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Aviation Industry Update & Market Outlook

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Introduction

My Thinking as I Prepared to Speak to You Last Year

- **The headlines from the Dubai Air Show**
  - $100 billion in orders/options and the lack of mention of a US carrier
- **The overwhelming sense that the US airline industry is in recovery**
  - $5 billion in profits on $130 billion in revenue does not a recovery make
    - $100 per barrel oil – how much can we really pass through before testing elasticity?
    - Credit Crunch and potential impact on consumer disposable income
      - Talk using the “R” word
    - Weakness of the dollar versus major international currencies
      - An enabler of non US aircraft orders
    - Suggestions from labor for demands that cannot be met
- **Commercial initiatives being undertaken by non-US competitors**
  - Air France/KLM
  - Cathay Pacific/Dragonair and investment in Air China
  - Singapore and investment in China Eastern
- **First phase of US – EU deal imminent**
  - Are the US Flag carriers really ready?

My Thinking as I Prepared to Speak to You Today

- **A US carrier actually places a significant order**
  - American to take 1 737 every 10 days beginning in 2009
  - American places a firm order for 42 787 aircraft
- **When I was speaking last year we were in recession (the R word)**
  - According to the National Bureau of Economic Research, the US is currently immersed in the third longest recession since 1929
- **Crude oil trades at more than $100 per barrel for the first time on January 2, 2008**
  - $147.11 on July 11, 2008
  - $49.38 on December 1, 2008
- **Credit issues and second order impacts on consumers now the story**
- **Non-US carriers looking to defer delivery of aircraft**
- **US industry is best positioned to weather near-term fallout from economic weakness**

My Thinking as I Prepared to Speak to You Today

- Commercial initiatives continue by non-US carriers
  - AF/KL and LH pursue the "Flying Pig" (Alitalia)
  - Lufthansa invests $300 million in jetBlue
  - Lufthansa exercises option to take controlling interest in BMI
  - Lufthansa only carrier with serious interest in Austrian
  - British Airways expresses interest in Iberia
  - British Airways and Qantas in merger talks

- **Commercial initiatives being undertaken by US carriers too**
  - Delta completes purchase of Northwest
  - United and Continental plan domestic alliance
  - United, Continental, Air Canada and Lufthansa apply for immunity
  - Southwest puts toe into international code share waters
  - jetBlue establishes relationship with Aer Lingus

- First Phase of US-EU deal put in place
  - Economic environment prevents opportunities from transpiring

Deregulation's 30th Birthday

What Hath Deregulation Wrought?

- **Barriers to entry for new and existing carriers were removed**
  - If one had a dollar, an airplane and a certificate: an airline was born
- **Barriers to exit for inefficient carriers were about to be erected**
  - Bankruptcy, government, labor as an internal source of capital
  - Inefficient providers remained in the market
- **Competition ensued: healthy or unhealthy?**
- **Boom and bust cycles describe the industry**
  - And they really are no good for any stakeholder group
- **The search continues for a sustainable model**

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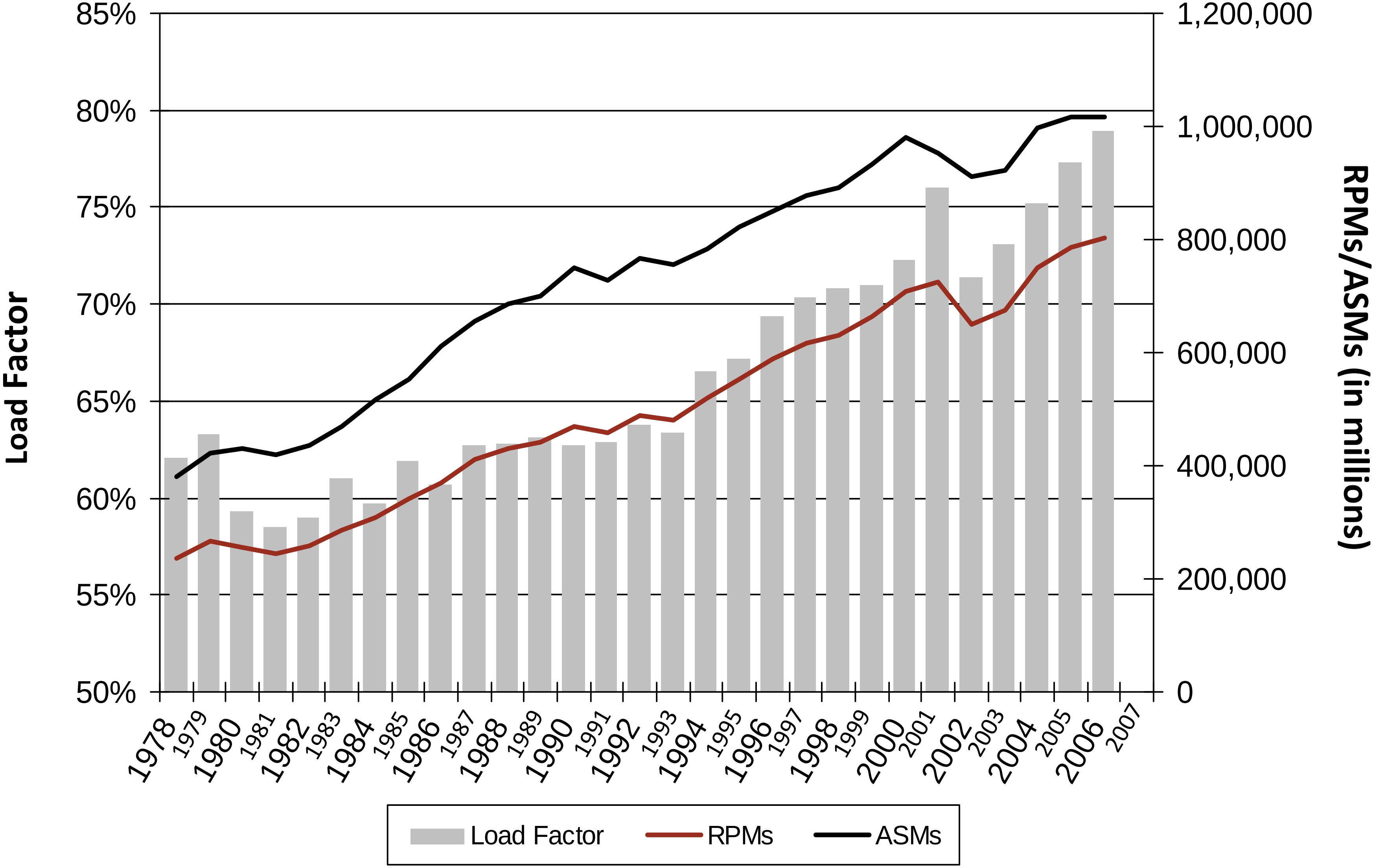
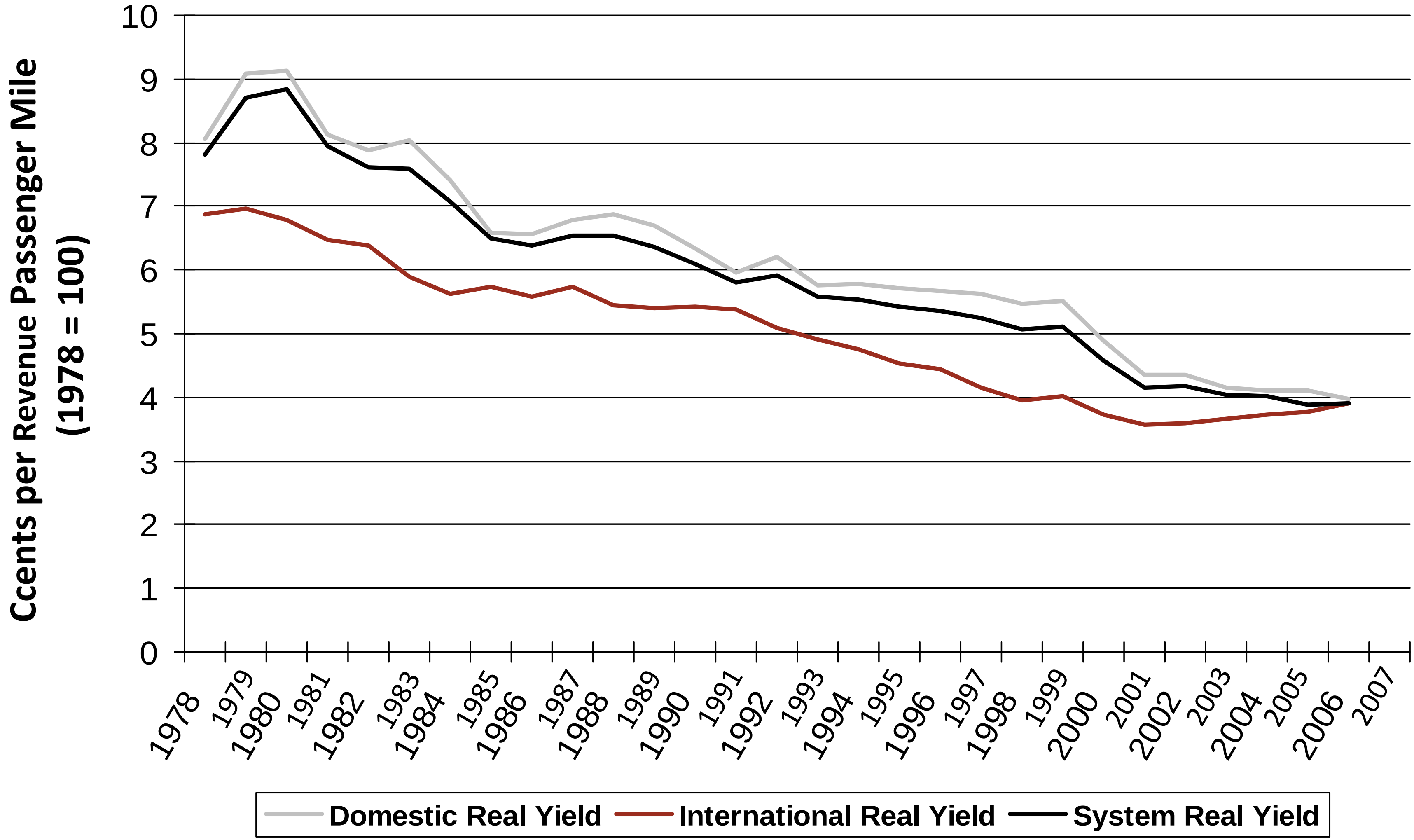
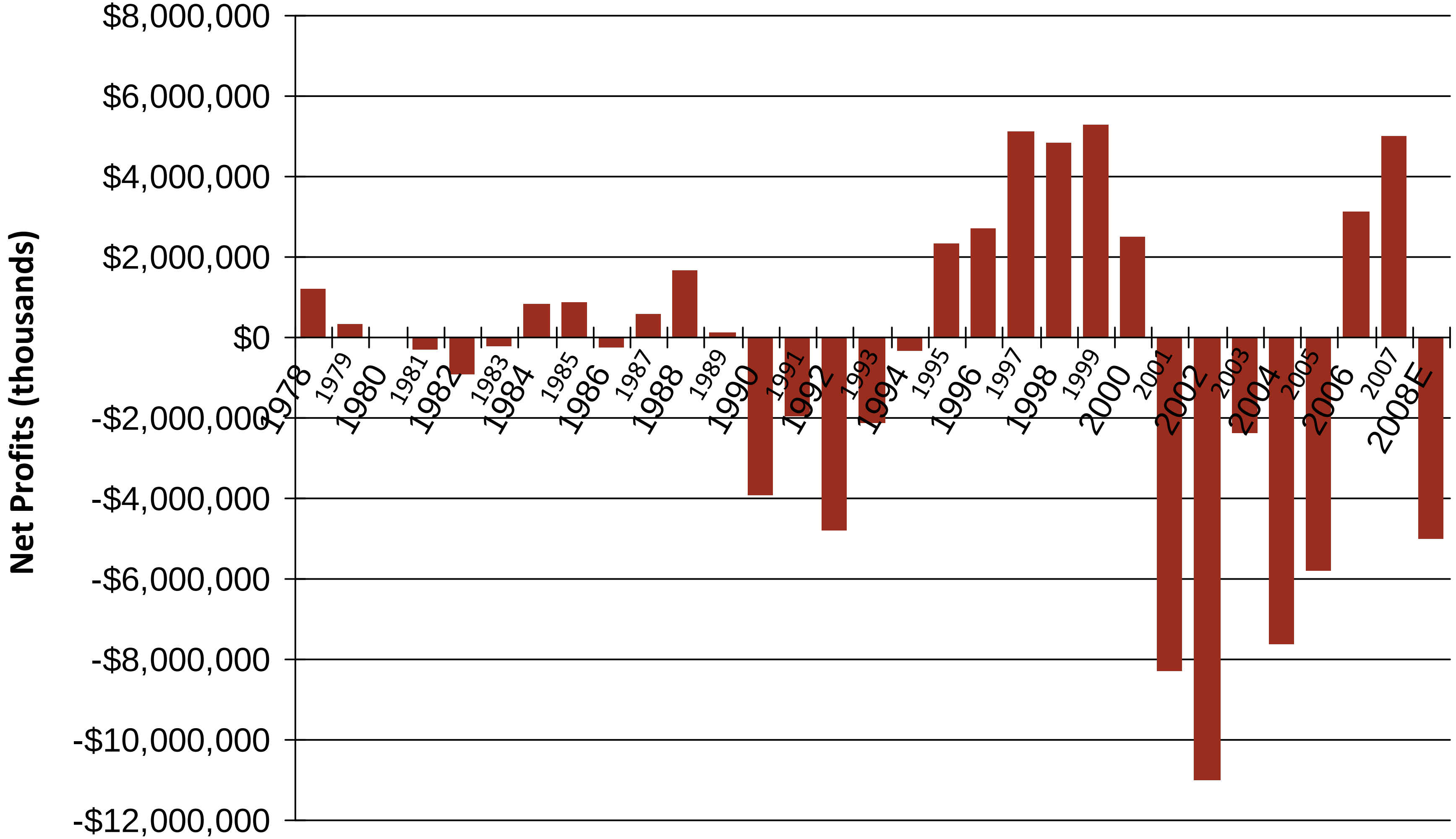
Will We Ever Learn……?
That Lines Going Perpetually Up Form Bubbles



And that Perpetually Decreasing Real Fares Make For An Industry Platform that is Unsustainable



Annual Net Profits 1978 – 2008E



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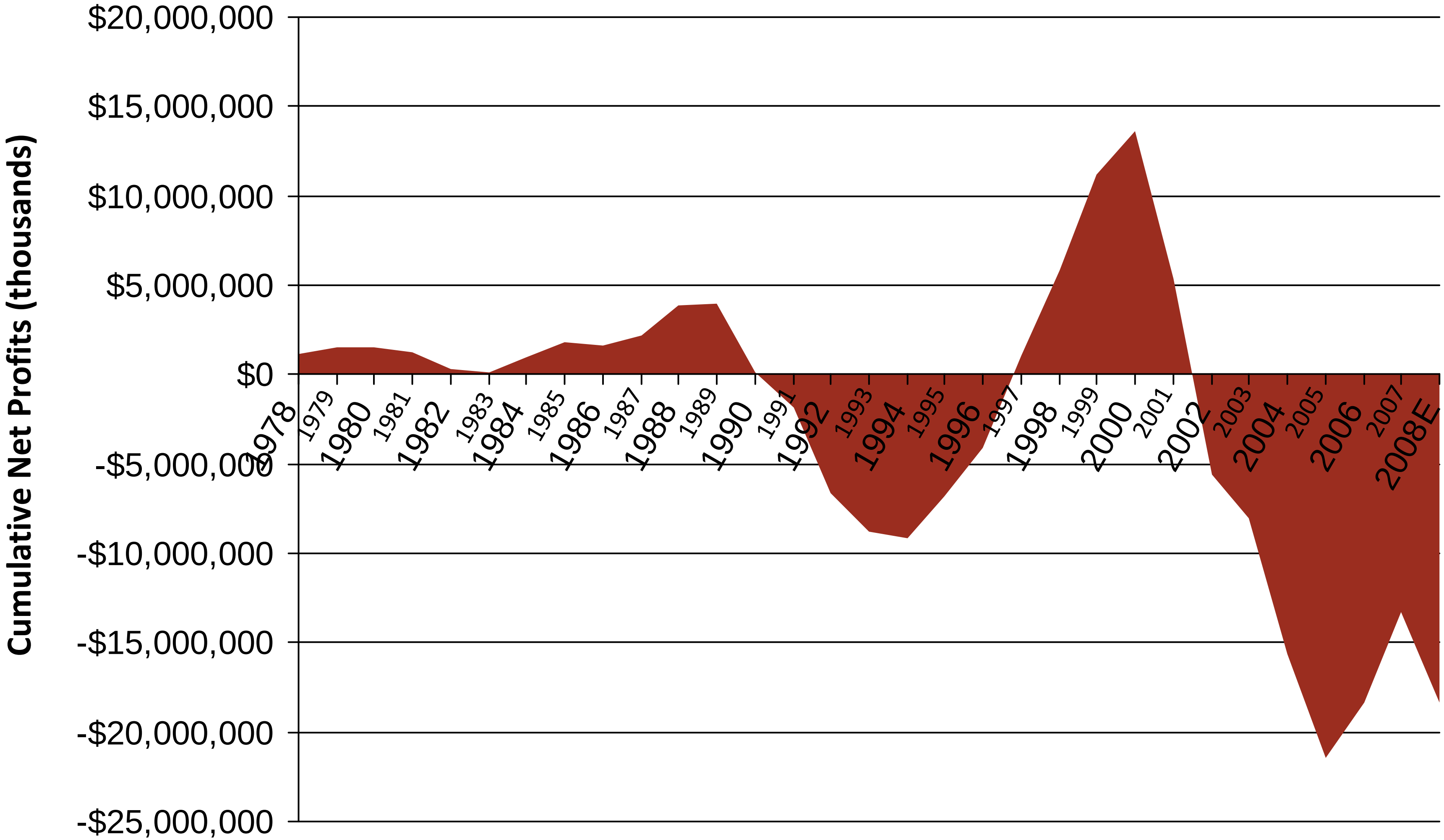
The Boom and Bust Cycles Are Good for No Stakeholder Group



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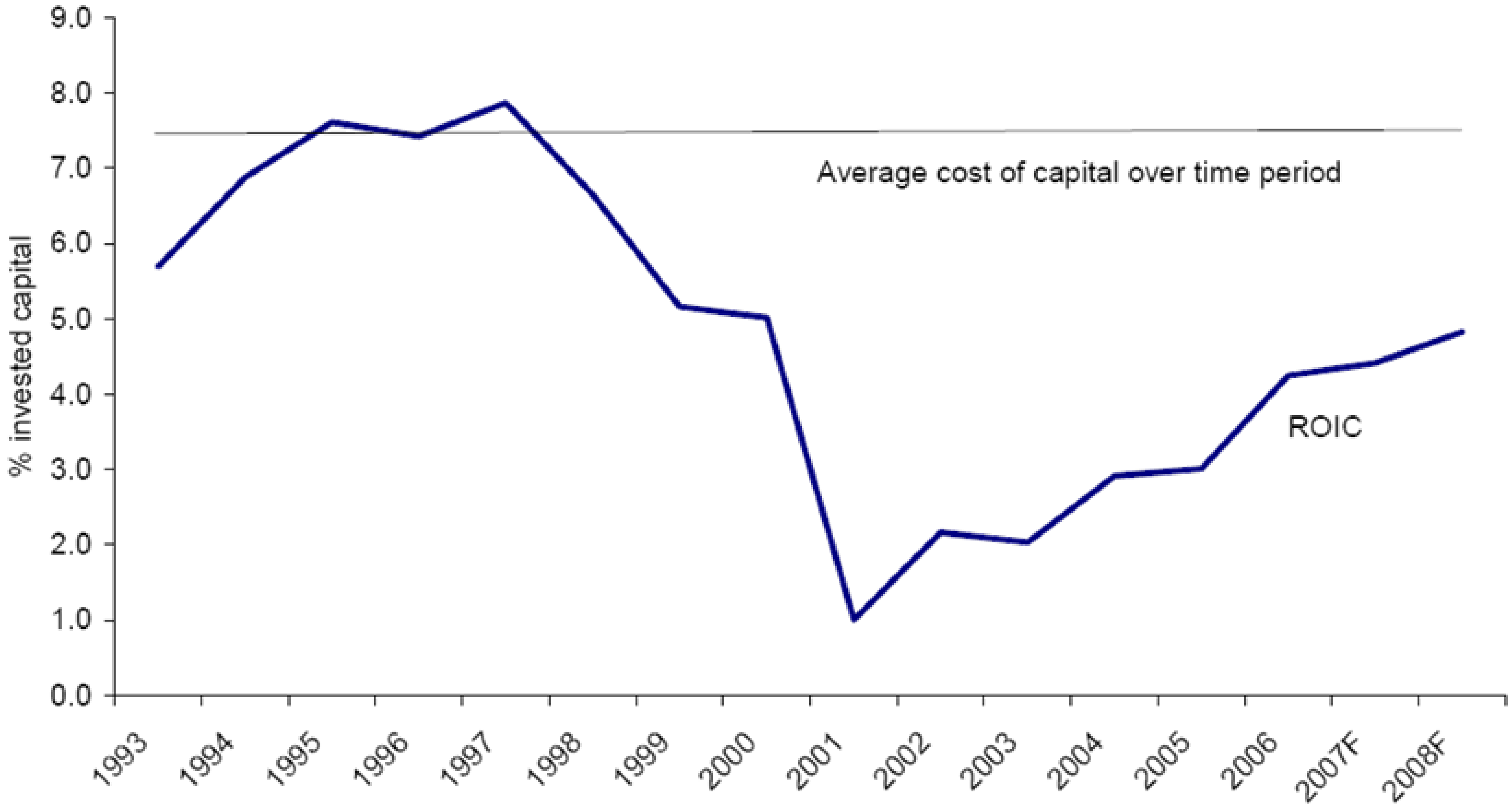
Bankruptcies

	BANKRUPTCIES	CUMULATIVE BANKRUPTCIES	SOME HIGHLIGHTED CARRIERS
1978			
1979	2	2	New York Air
1980	4	6	
1981	5	11	
1982	10	21	Braniff
1983	5	26	Continental
1984	17	43	Air Florida, Wien
1985	10	53	PBA, Cascade
1986	6	59	Frontier
1987	9	68	Air Atlanta, Air South
1988	11	79	Mid Pacific
1989	7	86	Eastern, Presidential
1990	6	92	Continental
1991	16	108	Pan Am, Eastern, Bar Harbor, Midway, America West
1992	5	113	TWA
1993	3	116	Hawaiian
1994	2	118	
1995	5	123	TWA
1996	4	127	
1997	4	131	Air South, Western Pacific
1998	2	133	
1999	4	137	
2000	7	144	Tower, Legend
2001	2	146	TWA, Midway
2002	4	150	Vanguard, United, US Airways
2003	2	152	Hawaiian
2004	6	158	US Airways, ATA, Polar
2005	7	165	Delta, Northwest, Independence Air
2006	1	166	
2007	2	168	Maxjet
2008	5	173	Aloha, ATA, Skybus, Frontier, Air Midwest

This Industry Has No Compelling Investment Thesis **NOT** Sustainable!

Return on Invested Capital



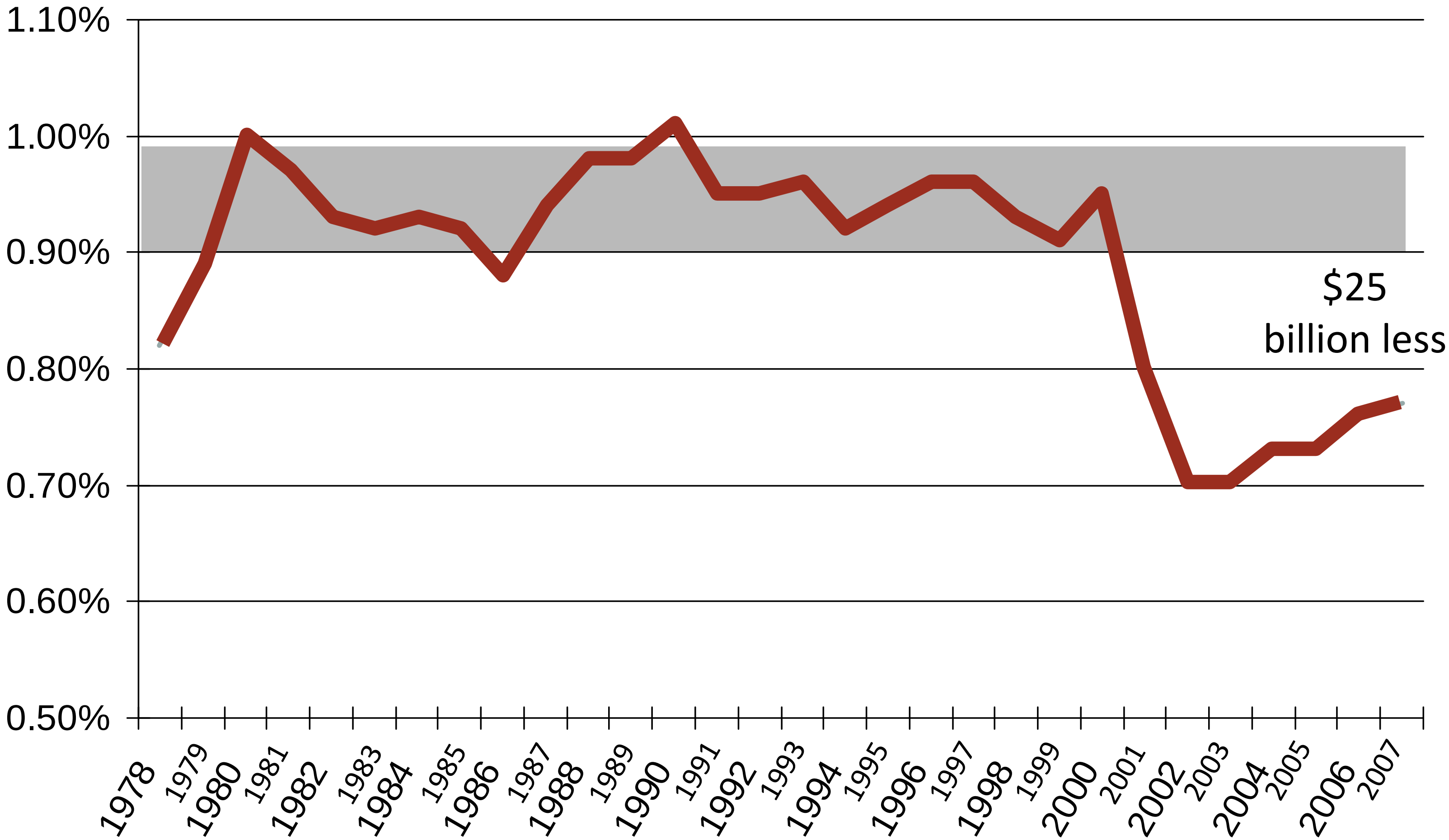
Source: IATA

Catalysts of Change

The Restructuring Refuses to Stop
Honestly, It Cannot

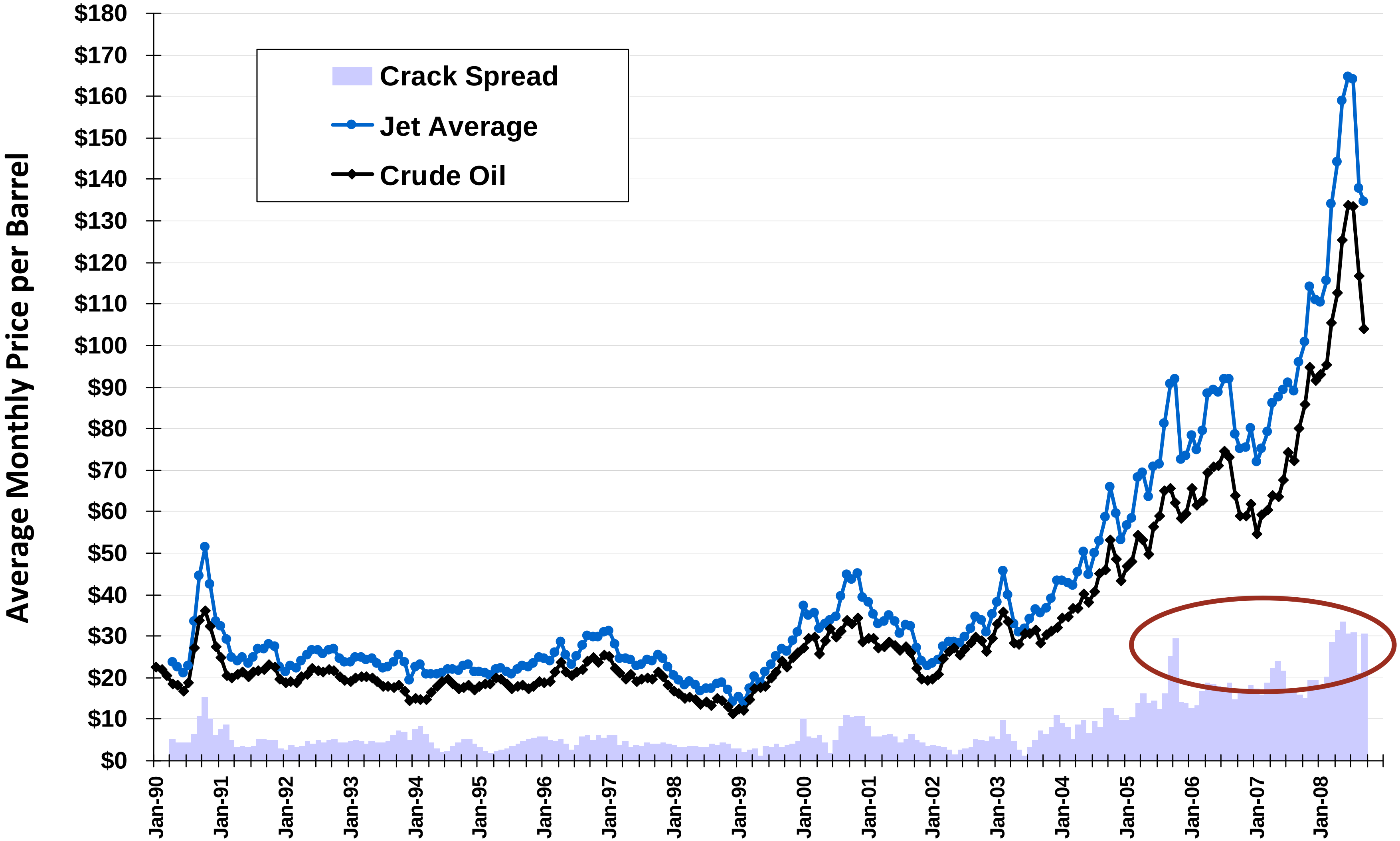
- **The historic relationship of GDP as a predictor of US airline industry health breaks down**
  - The revenue breakdown caused the industry to resort to cost-cutting as we had never experienced – as there was little to no choice
- **The Growth of the Low Cost Carriers**
  - Are they the savior?
- **The restructuring that occurred between 2002 and early 2007, removed approximately $20 billion in expense**
  - But the restructuring began when fuel was an equivalent of $30 per barrel “in the wing”; and today we are paying $30 billion more
  - The new economic order is all about $100+ per barrel fuel
- **Tomorrow, global forces will shape our domestic services**

Passenger Revenue as a Percent of GDP
Fewer Seats Finally Aligning with Less Revenue?



The Cost of Jet Fuel Is the Game Changer

Despite the Drop in Crude Oil Prices, the Industry Will Spend In Excess of $100 per Barrel in 2008



Sources: U.S. Energy Information Administration and the Air Transport Association of America

The Need for Capacity Cuts

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The Expense Portion of the Income Statement 2001 - 2007

- **Labor:** Significant cuts in headcount, pay and benefits.
- **Maintenance:** An area of concern as materials costs increasing. No secret as to why older aircraft are being removed as quickly as possible. Outsourcing questions remain. Activist agencies of government.
- **Commissions:** Most fruit has been picked.
- **Aircraft and non-aircraft rentals; food service; and infrastructure**: many reduced, but not enough. Airport and other costs could go up given their inverse relationship to activity.
- **Payments to Regional Partners:** a continuing issue.

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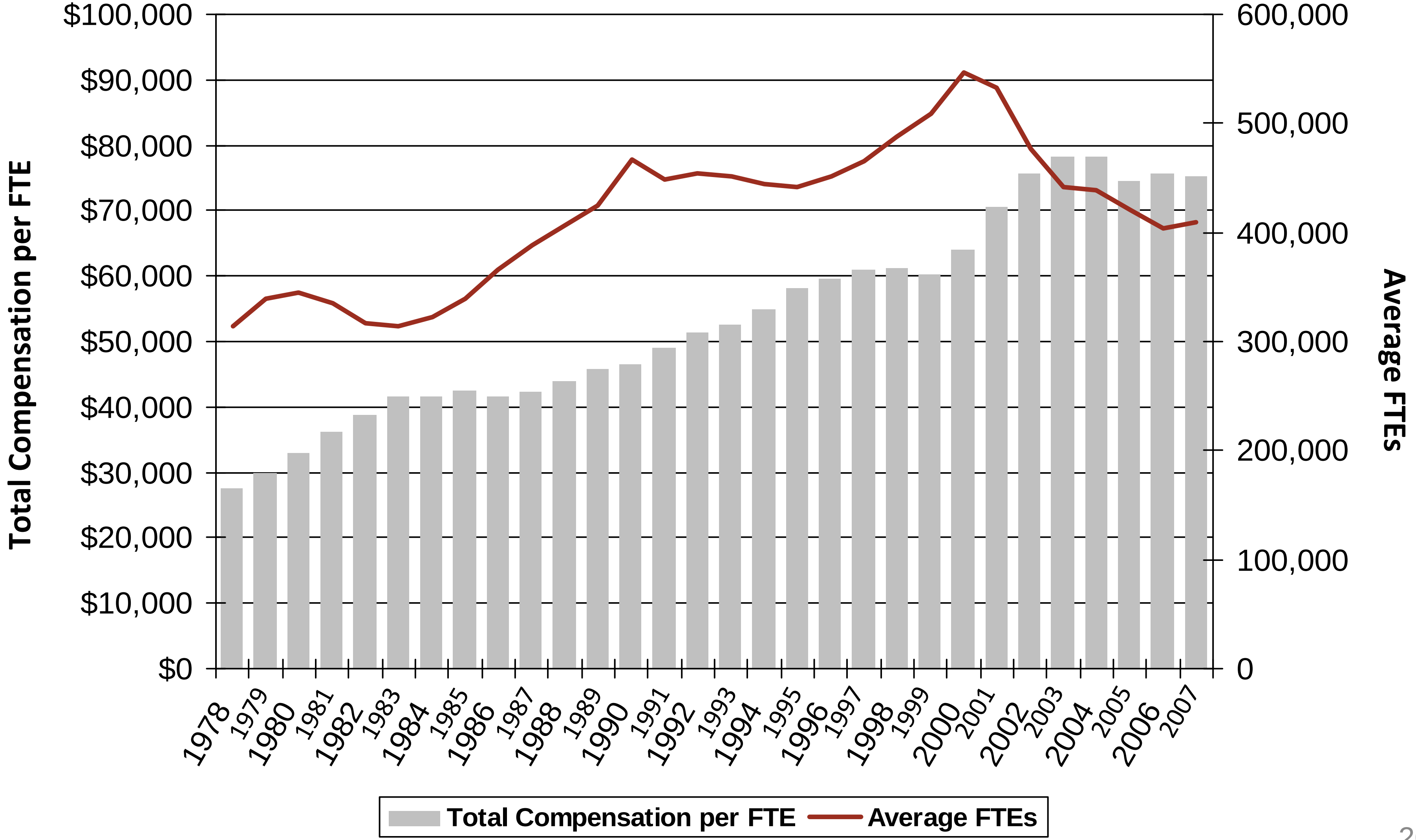
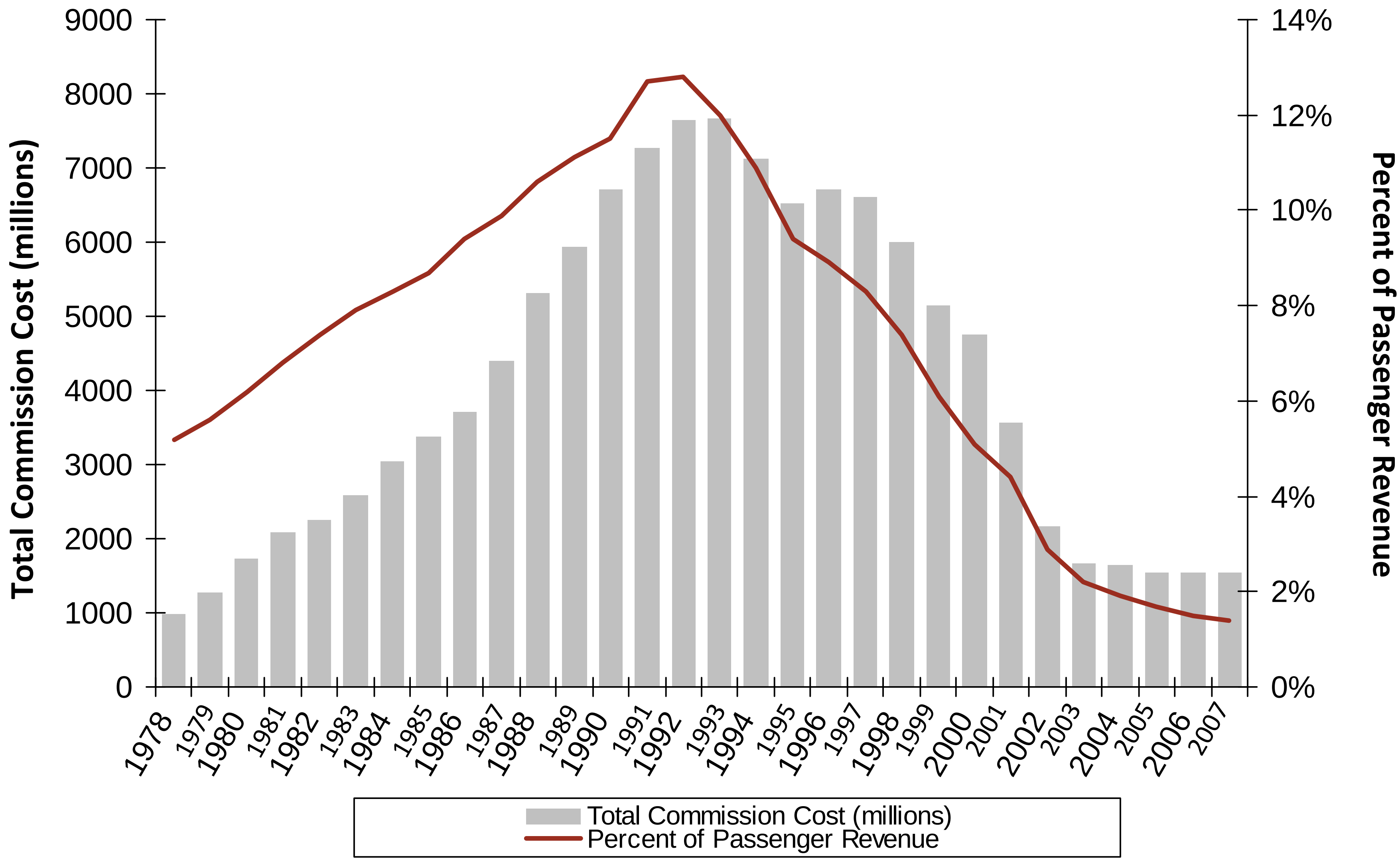
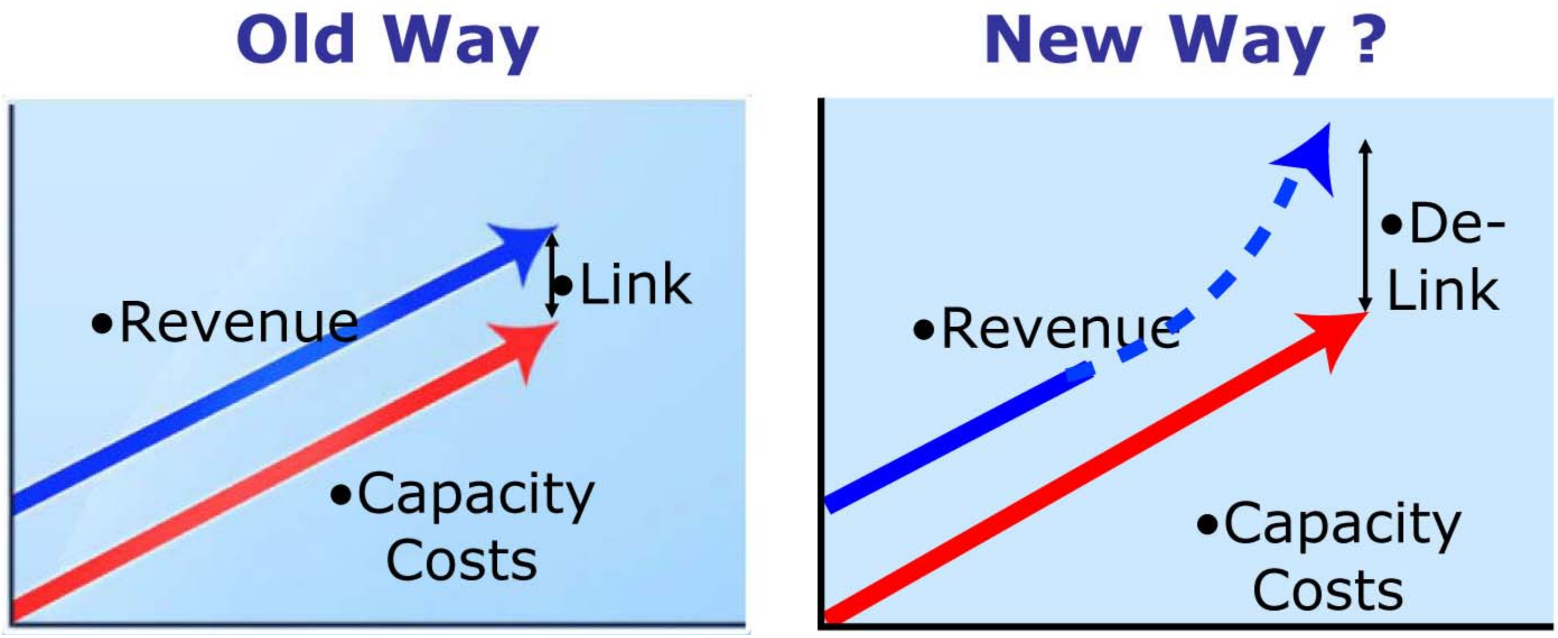
But as We Reduced Headcount, the Average Cost of Airline Labor Does Not Change Commensurately



Passenger Commissions and the Internet
A Classic Example of "Competing Away" the Efficiencies



Unbundling and Ala Carte Pricing are the Day's Strategy



Source: Air Canada Presentation, MIT Executive Education Forum, June 2007

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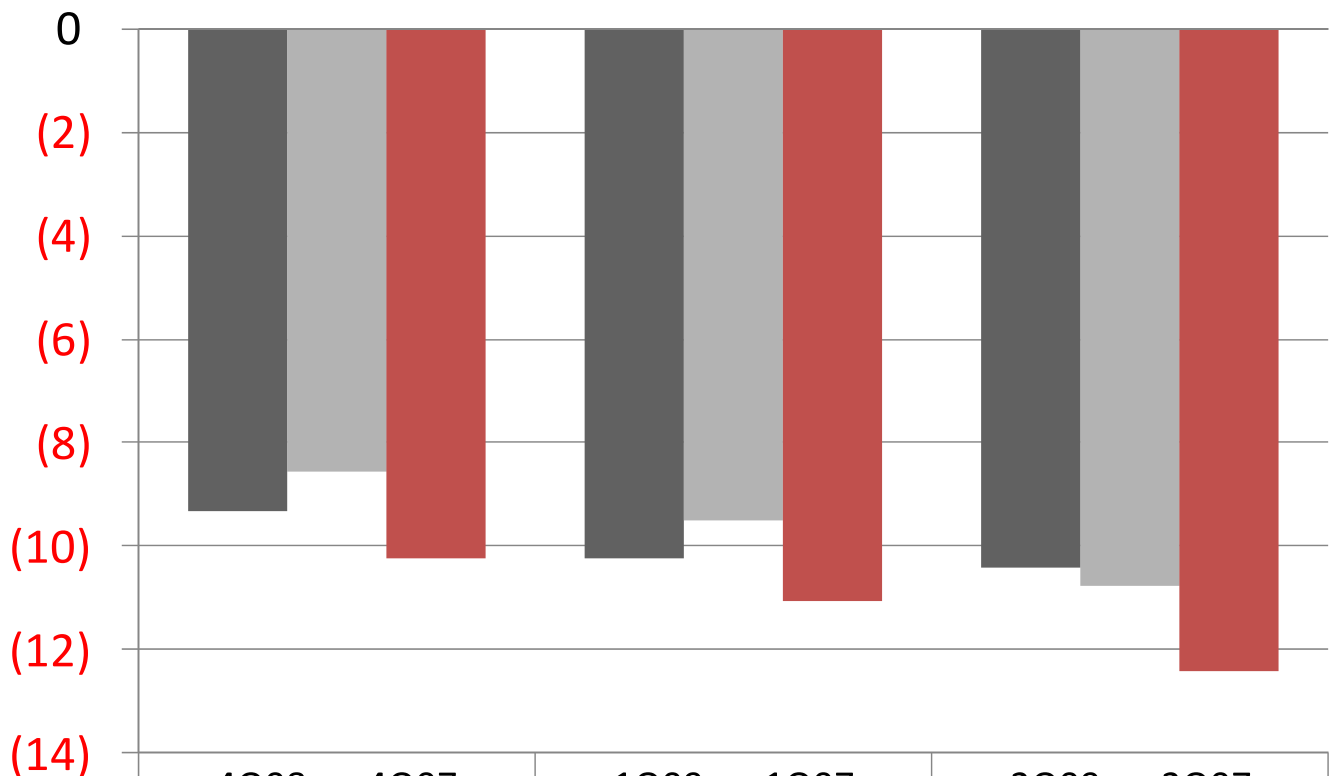
Economic Circumstances Sustaining Industry Contraction

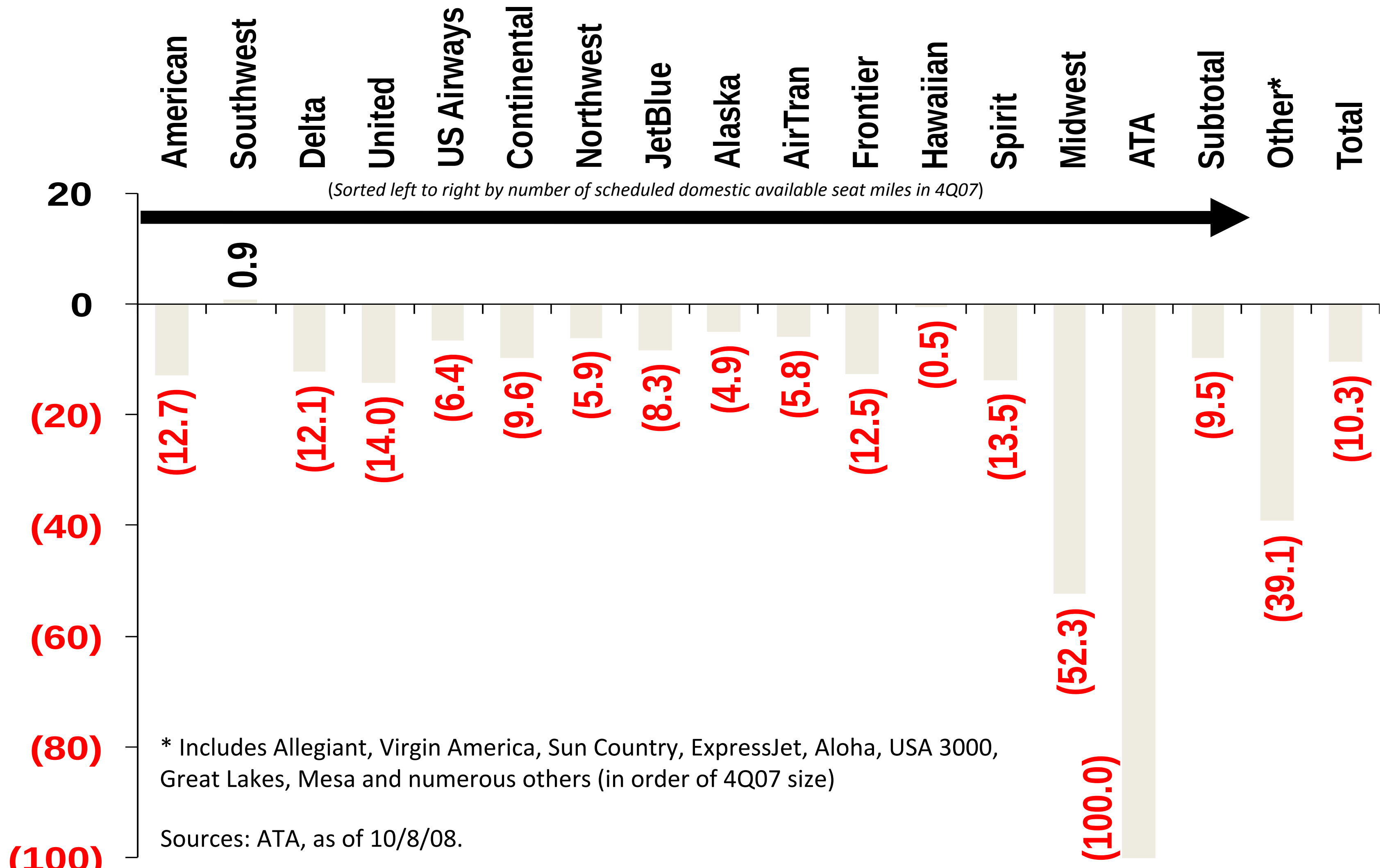
Reductions in Scheduled Domestic Air Service vs. Same Quarters in 2007



	4Q08 vs. 4Q07	1Q09 vs. 1Q07	2Q09 vs. 2Q07
Flights	(9.3)	(10.2)	(10.4)
Seats	(8.5)	(9.5)	(10.8)
ASMs*	(10.2)	(11.1)	(12.4)

* An available seat mile (ASM) is one seat flown one mile and is the standard unit of capacity in the passenger airline sector
Source: ATA

Domestic Seating Capacity Cuts Span the Industry
% Change in Scheduled Domestic Available Seat Miles: 4Q08 vs. 4Q07



* Includes Allegiant, Virgin America, Sun Country, ExpressJet, Aloha, USA 3000, Great Lakes, Mesa and numerous others (in order of 4Q07 size)

Sources: ATA, as of 10/8/08.

The Upcoming Labor Negotiations Cycle

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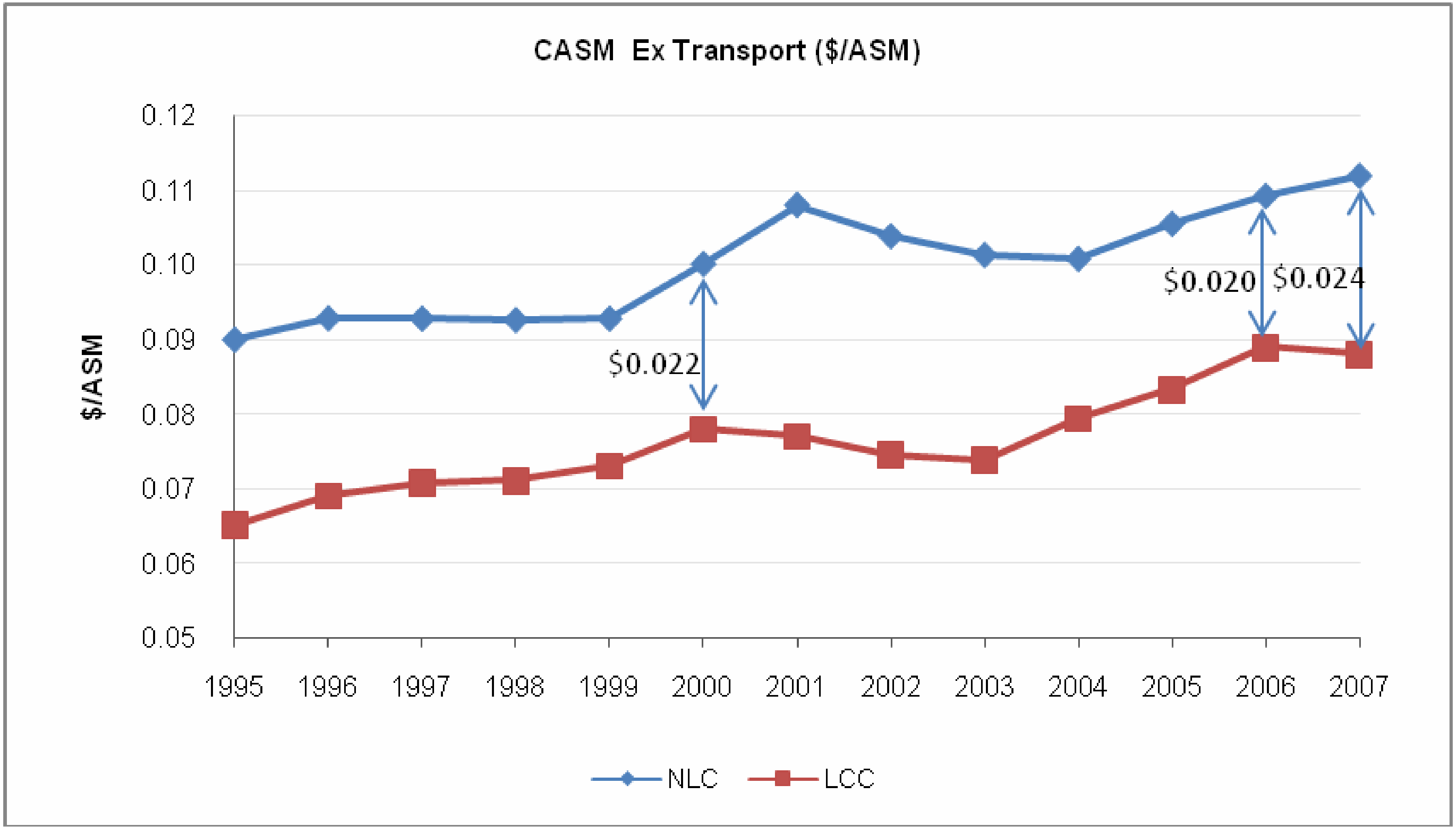
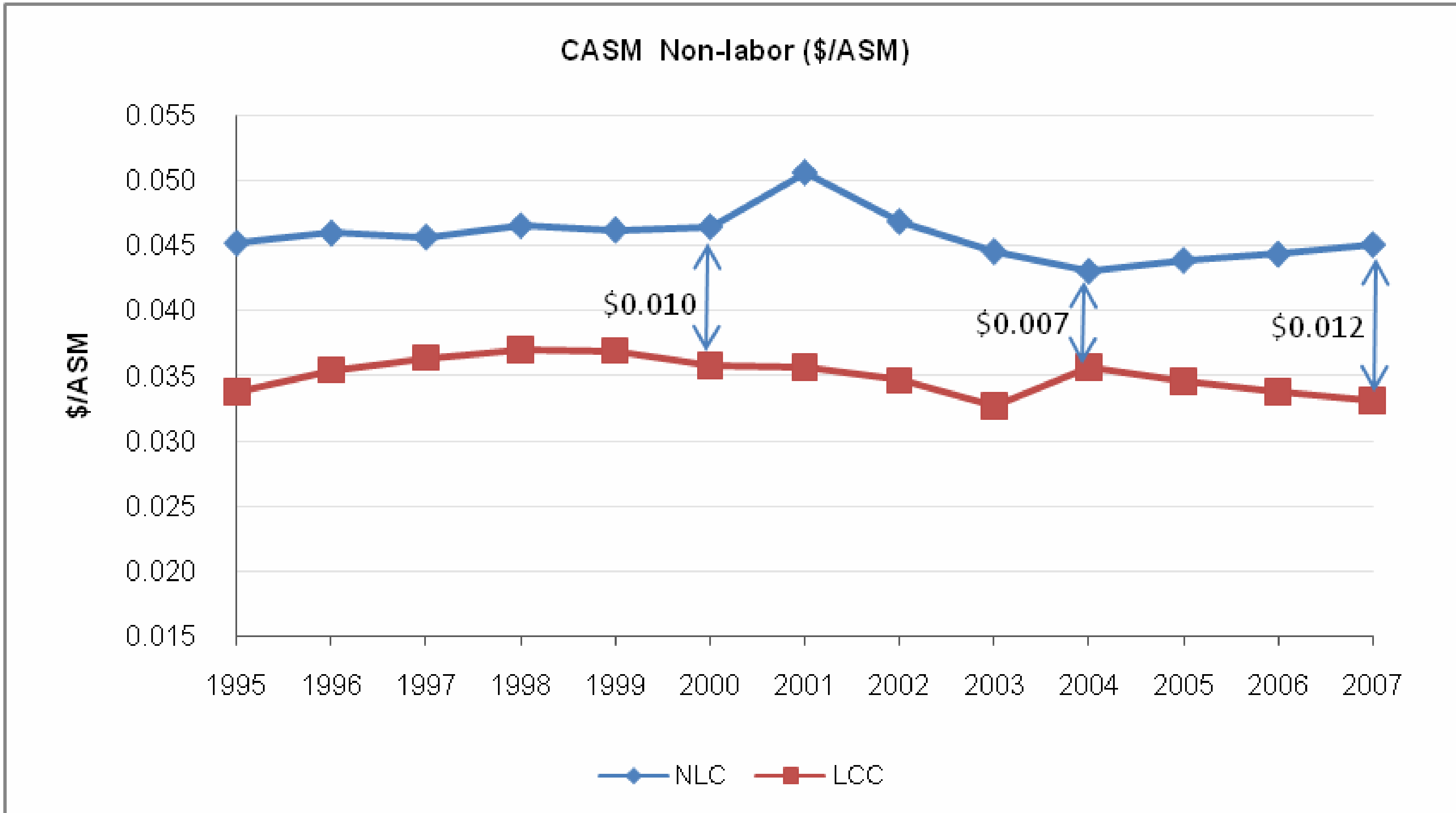
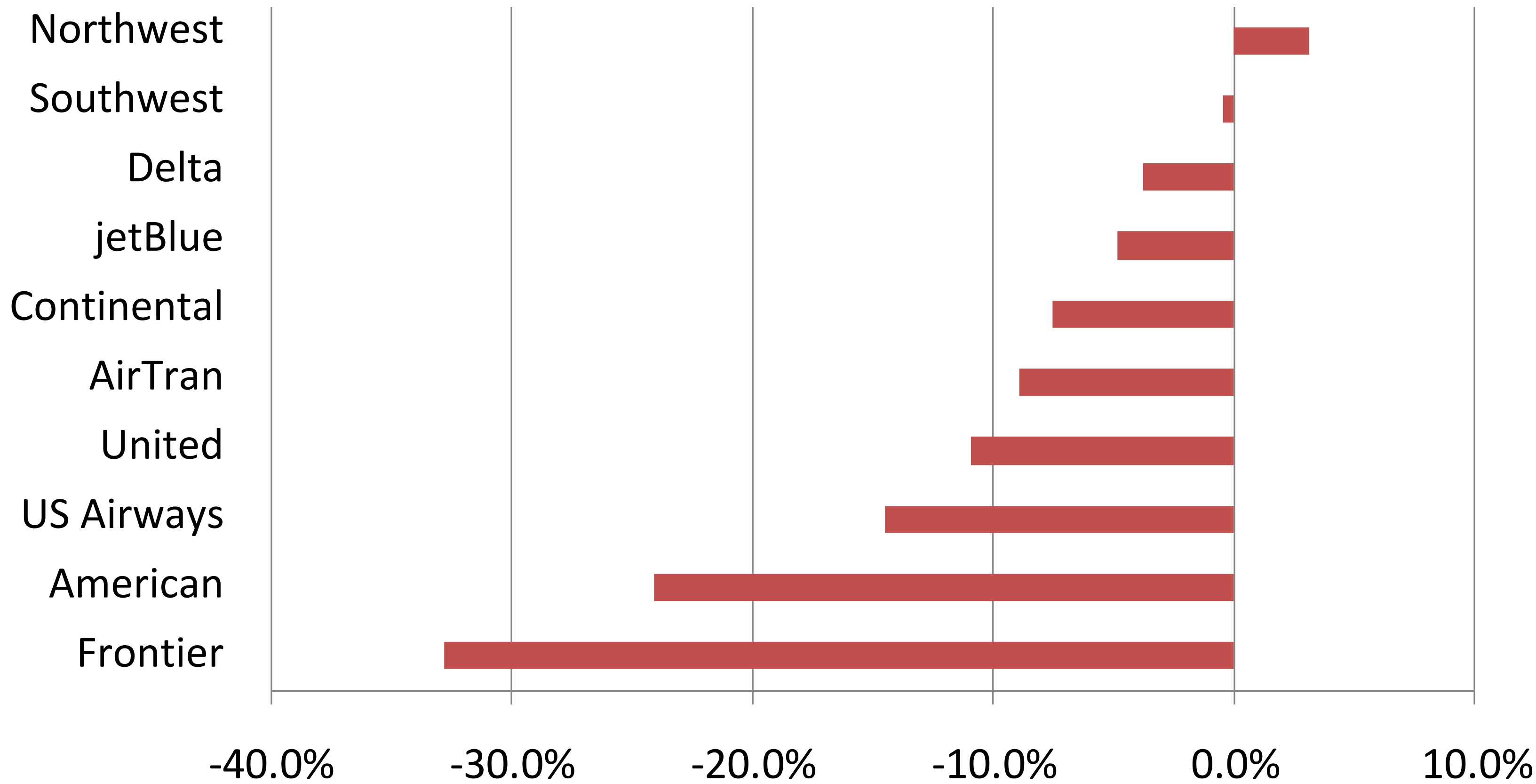
Difficult Revenue Environment Continues to Dictate Aggressive Cost Control



The Structural Difference in Cost Between the Legacy and the Low Cost Carriers



Percent Change in Unit Non-Labor Costs 2001 - 2007



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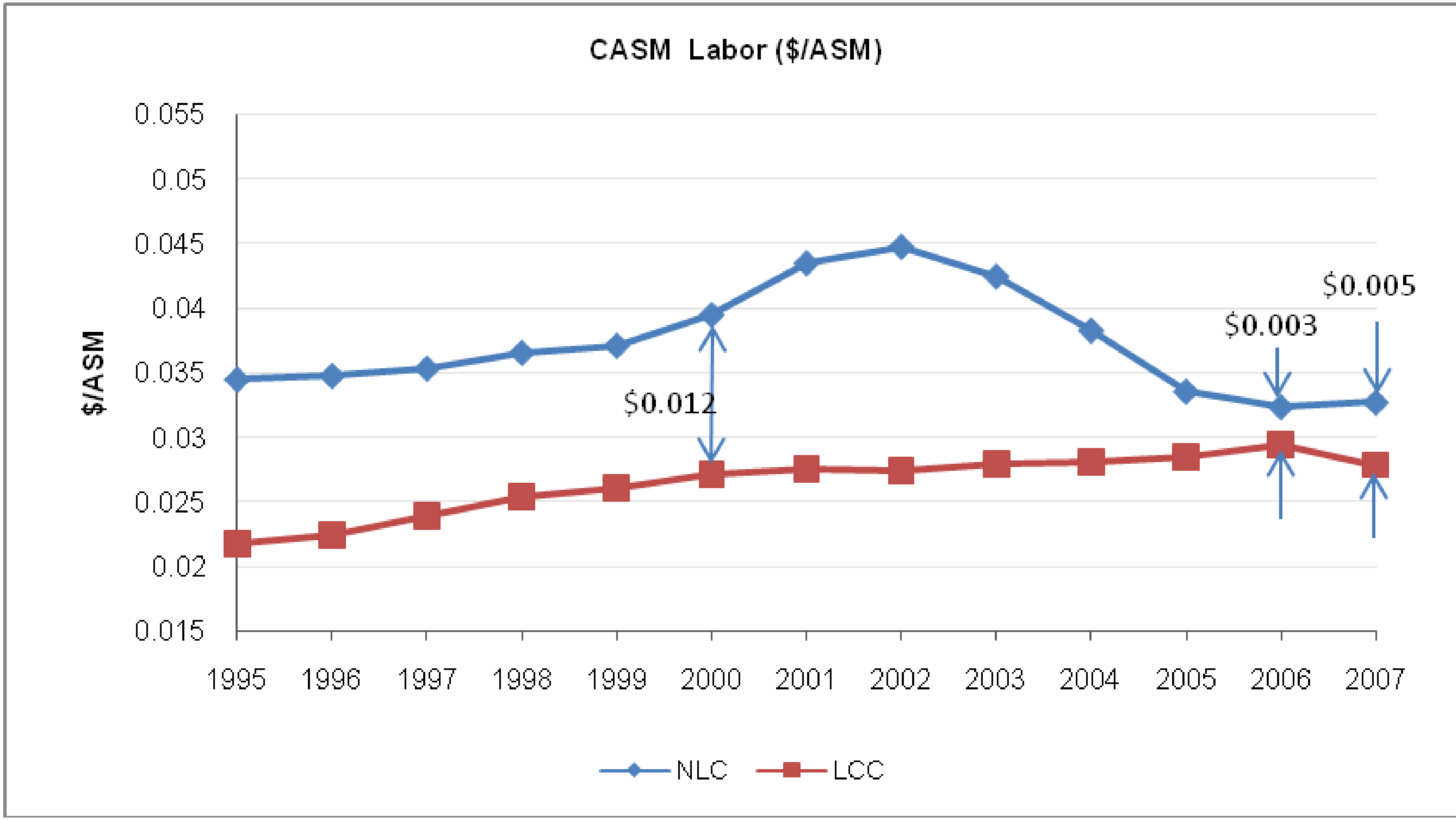
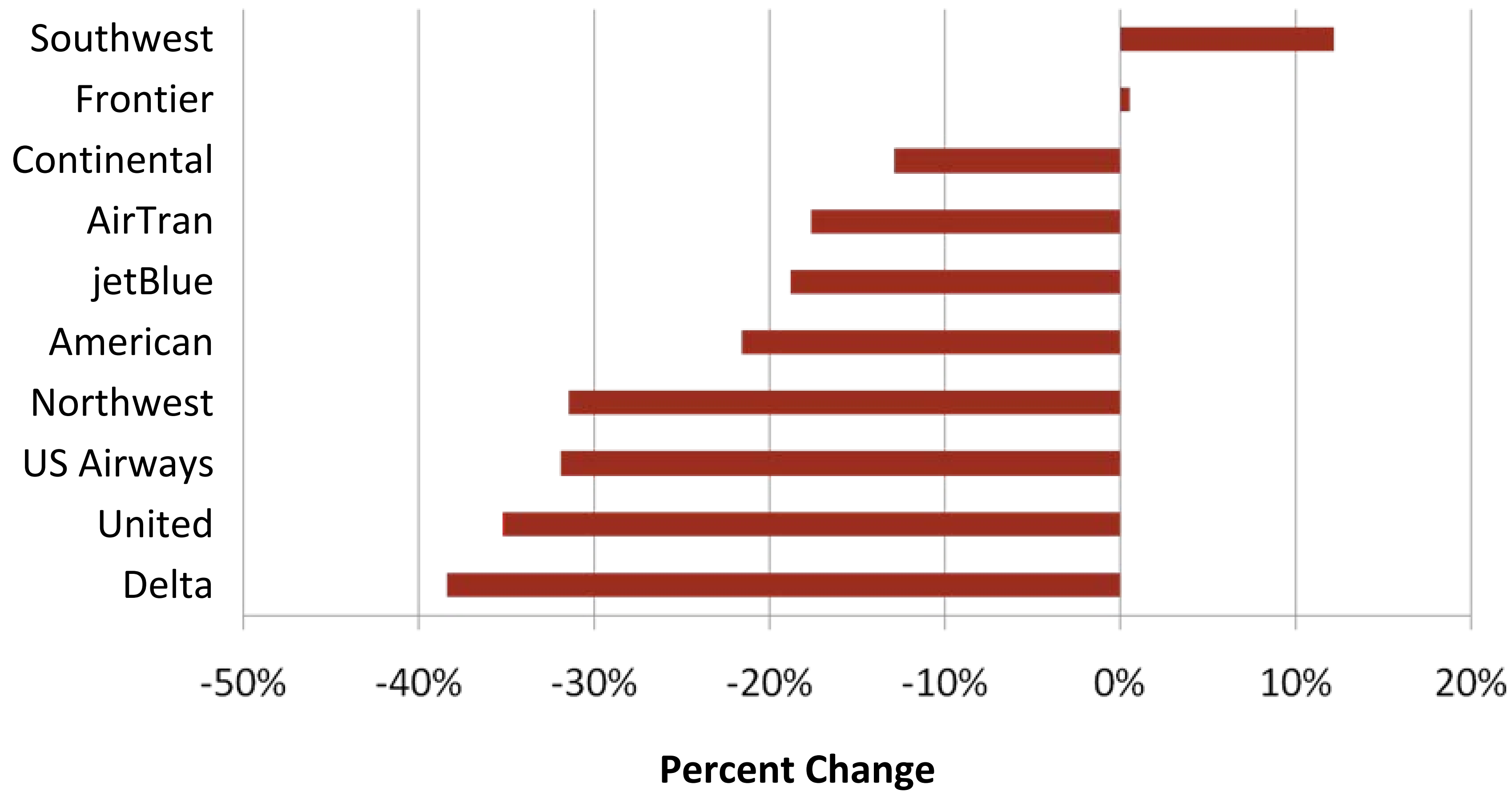
The Gap Between Unit Labor Costs Has Been Closed, A Labor Market Established?

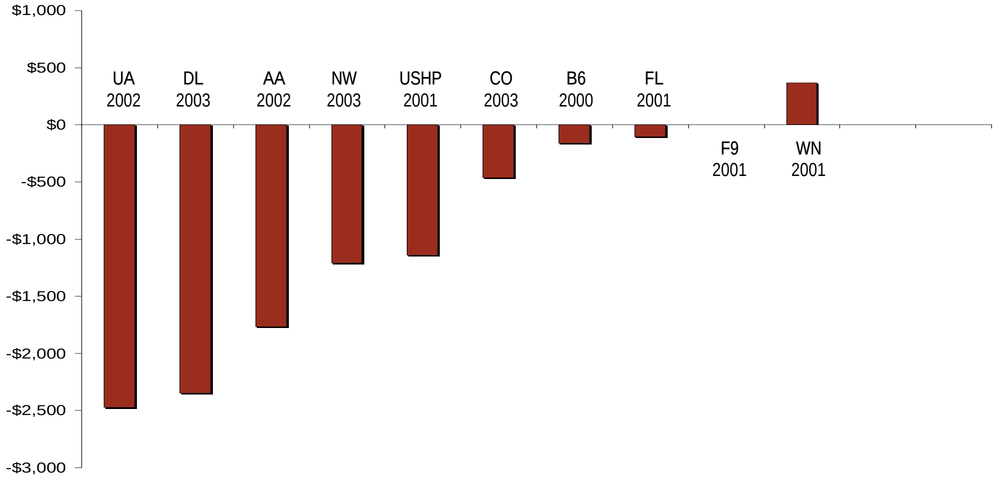


Percent Change In Unit Labor Costs 2001 - 2007



The Pending Labor Question: Who Paid for the Brief Recovery?

Annual Labor Cost Change
$ Millions
Based on Peak Labor CASM
At YE 2007



Annual Non-Labor Cost Change
$ Millions
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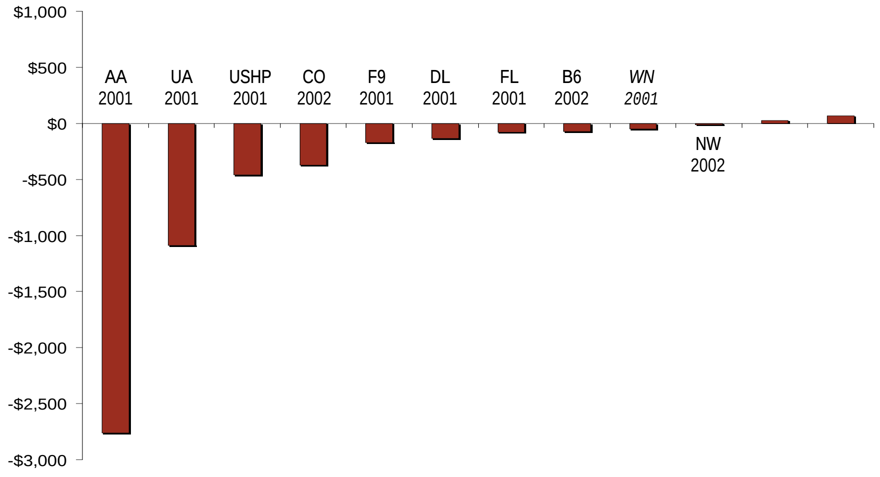

Peak CASM is defined as highest unit cost since 2001.
Annual expense reduction calculated using 2007ASMs.

Maturing and Emerging Global Markets

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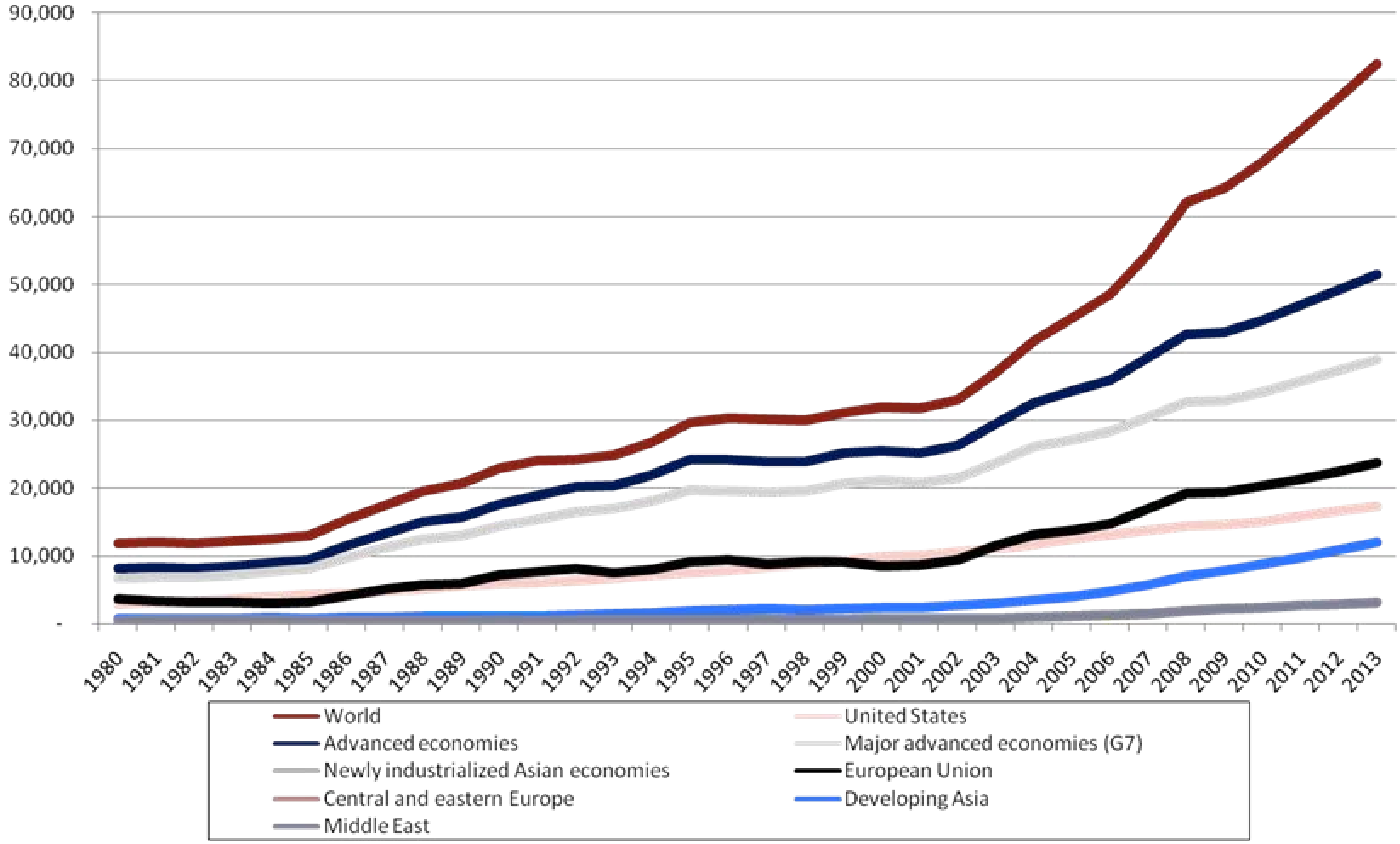
Gross Domestic Product by Select Regional Groupings
in US Dollars



Source: IMF World Economic Outlook, October 2008

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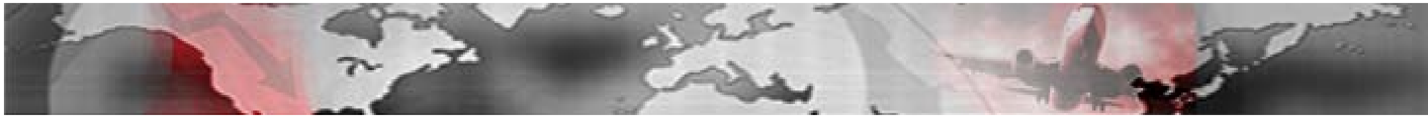
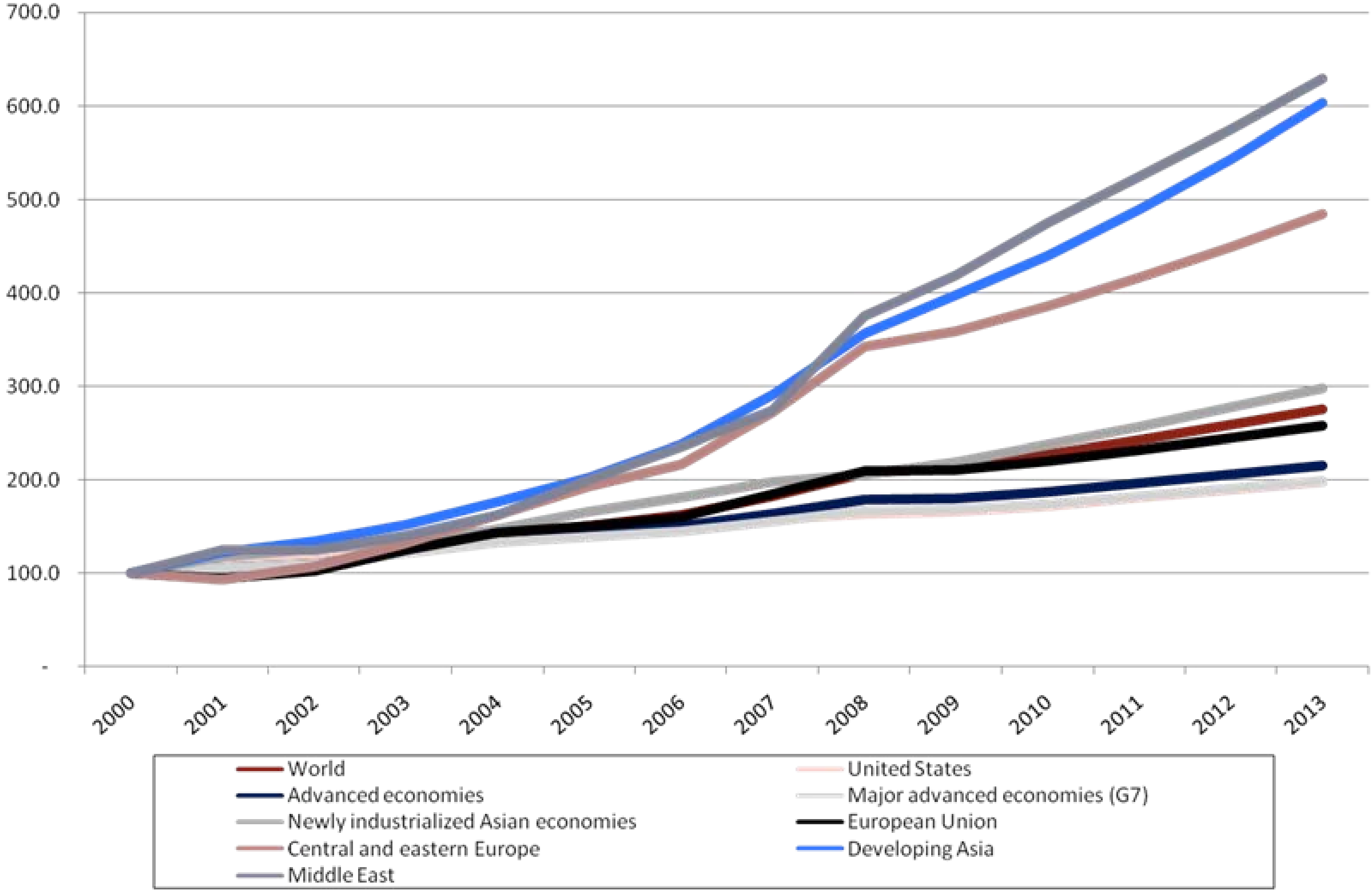


Index of Gross Domestic Product 2000 = 100.0



Definitions

- **Major advanced economies (G7)**
  - Composed of 7 countries: Canada, France, Germany, Italy, Japan, United Kingdom, United States
- **Newly industrialized Asian economies**
  - Composed of 4 countries: Hong Kong SAR, Korea, Singapore, Taiwan Province of China
- **European Union**
  - Composed of 27 countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Romania, United Kingdom
- **Central and eastern Europe**
  - Composed of 14 countries: Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Former Yugoslav Republic of, Poland, Romania, Slovak Republic, Turkey
- **Developing Asia**
  - Composed of 23 countries: Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, Kiribati, Lao People's Democratic Republic, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu, Vietnam
- **Middle East**
  - Composed of 13 countries: Bahrain, Egypt, Iran, Islamic Republic of, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen, Republic of

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GDP Per Capita: Emerging and Maturing Markets

1990

Switzerland	35,453
Luxembourg	33,268
Sweden	28,269
Finland	28,042
Norway	27,764
Denmark	26,490
JAPAN - 24,560	
US – 23,208	
France	22,016
Austria	21,542
Canada	21,087
Italy	20,029
Belgium	19,832
Netherlands	19,761
Germany	19,593
United Arab Emirates	19,515
Australia	18,602
United Kingdom	17,782
Ireland – 13,621	
Spain – 13,408	
New Zealand	12,951
Bahamas, The	12,493

2000

Luxembourg	46,360
JAPAN – 36,811	
Switzerland	34,802
US – 34,774	
Iceland	30,824
Denmark	30,065
Qatar	29,290
Ireland – 25,565	
Hong Kong SAR	25,199
United Kingdom	25,142
Netherlands	24,251
Austria	23,935
Canada	23,661
Finland	23,612
United Arab Emirates	23,446
Germany	23,168
Singapore	23,019
Belgium	22,669
France	22,578
Israel	20,330
Australia	20,328
Italy	19,293
Brunei Darussalam	18,477
Spain – 13,408	

2006

Luxembourg	89,923
Norway	72,768
Qatar	67,922
Iceland	54,225
Ireland – 52,505	
US – 44,063	
Sweden	43,190
Netherlands	41,477
United Kingdom	40,238
Finland	39,828
Canada	39,314
Austria	39,099
United Arab Emirates	38,804
Belgium	37,619
France	37,020
Australia	36,420
JAPAN – 34,264	
Italy	31,802
Singapore	31,028
Kuwait	31,014
Brunei Darussalam	30,342
Spain – 27,989	

2013E

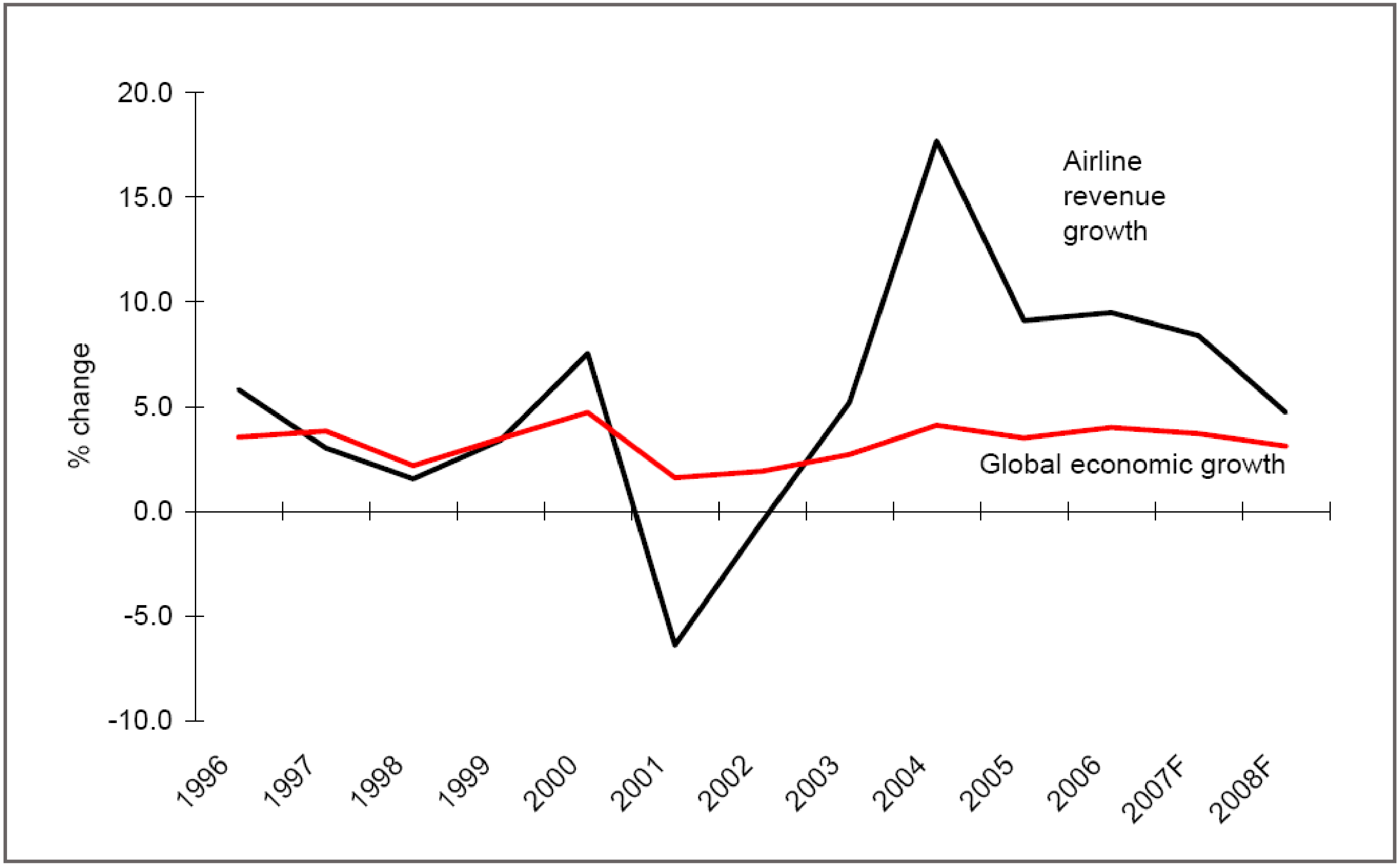
Luxembourg	142,476
Qatar	124,714
Ireland – 78,673	
Denmark	76,680
United Arab Emirates	69,472
Switzerland	68,485
Sweden	66,123
Netherlands	65,519
Finland	65,152
Austria	63,034
Belgium	59,128
Iceland	58,815
France	57,393
Singapore	57,344
Australia	56,179
Canada	55,458
US – 54,039	
Germany	53,632
Kuwait	51,505
Spain – 44,885	
Italy	44,764
Greece	43,897
JAPAN	

U.S.-European Open Skies Agreements

Year	Open Skies Signatory	Service Change
1992	Netherlands; 1st U.S. Open Skies Agreement	Increase in departures, increase in O-D pairs (all to AMS) and increase in number of competitors
1995	Belgium, Finland, Denmark, Norway, Sweden, Luxembourg, Austria, Iceland, Switzerland, Czech Republic	All except Iceland and Czech Republic saw either: 1) Reduction in number of departures 2) Reduction in number of competitors 3) Reduction in number of O-D pairs
1996	Germany	Increase in departures and O-D pairs, no change in number of competitors
1998	Romania and Italy	Both saw increase in O-D pairs, competitors, departures
1999	Portugal	Reduction in O-D pairs, increase in competitors and departures
2000	Slovak Republic, Turkey and Malta	Only Turkey saw addition of service following agreement
2001	Poland and France	Reduction in service to France, no change in Polish service
2003	Albania	No addition of service
2005	Bosnia and Herzegovina	No addition of service
2008	U.S.-EU Open Skies: Bulgaria, Cyprus, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Slovenia, Spain, UK	**Only Ireland and Spain have seen a >5% increase in number of departures** UK has seen an increase to LHR No addition of intra-Europe service by U.S. carriers
2008	Croatia separately in 2008	All service to Croatia lost prior to 2008, no addition since

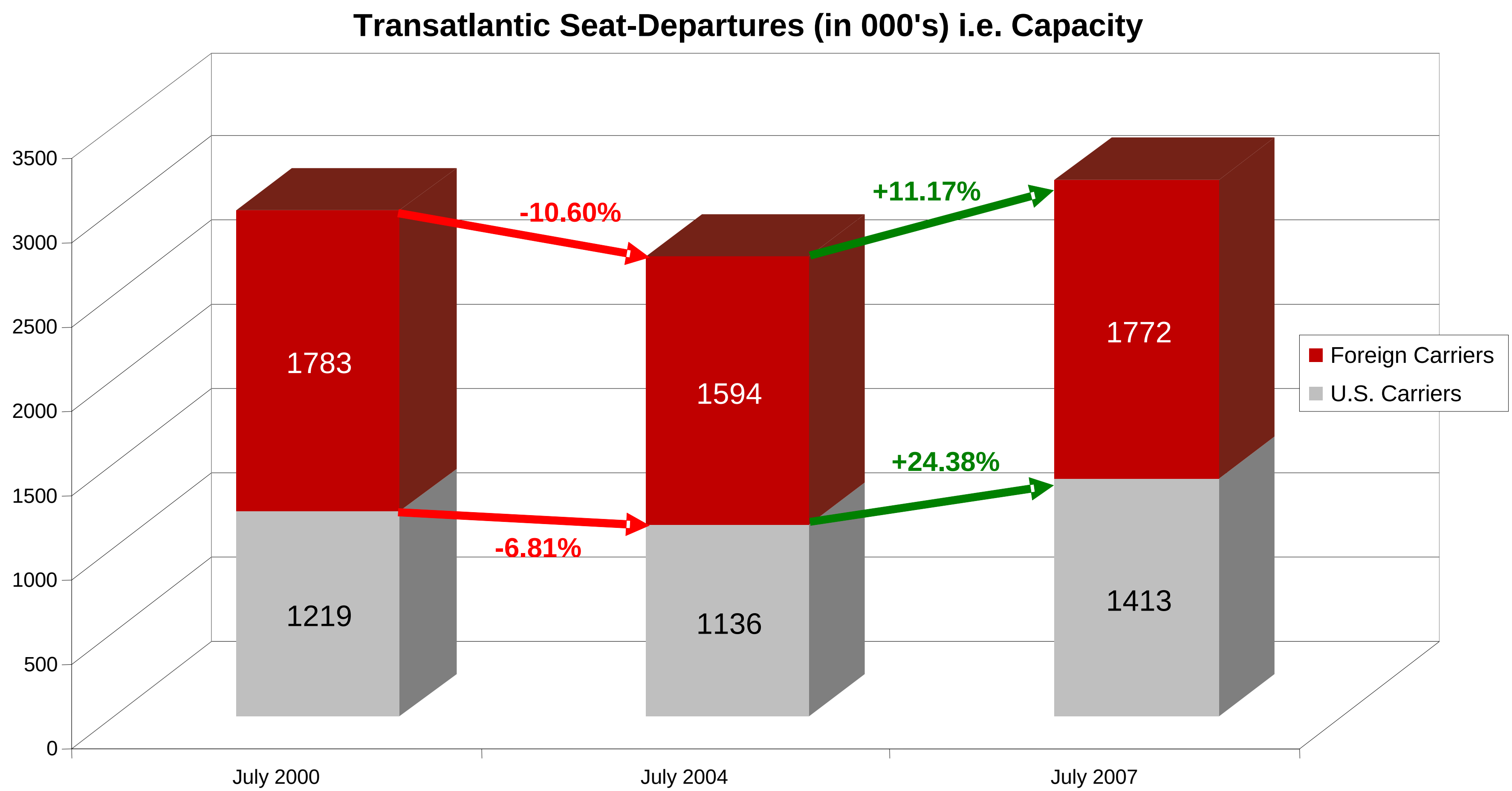
Source: U.S. Department of State, Bureau of Economic, Energy and Business Affairs

IATA Suggested a Revenue Deceleration in 2008…….
But How to Read 2003-2007? A Bubble?



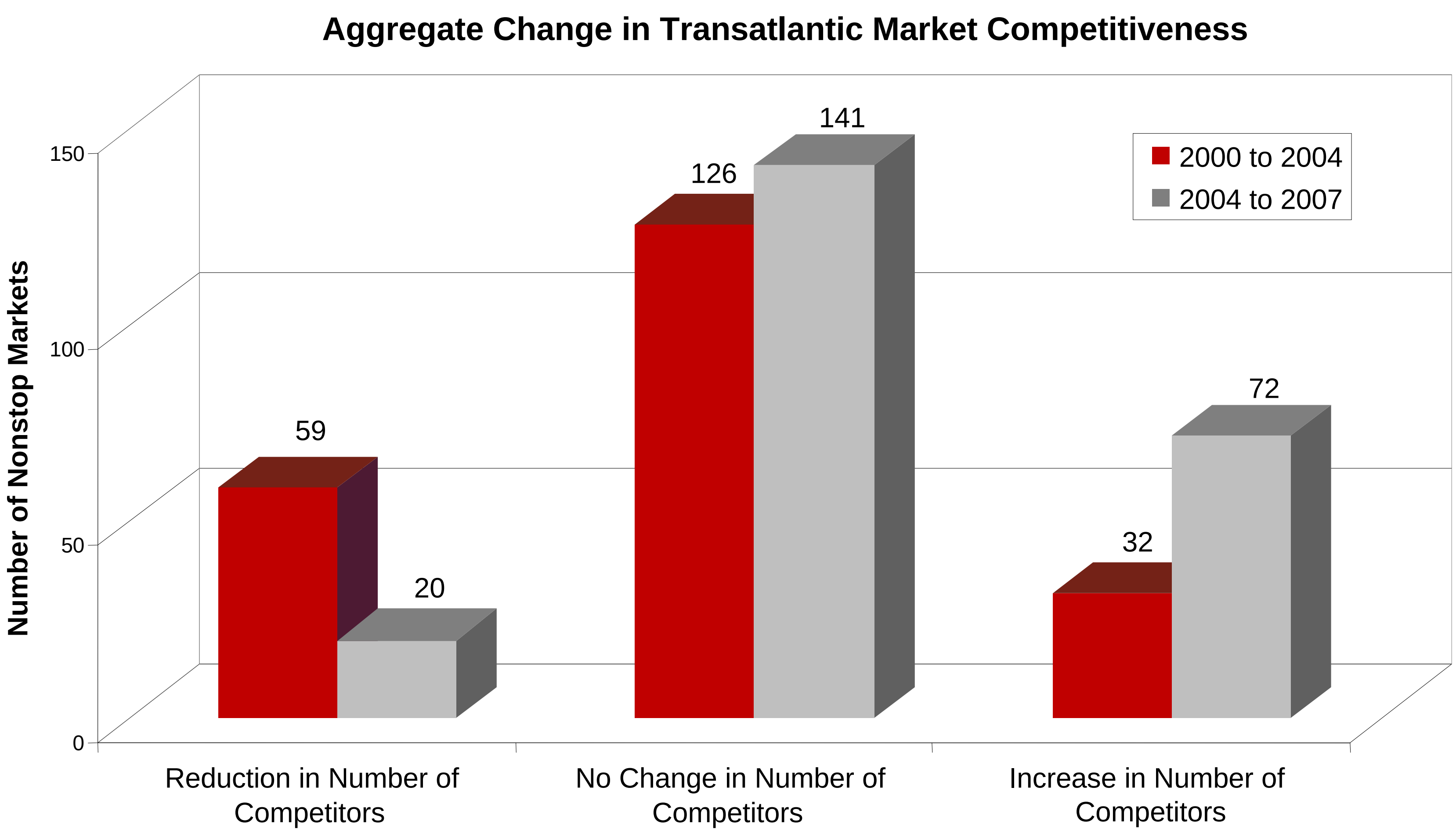
The Transatlantic

Foreign Capacity has Outpaced U.S. Capacity



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

Market Competition Has Been Increasing Since 2000

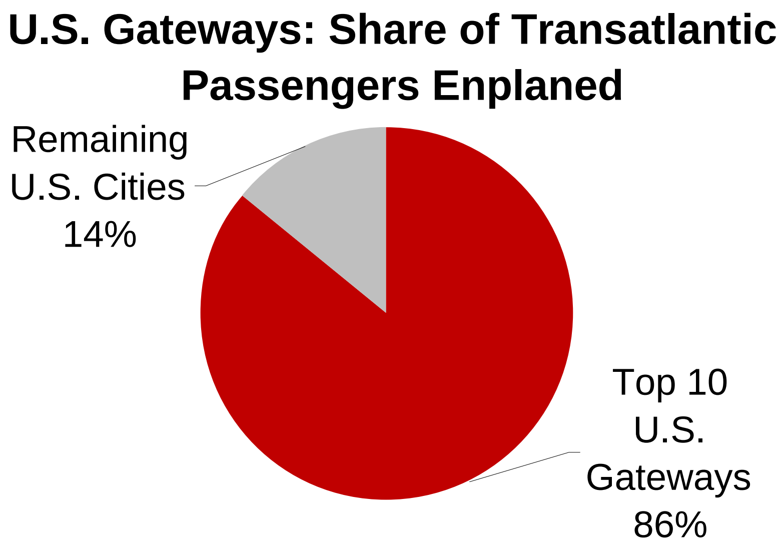


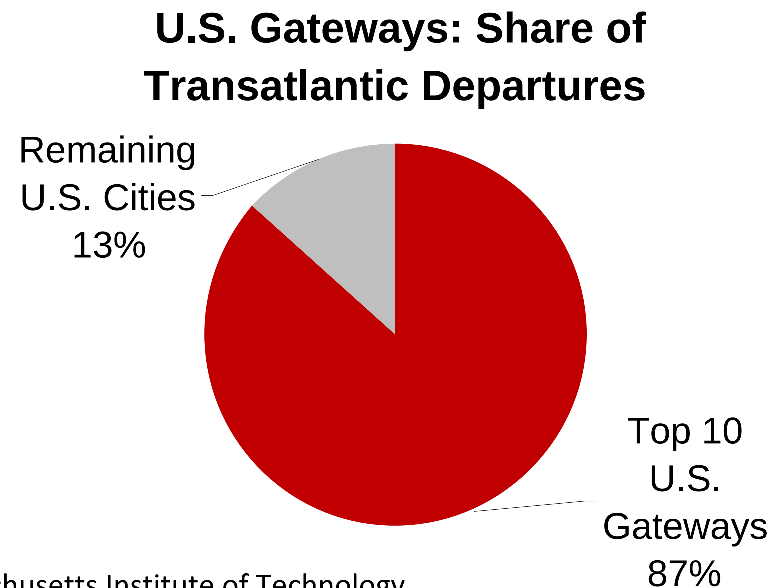
Data Source: U.S. DOT T-100 International Segment Data

In the U.S., Traffic Concentrates In Largest Gateways

Top 10 U.S. Gateways (pax)

1. New York, NY
2. Chicago, IL
3. Washington, DC
4. Los Angeles, CA
5. Atlanta, GA
6. Boston, MA
7. Philadelphia, PA
8. San Francisco, CA
9. Miami, FL
10. Detroit, MI



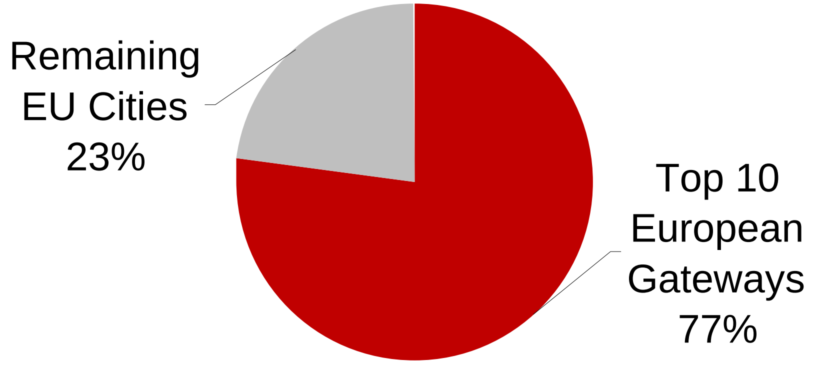


Whereas in the EU, Other Factors Are More Prevalent

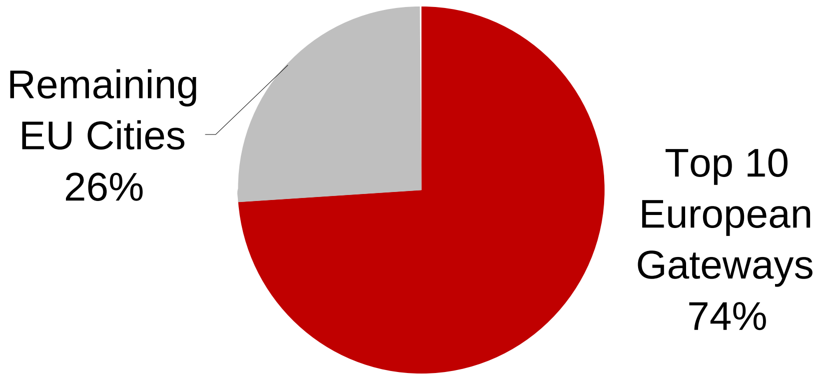
Top 10 EU Gateways (pax)

1. London, United Kingdom
2. Frankfurt, Germany
3. Paris, France
4. Amsterdam, Netherlands
5. Rome, Italy
6. Munich, Germany
7. Madrid, Spain
8. Dublin, Ireland
9. Zurich, Switzerland
10. Manchester, United Kingdom

EU Gateways: Share of Transatlantic Passengers Enplaned



EU Gateways: Share of Transatlantic Departures



Preliminary 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, economic presence, and distance have very weak explanatory power
  - Existence of an **Open Skies** agreement **does not have significant correlation** to service level to the U.S.
  - In contrast, whether the city serves as a **hub for a Big3** carrier is the **dominant factor** in explaining level of service

Some Conclusions on Transatlantic Service

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 Big3 hubs do more to explain transatlantic service levels of various cities than the size, 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. <u>As competition has increased</u>: U.S. cities that have gained nonstop transatlantic service have been connected to Big3 European hubs, and vice versa

Global Infrastructure Needs Hint at Tomorrow's Opportunities?

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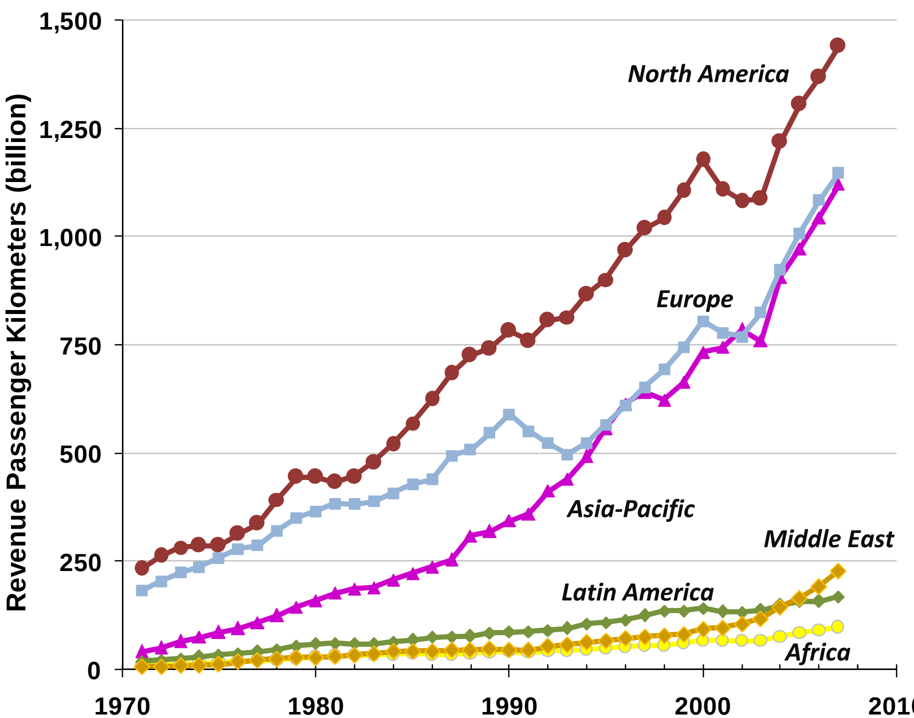
Infrastructure as Another Barometer

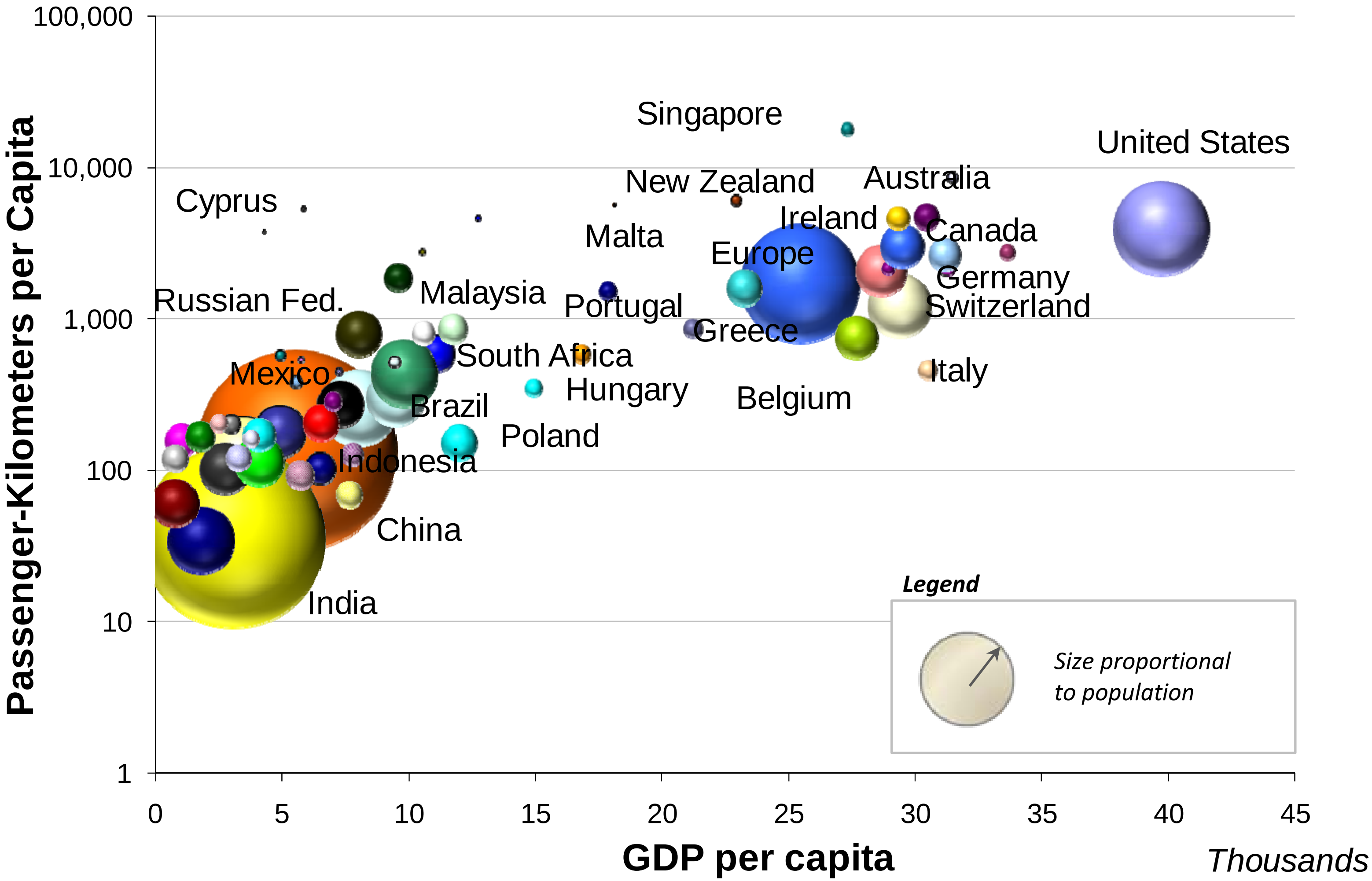
- Increasing demand for air transportation
- Key air transportation infrastructure constraints (i.e. capacity)
- Implications:
  - congestion,
  - degradation of the passengers' quality of travel experience,
  - economic impacts.
- Air transportation system is a vital underlying infrastructure of a country's economy
- Analyze the characteristics and capabilities of national airport networks worldwide.
- Evaluate the opportunities and the implications of next generation air transportation technologies to improve the access to these airport systems.

Historical Evolution of Passenger Traffic
(Revenue Passenger Kilometers - RPKs)
from 1971 to 2007



Data sources: ICAO (1971-2005) and IATA (2006-2007)

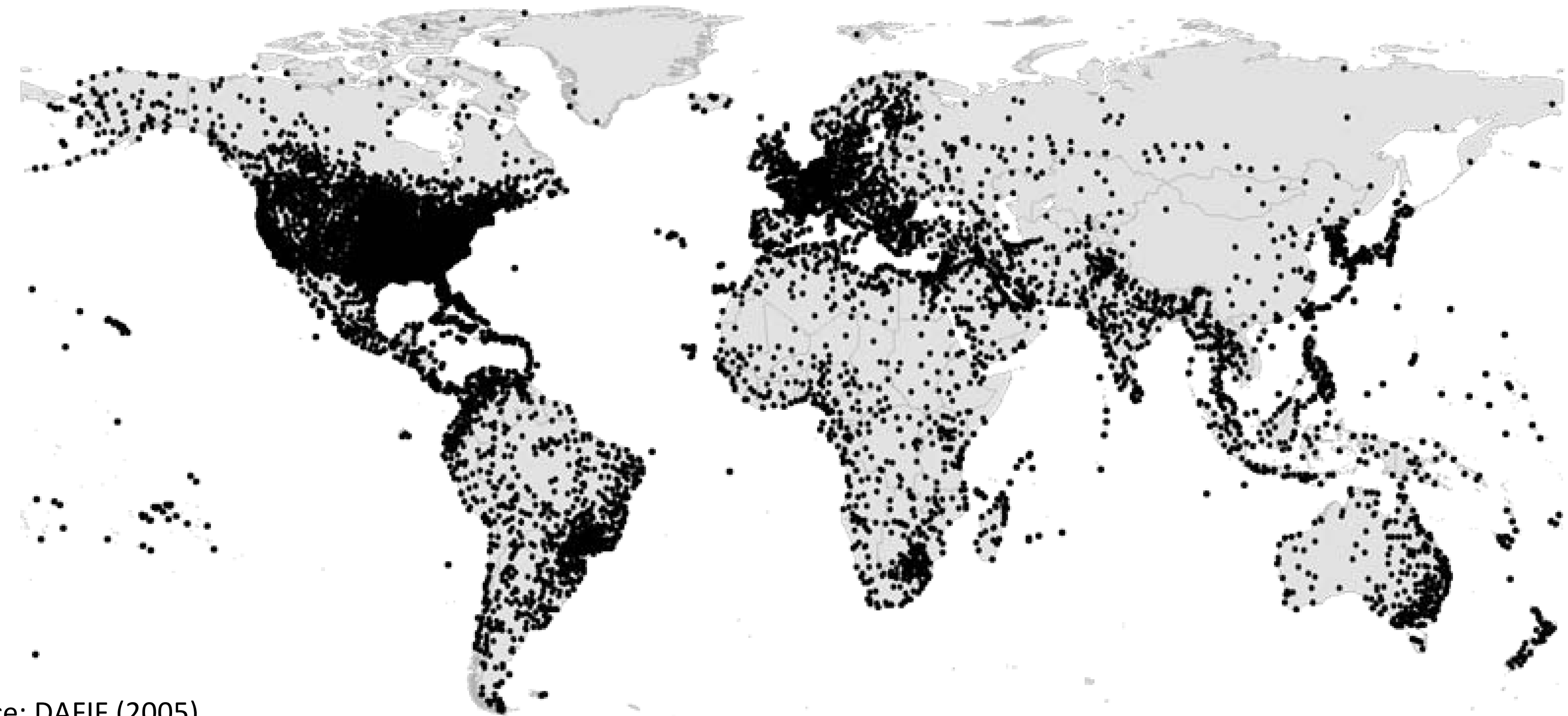
Passenger Transport Activity (Revenue Passenger Kilometer per capita) vs. GDP per capita



Data sources: ICAO (2005), CIA (2005)

World Airport Network

- World airport network in numbers:
  - 45,813 airports,
  - 14,000 airports with at least one paved runway,
  - 6,750 airports with at least one paved runway longer than 5,000 ft,
  - 950 airports with at least one paved runway longer than 10,000 ft.



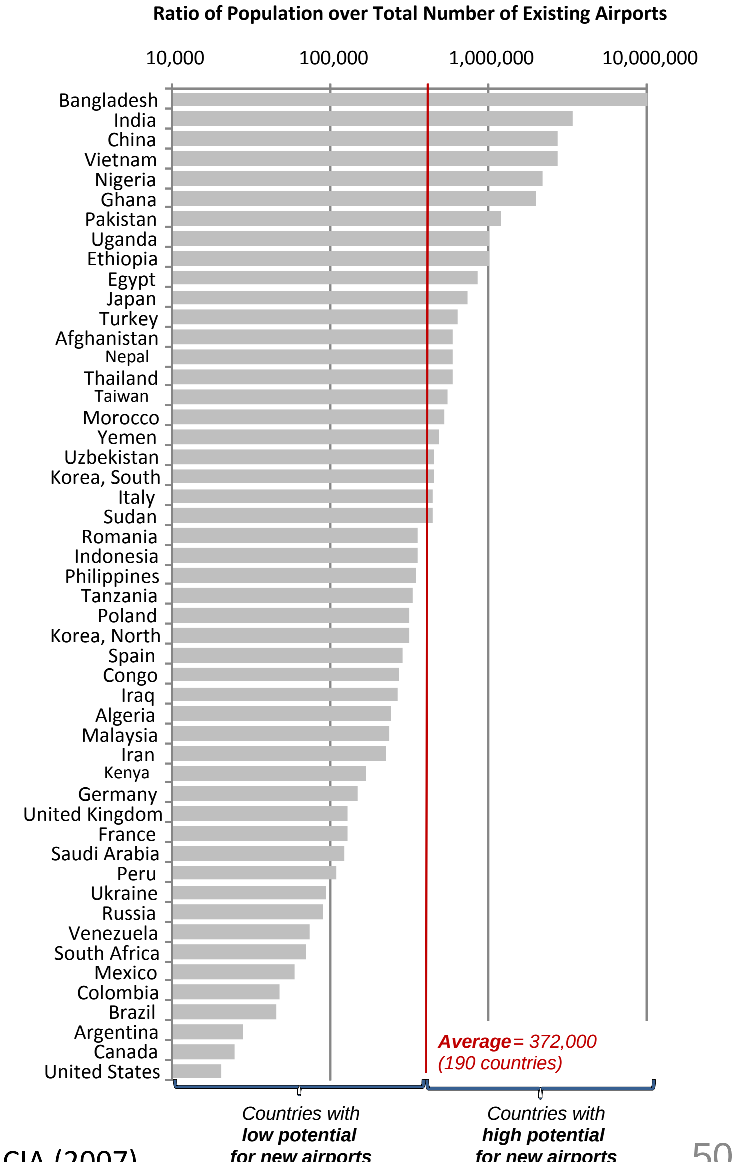
Data source: DAFIF (2005)

Analysis of Airport Network Density

- Computed ratio of population over the total number of existing airports for each country.
  - Metric that better reflects the adequacy between potential supply of air transportation services and potential demand.

- Great diversity in this ratio, indicative of the ability of different countries to accommodate future demand.

- All else being equal, countries with high ratio of population to number of existing airports are more likely to need the construction of new airports.
  - e.g. China and India will require significant future development of airport infrastructure as their GDP per capita increases.
  - United States and Europe generally have airport networks that are large enough compared to their population basins that they can rely on existing airports to accommodate future growth.



Data source: CIA (2007)

Some Final Thoughts

- Plan to host more informational picketers at your airports
- The Oil v. Macro economy tradeoff
- US carrier's operating cost advantage v. the world is a strong attribute but our capital structure disadvantage remains most troubling
- Can we dispel the myth that airlines can really shrink themselves to profitability?
- Ever wonder just how many airline trips were purchased with proceeds from a home equity loan?
- Live by the "hedge"; Die by the "hedge"
- We talk about issues like Credit, Currency and Commodity prices
  - Can we please not forget the air travel CONSUMER
- President Obama: Please make the aviation infrastructure a priority
- Lines that go perpetually up are bad

About the MIT Global Airline Industry Program

About Us

- The MIT **Global Airline Industry Program** represents a large-scale effort that provides the means for MIT and the academic community to make contributions in studying the airline industry and in educating its future leaders. This effort is funded under the umbrella of the **Sloan Foundation's Industry Studies Program**.

- The MIT **Airline Industry Research Consortium** is an outgrowth of the MIT Global Airline Industry Program, sponsored by the Alfred P. Sloan Foundation. Its goal is to engage industry stakeholders in the next phase of the Program's research and to provide a forum for addressing key issues facing the airline industry during this critical period of transformation.

- Another goal of MIT's **Global Airline Industry Program** is to develop a body of knowledge for understanding development, growth and competitive advantage in this industry, which is one of the most diverse, dynamic and perplexing of the world. To further this goal, and to support the goals of the **Sloan Foundation Industry Studies Program** and the goals set forth in establishing the **MIT Airline Industry Research Consortium**, the **MIT Global Airline Industry Program** recently introduced the establishment of the **Airline Data Project**.

Members of the MIT Airline Industry Consortium

- Air Canada
- Air Transport Association of America
- Amadeus s.a.s.
- American Airlines
- American Express
- Federal Aviation Administration (FAA)
- Jeppesen Systems
- Lufthansa German Airlines
- Massachusetts Port Authority
- Metropolitan Washington Airports Authority (MWAA)
- SITA
- United Airlines

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