
Demand Management: Options for Ensuring the Efficient Use of Scarce Airport Capacity

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Paper prepared for presentation to *Optimal Use of Scarce Airport Capacity*,
Airneth Conference, The Hague, April 11-13, 2007



Outline

- Background
- Is there a problem, is it different?
- Options for Demand Management
- Administered rationing
- Slots versus prices
 - Efficiency and Equity
- Political economy of slots and pricing
- Some remaining questions



Background

- Excess demand for busy airports-getting worse
- Ration by congestion (US)
- Prices ration scarce resources (but where?)
- Ration by slots (outside US)
- Allocate slots by grandfathering
- Limited slot trading leads to inefficient allocation- within and between airlines



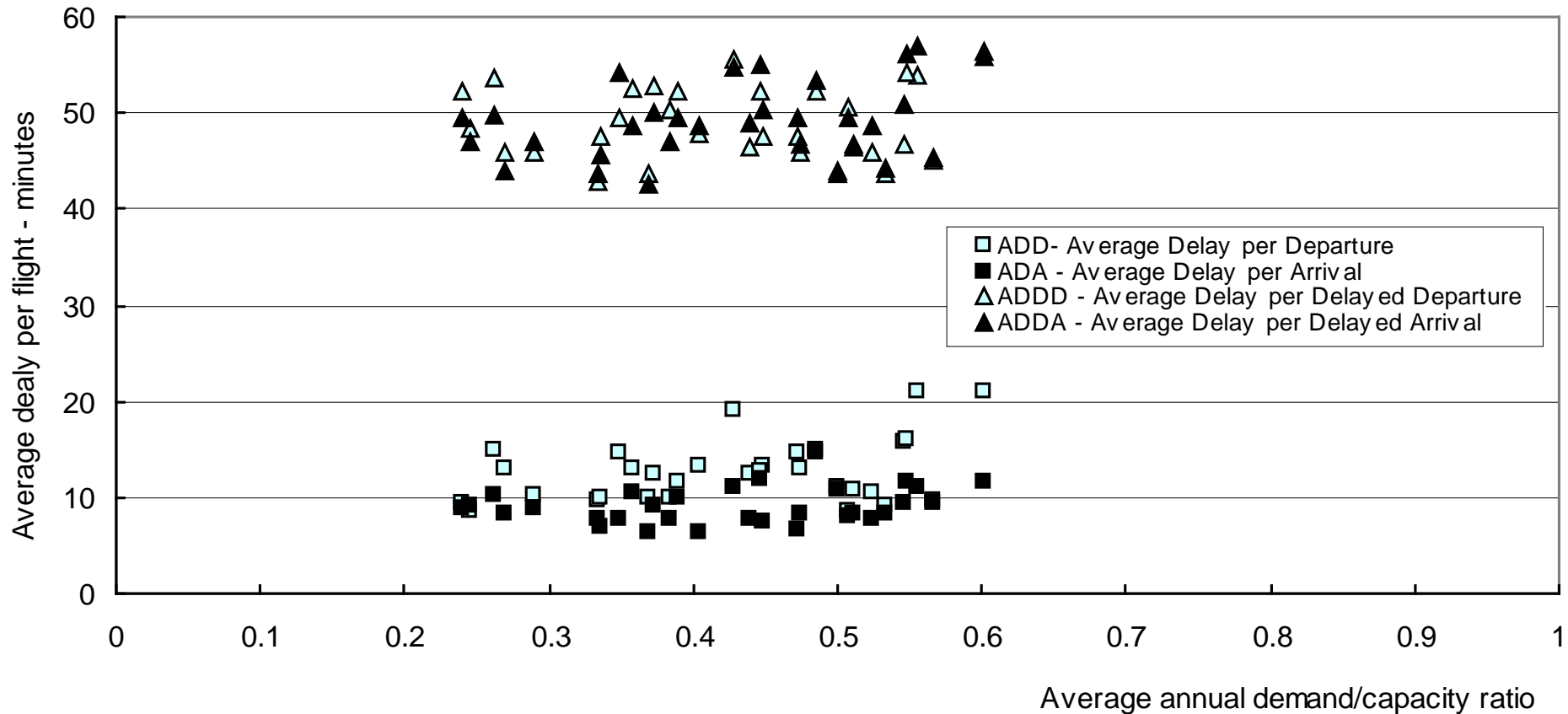
Is there a Problem? Is there a Difference?

<u>European airports</u> <u>(2001)</u>	<u>(%) of delayed flights</u>		<u>U.S. airports</u> <u>(1999)</u>	<u>(%) of delayed flights</u>	
	<u>Arrivals</u>	<u>Departures</u>		<u>Arrivals</u>	<u>Departures</u>
Paris CDG	24.6	21.8	Chicago-O'Hare	33.6	29.9
London Heathrow	17.4	21.0	Newark	38.4	31.0
Frankfurt	30.8	18.9	Atlanta	30.9	26.8
Amsterdam	25.7	23.2	NY-La Guardia	40.1	28.9
Madrid/Barajas	19.6	20.0	San Francisco	32.1	21.5
Munich	19.0	19.0	Dallas-Ft. Worth	21.7	23.7
Brussels	29.8	27.7	Boston Logan	37.7	29.3
Zurich	23.2	23.8	Philadelphia	40.4	37.9
Rome/Fiumicino	-	12.5	NY-Kennedy	28.0	19.0
Copenhagen/K	17.8	10.3	Phoenix	29.6	30.8
Stockholm/Arlanda	-	8.0	Detroit	24.6	26.3
London/Gatwick	19.6	24.3	Los Angeles	26.1	20.8

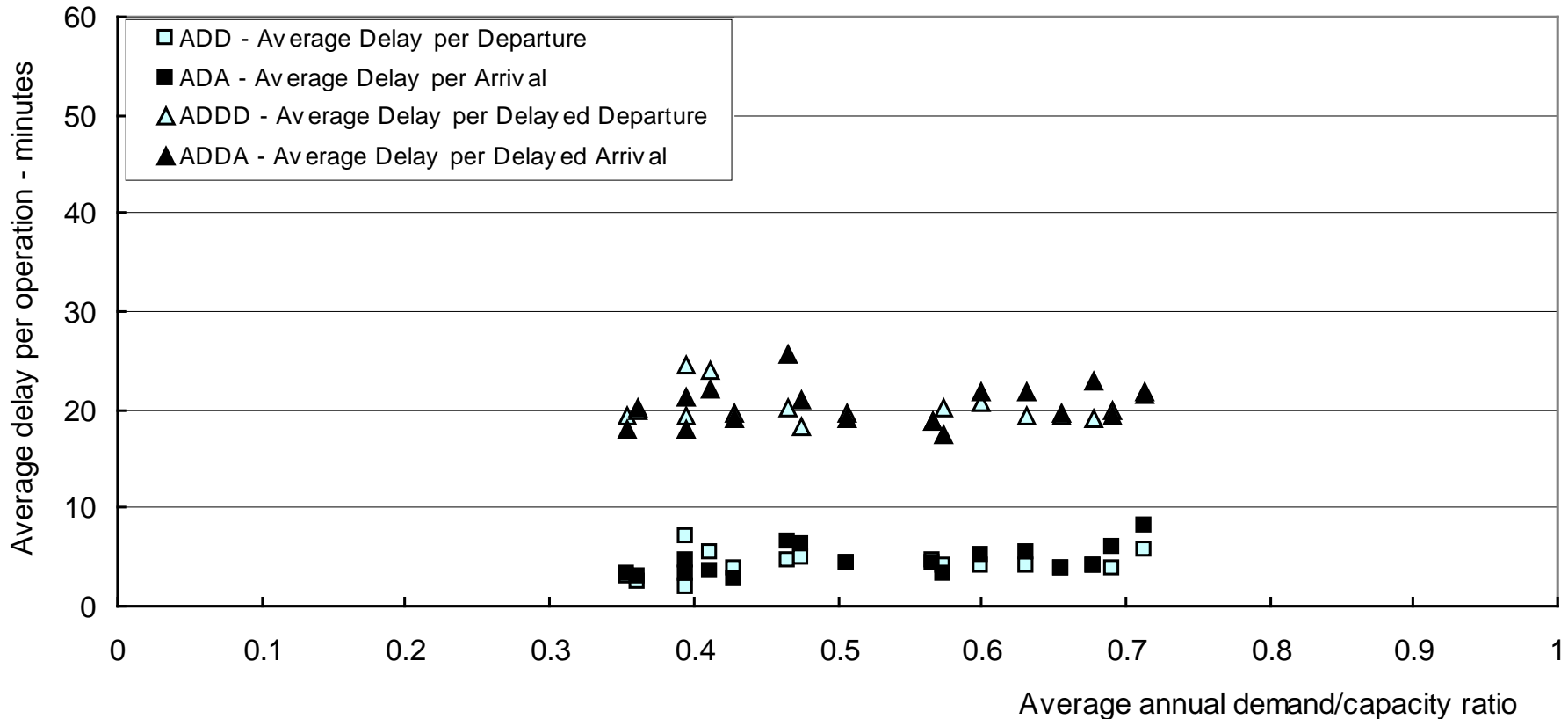
Sources: EUROCONTROL/ECAC, 2002; FAA, 2002a



US Airports-Delay



EU Airport Delay



Options for Demand Management

- Administered

- airport allocation
- Runway allocation
- Gate allocation
- Aircraft controls
- Quotas
- CDM
- Slots administered
- Congestion queues

- Market Based

- SRMC/LRMC
- Unit Cost
- Peak/off-peak
- Ramsey pricing
- Secondary trading
- Slot auctions
 - *Limited auctions*
 - *Slot pooling*
 - *Combinatorial*



Administered Allocation of Capacity

- Generally no necessary relationship between actual use and efficient use
- Disconnect between rationing and investment signals
- Generally will have adverse impact on downstream competition
- There is always a history e.g. grandfathering



Pricing versus Slots: Equity and Efficiency

- Slots are better at:
 - Minimizing congestion costs
 - Handling stochastic nature of demand
 - Lower transactions costs
- Pricing is better at:
 - Allocating slots between and within carriers
 - Linking investment to signals
 - Reducing impact on downstream competition



On Balance which is preferred?

- Identifying efficient price structures is easy- implementing them is not but
- Nor is slot allocation – complex auctions
- In a regulated environment, slots may be preferred
- Secondary trading reduces most of pricing strengths
- Slots are consistent with an efficient throughput



Political Economy of Slots

- Slot auctions and pricing rarely replaced ‘grandfathered slots, why?
- Do airlines really want more capacity when they own slots?
- Why do airlines want ‘leveled’ airport charges in EU and cost based in the US?



Political Economy of Slots

- Why is peak pricing viewed as good for airlines and not good for use by airports?
- Have slots allowed EU legacy carriers an advantage over US legacy carriers?
- Does the lack of slot trading protect the home carrier?
- Are slots a currency of International trade?



Slots: Some Remaining questions

- How effective is slot system in reducing delay?
 - Evidence from US versus EU
- How effective can secondary trading be?
 - Would freeing up trading remove all the problems?
- Are slots allocated efficiently within airlines?
 - Where are the slot rents?
- Is slot concentration a problem?



Slots: Some Remaining questions

- How effective can slot auctions be?
 - Complexity is the key
- How well does the willingness to pay for a slot reflect community value?
- Do slots and prices have differing impacts on downstream competition?
- How well do slots drive efficient investment?



Thank you

Czerny, Achim, Peter Forsyth, David Gillen and Hans-Martin Niemeier (2007), *Airport Slots: International Experiences and Options for Reform* (Ashgate Publishers)

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