

Multi-Airport Systems in Era of Low-Cost Carriers

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Organization of Presentations

1 The Context Setting

- Pattern of Multi-Airport Systems
- Rise of Low Cost and Innovative Carriers

2 Implications for airport development

- Parallel Networks
- Main ports

Theme 1: Context Setting

- **Pattern of Multi-Airport Systems**
 - Traditional Drivers of Creation
 - Role of Secondary Airports
 - Worldwide evidence
- **Rise of Low-Cost, Innovative Airlines**
 - Their dominance
 - Their airport requirements

Pattern of Multi-Airport Systems

What is a Multi-Airport System?

- The significant transport airports serving a metropolitan region, without regard to ownership or political control
 - Heathrow, Gatwick, Luton, Stansted, City
 - Boston, Providence, Manchester
- Discussion
 - This is reality for travellers
 - Contrasts with ACI focus on ownership

Planning Issue

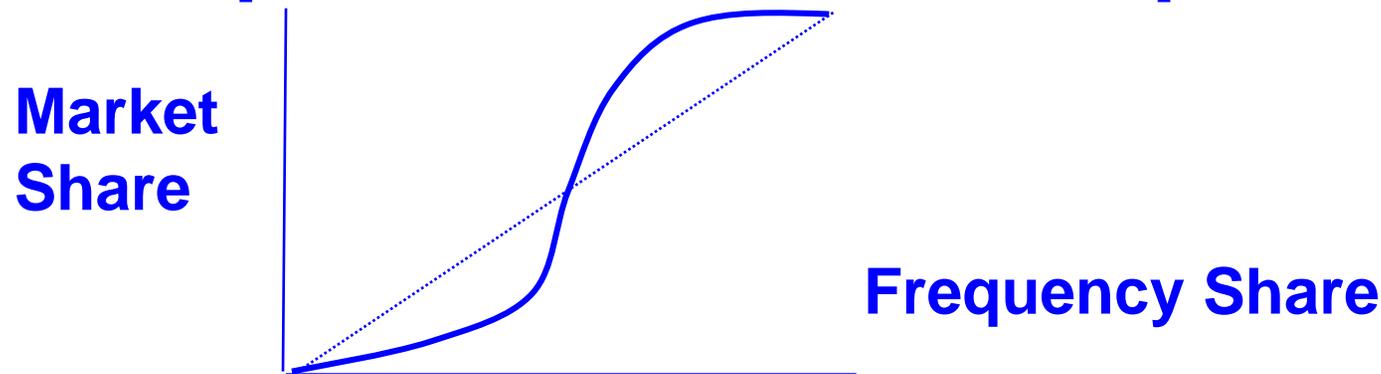
- **Many ‘mistakes’ in planning multi-airport systems**
 - Washington/Dulles – planned as major DC airport, but had only ~ 3M Pax for 20 years
 - London/Stansted – similar story – only developed with Ryanair hub around 2002
 - Osaka/Kansai – Osaka/Itami did not close
 - Montreal/Mirabel – huge airfield, now “closed” to passenger traffic
 - Et cetera...

Why mistakes happened

- **Failure to appreciate traffic concentration at**
 - **Primary airports**
 - **Special traffic (low-cost, integrated cargo)**
- **... Because planners/forecasters using wrong mental model**

What drives traffic allocation in Multi-Airport System?

- Airline competition has been primary
- S-shaped market share/frequency share



- Drives airlines to
 - Match flights => Allocate flights to major markets
 - Concentrate Traffic at primary airports

Right model: “Concentration” not “Catchment Areas”

- **Concentration is standard urban phenomenon**
 - e.g.: financial, jewelry, etc. districts
- **Driven by what suppliers offer**
- **Customers choose which location (airport) depending on where they find what they need -- not just most convenient facility**

“Concentration” persists -- until high level of local traffic

- **When local originating traffic high...**
- **More flights add little at major airports**
- **Airlines place flights at second airports**
- **There appears to be a ‘threshold’...**
- **Currently ~ 13 million originations/year**
- **Note: higher as “average” aircraft larger**

Metropolitan areas with significant multi-airport systems

Metropolitan Region	Traffic in Millions		Multi-Airport System
	For Region	Originating	
London	130	51	Yes
Tokyo	93	40	Yes
New York	97	29	Yes
Los Angeles	86	37	Yes
Chicago	100	30	Yes
Paris	76	29	Yes
San Francisco	58	24	Yes
Miami	57	24	Yes
Hong Kong	55	22	Yes
Washington/Baltim.	57	20	Yes
Seoul	41	18	Yes
Boston	35	16	Yes

Metropolitan areas with significant multi-airport systems

Metropolitan Region	Traffic in Millions		Multi-Airport System
	For Region	Originating	
Shanghai	36	16	Yes
Osaka	35	16	Yes
Atlanta	84	15	
Las Vegas	42	15	
Bangkok	28	14	U.C.
Frankfurt	54	14	Yes
Milan	31	14	Yes
Dallas/Fort Worth	65	13	Yes
Orlando	33	13	Yes
Sao Paulo	27	13	Yes
Phoenix	40	13	
Moscow	27	13	Yes

Major exceptions to rule: technical or political

- **Until recently, major exceptions to concentration rule were:**
- **Technical -- runways too short**
 - Belfast, Belo Horizonte, Buenos Aires, Rio de Janeiro, Taipei
- **Political -- or military...**
 - Berlin, Dusseldorf/Bonn, Glasgow, Moscow

Rise of Low-Cost, Innovative Airlines

A New World Order

- **Low-Cost, Innovative Airlines are dominating**
 - Traffic and Economically
- **These airlines differ from traditional “legacy” carriers**
 - Low costs, rapid turn-arounds
 - Integrative supply-chain

Traffic Importance of Low-Cost Airlines

- **They are now the big players**
 - According to IATA 2004 World statistics, LCA have
 - 45 % of US Domestic Traffic
 - 1/3 of European market (including charter traffic)
 - Major role in Brazil
 - Increasing visibility in East Asia
- **We must pay attention to L-C Airlines!**

Economic Importance of Low-Cost and New Airlines

- **They have the highest market values**
 - **UPS US\$ 82 billion; Fedex US\$ 28 billion**
 - **Southwest US\$ 13 billion, about same as British + Lufthansa + Air France**
 - **Ryanair has 30% more value than British**
 - **Easyjet, jetBlue, Virgin Blue, AirTran each far more valuable than Japan Airlines**
 - **United, NWest, Delta, Air Canada bankrupt**
- **We must pay attention to L-C Airlines!**

Low-Cost, Innovative Airlines Dominate Market Capitalizations

Airline	Market Cap US\$, Billions	Airline Type	Bankruptcy History
UPS	82	Integrated Cargo	
Fedex	28	Integrated Cargo	
Southwest	13	Low-Cost	
Singapore	9		
Ryanair	7	Low Cost	
British	5.5		
Lufthansa	5.0		
Air France	4.3		
Gol	3.9	Low Cost	
American	2.3		
easyjet	2.1	Low Cost	
jetBlue	1.9	Low Cost	
Virgin Blue	1.3	Low Cost	
Air Tran	1.3	Low Cost	
Japan Airlines	1.0		
Alaska	0.9		
Continental	0.9		Yes, pre 2000
Westjet	0.4	Low Cost	
Delta	~ 0		Yes, now
Northwest	~ 0		Yes, now
Air Canada	~ 0		Yes, now
United	~ 0		Yes, now

Nov
2005
Data

Source: finance.yahoo.com and industry estimates

Airport Systems Planning RdN

Low-Cost Airlines Differ from Legacy Airlines

- **Their business model is very different. They emphasize**
 - **Maximizing Aircraft Use**
 - **Rapid Turn-arounds**
 - **Avoidance of congestion**
 - **Avoiding useless extras**
 - **Low-cost buildings**
 - **Low-rent areas, to minimize side costs to users**
 - **High Utilization**
 - **Passengers/gate (e.g.: 600K/year vs. 250K)**

Low-Cost Airlines prefer inexpensive airports: airside

- **Ryanair and Easyjet, Southwest (USA)**
 - **Go to Cheap properties**
 - Luton and Stansted vs Heathrow
 - Charleroi vs Brussels/Zaventem
 - Oakland vs San Francisco/International
 - **Prefer Uncongested airside facilities**
 - Avoid congestion delays in air and taxiing
 - **Thus favor secondary airports**
 - **Have created “parallel” network in competition with main airports**

New Reality: Europe Network of Low-Cost Carrier Airports

Metropolitan Region	Secondary Airport	Low-Cost Carrier
Brussels	Charleroi	Ryanair
Copenhagen	Malmo	Ryanair
Dusseldorf	Koln/Bonn	Easyjet
Frankfurt	Hahn	Ryanair
Glasgow	Prestwick	Ryanair
Hamburg	Lubeck	Ryanair
London	Luton	Easyjet
London	Stansted	Ryanair
Manchester	Liverpool	Easyjet
Milan	Linate	Easyjet
Milan	Orio al Serio	Ryanair
Oslo	Torp	Ryanair
Paris	Beauvais	Ryanair
Rome	Ciampino	Easyjet + Ryan
Stockholm	Skvasta	Ryanair

New Reality: US/Canada Network of Low-Cost Carrier Airports

Metropolitan Region	Secondary Airport	Low-Cost Carrier
Boston	Manchester	Southwest
Boston	Providence	Southwest
Dallas/Ft Worth	Love	Southwest
Houston	Hobby	Southwest
Los Angeles	Long Beach	Jet Blue
Miami	Ft Lauderdale	Southwest
New York	Islip	Southwest
San Francisco	Oakland	Southwest
Toronto	Hamilton	Westjet
Vancouver	Abbotsford	Westjet

Low-Cost Airlines prefer inexpensive airports: landside

- **Factors important to LCA success:**
- **Maximize flights hours in a day**
 - **Rapid aircraft turn-around at gate**
 - **Easy access to runways**
- **Eliminate “extras” where possible**
 - **Electronic tickets – few check-in counters**
 - **Shared wait rooms for gates**
 - **Air bridges may be optional**

Design Consequences

- **Higher turn-around => More flights per gate, fewer gates needed**
- **Walk to gate possible**
- **No interlining => simple bag system**
- **No value in beautiful architecture**

- **Result: Simple Square “boxes” OK**

Singapore example

- **Singapore is spending US\$ 1 billion on Terminal 3 (~ US\$40 million/gate)**
 - 1st class facility, 5 stories, beautiful
- **In early 2005 S'pore decided to build low-cost terminal to open Mar 2006**
 - ~US\$ 25 million (US\$ 4 million/gate)
 - 1 level, absolutely simple
 - See pictures from January 2006









Questions before the break?

Theme 2: Implications for Airport Development

- **Development of “Parallel” Networks**
 - Evidence Worldwide
 - Passengers and Integrated supply chains

- **Implications for Main ports**
 - Commercial Threat
 - Redefinition of Roles?
 - What should Policy be?

Development of “Parallel” Networks

New Reality: No-frill airlines setting up “parallel network”

- **Low-cost carriers “parallel” majors**
- **Major fare distinctions**
- **Ticket distribution separate**
 - Internet direct to users, ‘no’ travel agents
- **Parallel service between cities**
 - Providence/Baltimore not Boston/Washington
- **‘No’ interlining of bags, tickets**
- **‘Not’ in Reservation systems**

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Toronto	Hamilton	Westjet
Vancouver	Abbotsford	Westjet

Multi-Airport Systems in Brazil

Metropolitan Area	Internat'l Distant Airport		Domestic Close-in Airport	
	Name	Traffic Millions	Name	Traffic Millions
Sao Paulo	Garulhos	13.0	Congonhas	11.7
Rio de Janeiro	Galeao	6.0	Santos Dumont	4.9
Belo Horizonte	Confins	0.8	Pampulha	2.5

Source: INFRAERO, 2002; Rabbani, 2002

Importance of Parallel Network of close-in Brazilian airports

Airport Pair		Passengers, 1000s	Rank
Congonhas	Santos Dumont	1461	1
Congonhas	Brasilia	596	2
Congonhas	Pampulha	565	3
Congonhas	Curitiba	551	4
Congonhas	Porto Alegre	365	5
Garulhos	Salvador	364	6
Santos Dumont	Brasilia	325	7
Santos Dumont	Pampulha	312	8

Source: INFRAERO, 2002, Rabbani, 2002

Implications for modelling future of second airports

- **A new driver for second airports...**
 - Low-cost carriers often 'not' competing at big airports
 - Frequency competition does not drive growth pattern of secondary airports
- **Competition between networks may be primary...**
- **... followed by catchment area model for choice between second airports**

Implications for future of Second Airports

- **No-frills airlines are becoming ‘major’**
 - Southwest 3rd largest airline in world (pax)
 - Market Cap ~ 11 billion \$ > any other pax airline
 - Ryanair Market Cap greater than British Airways
- **Majors are losing markets or closing**
- **Implies that Primary airports will lose significant traffic to second airports**
- **This is already happening!!!**

Use of Secondary Airports Challenges Main Hubs

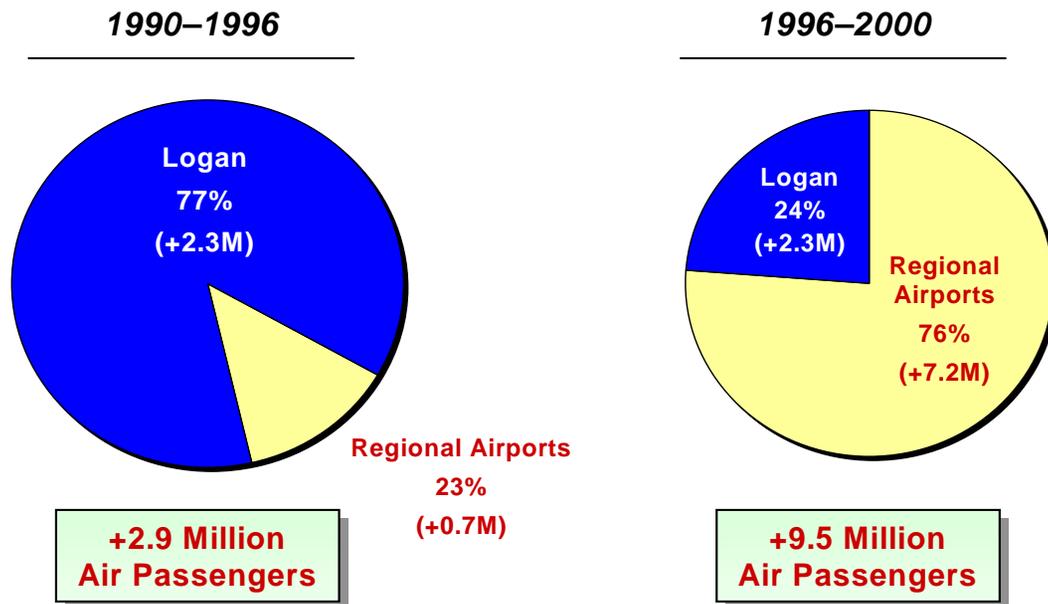
- Many Main Hubs have lost much of their metropolitan market share

Metropolitan Region	Primary Airport	Market Share (%) in	
		1994	2004
Boston	Logan	90	72
Miami	International	69	56
San Francisco	International	68	58
London (UK)	Heathrow	65	53

Source: de Neufville Multi-Airport Systems database

Southwest entry in Boston market grew second airports

Figure 1: New England traffic growth shifted from Boston/Logan to Regional Airports along with growth of Southwest at Providence and Manchester (NH)

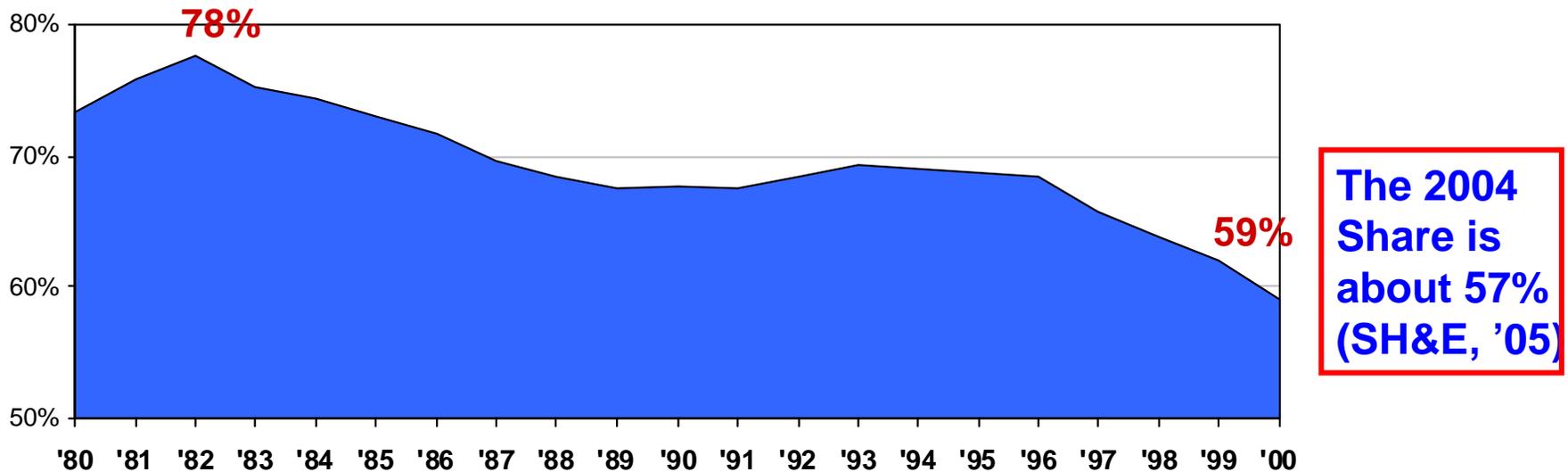


Regional airports include Providence, Manchester, Worcester, Bangor, Burlington, Hartford, New Haven, and Portland.
Source: Airport Records and US DOT, Form 41 schedules.

Source: Louis Berger, New England Regional Aviation System Plan materials

New England Market Share of Boston/Logan is in decline

Figure 2: The Boston/Logan traffic share dropped by a quarter over the past 20 years; half of this occurred with the Southwest growth in the late 1990s at Providence and Manchester (NH)



Note: Includes enplaned passengers at Logan, Hartford/Bradley, T.F. Green/Providence, Manchester, Portland, Burlington, Bangor, Tweed New Haven, and Worcester.

Source: US DOT, Form 41 and Part 298/C. Airport records for Logan and various regional airports.

**Source: Louis Berger New England
Regional Aviation System Plan**

Airport Systems Planning RdN

Similar Developments for Integrated Air Cargo Airlines

- **They have networks of cargo airports**
- **Fedex: Memphis plus**
 - Manila/Subic Bay,
 - San Francisco/Oakland, etc.
- **UPS: Louisville plus**
 - Los Angeles/Ontario, Chicago/Rockford, etc.
 - Cologne/Bonn, Manila/Macapagal, etc

Implications for Main ports

Many Main Airports unprepared for Low-Cost Airlines

- **Many main airports have magnificent facilities – some very new – unsuited to needs of LCA**
 - **Bangkok, Madrid, London/Heathrow (soon) Frankfurt, San Francisco, Toronto, etc**
 - **How should they cater to LCA?**
 - **Or indeed, should they? This is a controversy among Airport Operators**

Strategic Issue for Main Airports

- **Main Airports cannot ignore Low-Cost airlines -- because they are dominant**
- **Main Airports need to attract Low-Cost Airlines from secondary airports**
- **Thus, Main Airports need to provide facilities that meet business needs of Low-Cost Airlines – as is Schiphol**
- **How can they do this?**

Experience So Far

- **Airports that do not work with Low-Cost Airlines usually lose traffic to competition**
 - **Boston – Delta \$400 Million Terminal**
 - **Manchester (UK) vs Liverpool (easyjet)**
 - **Hamburg vs Lübeck**
 - **Zurich: prices up => easyjet moved away**
- **What could main airports provide?**

Main Airports with Low-Cost Terminals

- **Not many airports have explicitly developed low-cost facilities**
 - Paris – Terminal “3” since 1994
 - Schiphol – new H pier
 - Toronto – mid-field charter facility
 - Kuala Lumpur – to be near cargo area
 - Marseille – to be developed
- **The pattern to date has been to avoid differentiated products...**

What is the future?

- **Differentiated terminal “products” seem inevitable**
 - 1st class facilities already in place
 - But airports will not be able to ignore the main, most powerful airlines, and will have low-cost facilities for them
- **Differentiation may involve services**
 - “Fast track” for frequent, paying customers
 - Access to parking, bag services, etc.

Will Differentiated services come easily?

- **Differentiation of airport “products” is a new paradigm, hard to accept**
 - **Contrary to self image (we’re 1st class – e.g. Hamburg, Schiphol, Singapore)**
 - **Opposition from established stakeholders**
 - **Legacy carriers who want to exclude Low-Cost**
 - **Architecture community**
 - **Professionals used to standard procedures**
- **Change will be slow – but inevitable?**

Summary

- **New, parallel air transport systems (low-cost and integrated freight) are emerging)**
- **These networks are becoming a major feature of industry**
- **Trend => growth of second airports**
- **The question is: to what extent and how will this connect to Main Ports?**