



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

EU-US Open Skies and US Air Travel

Dipasis Bhadra

To be presented at the 33rd Annual
FAA Conference, Washington, D.C.

March 11, 2008

The contents of this material reflect the views of the author and/or the Director of the Center for Advanced Aviation System Development. Neither the Federal Aviation Administration nor the Department of Transportation makes any warranty or guarantee, or promise, expressed or implied, concerning the content or accuracy of the views expressed herein.





An outline

- **Open aviation area and its impact on passenger travel**
 - **Bi-directional traffic estimates by origin-destination (O&D)**
- **Why is it important and now?**
 - **Consolidation, globalization and new markets**
- **Policy and forecast perspectives**



Towards the Open Aviation Area: 1st Stage Agreement

- **June 5, 2003: European Commission agrees authorization to open negotiations**
- **March 2, 2007: Draft agreement initiated in Brussels**
- **March 22, 2007: Agreement approved unanimously by the 27 EU transport ministers**
- **April 30, 2007: Agreement signed at EU-US summit in Washington, D.C.**
- **March 30, 2008: Agreement is effective and implemented**



2nd Stage

- **2008: 2nd stage negotiations to begin within 60 days of implementation of the 1st stage (Article #21)**
- **2009: Parties review progress of 2nd stage negotiations within 18 months of their commencement (Article #21)**
- **2010: EU can re-implement some restrictions if an ‘open aviation area’ has not been achieved**



Open Sky Signatories

27 MEMBERS IN EUROPEAN UNION

AUSTRIA	GREECE	PORTUGAL
BELGIUM	HUNGARY	ROMANIA
BULGARIA	IRELAND	SLOVAKIA
CYPRUS	ITALY	SLOVENIA
CZECH REPUBLIC	LATVIA	SPAIN
DENMARK	LITHUANIA	SWEDEN
ESTONIA	LUXEMBOURG	UNITED KINGDOM &
FINLAND	MALTA	NORTHERN IRELAND
FRANCE	NETHERLANDS	
GERMANY	POLAND	

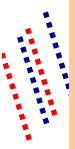
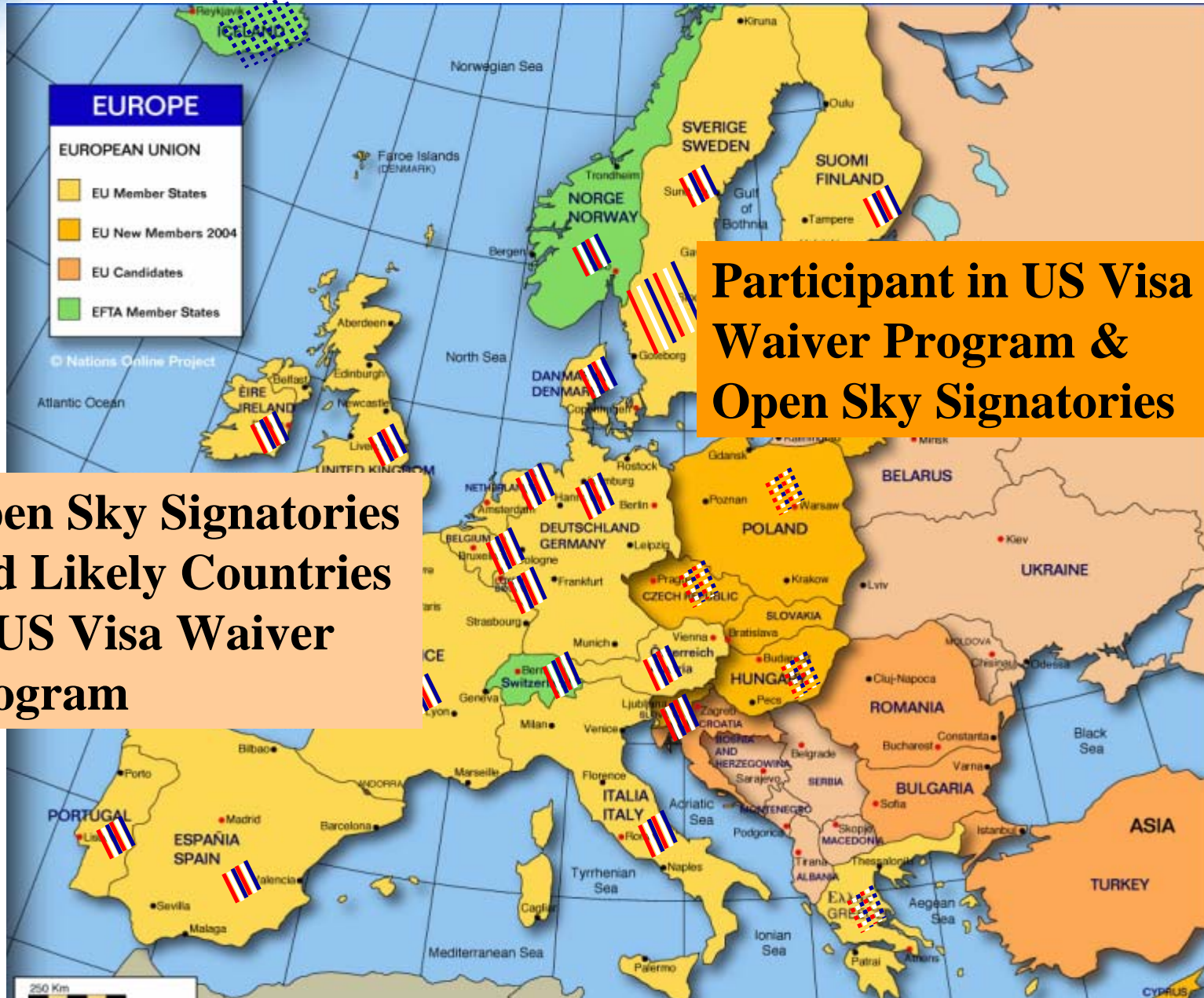


Countries with Visa Waiver Program

Participant in US Visa Waiver Program

Andorra	Iceland	Norway
Australia	Ireland	Portugal
Austria	Italy	San Marino
Belgium	Japan	Singapore
Brunei	Liechtenstein	Slovenia
Denmark	Luxembourg	Spain
Finland	Monaco	Sweden
France	the Netherlands	Switzerland
Germany	New Zealand	United Kingdom

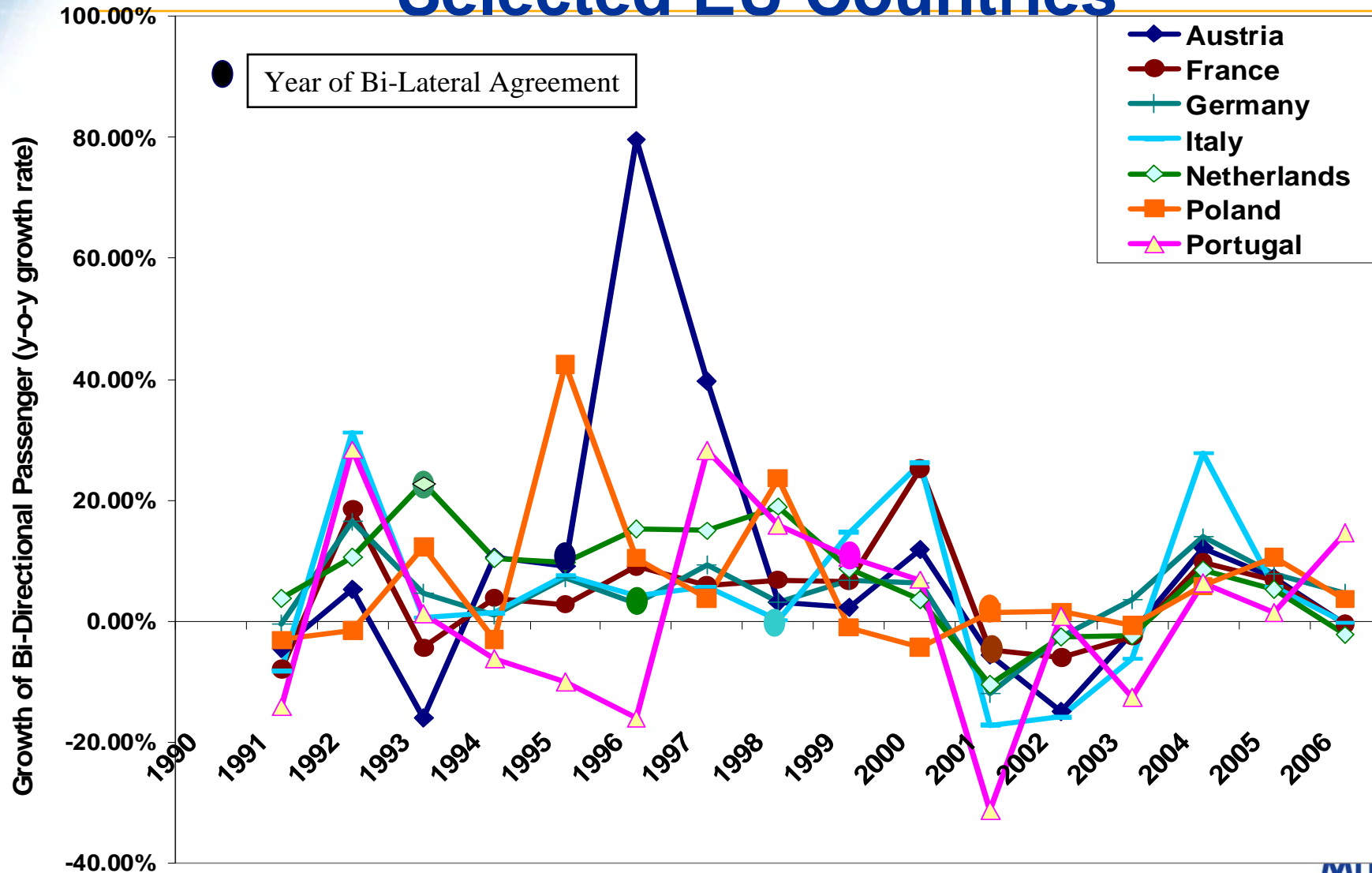
European Union



Open Sky Signatories and Likely Countries in US Visa Waiver Program



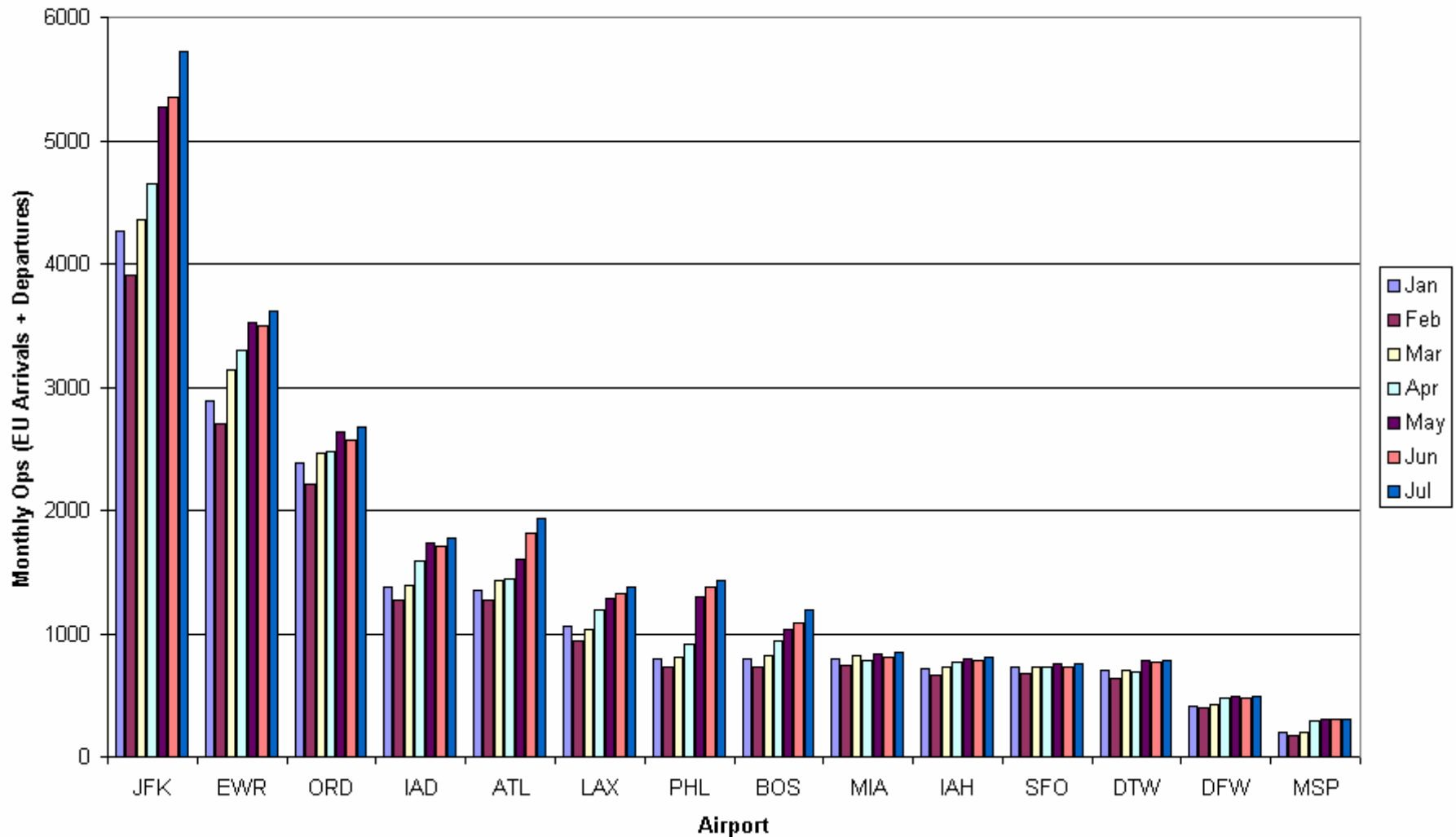
Annual Growth in Bi-Directional Passenger Travel Between US and Selected EU Countries





Total Monthly EU Ops - 6 Month Look Ahead

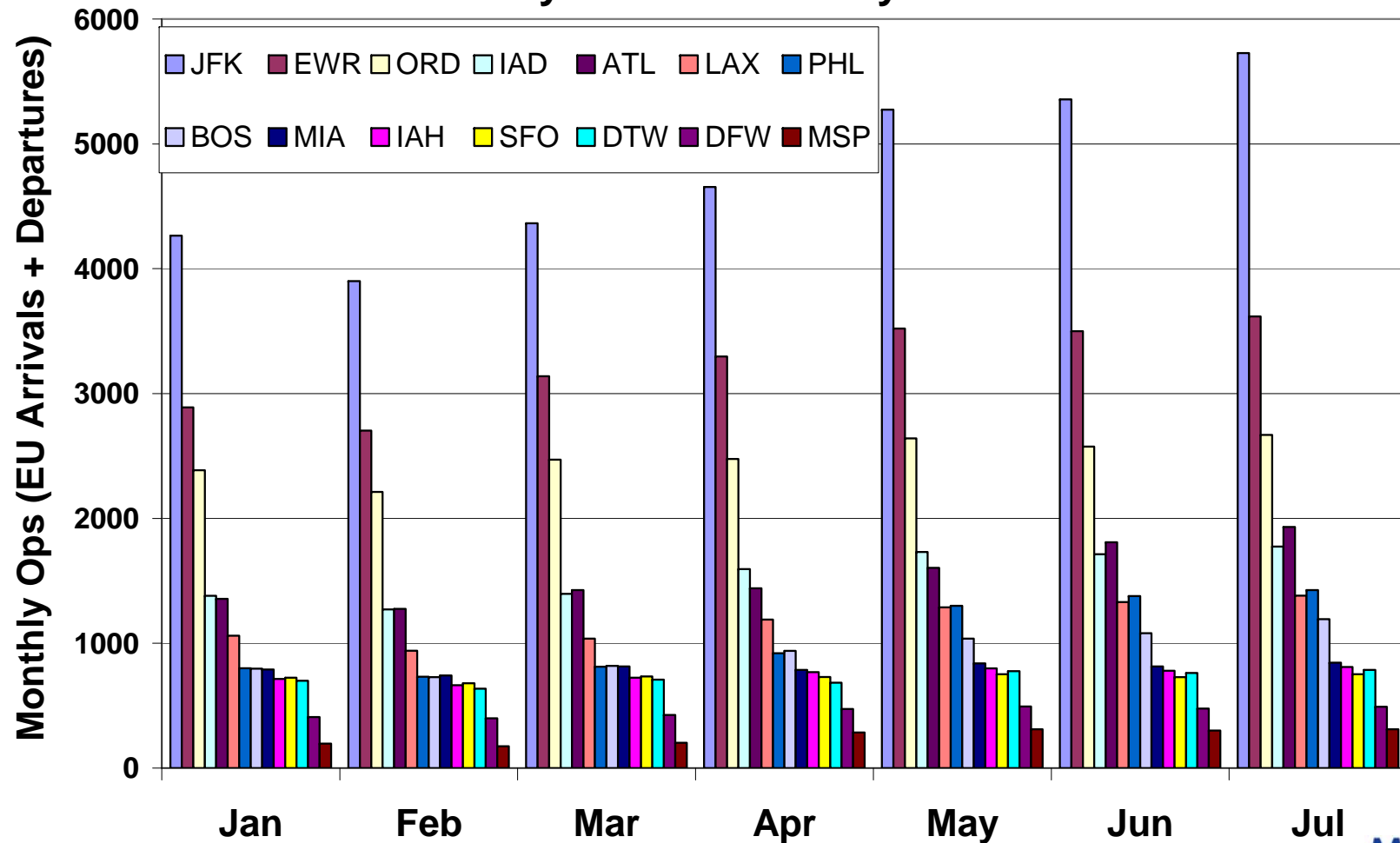
Gateway Airport EU Ops:
Monthly Totals Jan - July 2008





Total Monthly EU Ops - 6 Month Look Ahead

Gateway Airport EU Ops:
Monthly Totals Jan - July 2008

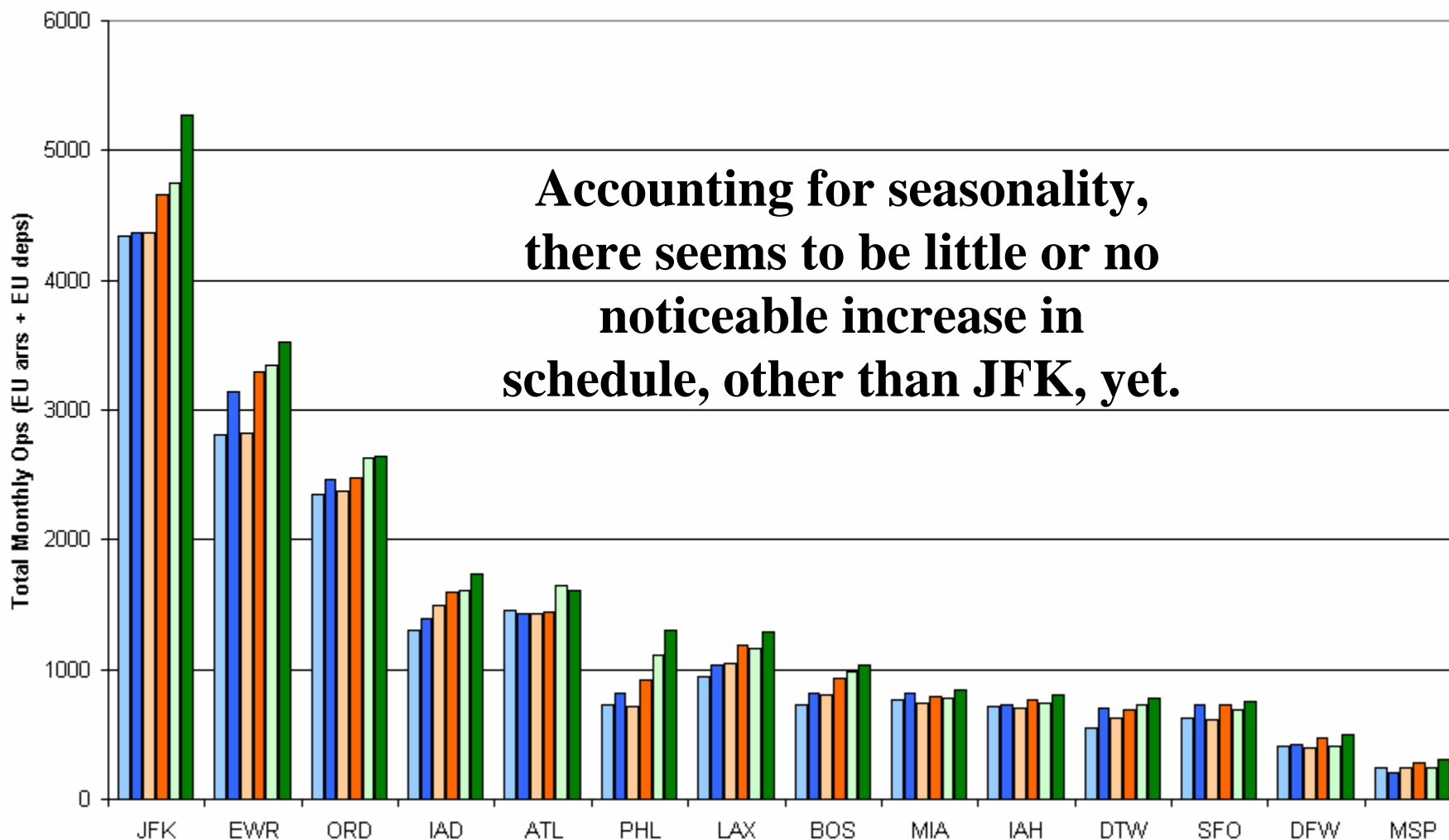




2007 vs. 2008 Monthly EU Ops (Mar-May)

Comparison of Total Monthly EU Ops, Mar, Apr, May 2007 vs. 2008

Mar 2007 Mar 2008 Apr 2007 Apr 2008 May 2007 May 2008



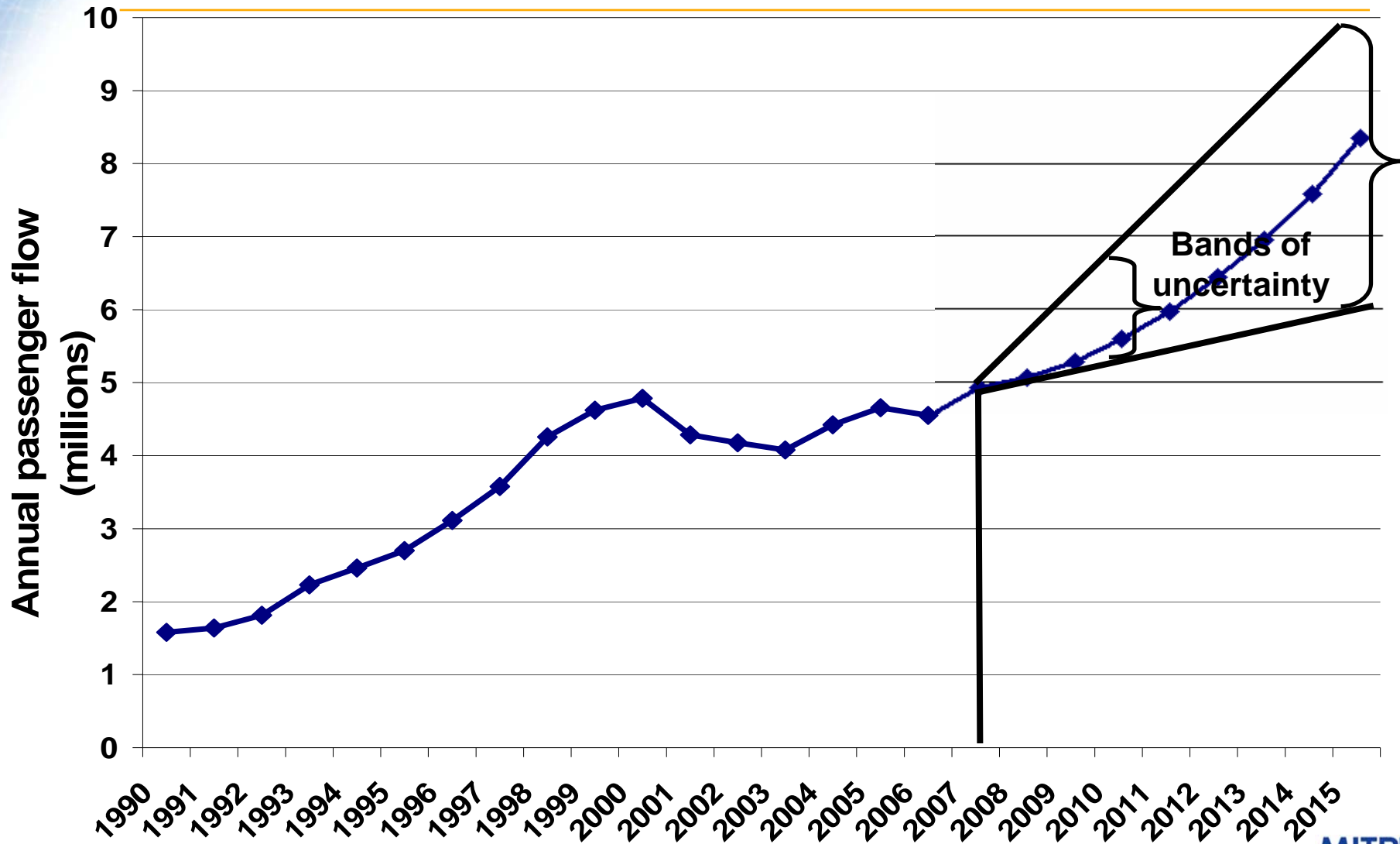


A Simple Bi-Directional Model for US-EU Countries

- **Log of passenger = f (log (gdpindex*), log Real Yield, open_sky dummy, post 9/11 dummy)**
- **gdpindex* :**
 - $\text{gdpindex90} = (0.9 \cdot \text{gusgdp} + 0.1 \cdot \text{ggdp})$; $\text{lgdpindex9} = \log(\text{gdpindex90})$;
 - $\text{gdpindex80} = (0.8 \cdot \text{gusgdp} + 0.2 \cdot \text{ggdp})$; $\text{lgdpindex8} = \log(\text{gdpindex80})$;
 - $\text{gdpindex70} = (0.7 \cdot \text{gusgdp} + 0.3 \cdot \text{ggdp})$; $\text{lgdpindex7} = \log(\text{gdpindex70})$;
 - $\text{gdpindex60} = (0.6 \cdot \text{gusgdp} + 0.4 \cdot \text{ggdp})$; $\text{lgdpindex6} = \log(\text{gdpindex60})$;
 - $\text{gdpindex50} = (0.5 \cdot \text{gusgdp} + 0.5 \cdot \text{ggdp})$; $\text{lgdpindex5} = \log(\text{gdpindex50})$;
 - $\text{gdpindex40} = (0.4 \cdot \text{gusgdp} + 0.6 \cdot \text{ggdp})$; $\text{lgdpindex4} = \log(\text{gdpindex40})$;
 - $\text{gdpindex30} = (0.3 \cdot \text{gusgdp} + 0.7 \cdot \text{ggdp})$; $\text{lgdpindex3} = \log(\text{gdpindex30})$;
 - $\text{gdpindex20} = (0.2 \cdot \text{gusgdp} + 0.8 \cdot \text{ggdp})$; $\text{lgdpindex2} = \log(\text{gdpindex20})$;
 - $\text{gdpindex10} = (0.1 \cdot \text{gusgdp} + 0.9 \cdot \text{ggdp})$; $\text{lgdpindex1} = \log(\text{gdpindex10})$;
 - where gusgdp = annual growth rate of US GDP; ggdp = annual growth rate of EU country GDP
- Based on Adj. R^2 , DW statistic and parameter estimates (t-value) of the model variables, choose an appropriate weight from above.

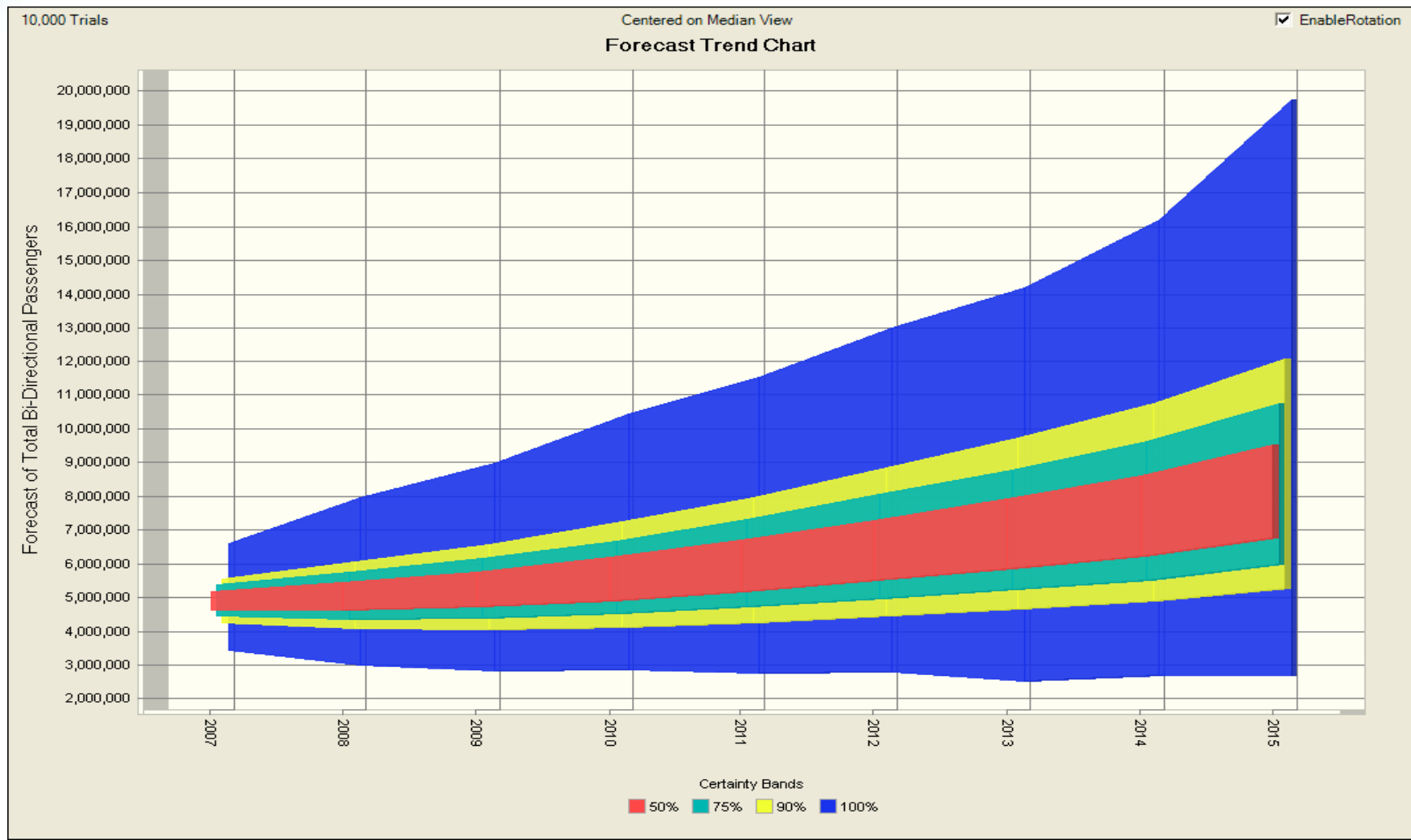


Point Estimate For Netherlands Using Econometric Model and Uncertainty



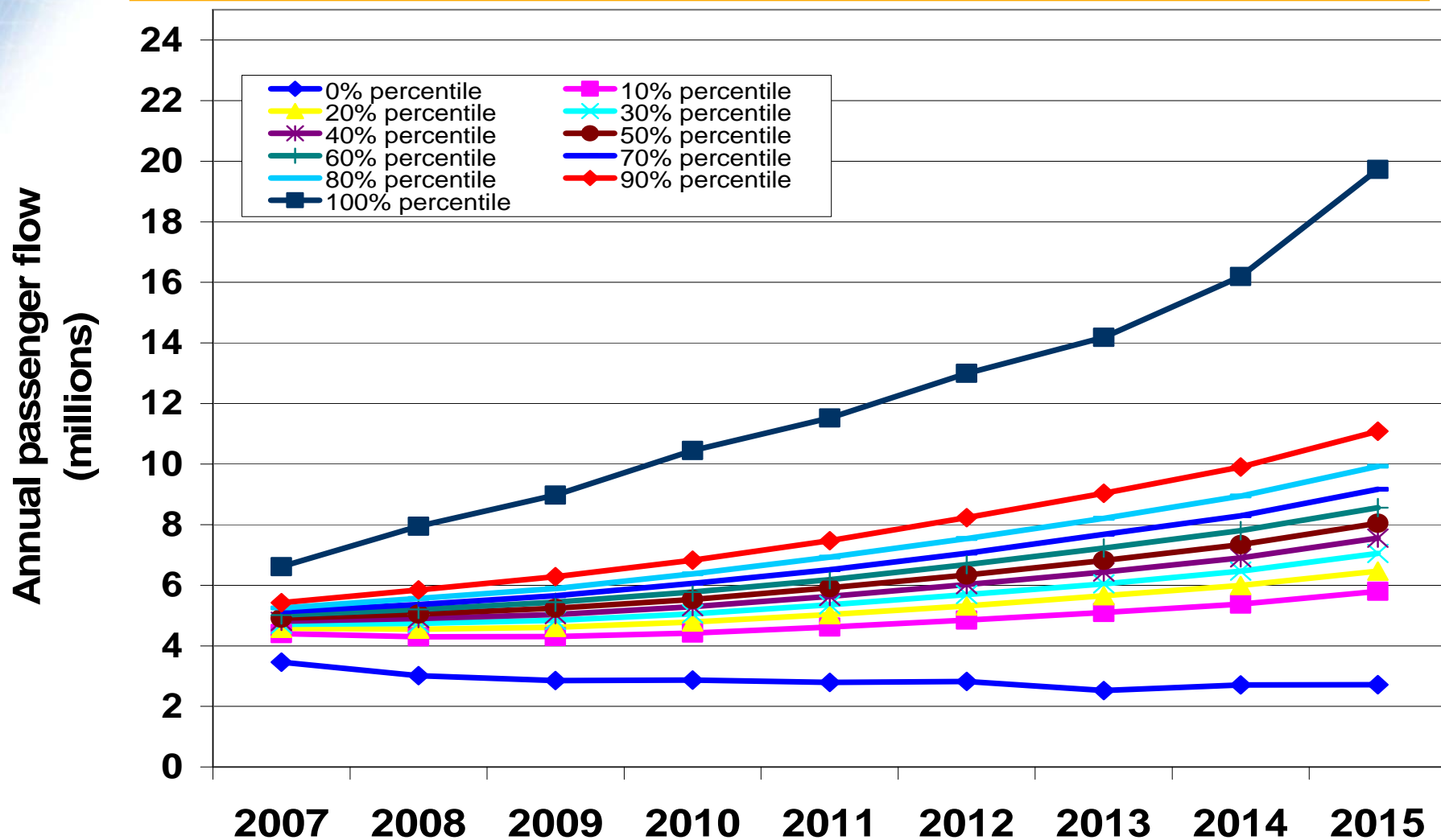


Simulation Using Point Estimate for Netherlands





Summary of Simulation Results in Percentile Bins

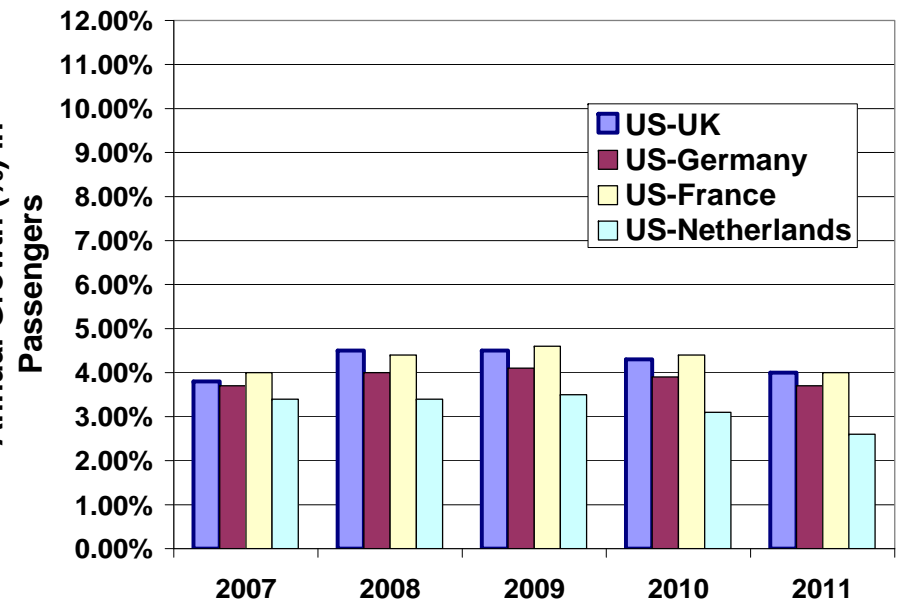
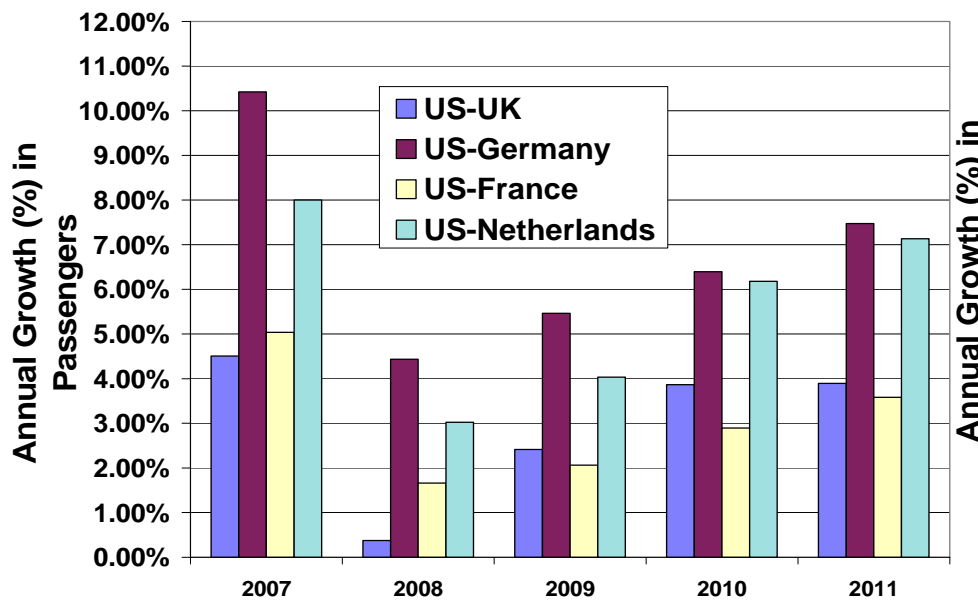




Comparison of Annual Growth Rates for Major Bi-Directional Flow

Probabilistic Method Based Forecasts

IATA Forecasts



Source: IATA (2007)



Conclusions and further work

- **Bi-directional EU Countries-US model**
- **Monte Carlo simulation/forecasts using the estimated models**
- **Compare forecasts with IATA and ITA/DOC forecasts**
- **Expand the framework to include possible merger and alliance effects**

- **Forecast Risks:**
 - **Consolidation and merger**
 - **Alliances**
 - **London Heathrow**
 - **Oil price**
 - **Economic slow down**
 - **External shocks including terrorism**



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

A technical paper with the methodology and results will soon be available

Contact for further information:

dbhadra@mitre.org

www.caasd-mitre.org