The Environmental Impacts of the EU-US Open Skies Agreement

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Outline

- Introduction
- Literature and context
- Hamburg Tourism Model (HTM)
- Scenarios
- Results
- Sensitivity Analysis
- Conclusions

Introduction

- Implications of Open Skies for carbon dioxide emissions and passenger numbers
- Partly liberalised market leading to falling ticket prices
- Direct impact on travel between EU-US and displacement from other destinations
- *International* travel by *tourists*

Literature and context

- Brattle Group (2002) find fare reductions of between 2% and 6%
- Booz Allen Hamilton (2007) consequences of Open Skies on passenger volumes (large increase), fares, consumer benefits, airline costs, productivity
- Both use price elasticities of demand of between 1.0 and 2.5

Literature and context (2)

- Aviation's contribution to GHG emissions in context of climate policy
- Tol (2007) carbon tax on international tourism
- FitzGerald and Tol (2007) aviation in European Trading System
- Here, look at changes in emissions due to OAA

Hamburg Tourism Model

- Developed by Hamilton, Tol, Maddison, Mayor
- Predicts number of domestic and international tourists from 207 countries plus bilateral flows, using population, income, travel time, travel cost, climate (rest constant)
- Time steps of 5 years, 1995 base year, show results for 2010

- Reduction in cost of travel leads to increased travel to affected destinations, and decreased travel to other places

Data and assumptions (1)

- Source: WTO (2003) and EuroMonitor (2002)
- Travel time and cost assumed to be linear in the distance between airports
- Does not take account of changes in quality of travel, intra-EU travel, business travel
- Issue: US as a destination (East vs. West Coast)

Data and assumptions (2)

- CO_2 emissions of 6.5kg C per passenger for take-off and landing and 0.02kg per passenger-km (Pearce and Pearce, 2000)
- Modelled emissions in 2000 are 140M metric tonnes of carbon = 2.1% total emissions from fossil fuels
- Total international aviation: 3% of global emissions

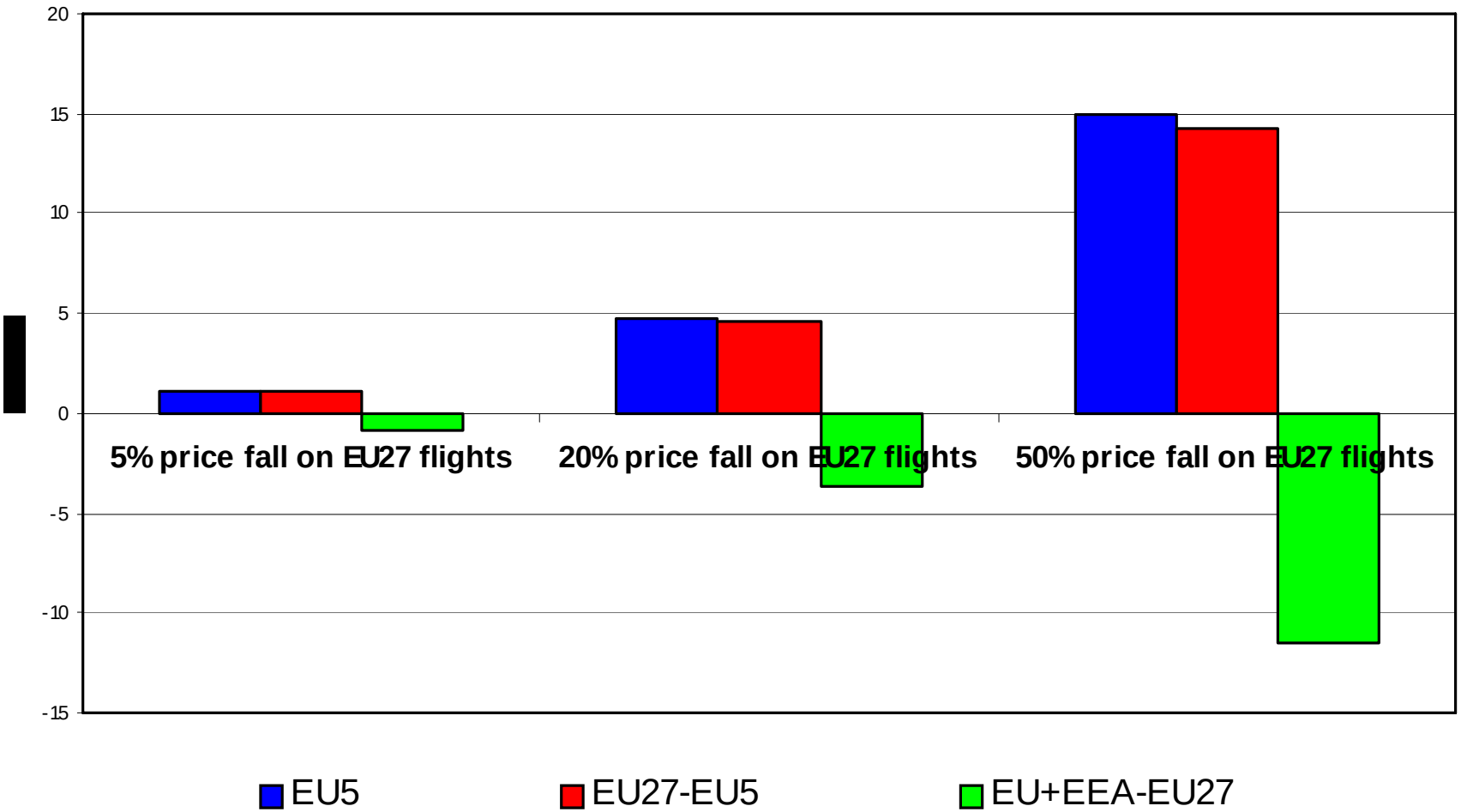
Elasticities

- Price elasticities lower than other studies and fall with income per capita
- Duration and cost of flight
- Trade-offs between *countries*
- Not for price competition on the same route
- Total cost of the holiday

Scenarios

- Assume price falls of 5%, 20% and 50%
- Three groups of EU countries: EU5, EU27 and EU30
- EU5 = UK, Ireland, Greece, Spain and Hungary
- EU30 = EU27, Switzerland, Iceland and Norway

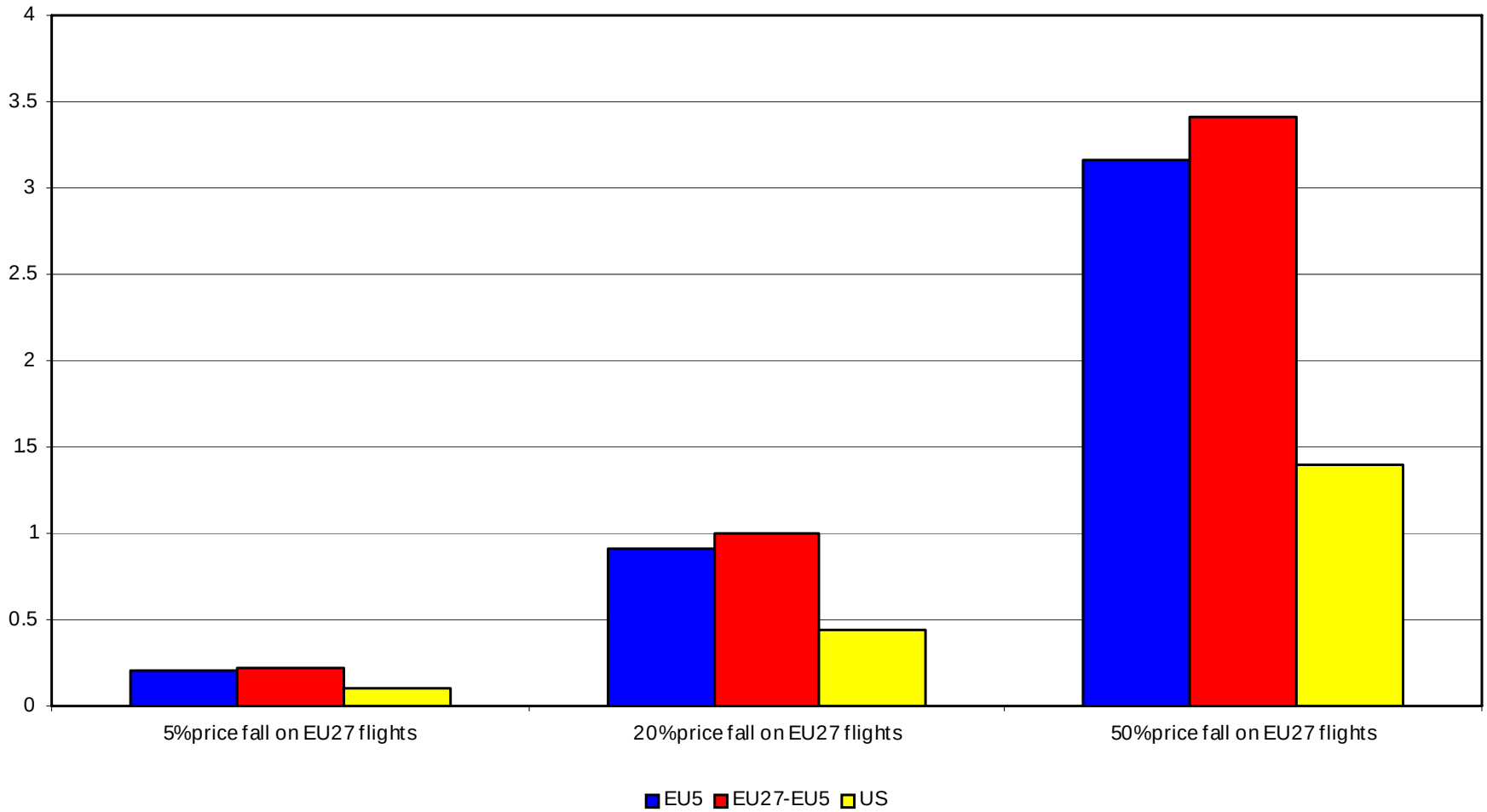
Arrivals from the US



Effect on arrivals

- As flights to EU27 become cheaper, US tourists substitute away from other European countries towards cheaper destinations
- Slightly higher for EU5 countries
- Cheaper fares, more travel, effect on emissions

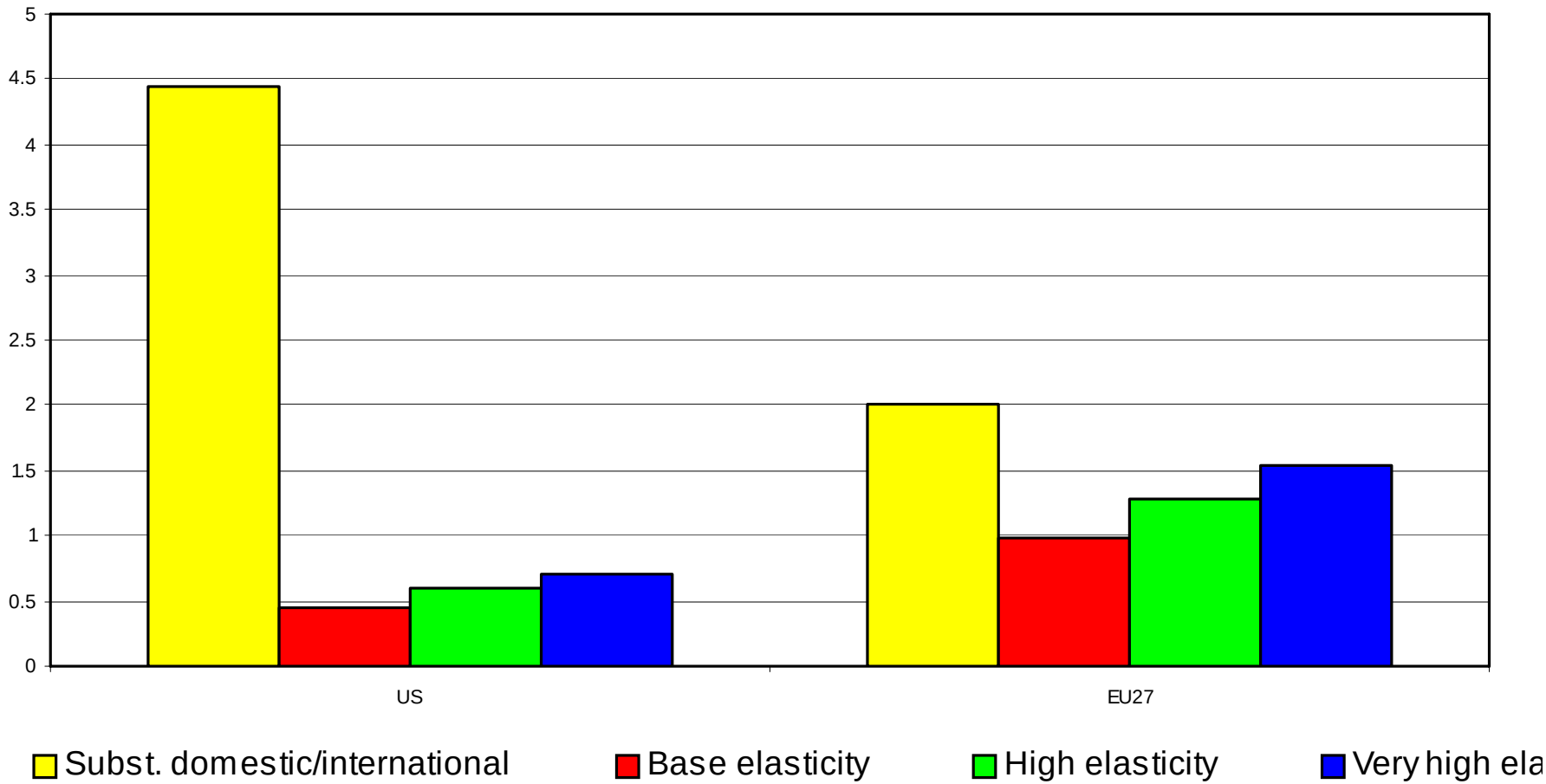
Emissions from EU and US



Effect on emissions from EU and US

- Increase in emissions from all EU countries between 0.2% and 3.4%
- Effect from the US: rise in emissions ranging from 0.1% to 1.4%
- Effect of the price reductions on emissions and passenger numbers is not large

Effect of elasticity changes on emissions



Effect on world emissions

- Increase in emissions ranges between 0.04% and 0.7%
- Increase in travel to Europe offset by fall in travel to other countries
- US tourists substitute away from relatively more expensive destinations
- EU tourists go to US more often but increase in travel restricted by time off work and budget

Conclusions

- Competition and lower fares will modestly increase passenger numbers
- As expected this will result in an increase in carbon dioxide emissions
- Increase in global emissions smaller than increase in transatlantic travel
- Exact numbers are sensitivity to assumptions, but overall pattern is not