Key Findings

Chunyan Yu

Air Transport Research Society (ATRS)

ww.atrsworld.org

ATRS Global Airport Performance Benchmarking Task Force:
Founding Chairman – Tae Oum; Coordinator - Chunyan Yu
Asia Pacific: Peter Forsyth, Xiaowen Fu, Yeong-Heok Lee, Yuichiro Yoshida,
Japhet Law, Shinya Hanaoka
Europe: Nicole Adler, Jaap de Wit, Hans-Martin Niemeier, Eric Pels
North America: Bijan Vasigh, Jia Yan, Chunyan Yu
Middle East: Paul Hooper

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 2017 Report

Canada-US   82 airports

Europe   71 airports
                   15 airport groups

Asia Pacific   9 airport groups
                   38 Asian airports
                   15 Oceania airports

Total   **206 airports**
                    24 airport groups

The ATRS Database

❑ The ATRS Database contains historic information (FY 2002-2015) 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 for more details.

Airport Characteristics

❑ Number of passengers ranges from 861,982 passengers for Dunedin International Airport (New Zealand) to 101 million passengers for Hartsfield-Jackson Atlanta International Airport (United States) in 2015.

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

❑ Number of Employees ranges from 19 (Queenstown) to 15,929 (Frankfurt)

❑ 12 airports serve only international passengers, and international passengers account for less than 10 % of total traffic at 60 airports

Passenger Traffic, 2015

Largest Five and Smallest Five ('000)
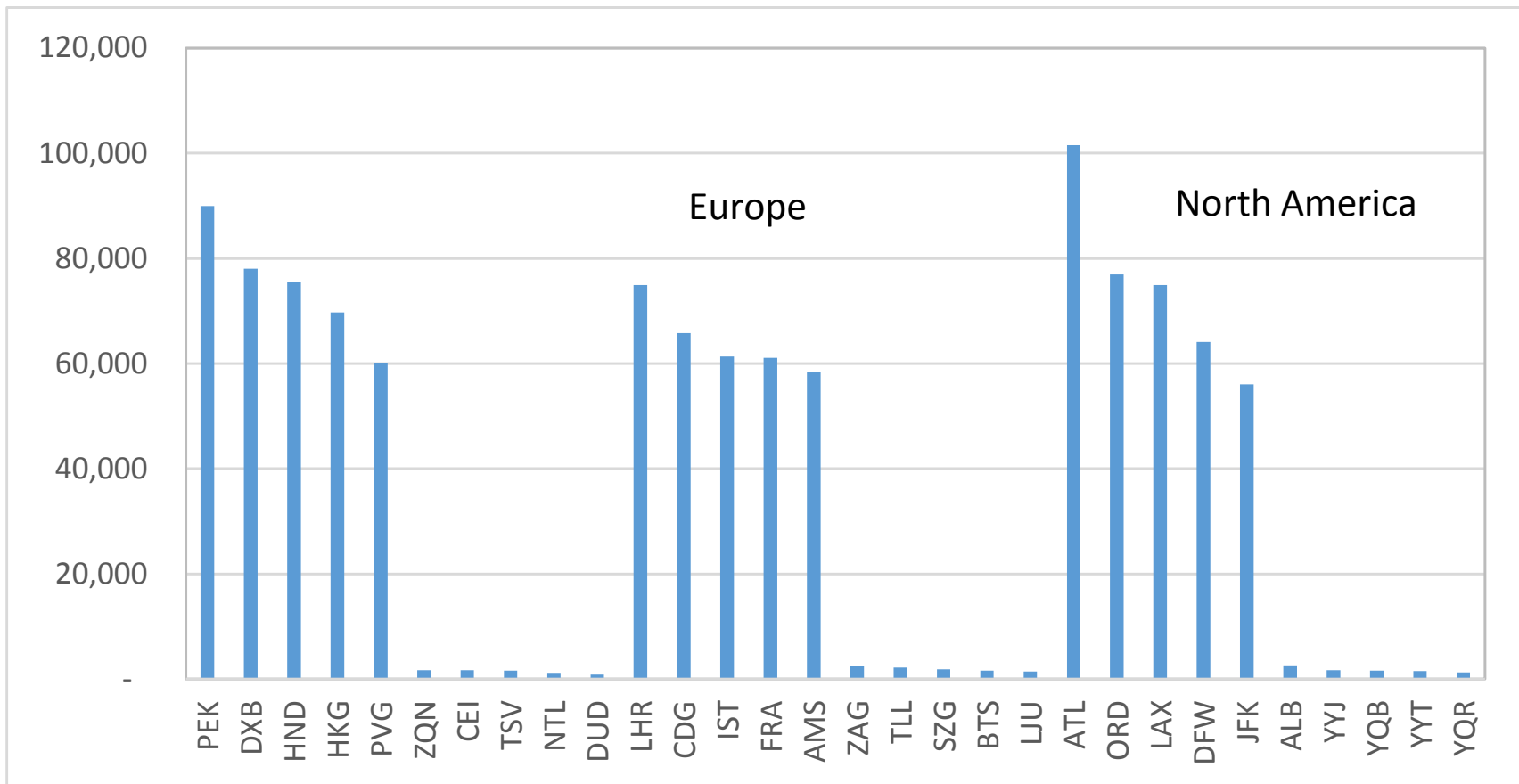
Passengers per Aircraft Movement, 2015
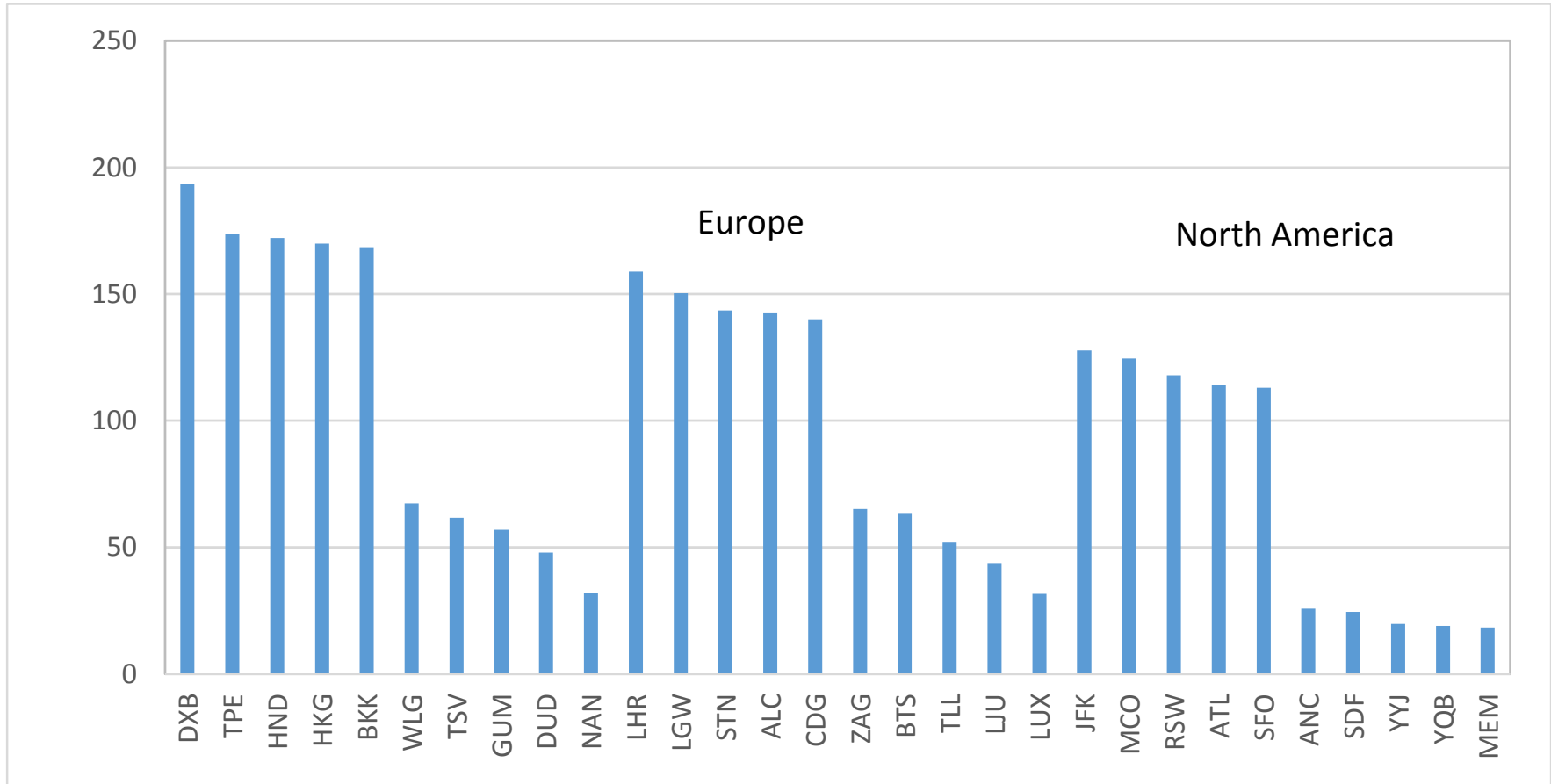
Highest Five and Lowest Five
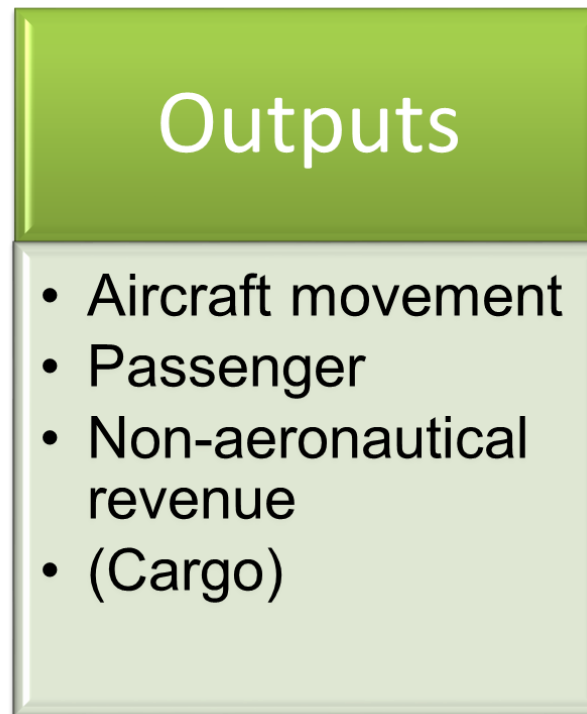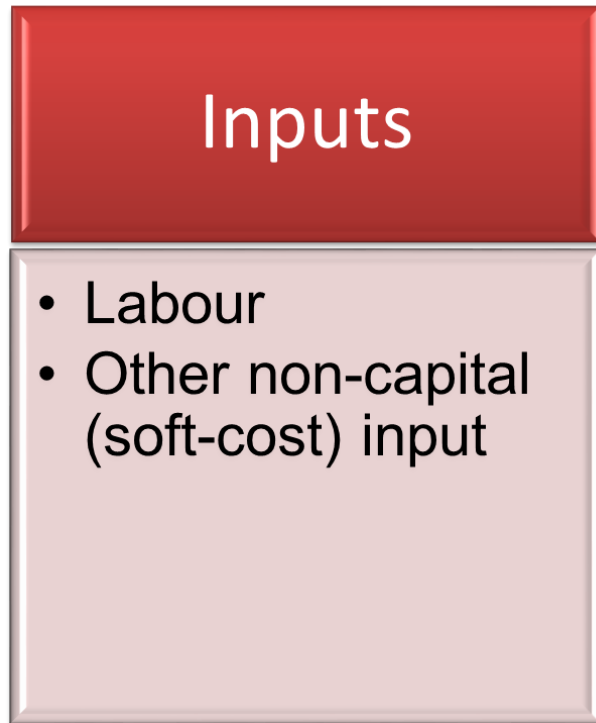
Highest Five and Lowest Five
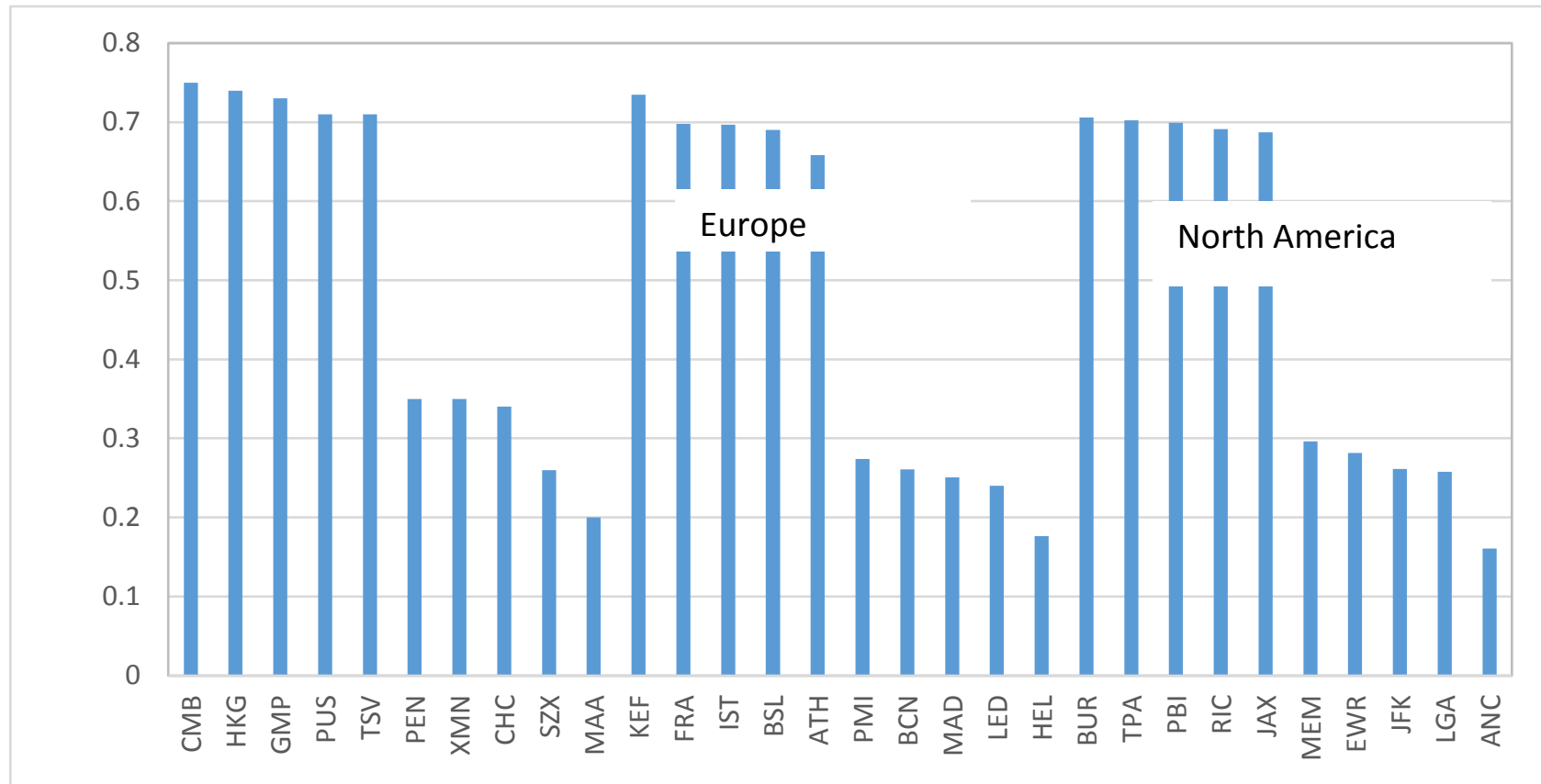
- **Variable Factor Productivity (VFP) Index**
  - Total Factor Productivity (TFP) - Impossible because of capital input cost accounting problem

- 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)

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

$$ln\frac{X_i}{X_j} = \sum \frac{W_{ki} + \bar{W}_k}{2} \, ln\frac{X_{ki}}{\tilde{X}_k} - \sum \frac{W_{kj} + \bar{W}_k}{2} ln\frac{X_{kj}}{\tilde{X}_k}$$

Methodology

Inputs

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

Outputs

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

Gross Variable Factor Productivity

Methodology

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.

Figure S-4a1 Residual Variable Factor Productivity (2015), Asia, HKG=1.0 Over 40 million passengers per Year
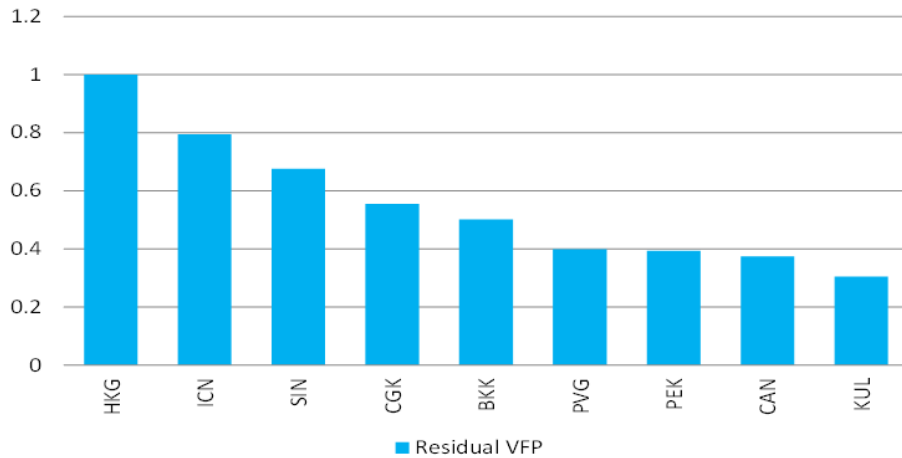
Figure S-4a2 Residual Variable Factor Productivity (2015), Asia, HKG=1.0 10-40 million passengers per Year
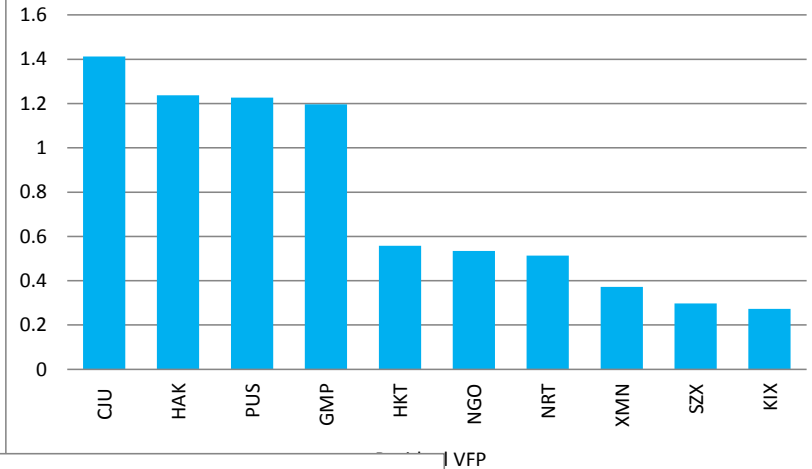
Figure S-4a3 Residual Variable Factor Productivity (2015), Asia, HKG=1.0 Under 10 million passengers per Year

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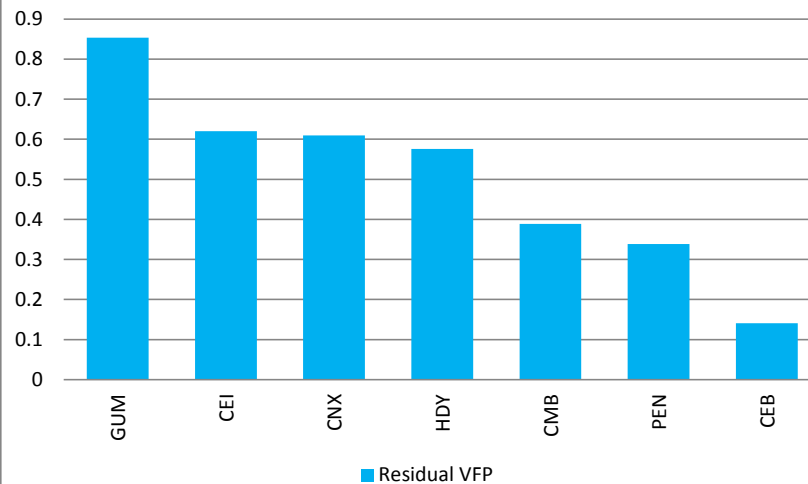
Key Results

Figure S- 4a4 Residual Variable Factor Productivity (2015), Oceania, SYD =1.0
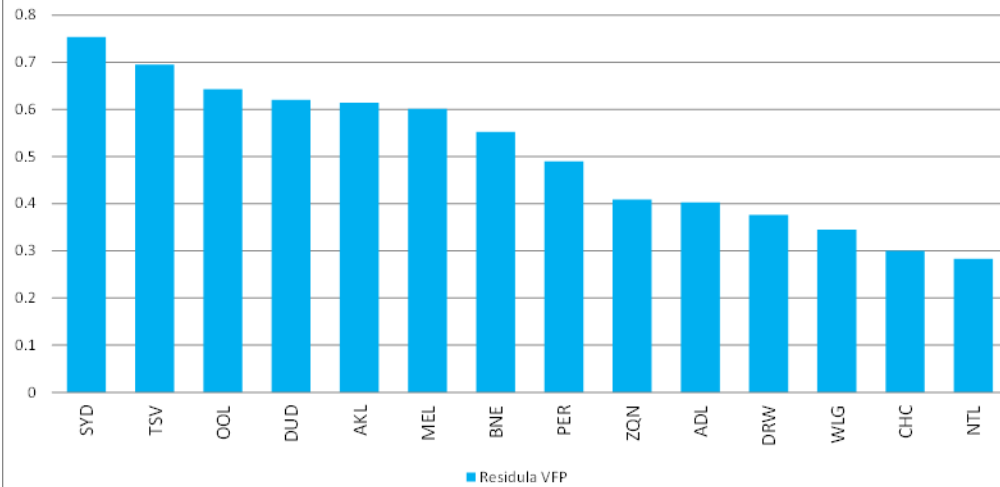
Figure S-4a5 Residual Variable Factor Productivity (2015), Asia Pacific, HKG=1.0 Airport Groups
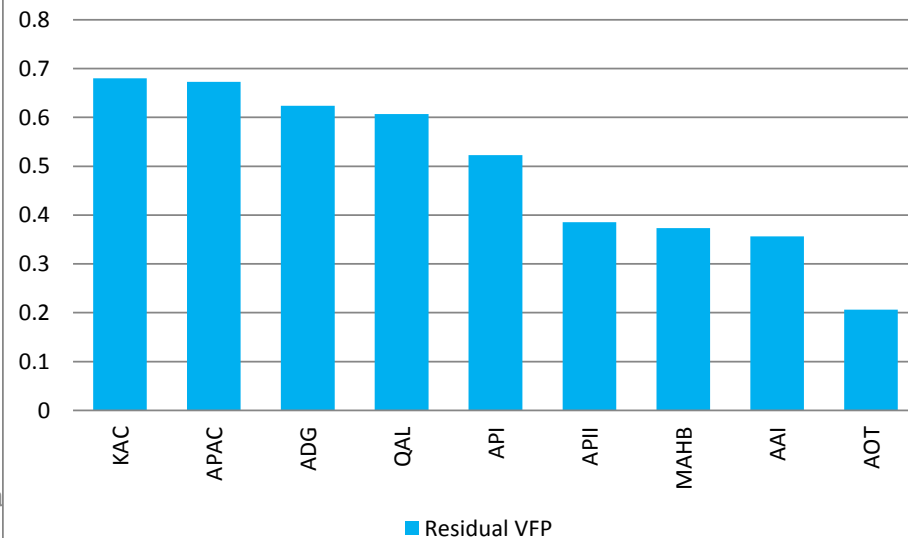
Figure S-4b1 Residual Variable Factor Productivity (2015), Europe: Over 25 million Passengers per Year , CPH=1.0
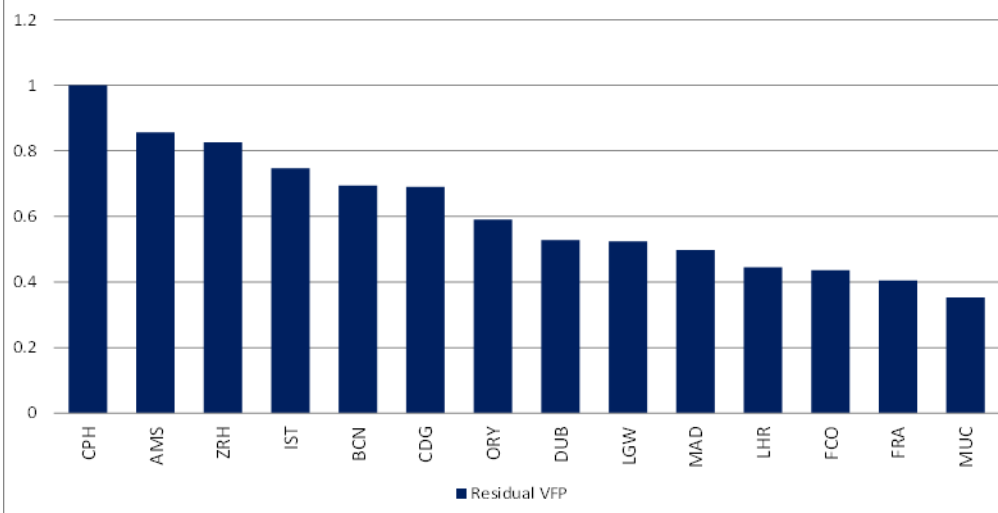
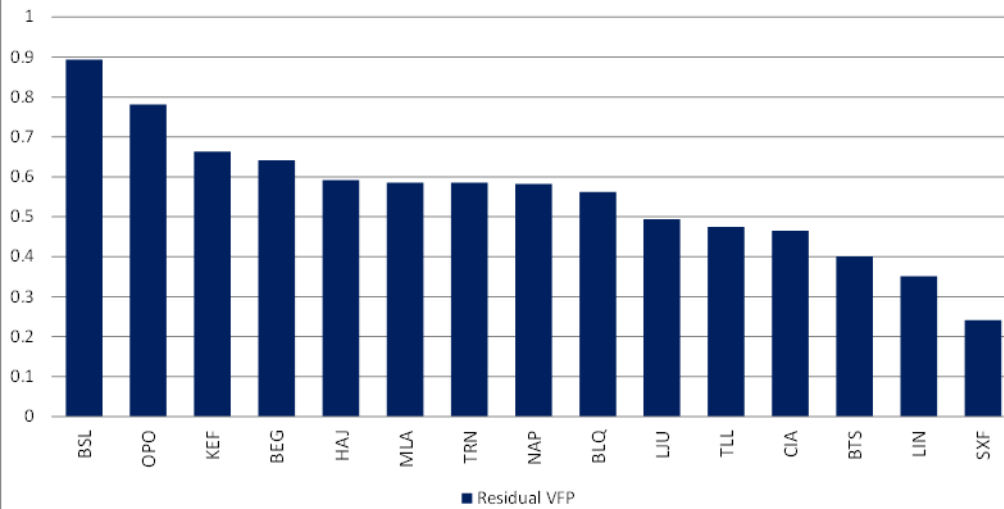Figure S-4b2 Residual Variable Factor Productivity (2015), Europe: 10-25 million Passengers per Year , CPH=1.0
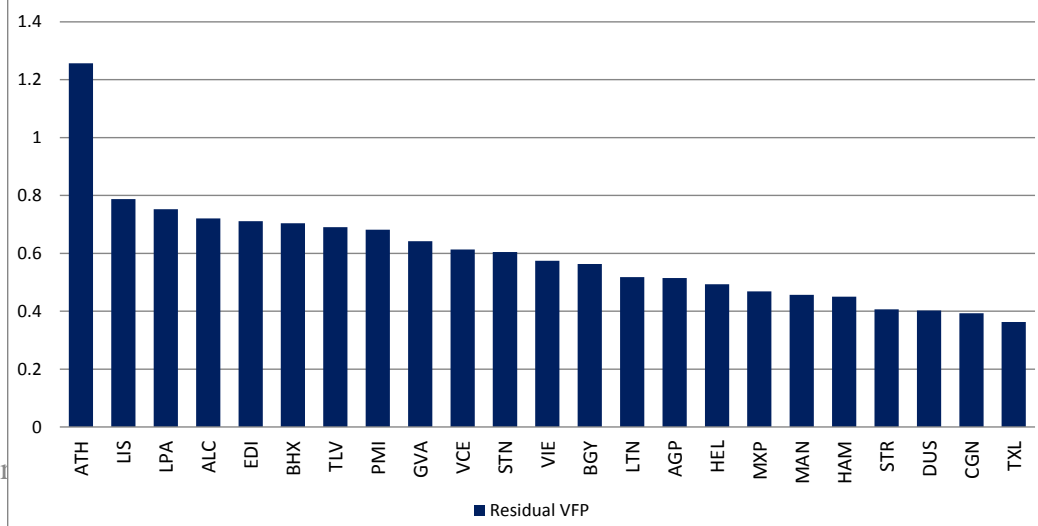
Key Results

Figure S-4b3 Residual Variable Factor Productivity (2015), Europe: under 10 million Passengers per Year , CPH=1.0
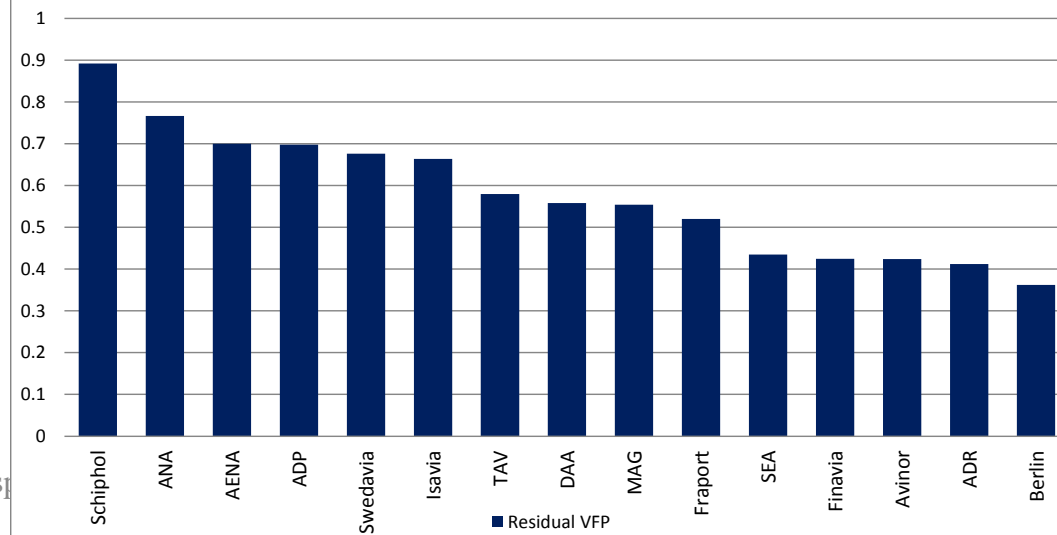
Figure S-4b4 Residual Variable Factor Productivity (2015), Europe: Airport Groups, CPH=1.0

Figure S-4c1 Residual Variable Factor Productivity (2015), North America: Over 40 Million Passengers per Year, YVR=1.0

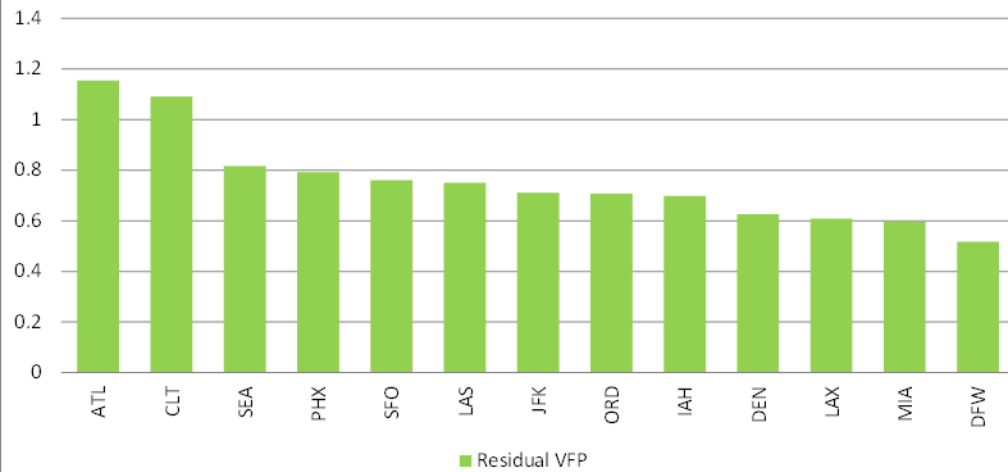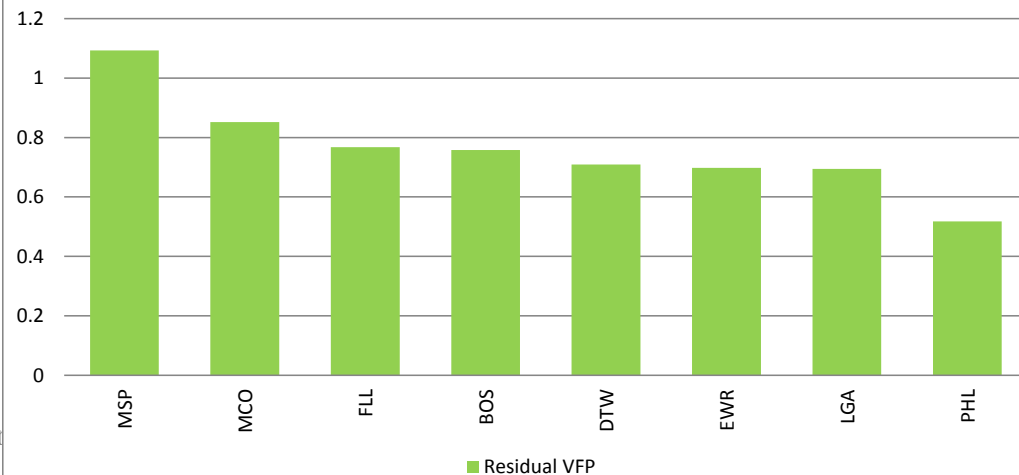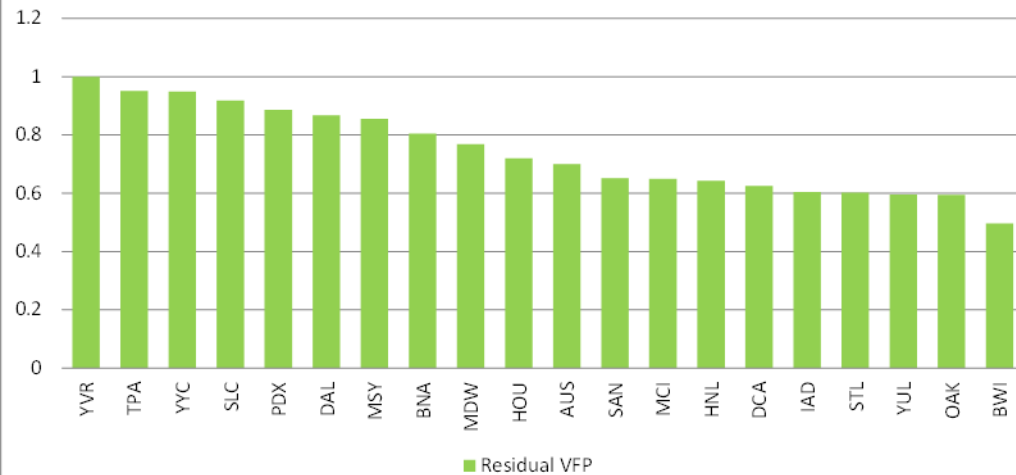Figure S-4c2 Residual Variable Factor Productivity (2015), North America: 25-40 Million Passengers per Year, YVR=1.0
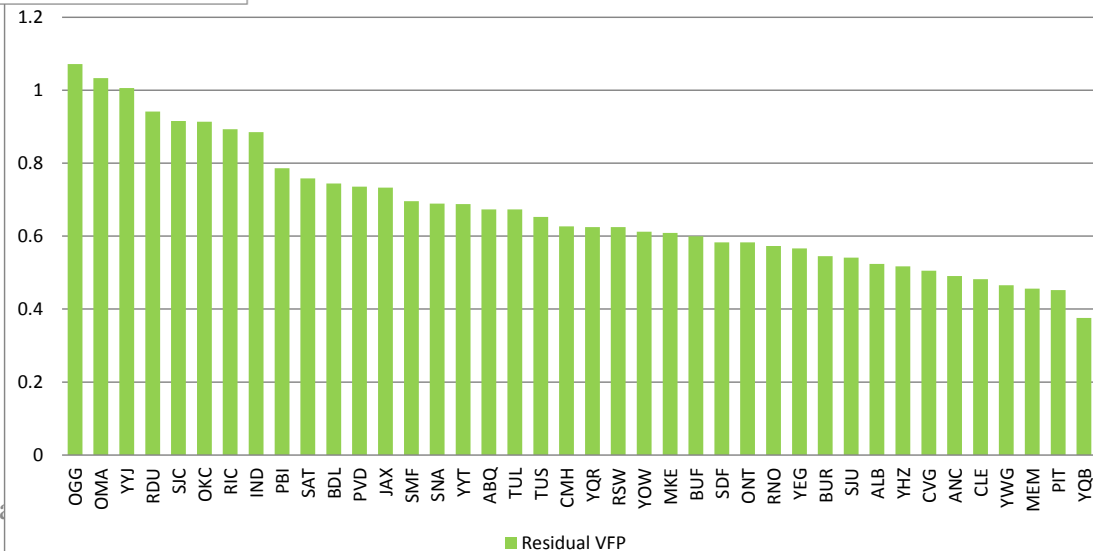
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Key Results

Figure S-4c3 Residual Variable Factor Productivity (2015), North America: 10-25 Million Passengers per Year, YVR=1.0

S-4c4 Residual Variable Factor Productivity (2015), North America: under 10 Million Passengers per Year, YVR=1.0

Top Efficiency Performers (2017)

Asia Pacific:

- Over 40 million passengers per year: Hong Kong
- 10-40 million passengers per year: Jeju International
- Under 10 million passengers per year: Guam
- Oceania Airports: Sydney
- Airport Groups: Korea Airport Corporation

Europe:

- Over 40 million passengers per year: Amsterdam
- Over 25 million passengers per year : Copenhagen
- 10-25 million passengers per year: Athens
- Under 10 million passengers per year: EuroAirport
- Airport Groups: Schiphol

Top Efficiency Performers (2017)

North America (Canada/US):

- Over 40 million passengers per year: Atlanta, Charlotte,
- 25-40 million passengers per year: Minneapolis/St Paul,
- 10-25 million passengers per year: Vancouver International
- Under 10 million passengers per year: Kahului Airport,

Key Results

- **Cost Competitiveness**

Key Results

Figure 5.4a1 Cost Competitiveness 2015 - Asia
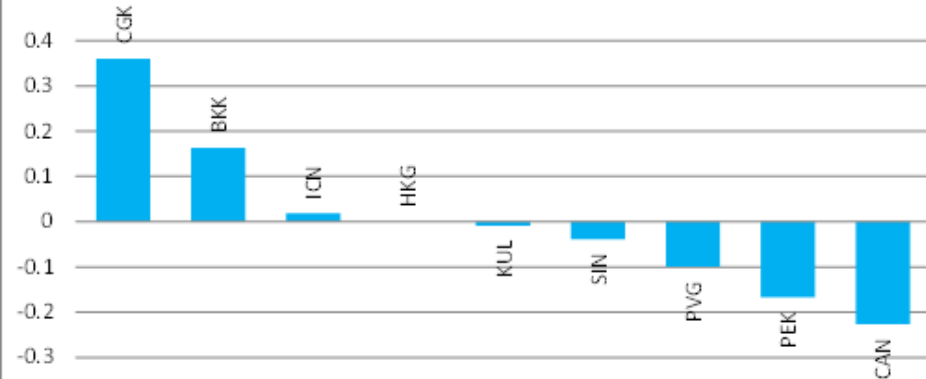HKG=0.0
Over 40 million Passengers per Year

Figure 5.4a2 Cost Competitiveness 2015 - Asia
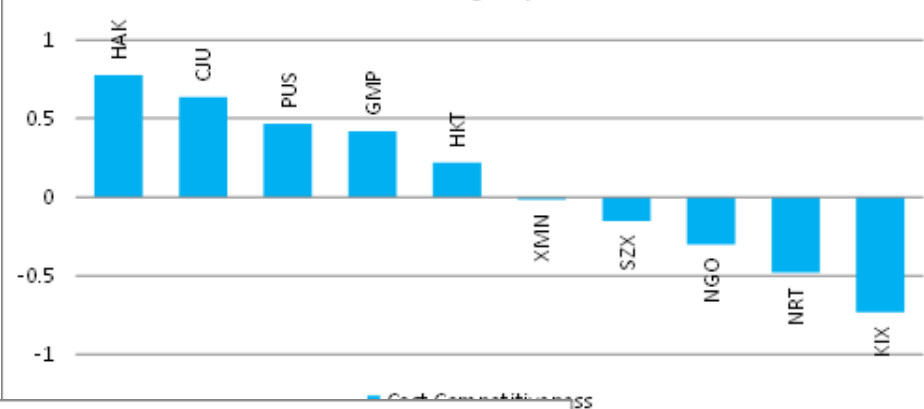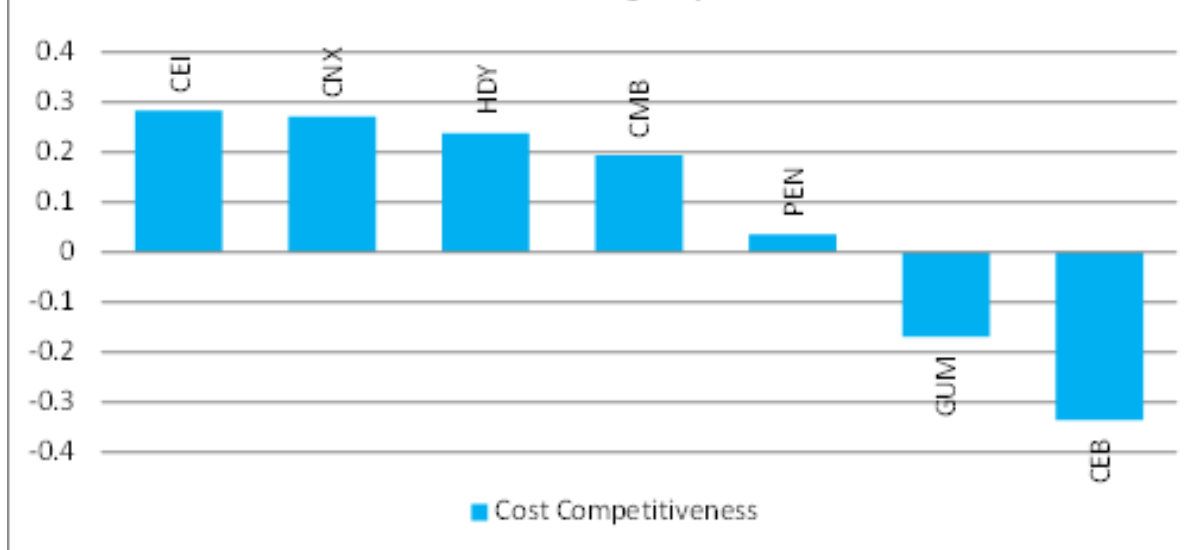HKG=0.0
10- 40 million Passengers per Year

Figure 5.4a3 Cost Competitiveness 2015 - Asia
HKG=0.0
Under 10 million Passengers per Year

24

Key Results

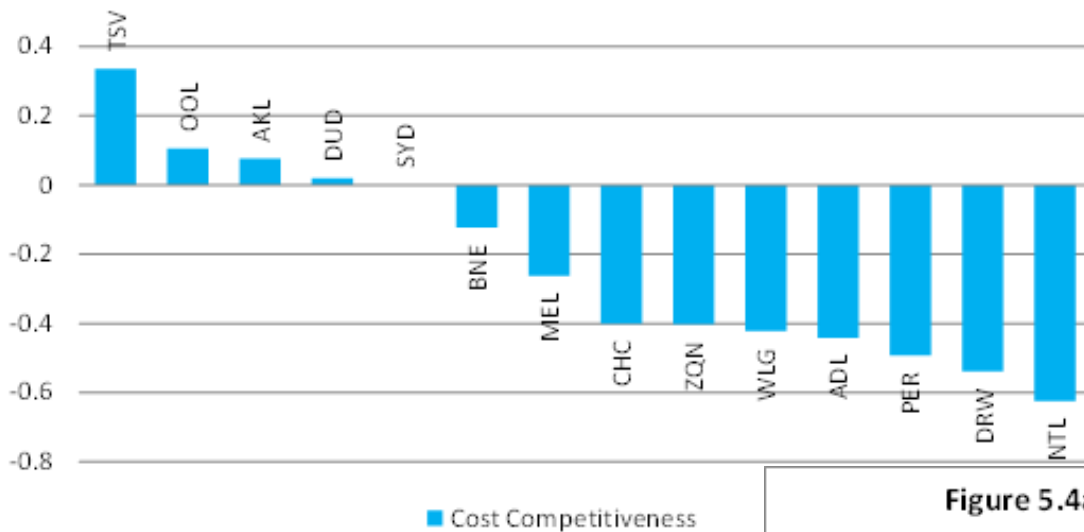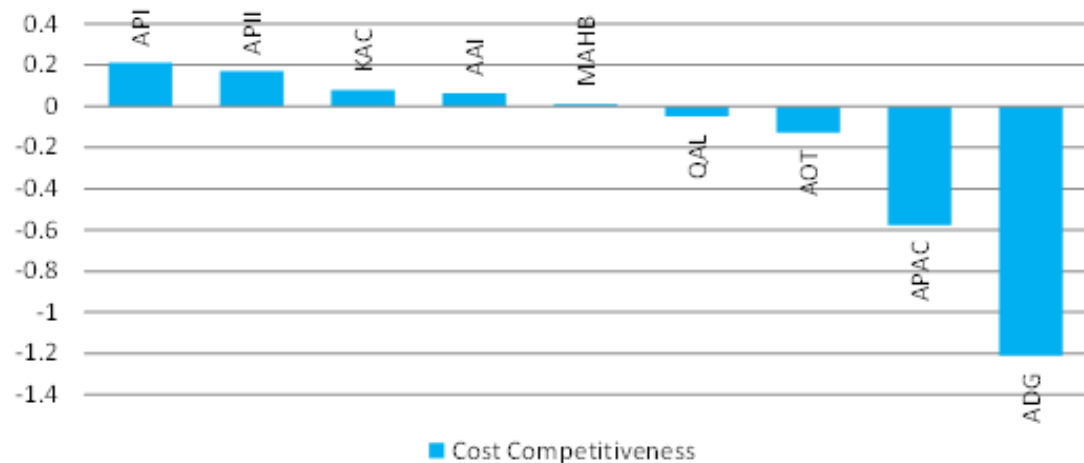Figure 5.4a4 Cost Competitiveness 2015 - Oceania
SYD=0.0

Figure 5.4a5 Cost Competitiveness 2015 - Asia Pacific
HKG=0.0
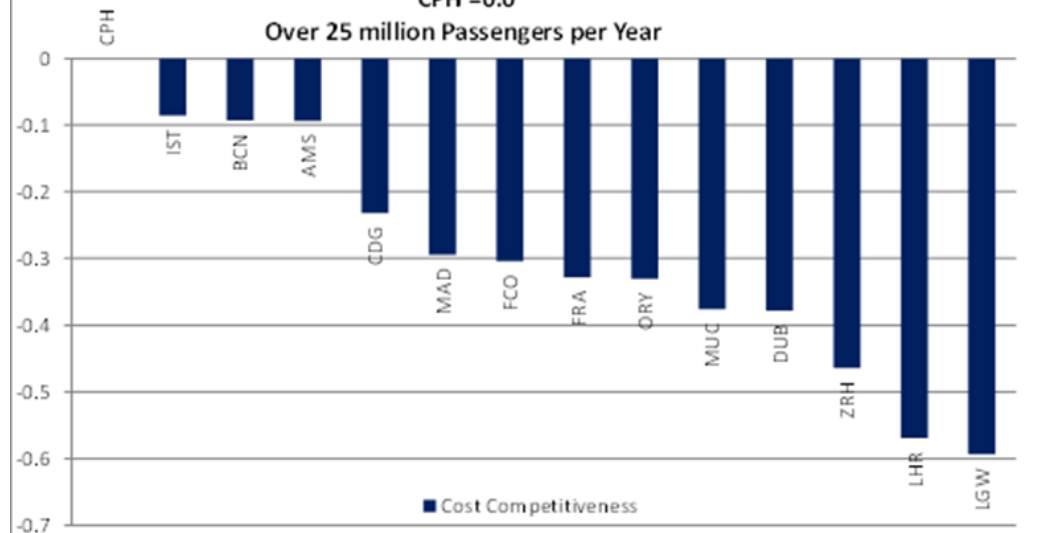Airport Groups

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Key Results

Figure 5.4b1 Cost Competitiveness 2015 - Europe
CPH = 0.0
Over 25 million Passengers per Year

5.4b2 Cost Competitiveness 2015 - Europe
CPH = 0.0
10- 25 million Passengers per Year

Key Results

Figure 5.4b3 Cost Competitiveness 2015 - Europe
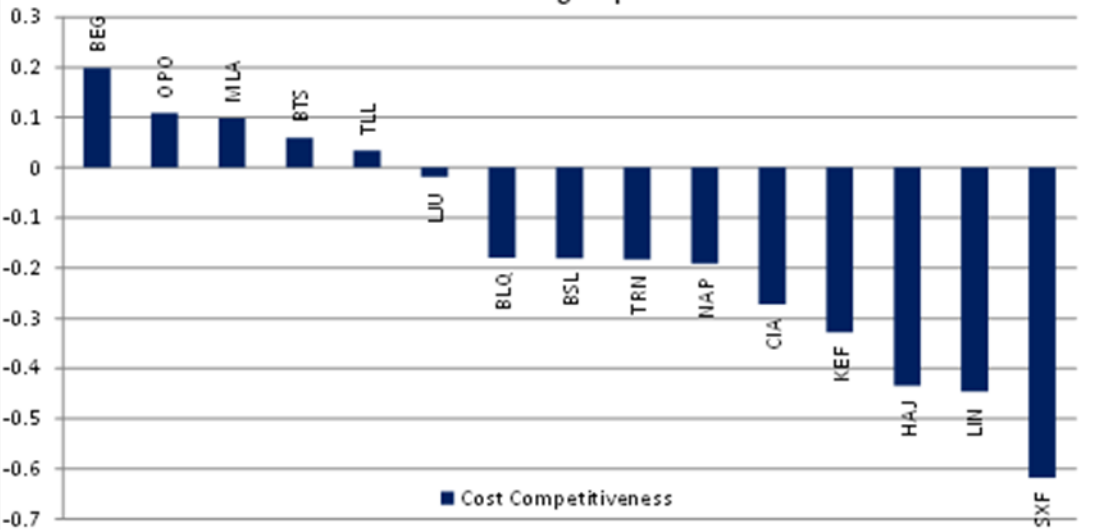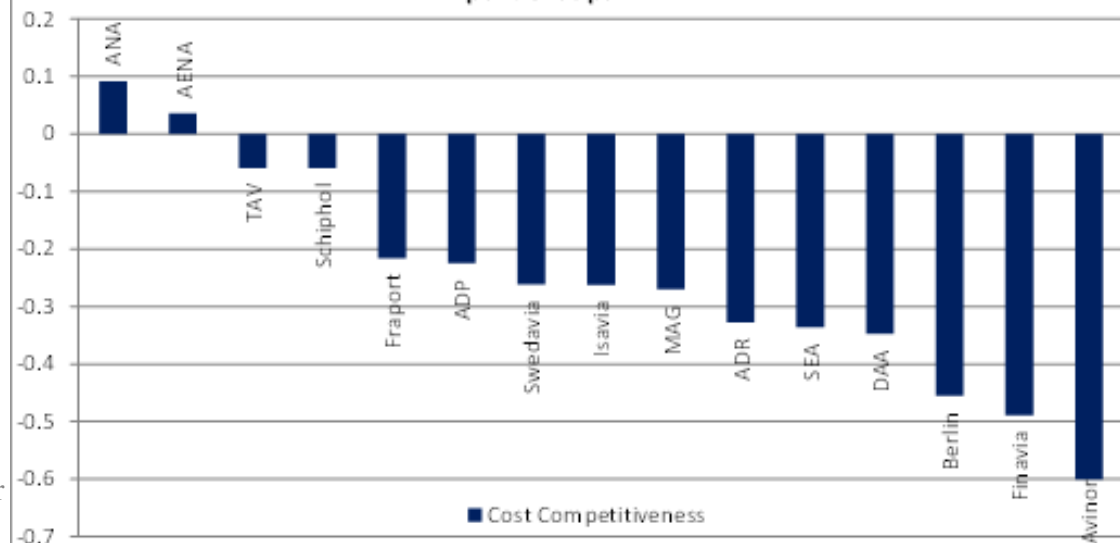CPH =0.0
Under 10 million Passengers per Year

...4 Cost Competitiveness 2015 - Europe
CPH =0.0
Airport Groups

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Key Results

Figure 5.4c1 Cost Competitiveness 2015- North America
YVR=0.0
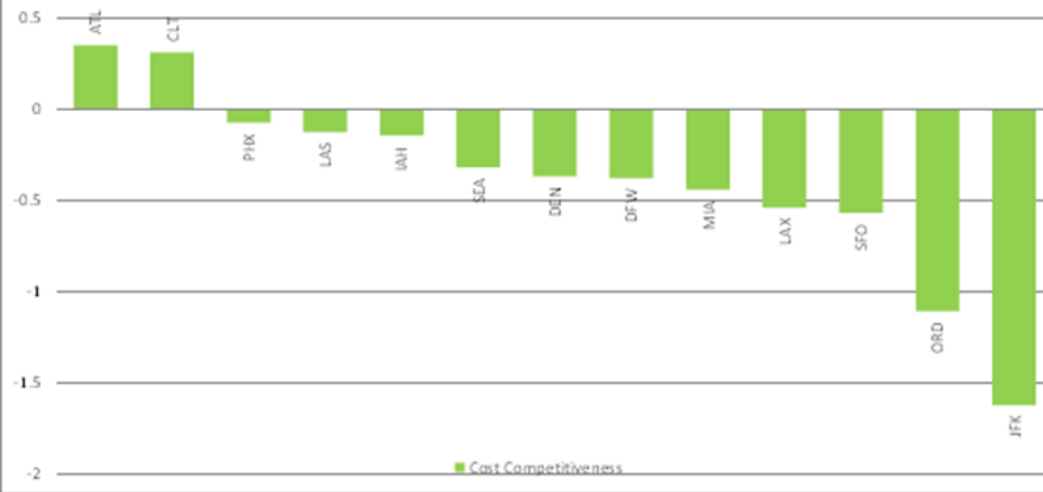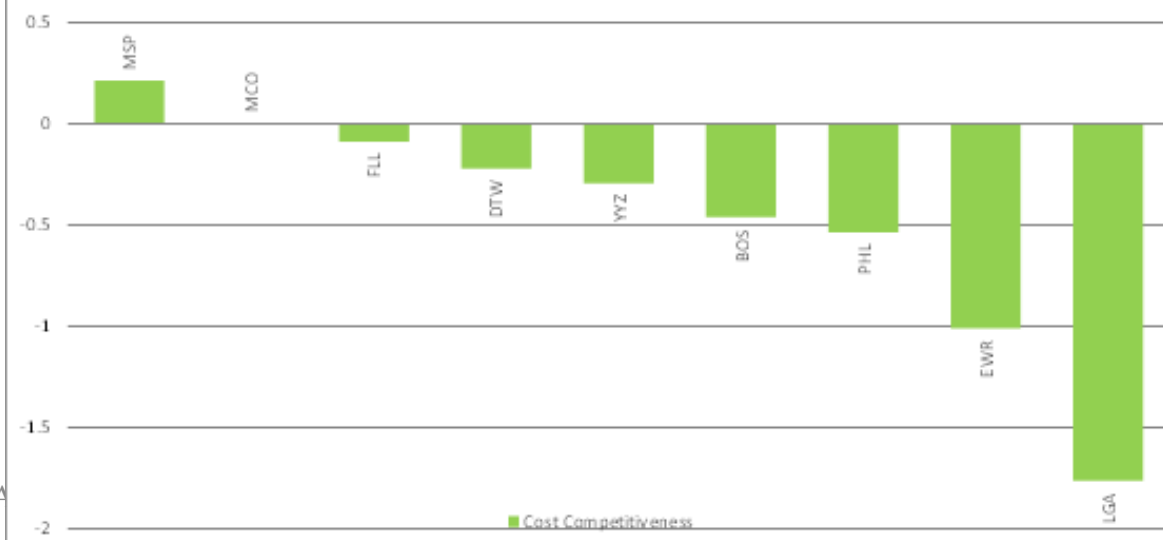Over 40 million Passengers per Year
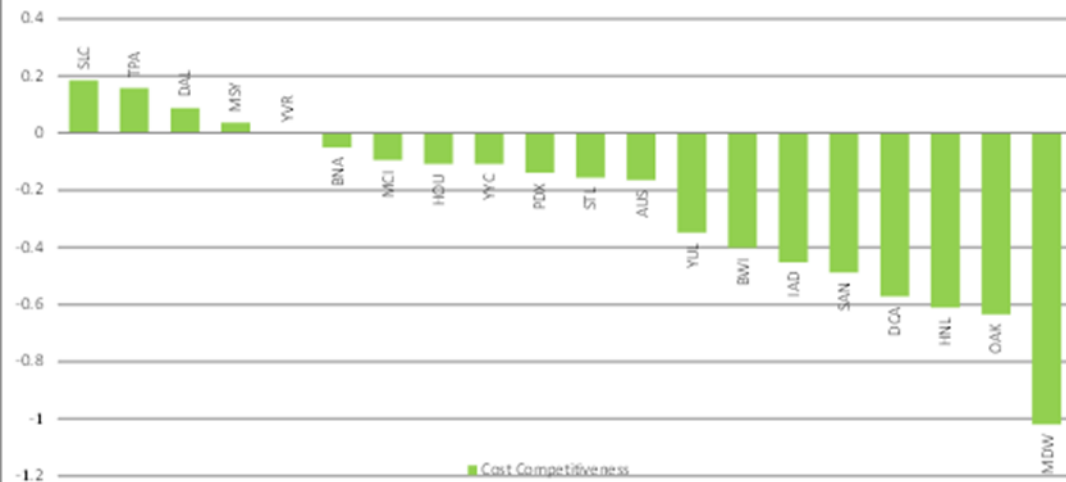

c2 Cost Competitiveness 2015- North America
YVR=0.0
25- 40 million Passengers per Year

Figure 5.4c3 Cost Competitiveness 2015- North America
YVR=0.0
10-25 million Passengers per Year

4c4 Cost Competitiveness 2015- North America
YVR=0.0
Under 10 million Passengers per Year

Top Cost Competitiveness Performers

Asia-Pacific:

- Over 40 million passengers per year: Soekarno-Hatta International,
- 10-40 million passengers per year: Haikou
- Under 10 million passengers per year: Chiang Rai
- Oceania Airports: Townsville, Gold Coast, Auckland

Europe:

- Over 25 million passengers per year: Copenhagen
- 10-25 million passengers per year: Athens
- Under 10 million passengers per year: Belgrade Nikola Tesla
- Airport Groups: ANA

N. America:

- Over 40 million passengers per year: Charlotte, Atlanta
- 25-40 million passengers per year: Minneapolis, Orlando International
- 10-25 million passengers per year: Salt Lake City. Tampa
- Under 10 million passengers per year: Omaha

❑ 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!
Merci beaucoup !