carriers to venture into new routes. Current regulation is also restrictive due to the limited BASAs, low levels of liberalisation and the inability to designate foreign owned carriers. YD is only partially implemented, stunted by protectionism and the desire of EAC member states to protect their own national airlines from competition. However, it is expected that some competition regulation will be necessary should the full implementation of YD take place. There are worries that larger carriers will fight off competition using excessive capacity, and then proceed to charge monopolistic prices.

Should open skies be implemented, it is critical that border access is made straightforward. There is a current desire to operate direct services between the Serengeti and Masai Mara, but currently connections must be made through Nairobi and Kilimanjaro. This adds unnecessary travel time and is very costly for tourists.

One respondent stated that the broader EAC region has pushed ahead efforts to form a Joint Competition Authority as a means to fully implement YD. However, this has only been deliberated and not finalized, thereby hampering further air service development. A single entry visa for the EAC region has been negotiated, but the results of this decision are inconclusive so far in terms of the effect on the

free movement of tourists. The lack of non-tariff barriers (NTBs) in the region has stunted the growth of industries as well.

Carriers face financial constraints such as high taxation (up to 40% of total fare) and a lack of direct access to financing. The result is an inability for carriers to refresh fleets and directly address prevailing safety concerns from travellers. Part of this issue stems from foreign ownership restrictions. In particular, the insistence of many EAC members to maintain a 51% ownership by respective EAC country nationals severely restricts access to investment, especially in a capital intensive industry. The lack of foreign investment paired with economic policies under the current Tanzanian government is not seen to be conducive to the growth air service development and the hotel/tourism industry by stakeholders.

Expanding safety oversight as traffic increases due to liberalisation will be very important. It is currently managed and run by CASSOA (East African Community Civil Aviation Safety and Security Oversight Agency), whose main objective is to oversee security harmonisation and implementation in the region. As countries are not self-sufficient in safety oversight, CASSOA will be subject to increased responsibility and governance. Furthermore, resourcing is of concern for the Tanzania Civil Aviation Authority as they currently face a lack of inspectors.

It was suggested that the airlines themselves must take some responsibility in liberalisation, particularly in the realm of fuel levies. One stakeholder indicated that the surcharge is unnecessary, yet has been made almost statutory.

There is an existing challenge with access to human capital. Currently, the region faces an issue of brain drain, whereby Middle Eastern carriers are attracting talent from the EAC region, resulting in higher wages and training costs in Africa.

Expected Benefits of Liberalisation

The general consensus amongst stakeholders was that liberalisation would improve trade between countries, increase tourism traffic, stimulate employment, boost the quality of service provided by carriers and increase the general economic competitiveness of the EAC region. There has already been tangible evidence of lowered fares. For example, as part of the northern corridor initiative, the presidents of Kenya, Rwanda, South Sudan and Uganda asked Kenya to relinquish 40% of the route capacity to Rwandair between Entebbe and Nairobi. The result was a reduction in fares of approximately 60%.

Export oriented industries overseeing the movement of fresh produce such as fish, flowers, vegetables and fruits would likely develop and grow given the ability to move their goods at a lower cost and more efficiently. Distance to market challenges currently faced by Mbeya and Iringa could be overcome if goods can be moved via air instead of costly and time inefficient ground services. Many Kenyan traders look for products available in Mbeya and bring them to Nairobi for processing and eventual transportation to international markets.

Expected Dis-benefits of Liberalisation

There are concerns that national carriers in the region will continue to lose business to competing international carriers due to their lack of leverage when negotiating bilateral agreements with partner states. Existing African carriers worry about the potential market power that could be exercised by well financed international carriers.

Some carriers fear the abandonment of less profitable routes and an increase in fuel and other operational costs. This combination may lead to the collapse of weaker airlines within the EAC.

There is concern amongst some stakeholders, in particular aviation authorities, that revenues will be lost should air traffic control services be relinquished from their complete control due to full liberalisation.

Uganda

The responding stakeholders were:

- Uganda Tourism Board
- Uganda Investment Authority
- Uganda Hotel Owners Association
- Uganda National Chamber of Commerce & Industry
- Taurus Tours & Travel Ltd.

A number of key themes arose from the stakeholder's responses, and are summarised in the following sections below.

Air Service and Costs

There was unanimous agreement amongst stakeholders that domestic and international air travel from Uganda is both limited and costly. Uganda does not have a national carrier, but several Ugandan (e.g., Eagle Air) and foreign airlines do service the region but charge high prices due to the absence of competition and a high operating cost environment. Furthermore, the frequency of many services is low – less than daily – which limits their usefulness to business and to tourism. This has limited flying to both corporations and the wealthy.

It was noted by some stakeholders that the high costs and low service levels force many travellers living in Uganda to drive to Nairobi, Dar Es Salaam or Mombasa instead of less economical air travel. This leakage of passengers to surrounding countries was felt to be harmful to Uganda as it drives money away from local airports and government, limiting the ability to invest in Ugandan aviation. Additionally, the scattered locations of airports across the Ugandan countryside (with the exception of Entebbe, which is centrally located) prove problematic for many travellers due to the costs incurred from travelling by road to catch flights.

The choice of direct regional and international routes from Uganda was deemed inadequate, with stopovers often required in neighbouring countries. These routes are also underserved (i.e., weekly), forcing travellers to adjust their schedules to match the flight times. Stakeholders suggested that improved access to the following areas would be of great use:

- Regional and Domestic: Entebbe to Hoima and Masindi. Additionally, routes should be added between South Sudan and Central/Western Uganda.
- International: Europe, China and rest of Asia.

While great improvements have been made to air safety in the region in recent years, challenges of developing infrastructure and maintenance facilities are still faced, paired with high fuel costs and frequency restrictions (e.g., limiting BASAs). Also hurting the volume of travellers is the presence of travel advisories that warn of disease outbreaks.

Impact of Air Transportation on Other Sectors of the Economy

The low frequency of flights in Uganda was felt to pose severe issues for time sensitive industries such as fishing, floriculture and horticulture. The low availability of flights makes it challenging for firms to place their goods onto connecting itineraries, ultimately reaching international destinations. The

resulting effects are reduced trade, lower income for business owners and therefore a reduced quality of living. It was noted that the agricultural and fishing industries are key sources of income and livelihood especially in the central region around the shores of Lake Victoria and in the western region around Lake Albert. In order to compete in the export market, there is need for more and cheaper aviation services to those export markets. The lack of adequate cold storage facilities, hygiene, and timely aviation linkages negatively affect Uganda's competitiveness in this sector. These challenges also adversely affect the floriculture and horticulture sectors.

A number of stakeholders commented that Uganda's poor air transport connectivity is limiting trade, tourism and inward investment. In the case of tourism, flights make potential travel destinations in Uganda very expensive to visit compared to Europe. The Central and Eastern regions are underserved by air transport services. In particular, one stakeholder noted that tourism is impacted by the lack of direct service to Eritrea from Entebbe. This limits the smooth movement of passengers, who instead have to use road transportation that is prone to traffic jams due to heavy traffic and poor road surfaces. However, it is noted that the development of the roads in the tourist circuit areas is gradually improving access.

One stakeholder noted that the discovery of oil in Western Uganda has created opportunity for wealth creation, but for this industry to be competitive, air access must improve to other parts of the country. Efforts are being made to develop Kasese airfield into a commercial airport and its development is crucial to serve both the oil and tourism sectors.

Challenges Facing Air Service Development

Stakeholders suggested that both foreign and local investment is needed to develop and grow important parts of the air service industry, in particular roads, airports and airlines themselves.³⁶ This investment should also flow to the development of training programs to ensure pilots, engineers, mechanics and other industry-related human capital are available to enter the work force as the sector expands. Two stakeholders note that the Soroti flying school located in Uganda is in critical need of training equipment and general refurbishment. On a positive note, the recent expansion and redevelopment of Entebbe International Airport and other airports was expected to improve the situation.

The level of taxes imposed by the government on the air travel sector was also felt to be prohibiting growth of the sector and potential investment, in particular from private investors. Some stakeholders indicated that other governments are also imposing restrictive bilateral air service agreements as a measure to protect national airline interests.

Uganda, South Sudan and Burundi are countries in the East Africa region that do not currently have active national carriers. Until they have been established, flying from these countries will remain cost-prohibitive.

Stakeholders expressed concern that while improvements are being made, terrorist threats pose a challenge to the development of air service in the EAC. Furthermore, political instability and health concerns such as diseases were also listed as impediments.

³⁶ East African carriers often have limited access to financing, making it harder to renew and grow fleets and corresponding flight networks.

Expected Benefits of Liberalisation

Liberalisation of air services within East Africa was expected to promote competition among the players which would benefit the customer through improved service levels and lower airline fares.

It was expressed that tourism would be a significant beneficiary from air service liberalisation. With more airlines entering the market and making flights cheaper, it was expected that there would be an increase in tourism arrivals, as more people would be able to travel. This would lead to growth in the tourism sector and the further development of tourism facilities, which in turn leads to revenue generation and economic growth.

Trade was another area where benefits are foreseen. Liberalisation allows easier access to a bigger trade market thereby enhancing exchange of goods and services. Revenues accruing to the relevant countries would be expected to expand.

Business development and investment is another area that would grow since it would allow for easy and affordable movement. One of the main challenges in many East African countries is poor transport infrastructure, which hinders swift movement and increases costs of doing business and limits investment. Improvements in air service from liberalisation would lead to saving in time wastage and ultimately catalyse investment.

A number of stakeholder comments that increase air services would support the development of new industries. The increase in air services among member countries could lead to an expansion in the size of the market and purchasing power, which is a stimulant for growth of the manufacturing and tourism industry. The catering industry is also likely to experience a boom due to the increase in demand for food stuffs. The financial services sector could also be enhanced to cater for the international needs. It could also ease existing challenges associated with oil manufacturing and processing and business.

All of the stakeholders viewed that liberalisation - through the effects described above - would result in job creation and economic development.

Expected Dis-benefits of Liberalisation

Some stakeholders expressed a concern that liberalisation could lead to larger foreign carriers "squeezing out" smaller, less-well-funded local carriers. However, it was generally viewed that the introduction of greater competition would ultimately be beneficial by encouraging existing carriers to undertake greater efficiencies.

It was noted that many East African countries depend on a few African and foreign airlines for air service and a big proportion of the air traffic to and from East Africa is carried by foreign airlines. Therefore, there may be a need to support a strong national carrier within the context of a liberalised market.

Appendix D: Gravity Model Econometric Analysis

This appendix provides additional technical detail on the econometric analysis described in **Chapter 5**.

Empirical Approach

The empirical analysis of the impacts of air service liberalisation used a gravity model approach to modelling air traffic between nations, based on data collected for each of the five study countries. In the field of economics, gravity models have been widely used to model both trade and transport (in the latter case, for all modes of transport). The gravity equation has been widely used to explain the flow of bilateral trade between two trading partners (see Tinbergen, 1962 and Anderson and van Wincoop, 2003). It has been successfully applied to analyse policy effects in bilateral air transport flows (Cristea et al., 2014; Yan and Winston, forthcoming; Schipper et al, 2002; Dresner and Tretheway, 1992) as well as other economic activities, such as foreign direct investments (Brainard, 1997), financial flows (Portes and Rey, 2005), and migration (Karemera et al., 2000).

The attraction of using a gravity model is that it can capture “attractor” factors (economic growth, population, etc.) and “impedance” factors (distance, cost, etc.). In transportation, the gravity model is the basis for the classic “four stage” model used to model and forecast urban and inter-urban transport in road, rail and public transport systems.

There are a number of limitations to gravity models that need to be recognised and managed. Firstly, gravity models tend to assume that travel is greater between countries (or regions/cities) with higher populations and higher incomes (e.g., there is more travel between the UK and the U.S. than between UK and Lichtenstein). While on the whole this is true, there can be exceptions or variations to this rule. For example, small island nations that are popular tourism destinations may have more air travel than their population or income levels would suggest. This can be controlled for by additional variables reflecting the tourism attraction of a nation. Similarly, the model generally assumes that the impedance variables reduce travel in a fairly linear manner (as distance increases, travel between the two nations reduces). However, this is not always the case for cultural and other reasons. For example, there are high traffic volumes between the UK and Australia, despite the large distance involved. Again, these can be controlled for by additional variables. That said, there will be a limit to number of additional variables that be added to control for additional and one-off factors, based on the amount of data available and the requirement to have a generally applicable model.

Overall, gravity models have been found to provide robust and plausible models of general tendencies in transportation markets. As with any model, there are limits their accuracy and applicability. In the case of modelling air transport flows, and the response to air service liberalisation in East Africa, the gravity model approach is considered the most appropriate.

The gravity model in this report is based on the proposition that the liberalisation of the air transport market affects two supply side variables: fares and frequency. Liberalisation reduces fares by introducing greater competition and also leads to greater capacity (frequencies) in the market as carrier are not restricted by the terms of the BASA.

The approach comprised of three related models:

Demand Model

A standard air transport demand model includes own price (fare) and service quality as the main explanatory variables (Schipper et al, 2002; Dresner and Tretheway, 1992). It also includes 'gravity equation' variables such as the population and GDP of the origin and destination countries of a trip, and the distance between them. The first two are 'generative' variables that capture a catchment area for potential travellers, whereas distance is an 'impedance' variable because social and economic interactions between countries tend to decline with it. Accordingly, a reduced form model for air passenger demand for country-pair ' r ' in period ' t ' is given as:

$$pass_{rt} = \beta_1 + \beta_2 fare_{rt} + \beta_3 freq_{rt} + \beta_4 income_{rt} + \beta_5 pop_{rt} + \beta_6 dist_{rt} + \beta_6 dist2_{rt} + \varepsilon_{rt} \quad (1)$$

where $pass$ is the number of round-trip passengers carried in country-pair r during year t ; $fare$ is the one-way fare; $freq$ is the departure frequency; $income$ and pop are the product of the per capita income and population size of the route end countries; and $dist$ is the average distance and its square between airports of the route end countries in kilometres. The betas are parameters to be estimated. The equation controls also whether countries are contiguous or not. All the variables are in logs, allowing the coefficient estimates to be interpreted as elasticity.

The fare and frequency variables pose an endogeneity problem because of their simultaneous determination with demand (the dependent variable). For instance, a higher traffic flow between two cities may lead to realization of economies of traffic density,³⁷ which lowers the average cost and ultimately leads to a lower fare. There is, therefore, a feedback effect from the left-hand-side variable, 'pass', to the fare level. As for frequency, airlines are likely to adjust their departure frequencies as a response to an increase in demand, again reversing the causality maintained in our specification. Jorge-Calderon (1997) and Schipper et al. (2002) show that frequency has a positive effect on demand. However, only the latter accounts for the endogeneity of frequency and fare in the demand equation. We follow a similar empirical strategy by Schipper et al. (2002) and estimate separate fare and frequency models.

Fare Model

The fare model evaluates how air fares respond to measures of openness in BASAs, while controlling for other determinants. The fare level between two route endpoints is specified by the following log-linear model:

$$fare_{rt} = \alpha_1 + \alpha_2 libf + \alpha_3 libp + \alpha_4 pass_{rt} + \alpha_5 income_{rt} + \alpha_6 dist_{rt} + \varepsilon_{rt2} \quad (2)$$

where ' $libf$ ' and ' $libp$ ' are liberalisation status dummy variables for fully liberalised and partially liberalised routes based on the bilateral air service agreements (BASAs) of the five EAC countries and Ethiopia.³⁸ The relative openness of provisions pertaining to capacity (frequency and aircraft size), 5th

³⁷ Caves et al (1984, p.p. 475) define 'economies of density' as 'the proportional increase in output made possible by a proportional increase in all inputs, with points served, average stage length, average load factor, and input prices held fixed.' If airlines manage to realize such economies, there is a possibility they may transfer it to consumers in the form of lower fare.

³⁸ It is important to account for partial liberalisation because the gains from deregulation might have already occurred in partially liberalised networks.

traffic rights and fare are used to define the liberalisation status of a BASA. In particular, a BASA is categorized as fully liberalised (i.e. *libf*) if there are no government interference in the choices of capacity, fare and 5th traffic or defined as ‘restrictive’ otherwise. A BASA is defined as partially liberalised (i.e. *libp*) if it allows only free capacity choice or 5th traffic rights. The liberalisation dummies are expected to have a negative effect on fare.

We assume all variables except ‘*pass*’ are exogenous. As noted by Dresner and Tretheway (1992), the sign of ‘*pass*’ depends on the location of the marginal cost curve at which airlines operate. On the one hand, if they happen to operate on the upward sloping part of the marginal cost, a higher output level (higher number of passengers) leads to higher marginal cost. The reason behind such a positive effect of demand on fare could be the presence of a short-run capacity constraint. On the other hand, a negative coefficient of the passenger variable can occur when airlines operate on the declining part of their marginal cost. The negative effect arises due to the presence of excess capacity and/or realization of economies of traffic density (Nero, 1998). Finally, a negative coefficient is expected for distance, showing that cost per kilometre (and hence fare) declines with distance, as fixed costs incurred at route end points are averaged over a longer distance.

Frequency Model

We model departure frequency as:

$$freq_{it} = \lambda_1 + \lambda_2 pass_{it} + \lambda_3 acsize_{it} + \lambda_4 dist_{it} + \lambda_5 libf_{it} + \lambda_6 libp_{it} + \varepsilon_{it3} \quad (3)$$

where ‘*acsize*’ stands for the average number of seats per flight. The lambdas are parameters to be estimated. The main variables of interest are ‘*libf*’ and ‘*libp*’. Low point-to-point demand in Africa forces airlines to serve multiple destinations simultaneously. If BASAs allowed 5th traffic right regimes, airlines would supply more service frequency by aggregating passengers from intermediate points and points beyond.³⁹ Accordingly, we expect the liberalisation dummies to have positive signs, mainly due to the flexible 5th traffic right aspect of liberalised regulatory regimes.

Finally, distance and aircraft size are expected to have a negative effect on frequency. Distance is a major ‘impedance’ variable that forces departure frequency to decrease. Operating a larger aircraft (i.e., increasing the number of seats per flight) effectively results in a decline in total departure frequency.

In the econometric framework outlined above, the fare and frequency variables are assumed to be endogenous in the demand equation. There are several suggestions in the literature to handle this endogeneity problem.⁴⁰ The most appropriate methodology to tackle the problem is a two-stage least square (2SLS) estimation in a panel data setting, suggested by Dresner and Tretheway (1992) and Schipper *et al.* (2002). We employ a similar 2SLS procedure. Although the demand, fare and frequency models can be solved simultaneously, each will be estimated separately using a 2SLS procedure. Doing so allows us to gain interesting insights into the effects of the parameters in each equation since they have important economic interpretations (Nero, 1998; Marin, 1995).

³⁹ Malibaue and Hansen (1995) mention 5th traffic operations as sources of disutility since they require multiple stops as compared to non-stop services. However, in the context of Africa the presence of an air-link between city pairs has a greater importance than the disutility entailed in multiples stops.

⁴⁰ Marin (1995) applies an instrumental variable estimation method to treat the endogeneity of the passenger and the fare variables. Mallebiau and Hansen (1995) estimate the fare and passenger equations independently, treating the two variables as exogenous in each equation, while Adler and Hashai (2005) estimate their passenger demand equation which doesn’t contain fare as an explanatory variable. The latter two approaches do not treat the endogeneity problem directly, and hence estimates based on them maybe inconsistent.

Data Sources

The data sources for the econometric analysis are set out in the table below.

Variable	Period	Source
Annual O/D traffic data and average fare paid between each of the EAC countries and with other selected Africa countries.	Annual, 2005-2015	Sabre Market Intelligence data. This data sources provides global passenger traffic data from over 40 industry sources including all three of the major global distribution systems (GDS) and other government sources. It provides a robust set of data on ticket bookings including passenger volumes and fares paid.
Average fare paid between each of the EAC countries and with other selected Africa countries.	Annual, 2005-2015	Sabre Market Intelligence data.
Airline frequency between each of the EAC countries and with other selected Africa countries.	Annual, 2005-2015	Diio Mi Airline Schedule data.
Average aircraft size (seats per aircraft) operated on each country-pair	Annual, 2005-2015	Diio Mi Airline Schedule data.
Characteristics (restrictiveness) of the BASAs	Current plus year of signing	Surveys of the Civil Aviation Authorities and Ministries of Transportation of the five study countries. The surveys collected information on the date of signing, designated airlines, capacity/frequency restrictions, fare regulation, 5 th freedom rights and named airports.
GDP per Capita	Annual, 2005-2014	World Bank Development Indicators online database. ⁴¹
Urban population	Annual, 2005-2014	World Bank Development Indicators online database. ⁴²
Country-pair trade volumes.	Annual, 2005-2014	World Bank Development Indicators online database. ⁴³
Jet Fuel Prices	Annual, 2005-2015	U.S. Energy Information Administration: U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price. ⁴⁴

⁴¹ <http://data.worldbank.org/data-catalog/world-development-indicators>.

⁴² Ibid.

⁴³ Ibid.

⁴⁴ https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EER_EPJK_PF4_RGC_DPG&f=D.

Using these sources, panel data developed of traffic flows between the five EAC study countries *plus* Ethiopia and other countries in Africa (Ethiopia, Sudan, Eriteria, Somalia, DC Congo, Mozambique, Zambia, South Africa, Nigeria, Egypt, Morocco and Angola).⁴⁵ While traffic data was available for 2015, explanatory variables such as GDP, population and trade were not available for all countries and so the data covered 2005 to 2014.

Each BASA was categorised based on three key characteristics:

- 1) The relative openness of provisions pertaining to capacity (frequency and aircraft size). BASA was categorised as 'liberal' if there is no government interference in the choices of departure frequency and aircraft size, and is defined as 'restrictive' otherwise.
- 2) Fare regulation - a BASA was defined as 'liberal' if the fare charged by airlines can be invalidated by the disapproval of both bilateral partners and/or if approval of fares by either countries' aeronautical authorities is not mandatory; it is defined as 'restrictive' otherwise.
- 3) Fifth traffic rights - a BASA was defined as 'liberal' if it allows 5th traffic rights to all intermediate and beyond points in Africa, and was defined as 'restrictive' otherwise.

Based on the above three categorisations, the regulatory regime of a BASA was classified as 'fully liberalised' if it attains liberal status in two or more categories; 'partially liberalised' if it attains one liberal status; and 'restricted' otherwise.

Empirical Results

The table overleaf provides the results of the 2SLS random effects passenger demand model.

Examining the demand model (Column 3), the coefficients are of the expected sign and of plausible magnitude. The coefficient on GDP/capita is positive and significant at the 1% level – as increase levels rise, demand is expected to increase. The coefficient is negative and significant at the 1% level. It suggests a relatively inelastic response to fare changes. This fare insensitivity of air transport demand may reflect the fact that in Africa air transport is still a luxury service yet to be enjoyed by the masses, which in turn implies that air travellers in Africa are price insensitive affluent business and leisure travellers. Departure frequency between the city-pair routes, as expected, has a significant positive effect on demand at the 1% level.

The remaining gravity variables – urban population, trade, contiguity, distance - have the expected negative and positive effects on demand.⁴⁶

The fare model (Column 1) finds that passenger volumes have a negative effect on prices (significant at the 1% level) reflecting economies of scale. Fuel prices, distance and GDP/capita all have a positive and statistically significant impact on fares as might be expected – fuel and distance both increase costs, while higher incomes lower airlines to charge higher fares (all else being equal). The main variables of interest are the dummies indicating full and partial liberalisation. The coefficient on the full liberalisation dummy is significant at the 5% level and indicates that full liberalisation results in

⁴⁵ As equivalent data was available for Ethiopia this was included in the data set. Including a broader dataset ensured that there was sufficient variation in the dataset to produce robust estimates of the impact of liberalisation.

⁴⁶ Both distance and distance squared are included in the model to capture the non-linear impact of distance on demand. The coefficient on distance is positive indicating that demand is higher for countries close to each other. However, the negative coefficient on distance squared means that demand declines significantly for more remote countries.

VARIABLES	(1) Fare Model	(2) Frequency Model	(3) Demand Model
Log Pax	-0.128*** (0.0268)	0.798*** (0.0727)	
Full Liberalisation Dummy	-0.0899** (0.0409)	0.344*** (0.129)	
Partial Liberalisation Dummy	-0.0579 (0.0390)	0.0549 (0.146)	
Log Fuel	0.906*** (0.129)		
Log Distance	0.397*** (0.0443)	-0.403*** (0.106)	1.450 (0.994)
Log GDP/capita	0.0228*** (0.00523)		0.0679*** (0.0140)
Log Aircraft size		0.152 (0.115)	
Log Fare			-0.718*** (0.252)
Log Frequency			0.438*** (0.104)
Log Urban Population			0.00594 (0.00586)
Log Distance-squared			-0.0888 (0.0729)
Log Trade			0.0630*** (0.0153)
Contiguity			0.507** (0.207)
Constant	2.889*** (0.414)	0.473 (1.184)	0.0614 (3.687)
R-squared	0.80	0.61	
Observations	755	496	496
Number of OD pairs	83	67	67
Year Fixed Effects	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

a 8.6% reduction in fares.⁴⁷ The coefficient on the partial liberalisation dummy indicates a smaller fare reduction effect but the coefficient is not statistically significant.

The frequency model (Column 2) finds a positive relationship with passenger volumes (significant at the 1% level) – as demand increases, service levels increase. Frequencies were also found to decline with distance. The coefficient on aircraft is not statistically significant. The coefficient on the full liberalisation dummy is positive and significant at the 1% level, suggesting that liberalisation results in airlines increasing frequencies by 41% on average.⁴⁸ A smaller effect was found with partial liberalisation, although the coefficient is not statistically significant.

In conclusion, the econometric analysis found that:

- Fully liberalising restricted routes reduces average fares by 9% on average (all else being equal). Partial liberalisation was found to have a smaller but statistically insignificant effects on fares
- Fully liberalising restricted routes increase frequencies by 41% on average (all else being equal). Partial liberalisation was again found to have a smaller effect but the effect was not statistically significant.
- The demand model demonstrates reductions in fares and increases frequencies will stimulation additional demand.

The results provide robust and compelling evidence that open skies liberalisations leads to lower fares and higher frequencies, which are expected to stimulate demand. Furthermore, the results show that that partially liberalisation in not effective in achieving equivalent impacts. Only once all the major restrictions are removed from BASAs is there a substantially impact on fares and frequencies.

These model results were used to estimate the traffic impacts of further liberalising BASAs within the EAC countries, as described in the next section.

Applying the Gravity Model to Estimate Traffic Impacts

The econometric model described above was used to estimate the impact resulting from complete liberalisation of BASAs from the five study countries.

The analysis assumes that all five countries are able to sign “open skies” BASAs with each other as well as with the broader set of African countries included in the dataset (any already fully liberalised BASAs are assumed to remain the same).⁴⁹ The analysis was based on 2015 traffic volumes. Results were generated for just liberalisation between the five countries and liberalisation with the wider set of African countries.

Analysis was conducted for each country pair as follows:

For country-pairs already subject to a fully liberalised BASA, it was assumed there would be no traffic change.

For country-pairs already served by regular air service (i.e., an average frequency of at least 3 flights per week over the year), the increase in passenger traffic was estimated using the elasticities from the models described above:

⁴⁷ Calculated as $\text{Exp}(-0.0899) - 1$.

⁴⁸ Calculated as $\text{Exp}(0.344) - 1$.

⁴⁹ The other African countries are: Ethiopia, Sudan, Eriteria, Somalia, DC Congo, Mozambique, Zambia, South Africa, Nigeria, Egypt, Morocco and Angola.

As noted previously, full liberalisation is projected to reduce fares by 8.6% and increase frequencies by 41%. The impact on passenger demand can be calculated as follows:

$$\begin{aligned} & -8.6\% \times -0.718 \text{ (demand fare elasticity)} \\ & \quad \times \\ & 41\% \times 0.438 \text{ (demand frequency elasticity)} \\ & = 25\% \text{ increase in passenger traffic} \end{aligned}$$

For country pairs currently unserved by regular service, the frequency model was used to estimate the frequency that might occur with liberalisation. Based on the explanatory variables for that country-pair (distance, passengers, aircraft size) and setting the full liberalisation dummy to one, it was possible to estimate the frequency of service that would be operated. If the resulting frequency was at least 3x week, it was assumed that regular service would start. The demand model was then used to estimate traffic levels with the introduction of regular service, entering the calculated frequency into the demand model (along with the other explanatory variables).

Appendix E: Estimating the Economic Impacts of Liberalisation

This appendix describes the economic parameters (employment, GDP, etc.) that are used in the model to estimate the economic impact of liberalisation. The parameters used a combination of generalised findings and localised data.

Aviation

The economic impact of aviation can be different in different types of economies and in different regions. Accordingly, for this model, economic impact multipliers were developed for each of the five countries. The aviation sector ratios and economic impact multipliers were estimated based on a number of industry statistical publications and reports and government data, including:

- The Air Transport Action Group – Aviation Benefits Beyond Borders (2012/13).
- Economic Benefits from Air Transport series of reports published by IATA.⁵⁰
- Employment and GDP data from the statistical agencies of each country.
- Additional employment and GDP data from the World Bank World Development Indicators.⁵¹
- Employment data by economic sector from the International Labour Organization.⁵²

Tourism

Tourism related expenditures, employment, GDP, and multipliers were based primarily on the following data:

- World Travel & Tourism Council (WTTC), Travel and Tourism Economic Impact 2015.⁵³
- Employment and GDP data from the statistical agencies of each country.
- U.N. World Tourism Organization (UN-WTO), Compendium of Tourism Statistics, 2016.⁵⁴

In order to determine the economic impact of international tourists arriving at individual countries by air transportation, various tourism ratios were developed including:

- Average expenditure per international tourist visit — international tourist expenditure data was sourced from WTTC.
- Employment per \$1 million of tourist expenditure — total tourism related employment was generally sourced from the WTTC and national tourism satellite accounts published by individual countries. Because the employment figures were only available at the industry level and not attributable to domestic versus international sectors, the employment ratios are based on combined domestic and international data. The tourism data has been adjusted to remove the air transport related

⁵⁰ <http://www.benefitsofaviation.aero/Pages/download.aspx>

⁵¹ <http://data.worldbank.org/data-catalog/world-development-indicators>

⁵² <http://www.ilo.org/global/statistics-and-databases/lang--en/index.htm>

⁵³ <http://www.wttc.org/research/economic-research/economic-impact-analysis/>

⁵⁴ <http://statistics.unwto.org/content/compendium-tourism-statistics>

employment in order to avoid double counting the employment impacts already included in the air transport economic impact above.

Catalytic Impacts

The approach taken to estimate the catalytic impacts resulting from liberalisation was to use generalised parameters drawn from statistical analysis of historical data. This analysis seeks to determine the contribution of air transport to economic growth by examining the relationship between these factors over time or compared between different countries (or both). The analysis attempts to control for other factors that also contribute to economic growth (education spending, government policies, investment, research and development spending, etc.), in order to isolate the impact of air transport.

The connectivity parameter was taken from a study undertaken by InterVISTAS.⁵⁵ It was selected because it is one of few studies that is based on global data (including data on African nations) — most studies have used U.S. data. It also provides a parameter that specifically addresses productivity, rather than other aspects of aviation economic impacts such as airport activity or tourism, which have already been estimated.

The parameter from that study found that a 1% increase in a nation's air connectivity increased the nation's productivity (measured in terms of GDP per hour or GDP per worker) in each year by 0.0068%. The measure of connectivity used for this parameter was a connectivity index developed by IATA. The index measures the number and size (in terms of passenger air traffic) of destinations served, as well as the frequency of service to each destination and the number of onward connections available from those destinations.⁵⁶

While the outcome from the parameter is expressed in terms of GDP per hour or worker, it captures the aggregate net effect of a range of catalytic impacts, including trade, investment, business location, etc., which manifest themselves as greater GDP per worker.⁵⁷ For example, greater trade allows businesses to benefit from economies of scale as they sell to a larger market. Investment decisions (expanding operations, developing new operations, introducing new technologies) will also have the effect of improving the value-added produced by each worker.

The forecasts of increased passenger traffic were used as a proxy for connectivity. This assumption is likely a conservative one as, historically, the connectivity index has grown at a slightly faster rate than passenger traffic. The connectivity parameter was applied to the percentage growth in traffic to estimate the total impact on GDP. The GDP attributable to the catalytic impacts of liberalisation stimulates spending by businesses and individuals in the economy and so can be translated into employment impacts. These were estimated based on the average GDP per worker in each of the five countries.

⁵⁵ InterVISTAS Consulting Inc., "Measuring the Economic Rate of Return on Investment in Aviation", December 2006.

⁵⁶ For further details on the connectivity index, see:
http://www.iata.org/whatwedo/Documents/economics/aviation_economic_benefits.pdf

⁵⁷ The original analysis that produced the connectivity parameter did not include any variables related to trade or business location, therefore air connectivity contribution to these effects is captured by the coefficient on GDP per hour.

Consumer Surplus

Consumer surplus is a term in economics that refers to the amount that consumers benefit by being able to purchase a product for a price that is less than they would be willing to pay. Consumer surplus is a concept frequently used in economic welfare analysis.

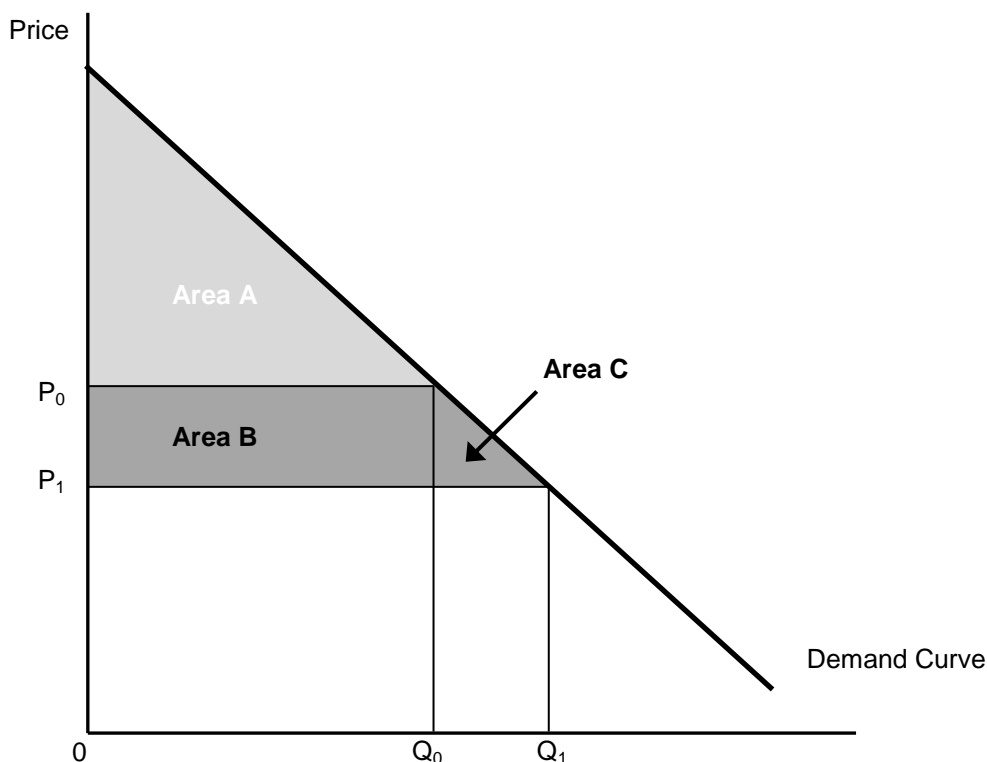
The concept is illustrated below which shows a standard demand curve representing the relationship between price and quantity demanded — as price declines the amount demanded increases.

At the initial price P_0 , the consumer surplus is represented by Area A. Consumers to the left of Q_0 were willing to pay a price higher than P_0 ; summing the difference between each consumer's willingness to pay and P_0 produces a consumer surplus equal to area A.

If the price is reduced to P_1 (e.g., in the air market, fares are reduced), then the consumer surplus is increased by an amount equal to Area B and Area C. It is this gain in consumer surplus (Area B + Area C) that is provided in this report. As suggested by the diagram, this gain in consumer surplus is comprised of two elements:

- Area B: the fare savings for existing passengers, calculated in this analysis as: average fare saving x number of existing passengers. This element represents a transfer of producer surplus to consumer surplus.⁵⁸
- Area C: this is a net gain in welfare resulting from additional passengers being able to access air services due to the lower fare. In this analysis, this element of consumer surplus is estimated as: $\frac{1}{2}$ x average fare saving x number of new passengers.

Figure C-1: Consumer Surplus



⁵⁸ Producer surplus is amount producers benefit by selling at a price higher than they would be willing to sell for.

It should be noted that the calculation of consumer surplus benefits is based purely on the fare reductions. However, consumers will also benefit in other ways: more direct services, greater frequencies, and more choice of airlines. These benefits are difficult to monetarise and have not been included. As a result, the consumer benefits may be understated.

Trade Value

The increase in trade *in goods* between the five countries resulting from liberalisation was estimated as follows:

- The current level of trade between the five countries was determined. Data on the total value of goods traded between the five countries was obtained from the UN COMTRADE database, which provides international merchandise trade statistics for 140 countries from 1962 to the present.⁵⁹ The database also contains data on bilateral trade broken down by commodity.⁶⁰
- Not all goods are likely to be transported by air. For example, commodities such as oil and minerals are likely to be trucked or moved by ship. Commodity groups that could be transported by air were identified and tabulated. These commodities were:
 - Fish, crustaceans, molluscs & other aquatic invertebrate
 - Dairy products, eggs, honey, edible animal products
 - Live trees, plants, bulbs, roots, cut flowers, etc.
 - Edible vegetables and certain roots and tubers
 - Edible fruit, nuts, peel of citrus fruit, melons
 - Pharmaceutical products
 - Photographic or cinematographic goods
 - Electrical, electronic equipment
 - Optical, photo, technical, medical, etc. apparatus
 - Musical instruments, parts and accessories
 - Works of art, collectors pieces and antiques
- It was assumed that half of these commodity flows were actually shipped by air (the rest were shipped by other modes).
- The increase in trade was estimated based on the traffic growth forecast from liberalisation. This involved estimating the bellyhold capacity of the additional passenger air services stimulated by liberalisation.

This provided an estimate of the percentage cargo capacity growth that would result from liberalisation, which was applied to the COMTRADE trade figures to estimate trade growth.

⁵⁹ The database is available here: <http://comtrade.un.org/>.

⁶⁰ The most recent data is for 2014. The trade values were converted to 2015 prices by adjusting for inflation.

The increase in trade *in goods* between the 12 countries resulting from liberalisation was estimated as follows:

- The current level of trade between the 12 countries was determined. Data on the total value of goods traded between the 12 countries was obtained from the UN COMTRADE database, which provides international merchandise trade statistics for 140 countries from 1962 to the present.⁶¹ The database also contains data on bilateral trade broken down by commodity.⁶²
- Not all goods are likely to be transported by air. For example, commodities such as oil and minerals are likely to be trucked or moved by ship. Commodity groups that could be transported by air were identified and tabulated. These commodities were:
 - Fish, crustaceans, molluscs & other aquatic invertebrate
 - Dairy products, eggs, honey, edible animal products
 - Live trees, plants, bulbs, roots, cut flowers, etc.
 - Edible vegetables and certain roots and tubers
 - Edible fruit, nuts, peel of citrus fruit, melons
 - Pharmaceutical products
 - Photographic or cinematographic goods
 - Electrical, electronic equipment
 - Optical, photo, technical, medical, etc. apparatus
 - Musical instruments, parts and accessories
 - Works of art, collectors pieces and antiques
- It was assumed that half of these commodity flows were actually shipped by air (the rest were shipped by other modes).
- The increase in trade was estimated based on the traffic growth forecast from liberalisation. This involved estimating the bellyhold capacity of the additional passenger air services stimulated by liberalisation.

This provided an estimate of the percentage cargo capacity growth that would result from liberalisation, which was applied to the COMTRADE trade figures to estimate trade growth.

⁶¹ The database is available here: <http://comtrade.un.org/>.

⁶² The most recent data is for 2014. The trade values were converted to 2015 prices by adjusting for inflation.

Appendix F: Impact of Liberalisation on Home and Incumbent Carriers

There is very little empirical research into the impact of liberalisation on home and incumbent carriers. This is due, in part, to the widely varying circumstances of these carriers (in terms of ownership, financial strength, managerial excellence, etc.) making it difficult to produce generalised findings from the research. Instead, a number of historical case studies are provided below to provide insight into the impact of liberalisation on home/incumbent carriers.

Case Study: New Zealand

Starting in the 1980s, New Zealand set out a policy towards aviation which sought to maximise the economic benefits of international air service taking into account the interests of trade, tourism and consumers along with those of the New Zealand airlines. As a result, it is an example of a highly liberalised air market, including:

- The Single Aviation Market with Australia, one of the most liberal air service agreements on the planet.
- Open skies agreements with eight of their top 20 international markets including the United States, the United Kingdom, Singapore, Canada, Samoa, Cook Islands and Tonga.
- Removal of foreign ownership restrictions in the domestic air market (i.e., foreign carriers can operate domestic services in New Zealand).
- Signatory of the MALIAT agreement with Brunei, Singapore, Samoa, Cook Islands, Tonga and the United States with unlimited 3rd, 4th, 5th and 6th freedom rights (and 7th and 8th freedom rights with Chile, Singapore and Brunei).

New Zealand's home carrier is Air New Zealand, headquartered in Auckland. The airline has a fleet of 105 aircraft (as of August 2015), of which 51 are turboprop aircraft, and operates both domestic and international services.

Air New Zealand is the dominant carrier in the domestic market, accounting for 79% of seat capacity in 2015.⁶³ Its largest domestic competitor is Australian-owned Jetstar (a subsidiary of Qantas). In the international markets, Air New Zealand accounted for 40% of seat capacity in 2015, which still made it the largest international carrier in New Zealand.⁶⁴ The biggest international market is New Zealand-Australia (known as the Trans Tasman), where Air New Zealand faces extremely strong competition not only from Australian carriers Qantas, Jetstar and Virgin Australia, but also 5th freedom/cabotage services operated by Emirates, Lan Airlines and others.⁶⁵ In 2015, nine separate carriers operated on the Trans Tasman routes. On other international routes (Europe, Asia, the Americas), Air New Zealand faces competition from Emirates (via Australia), Qantas (via Australia), Singapore Airlines, Lan Airlines and others.

⁶³ Source: Diio schedule data.

⁶⁴ Source: Diio schedule data.

⁶⁵ In the case of Emirates, the airline is using aircraft that arrive in Australia (Sydney, Brisbane and Melbourne) in the early morning and do not depart Australia until the evening, so are operated over the Tasman during the day to increase aircraft utilization. As a consequence, the carrier is operating large aircraft on these routes (A340s, A380s and B777s). Emirate's Trans-Tasman service also provides significant volumes of feed traffic onto its Australian services.

One of the reasons the New Zealand government has pursued a liberal air policy is that it viewed that New Zealand airlines would not be able to operate sufficient levels of service to support the country's key tourism and trade industries, especially given the remoteness of the country. Air New Zealand has also recognised its relative small size, especially in the face of competition from larger Australian, Asian and (more recently) Middle Eastern carriers, and has attempted various strategies to address this:

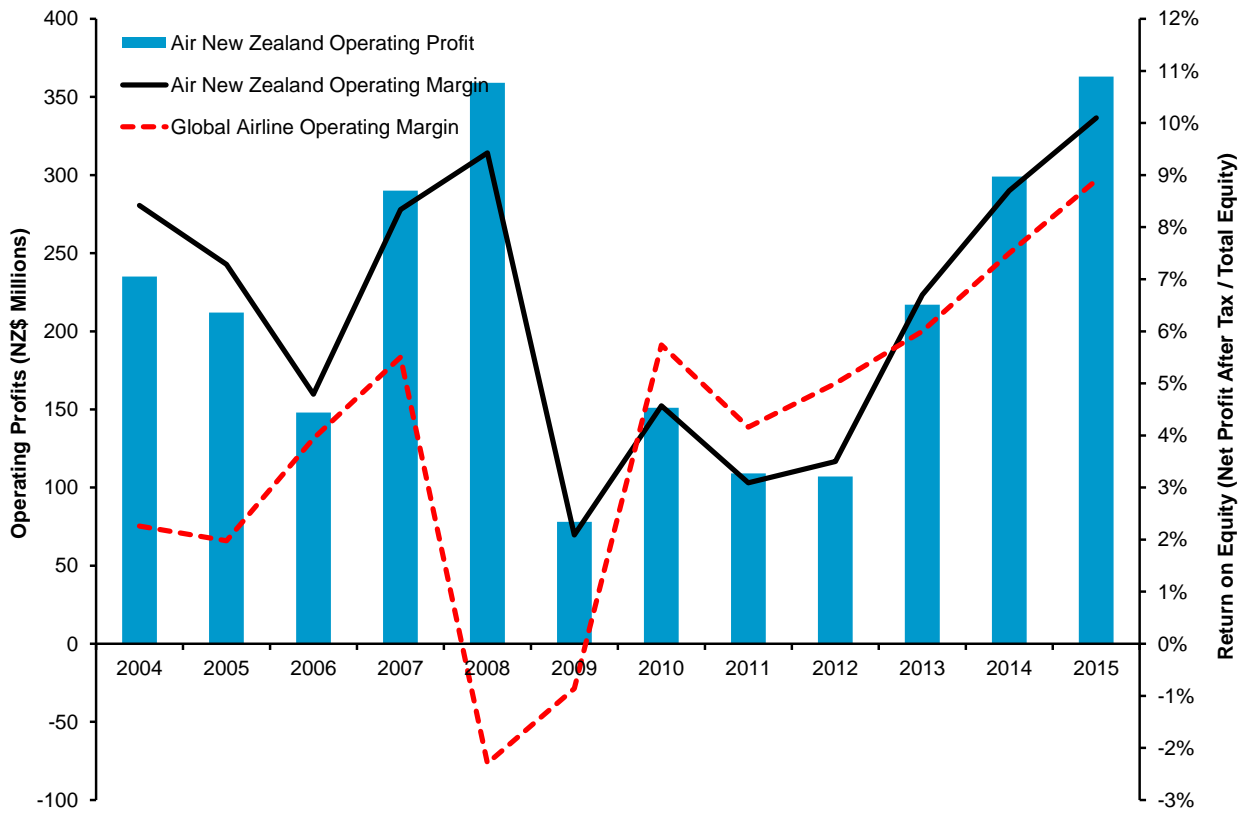
- In 2000, Air New Zealand acquired Ansett Airlines, Australia's second largest airline at the time, having previously held a 50% share in the carrier. Air New Zealand's strategy was to develop into a larger Australasian airline (Air New Zealand was part owned by Singapore Airlines at the time), more able to compete with the likes of Qantas. However, Ansett was in severe financial difficulties and was shut down in September 2001 and liquidated. The resulting hole in Air New Zealand's balance sheet meant that the New Zealand government had to recapitalise the airline. Although the carrier is listed on the New Zealand stock exchange, the New Zealand government owns 74% of shares.
- In 2002, following Air New Zealand's emergence from the Ansett collapse, Qantas and Air New Zealand proposed a strategic alliance, which was rejected by the competition authorities in Australia and New Zealand in 2003. More recently, Air New Zealand has sought an alliance with Virgin Blue (now Australia's second largest carrier) which was approved by the competition authorities in 2010.
- Air New Zealand has been a member of the Star Alliance since 1999 (two years after the alliance was formed), and also has code sharing arrangements with Virgin Atlantic, Virgin America (as well as its alliance with Virgin Blue), and other airlines.

While the Ansett merger was a strategic failure, and not necessarily a natural consequence of liberalisation, Air New Zealand has managed to compete reasonably effectively in a highly liberalised market place. Since 2004 (the earliest data available), it has marginally increased its market share (in terms of seats) in the growing domestic market (from 76% in 2004 to 79% in 2015), despite the domestic market being open to all carriers. In the international market, Air New Zealand's share of international capacity has declined from 45% in 2004 to 40% in 2015, although the volume of traffic it has carried has increased by 15%.⁶⁶

The airline has also been able to remain profitable since 2004, although with considerable volatility, as shown in **Figure F-1**. Also shown is the operating margin for airlines globally. As can be seen, Air New Zealand achieved a higher level of profitability than the global average for a many of the years.

⁶⁶ Source: Diio schedule data.

Figure F-1: Air New Zealand Operating Profits and Margin Since 2004



Source: Air New Zealand Annual Reports and the Airline Monitor (global airline operating margin).

The global airline operating margin was based on data from 81 passenger airlines from all continents, including low cost and legacy carriers.

Case Study: Morocco

In 2006, an open skies agreement between the EU and Morocco came into force. The agreement allows EU carriers to serve any point in Morocco without restriction on price or capacity while allowing Moroccan carriers the same freedom to operate to any point in the EU, and will allow 5th freedom rights for carriers from both sides. The impact on the home carrier, Royal Air Maroc (including its low cost carrier subsidiary, Atlas Blue) in the six years following liberalisation is illustrated in **Figure F-2**.⁶⁷

In 2005, the combined market share of Royal Air Maroc and Atlas Blue peaked at 66% of the total seat capacity operated between Morocco and the EU. By 2010, four years after the open skies agreement, that share had declined to 47%. This was largely the result of entry by European Low Cost Carriers (LCCs), primarily Ryanair and EasyJet, as well as other European carriers. In 2009, a Moroccan LCC, Air Arabia Maroc, was set up as a joint venture between various Moroccan investors and Air Arabia. European and Moroccan LCCs accounted for 39% of seat capacity in 2010, compared with 0% in 2004. Ryanair is the largest carrier in Morocco after Royal Air Maroc, operating 50 routes (some seasonally) followed by EasyJet operating 19 routes. The amount of capacity operated by some foreign legacy carriers has declined since the start of the open skies agreement, with Air France, British Airways, Lufthansa and Iberia all cutting capacity by 30-60% compared with 2005. These declines may also be driven by economic factors (recession in Europe and Morocco).

However, while the market share of the main home carrier has declined, total passenger traffic to/from Morocco more than doubled between 2004 and 2010 (from 7.7 million passengers to 15.5 million).⁶⁸ Despite the loss of market share, Royal Air Maroc has increased its traffic volumes, by 52% between 2004 and 2010.⁶⁹ Approximately 29% of the traffic growth occurred at Morocco's largest airport – Casablanca – while 50% of the growth occurred at the country's second largest airport in Marrakesh. Regional airports in Agadir and Fez also experience substantial growth.

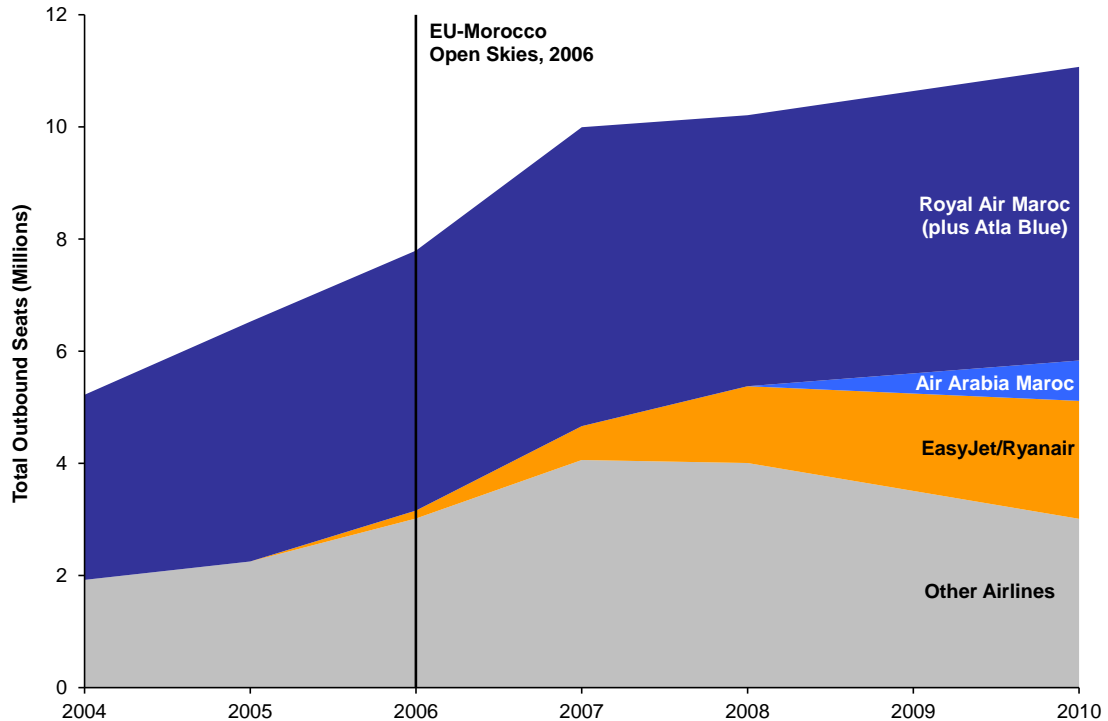
Nevertheless, Royal Air Maroc has struggled to adjust to the new competitive environment, and required the Moroccan government to provide the airline with a bailout of US\$193 million in September 2011. It should be noted that Royal Air Maroc's difficulties were not due entirely to the opens skies agreement with the EU. The Global Financial Crisis (GFC) that started in 2007 has also contributed, as has the political unrest in the region. Furthermore, the open skies agreement likely exposed weakness in the management of the airline which had previously operated in a very protected environment and was heavily dependent on its near monopoly on routes to Europe, especially France. The airline has gone through a major restructuring process, with the result that the carrier made a positive operating profits between 2012 and 2014 (the most recent year available).

⁶⁷ Royal Air Maroc set up Atlas Blue as an LCC subsidiary in 2004. The airline was rolled back into Royal Air Maroc in 2009.

⁶⁸ Source: Moroccan Airports Authority.

⁶⁹ Royal Air Maroc has reported that traffic volumes declined in 2011 which was in part due to the Marrakesh bombing in April 2011 as well as political tension in neighbouring countries.

Figure F-2: Impact of EU-Morocco Open Skies on the Market Share of Royal Air Maroc Total Seat Capacity Between Morocco and EU Destinations



Source: Diio schedule data.

Case Study: Hungary/Malév

Hungary joined the European Union in 2004, which resulted in the country becoming part of the highly liberalised European aviation market. At the time, the country's home carrier was Malév Hungarian Airlines, a state-owned airline which went through a modernisation process in the 1990s and 2000s (the airline retired its last Soviet-built Tupolev Tu-154 in 2001). The airline was based in Budapest and primarily served destinations in Europe, Russia and the Middle East (including Tel Aviv). In 2007, the government sold its shares in the airline to a private company, AirBridge Zrt, which had links to Russian investors. The airline joined the OneWorld alliance in March 2007.

By 2010, Malév was in extreme financial difficulty due in great part to the severe recession that Hungary experienced between 2008 and 2010 (the country's GDP declined by 6.3% in 2009 alone). In February of 2010, the Hungarian government decided to effectively renationalise the airline through a US\$127 investment in the airline to acquire a 95% stake. The government made subsequent payments to stabilise the airline. However, following a year-long investigation, the EU ruled that these payments were illegal state support of the airline, and ordered the airline to repay over US\$400 million. As this amount was greater than Malév's annual revenues, the airline was unable to do so and was forced in liquidation. The airline ceased operations on February 3, 2012. Some of its aircraft were seized at various airports due to concerns about unpaid debts.

At the time of its collapse, Malév accounted for approximately 40% of passenger traffic at Budapest airport. However, there was a surprisingly rapid response to Malév's collapse by other carriers in Europe. Within seven hours of Malév's demise, Ryanair announced 31 new routes to and from

Budapest. One of the reasons Ryanair was able to move so quickly is because it routinely parks some of its fleet during the winter low season (reports suggest up to 80 aircraft were parked during the winter of 2011/12). A few days later Ryanair confirmed that the airline would operate a base from Budapest. A number of other airlines quickly announced new routes or additional capacity to/from Budapest including Wizz Air (an Hungarian LCC already based at Budapest), Air Berlin, SmartWings and Lufthansa. Based on press reports and discussions with Budapest airport, the following changes occurred in the aftermath of the collapse of Malév:

- Within one week of Malév's collapse, 60% of the airline's lost capacity was replaced by other carriers.
- Virtually all of the recovered capacity has been for EU destinations. Capacity recovery has been much slower (or has not occurred) on routes outside the EU, where the bilateral arrangements do not allow rapid changes in carriers. These include Russia, Turkey, Israel and the Ukraine.
- Budapest airport, which is privately owned and operated, has acted aggressively to attract other airlines to fill the services lost by Malév, which may not be the response of other airports.
- While Malév did not have a particularly strong hub operation, it nonetheless did connect some passenger traffic through the airport. The in-fill flights have been largely point-to-point only.
- The airport used to operate two terminals: Terminal 1 for low cost carriers, and Terminal 2 (newly renovated and expanded) for Malév and other network carriers. Since Malév's demise, the airport has closed Terminal 1 and consolidated all operations at Terminal 2.

Conclusions

In many ways, the liberalisation of the aviation industry can be seen as part of a fairly global trend of market deregulation and privatisation which has also been applied to the telecommunications, utilities, railway and other industries. It is generally accepted that this deregulation has been on the whole beneficial to these industries and, more importantly, to the consumers they serve.

AS documented in this report, empirical research of liberalisation in the aviation industry has found that it generally leads to lower prices for passengers, higher service levels (more frequencies and destinations served) and greater volumes of passengers travelling. The evidence on the impact to home/incumbent carriers of liberalisation is mixed. A common result is that liberalisation leads to loss of market share as new competitors enter the market. However, the stimulatory impact of liberalisation also means that the incumbent home carrier often still experiences a growth in traffic volumes despite this loss of market share. While increased competition has the potential to weaken the viability and profitability of home carriers in some instances, liberalisation also offers a means to restructure the carriers and protect profitability by expanding into new markets, accessing a wider pool of investment and through consolidation. Ultimately, liberalisation, per se, does not set off an inevitable chain of events. Whether the home carrier prospers or suffers under liberalisation will depend in greater part on the quality of management of the carrier and how the carrier chooses to respond to liberalisation.

Bibliography

Abate, Megersa. "Economic Effects of Air Transport Liberalisation in Africa." Presented at the 2013 African Economic Conference. 2013.

Airports Council International. "New study reveals the real economic impacts of airports." *Airport Business*, 2015. < <http://www.airport-business.com/2015/04/new-study-reveals-real-economic-impacts-airports/>>

Bel, Germà and Xavier Fageda. "Getting There Fast: Globalization, Intercontinental Flights and Location of Headquarters." *Journal of Economic Geography* 8. 2008.

Bofinger, Heinrich and Kenneth Gwilliam. "Airports and Air Transport: The Sky's the Limit." In *Africa's Infrastructure: A Time for Transformation*, eds. Vivien Foster and Cecilia Briceño-Carmendia (World Bank). 2010.

Brueckner, Jan K. "Airline Traffic and Urban Economic Development." *Urban Studies* 40. 2003.

Burghouwt, Guillaume, Pablo Mendes De Leon and Jap De Wit. "EU Air Transport Liberalisation: Process, Impacts and Future Considerations." *International Transport Forum* (Discussion Paper No. 2015-04). January 2015.

CASSOA. *East African Community Civil Aviation Safety and Security Oversight Agency*. [cassoa.org](http://www.cassoa.org), 2016. Available at: < <http://www.cassoa.org/> >

Chingosho, Elijah. *African Airlines in the Era of Liberalisation*. 2016.

Chingosho, Elijah. *Taxes and Charges in African Aviation*. 2016.

Cristea, Anca D., David Hummels and Brian Roberson. *Estimating the Gains From Liberalising Services Trade: The Case of Passenger Aviation* (Working Paper). March 2014.
<http://pages.uoregon.edu/cristea/Research_files/osa.pdf>

Göneriç, Rauf and Guisepe Nicoletti. "Regulation, Market Structure and Performance in Air Passenger Transportation." *OECD Economic Studies* 32. 2001.

IATA, *Airline Network Benefits* (Economic Briefing No. 3), 2006.

ICAO. *Background to the Experiences of Liberalisation in Africa*. March 2003.

ICAO. *Relaxing the Rules for Airline Designation* (Working Paper ATConf/6-WP/46). 2013.

InterVISTAS Consulting. *Measuring the Economic Rate of Return on Investment in Aviation*. 2006.

InterVISTAS Consulting. *The Economic Impact of Air Service Liberalisation*. 2006.

InterVISTAS Consulting. *Transforming Intra-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision*. 2014.

Isamila, Danjuma Adamu, David Warnock-Smith and Nick Hubbard. "The Impact of Air Service Agreement Liberalisation: The Case of Nigeria." *Journal of Air Transport Management* 37. 2014.

Kuuchi, Raphael. "An Assessment of African Open Skies." *African Airlines Association*. 2013.

Myburgh, Andrew, Fathima Sheik, Fatima Fiandeiro and James Hodge of Genesys Analytics. *Clear Skies Over Southern Africa* (ComMark Trust), 2006.

Northern Corridor Integration Projects, <http://www.nciprojects.org/>

Oum, Tae Hoon, Anming Zhang and Xiaowen Fu. "Air Transport Liberalization and its Impacts on Airline Competition and Air Passenger Traffic." *Transportation Journal*. Fall 2010.

Oxford Economic Forecasting, *The Catalytic Effects of Air Transport in Europe*. October 2005.
<https://www.eurocontrol.int/eec/see/gallery/content/public/documents/workshop_2005_Adrian_Cooper.pdf>

Piermartini, Roberta and Linda Rousová. *Liberalization of Air Transport Services and Passenger Traffic* (WTO Working Paper ERSD-2008-06). 2008.

Poole, J. *Business Travel as an Input to International Trade* (UC Santa Cruz Working Paper). 2010.

Price Waterhouse Cooper, *Econometric Analysis to Develop Evidence on the Links Between Aviation and the Economy*. 2013

Raguraman, M. (1997) Airlines as instruments for nation building and national identity: case study for Malaysia and Singapore

Schlumberger, Charles E. *Open Skies for Africa: Implementing the Yamoussoukro Decision*. 2010.

Schlumberger, Charles E. and Nora Weisskopf. "Opportunities and Challenges for LCC Development: The Case of East Africa." In *Ready for Takeoff? The Potential for Low-Cost Carriers in Developing Countries* eds. Charles Schlumberger and Nora Weisskopf. 2014.

UK Civil Aviation Authority. *The Effect of Liberalisation on Aviation Employment*. March 2004.

Yamoussoukro Decision, <http://www.afcac.org/en/documents/conferences/July2012/yde.pdf>



Prepared by
InterVISTAS Consulting
www.intervistas.com