



The Impacts of Open Skies on Transatlantic Service Levels

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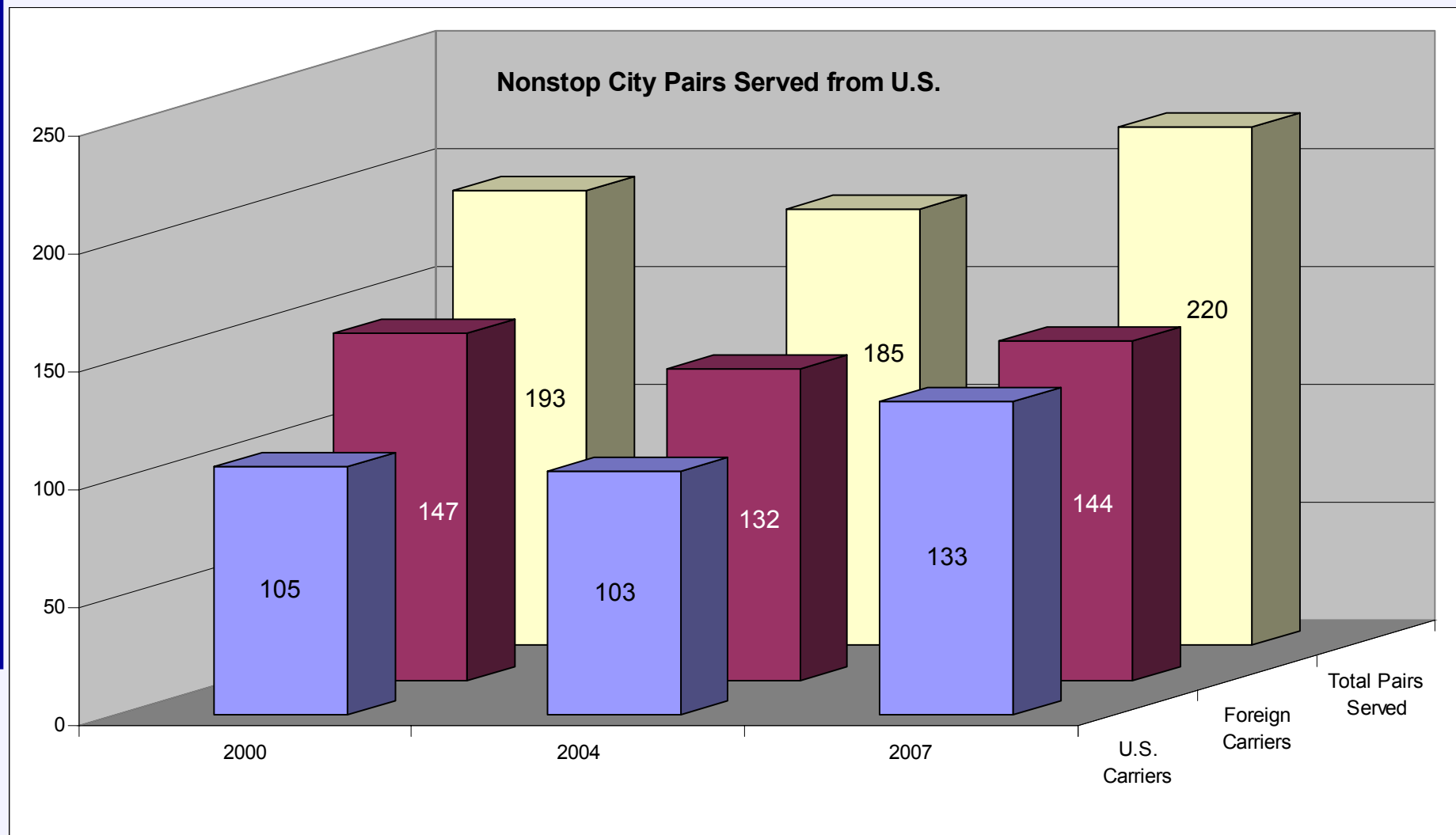


Outline

1. Transatlantic Landscape
2. Research Overview
3. Policy Impacts on Transatlantic Service Levels
4. Results and Conclusions

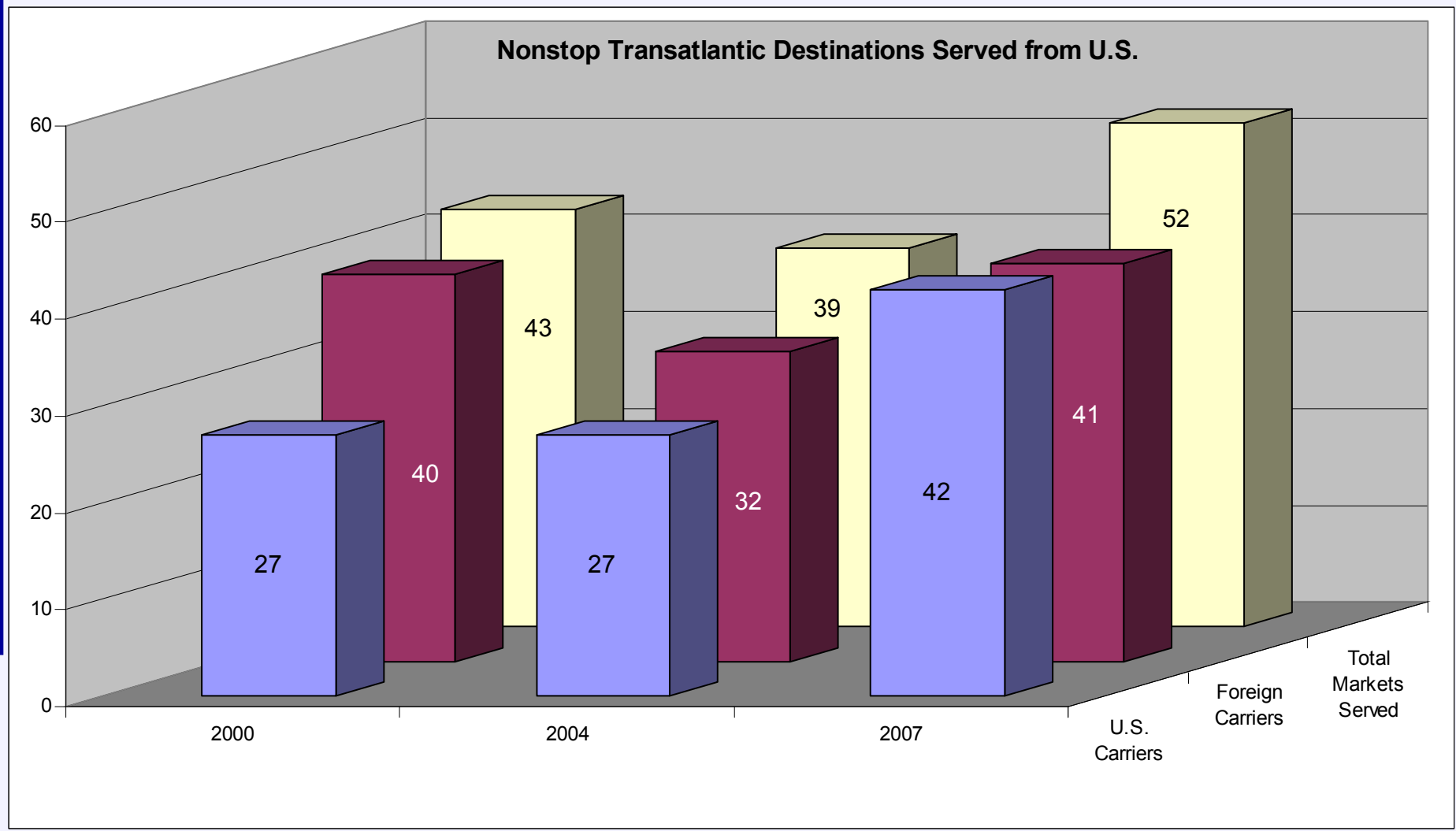


U.S. and Europe are Increasingly Connected



Data Source: U.S. DOT T-100 International Segment Data

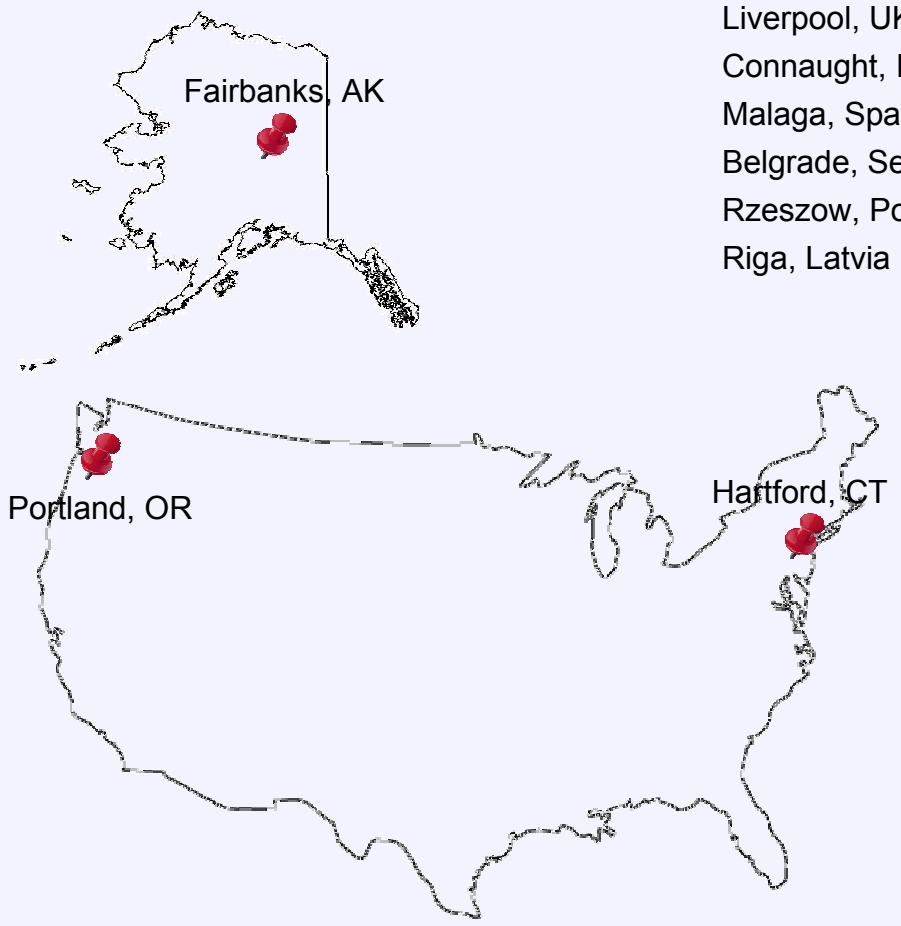
U.S. and Europe are Increasingly Connected



Data Source: U.S. DOT T-100 International Segment Data



Cities Have Received First Transatlantic Service since 2000



- Bristol, UK
- Belfast, UK
- Edinburgh, UK
- Liverpool, UK
- Connaught, Ireland
- Malaga, Spain
- Belgrade, Serbia
- Rzeszow, Poland
- Riga, Latvia

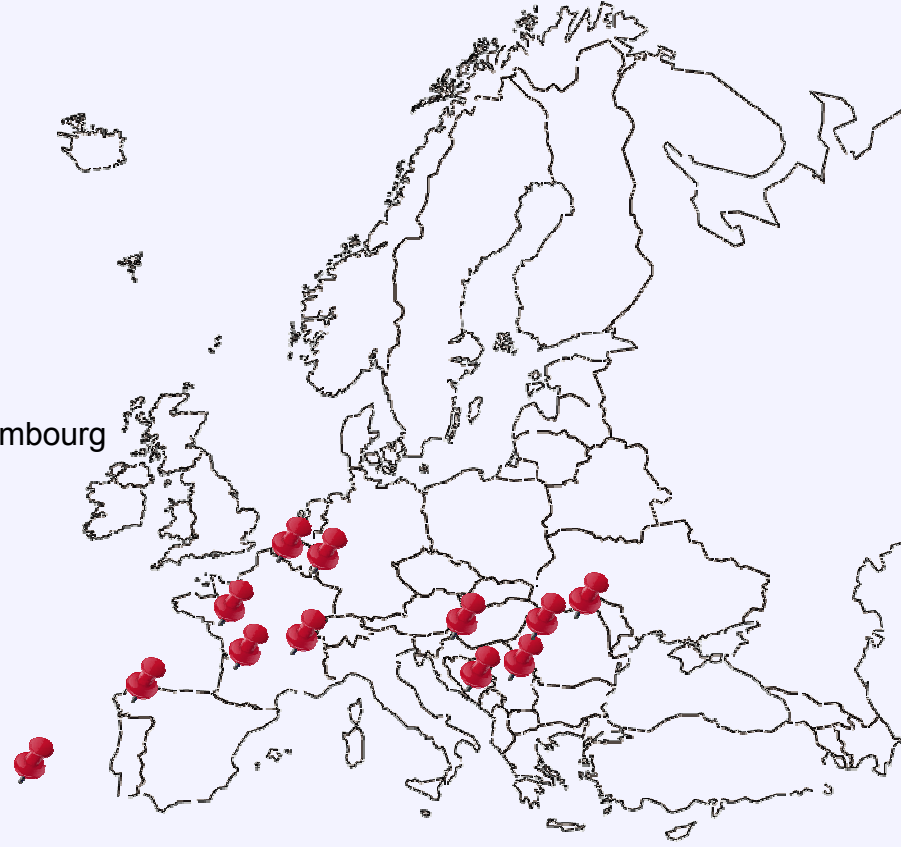


- Berlin, Germany
- Hamburg, Germany
- Cologne, Germany
- Bologna, Italy
- Pisa, Italy
- Naples, Italy
- Palermo, Italy



But Some Cities Have Lost All Transatlantic Service since 1990

- Lyon, France
- Nantes, France
- Bordeaux, France
- Lille, France
- Zagreb, Croatia
- Dubrovnik, Croatia
- Belgrade, Serbia
- Luxembourg, Luxembourg



- Santiago de Compostela, Spain
- Ponta Delgada, Portugal
- Terceira, Portugal
- Timisoara, Romania
- Satu Mare, Romania



- Pittsburgh, PA
- St. Louis, MO

Research Questions

- What has driven these changes? Specifically, how has regulation and/or liberalization played a role?
- How has the competitive environment in the transatlantic aviation market evolved since 1990?
- Has transatlantic liberalization led to increased service or competition? Alternatively, has it led to losses for some cities?

Research Approach

- Stakeholder Analysis
- Analysis 1: Transatlantic Competition
 - Recent evolution of transatlantic competition
 - U.S. DOT Data: service offerings, frequencies, a/c size
- Analysis 2: Impacts of Policy Changes
 - Transatlantic Open Skies Agreements
 - Granting of Antitrust Immunity
- Analysis 3: Econometric Market Model
 - Aggregate U.S. city and European city service levels
 - Correspondence with Policy Changes

U.S.-EU Open Skies Agreement

- On April 30, 2007 EU and U.S. authorities signed a first stage Open Skies accord
 - Allows EU airlines to operate direct flights between U.S. and any EU country (and some others)
 - Allows U.S. airlines reciprocal right, and ability to fly between cities in different EU countries
 - Elimination of the nationality clause
- EU officials have made liberalized foreign control a prerequisite for a 2nd Stage agreement
 1. Match EU's 49% foreign control restriction
 2. U.S. domestic market lucrative as standalone and hub-feeder
 - Cabotage rights only granted to U.S. citizen airlines
 - U.S. incorporation requires meeting ownership caps
 - Without control, network composition cannot be shaped



U.S.-European Open Skies Agreements

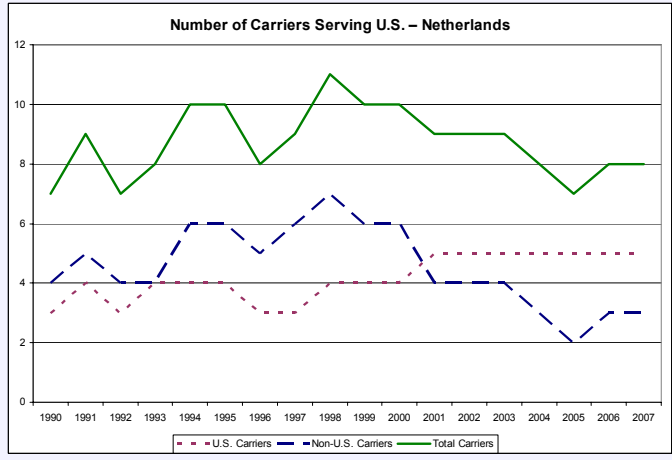
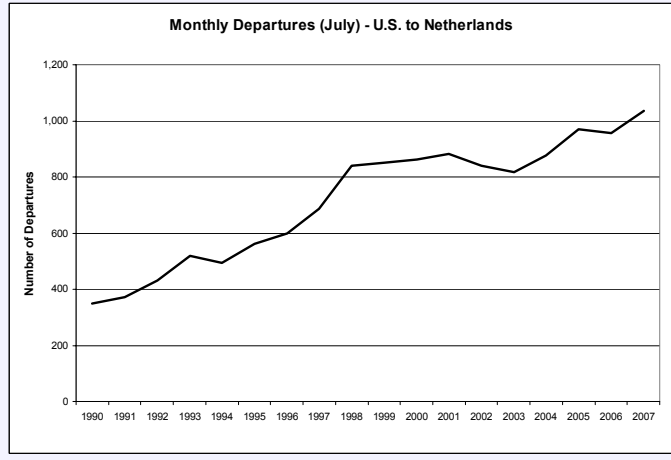
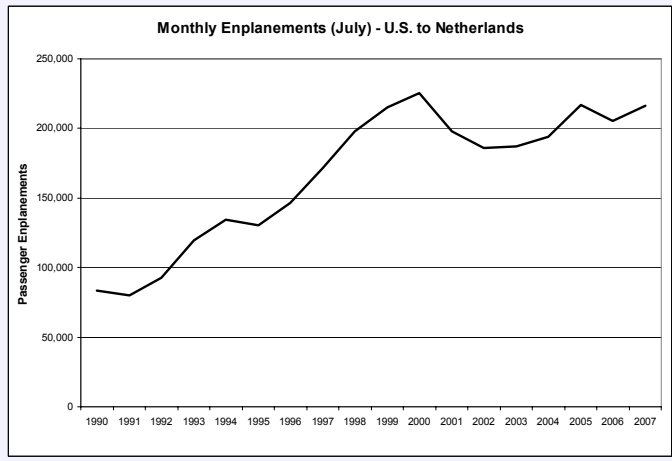
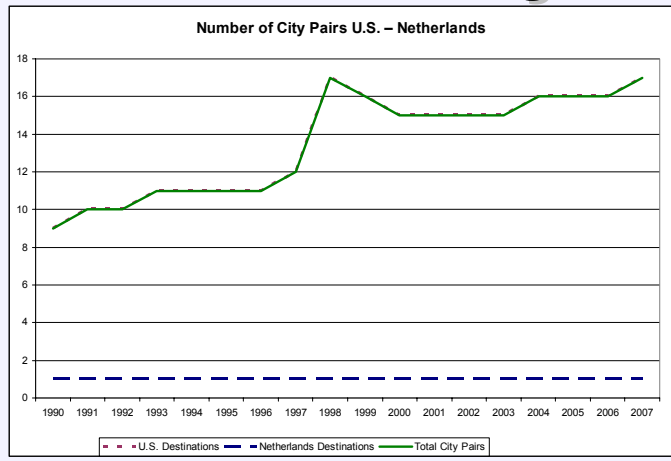
Country	Date Signed	City Pairs	Departures	Passengers Enplaned	Competitors	Conclusive Increase from Open Skies?
Netherlands	10/14/1992					
Belgium	3/1/1995					
Finland	3/24/1995					
Denmark	4/26/1995					
Norway	4/26/1995					
Sweden	4/26/1995					
Luxembourg ¹	6/6/1995					
Austria	6/14/1995					
Iceland	6/14/1995					
Switzerland	6/15/1995					
Czech Republic	12/8/1995					
Germany	2/29/1996					
Romania	7/15/1998					
Italy	11/11/1998					
Portugal	12/22/1999					
Slovak Republic ¹	1/7/2000					
Turkey	3/22/2000					
Malta	10/12/2000					
Poland	5/31/2001					
France	10/19/2001					
Albania ¹	9/24/2003					
osnia & Herzegovina ¹	11/22/2005					

¹ Country had no service in period before or after signing of agreement

Source: Analysis of BTS T-100 Segment Data

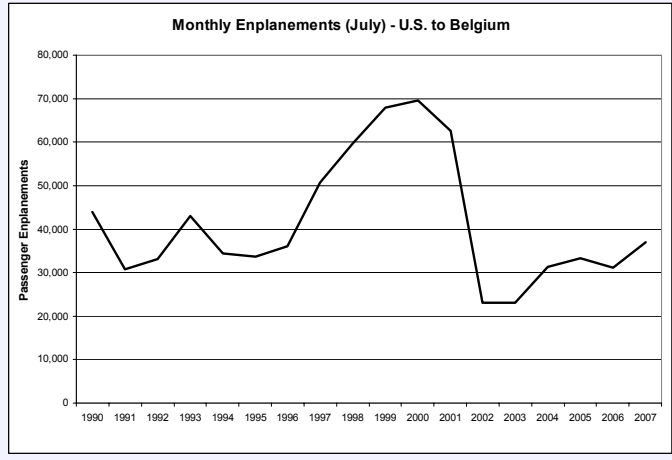
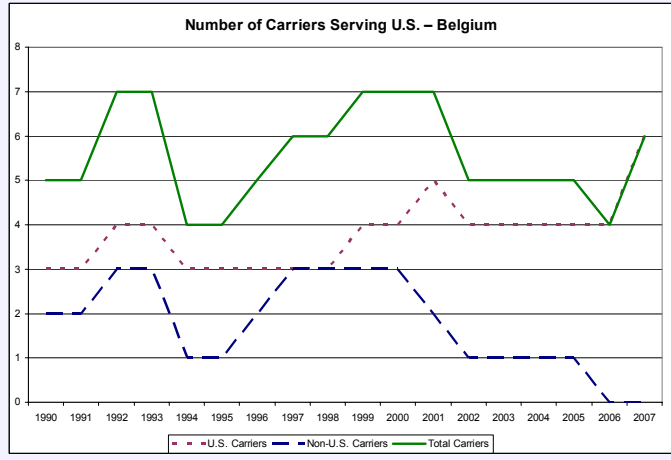
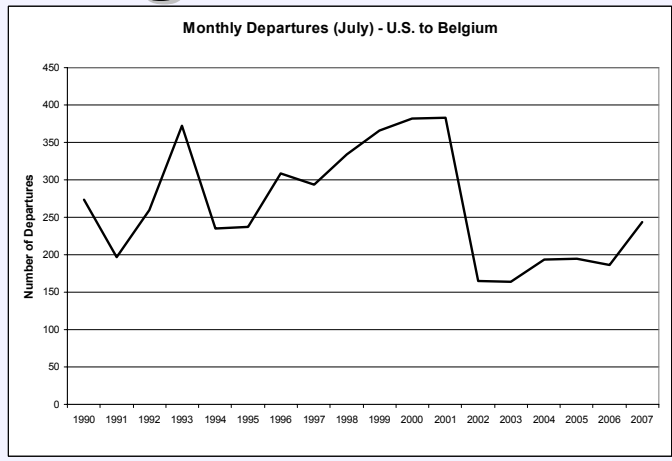
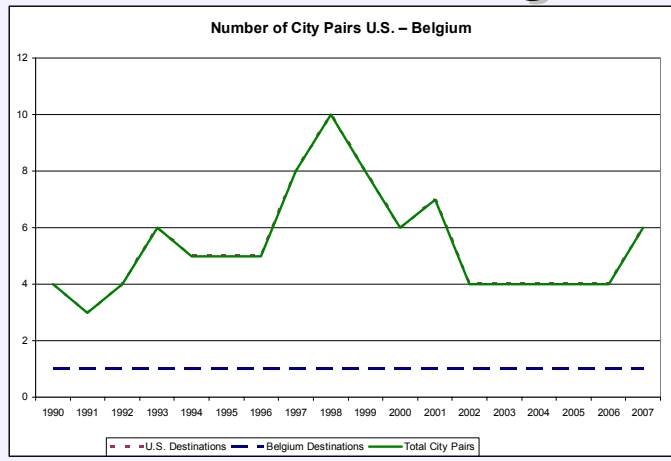


Case Study 1: The Netherlands



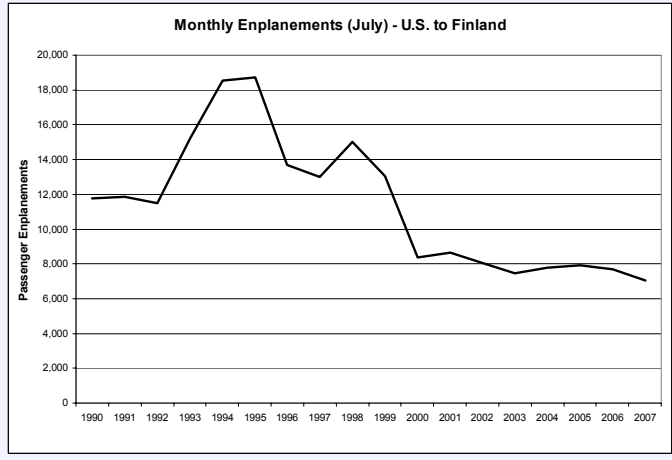
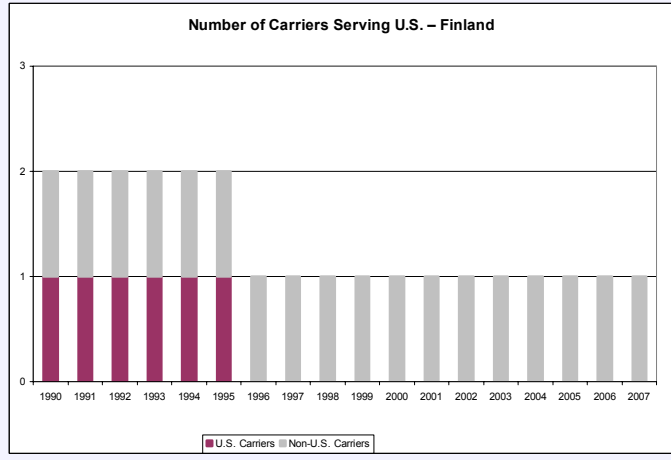
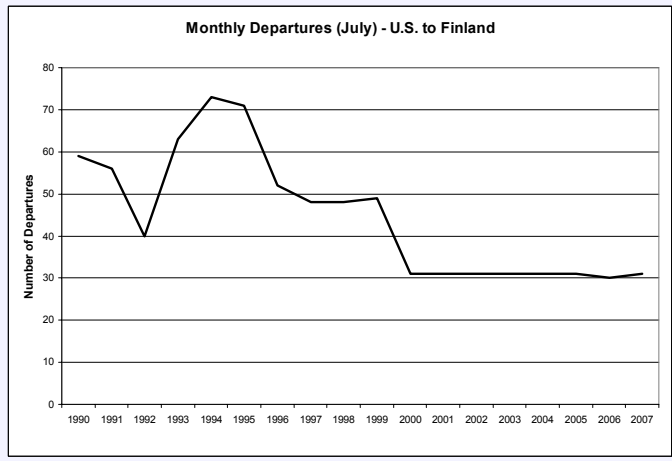
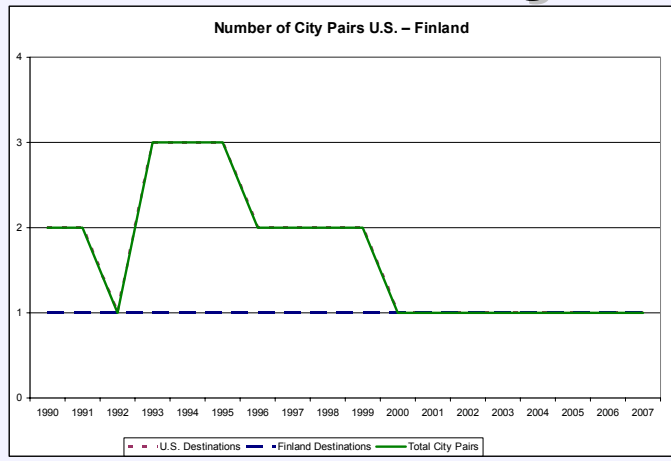
Service Level	5-Year Pre Avg.	5-Year Post Avg.	Service Changes
# of City Pairs	9.67	11.20	Increase
# of Competitors	7.67	9.00	Increase
Departures Annual Growth Rate	11.08%	10.20%	Decrease
Enplanements Annual Growth Rate	5.55%	13.69%	Increase

Case Study 2: Belgium



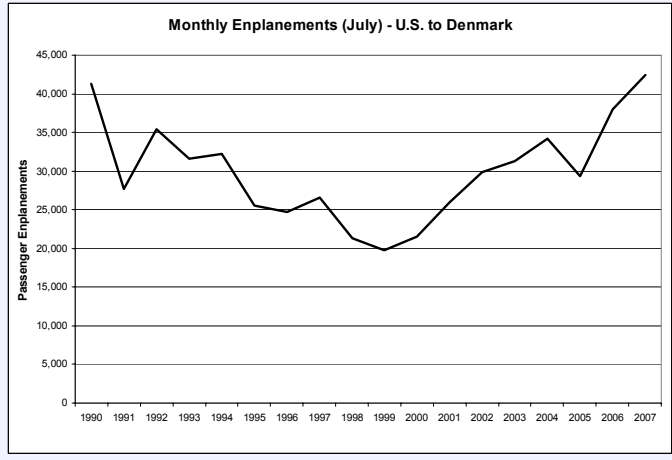
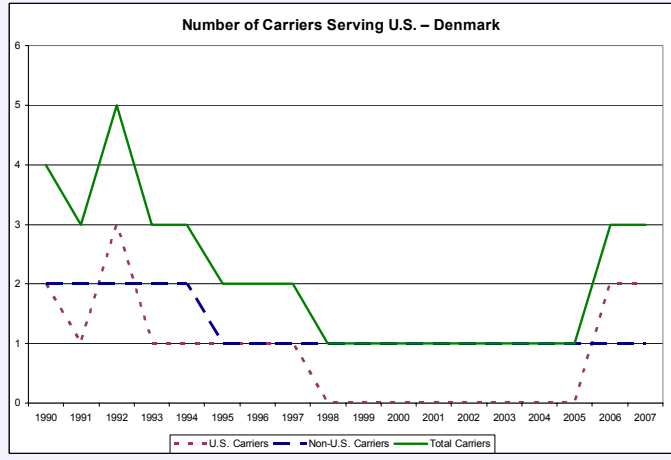
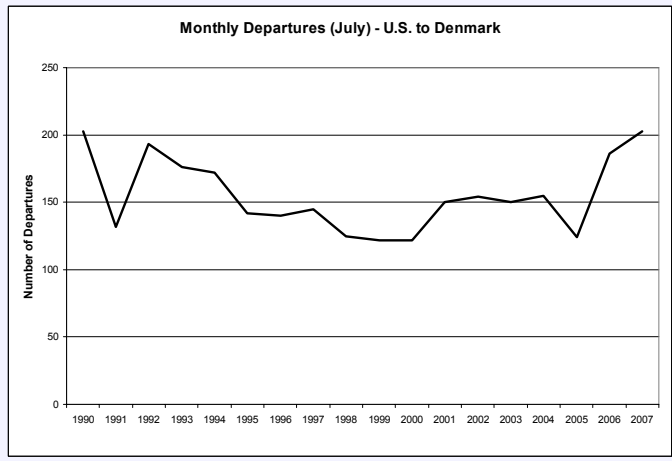
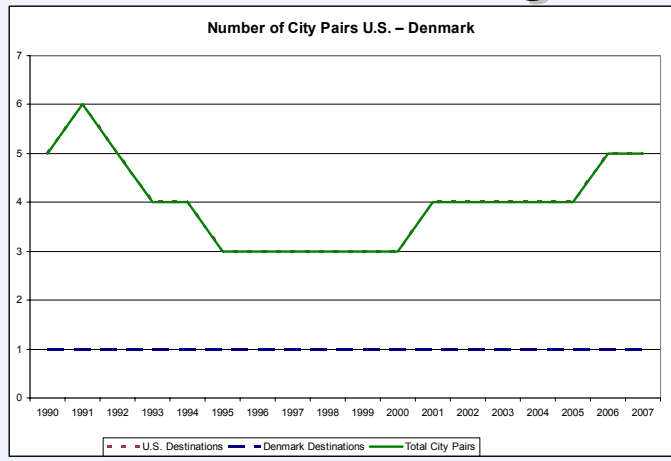
Service Level	5-Year Pre Avg.	5-Year Post Avg.	Service Changes
# of City Pairs	4.40	7.20	Increase
# of Competitors	5.60	5.60	None
Departures Annual Growth Rate	2.60%	9.91%	Increase
Enplanements Annual Growth Rate	-3.09%	15.48%	Increase

Case Study 3: Finland



Service Level	5-Year Pre Avg.	5-Year Post Avg.	Service Changes
# of City Pairs	2.20	2.20	None
# of Competitors	2.00	1.20	Decrease
Departures Annual Growth Rate	9.93%	-7.02%	Decrease
Enplanements Annual Growth Rate	12.96%	-5.73%	Decrease

Case Study 4: Denmark



Service Level	5-Year Pre Avg.	5-Year Post Avg.	Service Changes
# of City Pairs	4.80	3.00	Decrease
# of Competitors	3.60	1.60	Decrease
Departures Annual Growth Rate	0.04%	-6.29%	Decrease
Enplanements Annual Growth Rate	-3.45%	-8.72%	Decrease



Impacts of Open Skies on Service Levels

Country	Date Signed	City Pairs	Departures	Passengers Enplaned	Competitors	Overall Change Following Open Skies?
Netherlands ¹	10/14/1992	▲	▼	▲	▲	Increase
Belgium	3/1/1995	▲	—	▲	—	Increase
Finland	3/24/1995	—	—	▼	▼	Decrease
Denmark	4/26/1995	▼	—	—	▼	Decrease
Norway	4/26/1995	—	—	—	▼	Decrease
Sweden	4/26/1995	—	—	▲	▼	Inconclusive
Luxembourg	6/6/1995	—	—	—	—	Inconclusive
Austria	6/14/1995	—	—	▲	—	Increase
Iceland	6/14/1995	▲	▲	▲	—	Increase
Switzerland	6/15/1995	▲	▲	—	▲	Increase
Czech Republic	12/8/1995	—	▼	▼	—	Decrease
Germany	2/29/1996	▲	—	—	—	Increase
Romania	7/15/1998	—	—	—	—	Inconclusive
Italy	11/11/1998	▲	—	—	—	Increase
Portugal	12/22/1999	—	—	—	—	Inconclusive
Slovak Republic ²	1/7/2000	—	—	—	—	No Service
Turkey	3/22/2000	—	—	▼	—	Decrease
Malta ²	10/12/2000	—	—	—	—	No Service
Poland	5/31/2001	—	—	—	—	Inconclusive
France	10/19/2001	▼	▼	—	▼	Decrease
Albania ²	9/24/2003	—	—	—	—	No Service
Bosnia & Herzegovina ²	11/22/2005	—	—	—	—	No Service

¹ Wilcoxon Rank Sum test could not be performed on the Netherlands due to a lack of available data prior to 1990

² Country had no service after signing of agreement

— Indicates no statistically significant change



Econometric Model Results

- For U.S. markets
 - Population, economic presence, and distance correlate very strongly with level of service
 - Whether the city serves as a hub has insignificant explanatory power
- For European markets
 - Population and distance have very weak explanatory power for European cities
 - In contrast, whether the city serves as a hub for a Big-3 carrier is the dominant factor in explaining level of service
 - GDP is dominant factor for European country service levels
 - Existence of an Open Skies agreement does not have significant correlation to service level to the U.S.

Conclusions

1. Liberalization has yielded both increases and decreases in service since 1990
 - No statistically significant correlation between existence of an Open Skies Agreement and service levels to that country
2. Existence of Big-3 carrier hubs do more to explain transatlantic service levels of various cities than the size or economic power of those cities, proximity to the U.S. or even the presence of an Open Skies agreement
3. U.S. carriers are capturing a disproportionate share of new service by leveraging the network effects from their hubs, much like the European model
4. As competition has increased: U.S. cities that have gained nonstop transatlantic service have been connected to Big-3 European hubs, and vice versa

