ASSESSING THE COMMERCIAL AVIATION IMPACTS OF THE US-AFRICA OPEN SKIES AGREEMENTS

TYLER B. SPENCE
MICAH S. WALALA
RICHARD O. FANJOY

PURDUE UNIVERSITY
OVERVIEW

• Background
• Introduction to Open Skies
• Literature Review
• Methodology
• Results
• Conclusions
• Future Studies
• **Preceding end of WWII** – Global recognition of need to standardize aviation development

• **Chicago Conference** – 1944 – 52 Nations
  • International Air Service Transit Agreements
  • International Air Transport Agreement
  • Independent of the Chicago Convention
BACKGROUND

- Disparity in approach between strong aviation States (the US) vs strong market access States (the UK)
  - Market protectionism by strong market access countries
  - Birth of bi/multi-lateral agreements
- Agreements
  - Air Transport Service Agreements
  - Code Shares
  - Specific bilateral flight agreements to specific city destinations
OPEN SKY AGREEMENTS (OSA)

- An agreement to eliminate or significantly reduce governments’ regulatory restrictions to civil aviation activities between two or more countries
  - Capacity
  - Market access/routes
  - Frequency of flights
  - Pricing
- Championed by the US
  - First OSA with the Netherlands in 1992
    - Supported by airlines and government officials
    - Expected reductions in regulatory burdens on carriers
    - Expected to strengthen relationships positively between countries (Los Angeles Times, 1992)
  - Worldwide comprehensive OSA campaign beginning in 2000
  - Currently over 100 OSA with two multilateral agreements
KEY LITERATURE REVIEWS OF THE EFFECTS OF OSA EFFECTS

• Sampson, 1984
  • The US benefits more from bilateral OSAs than multilateral OSAs

• Serebirsky & Micco, 2006
  • For developed and middle-income developing countries: OSAs reduces air transport cost by 9%, increases air transport imports by 7%
  • No cost reduction for lower-middle-income and low-income developing countries

• Cosmas, Belobaba, & Swelbar, 2010
  • Evaluation of 22 European Union carriers in US-EU OSA indicate that OSAs alone do not increase service levels between nations’ partner carriers

• Ismaila, Warnock-Smith, & Hubbard, 2014
  • Study of Nigeria’s 10-year old OSA policy indicates a potential increase of passenger traffic by 65%
  • Conflicting understandings of OSAs effects exist among analyses
RESEARCH LIMITATIONS

- Limited literature on US-Africa civil aviation traffic (and Africa’s aviation status in general)
- Emerging nations lag behind developed nations in infrastructure and technological developments
- Individual Sovereignty and security concerns create tensions over release of data
1. Do trends exist among passenger volumes and cargo volumes in the US-Africa aviation activities in the post Open Sky era?

2. Do the year 2000 US-Africa OSA initiatives have an effect on passengers and cargo services to the US?

3. Are there noticeable differences in the trends in US-Africa civil aviation traffic between countries with and those without OSA with the US?
METHODOLOGY

• Exploratory Study
• Primary Data collected using the Department of Transportation- Bureau of Transportation Statistics (BTS)
• Department of State Office of Aviation Negotiations Open Sky Data
• Focused on African Nations with commercial aviation services to and from the US
• Analyzed US-Africa departures, passenger volumes and cargo volumes from 1990 – 2013
• Comparison between OSA and non-OSA countries with flights to and from the US
RESULTS

• As of 2013, 26 of the 54 African countries have OSAs with the US
  • Tanzania - first to sign OSA with US, 1999
  • Equatorial Guinea signed OSA in 2014
  • Rwanda and Chad have OSAs, but no flight history
• Only 8 African carriers have direct Africa-US flights
• 2 US carriers have direct US-Africa flights
Since 1990, 43 African countries with passenger and freight operations
  • 14 countries with only freight operations and 3 with only passenger operations
Since 2000, 41 African countries with passenger and freight operations
  • 13 countries with only freight operations and 3 with only passenger operations
  • 11 similar countries between two periods with only freight and 2 similar countries with only passengers
  • 15 countries operated flights with only bilateral agreements (no official OSA)
US – AFRICA AIRLINE OPERATOR MARKET SHARE, 2013

Available seats

Air Arabia Maroc
TACV Cabo Verde Airlines
Arik Air
Air Algérie
United
EgyptAir
Ethiopian Airlines
Royal Air Maroc
South African Airways
Delta

(Kimani, 2014)
# Number of US-Africa Flights: 2013

<table>
<thead>
<tr>
<th>Operating Carrier</th>
<th>Flights in 2013</th>
<th>Seats in 2013</th>
<th>% share (seats)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta</td>
<td>2258</td>
<td>503783</td>
<td>39.25%</td>
</tr>
<tr>
<td>South African Airways</td>
<td>1118</td>
<td>304774</td>
<td>19.43%</td>
</tr>
<tr>
<td>Royal Air Maroc</td>
<td>678</td>
<td>174890</td>
<td>11.79%</td>
</tr>
<tr>
<td>Ethiopian Airlines</td>
<td>494</td>
<td>146259</td>
<td>8.59%</td>
</tr>
<tr>
<td>EgyptAir</td>
<td>454</td>
<td>157084</td>
<td>7.89%</td>
</tr>
<tr>
<td>United</td>
<td>259</td>
<td>62818</td>
<td>4.50%</td>
</tr>
<tr>
<td>Air Algérie</td>
<td>199</td>
<td>50705</td>
<td>3.46%</td>
</tr>
<tr>
<td>Arik Air</td>
<td>152</td>
<td>36024</td>
<td>2.64%</td>
</tr>
<tr>
<td>TACV Cabo Verde Airlines</td>
<td>109</td>
<td>19575</td>
<td>1.89%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5753</strong></td>
<td><strong>1461096</strong></td>
<td></td>
</tr>
</tbody>
</table>

(Kimani, 2014)
FLIGHTS BY AIRLINE, 2013

Share of Airline Operations between United States and Africa

- Africa (Eight carriers), 3236, 56%
- US Delta, 2258, 39%
- US United, 259, 5%
YEARLY AFRICAN COUNTRY COUNTS

African Countries with Commercial Passenger or Cargo Activity

Y = number of African countries with commercial aviation activity
COUNTRY ACTIVITY BY YEARS SINCE 1990

Active Commercial Aviation Passenger and Cargo Operations in Years by African Country

Y = Number of Years with Commercial Flight Operations
## TOP 10 COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>Freight (lbs.)</th>
<th>Country</th>
<th>Pax</th>
<th>Country</th>
<th>Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>211687763</td>
<td>Egypt</td>
<td>3499031</td>
<td>Senegal</td>
<td>17969</td>
</tr>
<tr>
<td>Senegal</td>
<td>194449912</td>
<td>Senegal</td>
<td>3216650</td>
<td>Egypt</td>
<td>16896</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>148650473</td>
<td>South Africa</td>
<td>3216285</td>
<td>South Africa</td>
<td>14417</td>
</tr>
<tr>
<td>Egypt</td>
<td>132342290</td>
<td>Morocco</td>
<td>2374146</td>
<td>Morocco</td>
<td>11411</td>
</tr>
<tr>
<td>Morocco</td>
<td>97651062</td>
<td>Cape Verde</td>
<td>1998118</td>
<td>Cape Verde</td>
<td>10083</td>
</tr>
<tr>
<td>Nigeria</td>
<td>53489246</td>
<td>Nigeria</td>
<td>1378615</td>
<td>Nigeria</td>
<td>8423</td>
</tr>
<tr>
<td>Ghana</td>
<td>50406546</td>
<td>Ghana</td>
<td>1291816</td>
<td>Ghana</td>
<td>8310</td>
</tr>
<tr>
<td>Angola</td>
<td>45173018</td>
<td>Ethiopia</td>
<td>847044</td>
<td>Ethiopia</td>
<td>3851</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>13117394</td>
<td>Angola</td>
<td>286991</td>
<td>Angola</td>
<td>3383</td>
</tr>
<tr>
<td>Gambia</td>
<td>2421216</td>
<td>Gambia</td>
<td>90164</td>
<td>Gambia</td>
<td>523</td>
</tr>
</tbody>
</table>
## TOP 10 COUNTRIES SINCE 2000

<table>
<thead>
<tr>
<th>Country</th>
<th>Freight (lbs.)</th>
<th>Country</th>
<th>Pax</th>
<th>Country</th>
<th>Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senegal</td>
<td>13,860,9949</td>
<td>Senegal</td>
<td>2,598,268</td>
<td>Senegal</td>
<td>13,524</td>
</tr>
<tr>
<td>Egypt</td>
<td>10,659,5910</td>
<td>Egypt</td>
<td>2,398,455</td>
<td>South Africa</td>
<td>10,708</td>
</tr>
<tr>
<td>South Africa</td>
<td>8,945,8467</td>
<td>South Africa</td>
<td>2,287,842</td>
<td>Egypt</td>
<td>9,806</td>
</tr>
<tr>
<td>Morocco</td>
<td>5,195,8347</td>
<td>Morocco</td>
<td>1,558,352</td>
<td>Morocco</td>
<td>8,242</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4,923,1239</td>
<td>Cape Verde</td>
<td>1,361,544</td>
<td>Nigeria</td>
<td>7,373</td>
</tr>
<tr>
<td>Ghana</td>
<td>4,549,7868</td>
<td>Nigeria</td>
<td>1,226,169</td>
<td>Ghana</td>
<td>7,171</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>4,504,8937</td>
<td>Ghana</td>
<td>1,114,170</td>
<td>Angola</td>
<td>6,745</td>
</tr>
<tr>
<td>Angola</td>
<td>1,276,8537</td>
<td>Ethiopia</td>
<td>847,044</td>
<td>Ethiopia</td>
<td>4,004</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>775,8122</td>
<td>Angola</td>
<td>2,869,911</td>
<td>Cape Verde</td>
<td>3,845</td>
</tr>
<tr>
<td>Gambia</td>
<td>223,3163</td>
<td>Gambia</td>
<td>783,987</td>
<td>Malawi</td>
<td>434</td>
</tr>
</tbody>
</table>
Open Skies Years Since 2000

Percentages of Total Active Aviation Country Occurrences in Africa with OSAs and Non-OSAs

<table>
<thead>
<tr>
<th>Open Skies</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>127</td>
<td>54</td>
</tr>
<tr>
<td>Yes</td>
<td>108</td>
<td>46</td>
</tr>
</tbody>
</table>
Total Numbers of African Countries with Commercial Activity between US and Africa

Y = Counts of Countries with Commercial Aviation Activities

- Countries
- Open Skies Countries

Linear (Countries)
YEARNLY OSA OPERATIONS

Percent of African Countries with Commercial Activity and OSA with the US

Y = Percent of Active Countries with OSAs

Open Sky Percent

TOTAL PASSENGERS PER COUNTRY

Yearly Total Passengers between the United States and Individual African Countries

Y = Number of Passengers
TOTAL PASSENGER COMPARISONS

Yearly US-Africa Passenger Comparisons between OSA and Non-OSA African Countries

Y = Number of Passengers

[Bar chart showing yearly US-Africa passenger comparisons from 2000 to 2013, with a vertical axis labeled 'Sum Passengers' and a horizontal axis labeled 'Year'. The chart compares 'No' and 'Yes' for Open Skies policies.]
DEPARTURE COMPARISONS

Yearly US-Africa Airline Departures Comparisons between OSA and Non-OSA African Countries

Y = Number of Departures

Open Skies

No

Yes

Sum DEPARTURES_PERFORMED

YEAR

FREIGHT COMPARISONS

Yearly US-Africa Freight Comparisons between OSA and Non-OSA African Countries

Y = Freight (lbs)
CONCLUSIONS

- OSA negotiations appear to be on the rise between US and Africa
- Motivations for Open Skies policies may extend beyond economic incentives
- There is substantial and continuous travel to and from two partners without OSA: South Africa and Egypt
- Air freight operations appear to be similar among OS countries and non-OS countries
CONCLUSIONS

- Open Skies partners outperformed non Open Skies partners in total passengers and total departures
- Aviation growth appears to continue to enhance global aviation standing in Africa
- Open Skies allow easier access to more destinations for business and tourist activity between US and Africa
FUTURE STUDIES

• More studies on the aviation status of African countries are necessary for understanding the global scale
• Continued monitoring of Open Skies status between the US and Africa, as well as other aviation hubs in Europe and Asia
• Better understanding of what drives incentives for Open Skies agreements as compared to specific bilateral agreements
• More focus on causes of temporal growth and decline of aviation in Africa
  • May be influenced by terror, regional violence
  • Global economic swings and political alignments may affect abilities for cooperation as well
• What existing features in South Africa and Egypt allow for successful aviation growth without OSAs as compared to other similarly situated countries?
QUESTIONS

Tyler Spence
spense5@purdue.edu

Micah Walala
mwalala@purdue.edu

Richard O. Fanjoy
rofanjoy@purdue.edu


