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Aspects of Regulation of Air Transport

Prof. Dr. Hans-Martin Niemeier

The European Aviation Business in 2014 and beyond: how to turn challenges into opportunities', Air Transport Colloquium University of Antwerp, 4 December 2014

Issues

- What are the key regulatory problems of Air Transport?
- Taking off from Hamburg Airport (natural monopoly, price cap regulation and noise budget)
- Munic (Public airport, cost based regulated, gold plated No third runway and No Berlin Megaport)
- Zagreb with Air Coatia to Dubrovnik Airport (loss making airlines and expanding airport charging parking cars but not aircrafts)
- Brussels (Benchmarking, partial privatised airport)
- Brussel to Hamburg (direct 550 NO!) via Schiphol 200€, assessed monopoly with an independent regulator)
- ATC (no delays, but high cost. Price capped by dependent regulator)

Issues

- A well functioning, but an inefficient system: Market failure, regulatory failure and rent seeking
- Partial privatisation: Higher costs.
- Have we drawn the line between competition and regulation well? Too much regulation
- Dependent regulators: Regulatory capture!
- Does incentive regulation work? Yes, a little
- Do airports & ATC get investments right? Hardly
- Do airports & ATC price their services correctly? Rarely
- Is airline competition intense? Doubtful mergers and no open skies

Agenda

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I. Introduction: Organization of the Value Chain

II. Effective regulatory institutions for air transport

III. Airports: Natural monopoly or competitive industry.

IV. Regulatory Intervention: The lack of independent regulator and the benefits of Incentive Regulation

V. Slots: More than trading

VI. Investment: Jobs versus Environment? Impact versus CBA.

VII. Summary: Reform of regulatory institutions

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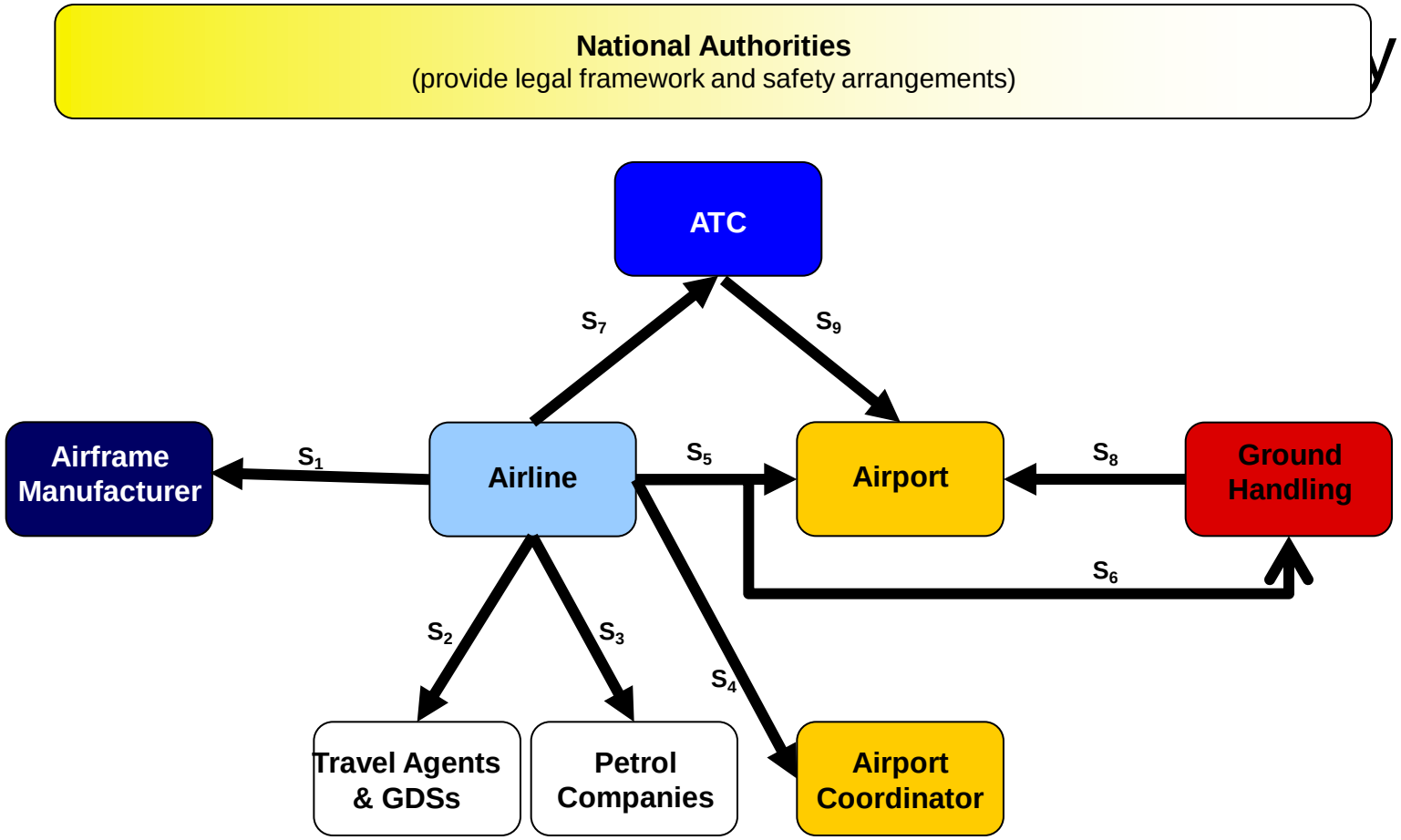
I. Value Chain of Air Transport



I. Value Chain of Air Transport

- Forms of organization (Niemeier, 2010):
  - spot markets, private contracts, concession contracts, discretionary regulation, public enterprises and hybrid forms
  - All these organizational forms are practiced in air transport with the exception of a privatized vertically integrated public utility subject to regulation.
  - Typically a disaggregated approach has been adopted consisting of regulated infrastructure and a partly liberalized downstream market.

II. Effective regulatory institutions

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- Two rationales for an effective regulatory institution:
- *Economic rational* of ex-ante regulation:
  - Persistent market power & welfare gain
  - Regulated private monopoly
  - How to encourage private investment ? Not easy, because of
    - durable and immobile assets
    - specific exchange relation
    - information asymmetry and hold up.
  - Necessary: stability and commitment
  - ➢ Solution: Independent regulator, an institution with limited discretionary power which provides long term creditability and trust

II. Effective regulatory institutions

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- *Political rationale* independent regulator
- Should politicians delegate discretionary power to an agency in order to avoid both inconsistent decisions over time and opportunistic behaviour ?
  - Public air transport infrastructure with long-term immobile asset-specific character
  - BUT elected governments only have power for a short period of time and cannot bind future governments
  - ➢ Solution: Democratically governments should assign limited discretionary power to independent regulators which have expertise and are committed to long-term political goals.

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II. Natural monopolies?

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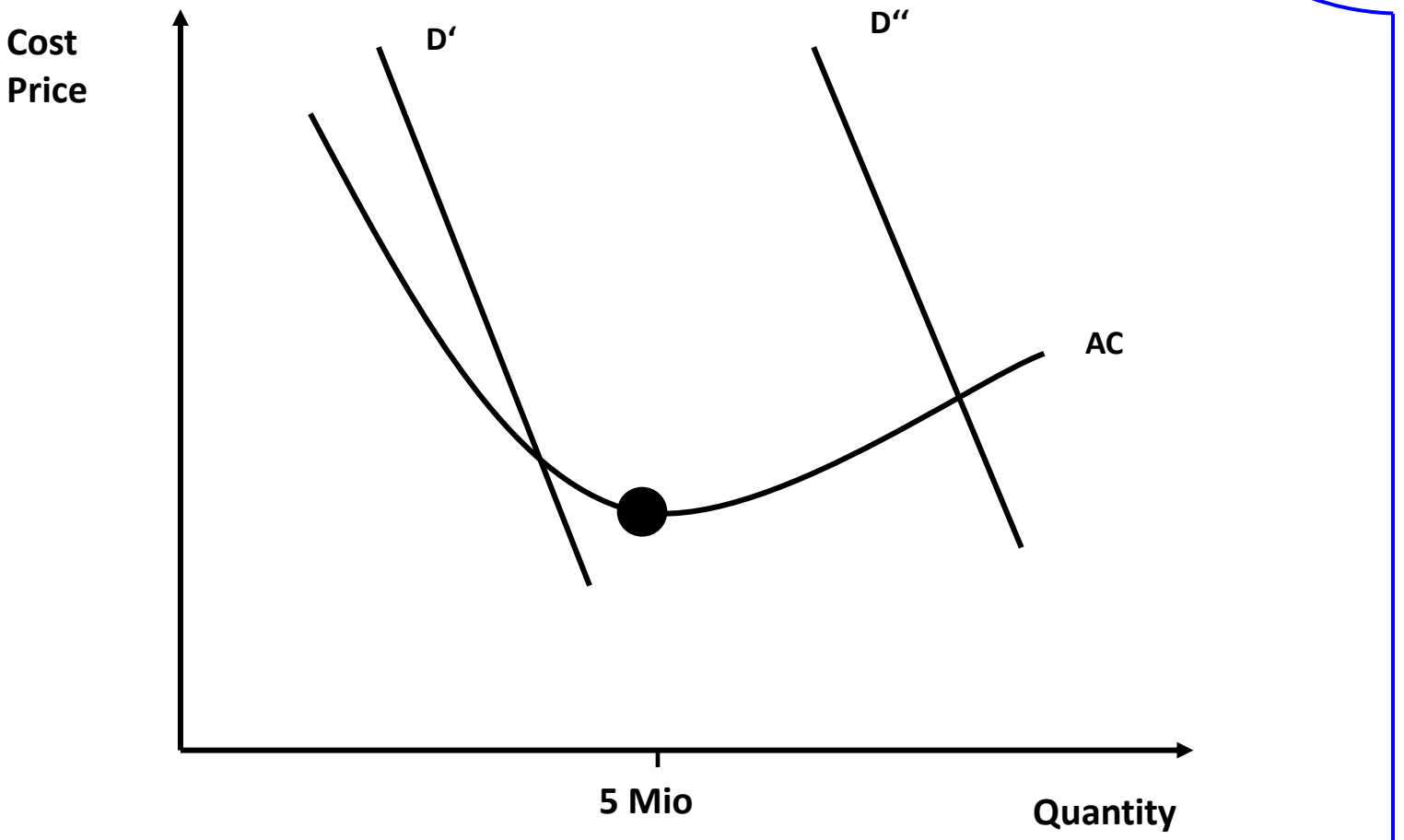
Definition

- Natural monopoly are often identified with economies of scale and seen as ever lasting. Source of mistakes
- Natural monopoly is a combination of subadditive and sunk cost for the market demand
  - Indivisibilities
  - Specialized investment
- Economies of scale are sufficient, but not necessary condition for subadditivity.

II. Natural monopolies?



II. Natural monopolies?

- Importance of natural monopoly characteristics has been underestimated (Lechmann & Niemeier, 2013)
- Entry has been overestimated (Copenhagen Economics 2012)
- Range of natural monopolies seem to be relevant even for large airports and play a role together with planning and environmental restrictions and with strategic behaviour
  - Privatisation prefers monopolies over competiton.
  - Contracts which prevents entry.
  - BAA in 1985, ADP in 2006.

II. Strategies of Airports

Barriers to entry

- **"New airports have also entered the market. There were 81 more airports in Europe with commercial jet services in 2008 than in 1996." CE, 2012, p.6)**
- **If airlines substitutes jets for turbo prop, airports are built over night and the iron forces of competition compete all profits away!**
- **In reality entry occurs in regions with excess supply and not with excess demand.**

Mueller-Rostin C. et al (2010), "Airport Entry and Exit: a European Analysis"

9 entries: 1995 to 2005

5 exits

General characteristics:

- ✈ **Most new entrants have not lived up to their expectations**
- ✈ **Often highly subsidized by the state**
- ✈ **Reentry Kassel Calden**

V. Intense airport competition?

- Which airports have substantial market power?
- Views on European Airports
  - CE (2012) versus Maertens (2012)
- No generalization helpful. The question has to be analyzed case by case.

II. Intense Competition

- *Airports*
  - Who decides which airports are subject to regulation?
  - Who decides which airport services should be regulated?
- EU:
  - Directive: 5 Mio passengers
  - Only the UK, Netherlands and Australia have analysed the market power of individual airports
- Excessive regulation: In Europe too many airport are regulated.

III. Regulatory intervention

- **Are airports regulated by an independent body?**
- ***"Member States shall ensure that the independent supervisory authority exercises its powers impartially and transparently."* EU directive on Charges**
- **BUT: Independency is not clearly defined and the directive allows member states to keep the status quo**

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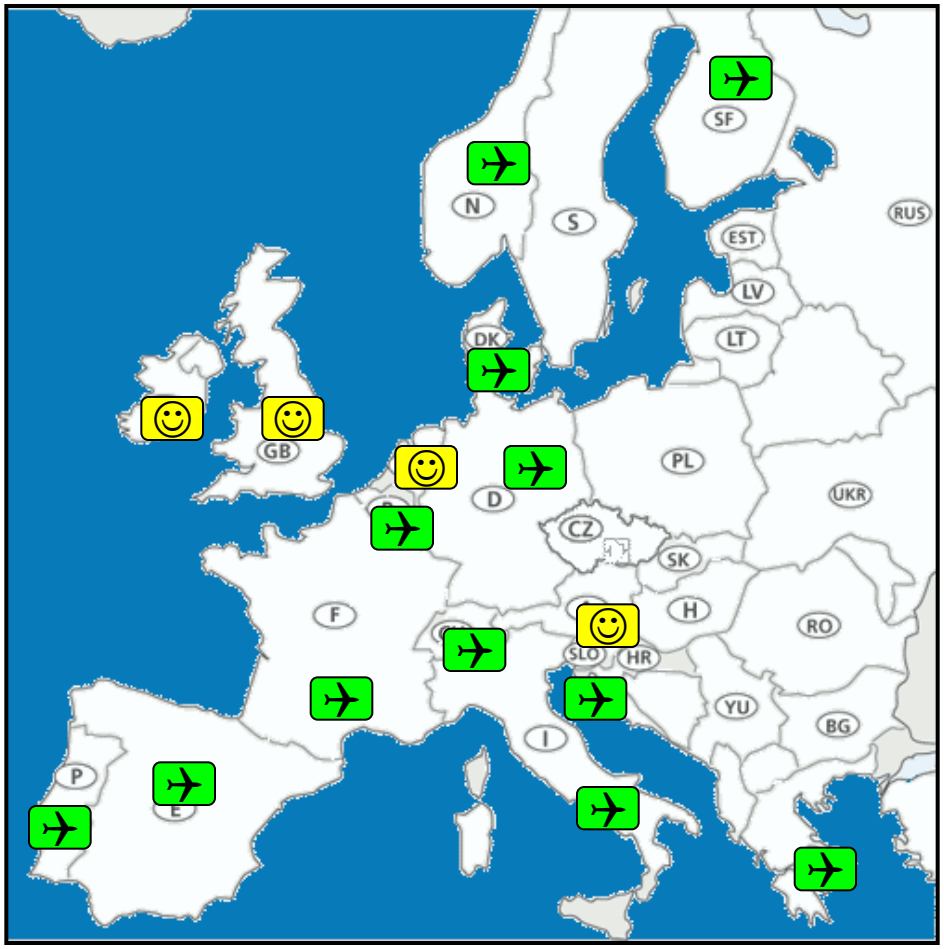
Regulation of European Airports



Independent regulator (all with user consultation)

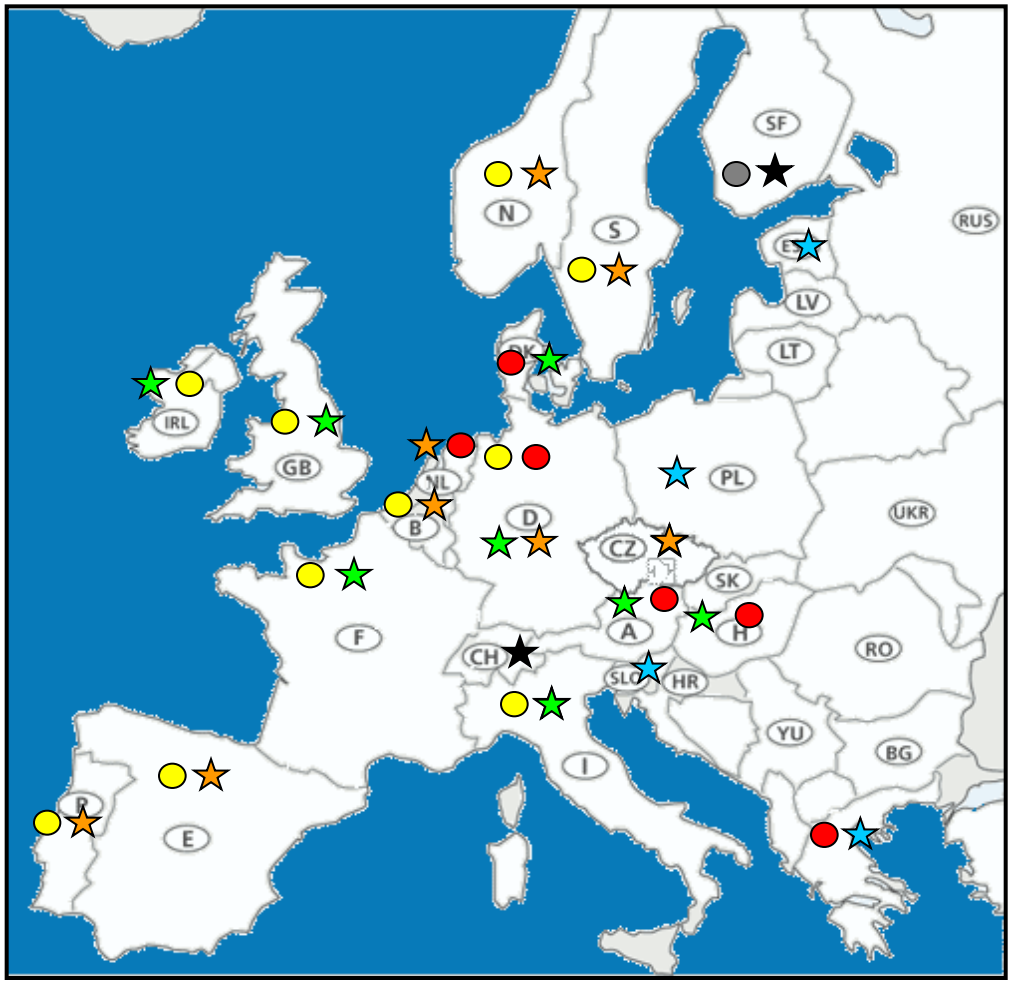
User consultation without independent regulator

- Improved consultation
- Lack of independent regulator
- Regulatory capture

* User consultation at Malta International Airport

Source: Gillen& Niemier, 2006

Type of Regulation at European Airports



★ Type of price cap

★ Charges set by airport

★ Cost plus regulation

★ No regulation

Single or dual till system

● Single till

● Dual till

● No till system

*** Malta International Airport has a price cap and a dual till system in place.**

OECD & ITF,
Leipzig, 26 May 2009

Source: Gillen& Niemier, 2006

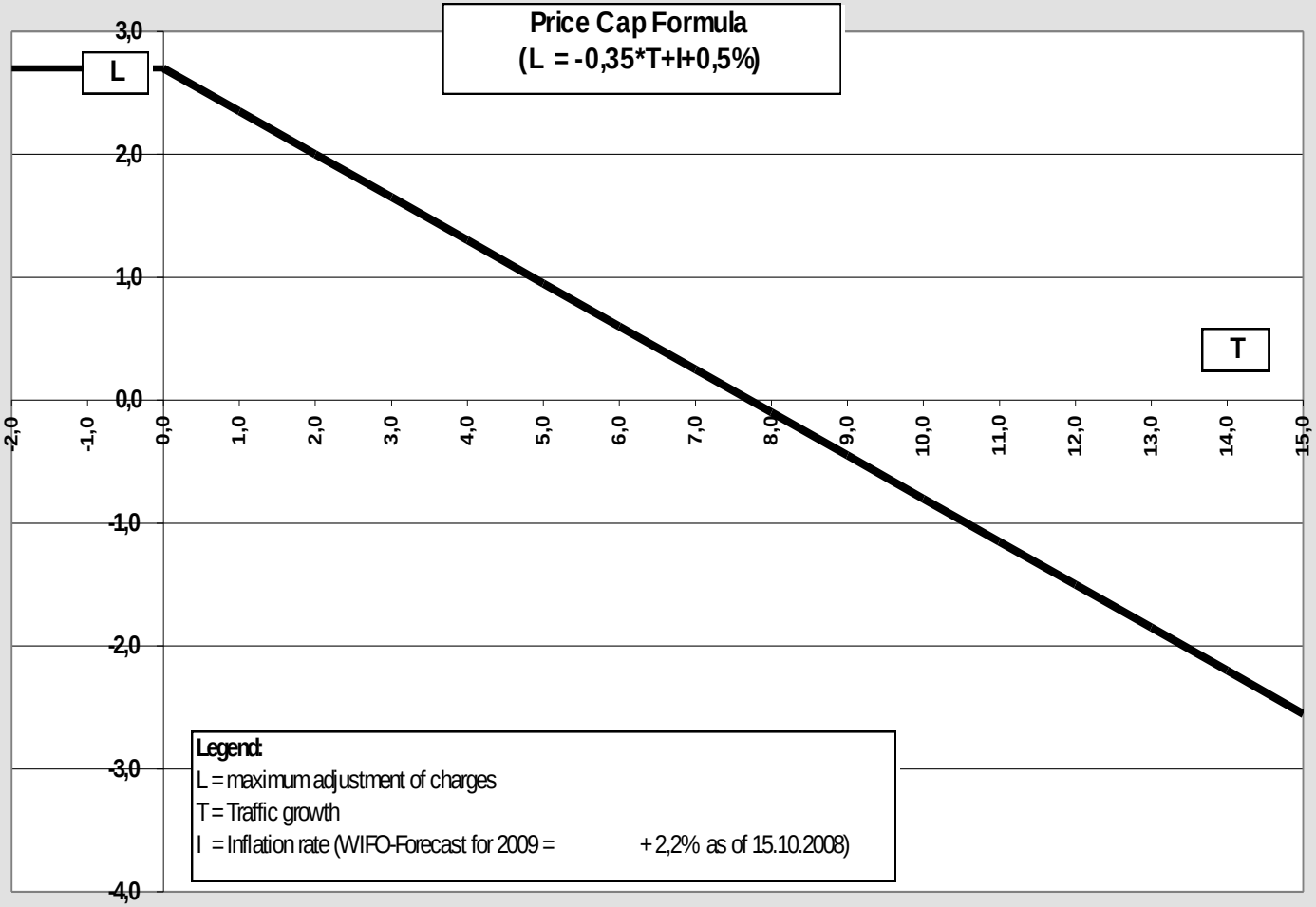
How strong are the Incentives?

- **Only a subset of airports are incentive regulated.**
- **Power of regulation differs widely between airports**
- **Does incentive regulation improve efficiency? (Adler et al., 2014)**

Incentive Regulation: An Assessment

Airports by country	Time period	Type of regulation	Strength/Weaknesses
Australia			
Adelaide, Brisbane, Melbourne, Perth,	1997 - 2001-02	Price cap with dual till	Low price cap, but instability in crisis with exit of Ansett Airlines
Above airports plus Sydney	Since 2002	Light handed regulation	Strong incentives to reduce costs and differentiate prices subject to independent regulator's assessment
Austria			
Vienna	Since 1998	Revenue cap	Stabilizes revenues at high level
Belgium			
Brussels	Since 2004	Cost based with benchmarking elements	Peer group of airports are relatively high cost airports. Cost based thinking prevails
Denmark			
Copenhagen	Since 1995	Price cap on a mixed dual till with regulator as arbitrator	Long record of incentive agreements. Role of dependent arbitrator so far not tested

Sliding scale in Austria



Incentive Regulation

- **Moving from low to high powered incentive regulation gradually increases productivity between 6 to 10%.**
- **Now empirical grounds for preferring incentive regulation to cost plus forms.**
- **Limits of data set and limits short-term managerial efficiency measurement**
  - Allocative efficiency
  - Capital and Investment

IV. Slots: More than trading

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- **Focus largely on secondary trading and auctioning.**

  BUT

- **Structure of charges matter**
- **Who sets the slot limit and how?**
- **Slots break the link between prices and investment.**

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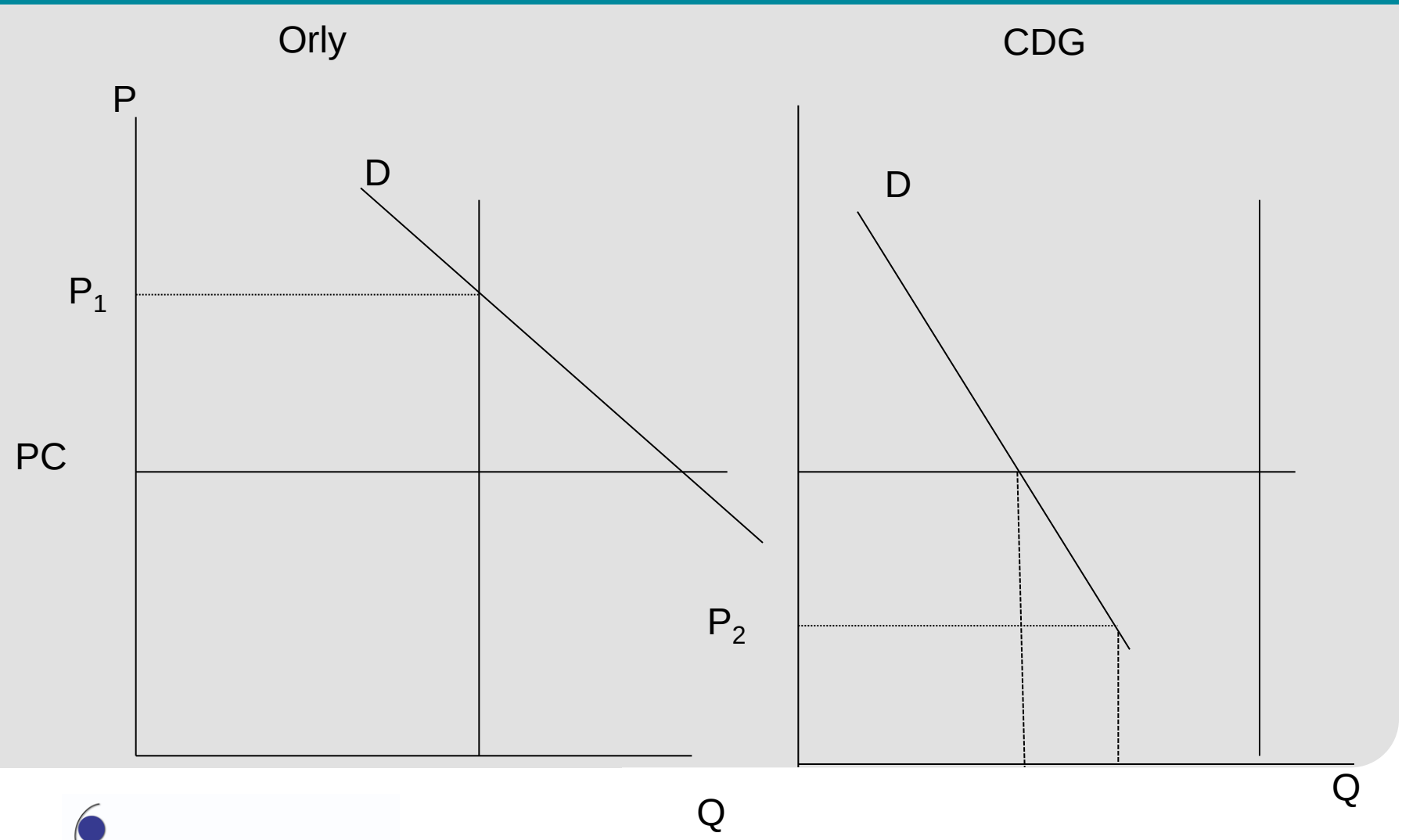
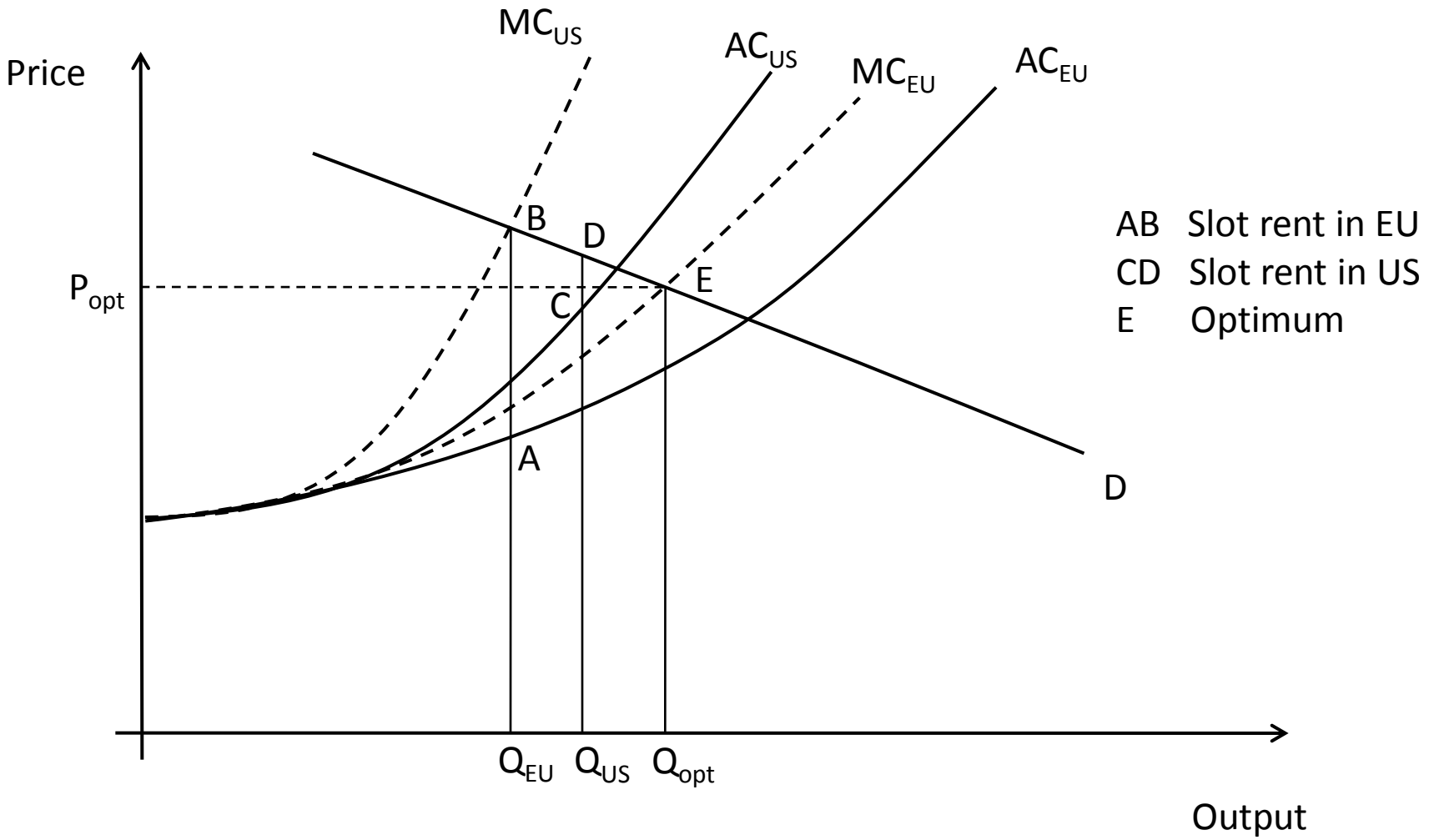
Regulation of ADP



Model of EU and US slot constrained airport




Niemand
hat die Absicht,
einen Flughafen
zu eröffnen!


BR

VI. Investment and jobs

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- **Airport investments are not assessed by Cost Benefit Analysis, but by Impact Analysis.**
  - **BBI P: 30 Mio PAX. Inputs: 2.8 Bill €**
    - **direct: 17.000, indirect: 11.300, induced: 12.200 jobs = 31500 jobs (Baum et al. 2005)**
  - **BBI B: 30 Mio PAX Inputs: 5.6 Bill €**
    - **direct: 32.00, indirect: 22600, induced: 24.400 = 63000 jobs (Niemeier, 2013)**

VI. Investment

- **Abuse of Impact Analysis.**
  - **Direct & indirect effects of are greater the more costly and unproductive an airport is. Induced effect is independent of the investment object.**
  - **Impact Analysis creates the ideology that jobs can only be created if noise and environmental burdens are accepted.**
  - **Impact Analysis is intentionally misused by airports to legitimize investment and to delude the public.**
- **Necessary a rational dialogue based on Cost Benefit Analysis with an independent planning authority.**

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VI. Summary: Regulatory Reform

- Current regulatory institutions are far from being effective to increase economic welfare.
- The greatest tensions are created when downstream markets are liberalized while the upstream the infrastructure market remains regulated by dependent regulators.
- Parts of air transport are unlikely to be subjected to effective competition
- Policy reform should put less hope on liberalization, but on good regulation.

Thank you very much!

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Back Up

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IV. Regulatory intervention

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Service	Market power	Assessment
Air craft movement facilities	High	Essential facility
Passenger processing facilities	High	Essential facility.
Lounge	Low	No evidence to constrain supply of space
Vehicle access facilities	High	Incentive to shift demand to car parking
Car parking	Low/mod.	Short term parking limited by other modes
Taxi facilities	Low/mod.	Charges limited by competing modes
Aircraft refueling	Mod./high	High switching cost for refueling
Aircraft light maintenance	Mod.	Access to side for third parties
Aircraft heavy maintenance	Low	Low switching costs
Flight catering facilities	Low	Good off airport locations available
Freight facility & storage sites	Low	Good off airport locations available
Waste disposal facilities	Low	Good off airport locations available
Administrative office space	Low/mod.	Incentive to constrain supply of space
Commercial & retail services	Low	Retail rentals reflect locational rent

Australian Productivity Commission (2002)

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IV. Regulatory intervention

Ground handling in EU countries

Country	Deregulation	Regulation
Austria	Market share of partially privatised Vienna airport from 100% to 93 % in 1996 to 93 in 2002 to 89 % in 2007.	DOT decides on tender. DOT is separated from owner
France	ADP offers ground handling. AF self and third party handling. Penauille Serviscair is third part provider. Market shares in 2004: AF 65 %, 13 % ADP, Serviscair 13 %, Others 8 %.	Regulatory conflict as DOT is part government with majority stake in ADP and a minority share in AF/KLM
Germany	All airports offer ground handling except Berlin. Dominant position. Major shifts in Hamburg (0% of independent handler); Düsseldorf 30%, Munic 11 % for independent handler.	Regulatory conflict as Landesluftfahrt-behörde is part of government which has a majority share

Incentive Regulation: An Assessment

France			
Aeroports de Paris	Since 2005	Hybrid revenue cap with bonus malus invest-ment/quality regulation	Regulatory capture and inefficient charges
Germany			
Düsseldorf	2004 – 2009	Revenue cap	Regulatory capture and instability
Frankfurt	2002 – 2006	Revenue cap	Regulatory capture and instability
Hamburg	Since 2000	Revenue cap on dual till	Stable and accepted by stakeholders
Hannover	2003 – 2008	Revenue cap	Regulatory capture and instability
Hungary			
Budapest	Since 2006	Price cap with quality regulation	Tight price cap. Initial conflict of interest resolved in 2011.

Incentive Regulation: An Assessment

Italy			
All major airports	2000 to 2008	Price freeze	Pure price cap with strong incentives, but uncertainty about institutional reform
Aeroporti di Milano Aeroporti di Roma Naples, Venice	Since 2012	Hybrid price cap with dual till, bonus malus investment and quality regulation	Hybrid price cap and regulated investments. Danger of regulatory capture
Other major Italian airports	Since 2009	Hybrid price cap with mixed till	Hybrid price cap. Danger of regulatory capture
India			
Delhi, Mumbai plus eight airports	Since 2011	Single till hybrid price cap with regulated price structure	Price cap is too much cost based. .
Ireland			
Dublin	Since 2001	Hybrid single till price cap	Hybrid price cap. Independent regulator

Incentive Regulation: An Assessment

Malta			
Malta Airport	Since 2002	Price cap on dual till for 2002 to 2007. Since then no changes	Strong incentives as cap is not cost based. Role of dependent regulator so far not tested
Portugal			
All airports	Since 2012	Single till hybrid price cap	Hybrid price cap with independent regulator
UK			
Heathrow	Since 1986	Price cap	Hybrid price cap with investment regulation
Gatwick, Stansted	Since 1986	Price cap	Hybrid price cap
Manchester	1986 - 2005	Price cap	Hybrid price cap

Measuring Performance

- **Two-stage Study on Productive Efficiency**
- **A non-oriented, variable returns to scale, bound adjusted DEA measure**
  - minimizes labour and other operating costs
  - maximizes non-aeronautical revenues
  - given declared runway capacity as a non-discretionary input
  - passengers, air traffic movements and cargo as outputs
- **Short-term managerial efficiency measurement**
- **Unbalanced data set for 1990 to 2010 of 58 airports**
- **About 8% of the airports in the dataset as relatively efficient**

Second-stage regression analysis

	Random effects GLS				Truncated regression [0,1)			
	Model 1		Model 2		Model 3		Model 4	
Dependent Variable = DEA estimate	Coefficient	T	Coefficient	t	Coefficient	t	Coefficient	t
RevCap	0.059	2.88	0.0588	2.87	0.071	3.49	0.071	3.49
Light	0.075	2.48			0.175	3.67		
Hybrid	0.075	2.38			0.186	3.86		
Hybrid/Light			0.0750	2.67			0.181	4.03
Pure	0.105	3.47	0.1045	3.53	0.248	4.42	0.254	4.75
Independent	-0.004	-0.11	-0.0037	-0.11	0.068	0.59	0.079	0.73
NA	0.062	5.13	0.0616	5.16	0.080	6.53	0.081	6.64
cap1	0.076	6.16	0.0756	6.18	0.088	6.57	0.088	6.57
cap2	0.277	10.35	0.2768	10.37	0.427	11.48	0.427	11.48
R^2/ log likelihood	within=0.284 between=0.2189, overall=0.2774		within=0.2841, between=0.2193, overall=0.2777		918.81		918.766	
Observations	707		707		701		701	