TURKISH AVIATION ACADEMY

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Introduction: Airline Industry Overview

Dr. Peter Belobaba
Presented by: Alex Heiter & Ali Hajiyev

Istanbul Technical University
Air Transportation Management
M.Sc. Program

Network, Fleet and Schedule
Strategic Planning
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Lecture Outline

- **Airline Terminology and Measures**
  - World Airline Statistics
  - Historical Trends in Industry Growth

- **Overview of World Airlines**
  - Recent Performance of Largest Airlines
  - Evolution of LCC Business Models
  - Emerging Global Carriers

Airline Terminology and Measures

- **Airline Demand**

  RPK = Revenue Passenger Kilometer

  ➔ One paying passenger transported 1 kilometer

  Yield = Revenue per RPK

  ➔ Average fare paid by passengers, per kilometer flown

- **Airline Supply**

  ASK = Available Seat Kilometer

  ➔ One aircraft seat flown 1 kilometer

  Unit Cost = Operating Expense per ASK (“CASK”)

  ➔ Average operating cost per unit of output

- **Load Factor = RPK / ASK**

- **Unit Revenue = Revenue/ASK (“RASK”)**

Example: Airline Measures

- **A 200-seat aircraft flies 1000 kilometers, with 140 passengers:**

  RPK = 140 passengers X 1000 kilometers = 140,000
  ASK = 200 seats X 1000 kilometers = 200,000

- **Assume total revenue = $16,000; total operating expense = $15,000:**

  Yield = $16,000 / 140,000 RPK = $0.114 per RPK
  Unit Cost = $15,000 / 200,000 ASK = $0.075 per ASK
  Unit Revenue = $16,000 / 200,000 ASK = $0.080 per ASK

- **Load Factor = RPK / ASK**

  LF = 140,000 / 200,000 = 70.0%
  - ➔ For single flight, also defined as passengers / seats

Additional Measures for Air Cargo

- ***Freight Tonne Kilometer (FTK)***
  Measure of freight traffic carried
  = freight tonnes carried X kilometers flown

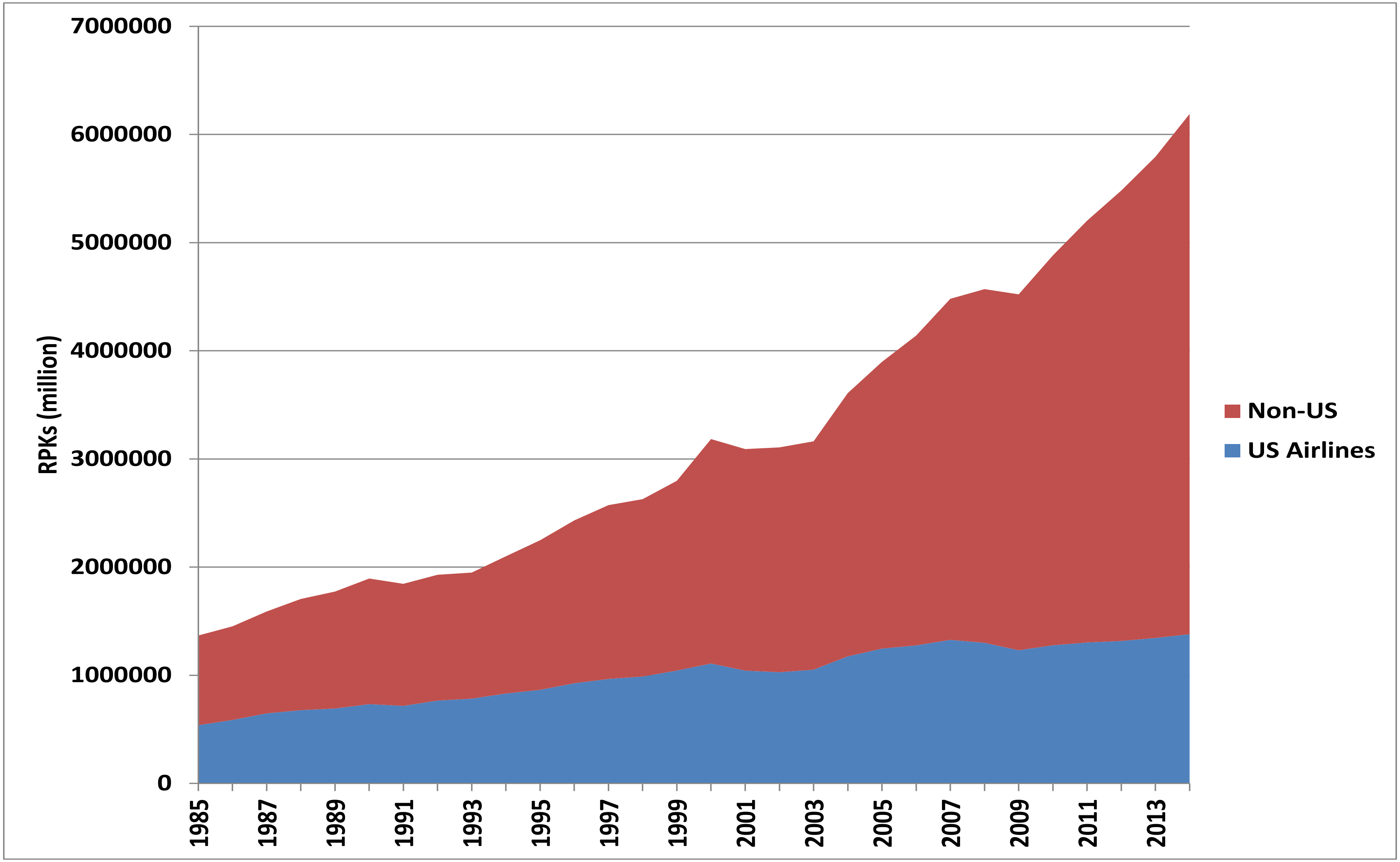
- ***Available Tonne Kilometer (ATK)***
  Measure of freight capacity available
  = freight tonne capacity X kilometers flown

- **Cargo Load Factor = FTK / ATK**
  - % of freight capacity utilized

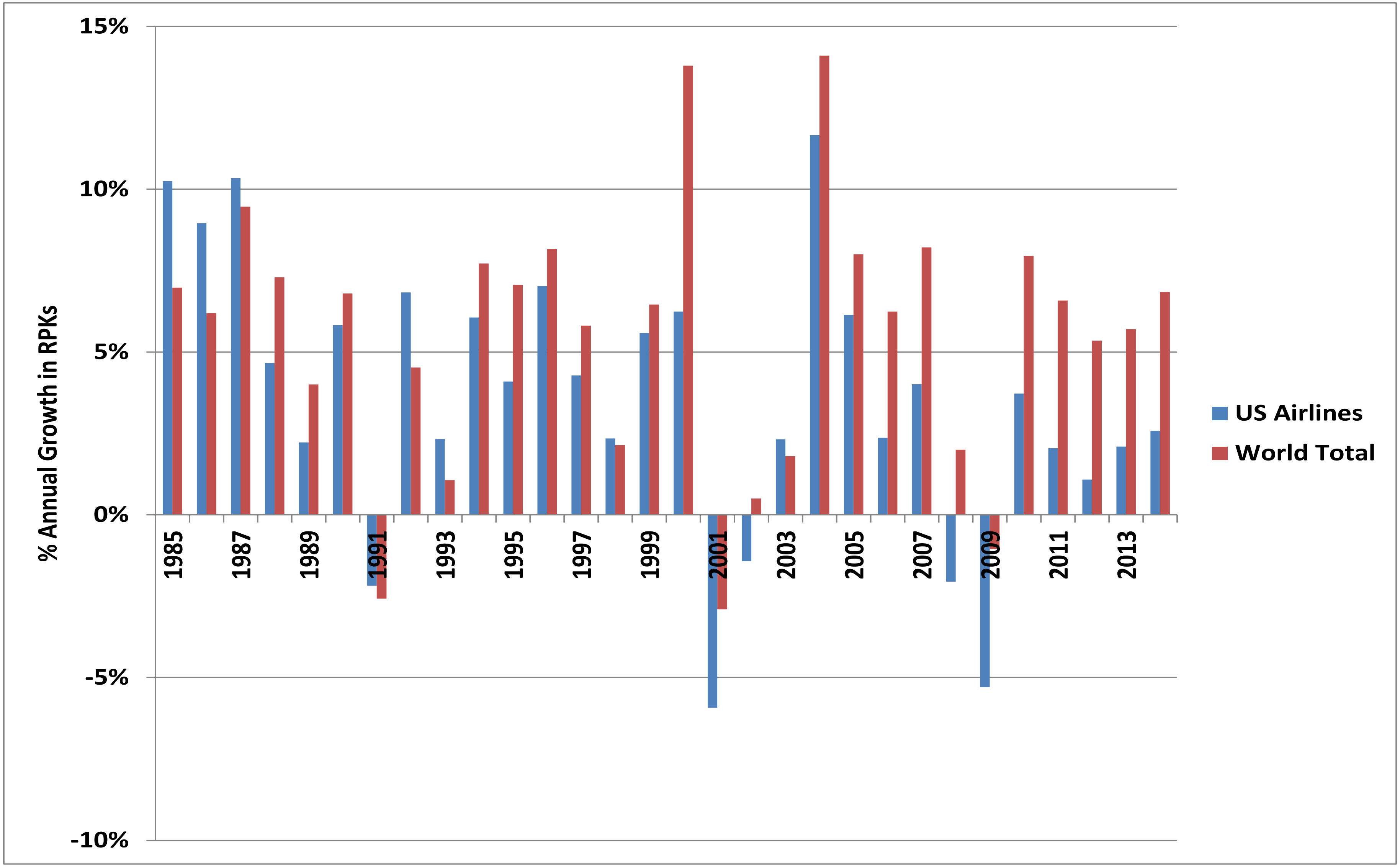
World Airline Industry Statistics 2014

	US Airlines	World (IATA)
Certificated airlines	**70**	**1 400**
Commercial aircraft	**6 727**	**25 300**
Scheduled departures	**9.5 million**	**36.4 million**
Employees	**580 000**	**2 400 000**
Passengers enplaned	**762 million**	**3.32 billion**
Passenger Traffic Growth	**2.6%**	**6.0%**
Cargo Traffic Growth	**3.0%**	**5.8%**
Operating Revenues (USD)	**$208 billion**	**$733 billion**
Net Profit (USD)	**$8.5 billion**	**$16.4 billion**
Net Profit Margin	**4.1%**	**2.2%**

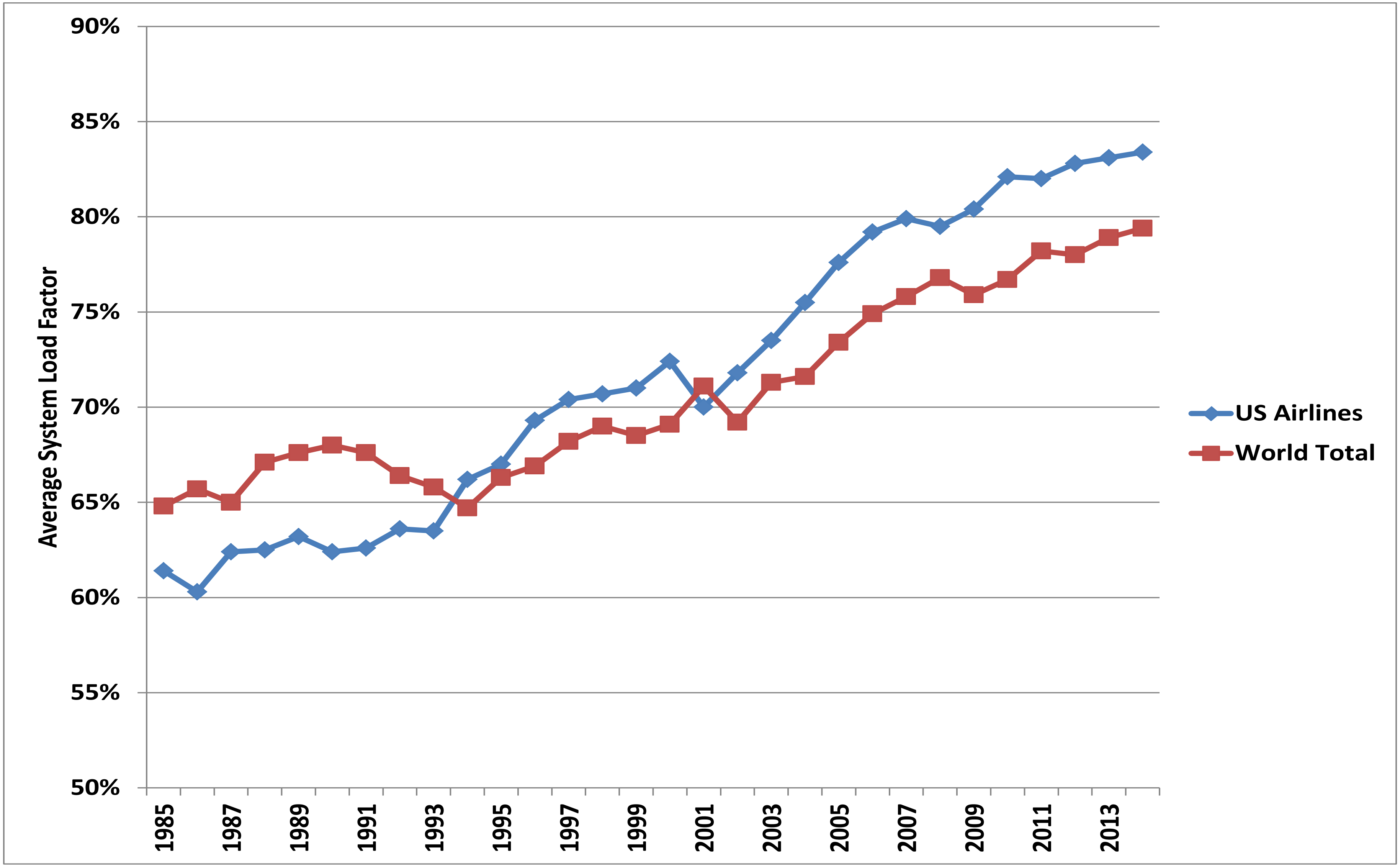
Airline Traffic (RPK) Growth 1985-2014



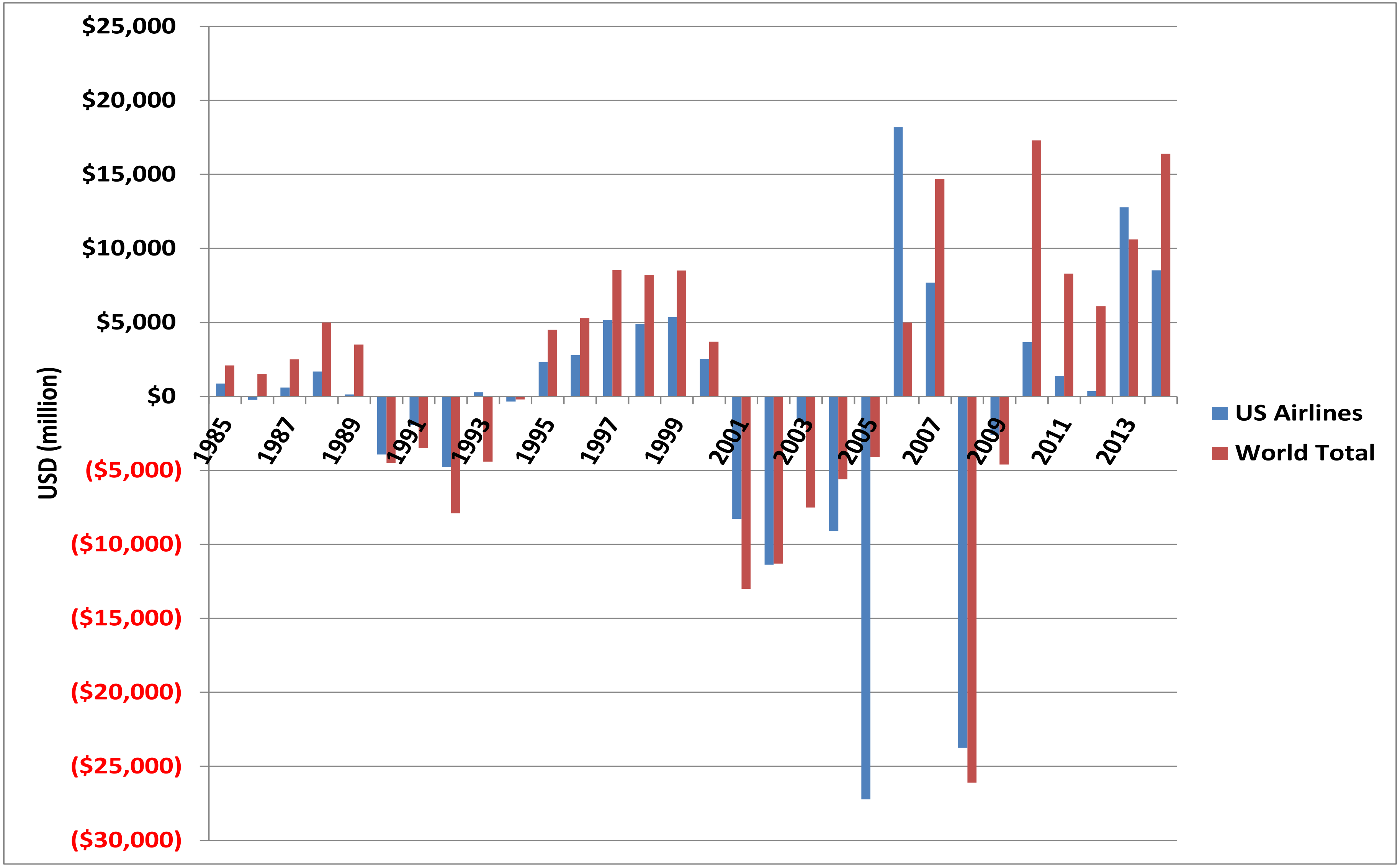
Annual % RPK Growth 1985-2014



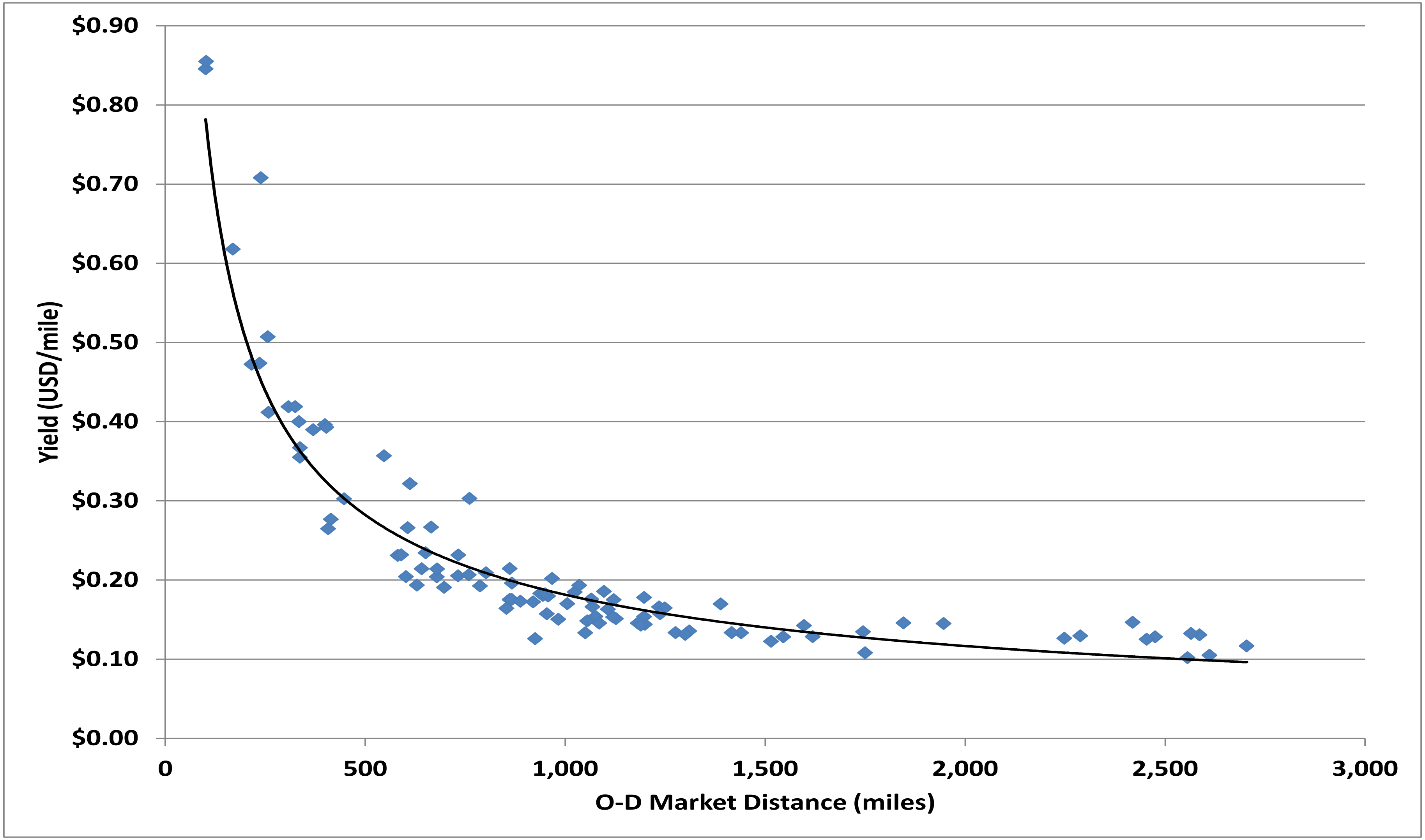
Average Load Factors 1985-2014



US and World Industry Net Profit 1985-2014



Yield vs. Distance Relationship
Top 100 US Domestic O-D Markets 1Q15



Data Source: Diio Mi US O-D Market Ranking Report

Additional Airline Measures

- **Average Stage Length**
  - Average non-stop flight distance
  - Aircraft Miles Flown / Aircraft Departures
  - Longer average stage lengths associated with lower yields and lower unit costs (in theory)
- **Average Passenger Trip Length**
  - Average distance flown from origin to destination
  - Revenue Passenger Miles (RPKs) / Passengers
  - Typically greater than average stage length, since some proportion of passengers will take more than one flight (connections)
- **Average Number of Seats per Flight Departure**
  - Available Seat Miles / Aircraft Miles Flown
  - Higher average seats per flight associated with lower unit costs (in theory)

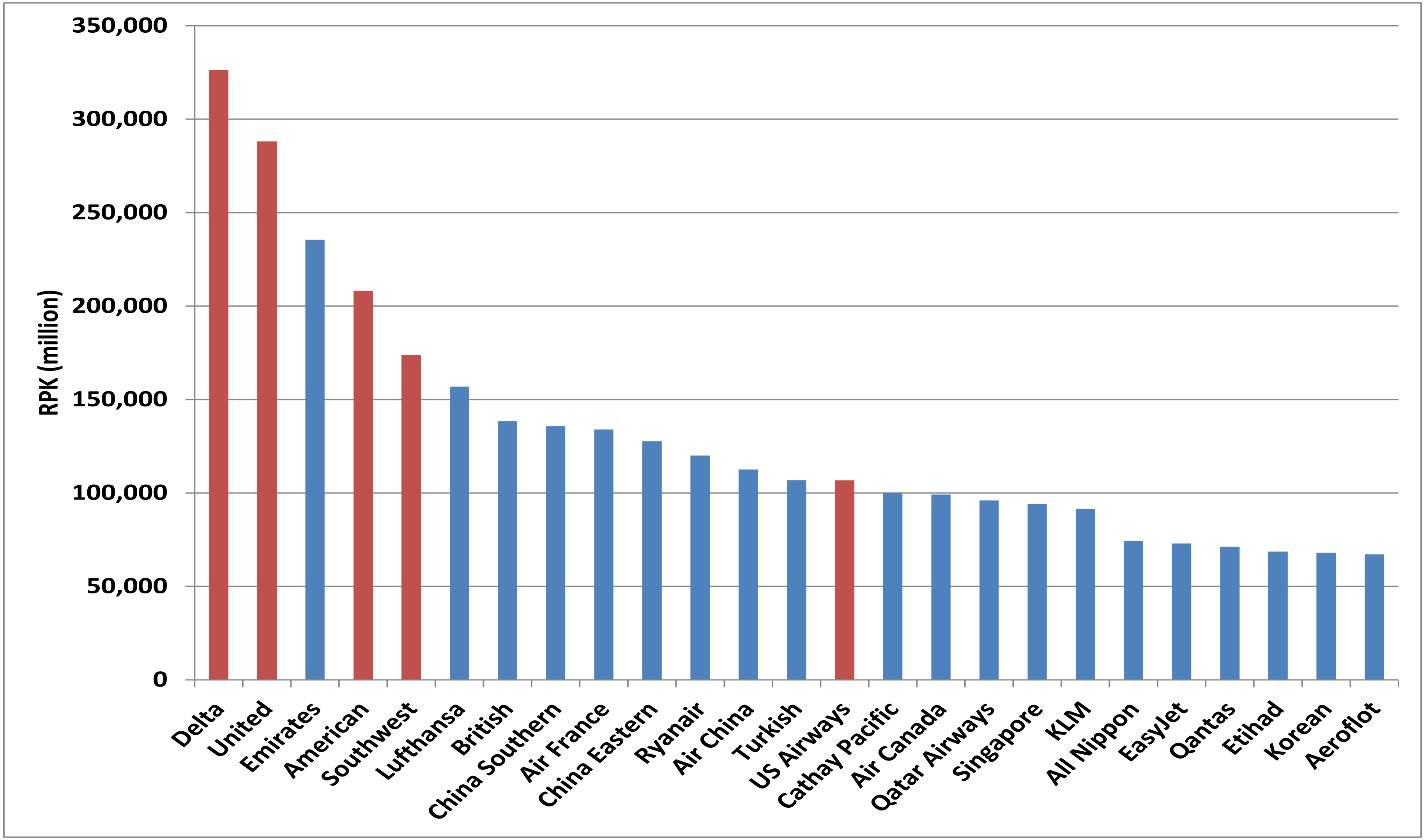
Competition Under Deregulation

- **The removal of economic regulations added several new dimensions to airline competitive strategies:**
  - Cost cutting and productivity improvement
  - Economies of scale in operations to reduce unit costs
  - Price competition and revenue management to increase revenues
  - New marketing and distribution programs
  - Increased network coverage and market dominance
- **Airline managers now actually have to make management decisions and trade-offs:**
  - In contrast to regulated times when government control ensured price increases to cover increased operating costs.

The Global Airline Industry: A Tale of Three Sectors

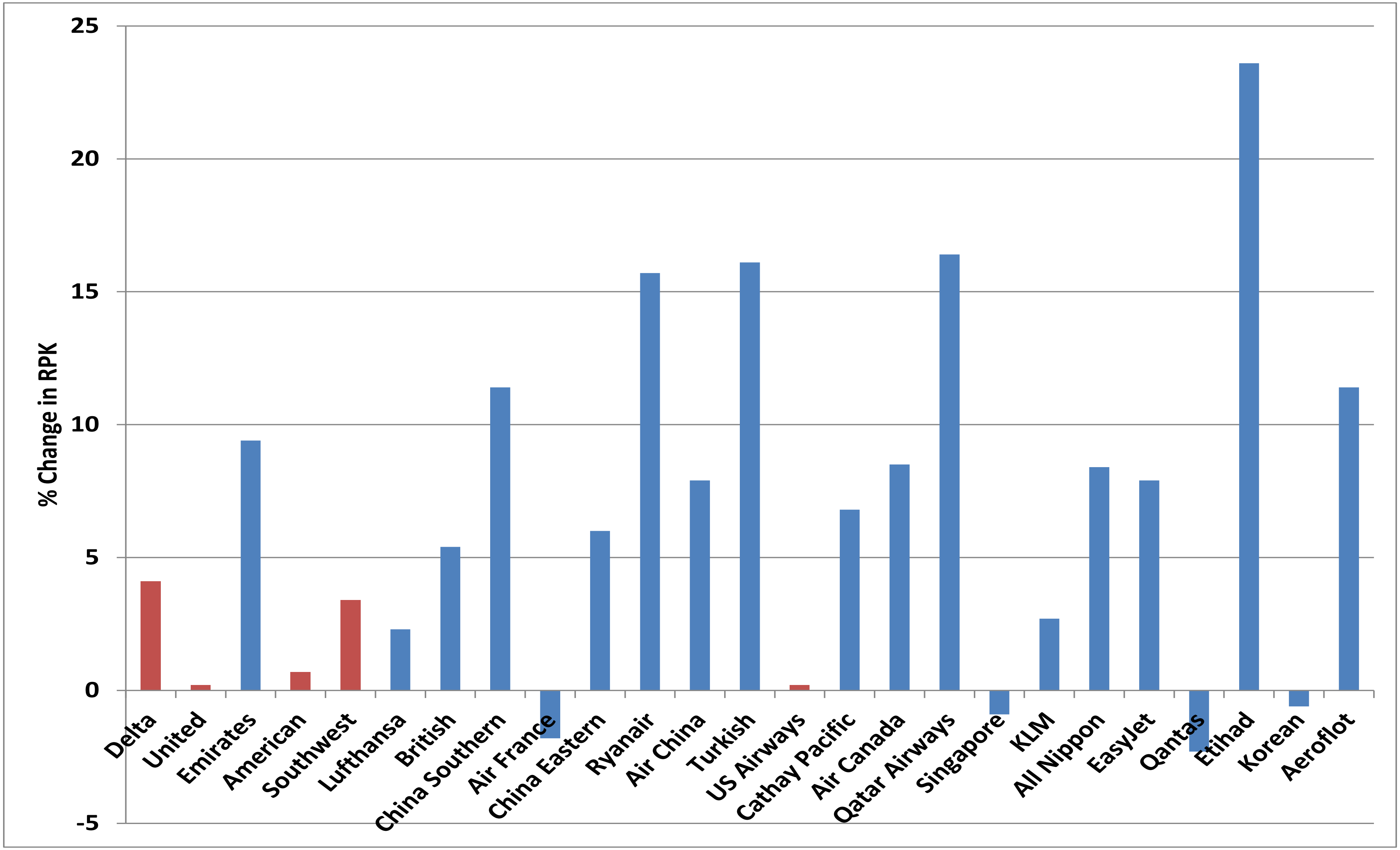
- **Network Legacy Carriers**
  - For some, bankruptcies and consolidation reduced excess capacity, allowed for labor cost and productivity improvements
  - But European legacy carriers still struggling with high costs
- **Low Cost Carriers**
  - LCC share of US domestic passengers has leveled off at 1/3
  - LCCs continue to grow rapidly in other world regions
  - But unit cost advantages of new entrants tend to disappear as both aircraft and employees mature
- **Emerging Global Carriers**
  - Large hub networks based in Middle East, South America and Asia
  - Examples: Emirates, Etihad, Qatar, Turkish, LATAM, China Southern, China Eastern

Top 25 World Airlines – Ranked by Passenger Traffic (RPK) 2014



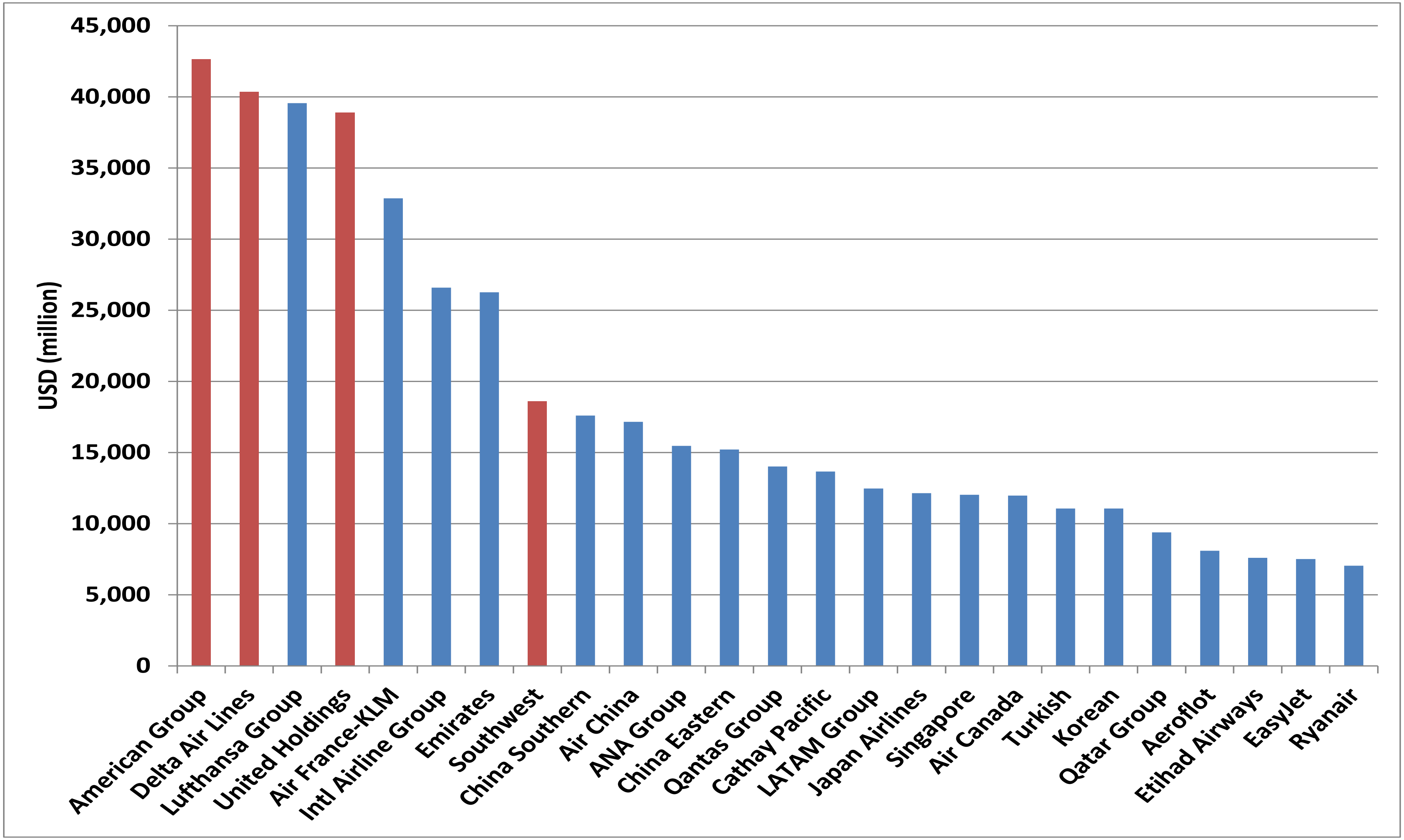
Source: Airline Business Top 200 Airlines Traffic 2014

Top 25 World Airlines – Annual Growth in Passenger Traffic (RPK) 2014



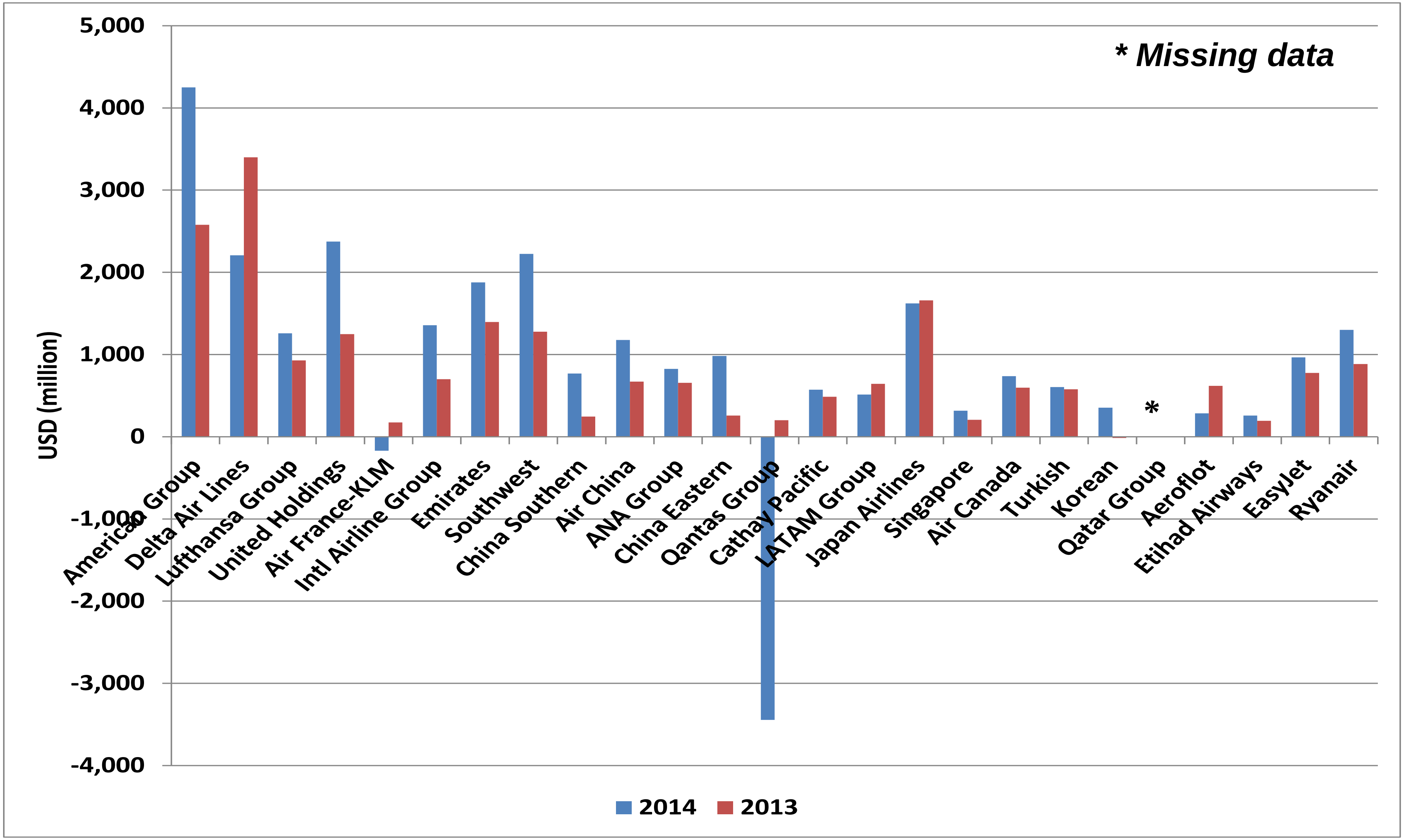
Source: Airline Business Top 200 Airlines Traffic 2014

Top 25 World Airline Groups – Total Operating Revenues 2014



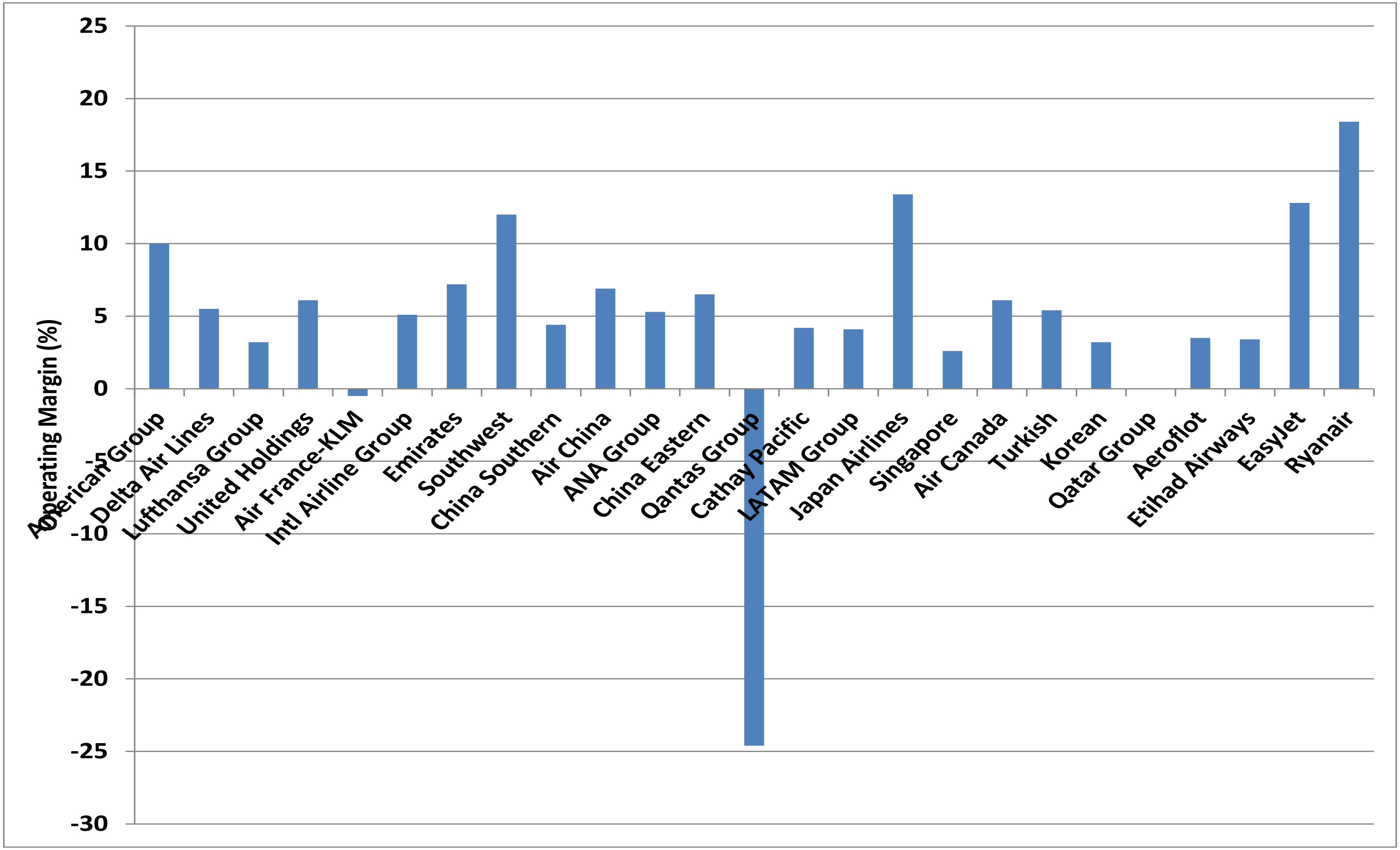
Source: Airline Business Top 150 Airlines Financial 2014

Top World Airline Groups – Operating Profit 2014 and 2013



Source: Airline Business Top 150 Airlines Financial 2014

Top World Airline Groups – % Operating Margin 2014



Source: Airline Business Top 150 Airlines Financial 2014

The LCC "Business Model"

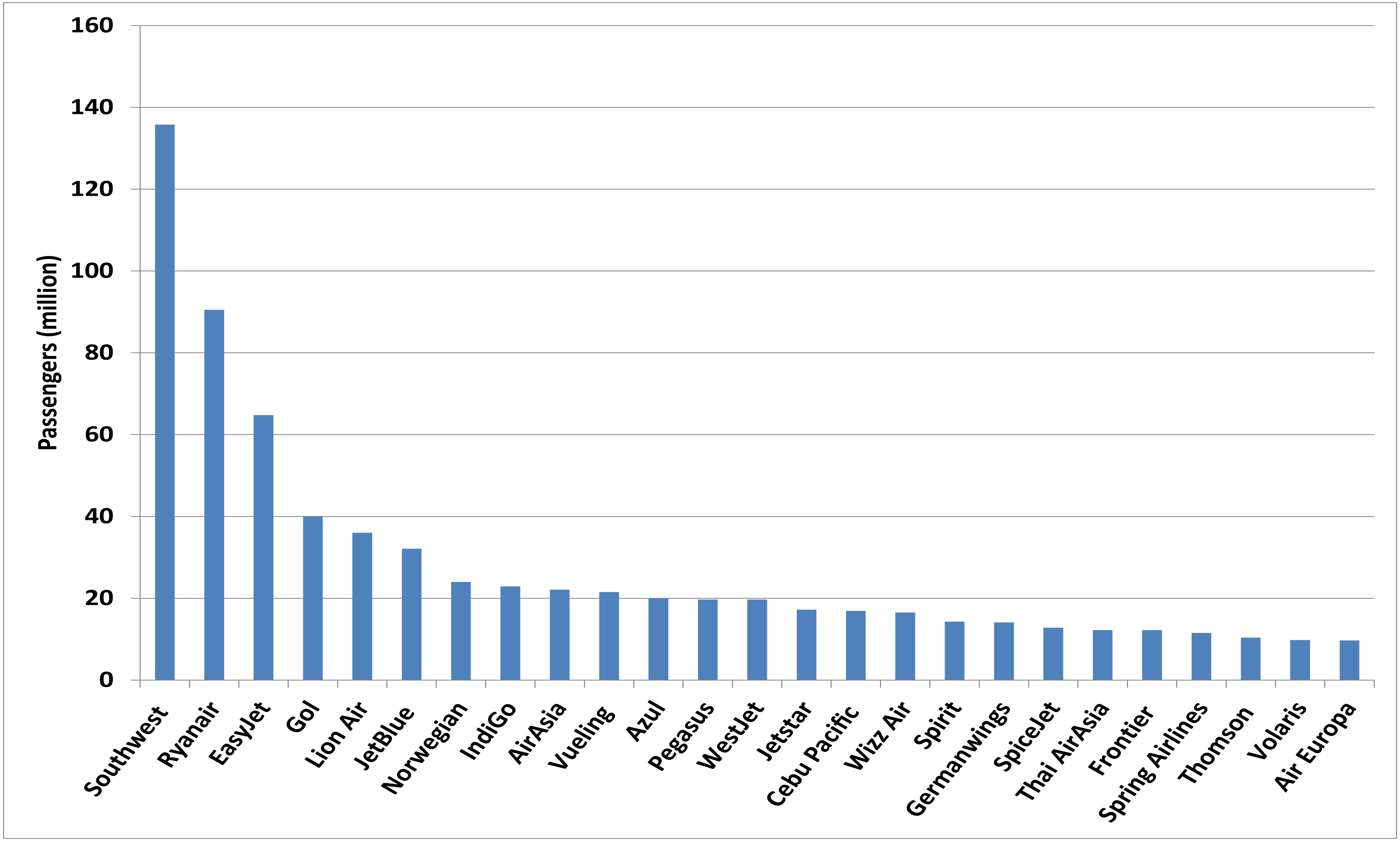
- **LCCs were once assumed to use common strategies designed to reduce unit costs:**
  - Single aircraft type or family of aircraft
  - Point-to-point vs. hub network structure
  - No connecting tickets (only point-to-point) local passengers
  - No labor unions, low wage rates
  - Single cabin service, no "premium" classes on board
  - No seat assignment (in advance and/or at the airport)
  - Reduced "frills" and seating space on board
  - No frequent flyer loyalty programs
  - No distribution through Global Distribution Systems (GDS)

- **With LCC evolution, very few large LCCs actually fit this assumed LCC "business model" today…**

Many Different LCC Business Models

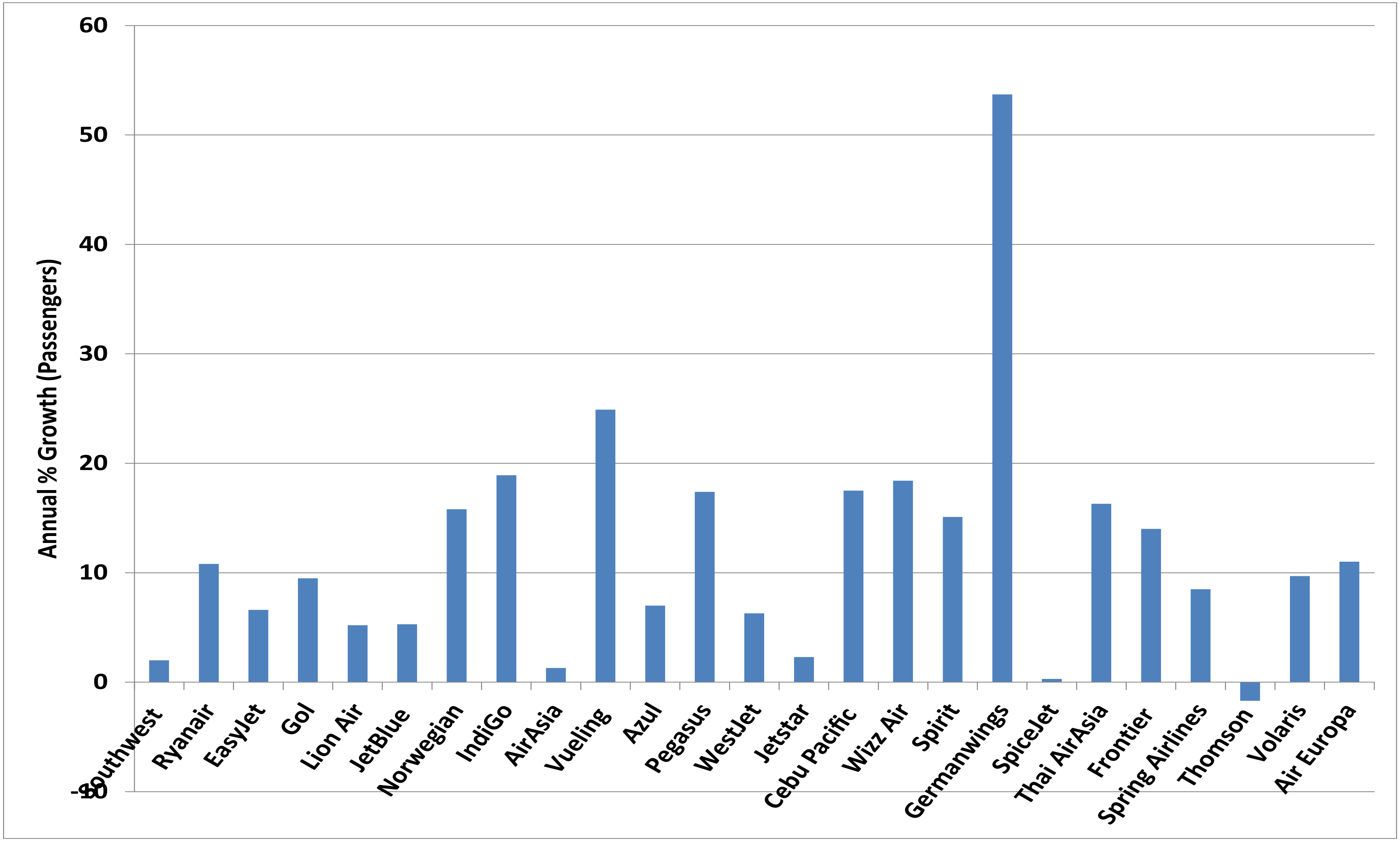
	Southwest	jetBlue	Air Asia	GOL	EasyJet	Ryanair
Single aircraft type or single family of aircraft	✗	✗	✓	✓	✓	✓
Point-to-point ticketing, no connecting hubs	✗	✗	✗	✗	✓	✓
No labor unions, lower wage rates	✗	✗	✗	✗	✗	✓
Single cabin service, no premium class	✓	✗	?	?	✓	✓
No seat assignments	✓	✗	✗	✗	✓	✓
Reduced frills for on-board service (vs. legacy)	✗	✗	✗	✗	✓	✓
No frequent flyer loyalty program	✗	✗	✗	✗	✓	✓
Avoid Global Distribution Systems (GDS)	?	✗	✗	✗	✓	✗

Top 25 LCCs by Passengers Enplaned (2014)



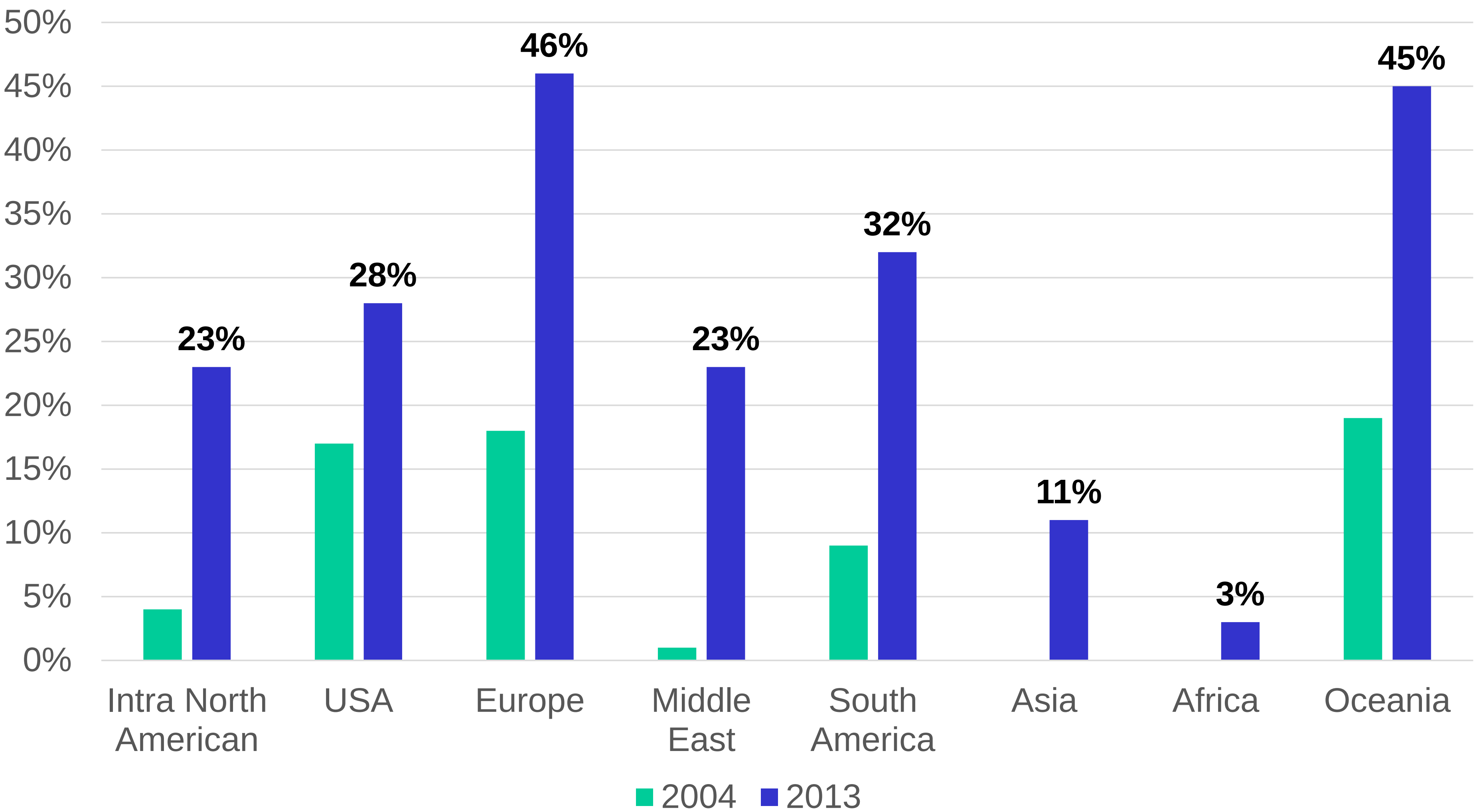
Source: Airline Business Top 50 LCCs 2014

Top 25 LCCs Annual Growth Rates (2014)



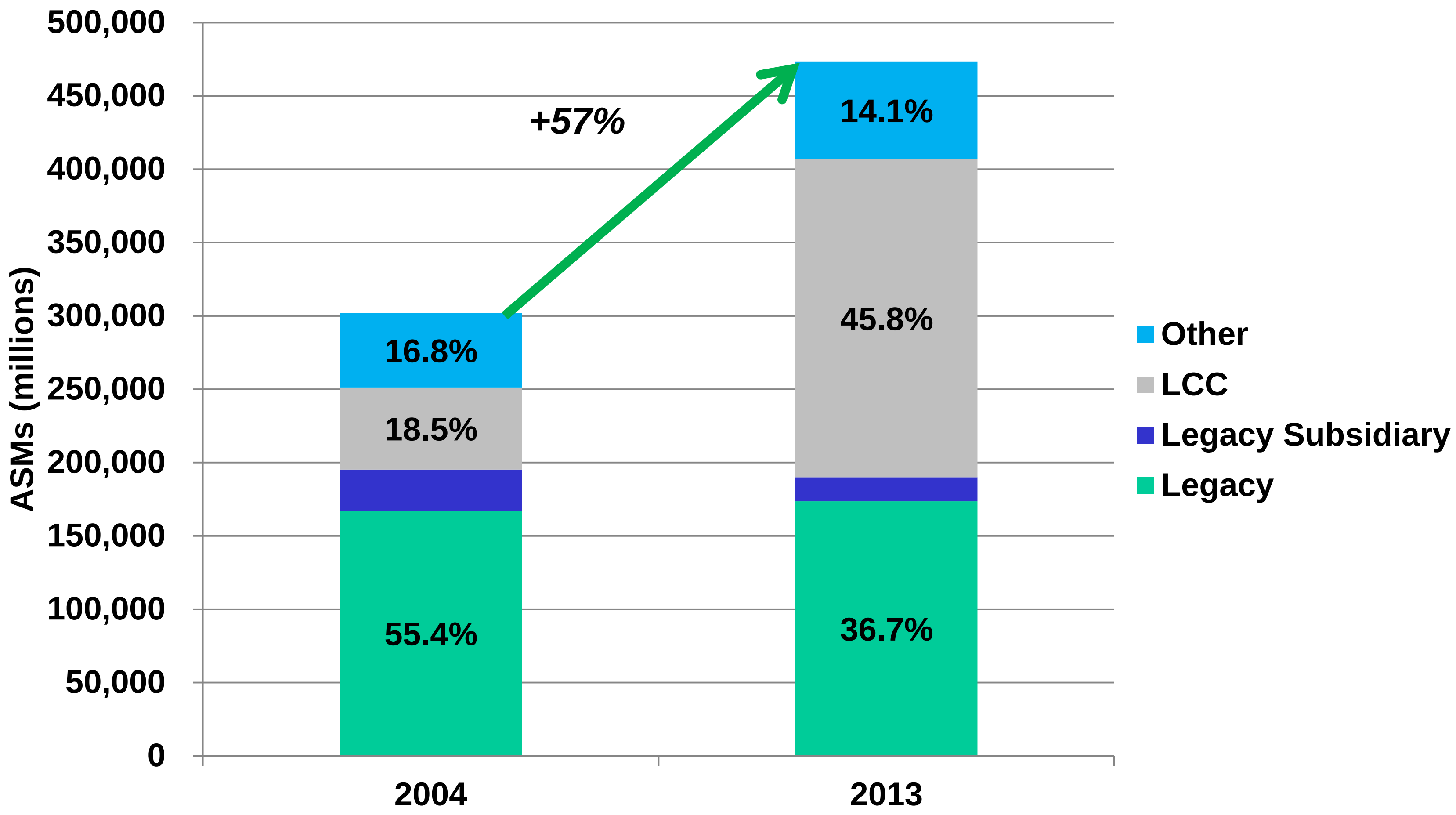
Source: Airline Business Top 50 LCCs 2014

LCCs have increased their ASM share in all regions; penetration is limited in Africa and Asia



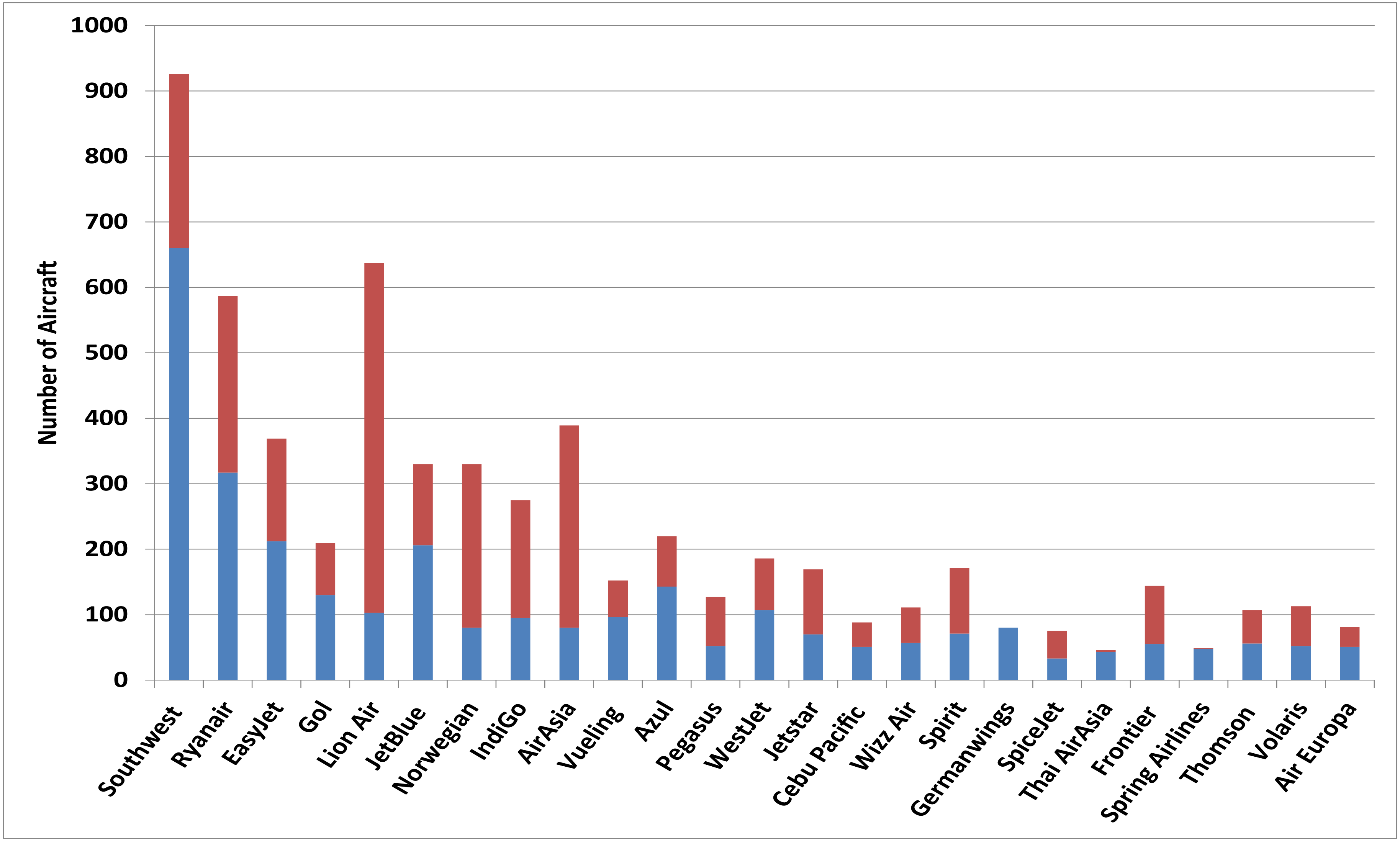
Source: Innovata Schedule Reference Service

European LCCs have more than doubled their intra-Europe ASM share since 2004



Source: Innovata Schedule Reference Service

Top 25 LCCs Fleets and Orders (2014)



Source: Airline Business Top 50 LCCs 2014

Emerging Global Carriers

Emirates

- *Dubai, UAE*
- *248 Aircraft*
- *3rd largest airline by weekly seat capacity*

Etihad Airways

- *Abu Dhabi, UAE*
- *120 Aircraft*
- *Owns large stakes in other airlines*

Qatar Airways

- *Doha, Qatar*
- *167 Aircraft*
- *oneworld member*

Turkish Airlines

- *Istanbul, Turkey*
- *267 Aircraft*
- *Star Alliance member*

Source: Airfleets.net, retrieved on 02/24/2016

What sets the emerging carriers apart?

- **Each of the 4 airlines has managed annual growth rates greater than 10% in the following categories:**

		Etihad	Emirates	Qatar	Turkish
5-year Annual Growth	Passengers	16.26%	12.65%	15.83%	13.62%
	ASKs	18.66%	14.19%	20.41%	18.30%
	RPKs	21.84%	14.37%	19.28%	18.20%
	Fleet Size	11.50%	11.68%	16.42%	15.30%

- **Hubs locations provide them with a geographic advantage over many other airlines**
- **Fleets composed mostly of wide-body aircraft**

Source: Airline Annual Reports, 2007-2012

Emerging global carriers will double their capacity by the end of the decade

Airline	2013			2020			Change		
	Fleet	Departures	ASMs (millions)	Fleet	Departures	ASMs (millions)	Fleet	Departures	ASMs
Emirates	187	163,338	170,331	321	262,545	305,079	72%	61%	79%
Etihad	64	67,014	34,907	148	134,868	91,062	131%	101%	161%
Qatar	113	124,246	62,687	241	244,660	131,954	113%	97%	110%
Turkish	195	277,327	62,180	389	545,164	138,786	99%	97%	123%
Total	**559**	**631925**	**330,106**	**1099**	**1187236**	**666,882**	**97%**	**88%**	**102%**

What do these growth projections imply for global airline rankings?

Rank	Airline	Country	RPK (2012)
1	Delta Air Lines	United States	310,466
2	United Airlines	United States	288,680
3	American Airlines	United States	203,299
4	Emirates Airline	United Arab Emirates	188,618
5	Southwest Airlines	United States	165,753
6	Lufthansa	Germany	149,780
7	Air France	France	135,824
8	British Airways	United Kingdom	126,436
9	China Eastern Airlines	China	109,113
10	China Southern Airlines	China	107,000
11	US Airways	United States	100,460
12	Ryanair	Ireland	100,000
13	Air China	China	95,940
14	Cathay Pacific	Hong Kong	94,191
15	Singapore Airlines	Singapore	93,766
16	Air Canada	Canada	89,534
17	KLM	Netherlands	86,281
18	Qantas	Australia	75,935
19	Turkish Airlines	Turkey	74,638
20	Qatar Airways	Qatar	73,608
30	Etihad Airways	United Arab Emirates	48,000

Rank	Airline	Assumed Annual Growth Rate	RPK (2020)
1	Emirates Airline	9.6%	392,781
2	Delta Air Lines	0.6%	325,989
3	United Airlines	0.6%	303,114
4	Southwest Airlines	5.0%	244,893
5	American Airlines	0.6%	213,464
6	China Eastern Airlines	8.0%	201,961
7	China Southern Airlines	8.0%	198,050
8	Turkish Airlines	11.5%	178,637
9	Air China	8.0%	177,578
10	Cathay Pacific	8.0%	174,341
11	Ryanair	7.0%	171,819
12	Qatar Airways	10.9%	168,981
13	Lufthansa	0.6%	157,269
14	Air France	0.6%	142,615
15	Singapore Airlines	5.0%	138,535
16	British Airways	0.6%	132,758
17	Etihad Airways	11.8%	117,240
18	US Airways	0.6%	105,483
19	Air Canada	0.6%	94,011
20	KLM Royal Dutch Airlines	0.6%	90,595
21	Qantas	2.0%	88,970

- ***Growth rates for non-emerging carriers were extrapolated from recent growth patterns***

Source: Airline Business 2012 Rankings