

Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005

Regional Airports in Greece: A Hidden Treasure?

Dr Andreas Papatheodorou
University of the Aegean

Mr Konstantinos Polychroniades
Independent Consultant

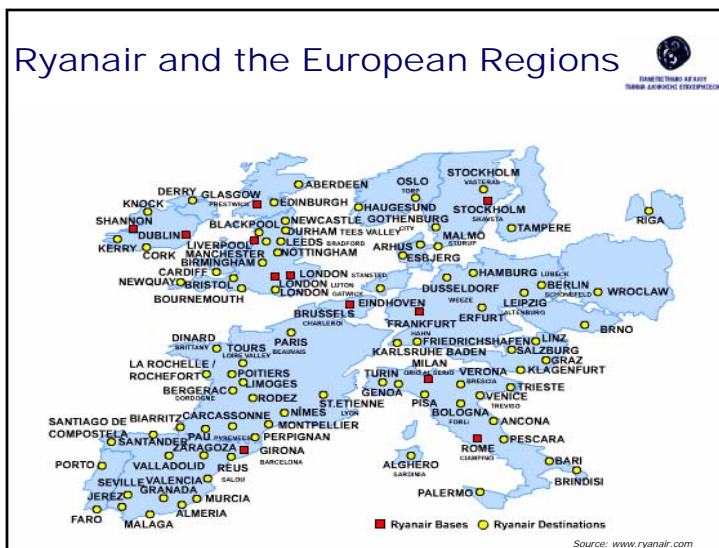
ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ
ΤΜΗΜΑ ΔΙΟΙΚΗΣΗΣ ΕΠΙΧΕΙΡΗΣΕΩΝ

GARS Workshop
Airport Competition and the Role of Airport Benchmarking

Vienna, 24-25 November 2005

Overview of the Presentation

- Inspiration – Ryanair and the European Regions
 - Airports and Regional Economic Development
 - *main theoretical considerations*
- Airports in Greece
 - *country and airport profile*
 - *maps and concentration graphs*
 - *PSO and difficulties faced by regional airports in Greece*
- A Hidden Treasure?
 - *results of correlation and asymmetry analysis*
 - *exploiting the treasure*
 - *proposed questionnaire: discrete and state preference analysis*
- Conclusions and Discussion



Airports and Regional Development

- Direct, indirect and induced effects related to income and employment
- Forward and backward industrial linkages, improvement of accessibility, external economies of scale, cumulative causation and growth
- But: rivalry among authorities, beggar-thy-neighbour policies and spatial lock-in, negative environmental impacts
- Empirical studies are usually supportive of economic benefits

Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005

Airports in Greece

Greece - General Profile



- 10.9 million inhabitants
- 131.957 sq km - out of which 20% islands
- Greek Archipelago: more than 2000 islands of which 227 inhabited
- About 14 million tourists visited Greece in 2004 / more than 75% by air
- Over 60 % of lodging establishments located on the islands

source: GNTQ, WTO

Greece - Airports Profile



- 38 Airports operate across the country (+7 closed)
 - mainland (11), islands (27)
 - state (33), municipal (4), joint venture (1)
 - international (15), hybrid (13), domestic (10)
- Activity in Greek Airports (2003)
 - A/C movements: about 400,000 - about 50% domestic
 - pax arrivals: about 5m domestic, 12m international (7.5m charter)
- Size Classification according to EC criteria (2003)
 - 1 "A" class (>10 mpax) accounting for about 36% of traffic
 - 0 "B" class (5<. <10 mpax)
 - 7 "C" class (1<. <5 mpax) accounting for about 51.5% of traffic
 - 30 "D" class (< 1mpax) accounting for about 12.5% of traffic
 - high values of the Herfindahl-Hirschman Index (HHI)

source: HCAA



orange: state international and JV
green: state hybrid and domestic
purple: municipal

source: HCAA

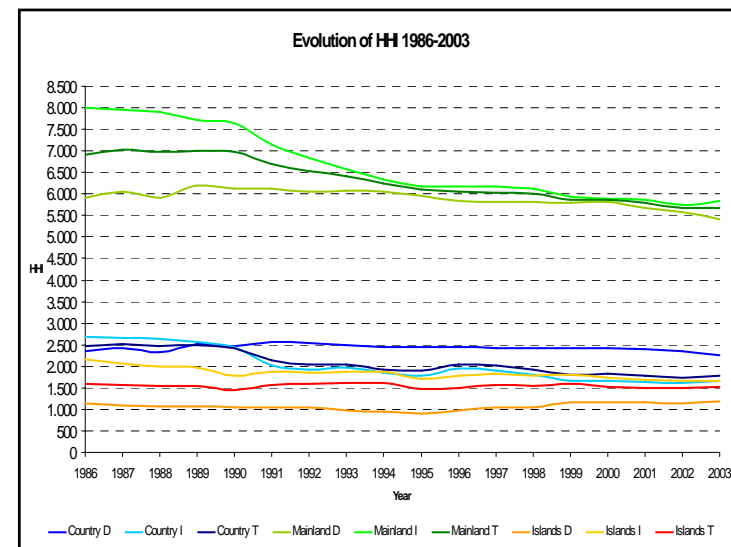
Regional Airports in Greece: A Hidden Treasure?
GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005



The Herfindahl – Hirschman Index

- Widely accepted market concentration measure defined as:

$$HHI = \sum_{i=1}^N s_i^2$$
 where s_i is the market share of airport i
- HHI takes values between 0 and 10,000 (monopoly)
- Derivation of airport HHI for the mainland, the islands and the country in total for the period 1986-2003
- Mainland HHI is very high but shows a downward trend
- Island HHI is substantially lower and remains relatively stable over time
- Country HHI lies inevitably in-between with values around 2,000 exhibiting a modest downward trend



Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005

22 Greek PSO Routes

- 11 routes from Athens to islands
- 4 routes from Thessaloniki to islands
- 4 inter-island routes connecting 2-5 islands
- 1 route connecting one mainland point and 3 islands
- 2 routes connecting mainland points with the island of Crete
- Nine new routes underway after PSO application connecting islands to mainland and other islands
- One way fares ranging between 18 – 70 Euros

source: Fragoudaki et al. (2005)

Characteristics of Small Regional Airports

- Many island airports are **extremely short and narrow** (runway length between 700m-1500m and width 25m-40m)
- **Limited opening hours**: some airports are open only four to six hours a day six days a week
- They are **built on cliff tops** due to lack of flat field areas so most of them have a **high elevation** that deteriorates aircraft performance
- In addition they are in **close proximity to mountainous terrain** making them very **vulnerable to gusty strong winds** prevailing in the islands especially during summer period.



source: Fragoudaki et al. (2005)

Types of Aircraft in Small Regional Airports

- **ATR 42 (40 seats)** and **ATR 72 (70 seats)** are used for the longer runways
- **Dash 8 (37 seats)** is used for the critically short runways such as Paros, Kastelorizo
- These aircraft have extreme short take-off and landing capabilities as well as low operational cost. In PSO airports ground facilities are also very poor necessitating versatile aircrafts for reasonable turn-around times



source: Fragoudaki et al. (2005)



Kalymnos – New Airport under construction



source: Fragoudaki et al. (2005)

Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005

In the Greek experience of remote region operations there are times where:



- The plane leaves the departure but never reaches the destination airport. It diverts instead to a more suitable alternate airport.
- This can happen because of strong winds, low visibilities, bird concentrations in the field, simple technical problems like tire bursts that cannot be fixed in the remote airport, electrical power loss, communications failure and many other unforeseen conditions.
- In this case the plane has made the flight but the passenger gets a refund of the ticket since he/she was not transferred to the destination.

source: Fragoudaki et al. (2005)

A Hidden Treasure?

Results of Correlation Analysis



- Analysis at NUTS3 Level (51 in Greece)
- GDP, population and size correlated with NUTS3 airport traffic
- Correlations for GDP and POP are low when the two major Greek NUTS3 areas are excluded (*)
- Correlation with size is very weak or even negative

GDP0 - PAX0	0,88
GDP*0 - PAX*0	0,37
POP1 - PAX1	0,87
POP*1 - PAX*1	0,29
SIZE - PAX1	0,09
SIZE* - PAX*1	-0,10

where GDP is adjusted is gross domestic product in purchasing power units, PAX is passengers, POP is population and SIZE is for NUTS3.
0 for year 2000 and 1 for 2001
Star calculations exclude Athens and Salonica
All variables in percentage terms

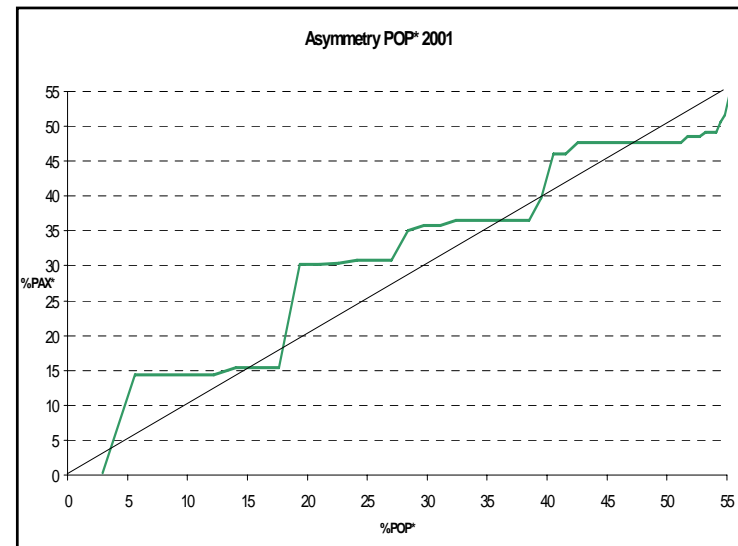
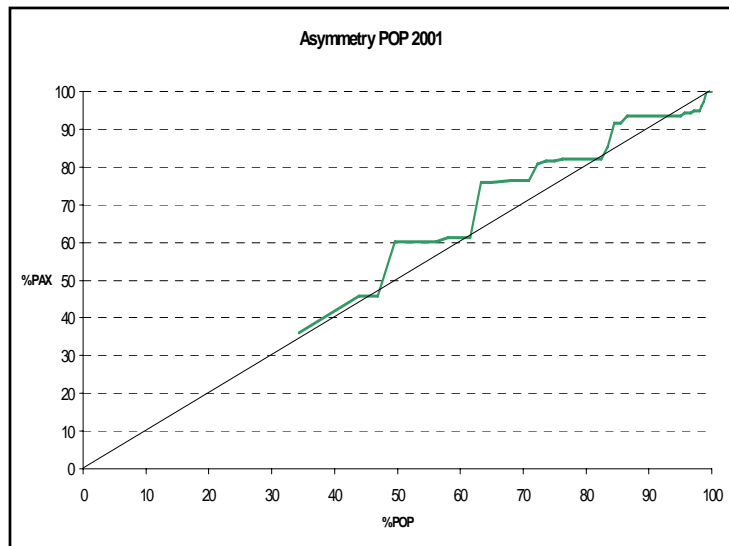
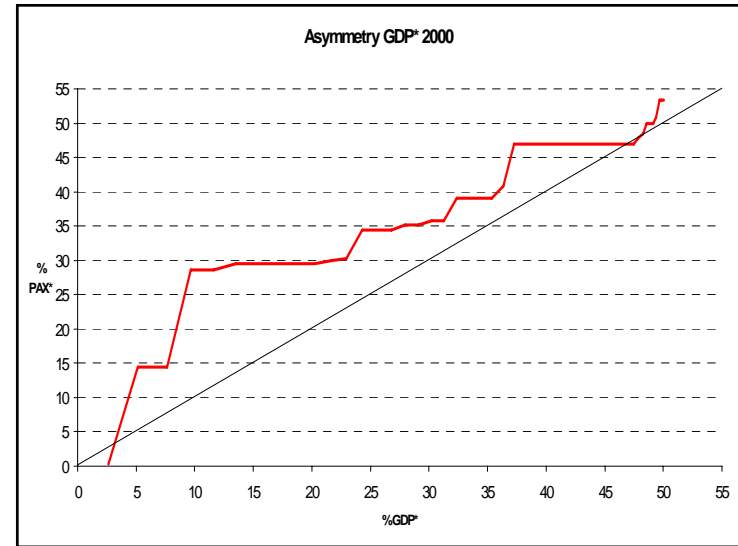
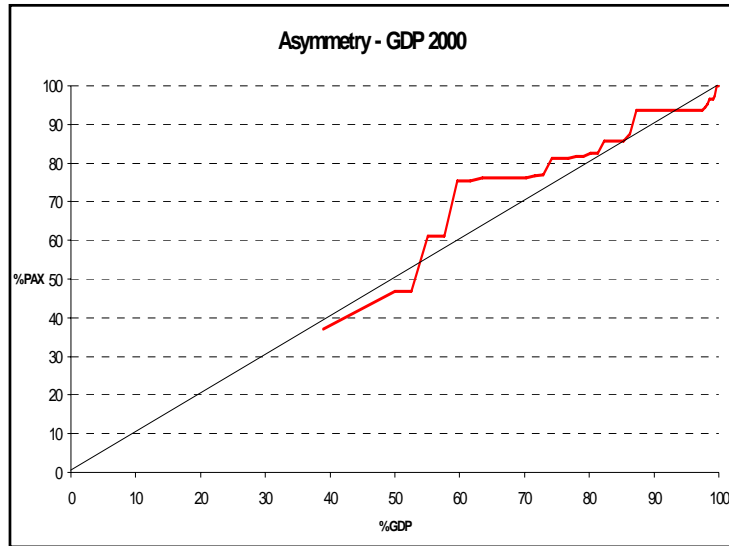
Asymmetry Analysis



- Based on income inequality studies
- Variables expressed in cumulative percentage terms
- Graphs for GDP, POP and PAX with or without the two major NUTS3 areas
- Points on the diagonal (45 degree line) correspond to perfectly proportional representation (e.g. 50% of POP to 50% of PAX)
- Points above the diagonal are related to over-representation and points below to under-representation
- The 'islands effect' (limited mode substitution and large tourism traffic) results in occasional over-representation
- Straight line segments represent NUTS3 areas with no airport traffic (mostly in the mainland): **here lies the treasure!**


Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005




Dr Andreas Papatheodorou - University of the Aegean
 Mr Konstantinos Polychroniades - Independent Consultant
 Email: academia@triopton.org, Web Site: www.triopton.org

Regional Airports in Greece: A Hidden Treasure?
GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005




Exploiting the Treasure

- Although the improvement of airport infrastructure on the islands will be beneficial to their accessibility, policy priority should be given to the mainland: out of 29 NUTS3 areas with no traffic, 26 are on the mainland!
- The 'Ryanair effect' is more likely to appear on the mainland:
 - *urban facilities are better developed and operate throughout the year (inbound traffic and possibly domestic)*
 - *existence of a critical mass (in GDP and POP terms) for outbound traffic*
 - *proximity to western and eastern European states*
 - *weather conditions are less stochastic*
- Appropriate Consultation of Stakeholders




Questionnaire

- Draft questionnaire for travellers is designed to collect suitable primary data for discrete choice and stated preference analysis
- Similar questionnaires will be designed for the other main stakeholders (policymakers, tourism and aviation authorities, hospitality service providers, etc)



Questionnaire - Filtering

- How many times have you travelled by plane during the past year?
 a. **None**___ b. **1-5** Times___ c. **5-10** Times___ d. **Over 10** Times___
- What is the primary reason of your journey?
 Leisure___ Business___
- Which are your most frequent destinations?
 European Union Destinations___ International Destinations___
- Which airports do you use primarily? ___
- When flying, which mode of transport do you use for airport transfer? (Please rate accordingly)
 - Car (self drive) ___
 - Car (driven by friends or relatives) ___
 - Bus ___
 - Taxi ___
 - Coach ___
 - Train ___
- What is your age group?
 20-25___ b.26-35___ c.36-45___ d.46-55___ e.56-65___ f. Over 65___
- Please advise of your occupation.
 Company Employee___ b. Self -Employed___ c. Student/Unemployed___
 If Self-Employed are you involved in the Tourism & Leisure Sector? ___




Questionnaire – Airline Choice

- Likert Scales (1 – not important, 10 – very important)
- Flying directly for point A to B (no transit flights)
- Ease of getting to/from the airport
- Speed of Travel
- Branded Airline and Support Network
- Convenience of Departure Time
- Duration of Flight
- Frequency of Services
- Cost of Journey (including access)
- Feeling of Safety
- Personal space at seat and comfort
- Provision of Facilities (i.e. TV, music)
- Ability to work during flight
- Complimentary Meals and Refreshments

Regional Airports in Greece: A Hidden Treasure?

GARS Workshop on Airport Competition and the Role of Airport Benchmarking – Vienna, 24/25 November 2005



ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ
ΠΑΡΑΡΤΗΜΑΤΟ ΡΙΟΠΤΡΟΝ

Questionnaire – Stated Preference

AIRPORT CHOICE				SERVICE QUALITY			
		Drive to Hub	Fly from local airport			Service A	Service B
In-vehicle Time	(min.)			Through Ticket	(Yes, No)		
Frequency	(min.)			Through Baggage	(Yes, No)		
Total Cost (Flight & Parking)	Euro			FF Programme	(Yes, No)		
	Tick your choice			Type of Aircraft			
				Total Cost (Flight & Parking)	Euro		
					Tick your choice		



ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ
ΠΑΡΑΡΤΗΜΑΤΟ ΡΙΟΠΤΡΟΝ

Conclusions

- The airport market in Greece is highly concentrated particularly on the mainland
- A large number of NUTS3 areas remain without access to airport facilities
- There is a good market potential for the development of mainland regional airports and services; co-ordinated action of the related stakeholders is required



ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ
ΠΑΡΑΡΤΗΜΑΤΟ ΡΙΟΠΤΡΟΝ

Thank you very much!

Andreas Papatheodorou
Konstantinos Polychroniades

academia@triopton.org
www.triopton.org