Key Findings: 2016 ATRS Global Airport Performance Benchmarking

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Key Findings

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Outline

Objective of the ATRS Benchmarking Study

Airports Included and ATRS Database

Characteristics of Sample Airports

Methodology

Key Results on Efficiency and Cost Competitiveness
Objective of the Benchmarking Study

- To provide a comprehensive, unbiased comparison of airport performance focusing on
  - Productivity and Operating/Mgt Efficiency
  - Unit Cost Competitiveness
  - Comparison of Airport Charges

- Limitation: Service Quality is not considered
## Airports included in the 2016 Report

<table>
<thead>
<tr>
<th>Region</th>
<th>Airports</th>
<th>Airport Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada-US</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>70</td>
<td>15</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38 Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 Oceania</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>205</strong></td>
<td><strong>24</strong> airport groups</td>
</tr>
</tbody>
</table>

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The ATRS Database contains historic information (FY 2002-2014) including financial data, traffic and capacity data of the major airports and airport authorities (groups) in the following geographic regions:

- Asia Pacific
- Europe
- North America

The data in each regions is segregated into:

- Airport Information (capacity, type of ownership etc)
- Traffic
- Aeronautical Revenue
- Non-Aeronautical Revenue
- Operating Expense
- Balance Sheet

Visit [http://www.atrsworld.org/publications.html](http://www.atrsworld.org/publications.html) for more details.
Number of passengers ranges from 853,097 at Dunedin (New Zealand) to 96.2 million at Atlanta (United States) in 2014.

40 airports with only 1 runway, and 7 runways at DFW and 8 at ORD.

Number of Employees ranges from 19 (Queenstown) to 19,919 (Frankfurt).

12 airports serve only international passengers, and international passengers account for less than 10% of total traffic at 60 airports.
Passenger Traffic, 2014

Largest Five and Smallest Five (‘000)
Highest Five and Lowest Five

Passengers per Aircraft Movement, 2014

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% OF Non-Aeronautical Revenue, 2014

Highest Five and Lowest Five

Asia Pacific

Europe

North America
• **Variable Factor Productivity (VFP) Index**
  – Total Factor Productivity (TFP) - Impossible because of capital input cost accounting problem

• VFP is essentially the ratio of **total (aggregate) output index** divided by **total (aggregate) variable input index**, namely labor and soft cost input (total non-labor variable inputs).

• VFP is computed using the **multilateral index** procedure proposed by Caves, Christensen and Diewert (1982).
Multilateral Index Procedure

- This multilateral output (input) index procedure uses the revenue (cost) shares to aggregate output (inputs)

\[
\ln \frac{Y_i}{Y_j} = \sum \frac{R_{ki} + \bar{R}_k}{2} \ln \frac{Y_{ki}}{\bar{Y}_k} - \sum \frac{R_{kj} + \bar{R}_k}{2} \ln \frac{Y_{kj}}{\bar{Y}_k}
\]

\[
\ln \frac{X_i}{X_j} = \sum \frac{W_{ki} + \bar{W}_k}{2} \ln \frac{X_{ki}}{\bar{X}_k} - \sum \frac{W_{kj} + \bar{W}_k}{2} \ln \frac{X_{kj}}{\bar{X}_k}
\]
Methodology

Inputs
- Labour
- Other non-capital (soft-cost) input

Outputs
- Aircraft movement
- Passenger
- Non-aeronautical revenue
- (Cargo)

Gross Variable Factor Productivity
Factors Beyond Managerial Control:

- Airport size (Scale of aggregate output)
- Average aircraft size
- Share of international traffic
- Share of air cargo traffic
- Extent of capacity shortage - congestion delay
- etc

Residual (Net) variable factor productivity (RVFP) is computed after removing effects of these Factors
Cost Competitiveness

• An airport enjoys lower unit costs than other airports when that airport is more efficient, or pays less for its inputs, or both

• A cost competitiveness indicator is constructed by summing the effects of variable input price and the effects of efficiency in using these variable inputs.
Key Results

Figure 4.5.2a1 Residual Variable Factor Productivity (2014), Asia, HKG=1.0

Hong Kong, Jeju, Busan
Key Results

Figure 4.5.2a2 Residual Variable Factor Productivity (2014), Oceania, SYD =1.0

Sydney, Auckland, Australia Pacific Airports Corporation
Key Results

Figure 4.5.2b1 Residual Variable Factor Productivity (2014), Europe
Large Airports, CPH=1.0

Copenhagen, Schiphol, AENA

Airports

Airport Groups

Residual VFP
Mean
Key Results

Figure 4.5.2b2 Residual Variable Factor Productivity (2014), Europe Small and Medium Airports, CPH=1.0

Athens, Alicante Airport, EuroAirport
Key Results

Figure 4.5.2c1 Residual Variable Factor Productivity (2014), North America Large Airports, YVR=1.0

Atlanta, Charlotte, Minneapolis/St. Paul
Top Efficiency Performers (2016)

Asia Pacific:
- **Asian Airports:**
  - **Hong Kong,** Jeju, Busan
- **Oceania Airports:**
  - **Sydney,** Auckland

Europe:
- **Large Airports (> 15 million pax):**
  - **Copenhagen,** Amsterdam, AENA
- **Small/Medium Airports (< 15 millions Pax):**
  - **Athens,** Alicante Airport, EuroAirport

North America (Canada/US):
- **Large Airports (> 15 million pax):**
  - **Atlanta,** Charlotte, Minneapolis/St Paul
- **Small/Medium Airports (< 15 millions Pax):**
  - **Omaha,** Victoria, Calgary

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Key Results

• Cost Competitiveness
Key Results

Figure 5.4a1 Cost Competitiveness 2014- Asia
HKG=0.0

Jeju (S. Korea), Haikou (China), Soekarno–Hatta (Indonesia)
Key Results

Figure 5.4a2 Cost Competitiveness 2014 - Oceania
SYD=0.0

Queensland Airports Ltd, Sydney, Auckland

Cost Competitiveness
Mean
Key Results

Figure 5.4b1 Cost Competitiveness 2014 - Europe
Large Airports, CPH = 0.0

AENA, ANA, Copenhagen
Key Results

Figure 5.4b2 Cost Competitiveness 2014 - Europe
Small and Medium Airports, CPH = 0.0

Bratislava, Athens, Malta
Key Results

Figure 5.4c1 Cost Competitiveness 2014- North America
Large Airports, YVR=0.0

Atlanta, Charlotte, Tampa
Key Results

Figure 5.4c2 Cost Competitiveness 2014 - North America
Small and Medium Airports, YVR=0.0

Omaha, Oklahoma, Victoria

Cost Competitiveness
Top Cost Competitiveness Performers

Asia-Pacific:
- **Oceania:**
  - Queensland Airports, Sydney
- **Asia:**
  - Jeju, Haikou

Europe:
- **Large Airports (> 15 million Pax):**
  - AENA, ANA, Copenhagen
- **Small/Med Airports (< 15 million Pax):**
  - Bratislava, Athens

N. America:
- **Large Airports (> 15 million Pax):**
  - Atlanta, Charlotte
- **Small/Med Airports (< 15 million Pax):**
  - Omaha, Oklahoma
The ATRS Global Airport Performance Benchmarking Report: 3 volumes, over 600 pages of valuable data and analysis.

ATRS Airport Database (2002-2014)

Details at www.atrsworld.org

Report and Database sale finances benchmarking research project
Thank You!
Ευχαριστώ!