



Air Cargo Market Outlook

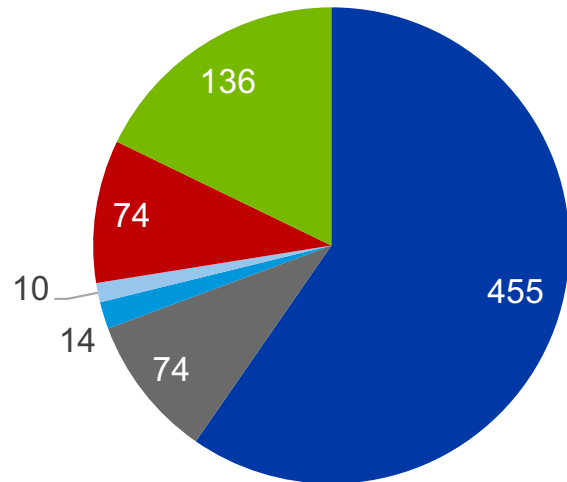
Gregg Gildemann
Market Analysis
Boeing Commercial Airplanes
20 February 2018

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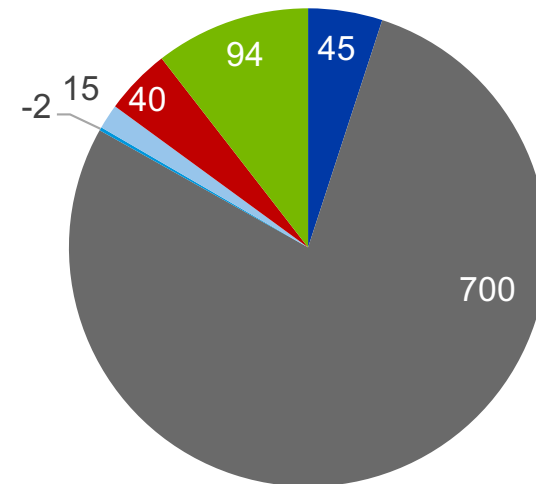
“It's tough to make predictions, especially about the future.”

- Yogi Berra

Strong 2017 results for Boeing Commercial Airplanes...

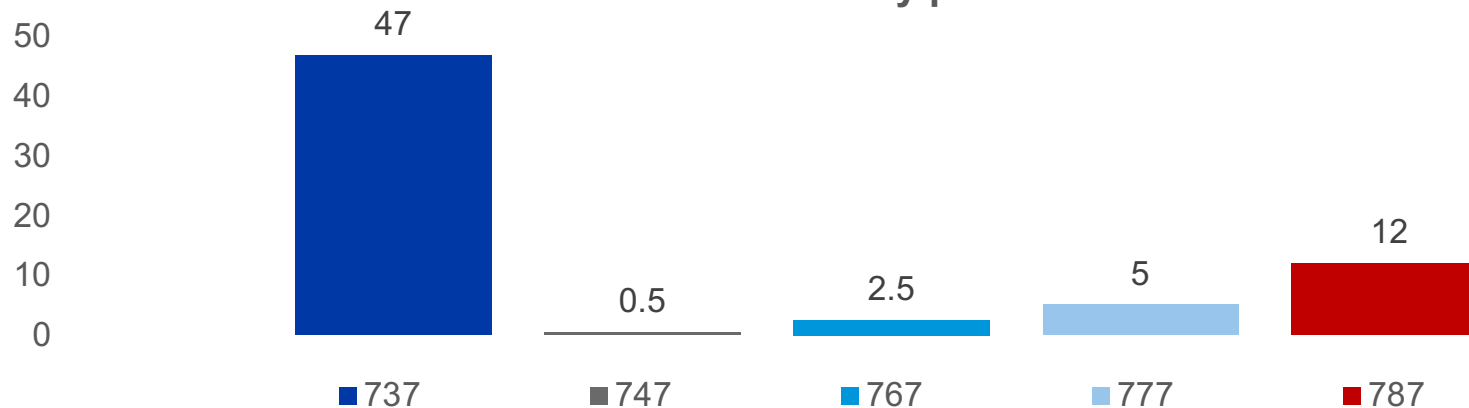


■ 737NG ■ 737 MAX ■ 747 ■ 767 ■ 777 ■ 787



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Current monthly production rates



Agenda



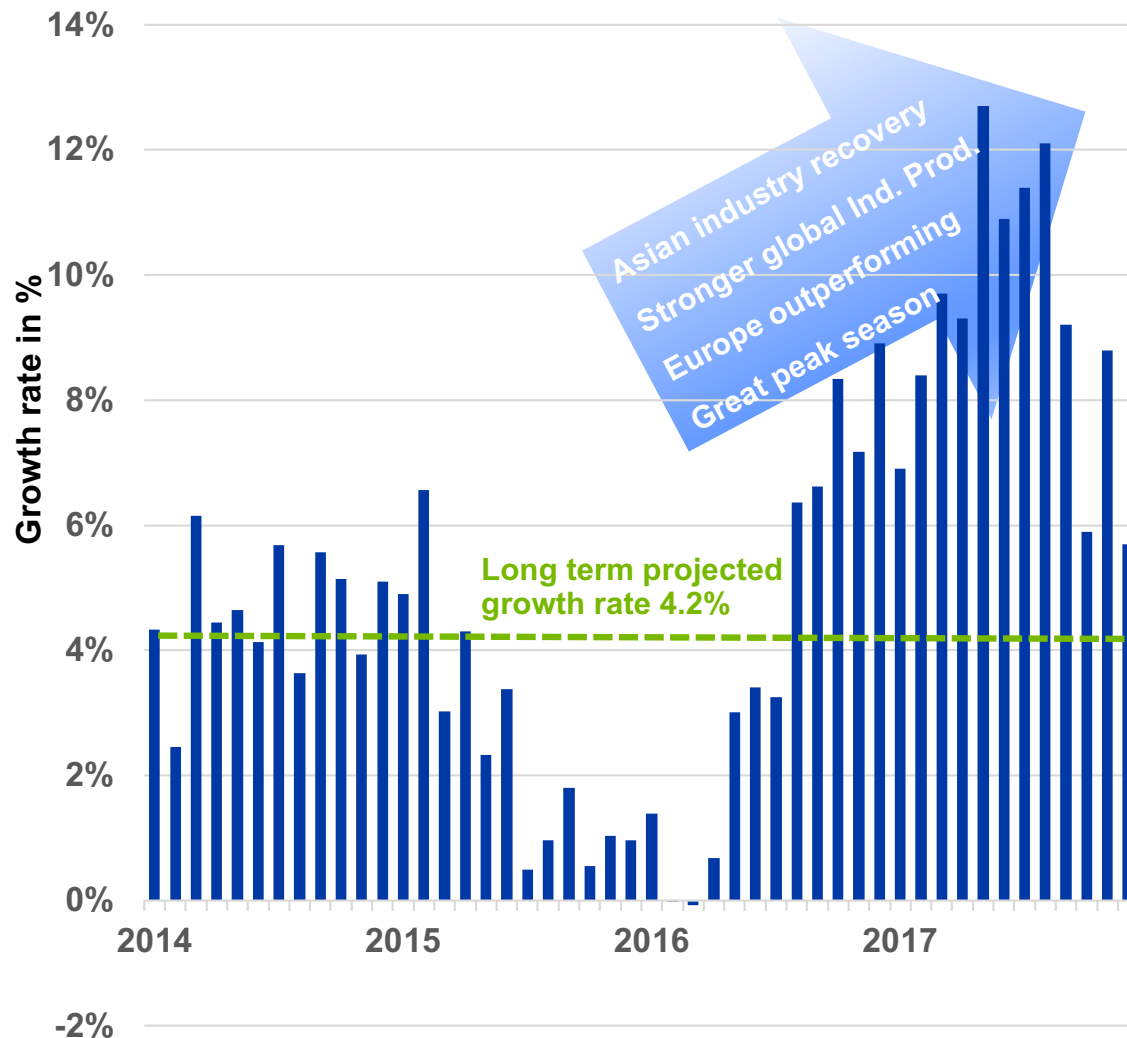
Air cargo - strong recovery in 2017

Market outlook- continued growth at or above trend

Freighter market and forecast

Air cargo market has recovered, above trend growth expected in 2018

2017 air cargo up 9%



Source: BCA Market Analysis and IATA full year 2017 data

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Air cargo growth



Economic and trade growth

E-commerce

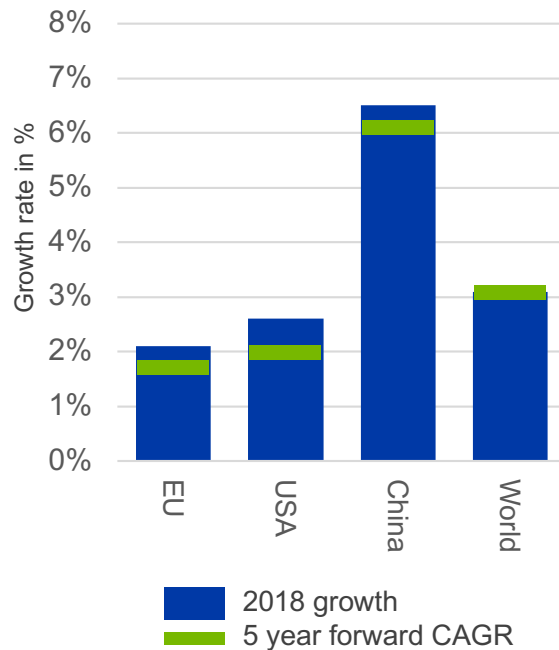


All regions participating

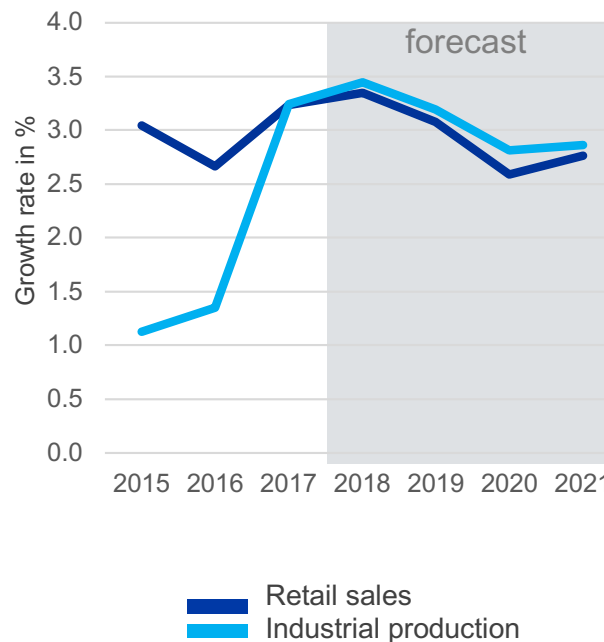
Economic fundamentals support strong demand

Key economies growing, industrial production gaining strength

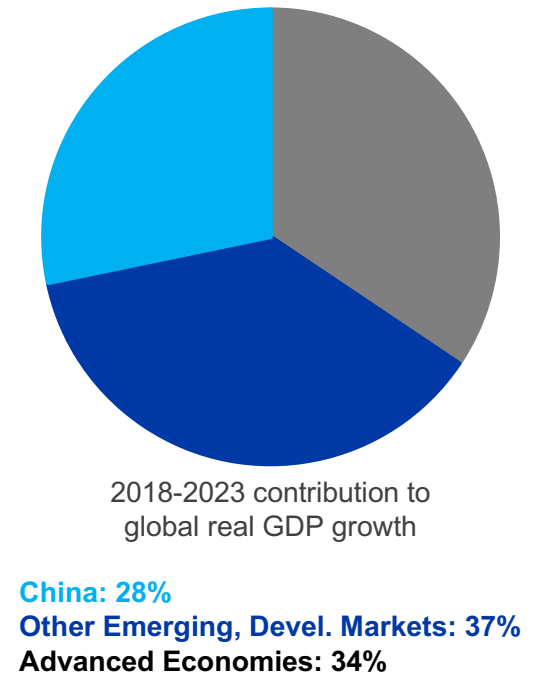
Synchronized upswing
in global growth



Industrial production
recovering

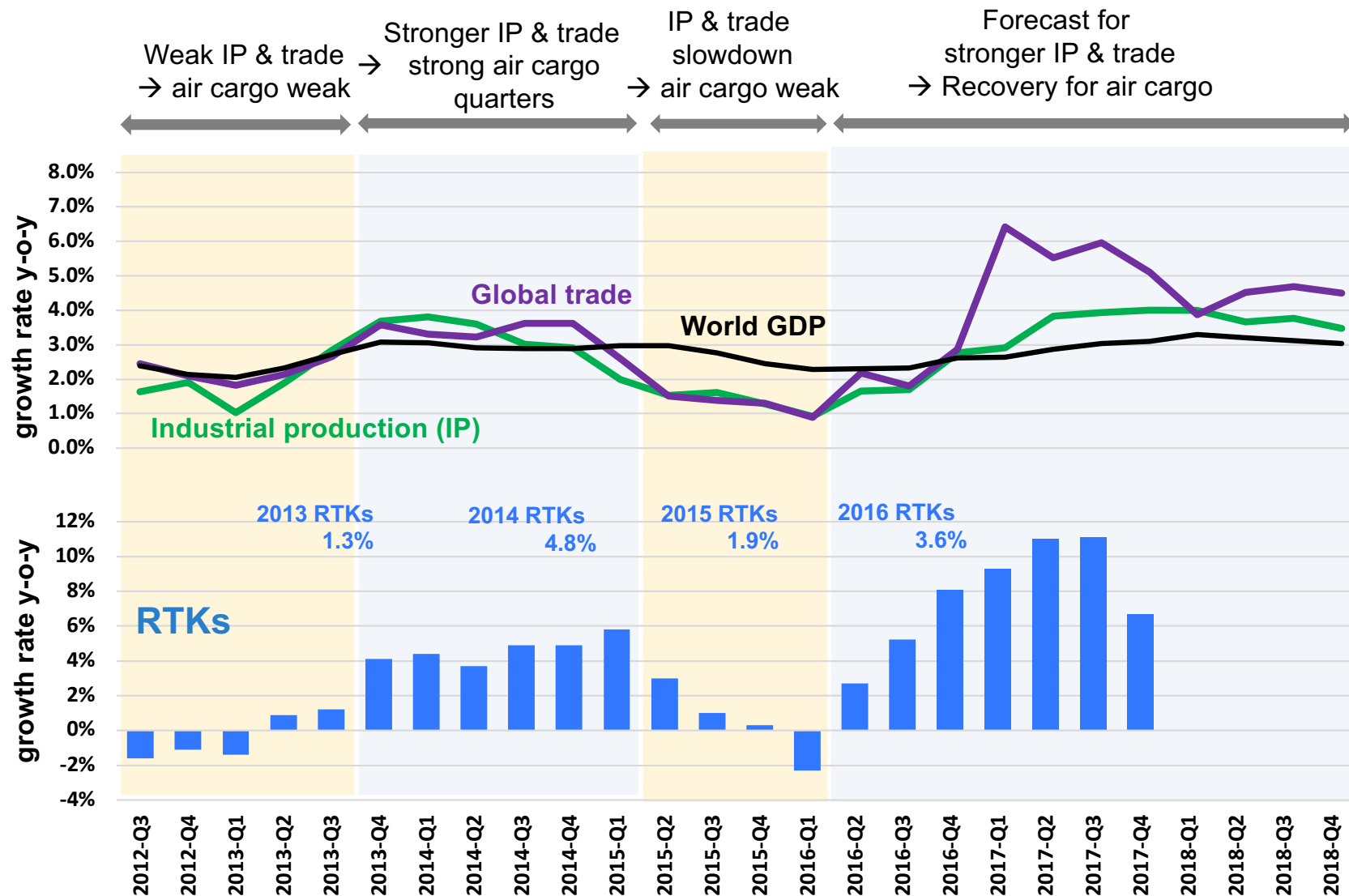


China, Emerging Markets
adding most to GDP



Air cargo volumes rebounding, driven by increase in industrial production and world trade

Industrial recovery crucial for air cargo growth

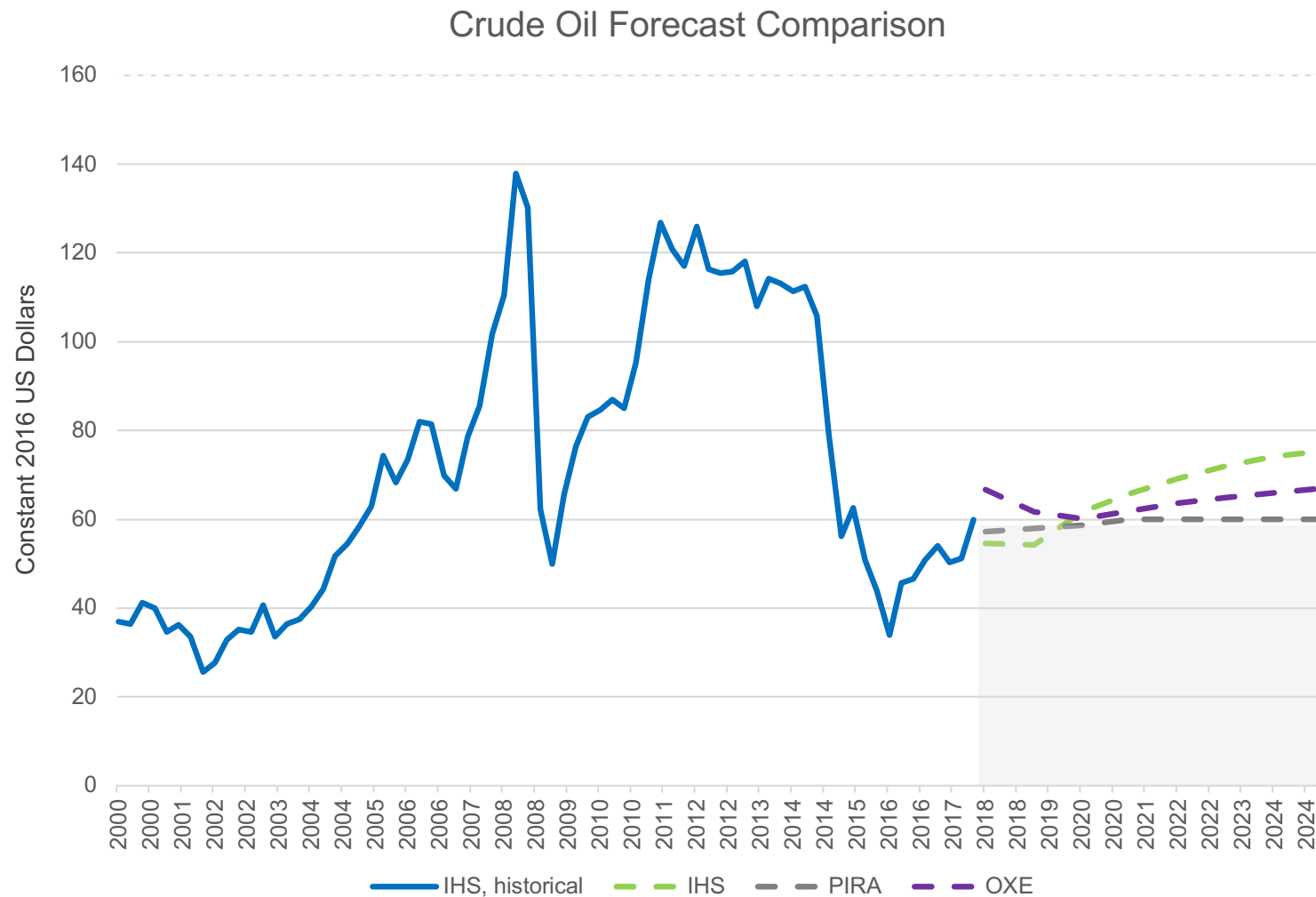


Sources: Oxford Economics, IATA, A4A, Boeing

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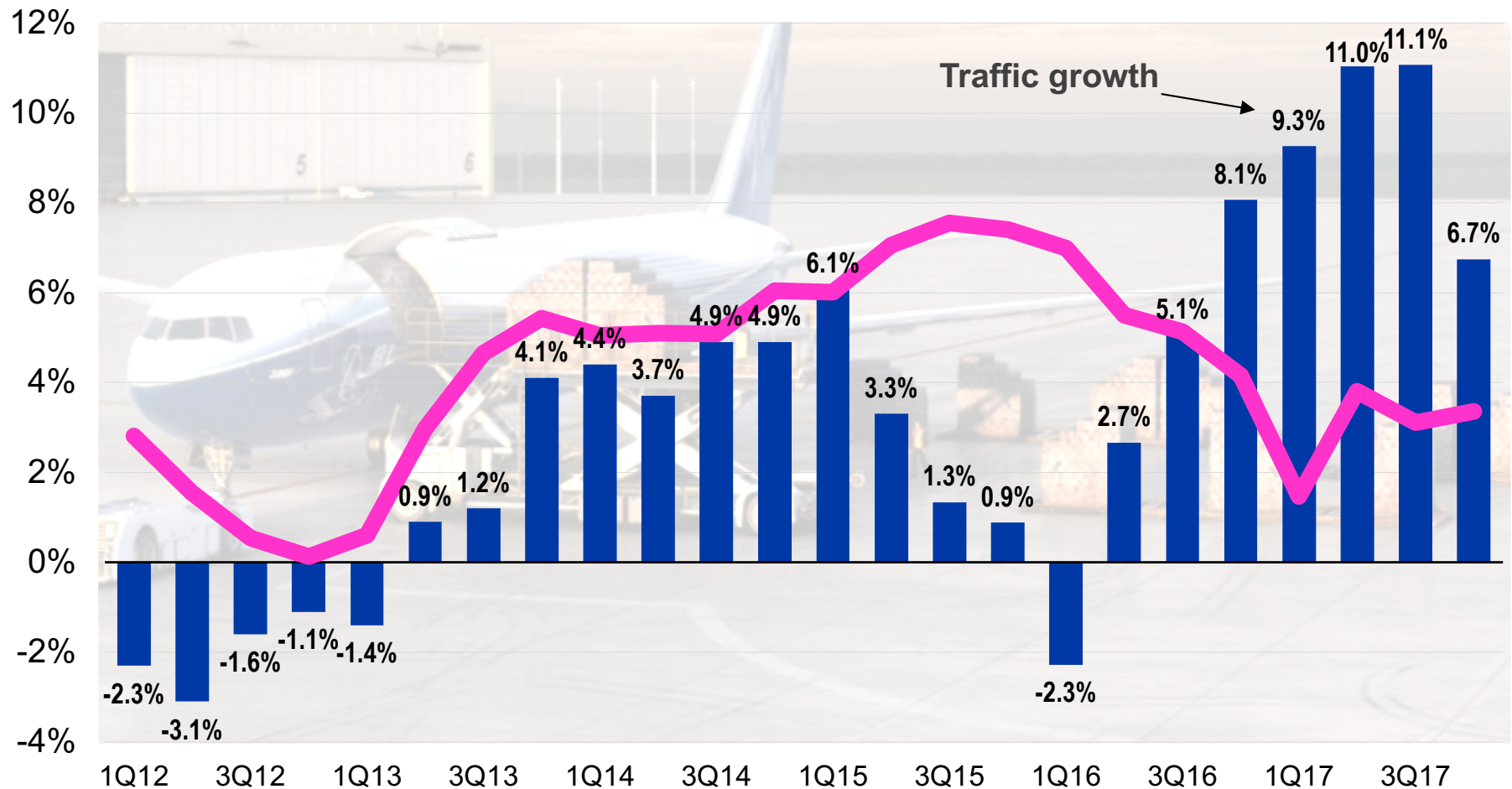
Oil prices moderately increasing

Demand lifting prices amid supply restraint; longer term supply to limit price rise



Air cargo demand exceeding capacity growth

Year-over-year RTK (traffic) and AFTK (capacity) growth



Source: IATA Carrier Tracker

Capacity a potential concern



Air cargo traffic resurgent, forecast for solid growth

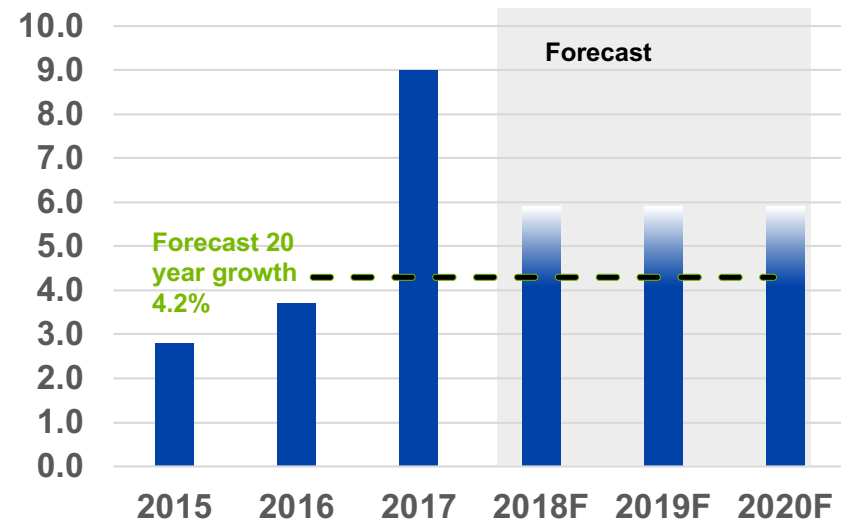






Large freighter utilization high and stable



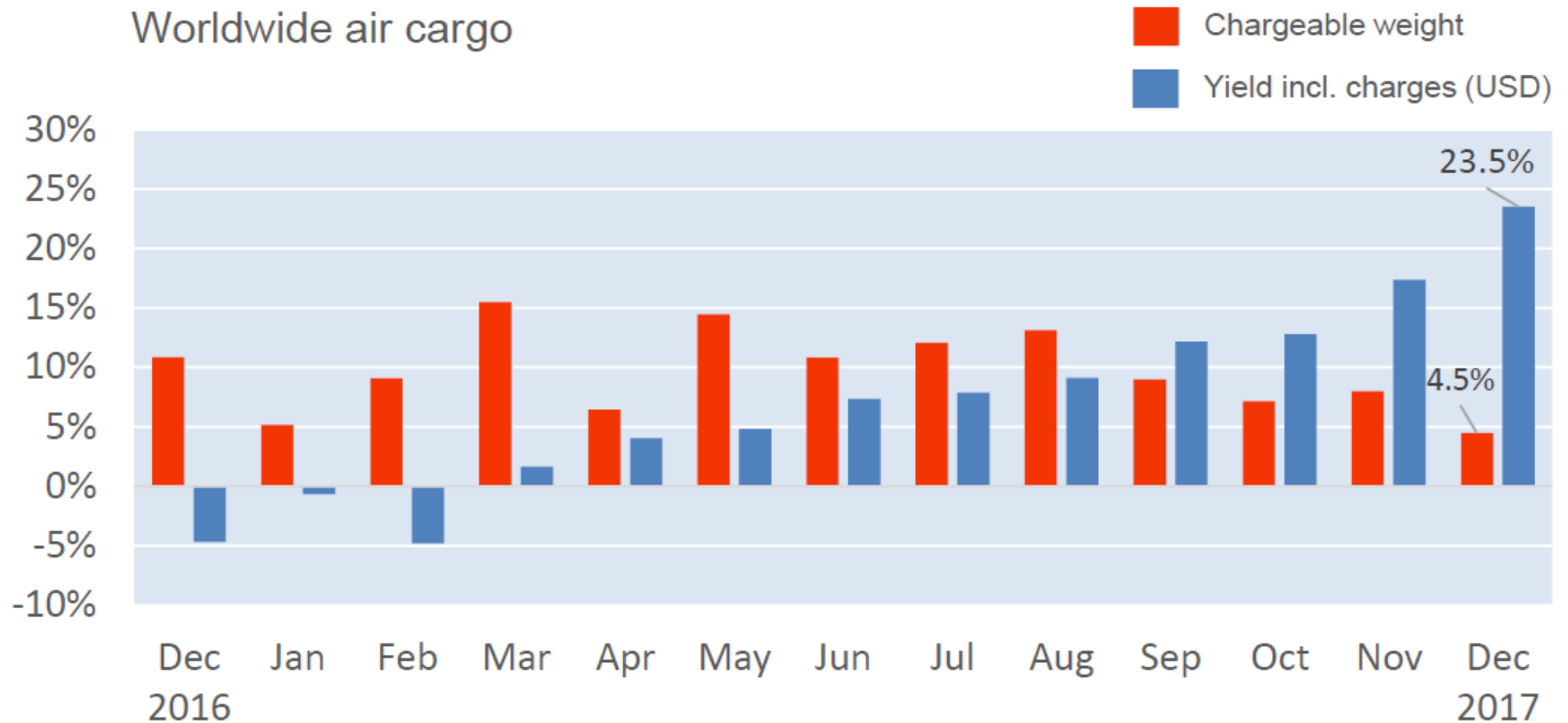
Parked freighter fleet shrinking

Air cargo traffic growth in %



				
	747-400F/ERF	747-8F	777F	767F/BCF/SF
In service:	150	75	138	257
Available:	6	0	0	0

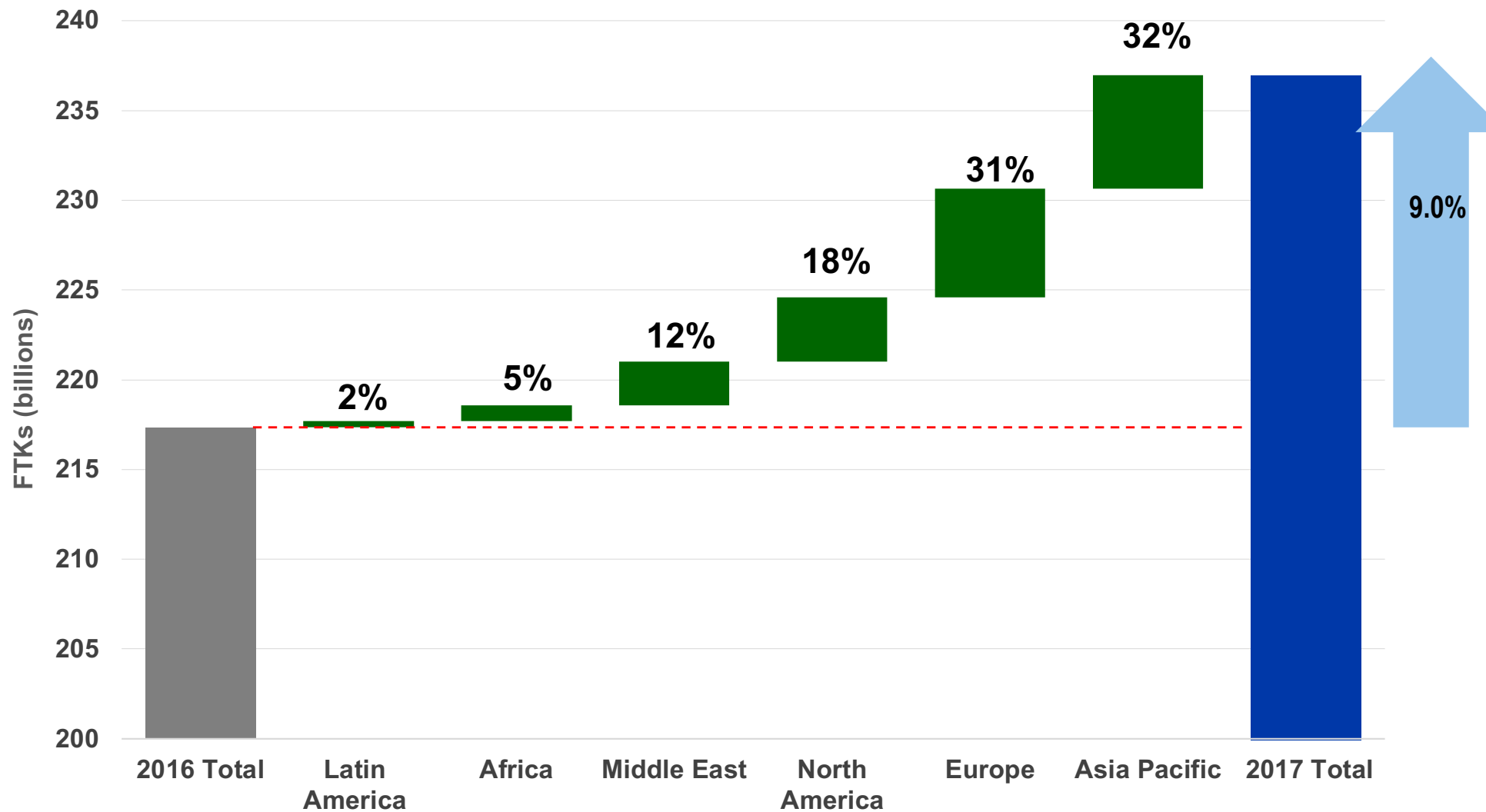
As a result, world air cargo yields have strengthened



Source: <http://www.worldacd.com/uploads/files/180131%20-%20WorldACD%20Air%20Cargo%20Market%20Data.pdf>

All regions participating in cargo growth, Asia and Europe leading

Traffic changes (FTKs) from 2016 to 2017

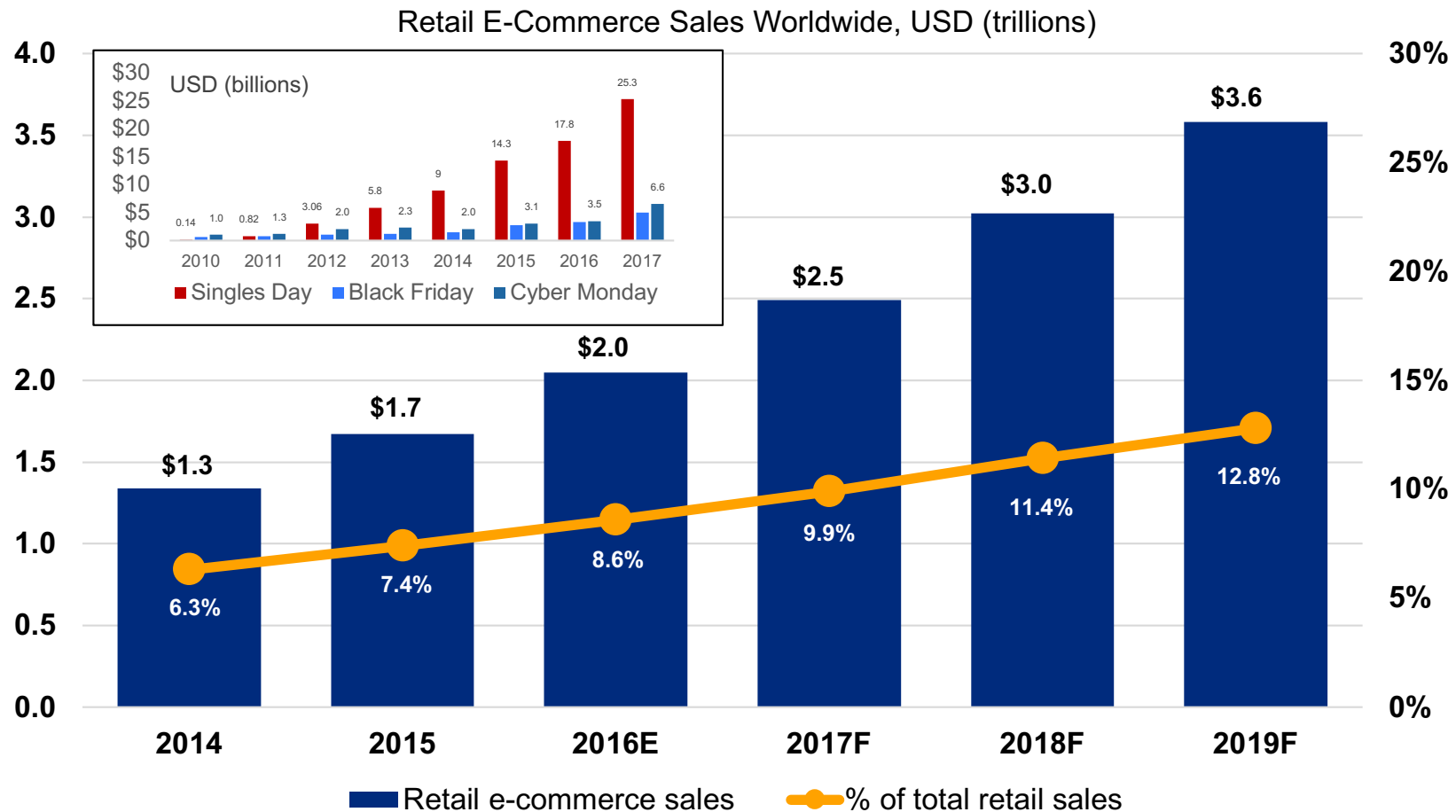


SOURCE:BCA Market Analysis with data from IATA December 2017

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E-commerce sales contributing to air cargo demand

Forecasted to grow 15% per year through 2019

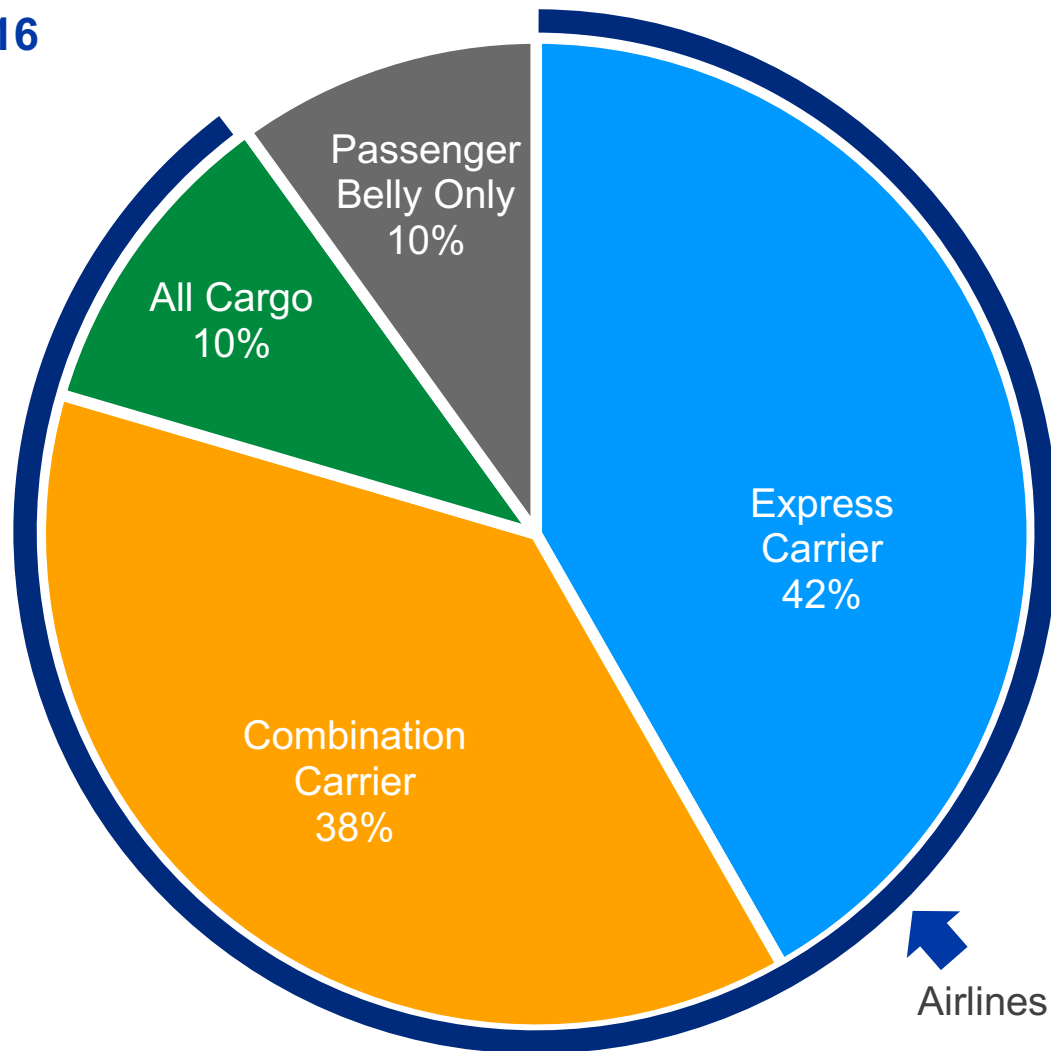


China online retail sales is the world's largest e-commerce market (2X US growth rate)

Freighters are critical to compete in air cargo markets

Airlines operating freighters generate 90% of industry revenues

2016



Express
Carriers

\$33.7B

Combination
Carriers

\$30.6B

All Cargo

\$8.5B

Passenger
Belly Only

\$8.0B

TOTAL

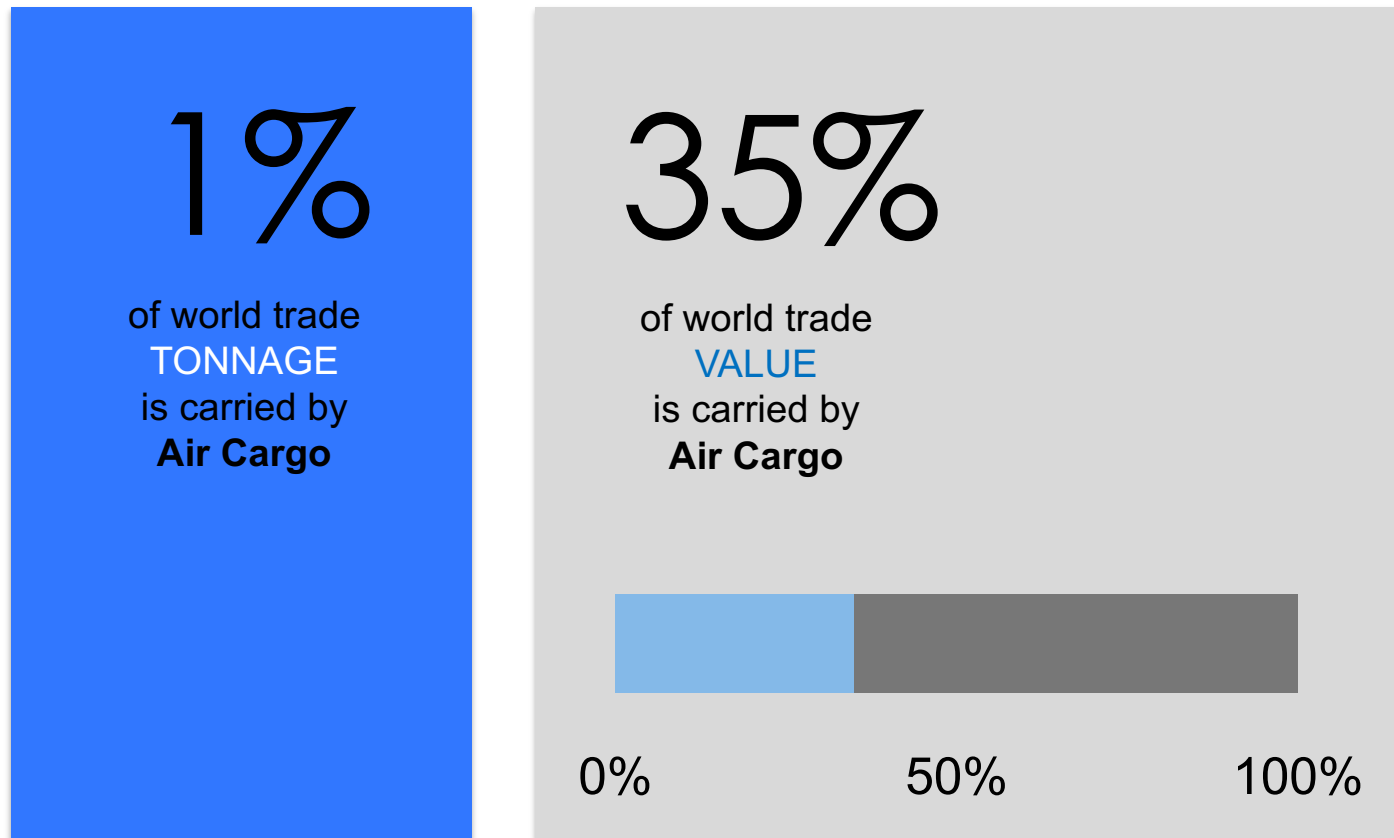
\$80.8B

Airlines operating freighters

Sources: FlightGlobal, U.S. DOT F41, airline reports, and Boeing estimates (2016 data)

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Air cargo's competitive advantage- high value/time sensitive goods



Note: Does not include trans-border tonnage that was transported by truck, rail or fixed installations such as pipelines or conveyors

Source: IATA

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The top 30 cargo airlines account for 72% of world traffic

2016 Rank	Airline	2016 Millions of RTKs	YoY % Change	Business model
1	Federal Express	15,712	-0.6%	Express carrier
2	Emirates	12,270	0.9%	Pax belly with freighters
3	UPS Airlines	11,263	3.9%	Express carrier
4	Cathay Pacific Airways	9,947	0.1%	Pax belly with freighters
5	Qatar Airways	9,221	20.4%	Pax belly with freighters
6	Korean Air	7,666	-1.2%	Pax belly with freighters
7	Lufthansa	7,384	7.2%	Pax belly with freighters
8	Cargolux	6,878	9.0%	Freighter only operator
9	Singapore Airlines	6,345	4.3%	Pax belly with freighters
10	Air China	6,089	6.5%	Pax belly with freighters
11	China Southern Airlines	5,536	3.4%	Pax belly with freighters
12	China Airlines	5,273	-1.3%	Pax belly with freighters
13	AirBridgeCargo	4,914	18.8%	Freighter only operator
14	China Eastern Airlines	4,561	0.4%	Pax belly with freighters
15	Etihad Airways	4,481	1.8%	Pax belly with freighters
16	All Nippon Airways	4,315	12.4%	Pax belly with freighters
17	Polar Air Cargo	4,211	0.6%	Freighter only operator
18	British Airways	4,117	1.5%	Pax belly with freighters
19	Asiana Airlines	3,813	6.1%	Pax belly with freighters
20	Turkish Airlines	3,640	42.2%	Pax belly with freighters
21	KLM	3,564	-0.1%	Pax belly with freighters
22	United Airlines	3,534	10.2%	Belly only
23	EVA Air	3,480	-2.7%	Pax belly with freighters
24	Air France	3,417	0.0%	Pax belly with freighters
25	American Airlines	3,168	4.0%	Belly only
26	Nippon Cargo Airlines	2,899	-1.4%	Freighter only operator
27	Delta Air Lines	2,577	-9.0%	Belly only
28	Japan Airlines	2,142	1.0%	Belly only
29	Thai Airways	2,123	2.0%	Belly only
30	Qantas Airways	1,889	0.0%	Pax belly with freighters

Top 30 scheduled airlines
Total world air cargo traffic

166,428
231,466

72% share of total traffic

Source: IATA World Air Transport Statistics (WATS), Boeing

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Boeing 20-year market outlook

2016 to 2036

World
economy
(GDP)  **2.8%**

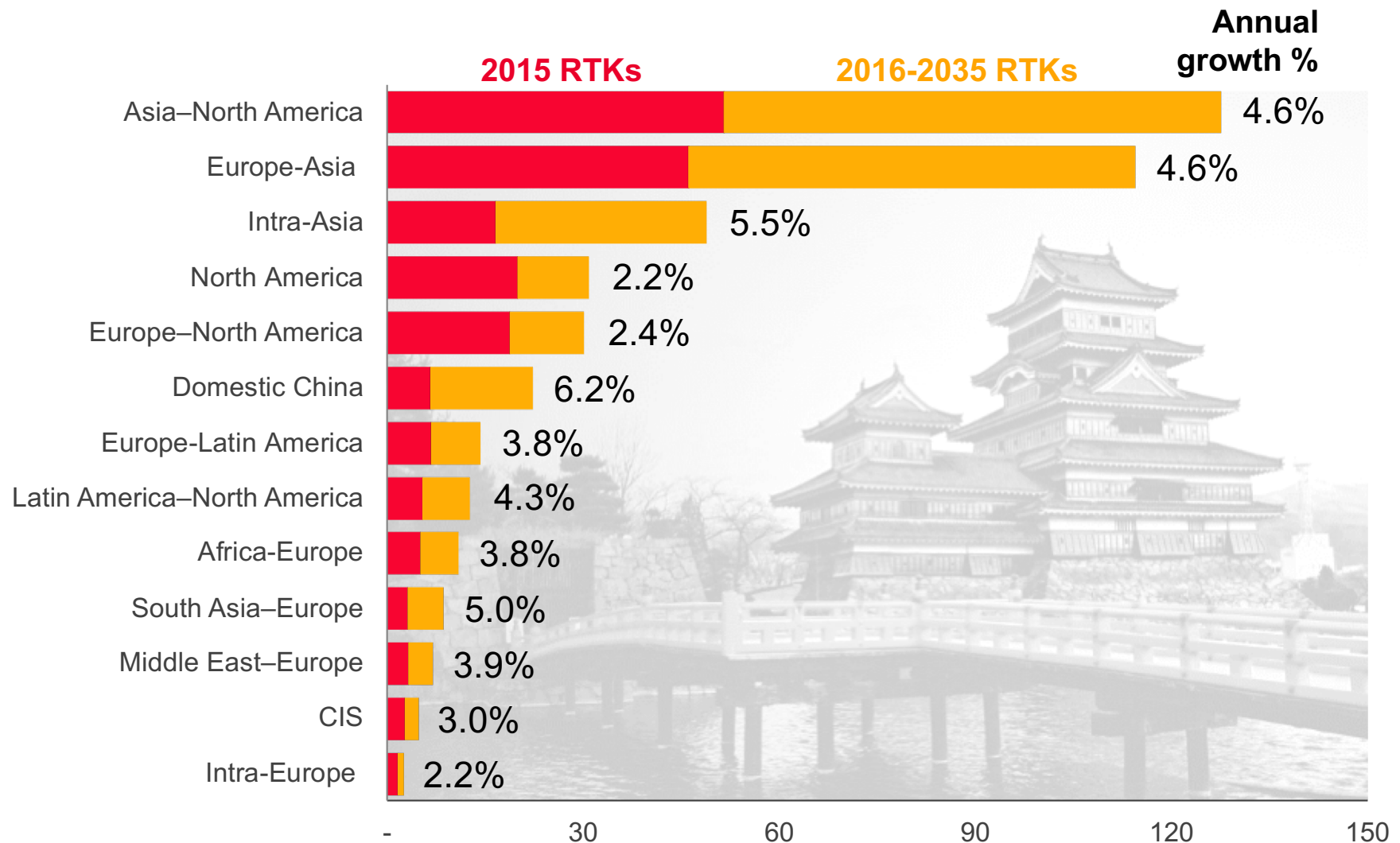
Airline
traffic
(RPK)  **4.7%**

Cargo
traffic
(RTK)  **4.2%**



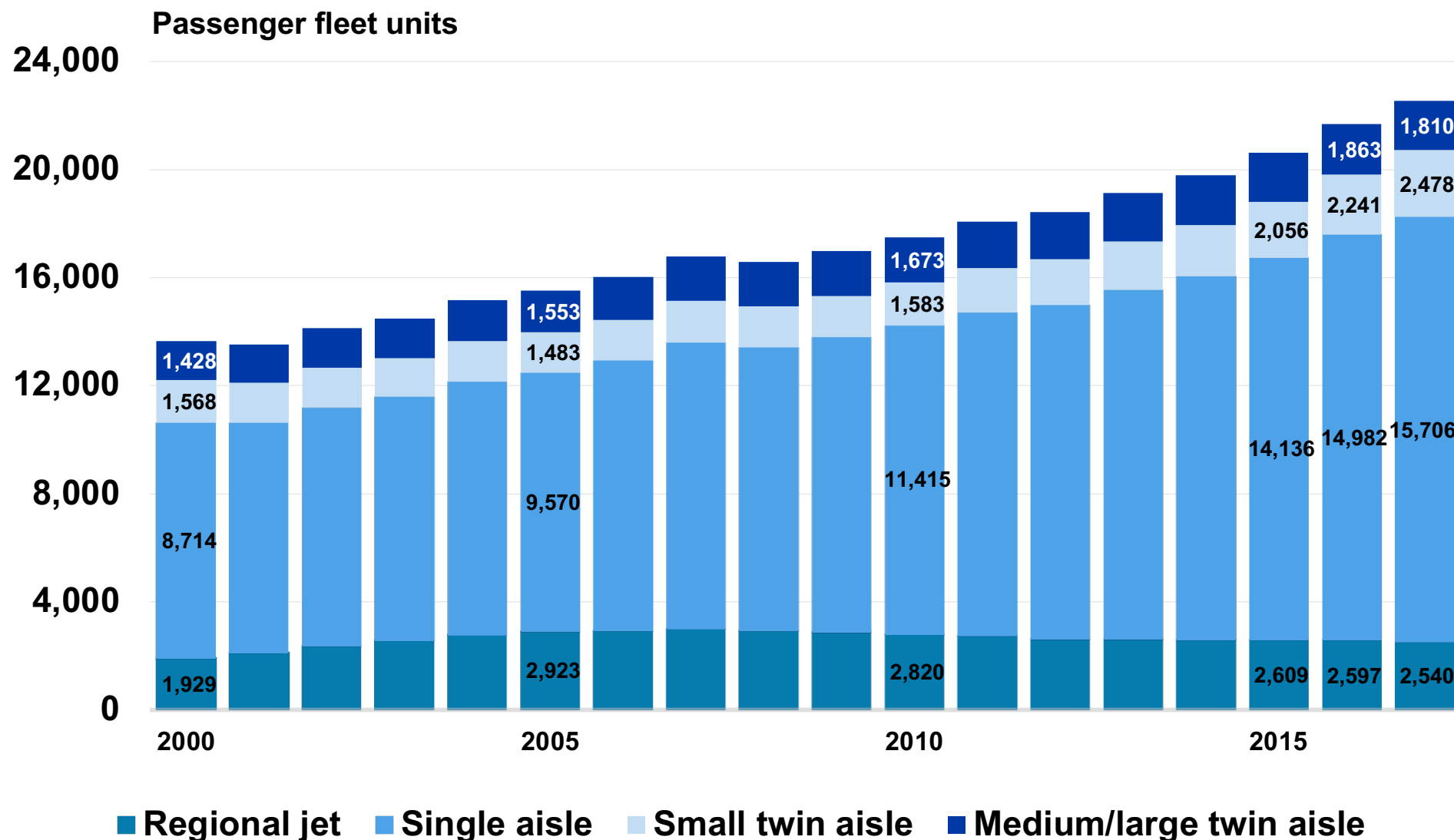
Asia markets will continue to lead industry growth

RTKs in billions



World passenger fleet: Single aisle fleet continues to expand the fastest

Passenger airplane fleet only

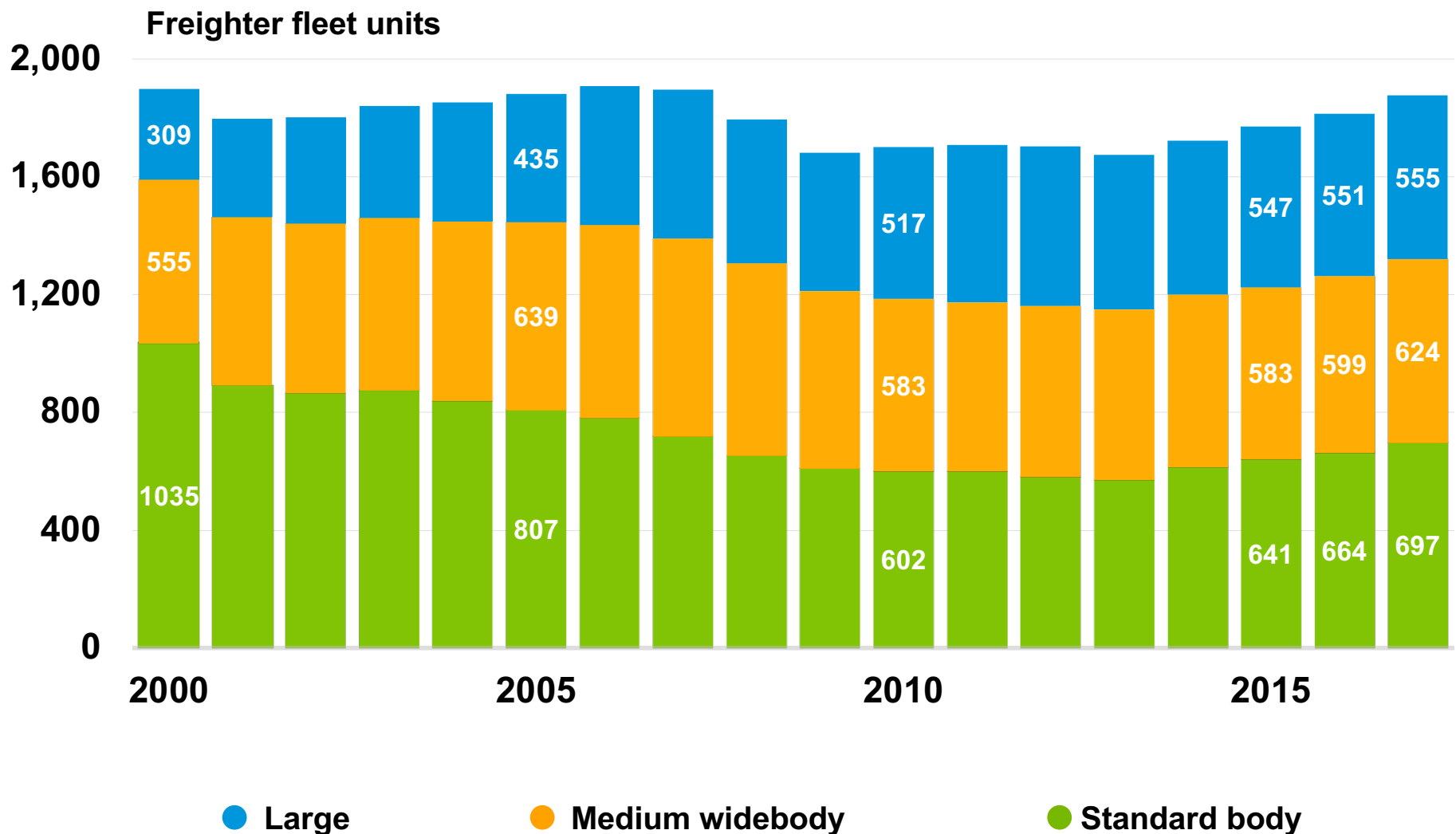


Source: Ascend, Boeing CMO

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World freighter fleet: Up-gauging of freighter fleet size continues

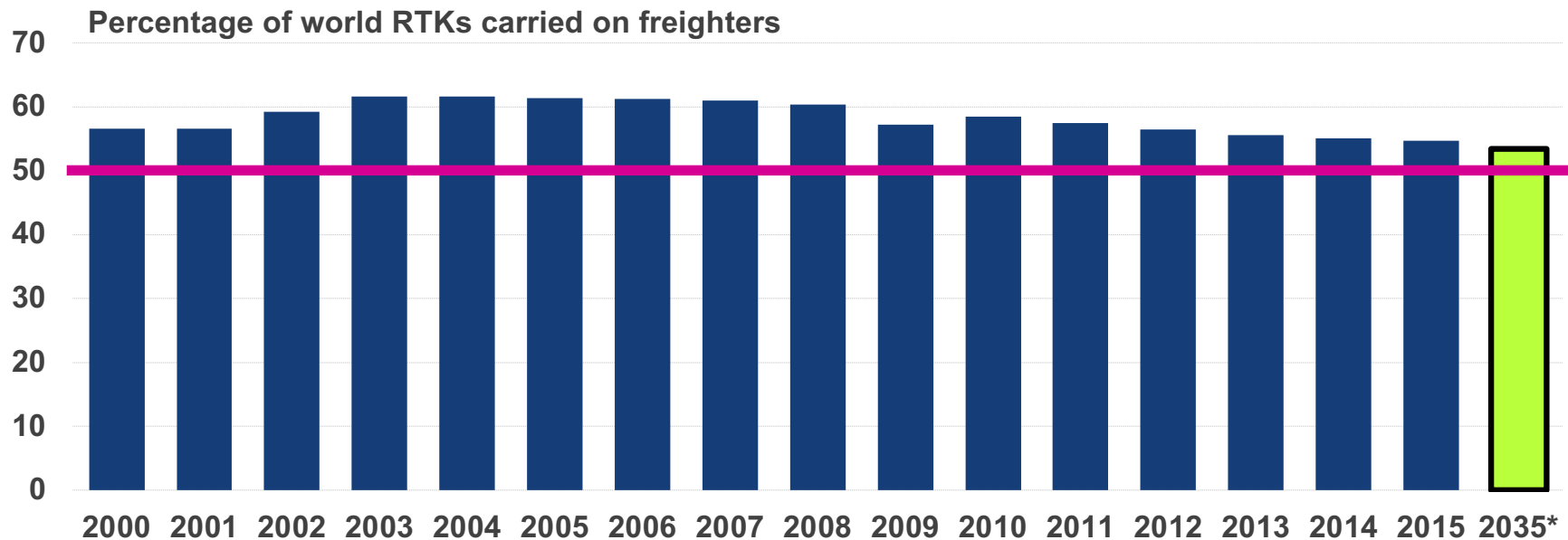
Freighter airplane fleet only



Source: Ascend, Boeing CMO

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Dedicated freighters will continue to carry more than half of air cargo traffic

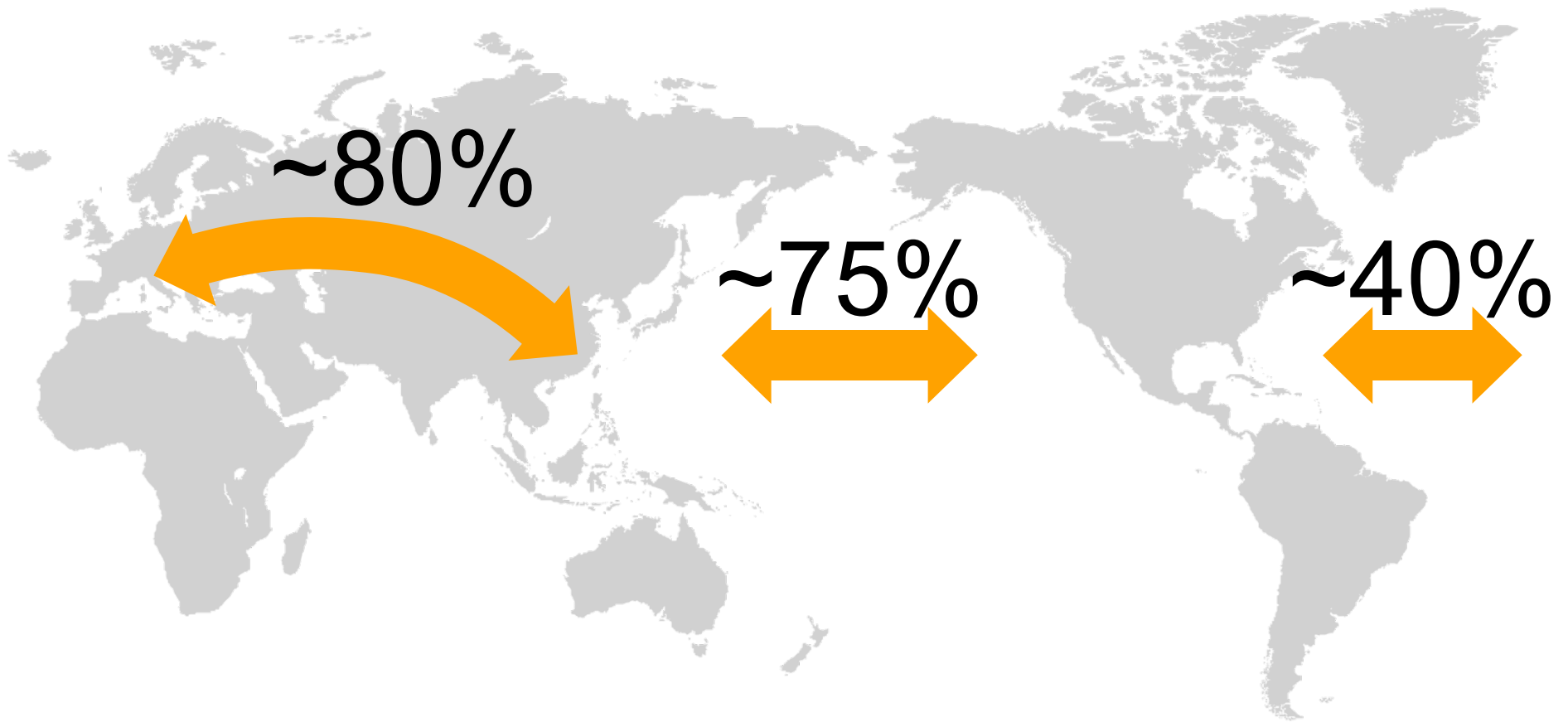


Sources: IATA, ICAO, company reports, Boeing research

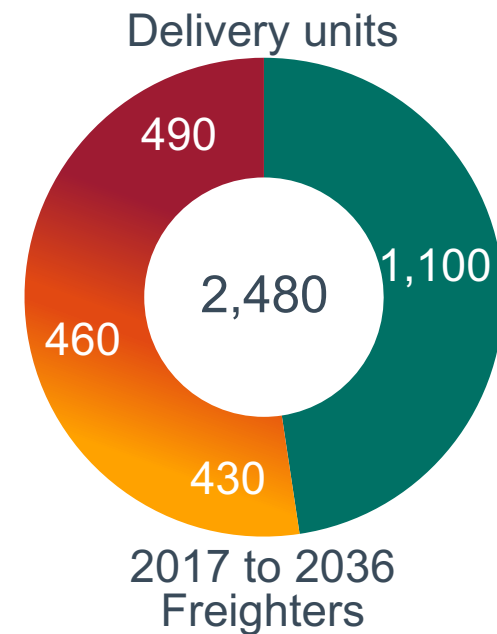
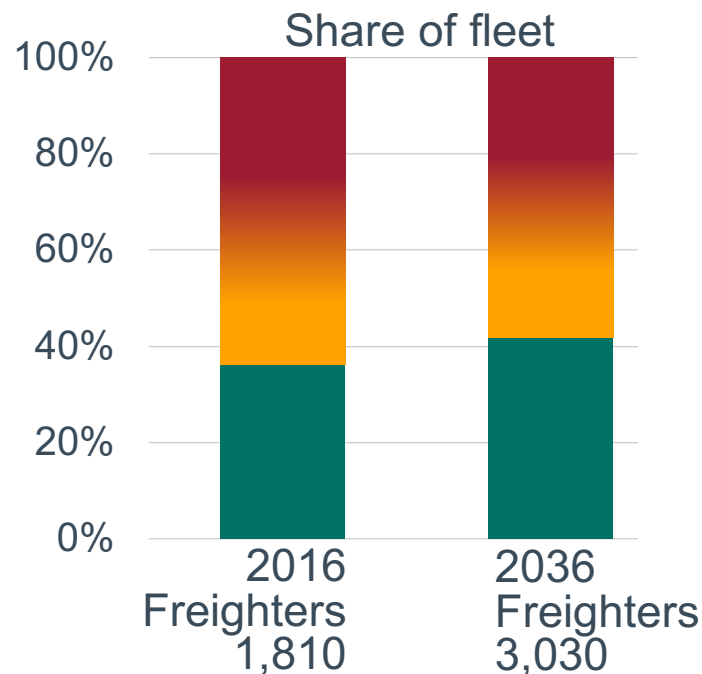
* Forecast

Freighters play a key role in major east-west markets

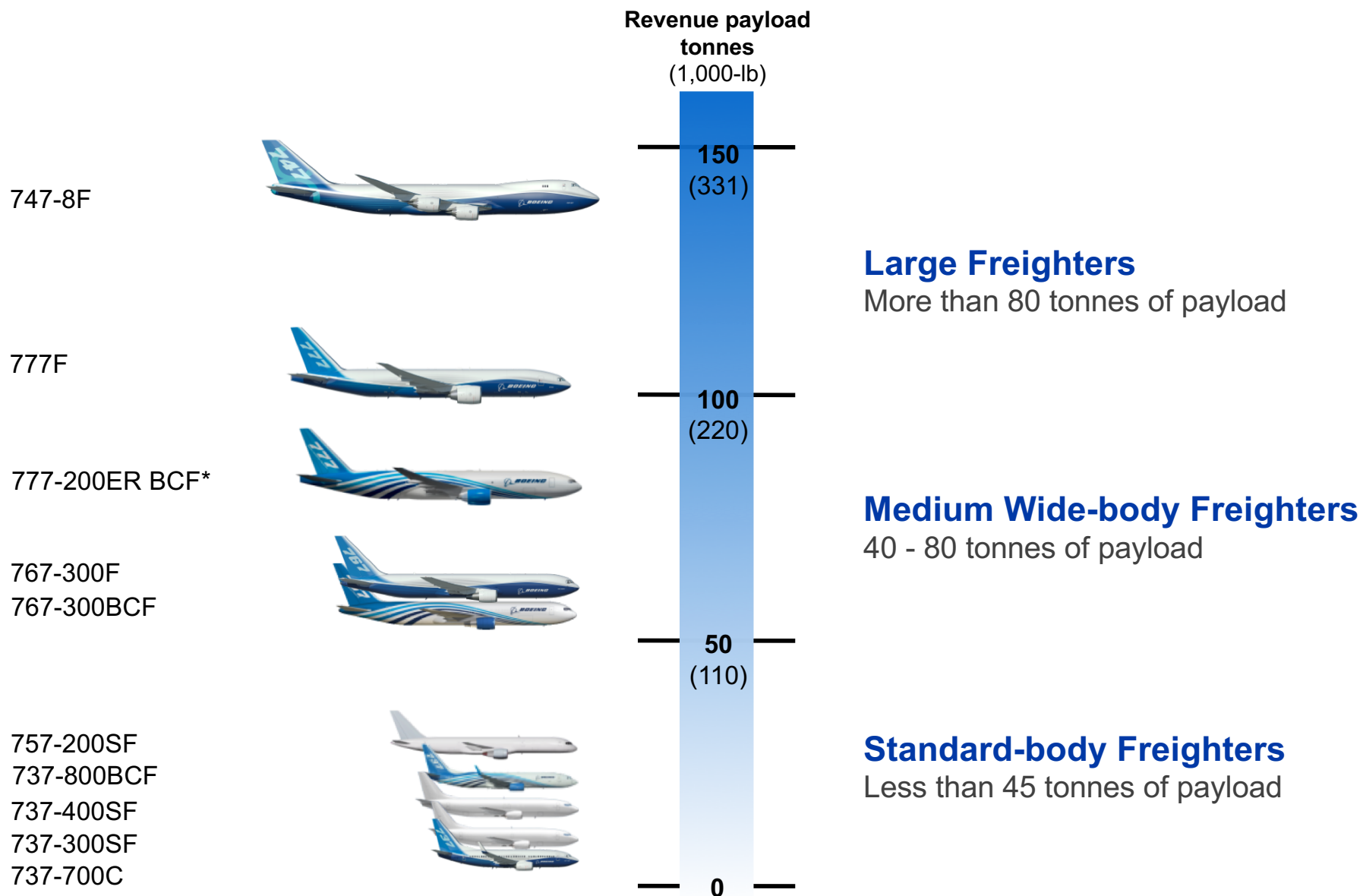
Total air cargo traffic carried by freighters
by percentage



Freighter demand -- 920 new, 1,560 converted



Boeing offers a complete family of freighters



* Product Development Study

Boeing Market Analysis products

Available online for all



- Yearly publication
- 20 year passenger market forecast



- Biennial publication
- 20 year cargo market forecast

Things to remember

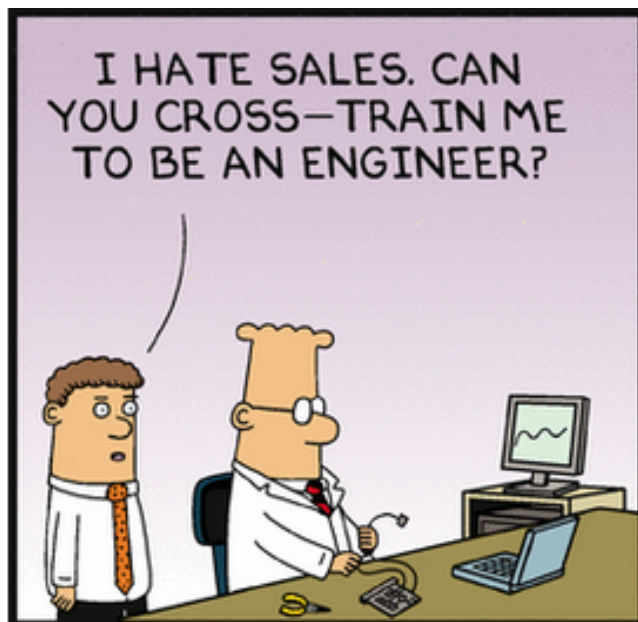


World air cargo traffic rebounding strongly with trade and industrial production

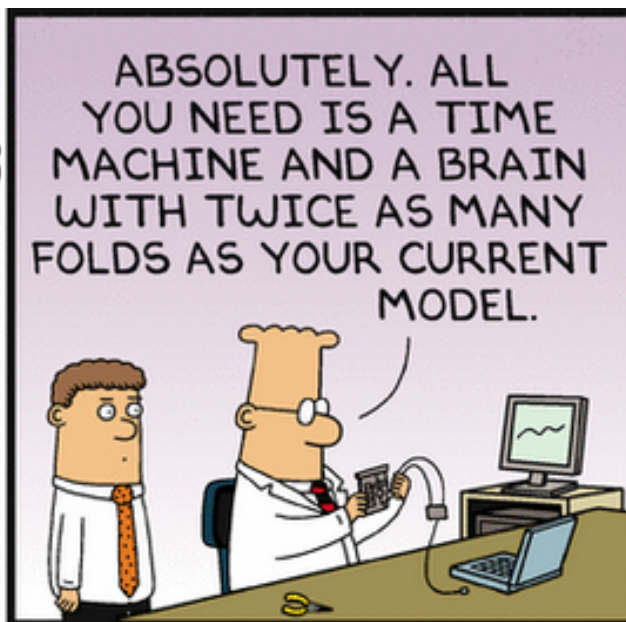
World air cargo traffic forecast to grow 4.2% per year through 2036

Pax capacity vital, but the majority of air cargo traffic will remain on freighters

The world freighter fleet will expand to 3030 airplanes over the next 20 years



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Thank you!