

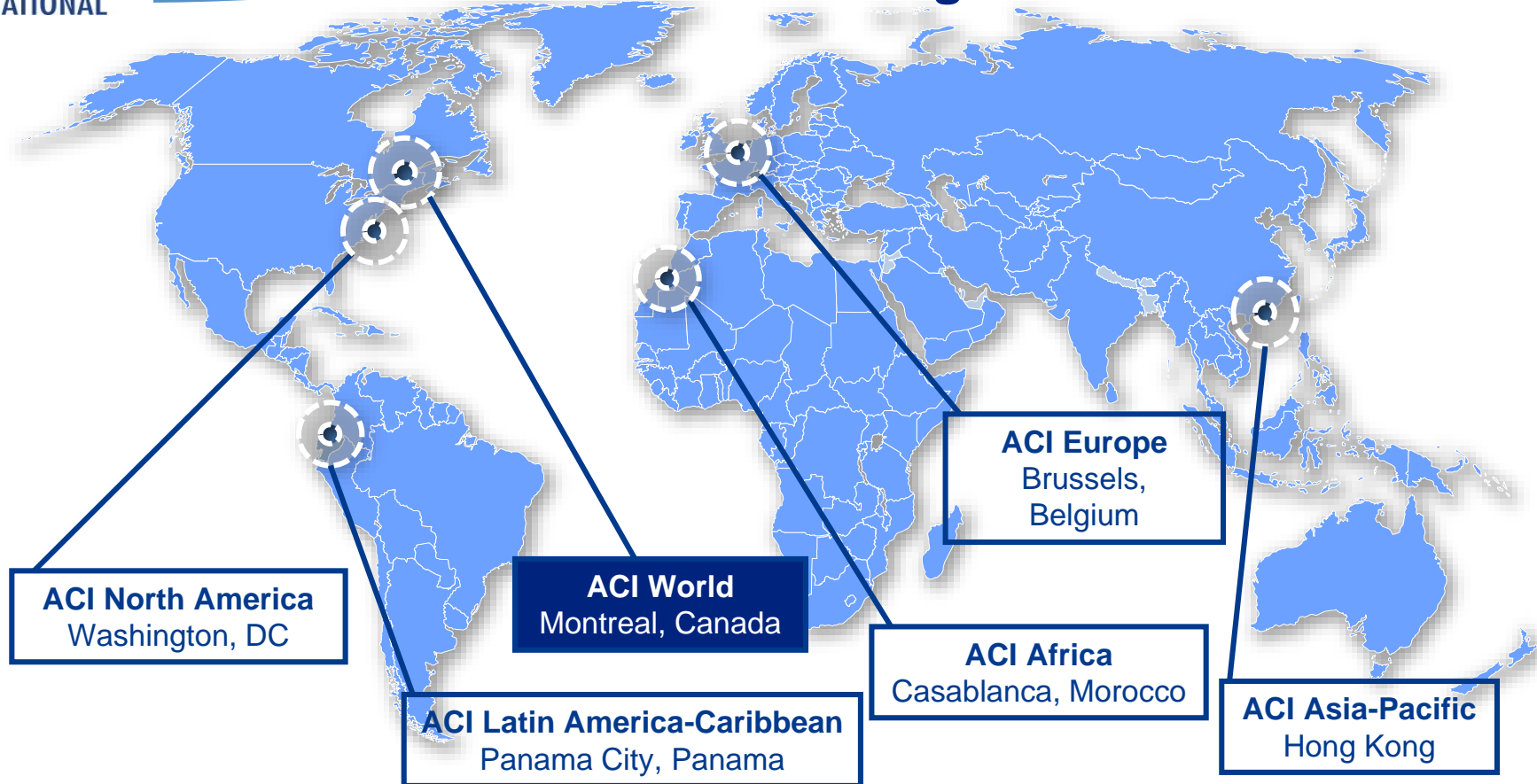


4 Short stories in Airports Economics

Patrick Lucas

Head – Airport Business Analytics, ACI World

ACI World and Regional Offices



**641 members operating 1953 airports in 176 countries;
500 World Business Partners**

4 short stories:

Debunking a few myths

- **Air transport demand across the world's airports:**
 - Where have we been, where are we now and where are we going?
- **Myth #1:**
 - Aircraft-related revenues (from airlines) make-up the lion's share of airports' aeronautical revenues
- **Myth #2:**
 - % share of non-aeronautical revenue has grown over time relative to aero as % of total revenue
- **Myth #3:**
 - Most airports generate net profits and a positive return on invested capital

1st story:

World Airport Traffic Report (WATR) and Forecasts (WATF)



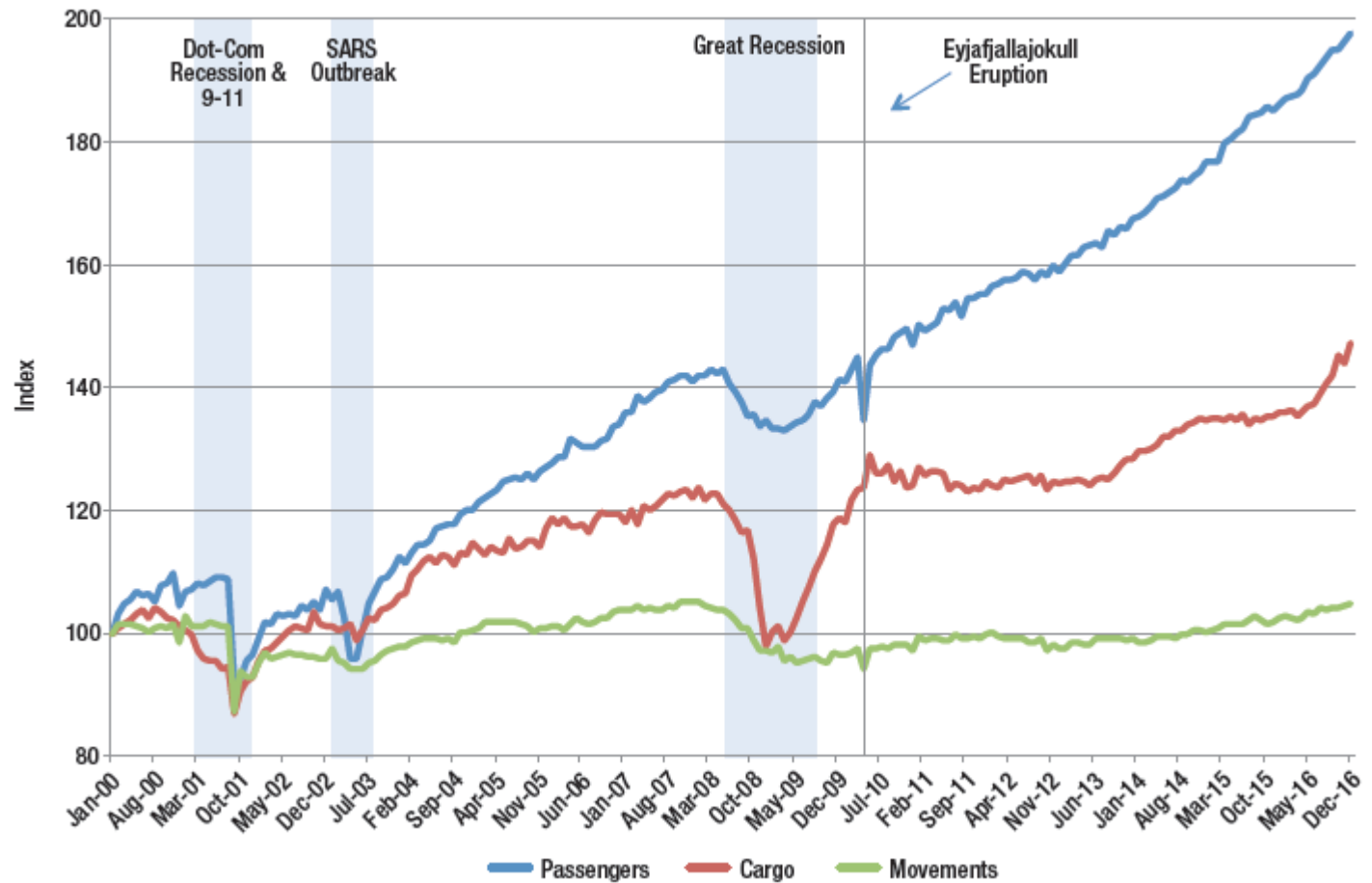
- WATR: Based on **+2400 airports** covering ~95% of global passenger traffic
- WATF: Short, medium and long-term country forecasts for over **90 markets up to 2040**

Where have we been? (2000–2016)

✓ **Pax:**
Resilience and animal spirits

✓ **Air cargo:**
Mode shift and cyclical recovery

✓ **Movements:**
Efficiency and consolidation



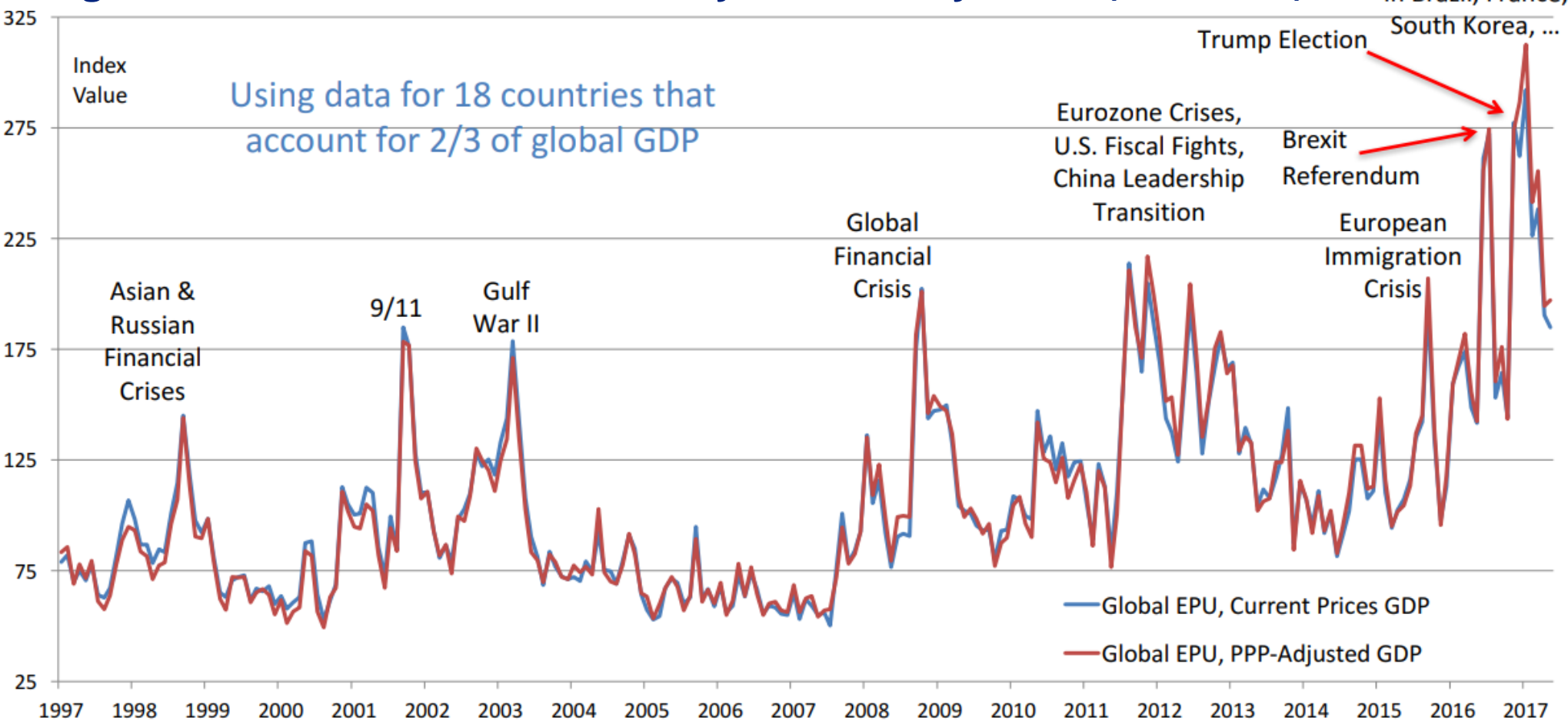


Pax:
Resilience and animal spirits

Air cargo:
Mode shifts and cyclical recovery

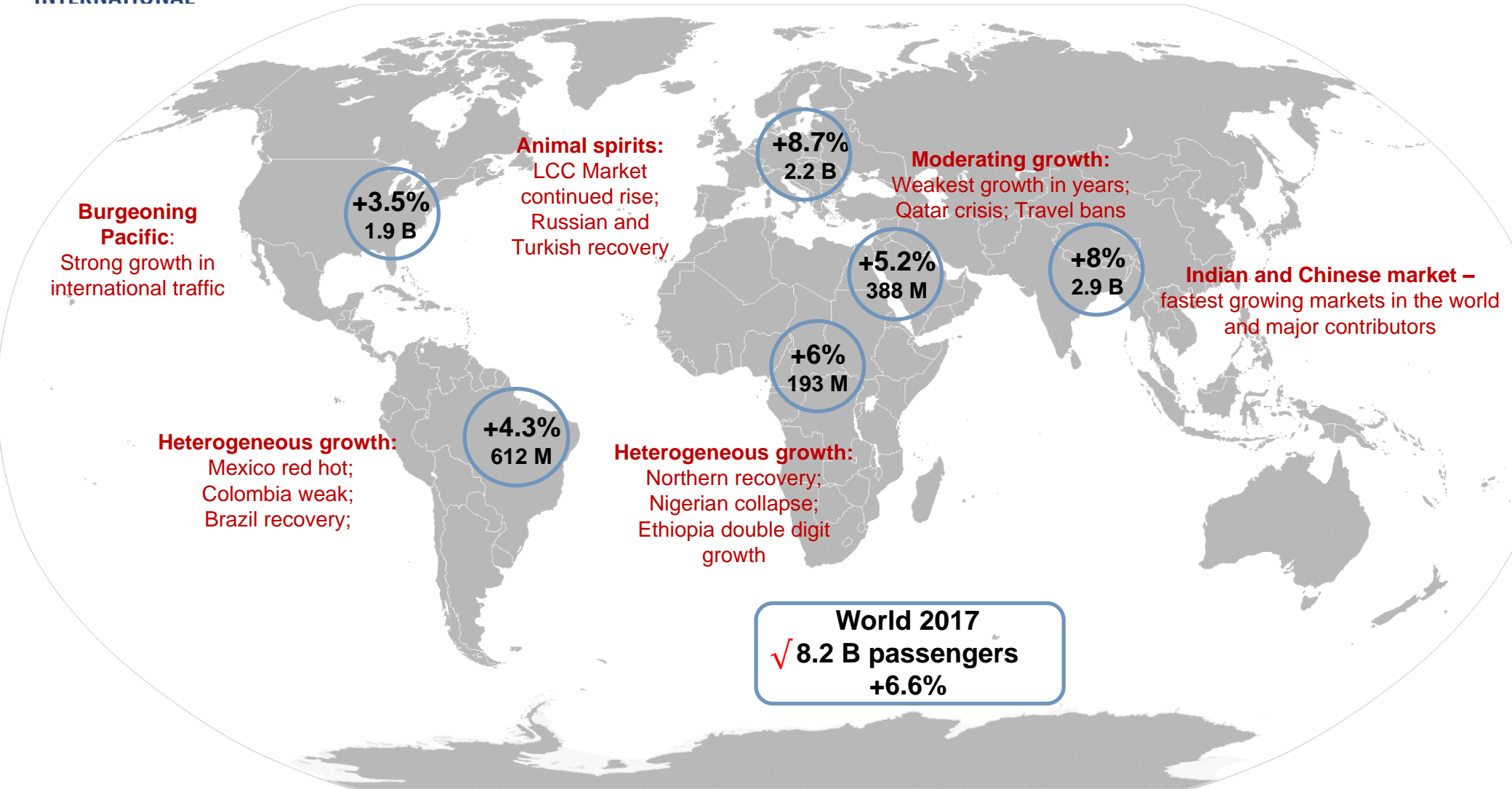
Movements:
Efficiency and consolidation

Exogenous – Global Economic Policy Uncertainty Index (1997-2017)



Notes: Global EPU calculated as the GDP-weighted average of monthly EPU index values for US, Canada, Brazil, Chile, UK, Germany, Italy, Spain, France, Netherlands, Russia, India, China, South Korea, Japan, Ireland, Sweden, and Australia, using GDP data from the IMF’s World Economic Outlook Database. National EPU index values are from www.PolicyUncertainty.com and Baker, Bloom and Davis (2016). Each national EPU Index is renormalized to a mean of 100 from 1997 to 2015 before calculating the Global EPU Index.

✓ Pax: Where are we now?



Endogenous variables.....

Jet Fuel and Crude Oil Price (\$/barrel)



Over 2 years of low prices:
Helps put downward pressure on fares in a competitive environment



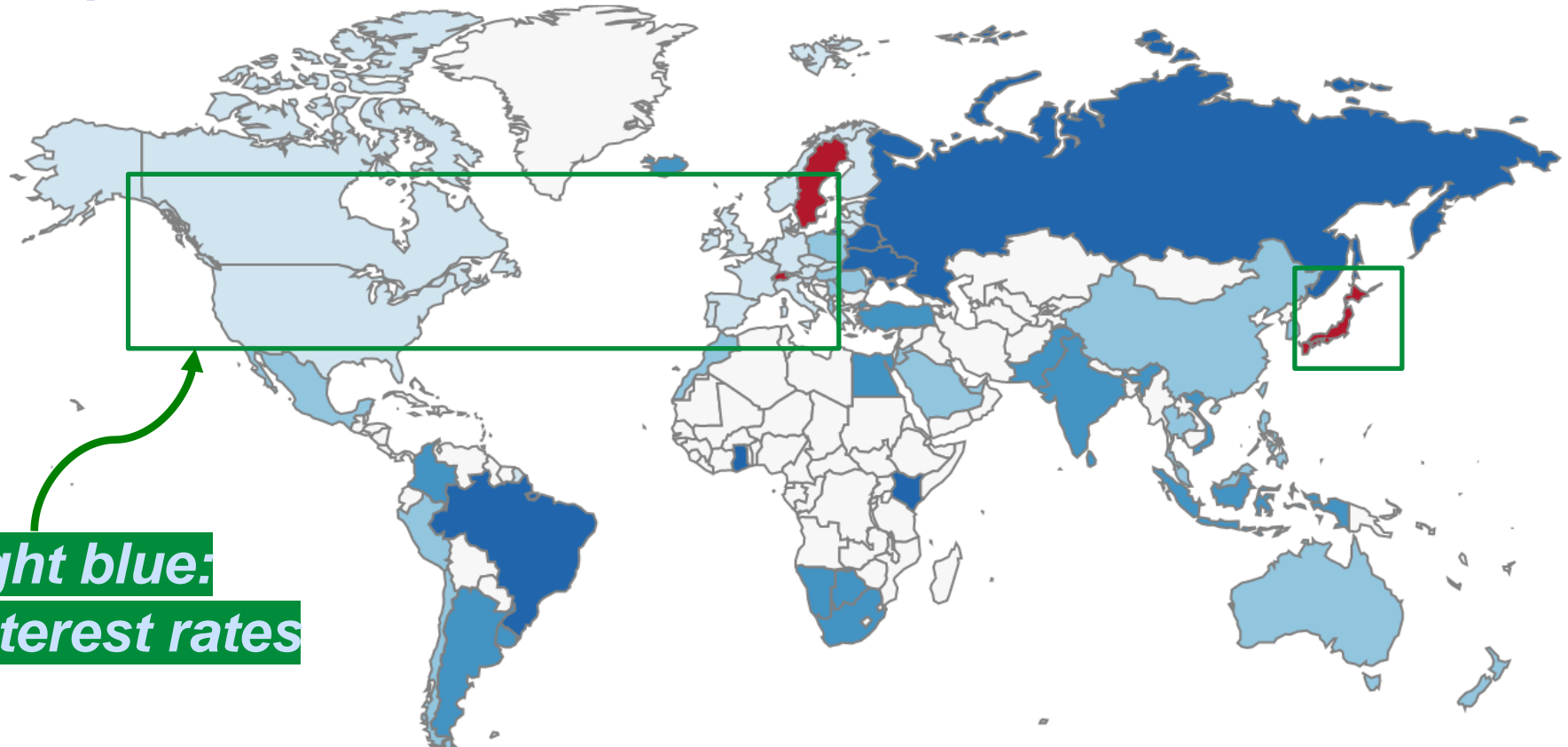
Source: Platts, Oanda

Endogenous variables.....

“No frills” low cost carrier business model stimulates demand through competitive fare offerings



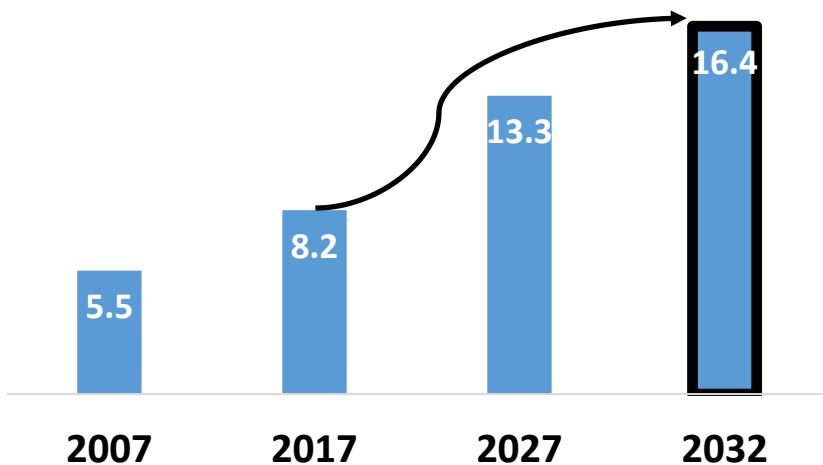
Cheap credit....



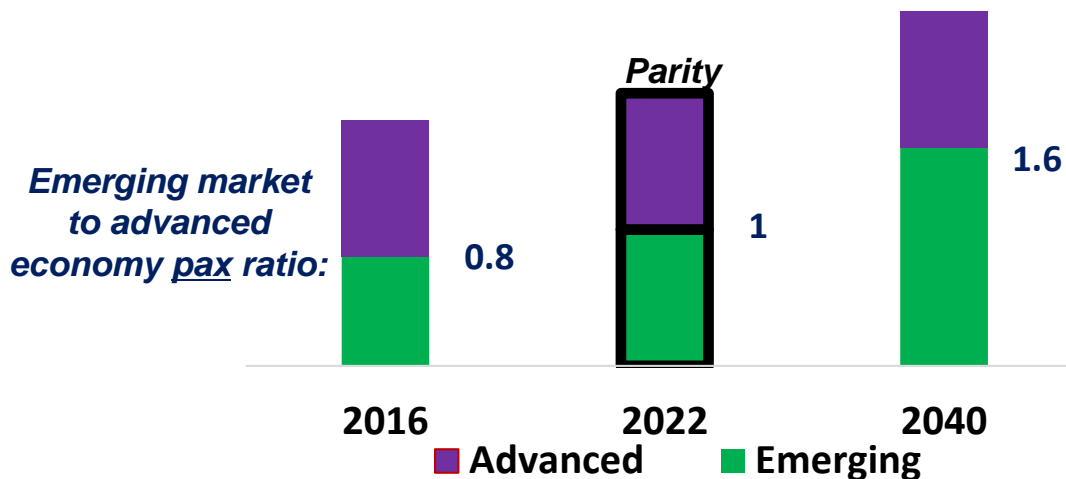
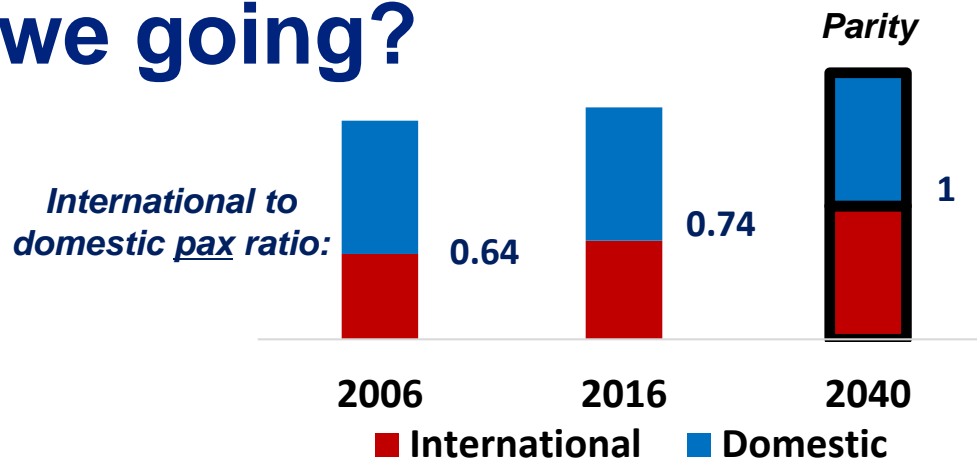
Light blue:
low interest rates

Darker blue higher positive interest rates; **red countries** are negative

A glimpse into the future...where are we going?

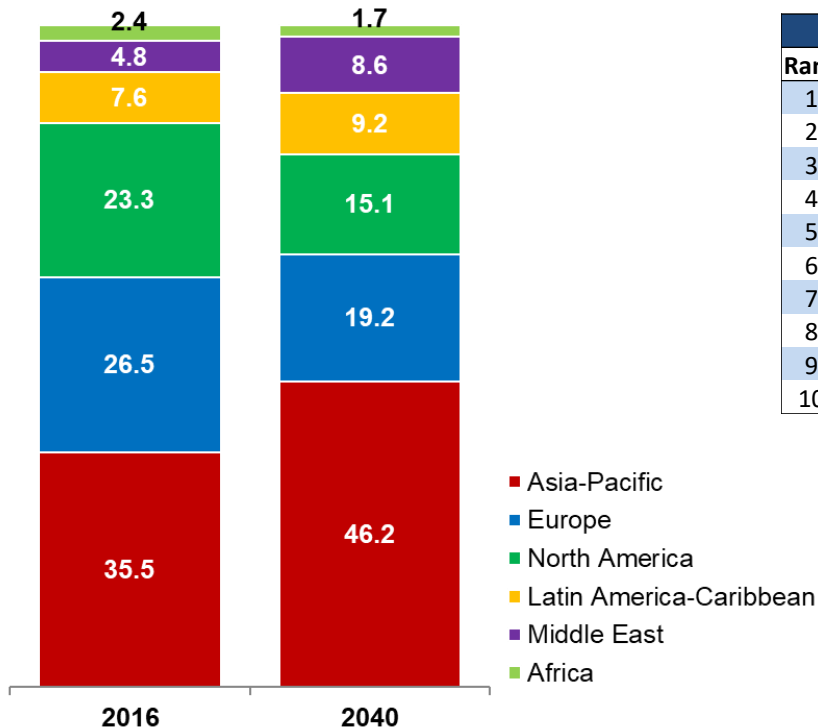


A doubling of pax traffic in less than 15 years



Aviation's center of gravity moves eastward

Projected evolution of global passenger market shares (%)



Top 10 Countries 2015-2040

Total passenger traffic: Top 10 countries			
Rank	2015	2016	2040
1	USA	USA	China
2	China	China	USA
3	Japan	Japan	India
4	UK	UK	Indonesia
5	Germany	India	UAE
6	Brazil	Spain	Vietnam
7	India	Germany	Japan
8	Spain	Brazil	UK
9	Turkey	Indonesia	Thailand
10	France	Turkey	Brazil

India to become 3rd largest market

Pax:

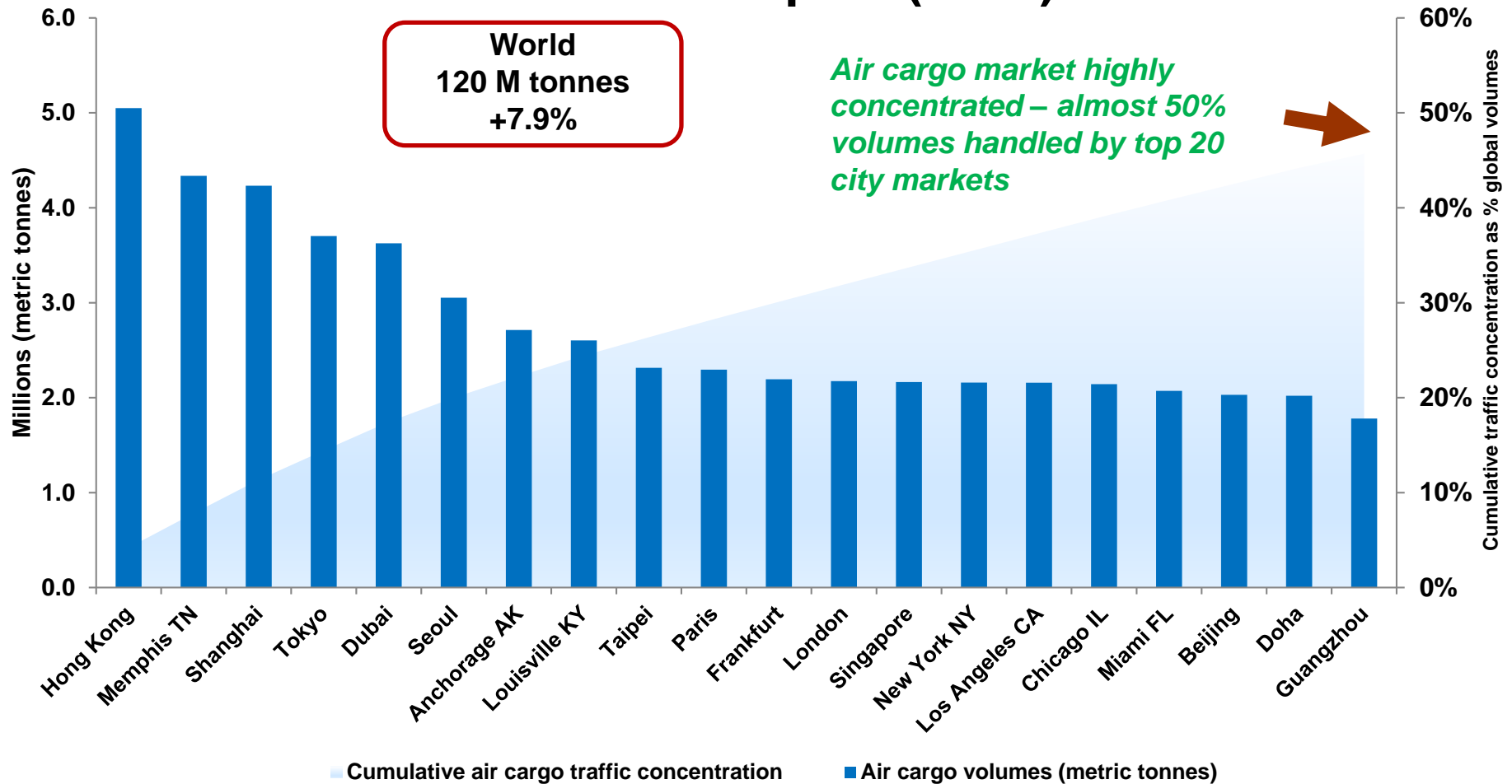
Resilience and animal spirits

✓ **Air cargo:**
Mode shifts and cyclical recovery

Movements:

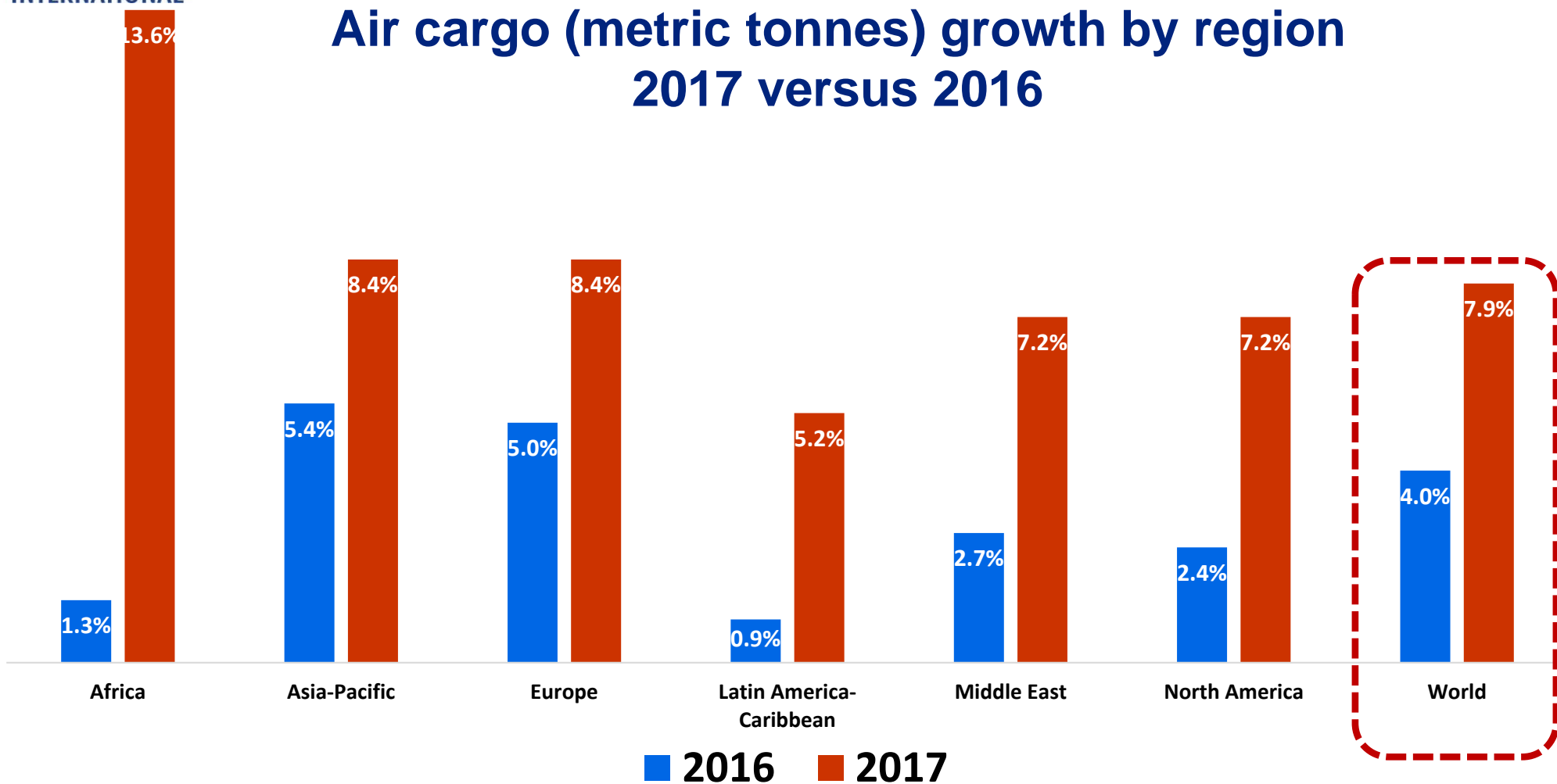
Efficiency and consolidation

Concentration of air cargo traffic by city market - top 20 (2017)



Source: ACI World Airport Traffic Database, 2018

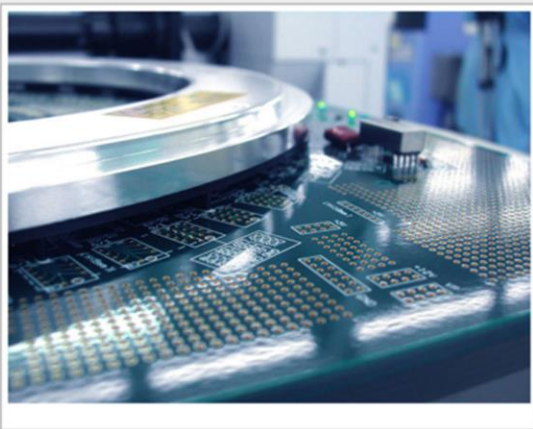
Air cargo (metric tonnes) growth by region 2017 versus 2016



Cyclical recovery in global trade and industrial production....

Taiwan's industrial production grows for 3rd straight month (update)

2017/08/23 21:57:56



Taipei, Aug. 23 (CNA) Taiwan's industrial production rose year-on-year for the third consecutive month in July on the back of strong global demand for electronic gadgets as the world's economy remained on a recovery track, statistics from the Ministry of Economic Affairs (MOEA) showed Wednesday.



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12 APRIL 20

Trade recovery expected in 2017 and 2018, amid policy uncertainty

Growth in the volume of world merchandise trade is expected to rebound this year from its tepid performance in 2016, but only if the global economy recovers as expected and governments pursue the right policy mix, WTO economists reported.

- Two market forces at play:

micro ↓ Capacity - containerships
(supply side)
macro ↑ Global trade & industrial production
(aggregate demand)

Ocean freight:
 Less service at
 a higher price

Demand for air
 cargo services
(reliability factor)



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12 APRIL 2017

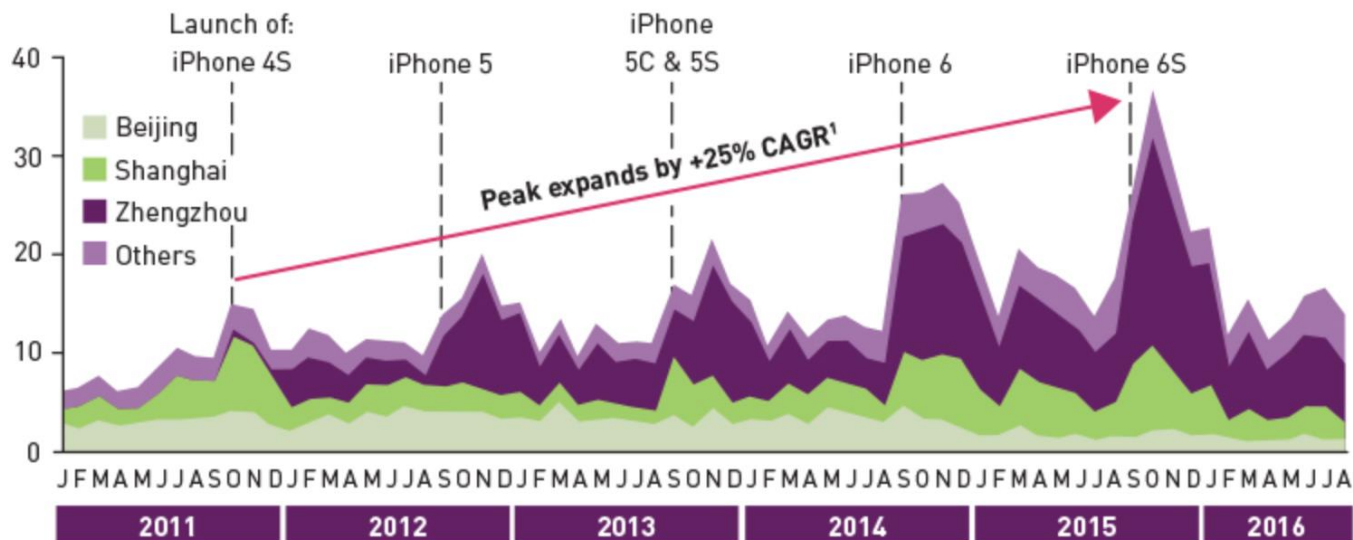
Trade recovery expected in 2017 and 2018, amid policy uncertainty

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Other market forces: Demand side

- Shipped by air because of huge demand despite higher cost
- Opportunity cost of capital: cash is tied up on a containership for 30 days

China's air exports of mobile phones, 2011-2016 (Aug)
 Thousand tonnes



Factories in Zhengzhou and Shanghai are largely contributing to year-end export peaks

1) Year-end peak of September-November, 2011-2015 CAGR (source: Seabury Trade Database China Monthly (October 2016))

Express delivery and the growth of e-commerce (B2C).....

- Major express carriers, including UPS, DHL, and FedEx with increased competition

Fastest-growing airports handling 50,000 to 250,000 metric tonnes of air cargo (2016)

Rank	City, Country	Code	Cargo 2016	% Change	Region	World rank
1	Allentown PA, United States	ABE	57 121	165.7%	North America	228
2	Islamabad, Pakistan	ISB	118 275	125.2%	Asia-Pacific	147
3	Denpasar Bali, Indonesia	DPS	51 620	67.0%	Asia-Pacific	238
4	Bangkok, Thailand	DMK	67 884	49.2%	Asia-Pacific	204
5	Dammam, Saudi Arabia (Kingdom of Saudi Arabia)	DMM	137 559	45.8%	Middle East	132
6	Buena Vista, Republic of Korea	BUC	65 709	41.2%	Asia-Pacific	211

Source: ACI World Airport Traffic Report, 2017



- New entrants SF Express in China and Amazon
- Vertical integration – Amazon to set up hub at Cincinnati/Northern Kentucky Airport ~28% yoy
- Instead of being a client of UPS and FedEx, it will be their competitor

Pax:

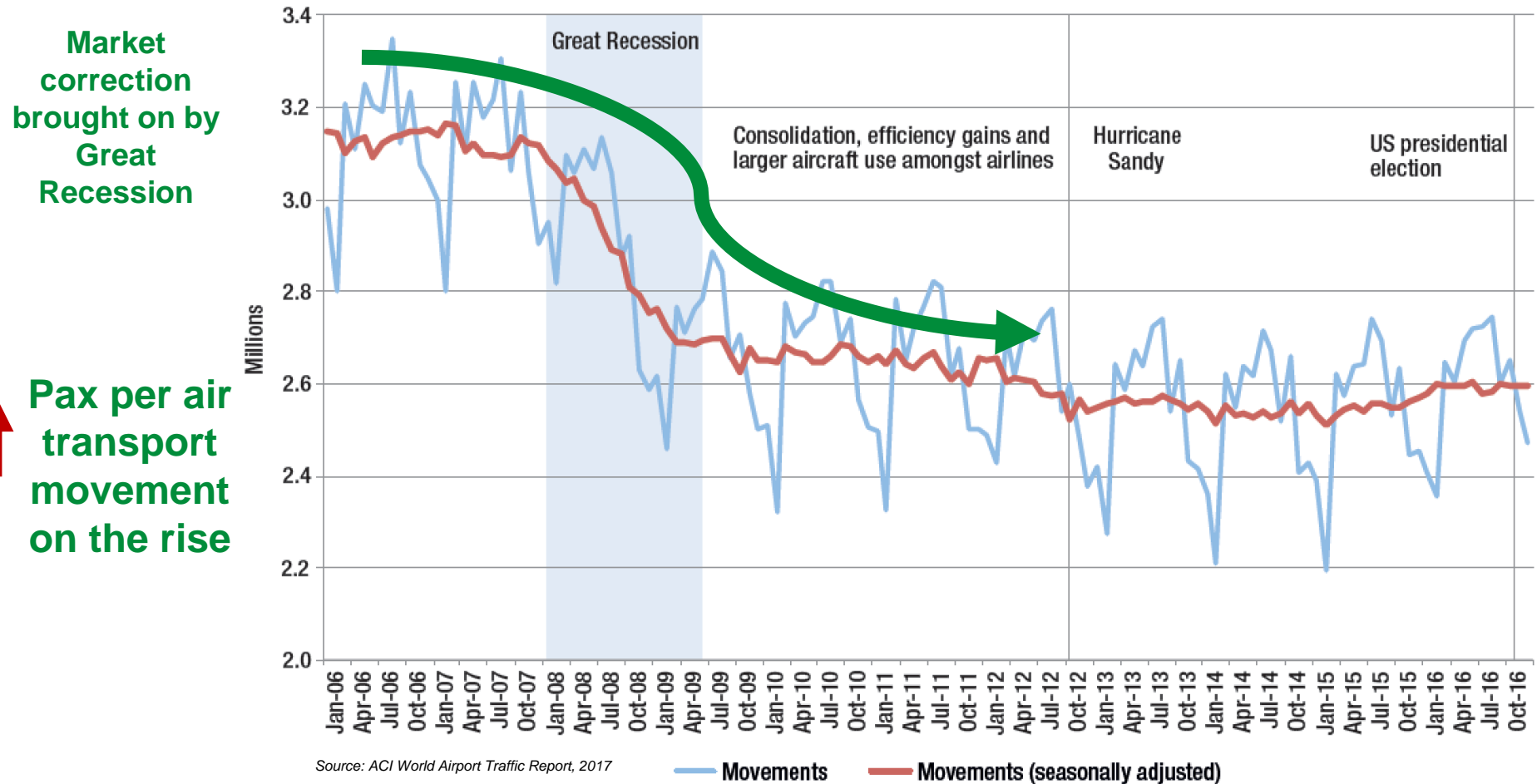
Resilience and animal spirits

Air cargo:

Mode shifts and cyclical recovery

 **Movements:**
Efficiency and consolidation

Evolution of monthly movements traffic in North America (2006–2016)

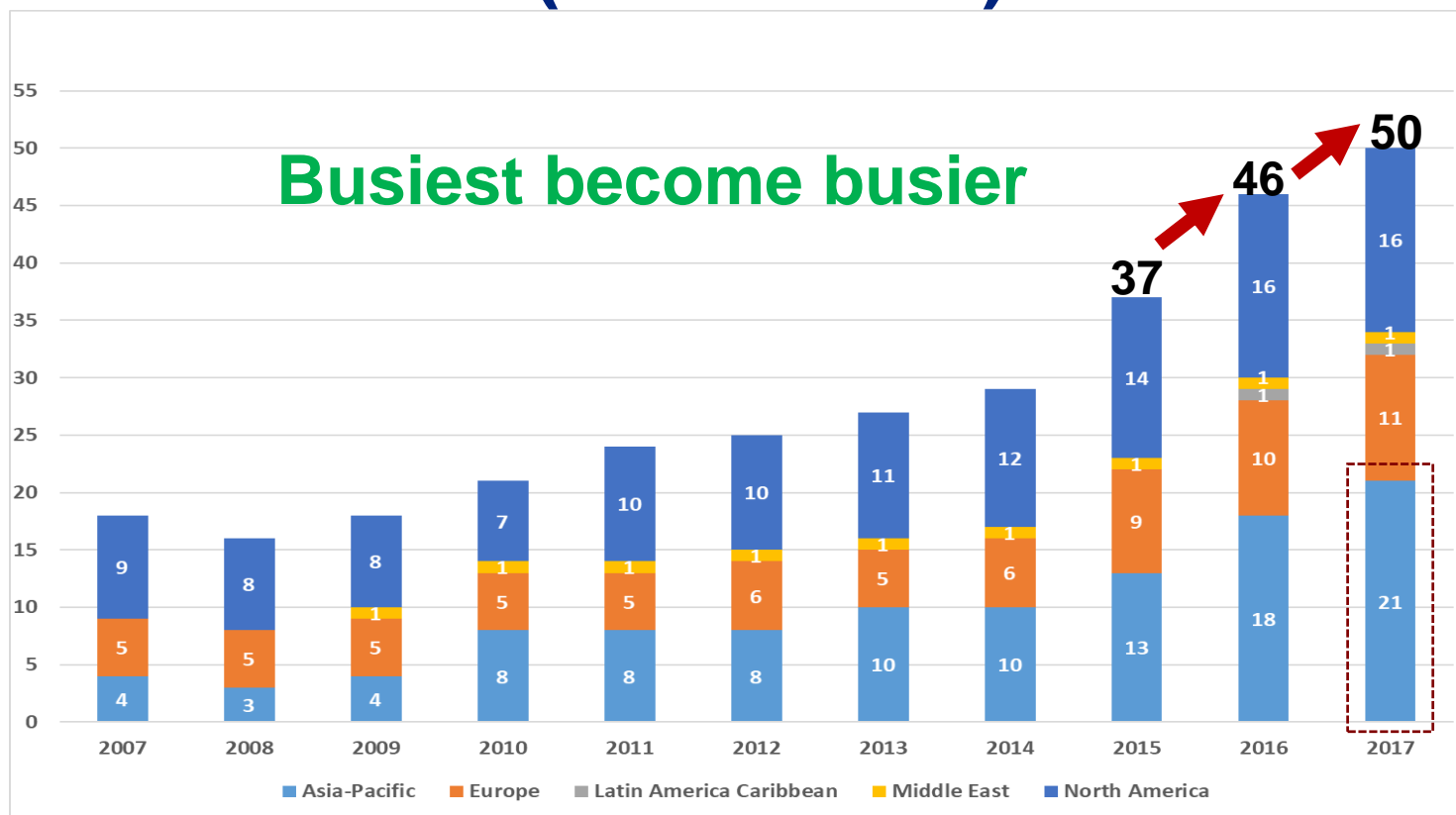


Source: ACI World Airport Traffic Report, 2017

Number of airports with >40 mppa - world (2007–2017)

2017 new airports:

- Manila (MNL)
- Moscow (SVO)
- Tokyo (NRT)
- Xi'An (XIY)





Overview Airport Economics Report

Airport Economics Report and KPIs



- The survey generates responses from ~700+ airports for financial year;
- These airports handle ~4.8 billion passengers or about ~70% of worldwide passenger traffic.



Industry Snapshot

What does the typical airport look like?

The typical airport on the planet is:



Heihe Airport, China (HEK)

Main criteria:

- **Size categories**
- **Median pax traffic**
- **Scheduled traffic**



Sogndal Airport, Norway (SOG)



Plovdiv Airport, Bulgaria (PDV)

How big is the airport industry?



If the Airport Industry was an economy, what country would it be in terms of Gross Domestic Product?

~~Argentina~~

B) Kuwait

~~Vietnam~~

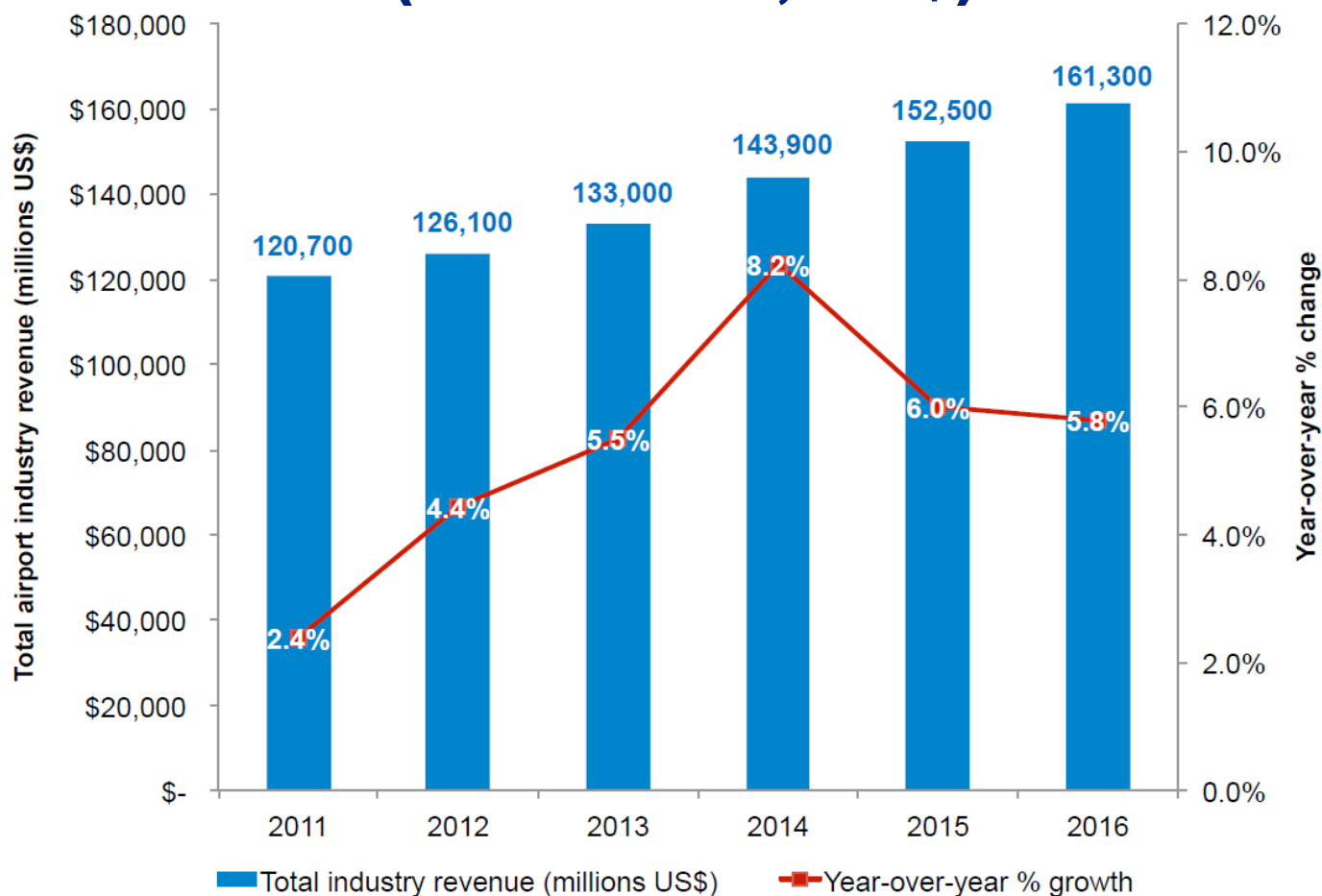
~~New Zealand~~

Rank ↕	Country ↕	GDP (millions of US\$) ↕
53	 Romania	199,045
54	 New Zealand	198,652
55	 Vietnam	186,205
56	 Bangladesh	173,062
57	 Kuwait	163,637
58	 Angola	146,676
59	 Hungary	138,347

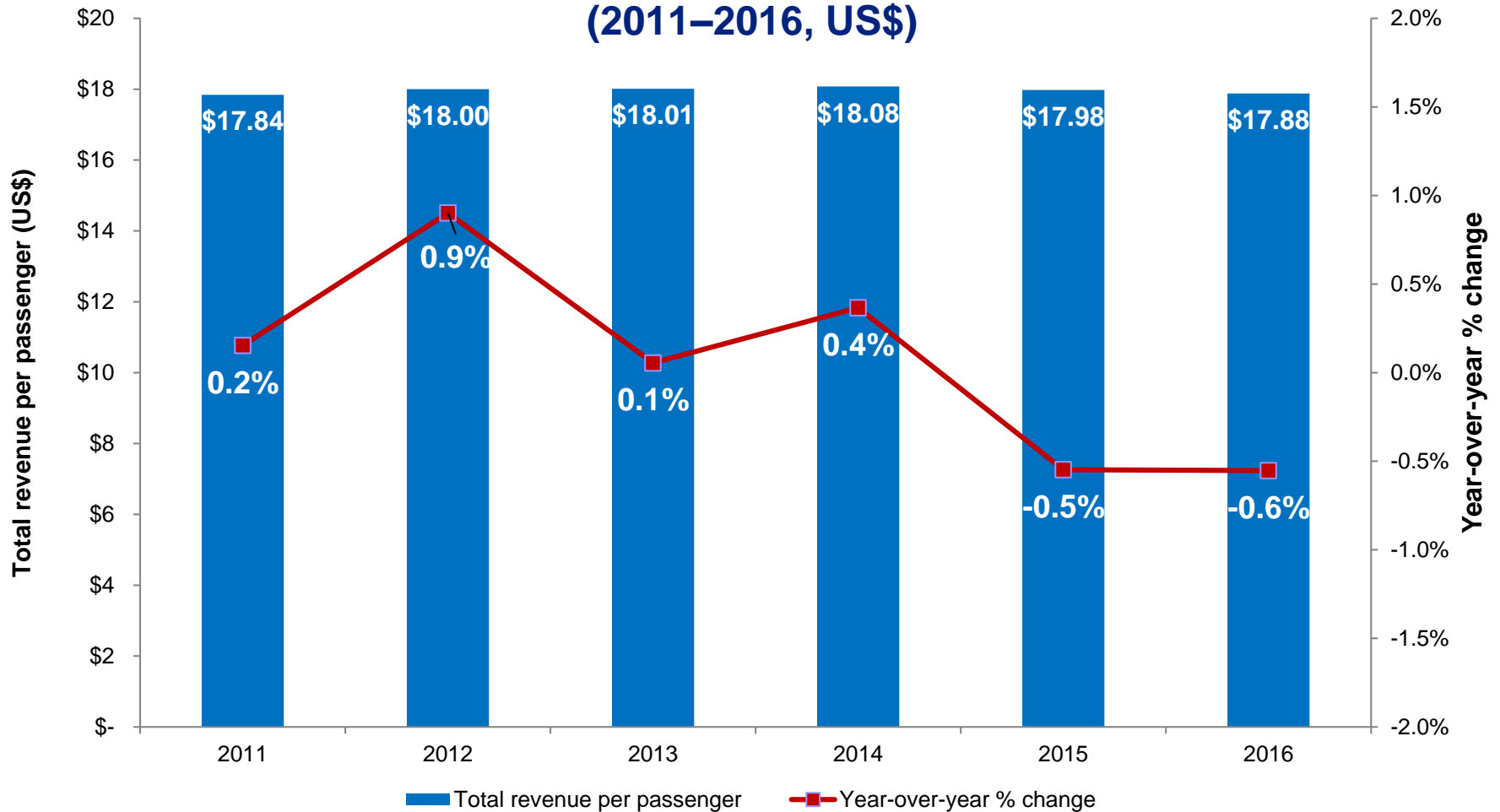
What are industry revenues and how are they evolving?



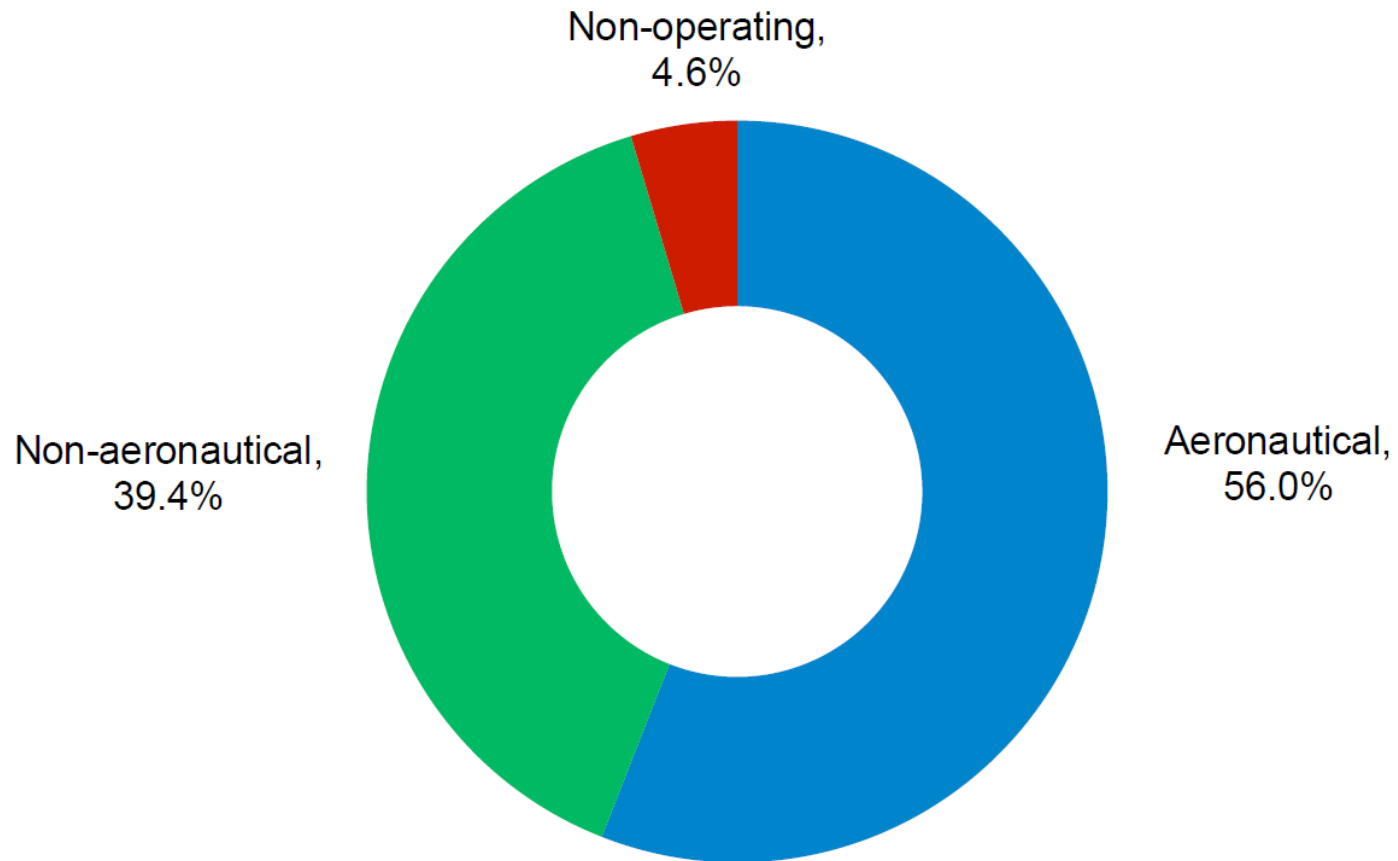
Evolution of total Industry Revenue and Y-o-Y Growth (2001–2016, US\$)



Evolution of total revenue per passenger (2011–2016, US\$)



Global industry revenue by source (2016)



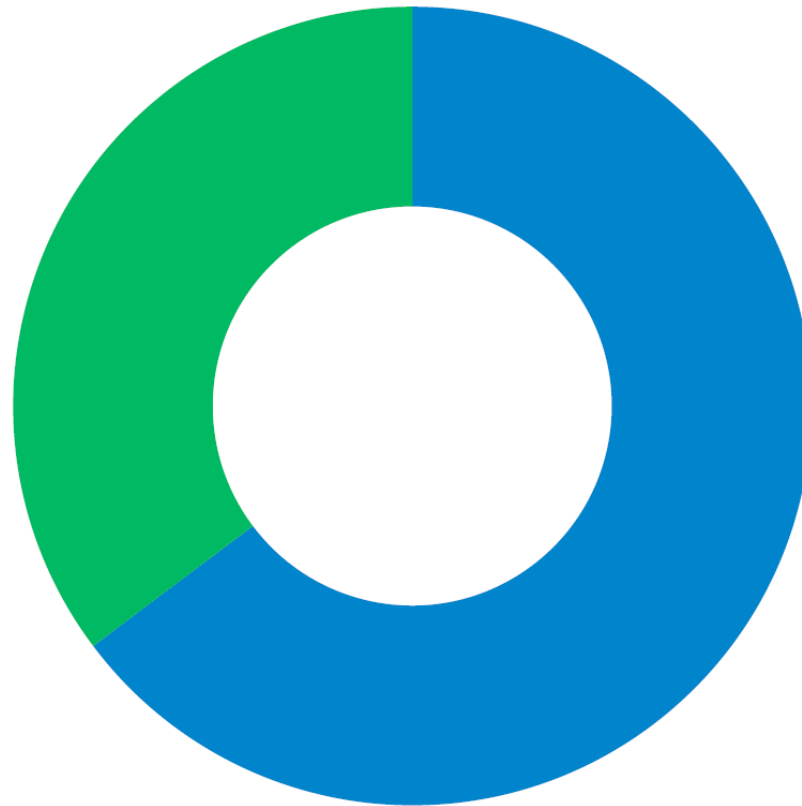
Source: ACI Airport Economics Survey (2017)

What is the largest component of costs?



Distribution of total costs (2016)

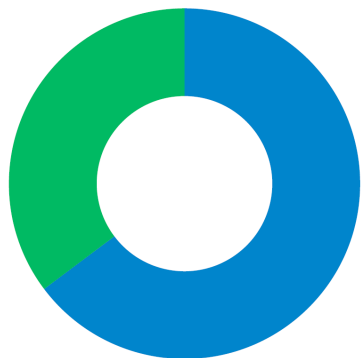
Capital costs,
35.3%



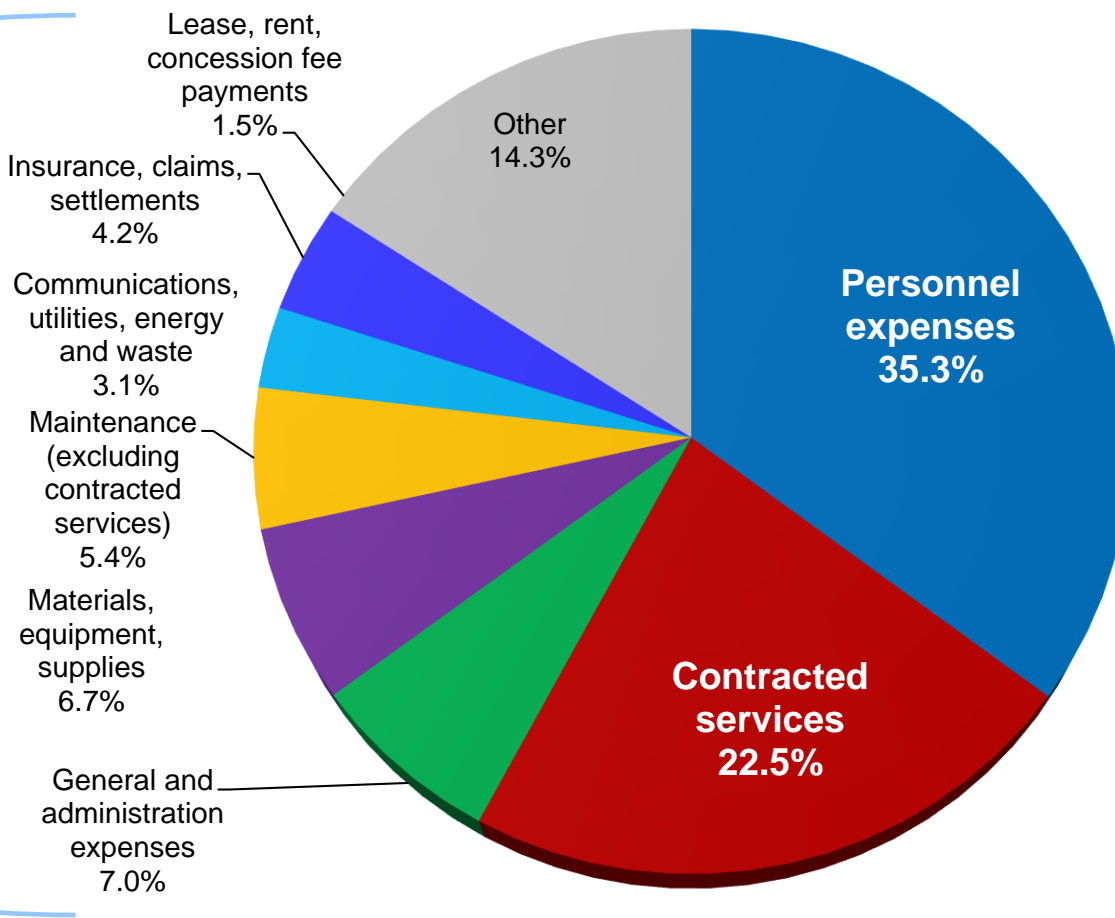
Operating
expenses, 64.7%

Distribution of total costs (2016)

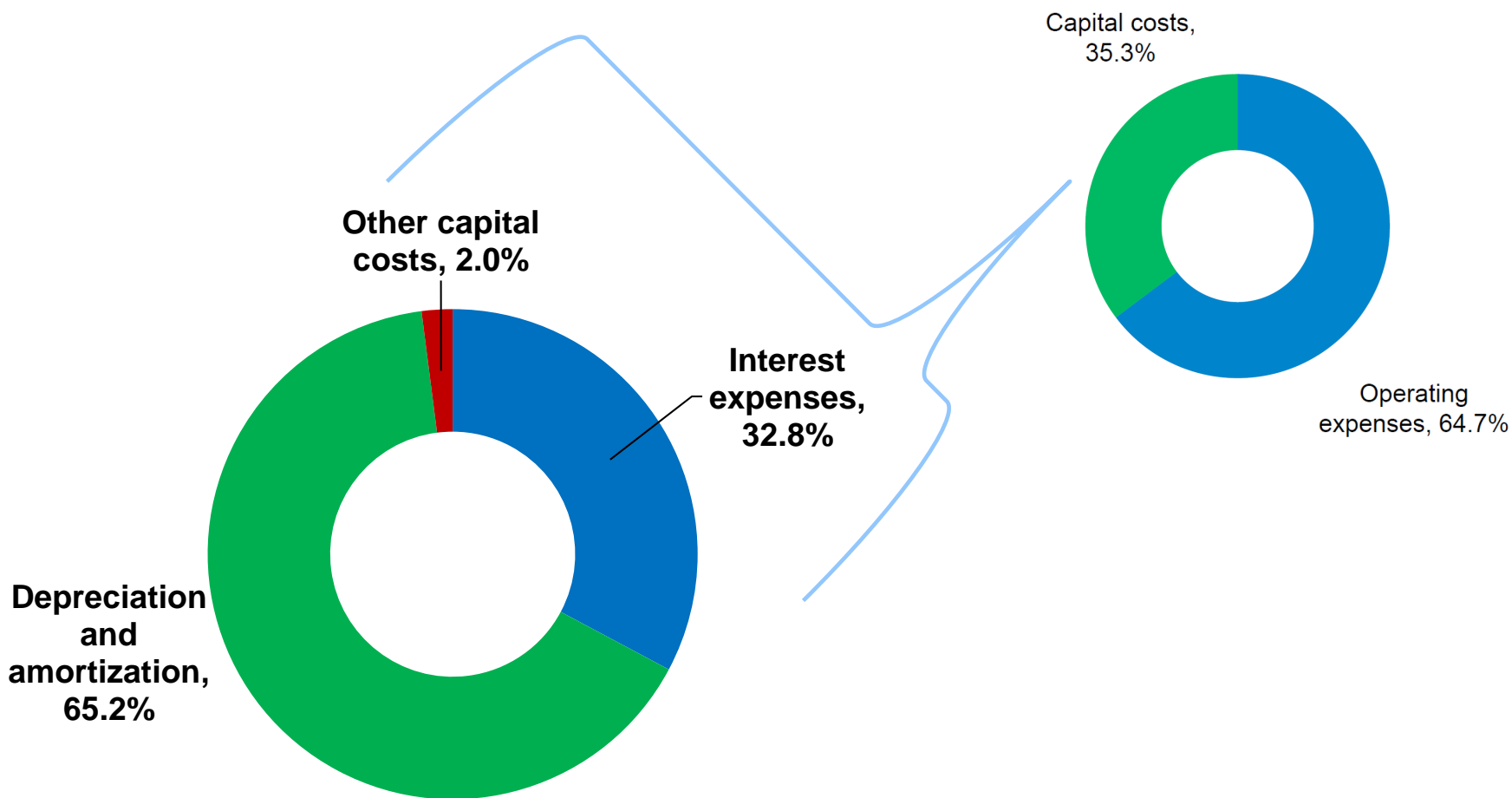
Capital costs,
35.3%



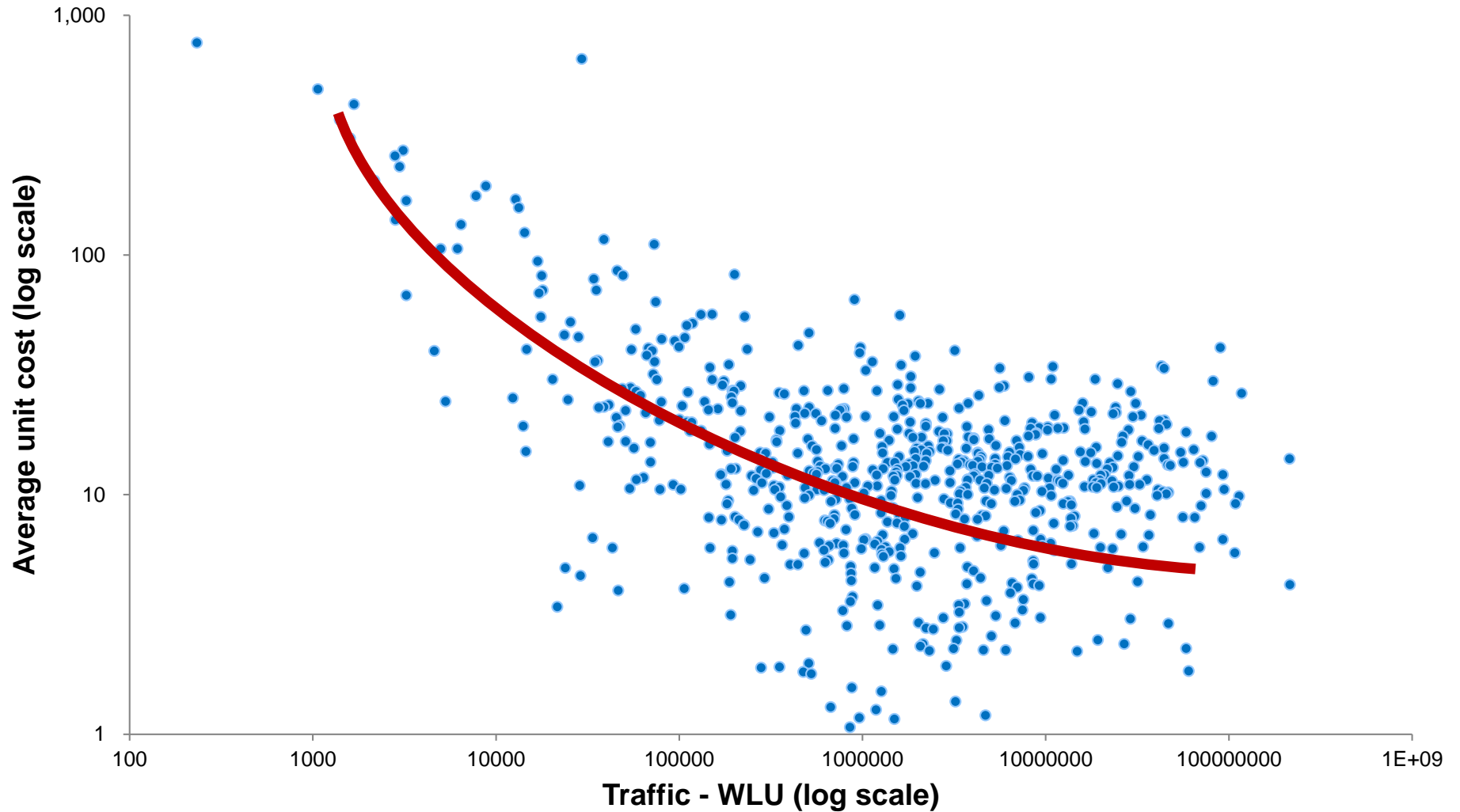
Operating
expenses, 64.7%



Distribution of capital costs (2016)



Economies of scale (2016)



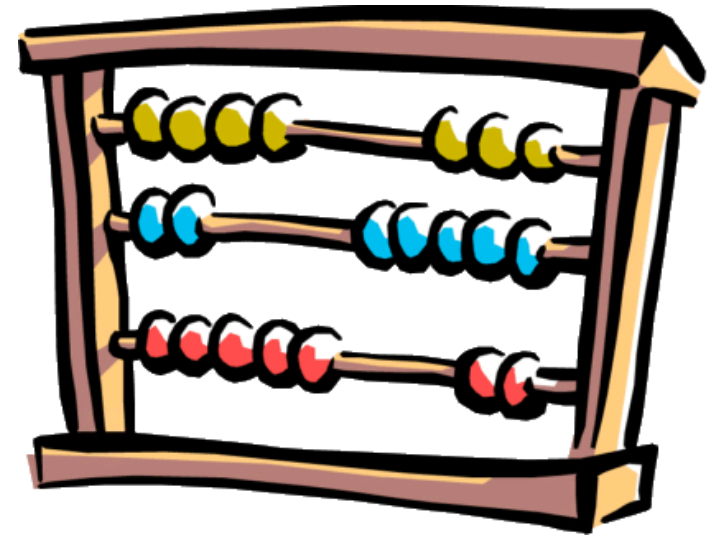


Debunking the Myths in the Airport Business

2nd, 3rd and 4th short story

Myth #1:

Aircraft-related revenues (from airlines) make-up the lion's share of airports' aeronautical revenues

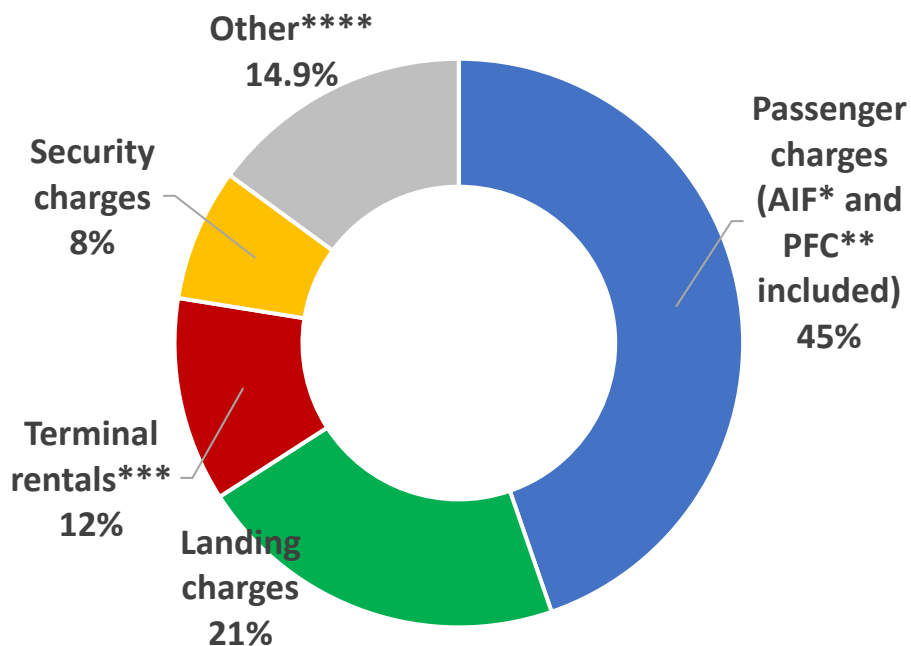


What is the largest component of aeronautical revenues?



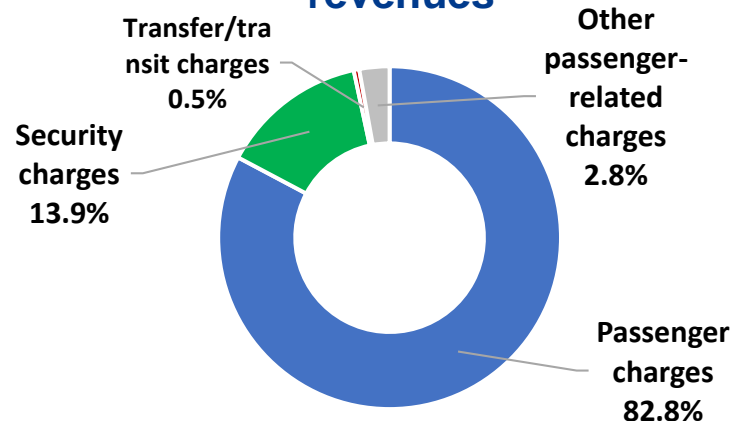
Aeronautical revenues (2016)

Distribution of aeronautical revenues

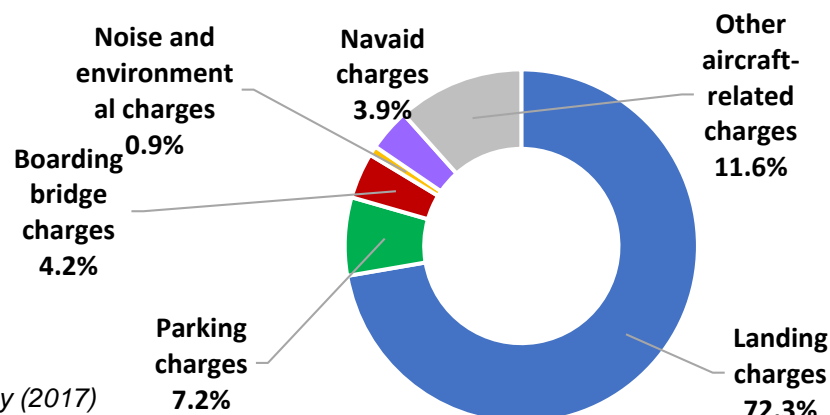


*AIF: Airport Improvement Fee (AIF)
 **PFC: Passenger Facility Charge (PFC)
 ***Terminal rentals are mainly limited to North America. The Federal Aviation Administration (FAA) classifies;
 ****Includes miscellaneous passenger-, aircraft-, cargo-related charges and all other unidentified charges of an aeronautical nature

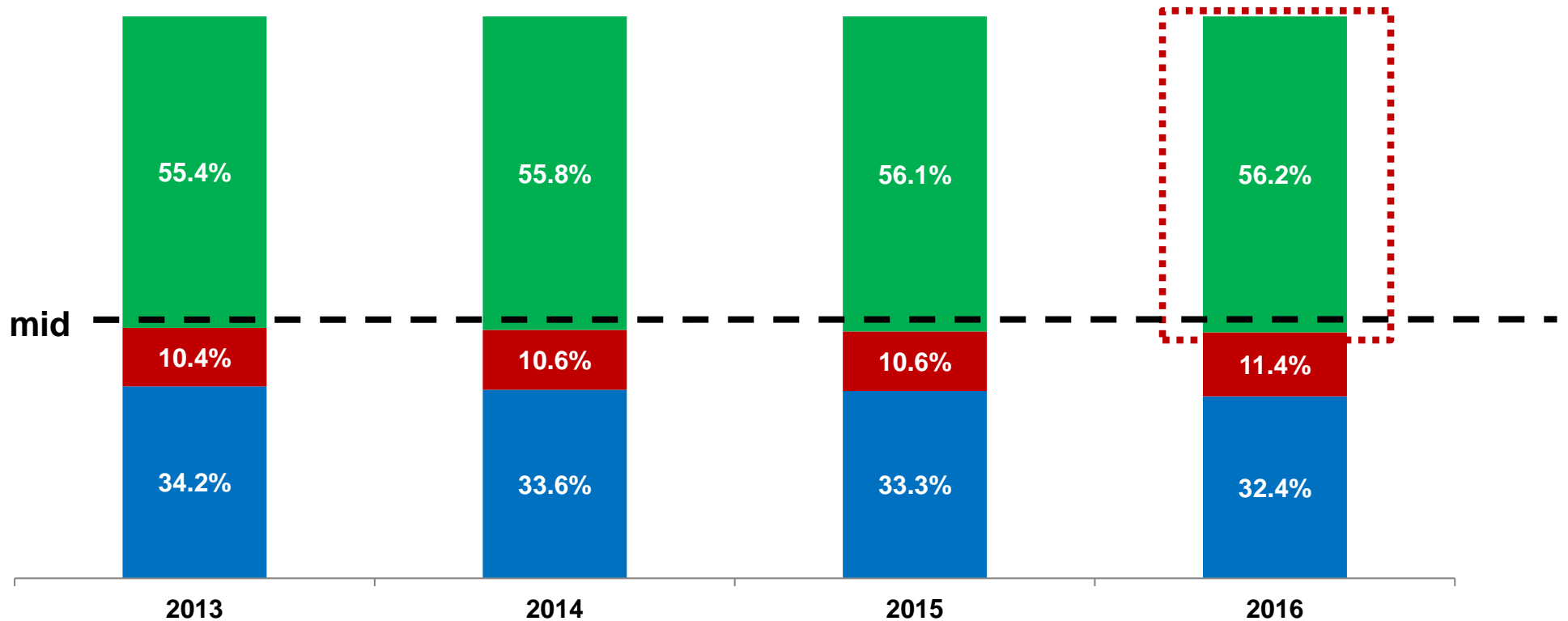
Distribution of passenger-related revenues



Distribution of aircraft-related revenues



Ratio of aircraft-related to passenger-related revenues (2016)



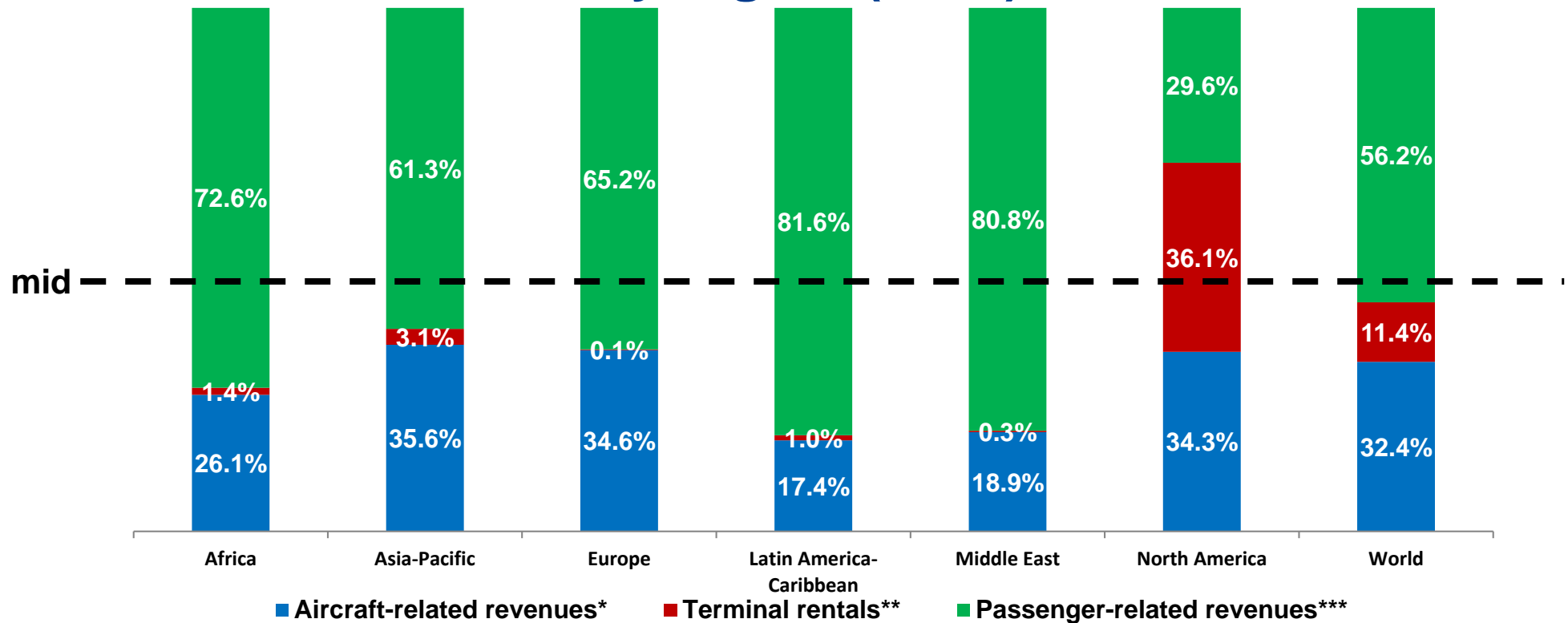
■ Aircraft-related revenues* ■ Terminal rentals** ■ Passenger-related revenues***

* Aircraft-related revenues refer to landing, parking, boarding bridge, noise and environmental, navaid and all other aircraft-related charges (e.g., de-icing).

** Terminal rentals are mainly limited to North America. The Federal Aviation Administration (FAA) classifies terminal rentals as passenger airline aeronautical revenues.

*** Passenger-related revenues refer to passenger charges (including AIF and PFC charges), security charges, transfer/transit charges and all other passenger-related charges (e.g., PRM).

Ratio of aircraft-related to passenger-related revenues by region (2016)



* Aircraft-related revenues refer to landing, parking, boarding bridge, noise and environmental, navaid and all other aircraft-related charges (e.g., de-icing).

** Terminal rentals are mainly limited to North America. The Federal Aviation Administration (FAA) classifies terminal rentals as passenger airline aeronautical revenues.

*** Passenger-related revenues refer to passenger charges (including AIF and PFC charges), security charges, transfer/transit charges and all other passenger-related charges (e.g., PRM).

Source: ACI Airport Economics Survey (2017)

Myth #1:

Aircraft-related revenues (charges to airlines) make-up the lion's share of airports' aeronautical revenues

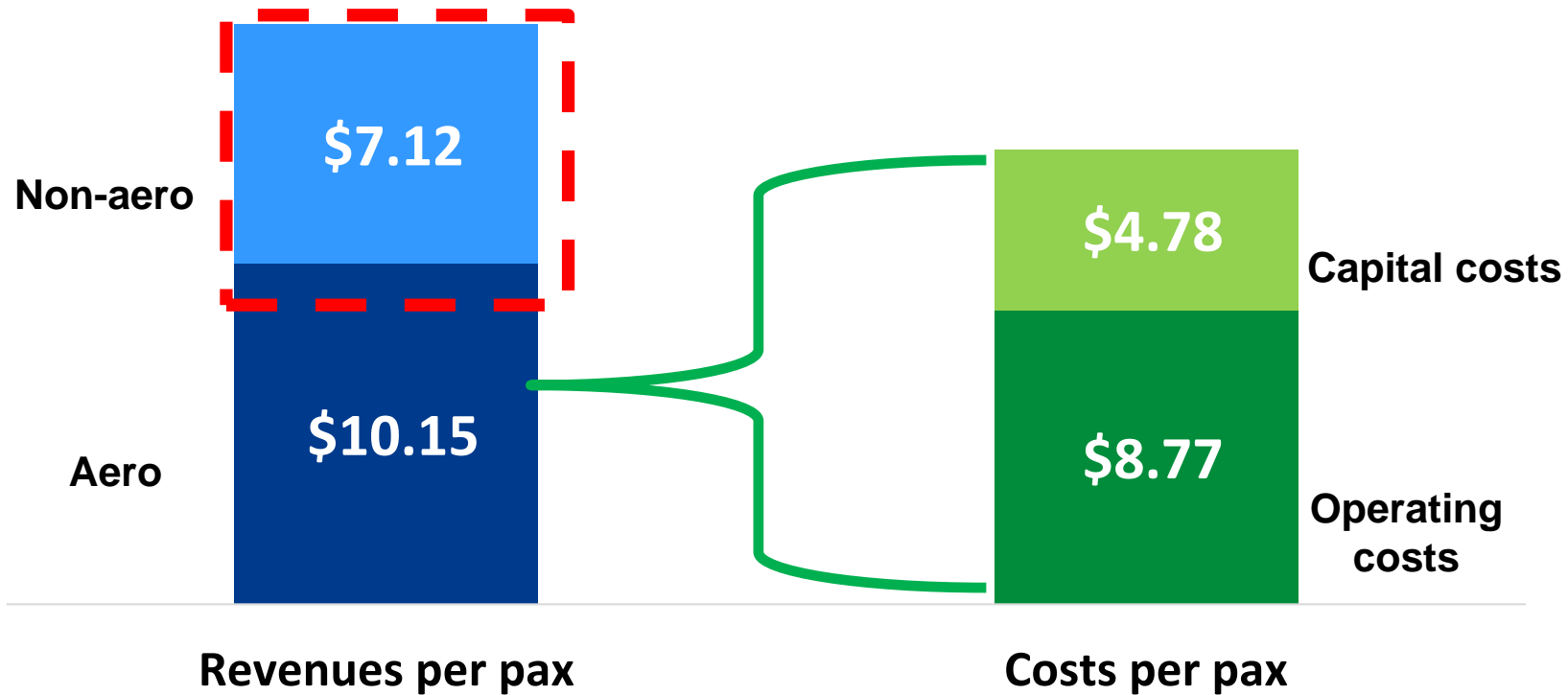
False: Ratio Passenger-related revenues make-up 56.2% vs. aircraft-related / terminal revenues

Myth #2:

% share of non-aeronautical revenue has grown over time relative to aero as % of total revenue



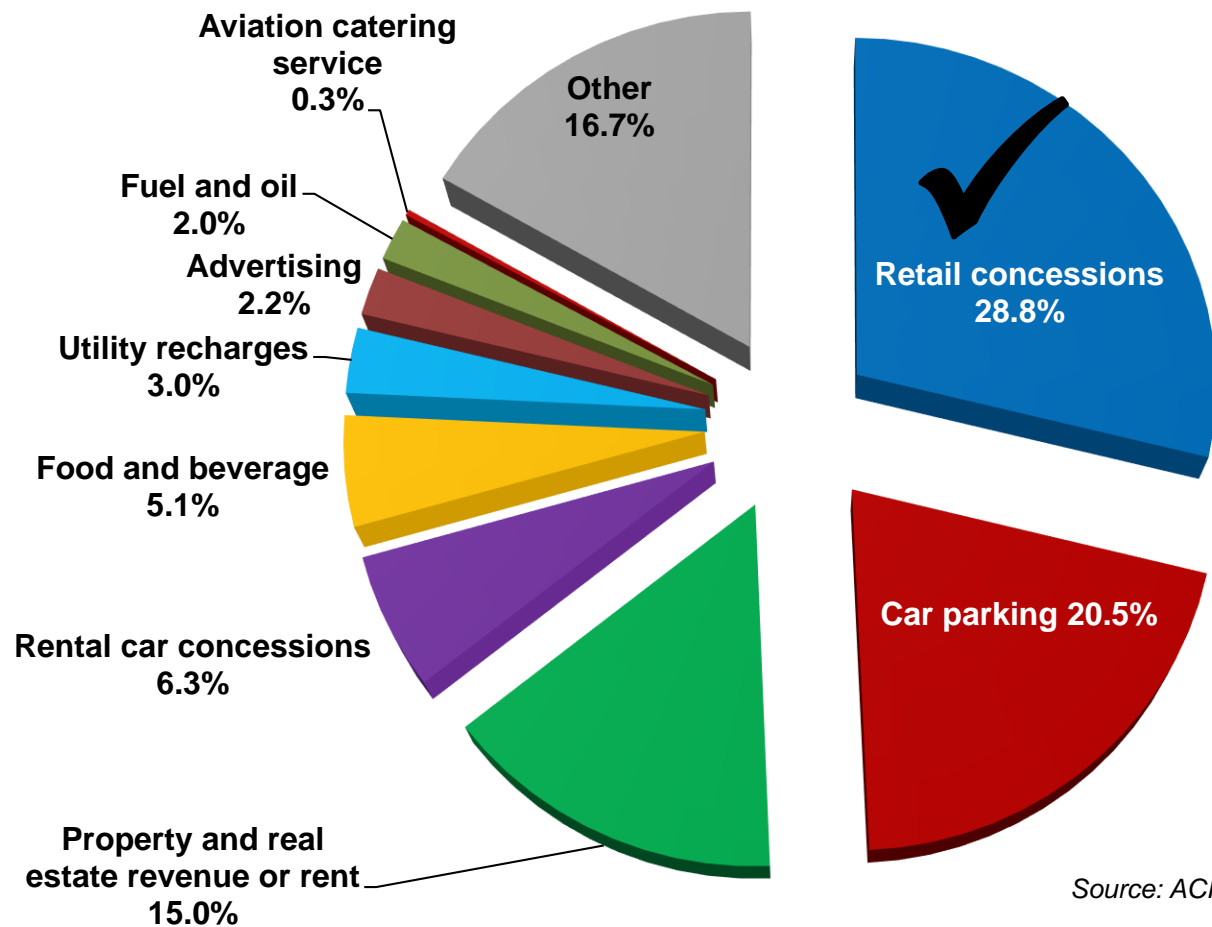
Aero alone is insufficient to cover airport costs



What is the largest component of non-aeronautical revenues?



Distribution of non-aeronautical revenue by source (2016)



Source: ACI Airport Economics Survey (2017)

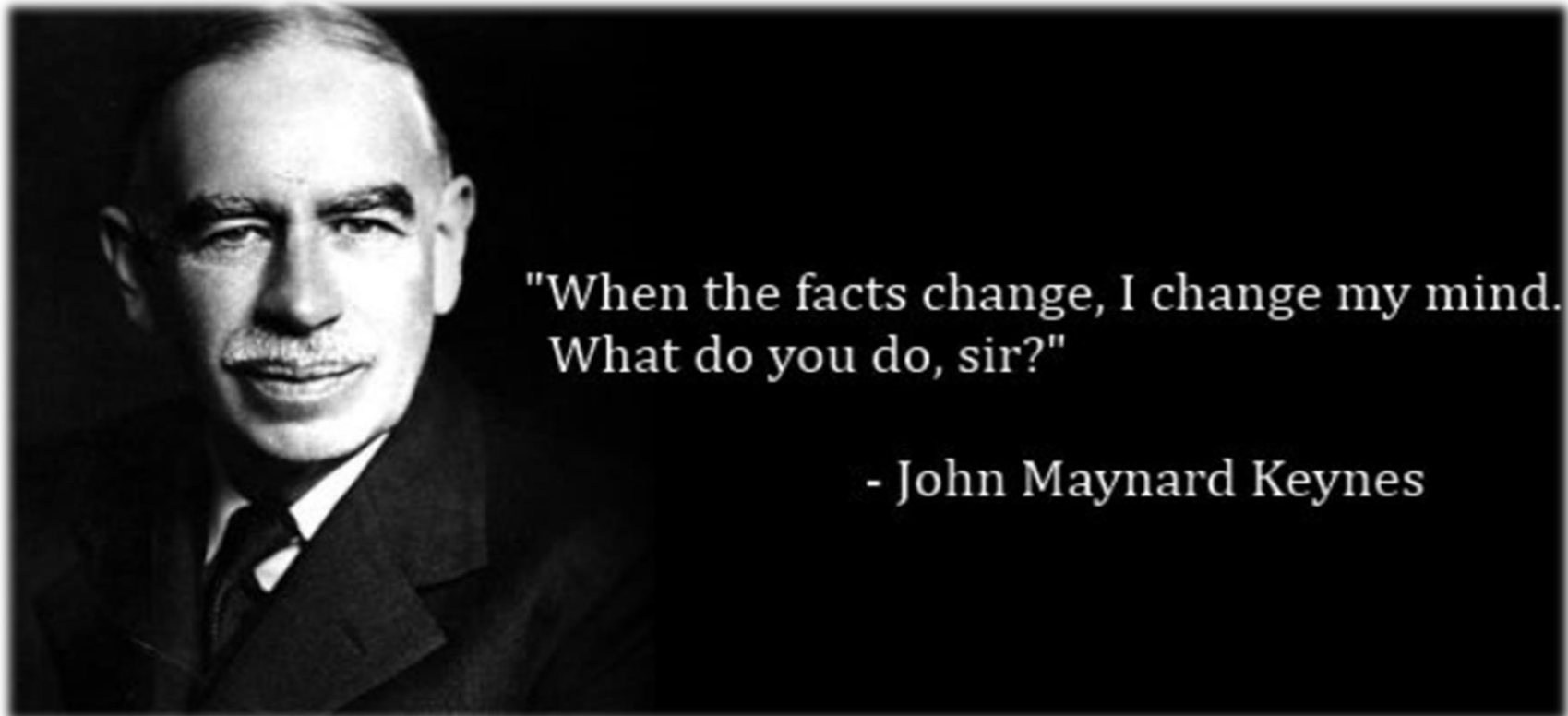
Distribution of non-aeronautical revenue by source (2016)

- Retail concession leading source in rest of world (Middle East)
- Car parking leading source in North America

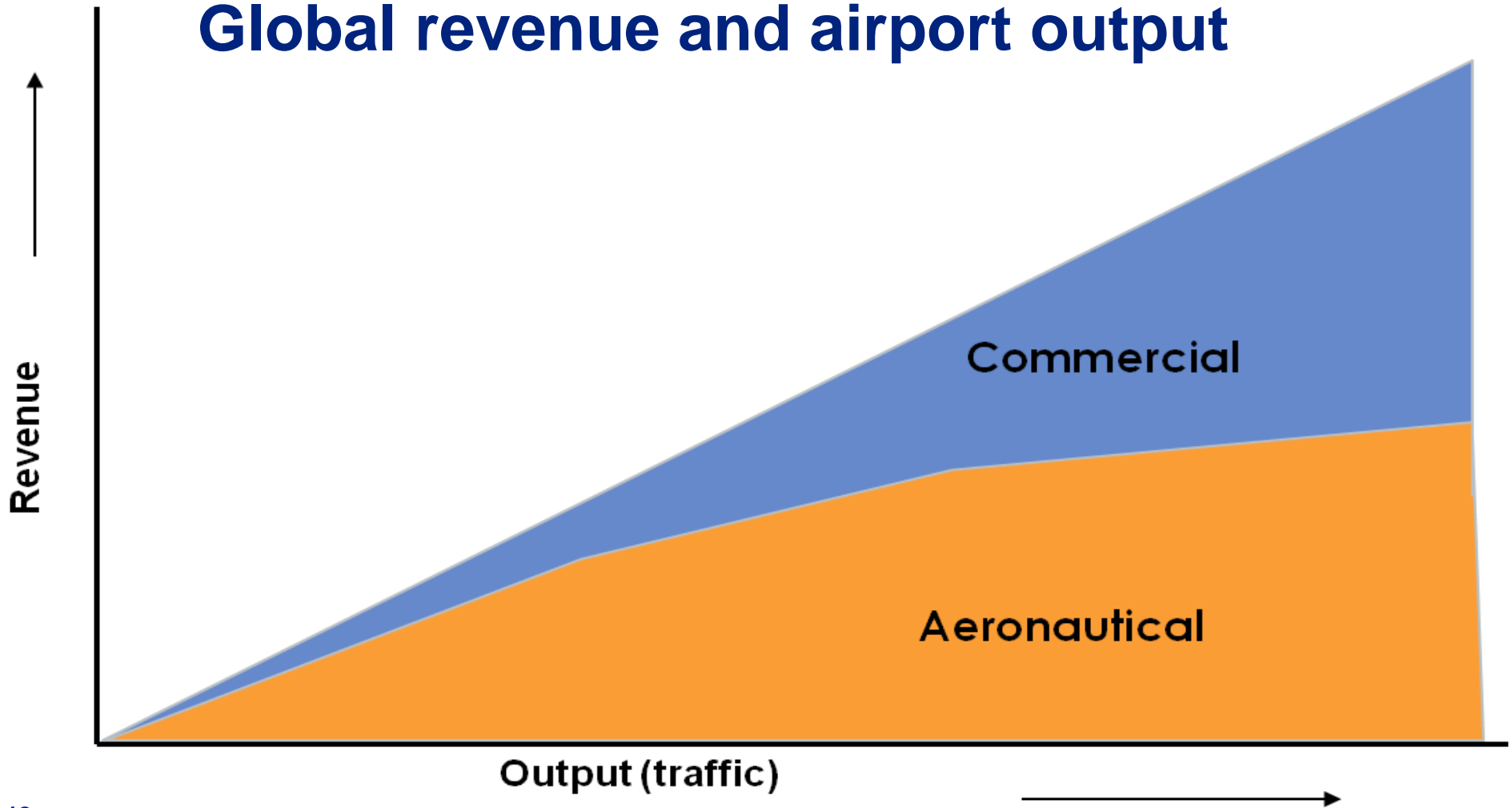
	Retail concessions	Food and beverage	Car parking**	Rental car concessions	Advertising	Fi
Africa	32.8%	2.1%	12.5%	5.5%	4.1%	
Asia-Pacific	41.6%	3.2%	7.5%	0.8%	3.8%	
Europe	34.4%	4.4%	15.9%	2.0%	2.1%	
Latin America-Caribbean	31.2%	6.5%	9.2%	3.0%	4.3%	
Middle East	56.0%	4.9%	9.1%	0.9%	2.2%	
North America	8.4%	7.6%	40.8%	17.4%	0.5%	
World	28.8%	5.1%	20.5%	6.3%	2.2%	

**Includes car parking concessions and airport owned car parks

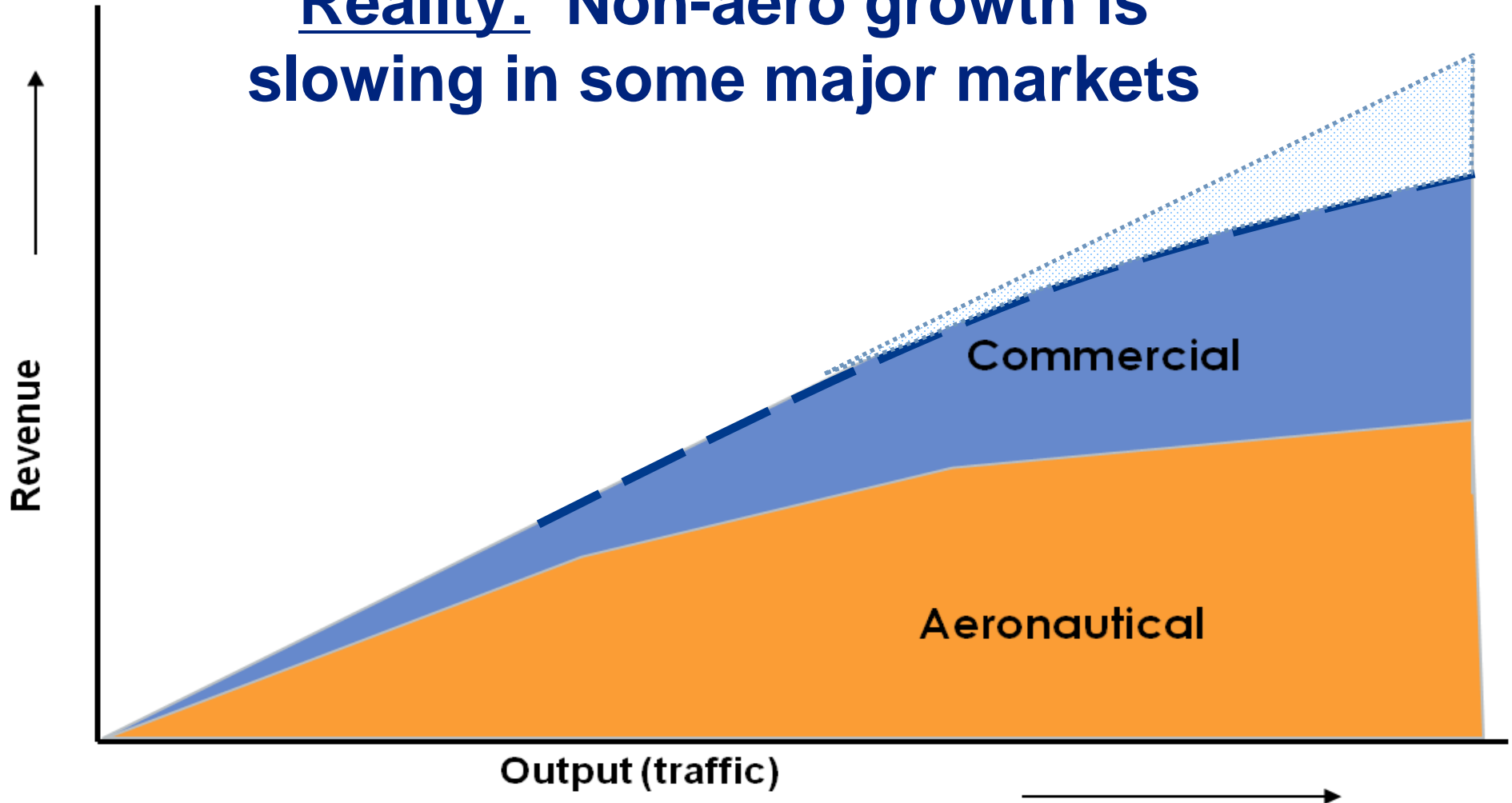
What is the performance of non-aeronautical vs. aeronautical revenues?



Conventional wisdom: Global revenue and airport output



Reality: Non-aero growth is slowing in some major markets

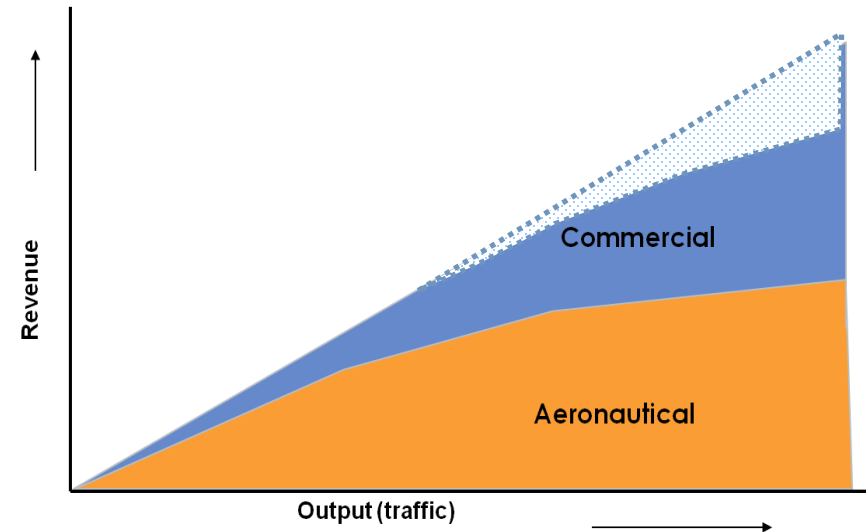


2005-2016 Compounded annual growth rate (inflation adjusted)

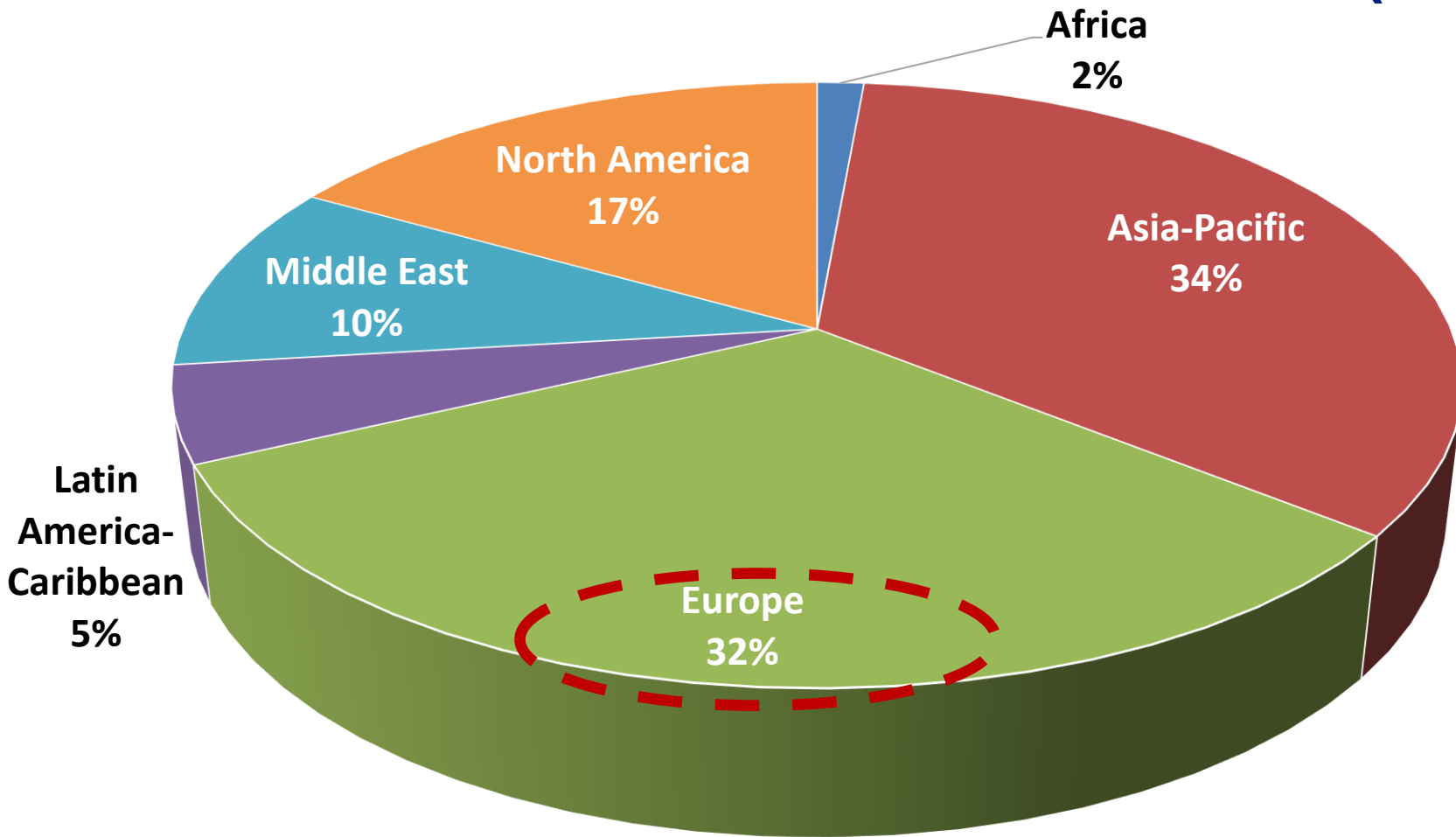
*Some variability for certain
years but on the whole:*

Commercial / non-aeronautical: **4.8%**

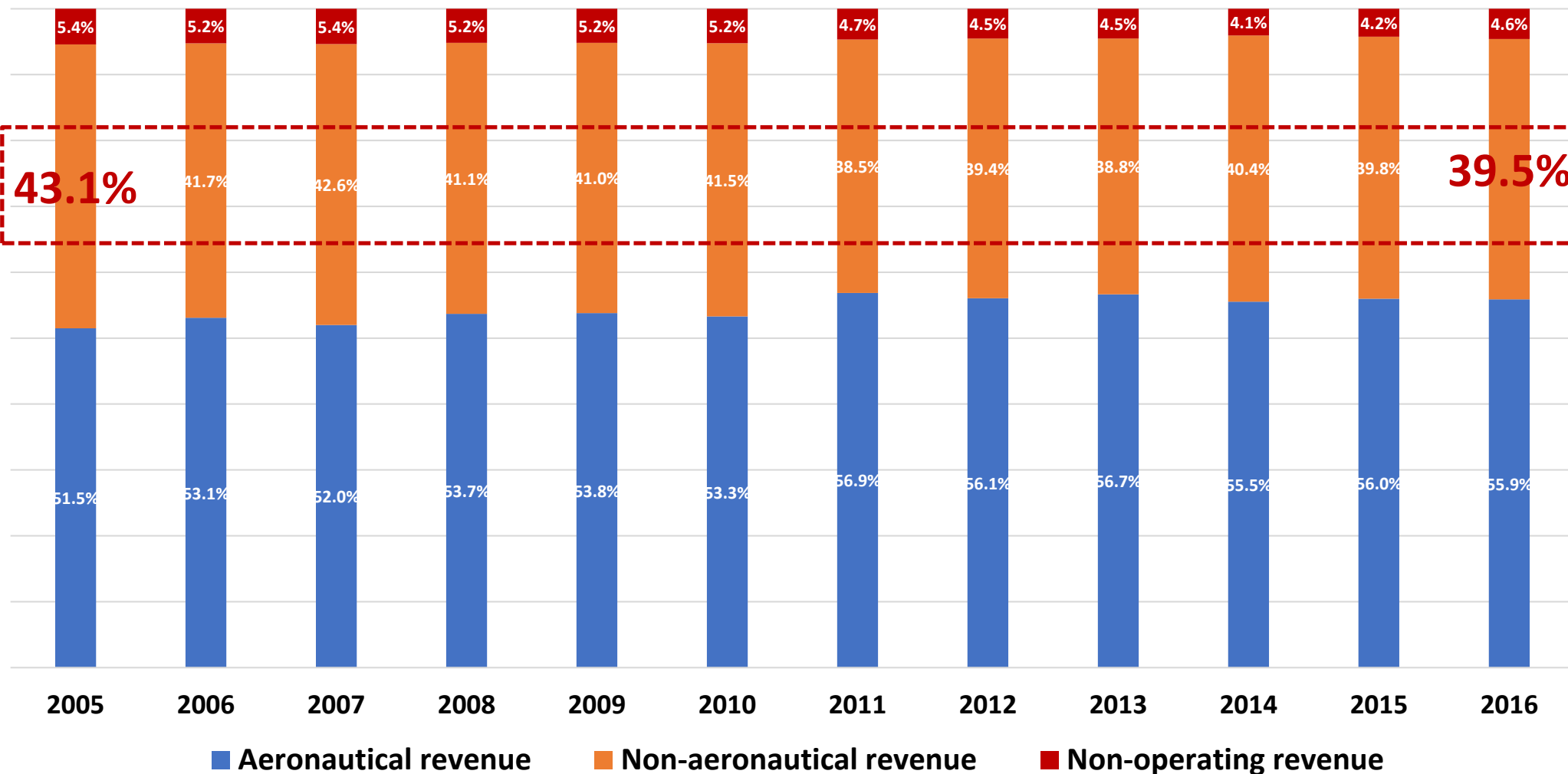
Aeronautical: **5.7%**



Distribution of non-aeronautical revenues (2016)

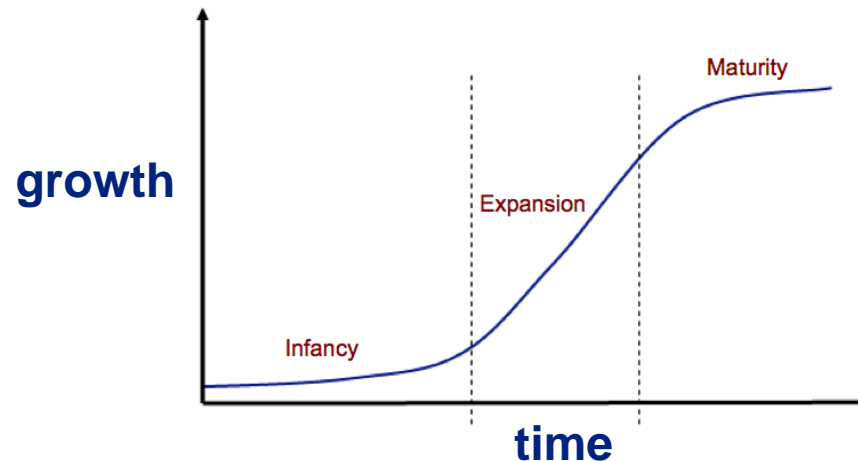


Evolution of airport revenues by source (2005-2016)



Reasons for slight proportional decline (2016 vs. 2005)

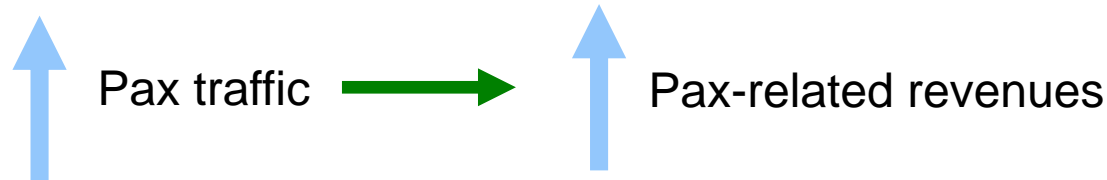
- Mature markets slowing non-aero revenue growth pulling down global figure;



- Weakened Euro-area; slowed growth in non-aeronautical;
- Intra-EU rules on duty-free shopping (no tax advantage);
- Competition from other commercial sources (online retail – Alibaba, Amazon, etc.);
- Heightened security; longer security queues vs. dwell time, security charge, etc.;

Reasons for proportional decline (2015 vs. 2005)

Aeronautical side:



- Pax traffic growth does not guarantee **symmetric revenue growth** on both the aeronautical and non-aeronautical side of the business;
- Growth in traffic has fueled growth in **passenger-related revenues** on the aeronautical side;



Myth #2:

% share of non-aeronautical revenue is growing more than aeronautical as % of total revenue

False: On annualized basis from 2005 to 2016, non-aeronautical revenue % is lower (4.8%) than aero (5.7%)



Myth #3:

Most airports generate net profits and a positive return on invested capital



Is the airport industry profitable?



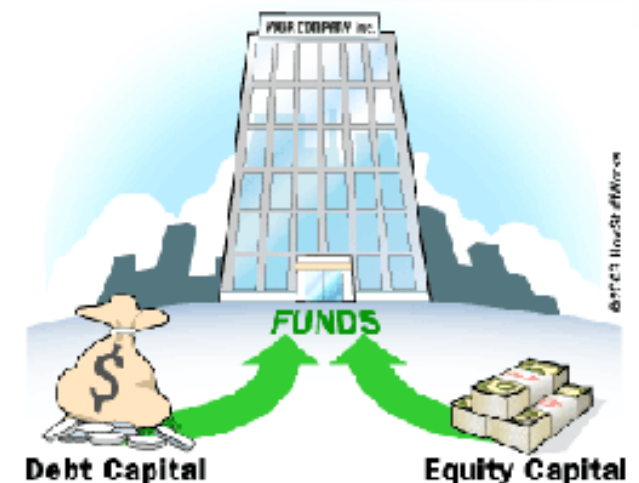
Caveats on profitability as concept:

- Heterogeneous regulations across varied jurisdictions, which affect costs and revenues;
- Differing objectives: cost recovery vs. profit maximization



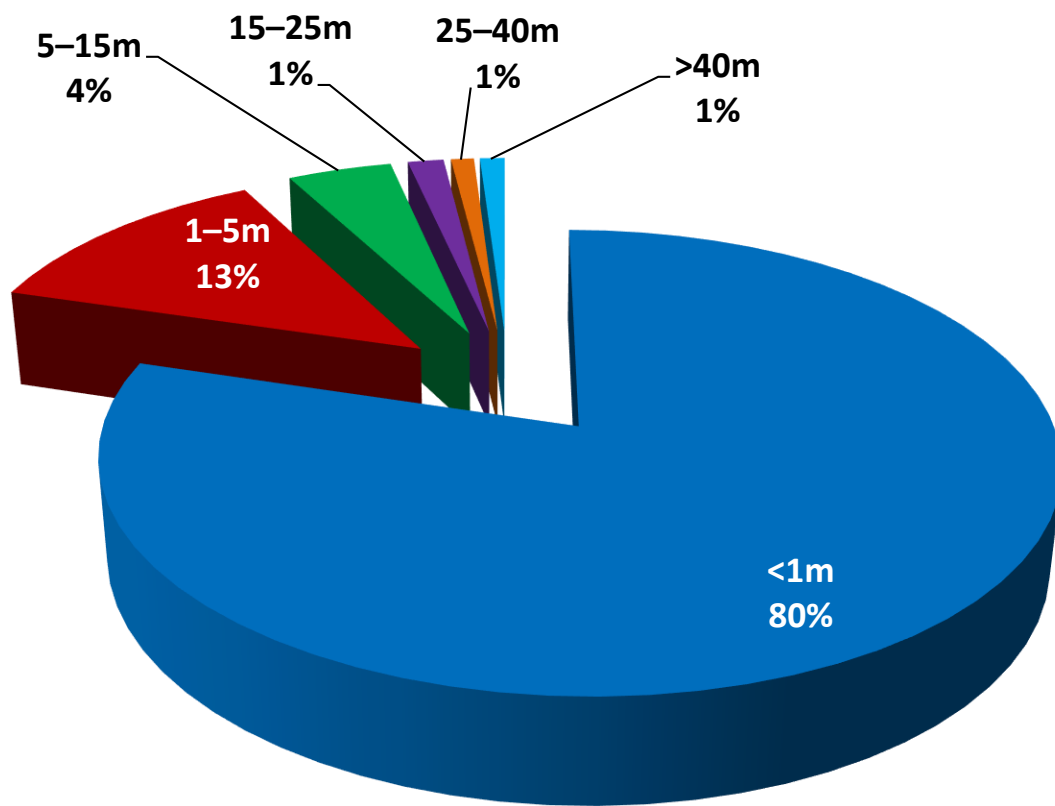
Caveats on measures of profitability:

- **Net profit** and **EBITDA margins** are insufficient measures of profitability and financial health;
- **Return on Invested Capital** takes into consideration the balance sheet (*i.e. the capital intensive business of airports*)



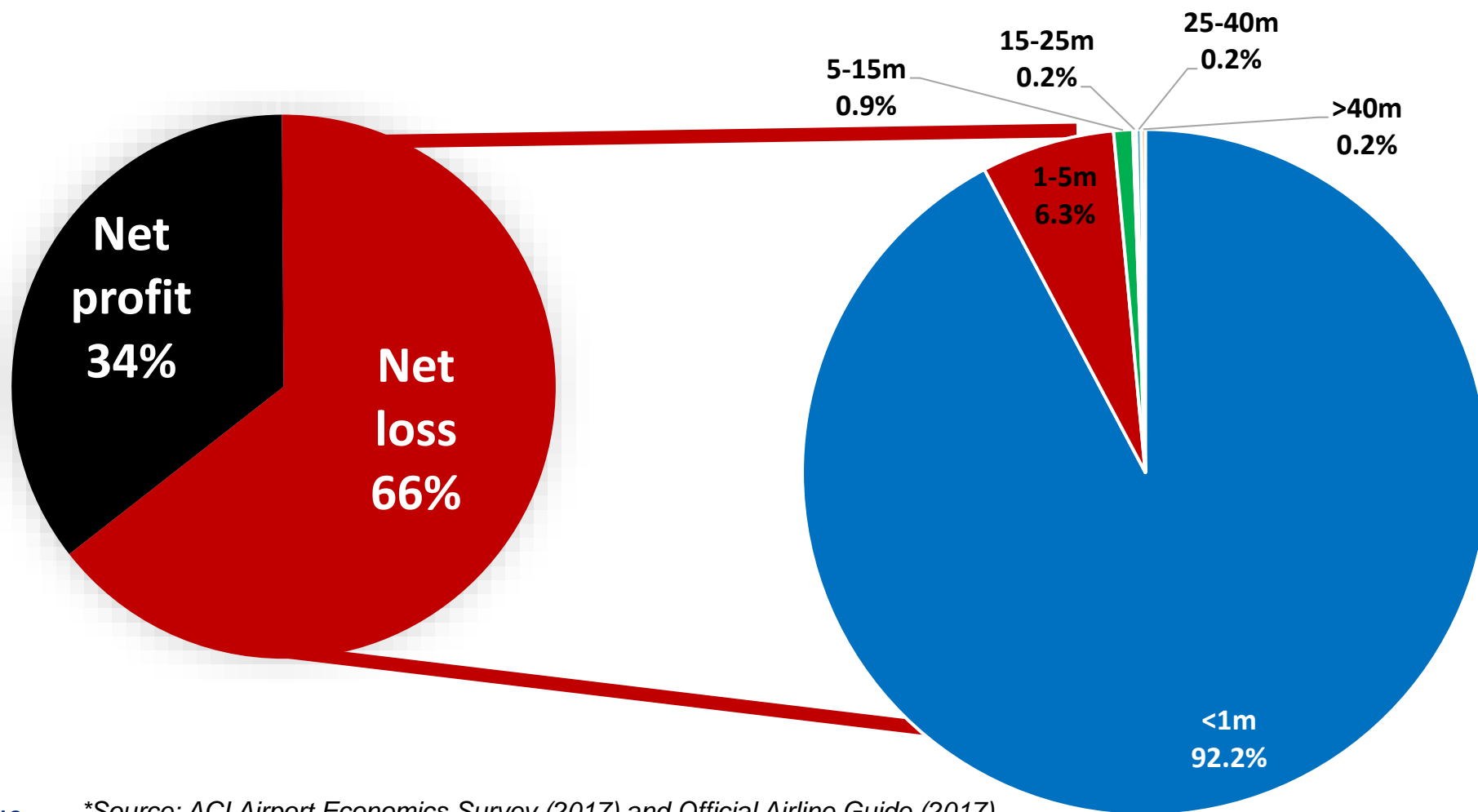
Paradox:
Overall industry is in the
black yet most airports
lose money

Distribution of airports with scheduled traffic by airport size (2016)



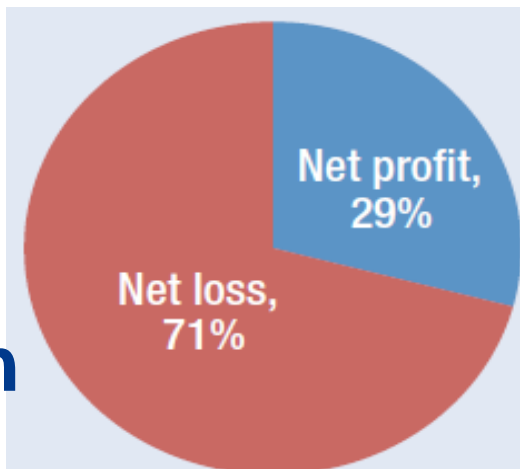
Source: ACI Airport Economics Survey (2017) and Official Airline Guide (2017)

Distribution of airports with a net loss (2016)

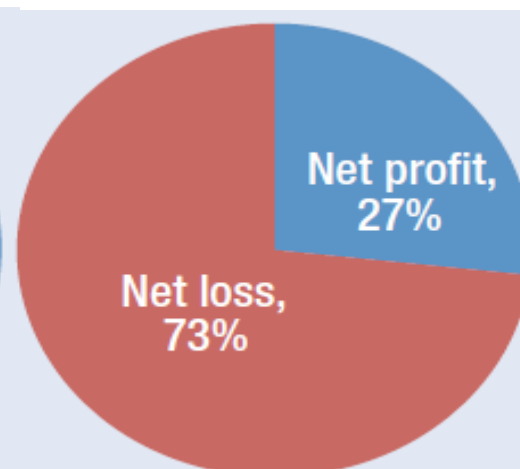


Proportion of airports with net profits*

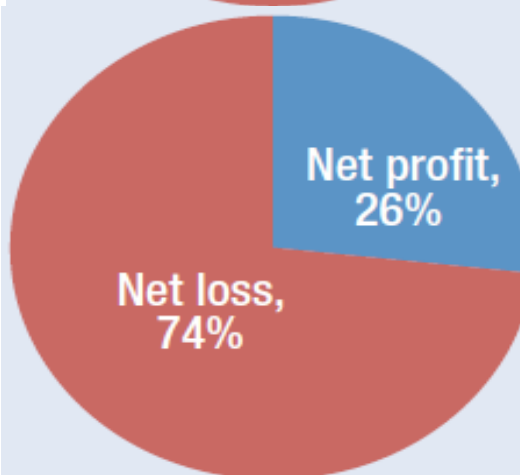
AENA
Spanish



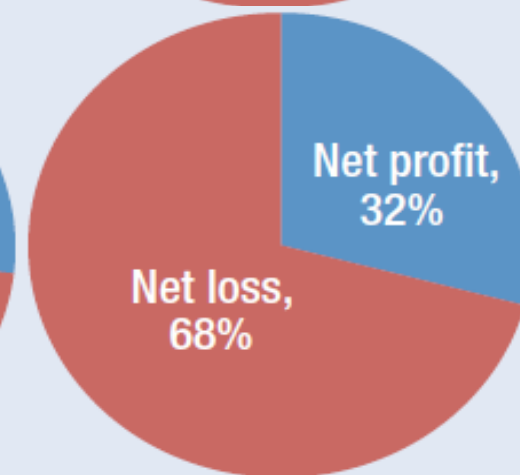
CCAA
Chinese



AAI
Indian

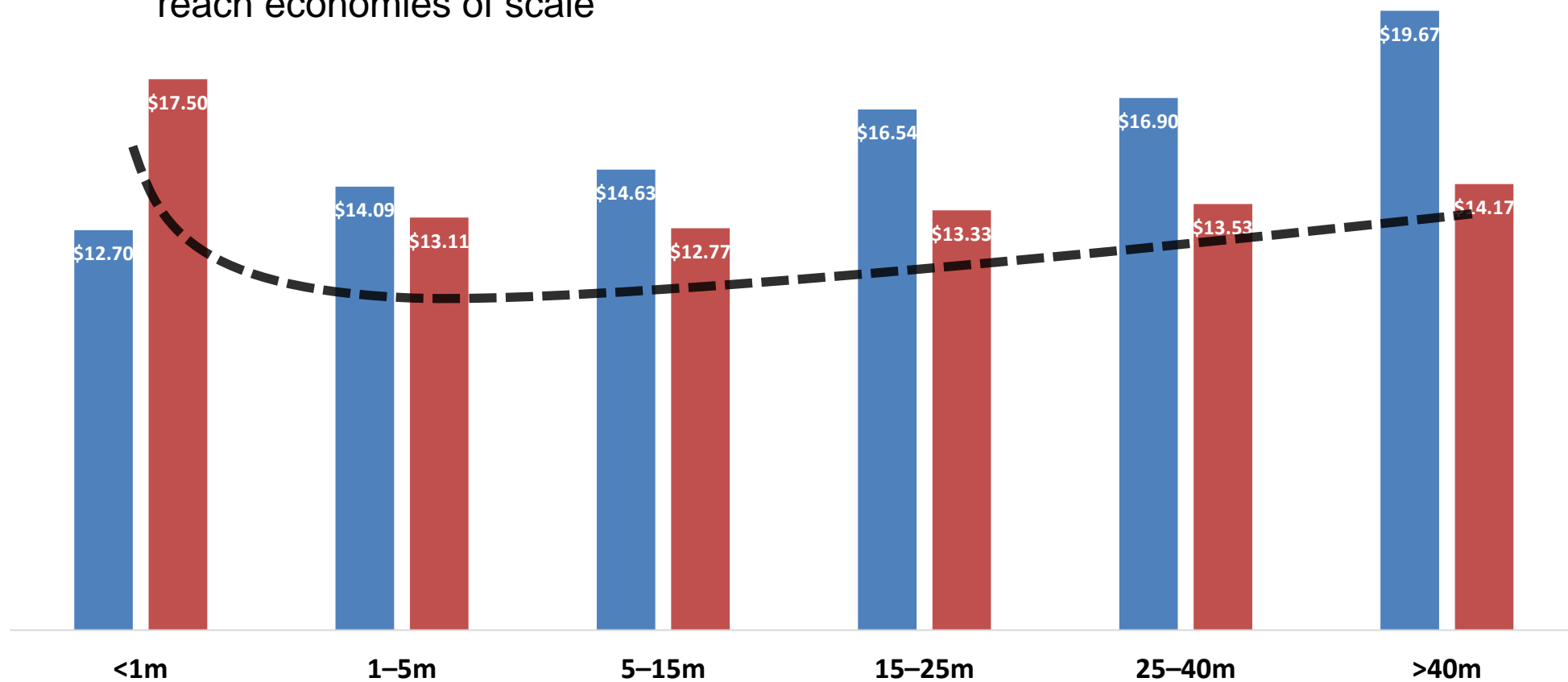


Infraero
Brazilian



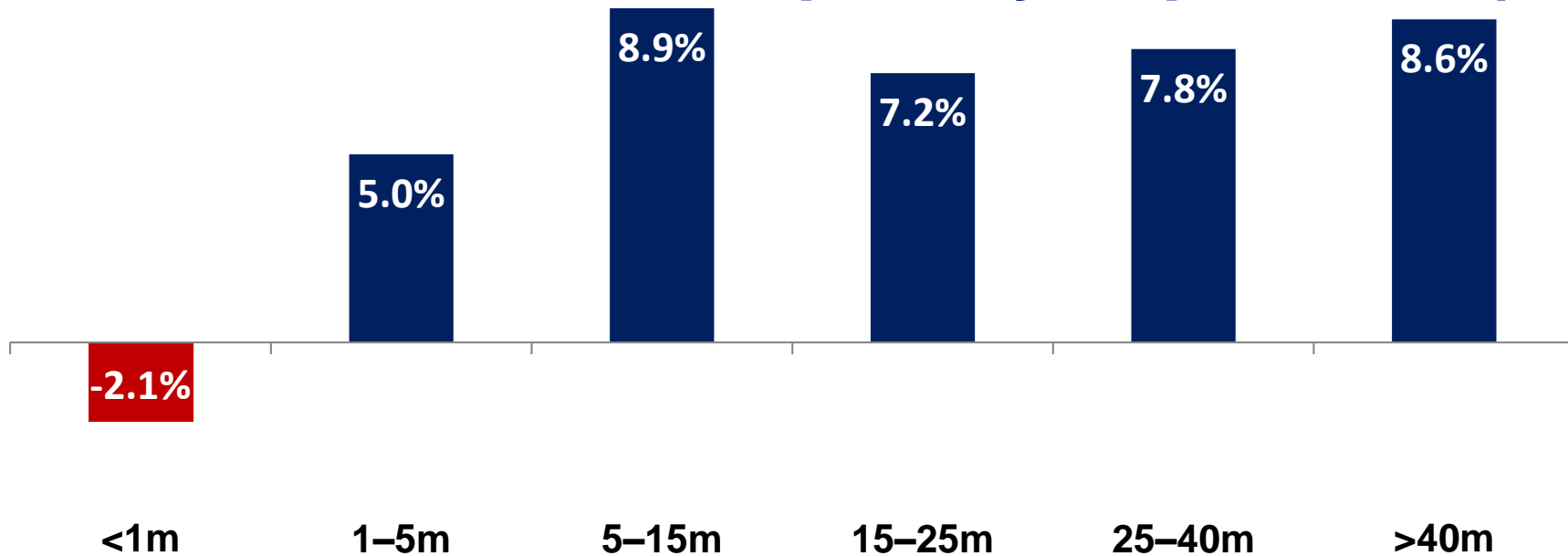
Revenues and costs per passenger (US\$ 2016)

High average total fixed costs at lower output levels – Need to reach economies of scale



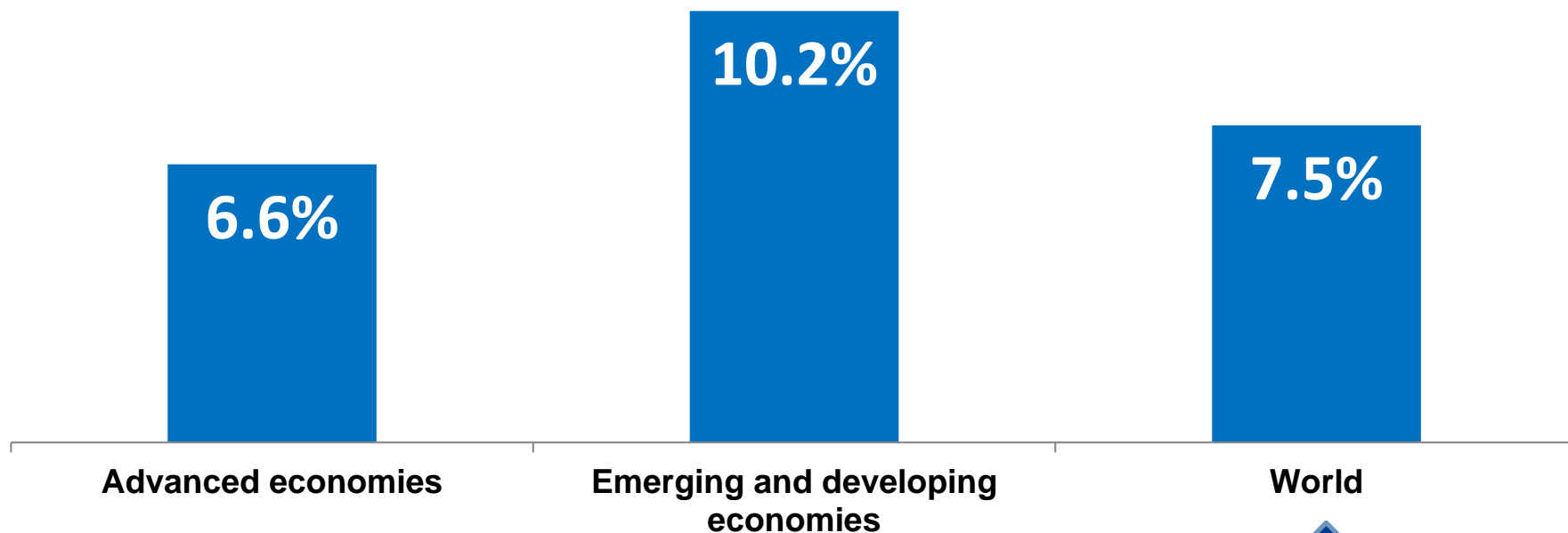
■ Revenues per pax ■ Costs per pax

Return on invested capital by airport size (2016)



80% of airports have <1m pax (93% of them have a loss)

Return on invested capital (2016)



**GLOBAL WACC:
6-8%
(OPPORTUNITY
COST)**

Myth #3:

Most airports generate net profits and a positive return on invested capital

False: 66% of airports globally operate at a net loss and most of these airports have <1m passengers



Airport symbols | 40 icons

Summary of 4 short stories:

1. **Air transport demand continues to march to the beat of its own drum**
 - **Competition; Strengthened global economy; Favourable micro and macro factors;**
2. **Greater reliance on passenger-related revenues as opposed to aircraft-related revenues**
 - **Shared risk between airlines and airports to pass on the largest proportion of aeronautical to the ultimate end user;**
3. **Globally proportion of non-aero revenues is not growing faster than aeronautical** (*European non-aero maturity; S-curve, pax related revenues*);
 - **Point of satiation with limitations on revenue growth depending on where you are located on the S-curve**
4. **Size matters - Overall industry is in the black yet most airports lose money**
 - **Policy question: How do we finance these smaller airports?**

Questions?