Key Findings: 2014 ATRS Global Airport Performance Benchmarking Project

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2014 ATRS Global Airport Performance Benchmarking Project

Key Findings

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OBJECTIVE OF THE BENCHMARKING STUDY

- To provide a comprehensive, unbiased comparison of airport performance focusing on
  - Productivity and Operating/Mgt Efficiency
  - Unit Cost Competitiveness
  - Airport User Charges
- Our study does not treat service quality differentials across airports because of our research resource constraints
2014 ATRS Global Airport Performance Benchmarking Project

Airport Database
200 MAJOR AIRPORTS AROUND THE WORLD

- North America, 78
- Europe, 69
- Asia Pacific, 53
- Oceania Countries, 16

- United States, 66
- Canada, 12
- Asia, 37

- 1 new airport
- 2 new airports

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
26 AIRPORT GROUPS

- Asia Pacific (9)
- Europe (17)
The ATRS Database contains historic information (since FY 2002) including financial data, traffic and capacity data for the major airports and airport groups in the following geographic regions:

- Asia Pacific including Oceania; Europe; North America
- Limited data on S. America and Africa

The data in each continent is segregated into:

- Traffic statistics and composition
- Airport characteristics (runways, terminals, ownership form, etc)
- Aeronautical Activities and Revenue
- Non-Aeronautical Activities and Revenue
- Labor input and other Operating Expenses
- Financial info obtained from Balance Sheets

Visit [http://www.atrsworld.org/Database.html](http://www.atrsworld.org/Database.html) for more details and to purchase.
2014 ATRS Global Airport Performance Benchmarking Project

Airport Characteristics
PASSENGERS TRAFFIC, FY2012
(IN ’000 PASSENGERS)

Asia Pacific  Europe  North America

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</table>
PASSENGER TRAFFIC (’000)-
TOP 10 AIRPORTS:
PASSENGERS PER AIRCRAFT MOVEMENTS, FY 2012
AIR CARGO TRAFFIC, FY 2012
(’000 METRIC TONS)
% NON-AERO REVENUE, FY 2012

- Asia Pacific
- Europe
- North America

[Graph showing the percentage of non-aero revenue across different regions with a focus on the mean values.]
Methodology
AIRPORT PRODUCTIVITY INDEX

**Outputs**
- Aircraft movement
- Passenger
- {Cargo tonnes}
- Non-aeronautical revenue output

**Inputs**
- Labour
- Other non-capital (soft-cost) input
- [Runways, terminal size, # of gates]
METHODOLOGY: EFFICIENCY MEASUREMENT

- **Variable Factor Productivity (VFP) Index**
  - Impossible - Total Factor Productivity (TFP) because of capital input cost accounting problem (comparable across different countries)

- **Unit Operating Cost Competitiveness Index:** Combines VFP and Input Price Index
MULTILATERAL AGGREGATION METHOD

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

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

\[
\ln \frac{X_i}{X_j} = \sum \frac{W_{ki} + \bar{W}_k}{2} \ln \frac{X_{ki}}{\bar{X}_k} - \sum \frac{W_{kj} + \bar{W}_k}{2} \ln \frac{X_{kj}}{\bar{X}_k}
\]
GROSS VARIABLE FACTOR PRODUCTIVITY (VFP)

ASIAN AIRPORTS
(HKG=1.0), FY 2012
POTENTIAL REASONS FOR THE MEASURED PRODUCTIVITY (GROSS VFP) DIFFERENTIALS

Factors Beyond Managerial Control:

- Airport size (Scale of aggregate output)
- Average aircraft size using the airport
- Share of international traffic
- Share of air cargo traffic
- Extent of capacity shortage - congestion delay
- Connecting/transfer ratio

We compute residual (Net) Variable Factor Productivity (RVFP) after removing effects of these Factors
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: ASIA (HKG=1.0), FY 2012
2014 ATRS Global Airport Performance Benchmarking Project

Key Results on Efficiency & Cost
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): ASIA (HKG=1.0), FY 2012

Busan Gimhae, Jeju, Hong Kong

Airports

Airport Groups

Objective  Data  Airport Characteristics  Methodology  Efficiency & Cost  User Charge
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Europe Large Airports (CPH=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP):
EUROPE LARGE AIRPORTS (CPH=1.0), FY 2012

Copenhagen Kastrup, Zurich, Oslo
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Europe Small & Medium Airport (CPH=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): EUROPE SMALL & MEDIUM AIRPORTS (CPH=1.0), FY 2012

Athens, Geneva, Basel
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: N. American Large Airports (YVR=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): NORTH AMERICA LARGE AIRPORTS (YVR=1.0), FY 2012

Atlanta, Charlotte, Minneapolis St. Paul
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: N. American Small & Medium Airport (YVR=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): N. AMERICA SMALL & MEDIUM AIRPORTS (YVR=1.0), FY 2012

Objective  Data  Airport Characteristics  Methodology  Efficiency & Cost  User Charge

Oklahoma City, Calgary, Raleigh-Durham
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Oceanian Airports (SYD=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): OCEANIA (SYD=1.0), FY 2012

Sydney, Dunedin, Melbourne
TOP EFFICIENCY PERFORMERS (2014)
(based on Net VFP index=operating/management efficiency)

Asia Pacific:
- **Asian Airports**:
  - **Busan Gimhae**, Jeju, Hong Kong
- **Oceania Airports**:
  - **Sydney**, Dunedin, Melbourne

Europe:
- **Large Airports (> 15 million pax)**:
  - **Copenhagen Kastrup**, Zurich, Oslo
- **Small/Medium Airports (< 15 millions Pax)**:
  - **Athens**, Geneva, Basel
TOP EFFICIENCY PERFORMERS (2014)
(based on Net VFP index=operating/management efficiency)

North America:

- **Large Airports (> 15 million pax):**
  - Atlanta, Charlotte, Minneapolis St Paul

- **Small/Medium Airports (< 15 millions Pax):**
  - Oklahoma City, Calgary, Raleigh-Durham
PAST AIRPORT EFFICIENCY EXCELLENCE
TOP PERFORMERS, 2009 - 2013

2009
- Hartsfield-Jackson Atlanta International Airport
- Copenhagen Kastrup International Airport
- Hong Kong International Airport

2010
- Hartsfield-Jackson Atlanta International Airport
- Large Airport Category: Oslo International Airport
- Small/Medium Airport Category: Geneva Cointrin International Airport

2011
- Hartsfield-Jackson Atlanta International Airport
- Large Airport Category: Seoul Gimpo International Airport
- Small/Medium Airport Category: Sydney Airport
- Asian Airports Excellence Award: Seoul Gimpo International Airport
- Oceania Excellence Award: Sydney Airport

2012
- Hartsfield-Jackson Atlanta International Airport
- Large Airport Category: Genève Aéroport
- Small/Medium Airport Category: Genève Aéroport
- Asian Airports Excellence Award: Seoul Gimpo International Airport
- Oceania Excellence Award: Sydney Airport

2013
- Hartsfield-Jackson Atlanta International Airport
- Large Airport Category: Copenhagen Kastrup International Airport
- Small/Medium Airport Category: Genève Aéroport
- Asian Airports Excellence Award: Seoul Gimpo International Airport
- Oceania Excellence Award: Sydney Airport

North America
Europe
Asia-Pacific

Objective Data Airport Characteristics Methodology Efficiency & Cost User Charge
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT

ASIA (HKG=0.0) – THE HIGHER THE BETTER

Haikou, Busan Gimhae, Jakarta
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT

EUROPE - LARGE AIRPORTS (CPH=0.0)

Copenhagen, Lisbon, Istanbul Ataturk
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
EUROPE - SMALL & MEDIUM AIRPORTS (CPH=0.0)

Riga (Latvia), Tallinn (Estonia), Ljubljana (Slovenia)

Objective       Data       Airport Characteristics       Methodology       Efficiency & Cost       User Charge
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
N. AMERICA - LARGE AIRPORTS (YVR=0.0)

Charlotte, Atlanta, Tampa

Objective
Data
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COST COMPETITIVENESS: = NET VFP AND INPUT PRICE EFFECT
N. AMERICA - SMALL & MEDIUM AIRPORTS (YVR=0.0)

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
--- | --- | --- | --- | --- | ---

**Oklahoma City, Raleigh-Durham, Richmond (Virginia)**
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
OCEANIA (SYD=0.0)

Dunedin, Auckland, Sydney
LANDING CHARGES
FOR AIRBUS 320, 2013 (IN US$)
ASIA PACIFIC: COMBINED LANDING AND PASSENGER CHARGES FOR AIRBUS 320, 2013 (IN US$)

Lowest charges: **Taipei Taoyuan**, New Delhi

Highest charges: **Osaka Kansai**, Nagoya

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
EUROPE: COMBINED LANDING AND PASSENGER CHARGES FOR AIRBUS 320, 2013 (IN US$)

Lowest charges: Luxembourg, Riga (Latvia)
Highest charges: London Heathrow, London Gatwick - Peak
NORTH AMERICA: COST PER ENPLANED PASSENGER, 2012 (IN US$)

Canada:
Lowest CPE: Victoria, Regina
Highest CPE: Toronto, Montreal

United States:
Lowest CPE: Charlotte, California Bob Hope (Burbank, CA)
Highest CPE: New York JFK, Washington Dulles
LANDING CHARGES
FOR BOEING 737-800, 2013 (IN US$)

Objective
Data
Airport Characteristics
Methodology
Efficiency & Cost
User Charge
ASIA PACIFIC: COMBINED LANDING AND PASSENGER CHARGES FOR BOEING 737-800, 2013 (IN US$)

Lowest charges: **Taipei Taoyuan**, New Delhi
Highest charges: **Osaka Kansai**, Nagoya
EUROPE: COMBINED LANDING AND PASSENGER CHARGES FOR BOEING 737-800, 2013 (IN US$)

Lowest charges: **Luxembourg, Riga (Latvia)**

Highest charges: **London Heathrow, London Gatwick- Peak**
NORTH AMERICA: COST PER ENPLANED PASSENGER, 2012 (IN US$)

**United States:**
- Lowest CPE: **Charlotte**, California Bob Hope (Burbank, CA)
- Highest CPE: **New York JFK**, Washington Dulles

**Canada:**
- Lowest CPE: **Victoria**, Regina
- Highest CPE: **Toronto**, Montreal

**Objective**
- Data
- Airport Characteristics
- Methodology
- Efficiency & Cost
- User Charge
ATRS AIRPORT BENCHMARKING REPORT

- The ATRS Global Airport Performance Benchmarking Report: 3 volumes, over 600 pages of valuable data and analysis.

- Can be purchased by visiting www.atrsworld.org

- Report sale finances our annual benchmarking research project

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Thank You

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- 200 major airports and 26 airports around the world.
- FY 2002-FY2012 (11 years data)
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- Download Database Manual and order form from the above website.