

# **Expanding Airport Capacity under Constraints in Large Urban Areas: The German Experience**

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**Roundtable on “Expanding Airport Capacity under Constraints in Large Urban Areas” of the International Transport Forum at the OECD 21-22 February 2013, Paris**



**Niemand  
hat die Absicht,  
einen Flughafen  
zu eröffnen!**







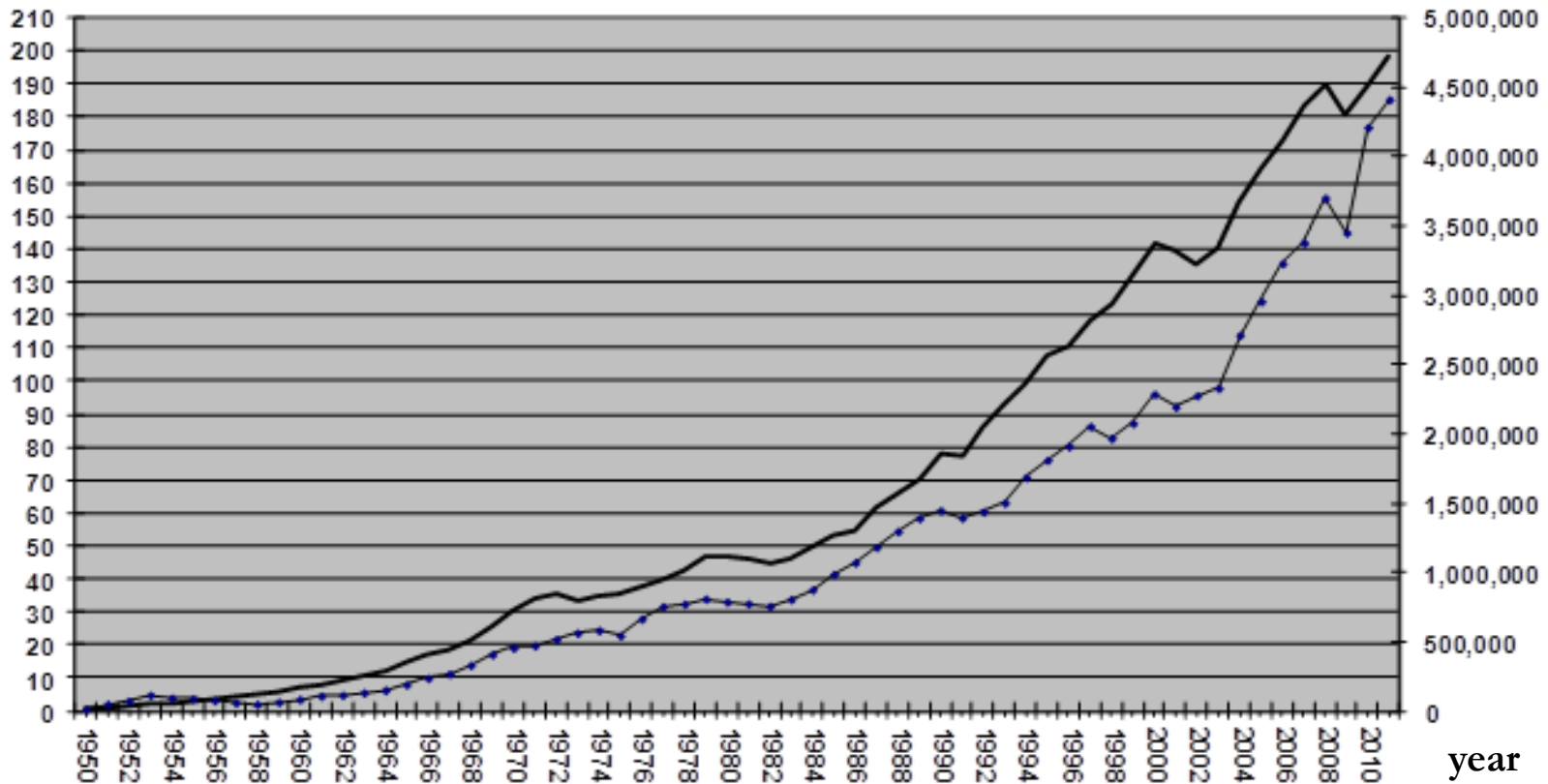
- **Airport expansion a hot potato**
- **Five research questions:**
  1. **How have German airports extended capacity? Has capacity been expanded on an optimal scale and time?**
  2. **What are the key problems of airport investment?**
  3. **How have investment decision been assessed? By what methods?**
  4. **What are the strength and weaknesses of the German decision process?**
  5. **What can be learned?**

- I. Overview and Case Studies on Investment of German Airports**
- II. Key problems of Airport Investment**
- III. Assessment of Decisions on Capacity Expansion of Airport: Strengths and Weaknesses**
- IV. Summary and Recommendations**



# I. Investment

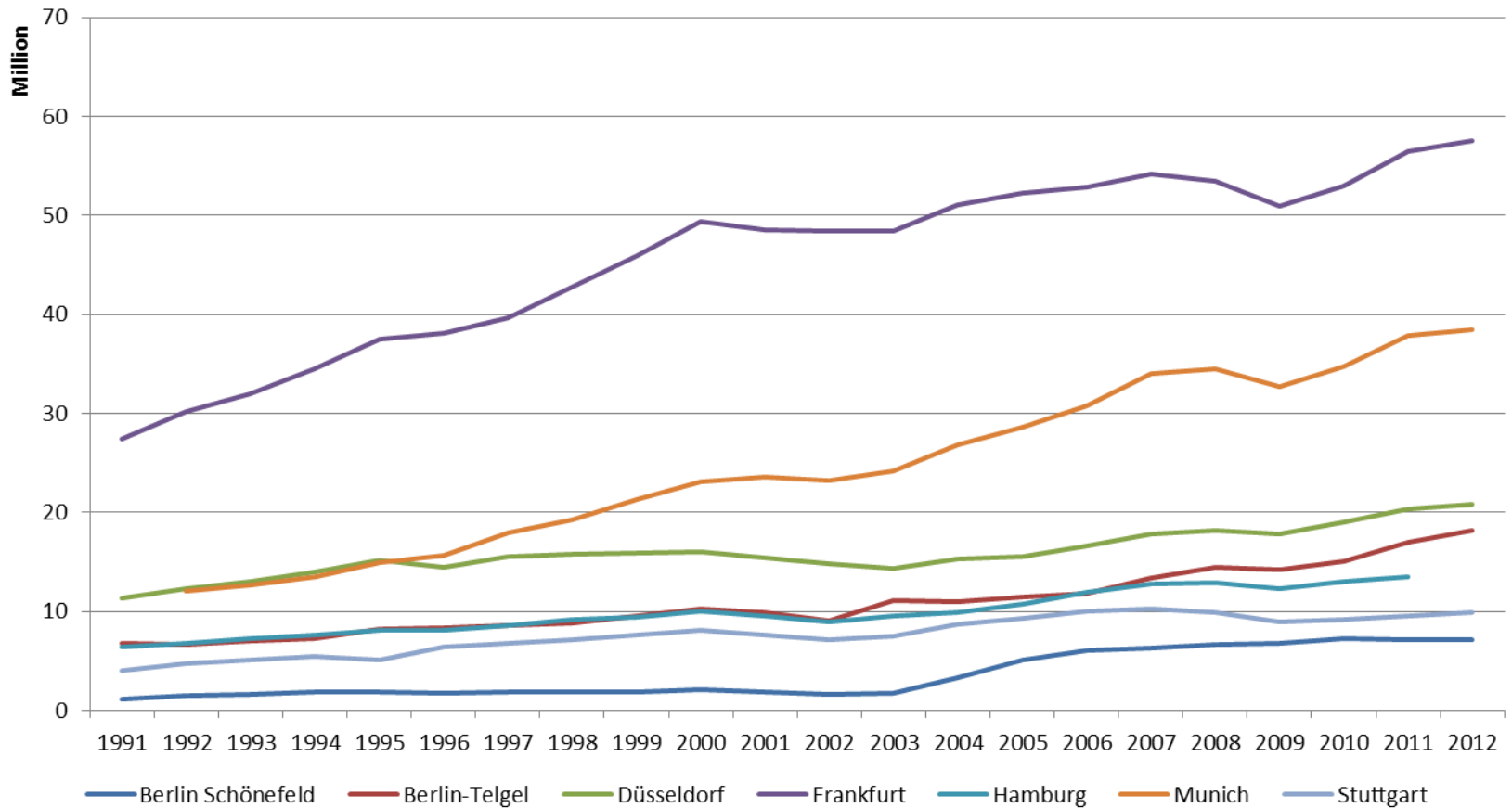
## Passenger and freight of German airports





# I. Investment: Six airports

## Passengers



Source: ADV

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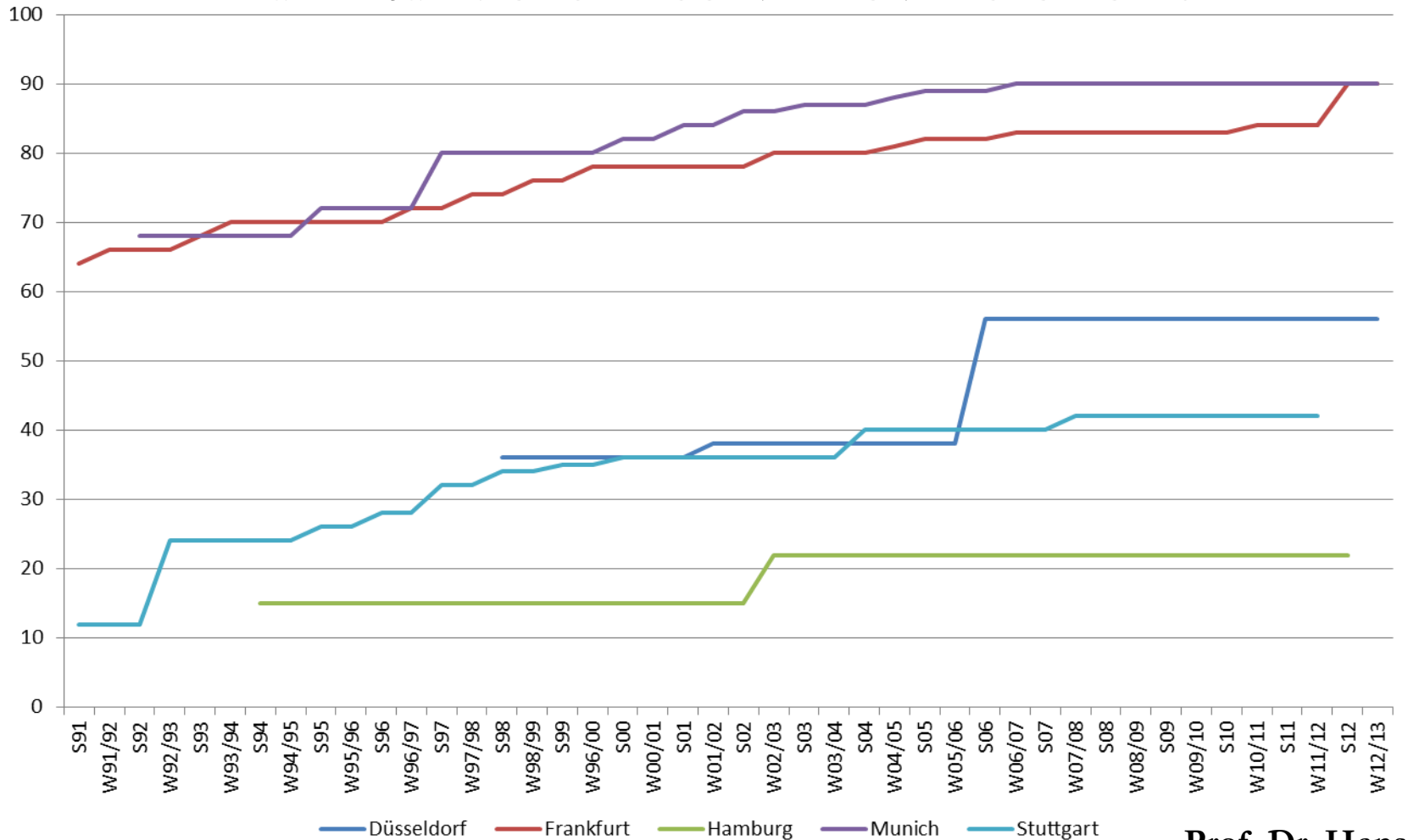
# I. Investment

<b>Airport</b>	<b>BBI</b>	<b>DUES</b>	<b>HAM</b>	<b>FRA</b>	<b>MUC</b>	<b>STR</b>
Location chosen/open	1996/past 2015	1914/1927	/1911	1934/1936	1969/1992	1936/1939
Runway extensions (year/ km)	N.A	1952/1969 up to 3 km.	1935- 64 3,3/3,6 km	1957- 60/ 3,9 3 km	NA	1951- 1996 to 3,3 km
New Runway	Two 3,6 Km, 4 km	2 <sup>nd</sup> / 1993	No	3 rd /1984 4 th/ 2011	3 rd voted down 2012	No new rw before 2016-20.
Public planning/ constr.	At least 19 years	24 years 2 nd rw	3 years apron	22 y, 3. rw/10 y. 4 rw	13 y. planning	NA
Mediation	Yes	No	No	Yes	No	No
Slots 1992 - 2012	NA	34 to 43 26,5 %	42 to 51 21,4 %	66 to 91 37,8 %	68 to 90 32,3 %	24 to 42 81,8 %

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# I. Investment: Peak capacity

## Maximum Number of Coordinated Movements



# I. Introduction:

- **Airports have wasted resources in building runways for intercontinental traffic**

**Table 1: Profitability of Long haul runways at secondary European Airports in 2007**

	<b>Germany</b>	<b>Spain</b>	<b>UK</b>	<b>EU</b>
Potentially profitable	30%	19	71,4%	26%
Unprofitable	50%	19	14,3%	27%
No long haul flights at all	20%	62	14,3%	48%
Number of Airports	10	16	7	113

Source: Based on Maertens (2009 and 2010)

- **Münster-Osnabrück Airport**
  - applied for public approval for runway from 2,2 Km to 3,6 Km
  - Agreement on a runway of 3,000 meter in 2011
  - Less than 1 Million passenger

# I. Investment: Entry & Exit

## Verkehrsleistung deutscher Flughäfen

Unter Berücksichtigung von einer  
Tonne Fracht als 10 Passagiere

- ⊕ unter 1 Mio. Passagiere
- ⊕ 1 – 7,5 Mio. Passagiere
- ✈ 7,5 – 25 Mio. Passagiere
- ✈ über 25 Mio. Passagiere

Quelle: Lufthansa,  
www.adv-net.org



1995 -2012

- 10 Entries
- 3 Exits
- Not reduced  
excess demand

# I. Introduction

- **Location of major airports chosen before the Second World War.**
- **50/60 ties: To changes in technology & demand public airports reacted in the with an runway extension.**
- **70 ties: Conflicts emerged with the growth of cities and stepwise extensions, more movements & noise of first jets**
- **70/80 ties: Conflicts accelerated & caused even violent protest.**

# I. Introduction

- **Mediation limited use in Berlin, major role in Frankfurt.**
- **Conflicts led to long planning processes, demonstrations and court decisions. Still unresolved.**
- **Capacity have become scarce only at a few airports. There is evidence for excessive investment in intercontinental capacity and in regional airports.**
- **Capacity has increased substantially sometimes at high costs (chemical plant removal at FRA, 2 billion cost overruns at BBI)**



## II. Key Problems

- **Transaction cost perspective:**
  - **Airports are long term relationship specific investments plagued with hold up problems, opportunism, externalities and imperfect information.**
  - **Costs and benefits are unevenly distributed in space and lead to NIMBY reactions in the direct neighbourhood of airports.**

## II. Key Problems

- **Airport & Regulatory Economics:**
  - German airports have expanded their capacity under a regime of cost based regulation and slot coordination.
  - Regulation and slots break the link between scarcity and pricing so that prices lose their signalling function for investment.
  - Cost based regulation sets incentives for inefficient pricing and for excessive and too costly investment.
  - The lack of independent regulation leads to regulatory capture and rent seeking

## II. Key Problems

- **Mega project economics:**
  - **Airport investments might turn into mega projects with benefit shortfalls and/or cost overruns.**
  - **The failure of mega project is due to the lack public sector or private sector accountability.**
  - **Public control and transparency are not implemented or competition does not work effectively.**
  - **Cost Benefit Analysis and forecasts should be made by independent organizations and be peer reviewed.**
  - **Private risk capital should be involved in the project.**

# III. Assessment: Strength

- **The planning process has democratic legitimation.**
- **It addresses the conflict of interest and with approval decision controlled by the court.**
- **It provides stakeholders with planning security to invest in long term relation specific objects.**

# III. Assessment: Weaknesses

- **Planning process lacks**
  - full compensation & encourages neighbours to take all legal & political action.
  - an independent planning authority. Quasi-independency is not accepted by citizens.
  - long term commitment.
- **Mediation can compensate partly lack of independency of the planning institution, but**
  - recommendations are not legally binding.
  - poor Berlin Brandenburg airport and better though not of a sufficient quality in Frankfurt.

# III. Assessment: Weaknesses

- Investment decisions 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)

### III. Assessment: Weaknesses

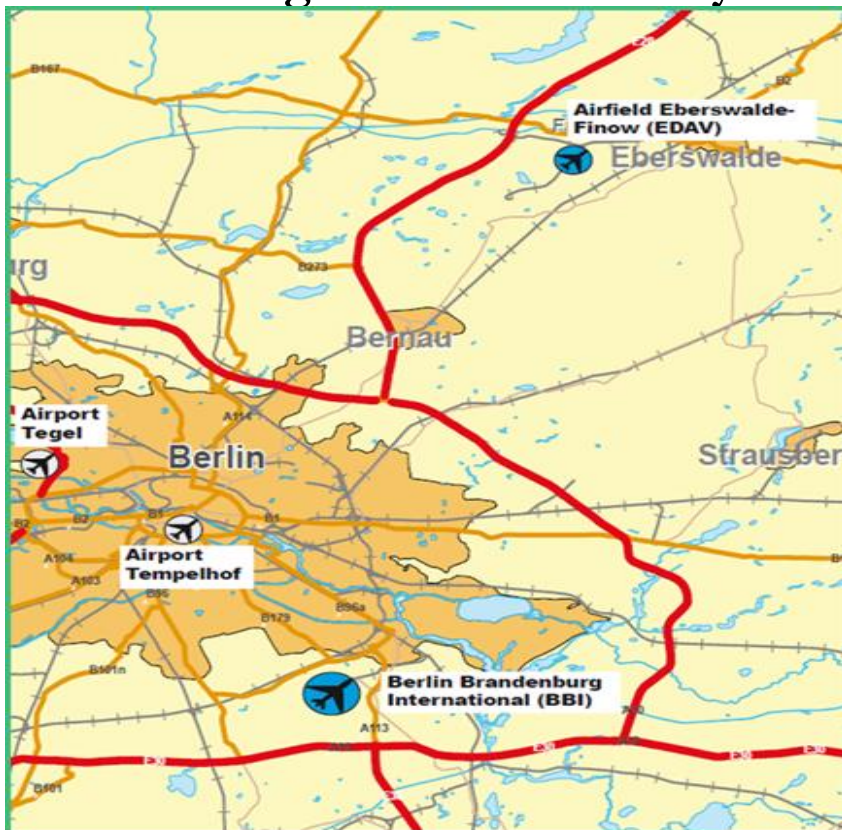
- **Investment decisions are not assessed by Cost Benefit Analysis, but by Impact Analysis.**
  - **Direct & indirect effects of are greater the more costly and unproductive an airport is. Induced effect is independent of the investment object.**
  - **Impact Analysis creates the ideology that jobs can 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.**
  - **Geffray Gazzard of Friends of the Earth (1999, p. 6): UK Advertising Standards Authority ordered Manchester Airport to withdraw the claim that 48,000 jobs would be created by the second runway**



### III. Assessment: Weaknesses

- The planning process of airports

- lack a vigorous ex-ante and ex-post evaluation of forecasts.
- tends to reduce airport competition & encourages rent seeking to erect legal barriers of entry.



- BBI airport under private or public ownership regime monopolized the market and prevented entry of LCC airport

# III. Assessment: Weaknesses

- **Negative externalities of airport expansion are not efficiently addressed**
  - **Efficient or acceptable noise budgets are not implemented at German airports.**
  - **After 36 years German law for Noise Protection has been reformed with improved noise protection norms, but with no legal binding exposure thresholds.**

### III. Assessment: Weaknesses

Airport	Berlin Brandenburg	Düsseldorf	Hamburg	Frankfurt	Munich	Stuttgart
Night curfew hrs	23 to 5:00	24 to 6:00	24 - 6 pm	23 - 5:00	24- 5.00 Noise & movement budget	24.– 6.
Restrictions for louder aircrafts	NA	Yes, 23 - 6.00	Yes, 23:00 -24		Yes 22 – 24; 5- 6	Yes, 23.30-24.
Noise surcharge	NA	Yes	yes	yes	yes	yes
Demand of initiatives	22.00 – 6.00	22:00 - 7:00	22.00 7.00	22-6.00	22-6.00	22.00-7.00

- **Noise budget set at an efficient or at a politically acceptable level have not been implemented although they seem to be suitable for the time from 22.00 to 24.00 and 5.00 to 7.00 hrs.**
- **Noise surcharges have been reformed though rather late and still do not lead to any measurable substitution effects.**

### III. Assessment: Weaknesses

- Does limiting capacity expansion at Frankfurt hub endanger the competitive position ?
  - Answered by mediators, but without vigorous assessment
- Overall, planning system has led to
  - avoidable transaction costs
  - costly and inefficiently used infrastructure
  - avoidable environmental costs.
- No wonder that investment in airports has been criticized by a large group of citizens not confined to a few living under the flight paths of airports.

# IV. Recommendations

1. Independent planning authority separated from the owners of airports
2. Open and transparent planning process
3. Compensation of directly negative affected citizens
4. Mandatory ex-ante & post controlled CBA
5. Market based environmental policy
6. Reforming governance structure: more competition, less subsidies, independent economic regulator, better pricing of scarce capacity

**Thank you very much**

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