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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OUTLINE

Objective of the ATRS Benchmarking Study

Airports Included and ATRS Database

Some Characteristics of Sample Airports

Methodology

Key Results on Efficiency and Costs

User Charge Comparisons
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

- **N. America, 78**: 1 new airport
- **Asia Pacific, 53**: 2 new airports
- **Europe, 69**: 2 new airports
- **Oceania Countries (16)**
- **United States (66)**
- **Canada (12)**

**Objective**

**Data**

**Airport Characteristics**

**Methodology**

**Efficiency & Cost**

**User Charge**
26 AIRPORT GROUPS

- Asia Pacific (9)
- Europe (17)
ATRS AIRPORT DATABASE, FY 2002-2012 (11 years)

- 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
PASSENGER TRAFFIC (’000)-
TOP 10 AIRPORTS:

Asia Pacific
Europe
North America

Objective
Data
Airport Characteristics
Methodology
Efficiency & Cost
User Charge
AIRCRAFT MOVEMENTS, FY 2012
(’000 ATM)

Asia Pacific

Europe

North America

Objective
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% NON-AERO REVENUE, FY 2012
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]

Objective  Data  Airport Characteristics  Methodology  Efficiency & Cost  User Charge
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

Airports

Airport Groups

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

Busan Gimhae, Jeju, Hong Kong
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

[Bar chart showing comparison of Gross VFP and Residual VFP for various airports]
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

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

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

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
EUROPE - SMALL & MEDIUM AIRPORTS (CPH=0.0)

Riga (Latvia), Tallinn (Estonia), Ljubljana (Slovenia)
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
N. AMERICA - LARGE AIRPORTS (YVR=0.0)

Objective |
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Charlotte, Atlanta, Tampa
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
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User Charge Comparison
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
EUROPE: COMBINED LANDING AND PASSENGER CHARGES FOR AIRBUS 320, 2013 (IN US$)

Lowest charges: Luxembourg, Riga (Latvia)
Highest charges: London Heathrow, London Gatwick- Peak

Objective Data Airport Characteristics Methodology Efficiency & Cost User Charge
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

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

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 ENPLAINED 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
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

See you at 2015 ATRS World Conference in Singapore!
ATRS AIRPORT DATA

Up to 30% discount for student and academic researcher

- 200 major airports and 26 airports around the world.
- FY 2002-FY2012 (11 years data)
- More details at http://www.atrsworld.org/Database.html
- Download Database Manual and order form from the above website.

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