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HSR v LCC: competing or complementary modes?

Can HSR expand if LCCs are taking over short routes?

Elements to open the discussion

Stephen Perkins

FSR, Florence, 3 March 2014

OECD

The International Transport Forum at the OECD

Think Tank

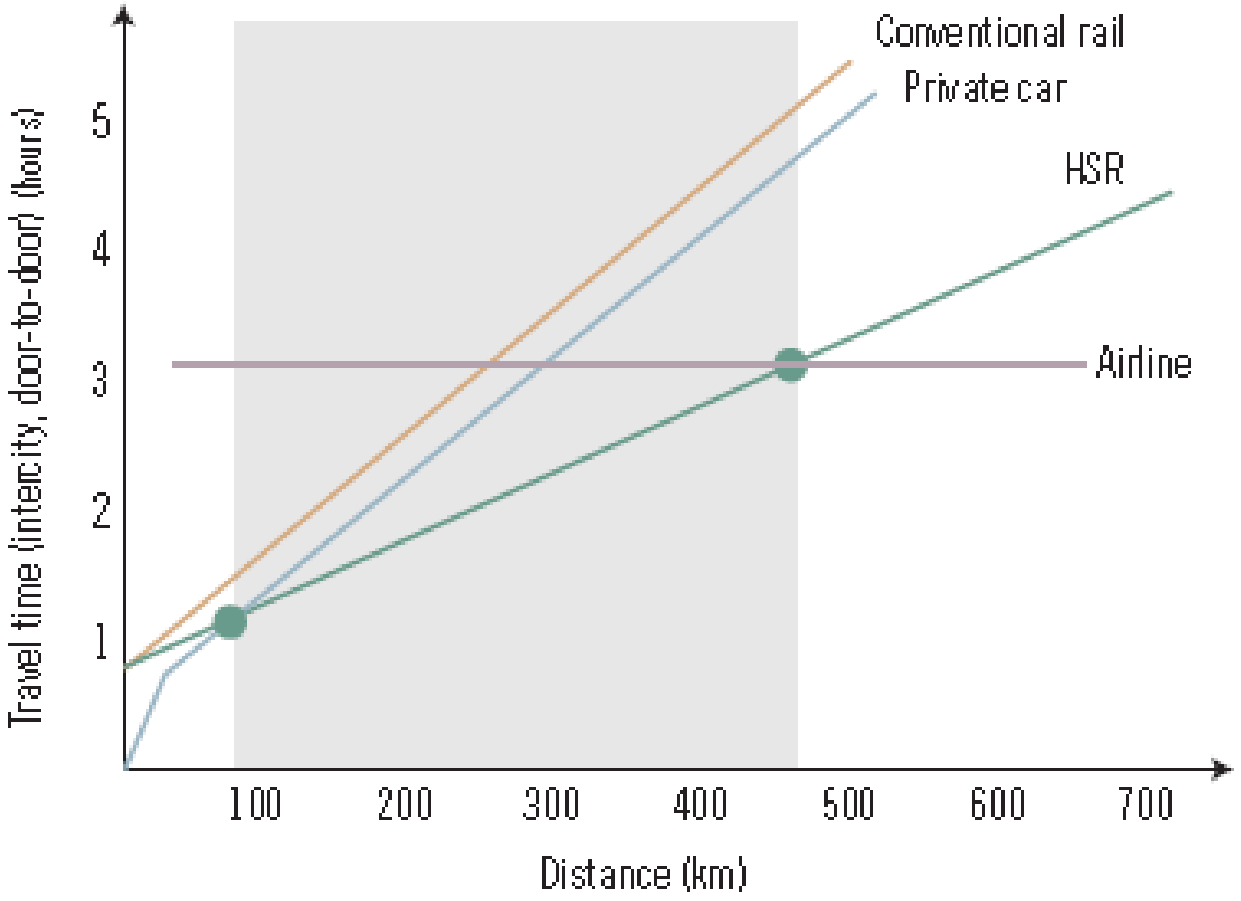
Annual
Summit

Intergovernmental
Organisation

LCC-HCR

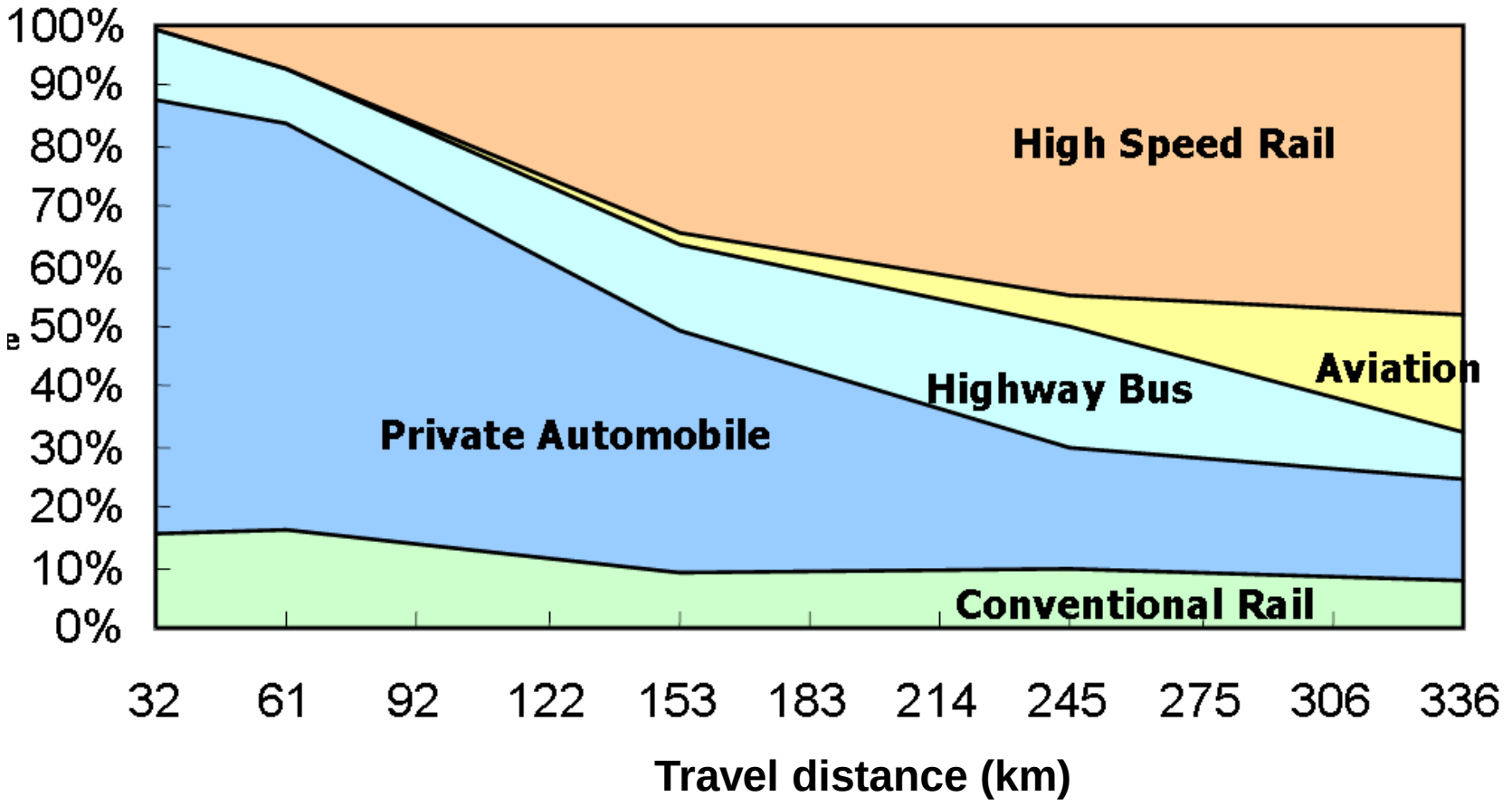
- Air-Rail modal split on high speed rail routes
- HSR and LCC price elasticities
- Source (destination) competition
- What does HSR deliver?

The basic modal competitive advantage of HSR



Selnik 2006 in Campos and Gagnepain, 2006

Shares of inter-city travel demand in Taiwan



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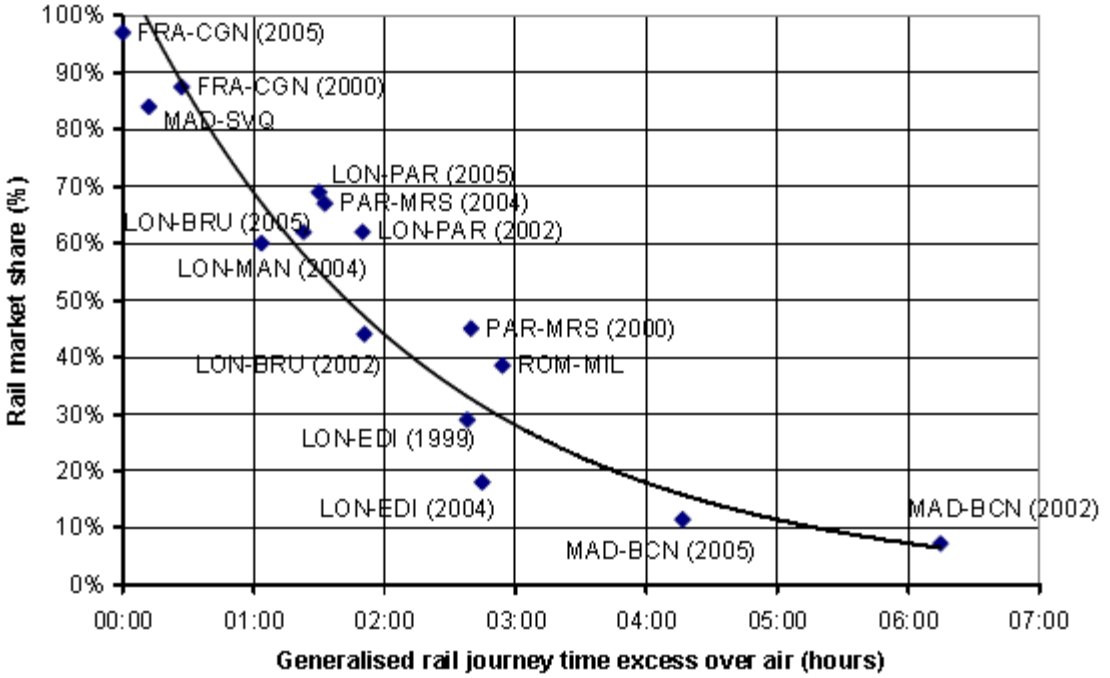
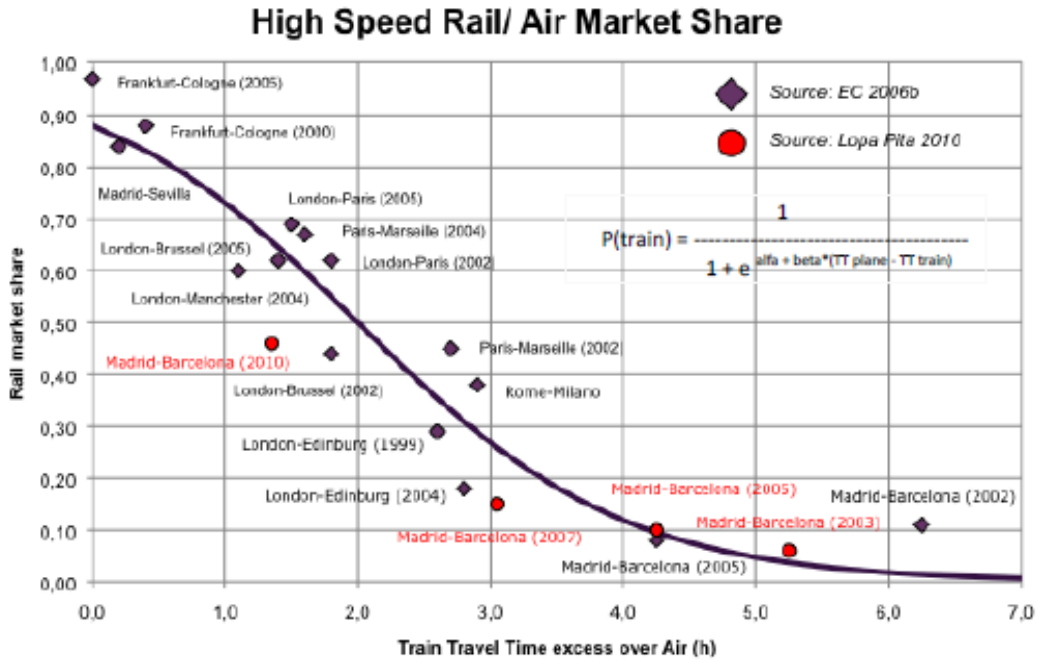
HSR-Air market, modal shares and travel time

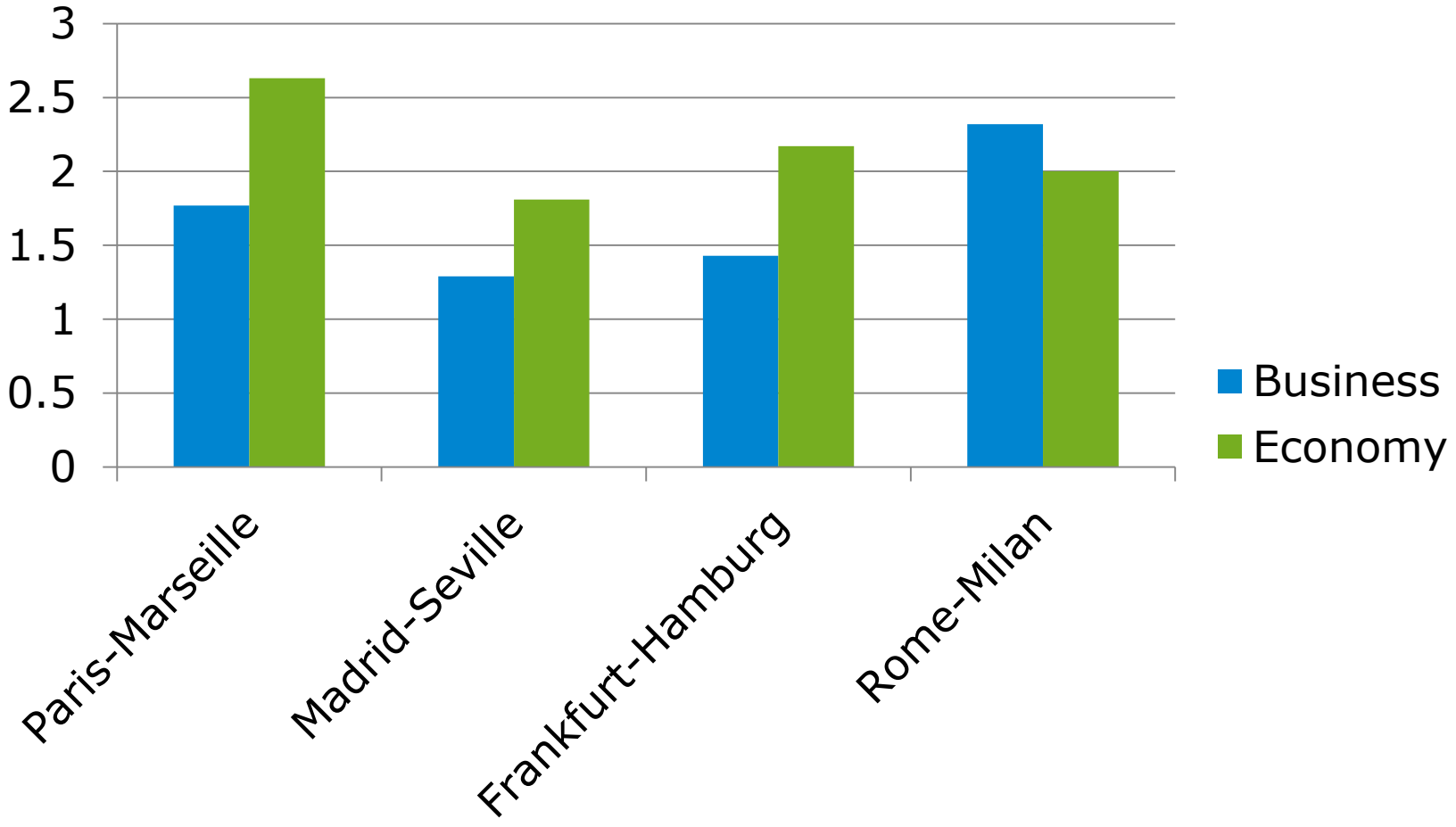
Train travel time excess over air

Top: SDG for EC, 2006
Below: Lopez Pita, 2010





Network carrier airfare to HSR fare ratio on European corridors



Lopez-Pita 2005, Lebouef 2006

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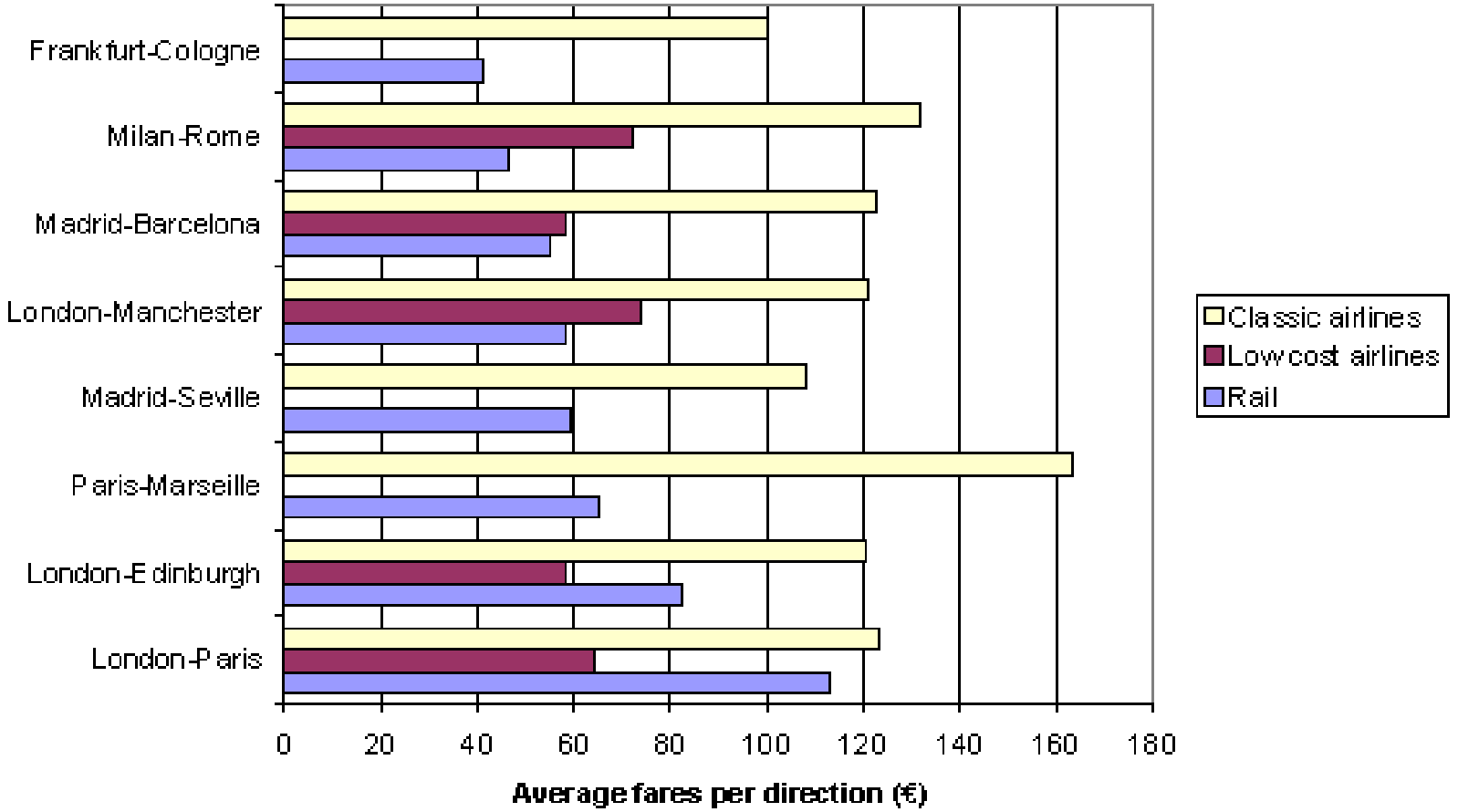
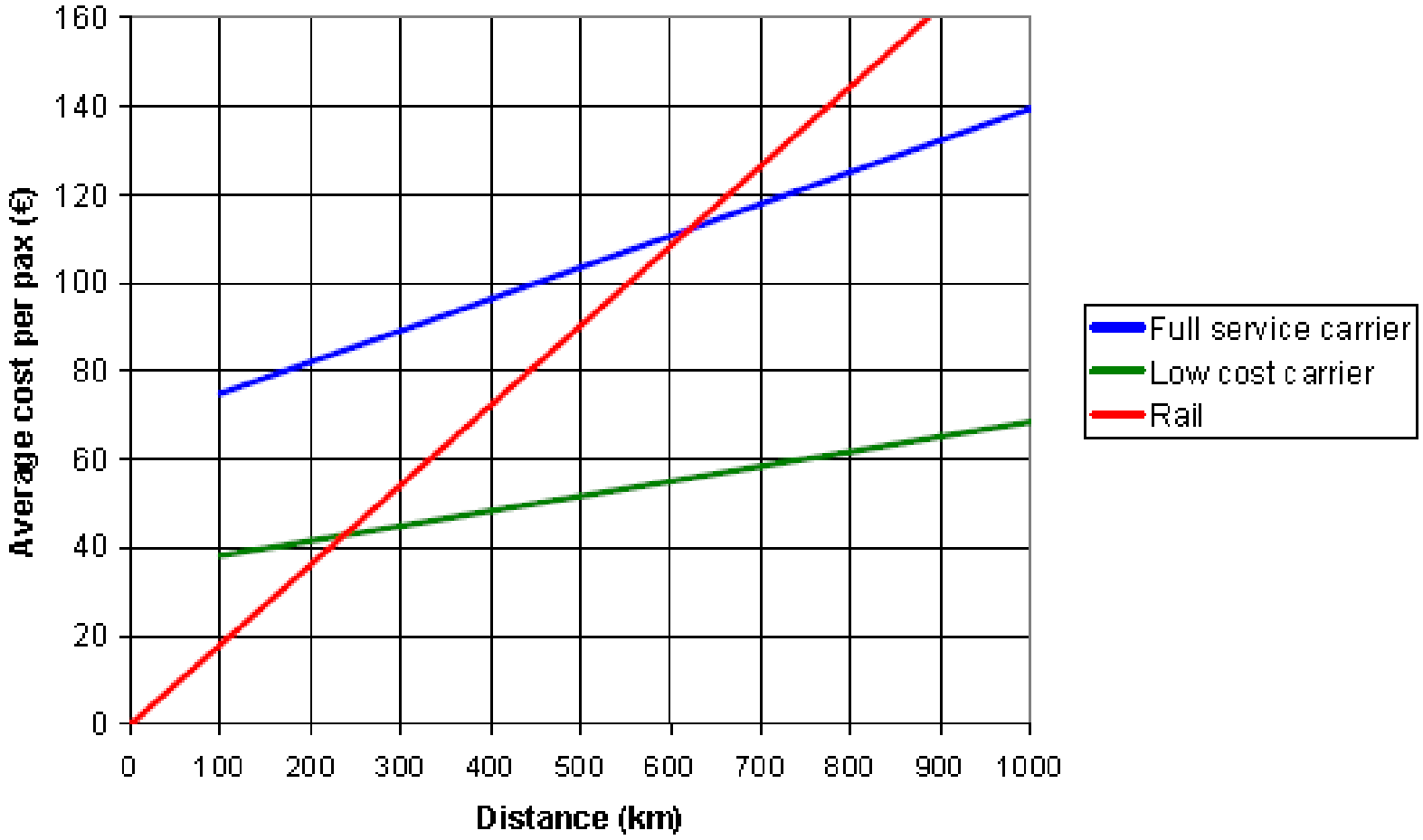
Average Network Air, LCC and HSR Fares



SDG, EC 2006

HSR and air costs per passenger, by route length



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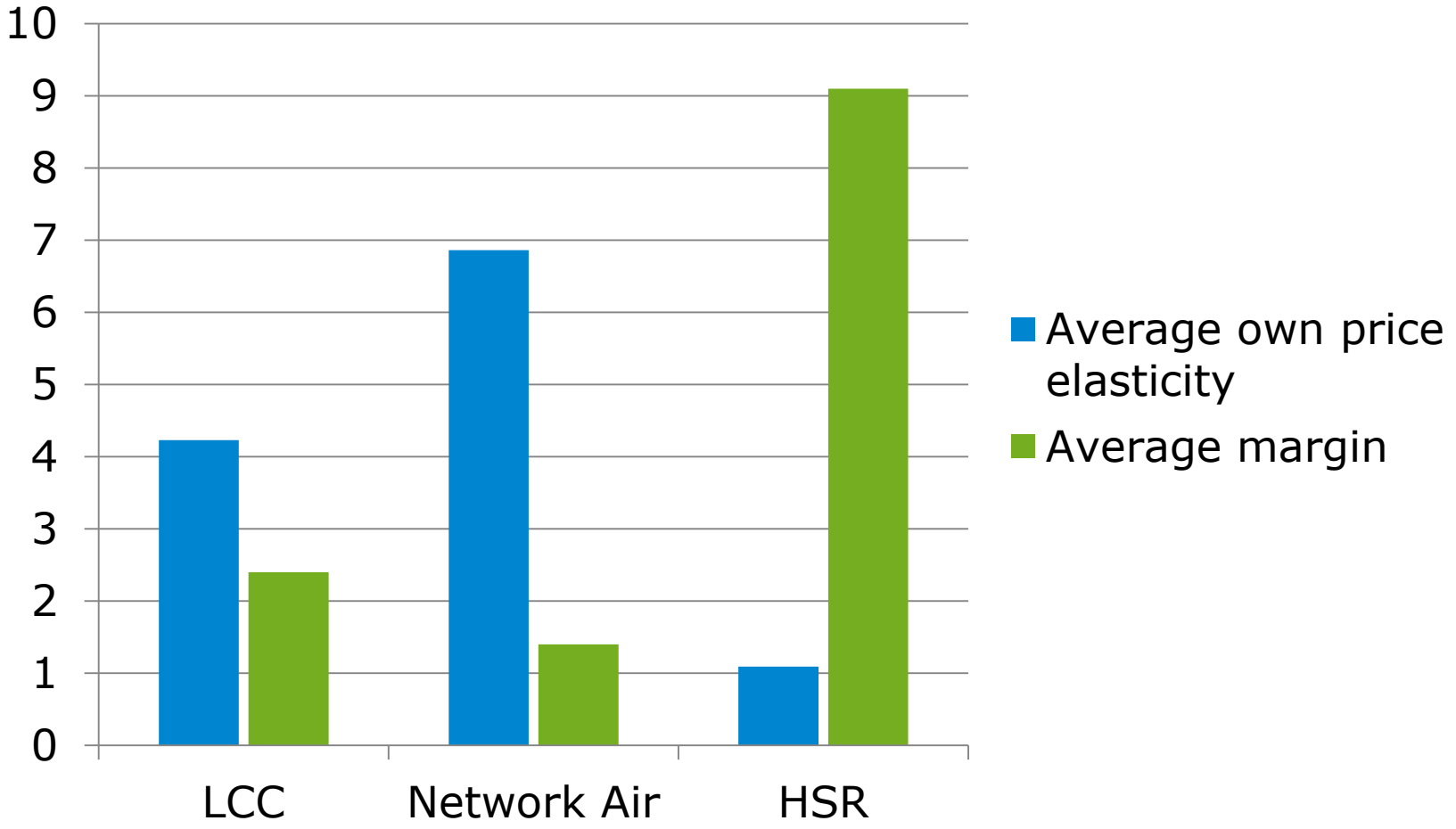
LCC–HSR competition empirical evidence

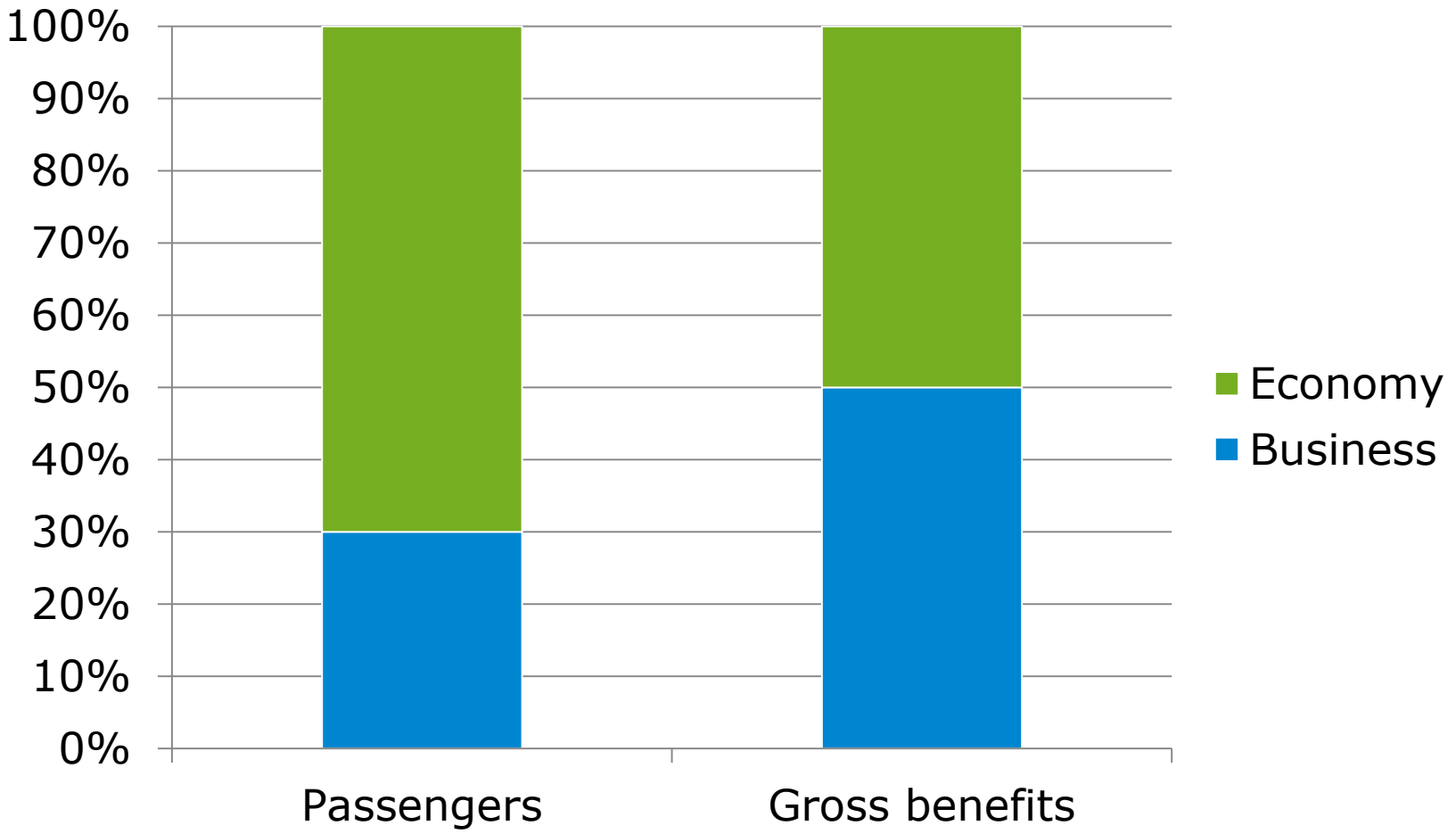
- Campos and Gagnepain in De Rus 2009; UIC 2003:
  - –Competition mainly with conventional rail
  - –And a few HSR corridors in Germany & France
  - –Main shift to LCC is from network air carriers
- Frequency major rail advantage: Europe over 25 services a day; Japan over 100
- HSR response – idTGV

Price elasticities



Modeled by Campos and Gagnepain, 2006

HSR Markets: HS2 forecast



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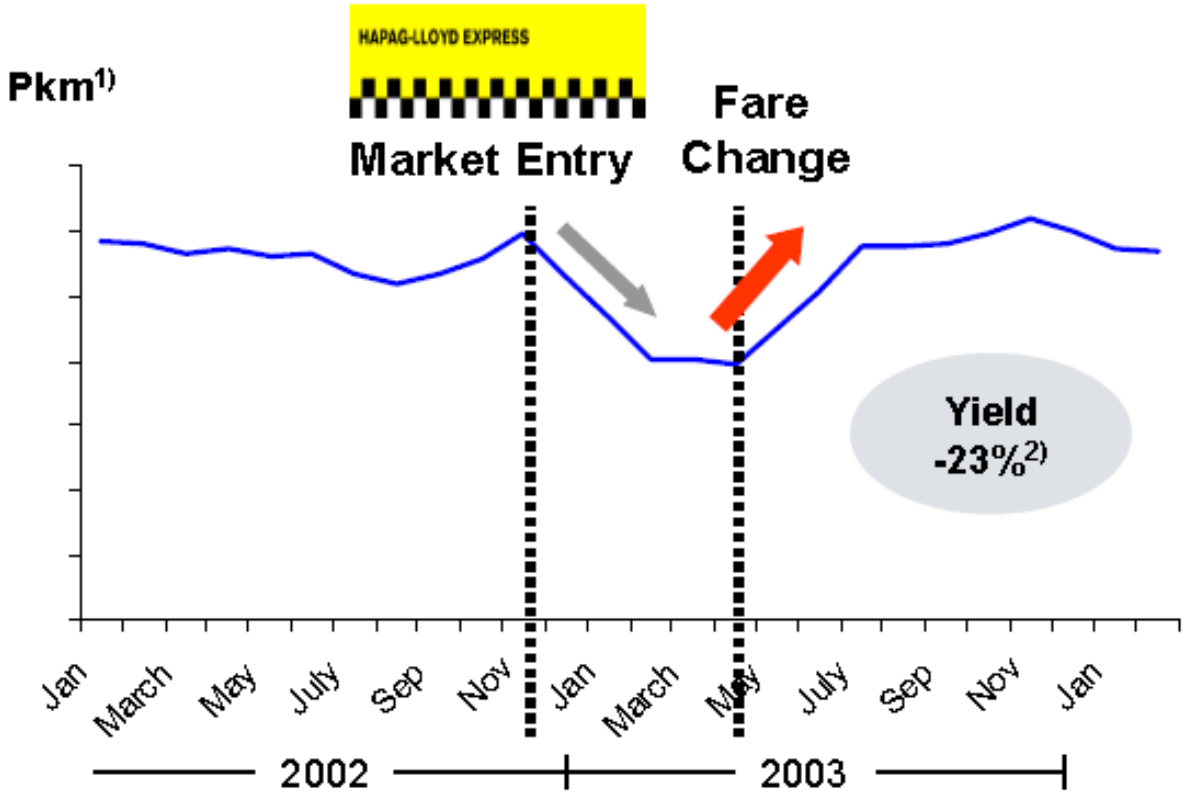
Friebel and Niffka, 2005

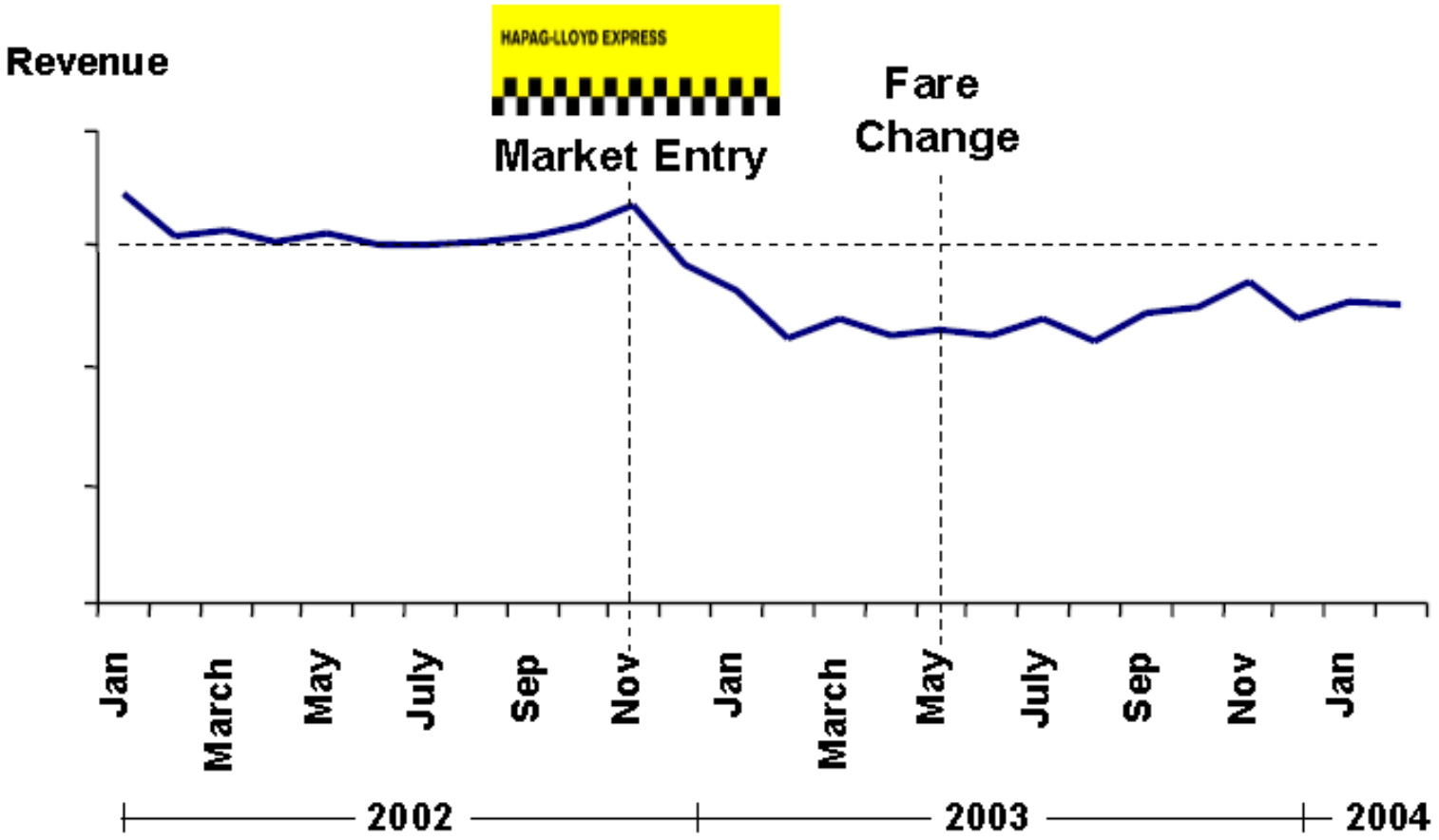
- Major impact of LCC entry in Germany
- On both Lufthansa – network-wide major reductions in fares
- And DB – fare reductions to stabilise turnover at lower level

Impact of LCC entry on DB Cologne-Hamburg



Friebel and Niffka, 2005

DB Revenues on Cologne-Hamburg Route

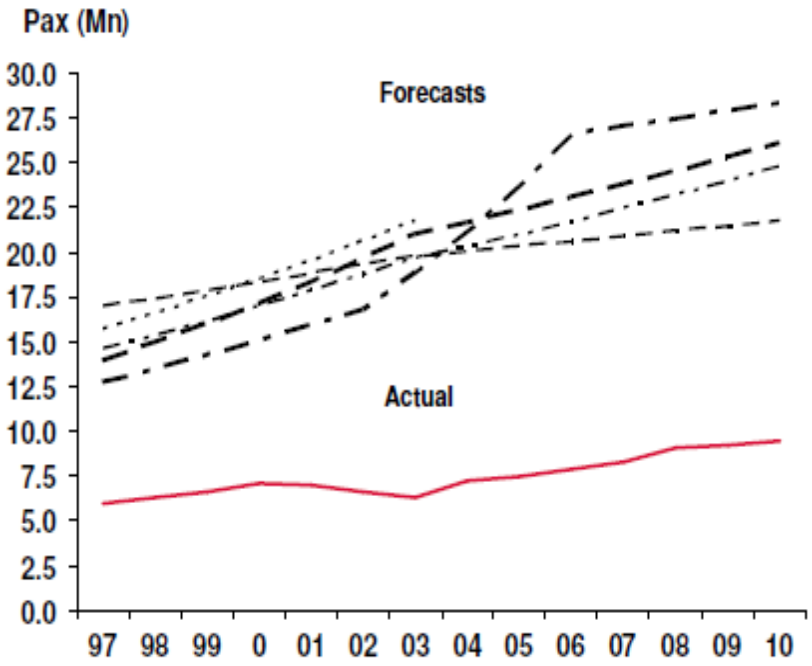


Friebel and Niffka, 2005

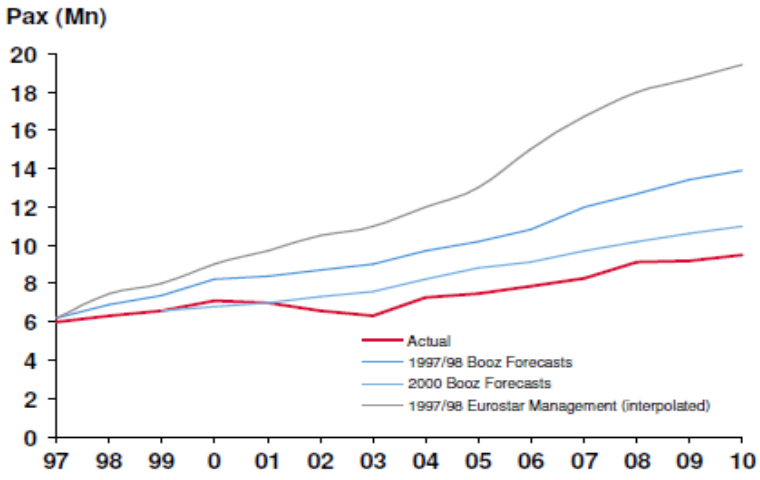
Source Competition

UK HS1 passenger forecasts

PPP Bidding Phase Forecasts



Forecasts made at time of Refinancing



Source: Booz 2012.

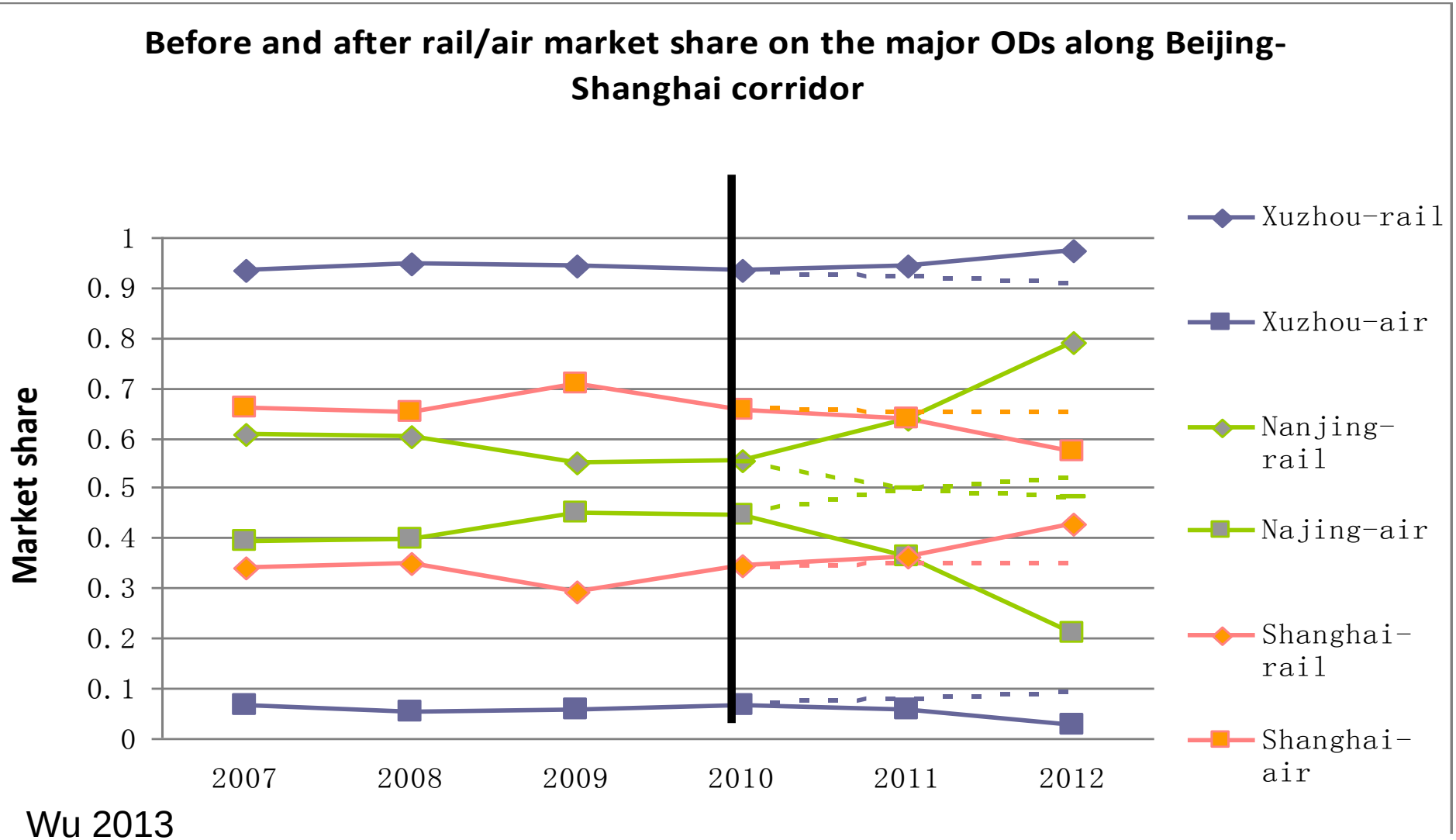
Competition between HSR & air in China

Rail/air share in Wuhan-Guangzhou transport OD pairs

	Before (2009)	*After (2010)*	*Change*
Aircraft	*7.01%*	*2.86%*	*-4.16%*
Conventional Train	*92.99%*	*55.92%*	*-37.06%*
HS Train	*0.00%*	*41.22%*	*41.22%*
Total	*100.00%*	*100.00%*	

Wu 2013

Competition between HSR & air in China



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Change of rail/air market share caused by Beijing-Shanghai HSR

Airport	Rail distance to Beijing	Rail journey time to Beijing	Expected Impact to air before	Market Share %				Actual impact to air after
				Before (2010)		After (2012)		
				Rail	Air	Rail	Air	
Jinan	406 km	1.63h	-36%	91%	9%	98%	2%	-78%
Xuzhou	692km	2.85h	-67%	93%	7%	98%	2%	-64%
Nanjing	1023km	4.10h	-4%	55%	45%	79%	21%	-53%
Wuxi	1210km	4.90h	-2%	57%	43%	70%	30%	-31%
Shanghai	1318km	5.53h	-2%	34%	66%	43%	57%	-13%

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Competition between HSR & air

- In China HSR 80% at rail journey times 4 hours or travel distance around 1,000km
- Higher frequency rail services
- High air fares
- No LCC
- Frequent, long airport delays

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What does HSR deliver?

	France	Japan	China	Italy	UK	Chinese Taipei	Spain
Speed	✓	✓	✓	✓	✓	✓	✓
Capacity	✓	✓	✓	✓	✓(HS2)	✓	
Reliability				✓	✓(HS1)		
Economic Development			✓		✓	✓	
Environment					✓(HS2)		
Supply Industry	✓	✓	✓				✓
Political Integration			✓				✓

Conclusions – HSR systems differ

- **Empirical data on LCC-HSR competition thin**
- Modeling suggests competition weak, with more LCC competition for network air carriers than HSR
- Source competition from LCC can be biggest effect
- In China air competition suppressed, emergence of LCC would have big effect on both air and HSR
- LCC competition cut DB HSR revenues >20%
- **HSR can respond with yield management**
- **Frequency of service is powerful advantage**

References

- De Rus, G. Economic Analysis of HSR in Europe, Fondacion BBVA, Bilbao, 2009
- Campos, J. and Gagnepain, P. Measuring the Intermodal Effects of HSR, in De Rus 2009
- HS2, The Economic Case for HS2, DfT 2013
- EC, Air and Rail Competition and Complementarity, 2006.

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- Economic Assessment of Investment in High Speed Rail, 2013 (includes Wu 2013)