Leasing and M&A Market Overview

October 30, 2018

Professor David Yu, CFA, ISTAT Certified Aviation Appraiser
Managing Director

2018 AWARDS
Aviation 100
WINNER
Appraiser of the Year
Airline Economics

IBA
AVIATION UNLOCKED

IBA - Enhancing Decision Making

Full service

- Aviation Intelligence, Asset Management, Advisory
- Only aviation consultancy that also appraises (7 ISTAT Appraisers), manages (130+ assets, $4bn), and remarkets
- Global approach

Independent

- No vested interest in a deal progressing
- No conflict in treatment of assets

Diversified talent pool and inputs

- Imaginative solutions from a breadth of backgrounds
- Appraiser of the year 2018
- 30 years of trading experience
- Quantitative and qualitative approach
- Unique access to critical data and human intelligence

Mapped the risks surrounding 100+ airlines	CDD around acquisition and investments	Leading analysis and valuations around commercial aircraft, engines, helicopters, freighters, business jets and slots
Maintenance costs analysis and benchmarking	Cash flow forecasting and mapping	Stress-testing of investment opportunities and returns
Lease rate and residual risk analysis	Route analysis and asset selection	Transition Management

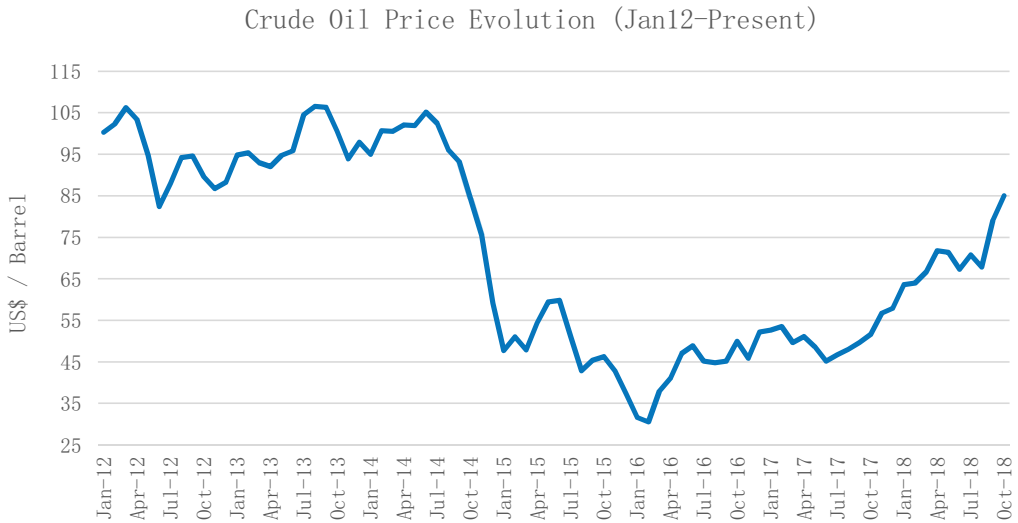
Economic Landscape

- **GDP**
- IMF maintains global forecast – less balanced across regions.
- Outlook for oil exporters strengthening.
- Brazil, India and Argentina downgraded.
- Economic Policy Uncertainty Index is increasing.
- US-China Trade War.
- Increasing trend of protectionism, risk to world trade and GDP growth.

GDP Growth Figures		
World	3.9%	
Advanced Economies	2.4%	Down from 2.5% in April
Emerging Economies	4.9%	
USA	2.9%	Tax reform
UK	1.4%	Recently downgraded1.6% in April
Euro Area	2.2%	Slowing to 1.9% in 2019
Japan	1.0%	Downgraded from a previous prediction of 1.2%
China	6.6%	6.4% expected in 2019
India	7.3%	Slight moderation from 7.4% prediction in April

Source: IMF

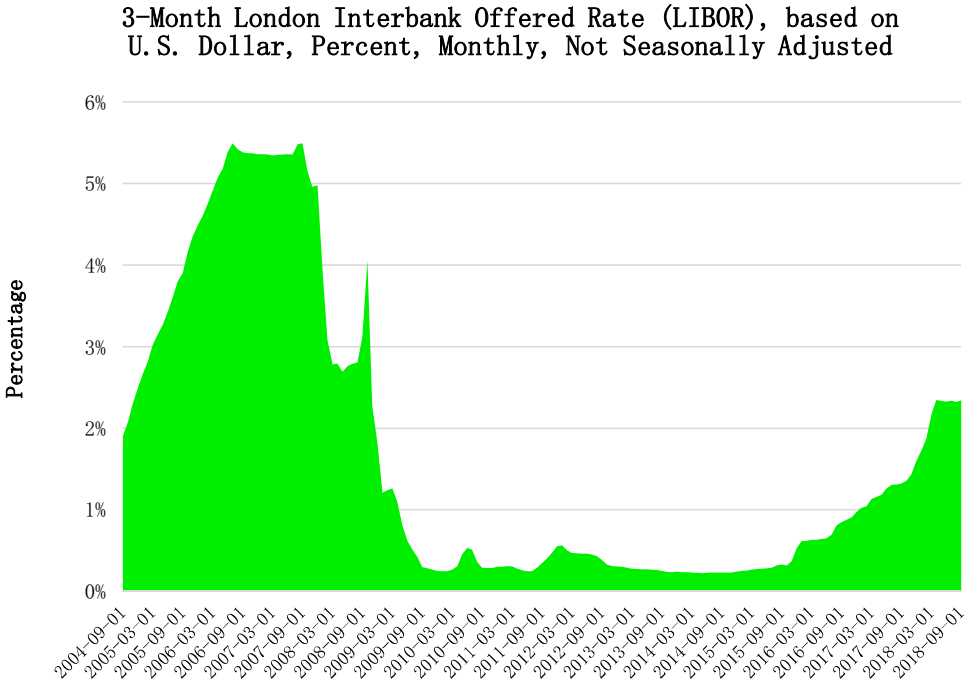
- **Oil volatility continues**
- Oil pricing is trending up.
- Brent now at around $85 per barrel.
- Iran related sanctions to restrict supply, oil exports declining.
- Growth and consumption



Interest Rates

- **US Prediction – small increases to continue**
- Increased to 2% - 2.25% late September
- A possible further increase may be implemented towards the end of the year.

- **UK view – similar pattern to the US**
- In August 2018, the UK Monetary Policy Committee (MPC) raised the interest rate from 0.5% to 0.75%.
- UK rate increase lagged US rise.
- Future rises planned to be limited and gradual.
- GDP growth remains subdued and the UK forecast has once again been downgraded.



Source: ICE Benchmark Administration Limited (IBA)

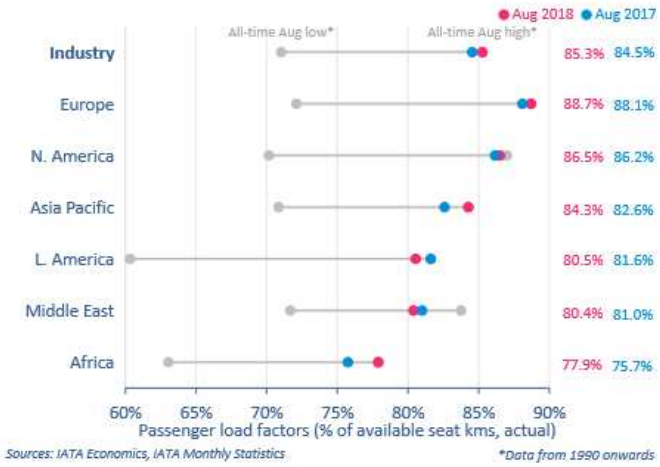
Yields

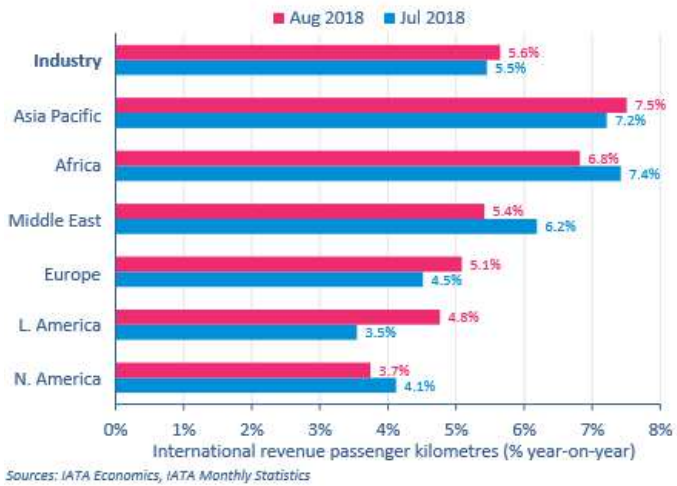
- **Yields**
- Average passenger yields stabilised in mid-2017.
- Recent developments point to renewed pressure – despite rising input costs.
- Premium yield performance has lagged economy class yields.
- High load factors and ancillaries are supporting revenues (figures include base airfares only.)
- Global trade uncertainty could pose greater risk to premium traffic and yields.

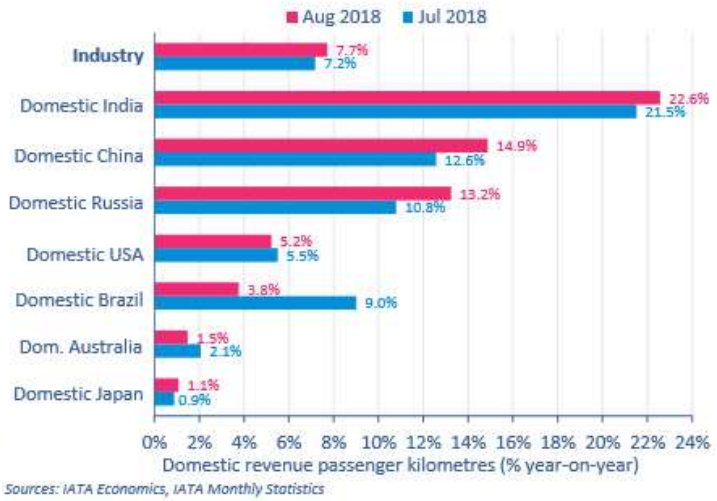
Traffic Growth

- **PAX Load Factors continue to rise…**
- YoY growth in RPKs increased to 6.4% in August.
- India's domestic traffic grew the most, with a 22.6% YoY increase.
- Internationally the Asia Pacific carriers continue to show the largest growth in passenger traffic.
- Passenger load factors hit an all-time high in the month of August 2018.

- **Freight Load Factors trending downwards**
- Industry-wide FTKs increased in August to by 2.3% YoY. Unchanged from the rate in July and less than half the five-year average pace (5.1%)
- Growth in air freight volumes outpace that of global goods trade by a large margin.







Airline profitability. A little more challenging

Positive Trends

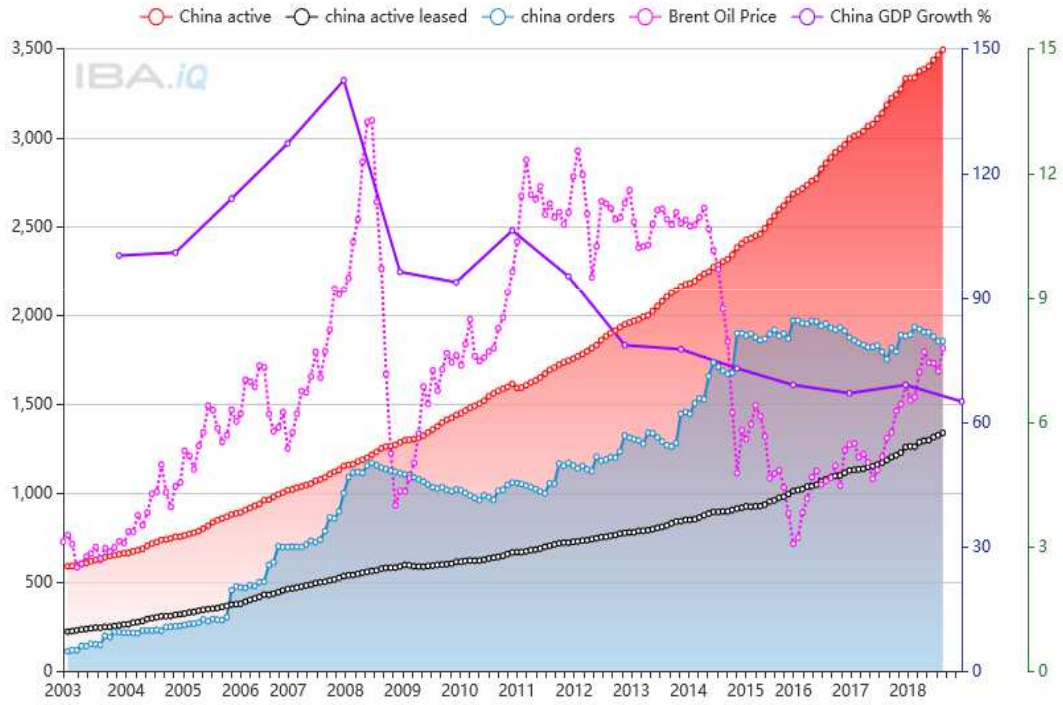
- Traffic growth remains robust
- GDP growth remains strong
- New routes are proving profitable
- High Load Factors
- Low Lease Rates
- Buoyant Sale Leaseback Market

Clouds gathering

- DOCs increasing (Fuel, wages, US$ costs)
- New aircraft supply limited
- New aircraft reliability challenges
- Interest rates increasing
- Trade Wars and Economic Policy uncertainty increase GDP downside risk
- Many new passengers very price sensitive
- Renewed pressure on passenger yields
- New markets stuttering

Emerging Markets - Characteristics

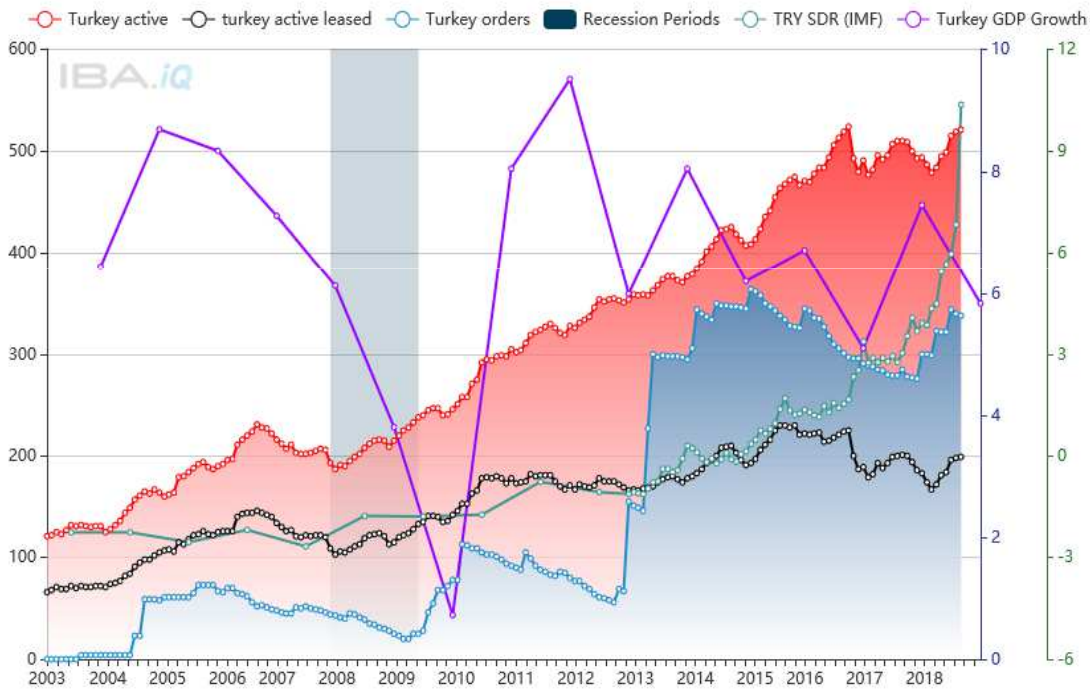
China



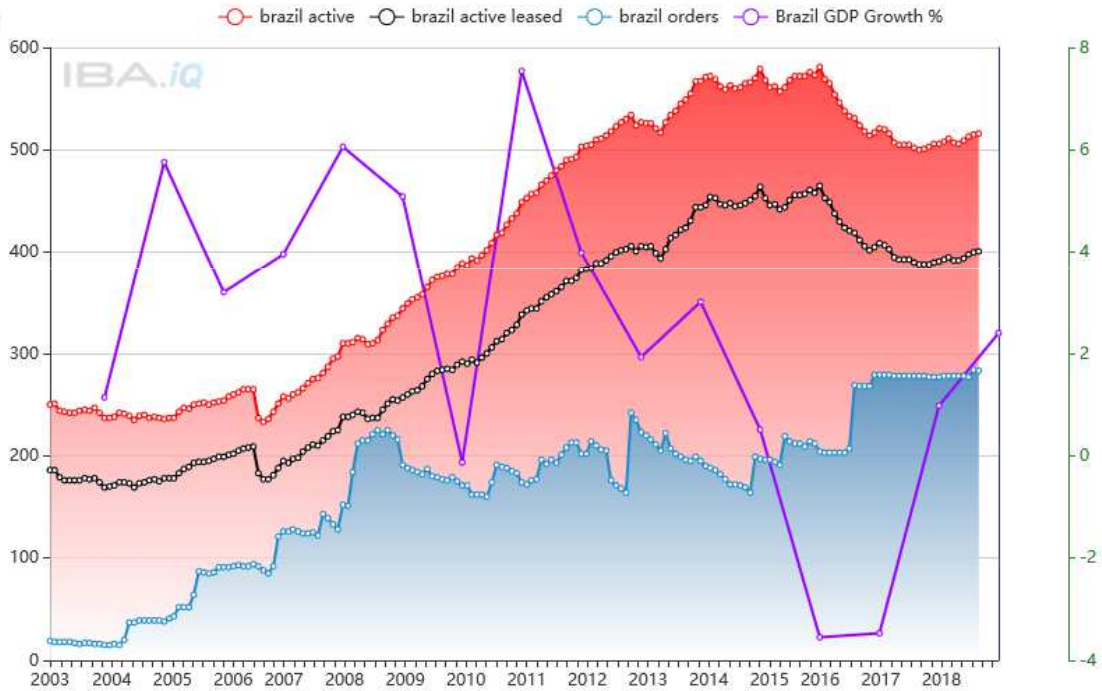
India

Emerging Markets - Characteristics

Turkey



Brazil

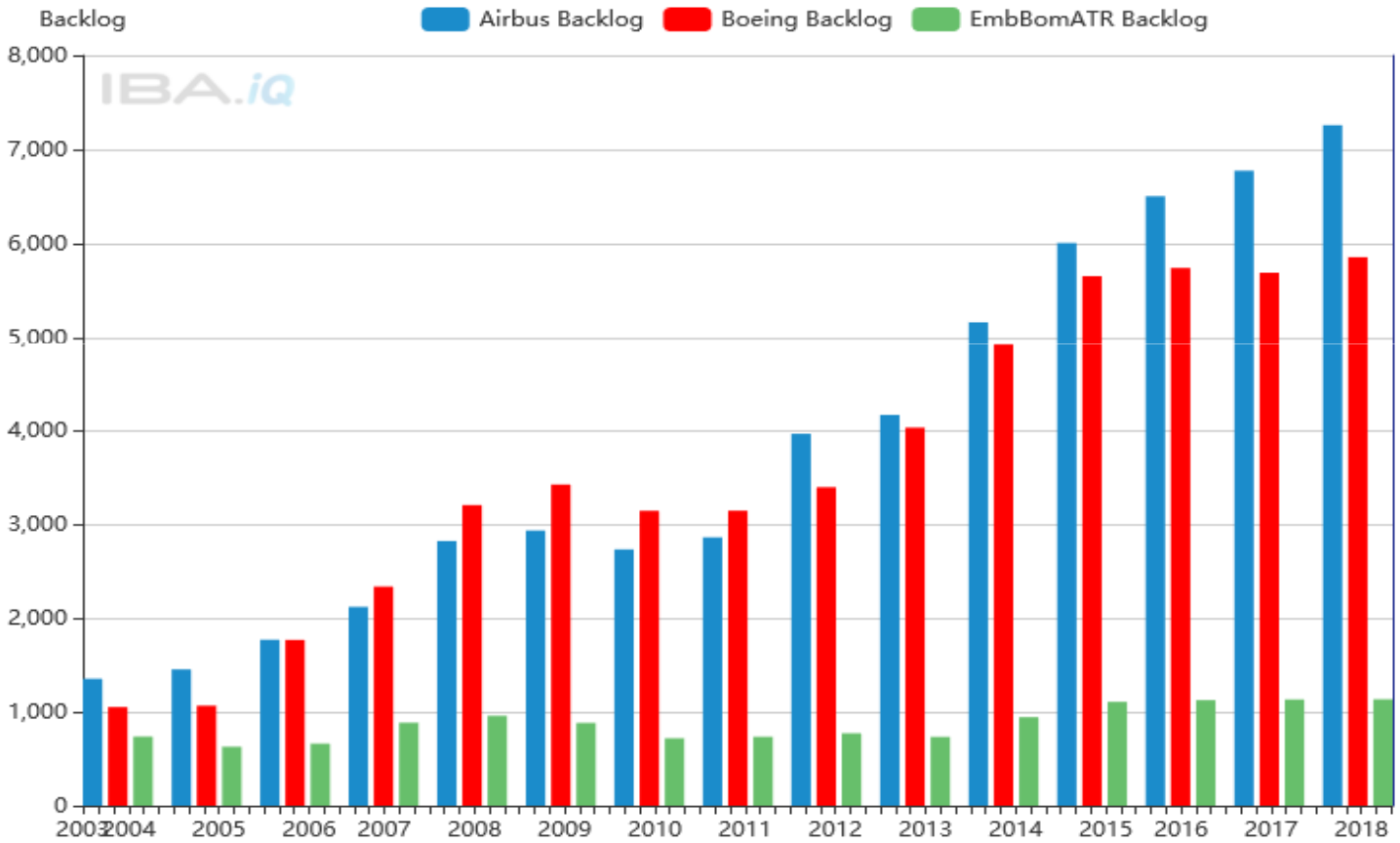


Global Market & Aviation Market Indicators

Global Climate	Regional GDP	Demand Trends	Supply Trends
Oil	Europe	Pax Traffic	Deliveries (>150 seats)
Interest Rates	North America	Freight Traffic	Deliveries (<130 seats)
GDP	Asia Pacific	Yields	Parked Fleet
World Trade	China	Load Factors (PAX)	Bankruptcies
USD	India	Load Factors (Freight)	
Geopolitical Mood	Japan	Orders	
Economic Mood	World		

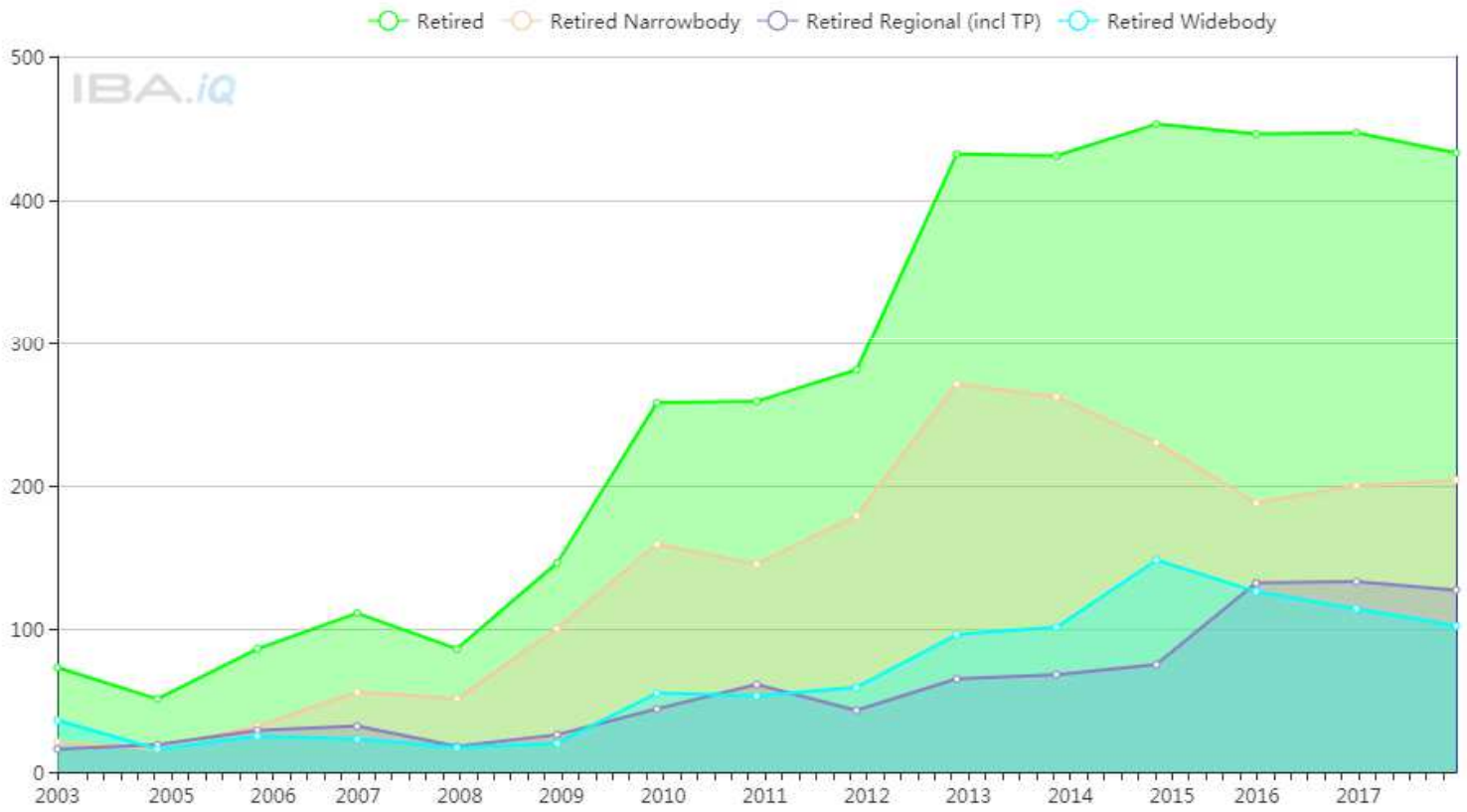
OEM Backlogs

- Airbus Backlog extending beyond Boeing in recent years.
- Regional backlogs have remained relatively stable at around 1,000+ aircraft.
- Narrowbody backlogs equate to around 6-8 years of production.

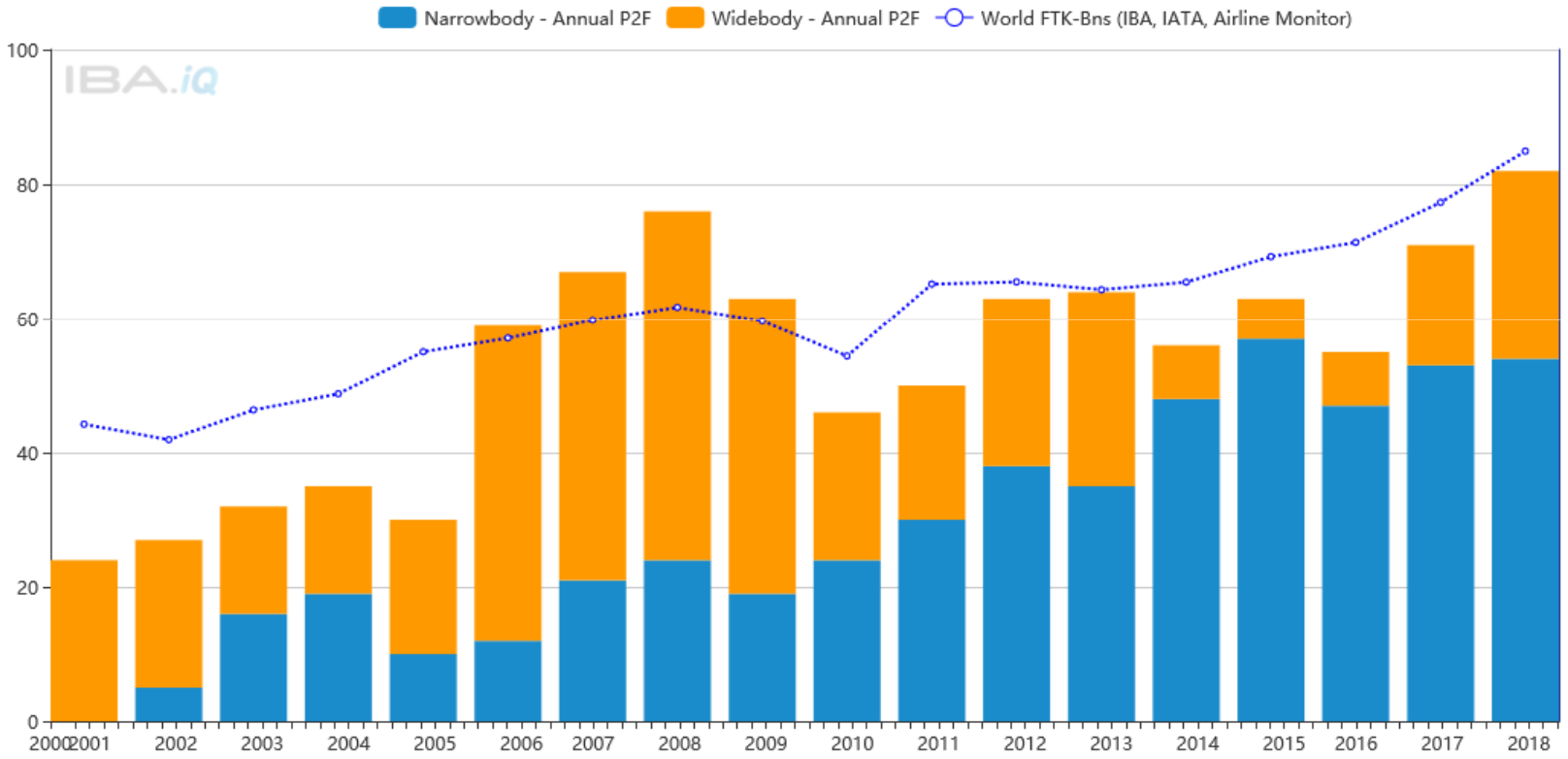


Retirement Trends

- Retirements have trended downward since 2015.
- Low Fuel Costs have kept older aircraft flying.
- Engine issues have aided older Narrow and Widebody models.
- Widebody retirements have declined steadily since 2015.



Number of Freighter Conversions (Per Year) 2000 - 2018



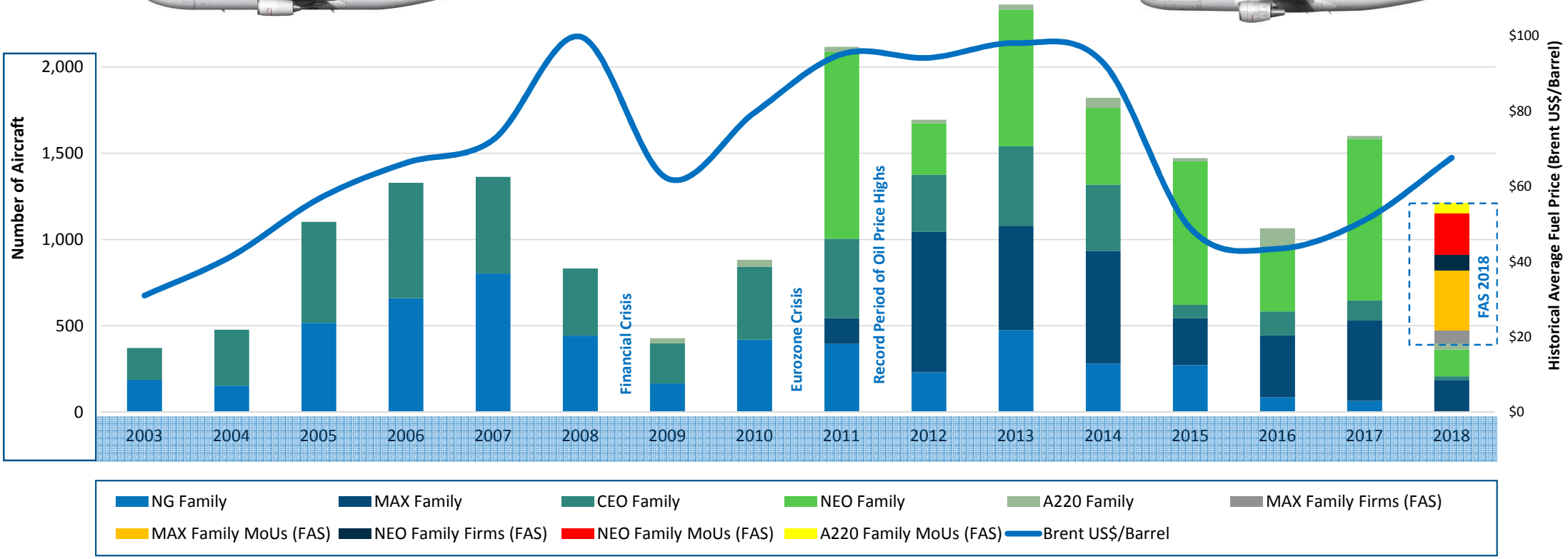
- Freighter conversions have tracked closely with cargo traffic growth.
- However, the balance has shifted towards narrowbody with emphasis on the newer generation aircraft.
- 757-200s continue to convert.
- 767-300ERs dominate WB conversions.
- A330s are building, slowly.

Narrowbody Demand: Where are we? Orders: Airbus A320 & Boeing 737

Airbus and Boeing Narrowbody Orders - Last 15 Years

* Farnborough Airshow Orders Excludes Options

** Farnborough Airshow Gross Orders Include MoUs and LOIs

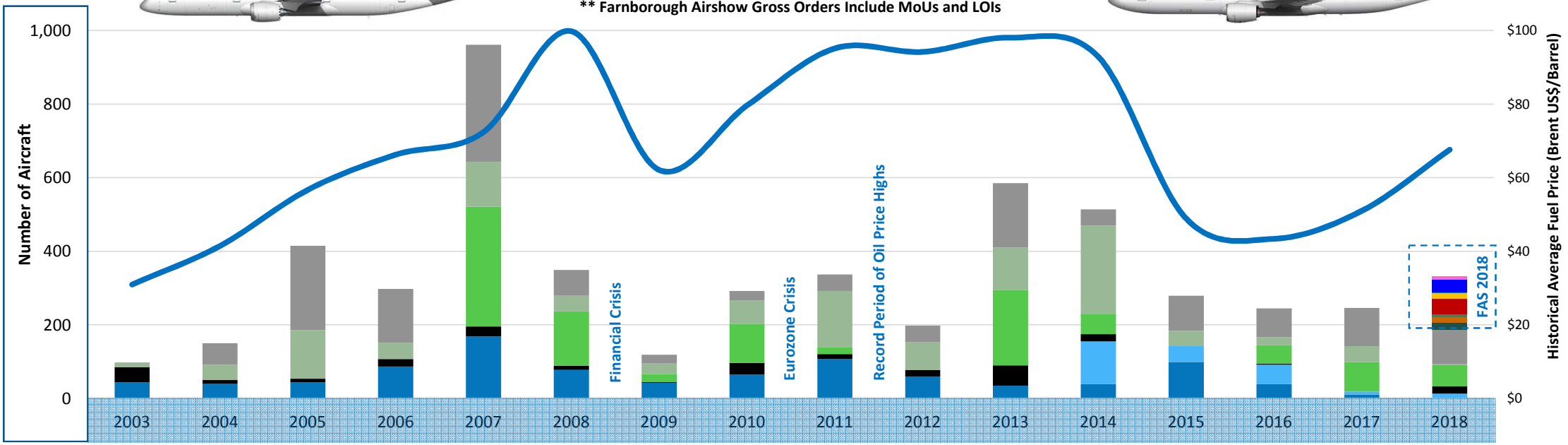


Widebody Demand: Where are we?

Airbus and Boeing Widebody Orders - Last 15 Years

*Farnborough Airshow Orders Excludes Options

** Farnborough Airshow Gross Orders Include MoUs and LOIs



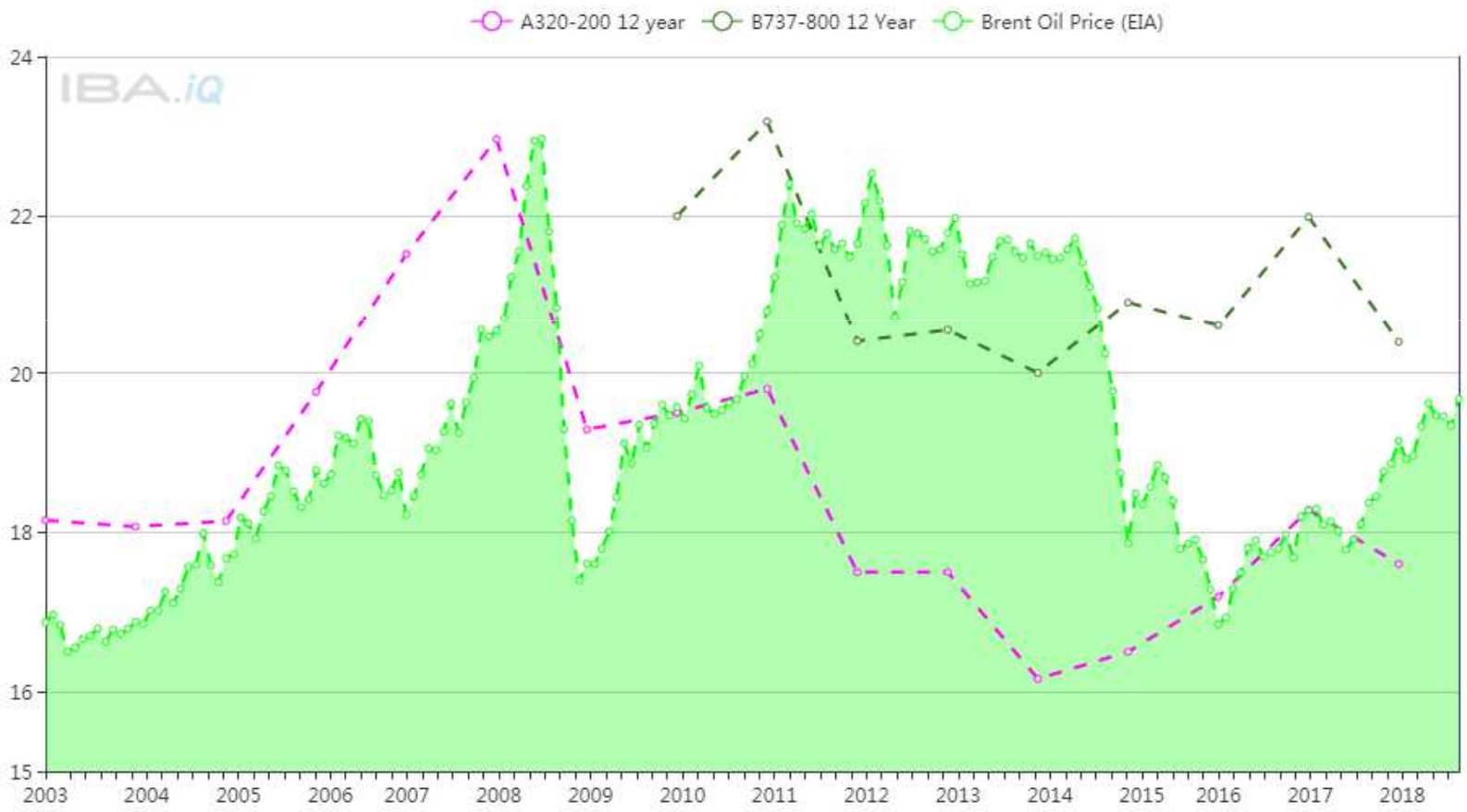
A330 CEO Family | A330 NEO Family | A380 Family | A350 Family | B777 Family

B787 Family | 787 Family Firms (FAS 2018) | 787 Family MoUs (FAS 2018) | 777 Family Firms (FAS 2018) | A350 Family Firms (FAS 2018)

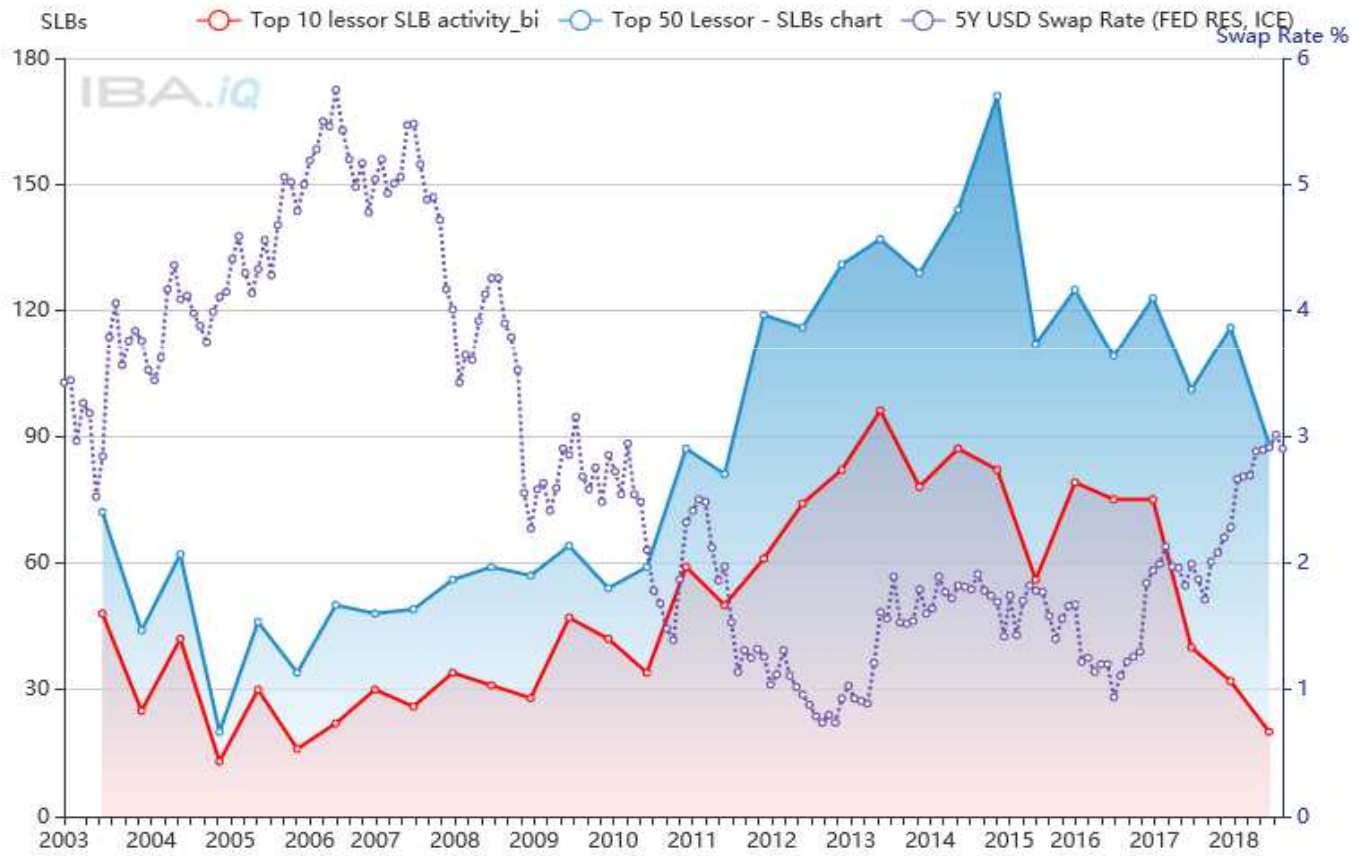
A350 Family MoUs (FAS 2018) | A330 CEO Family Firms (FAS 2018) | A330 NEO Family Firms (FAS 2018) | A330 NEO Family MoUs (FAS 2018) | Brent US$/Barrel

Impact of Used Aircraft Values on Fuel – 12 Year Old Narrowbody Values

- Older aircraft values suffered in the high fuel environment.
- Both the Boeing 737-800 and Airbus A320-200 saw values decline.
- Values have recovered since 2014/15.



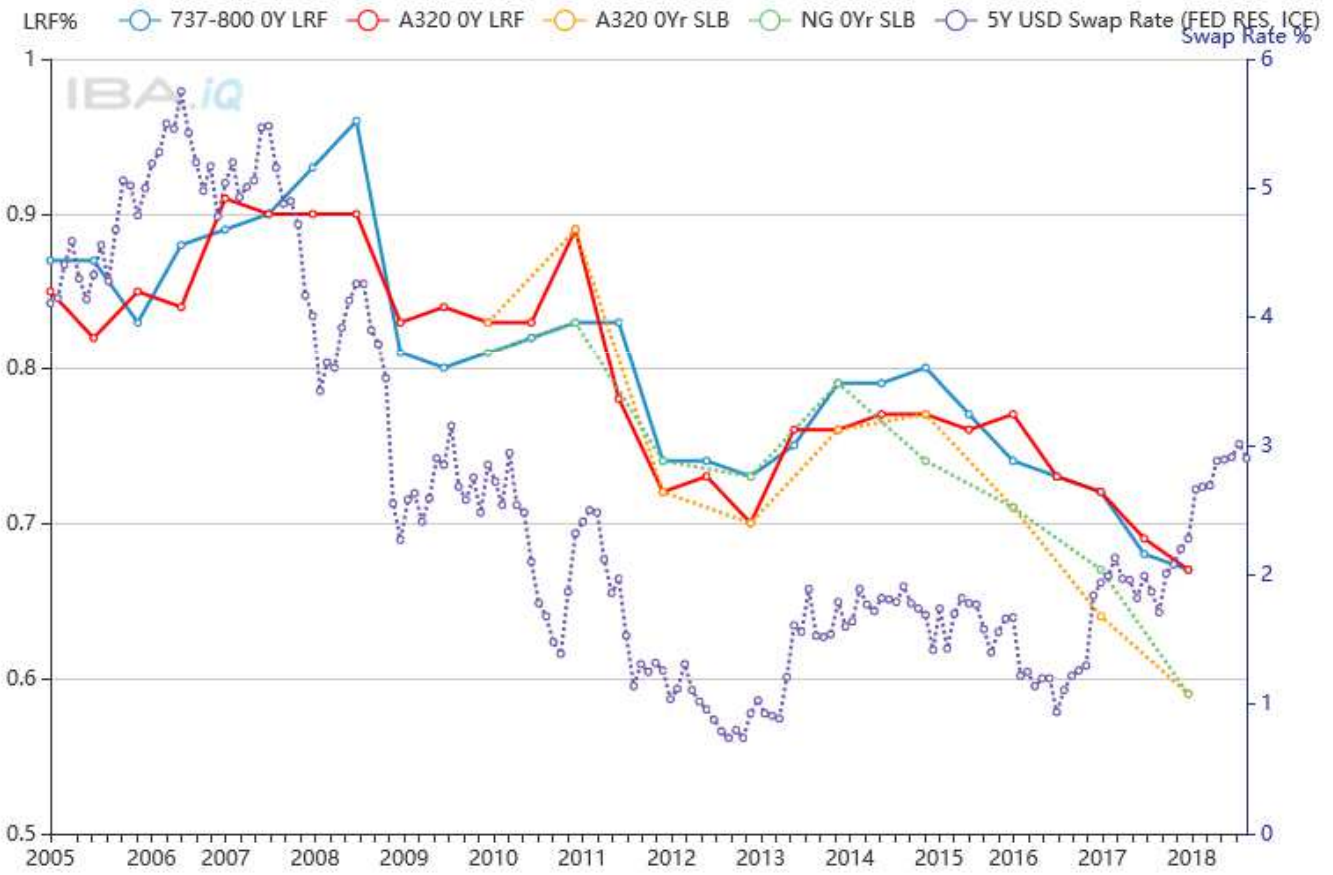
Trends in the Lessor Space – SLB vs Order



- The sale leaseback space is expected to remain competitive amongst new investors but margins are still weak.
- Top lessors are shifting towards speculative orders for growth.

Direct and Sale Lease Back Pricing in the Narrowbody Space

- SLB lease rate factors have dropped below 0.6 LRF for A320s and 737s.
- For many, a LRF of 0.6 does not make financial sense.
- These returns will appeal more to funds under pressure to get critical growth and who can take a hit on the margin.

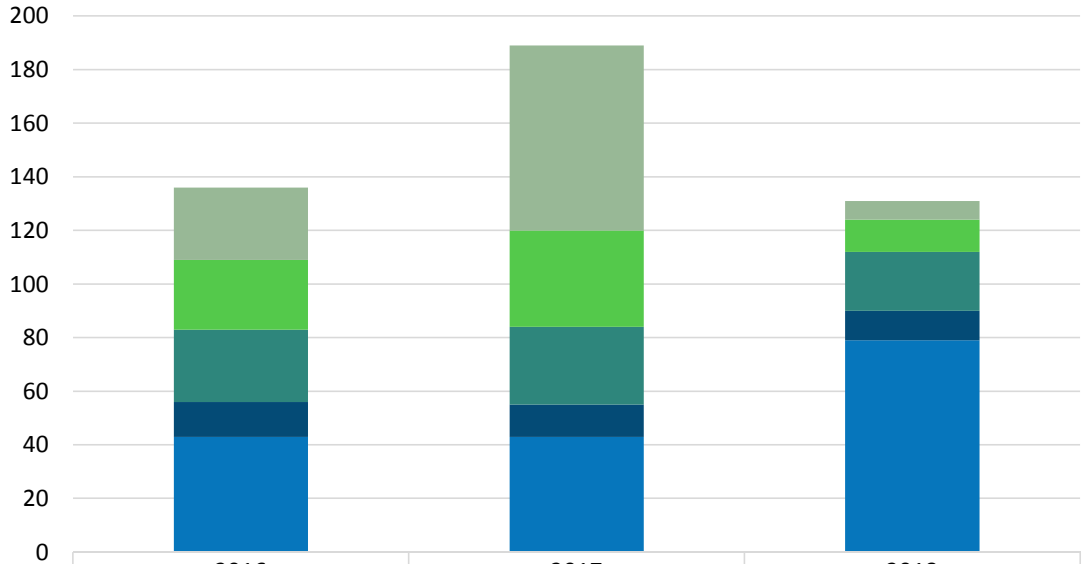


Leasing Asset Overview

Airbus A319-100 Secondary Market Activity Overview

- Through the past three years we have seen a large number of secondary market transactions involving Airbus A319 aircraft.
- However, the number of new leases in 2018 is somewhat skewed by easyJet Europe leasing aircraft from parent company easyJet, which accounts for 36 of the 79 transactions.
- Discounting those leases involving easyJet Europe would bring the number of leases agreed so far in 2018 to levels which are more in line with 2016 and 2017.
- The number of retirements in 2018 is an area to monitor, as this may represent an increase over previous years.
- The Airbus A319-100 is trading between lessors, though we have seen a decline in sold with lease activity as 2017 was bolstered by Avolon and DAE M&A transactions, sold off lease activity remains consistent with 2018.
- The type is popular within the ABS market.

Airbus A319-100 Market Activity 2016 – 2018 YTD

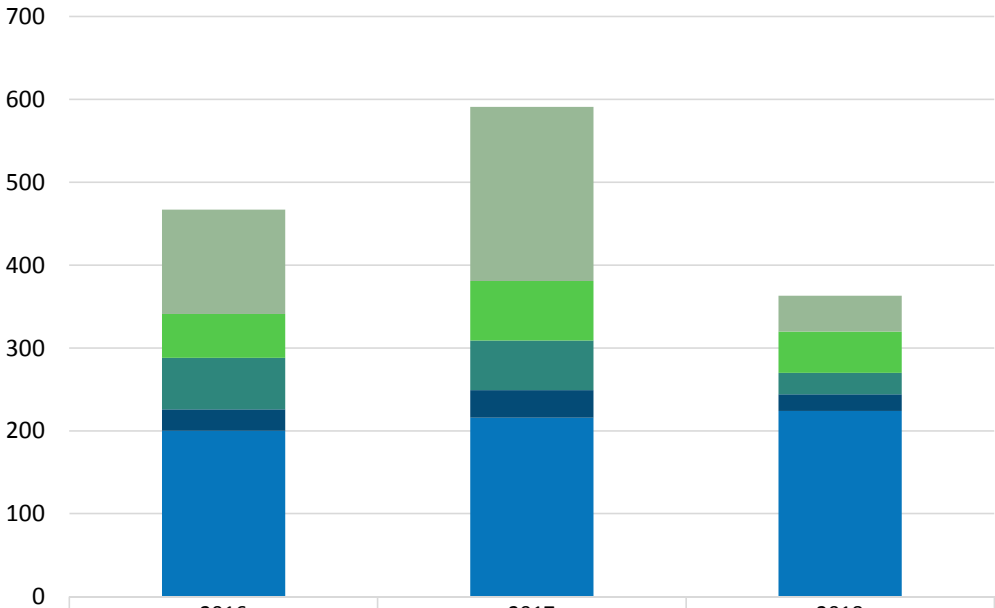


	2016	2017	2018
Sold with lease	27	69	7
Sold to ABS	26	36	12
Sold off lease	27	29	22
Retired	13	12	11
Lease start	43	43	79

Airbus A320-200ceo Secondary Market Overview

- The Airbus A320-200ceo is a highly liquid asset and has seen strong performance across a range of transaction types, in particular operating leases and sales to ABS.
- So far in 2018 we have seen a drop in sold with lease deals, however this is not a cause for concern as we have seen sold with lease deals fluctuate largely for the Airbus A320-200ceo over the past few years.
- 2017 saw a noticeable peak for sold with lease activity, due to consolidation within the leasing sector as Avolon acquired CIT Aerospace and AWAS was acquired by DAE.
- ABS transactions have always relied on narrowbodies such as the Airbus A320-200ceo as forming the backbone of portfolios and this is clear to see as the type has been involved in many such transactions across the previous three years.
- The bulk of retirements involving Airbus A320-200ceo aircraft are early build examples and therefore are not of concern.

Airbus A320-200ceo Market Activity 2016 – 2018 YTD

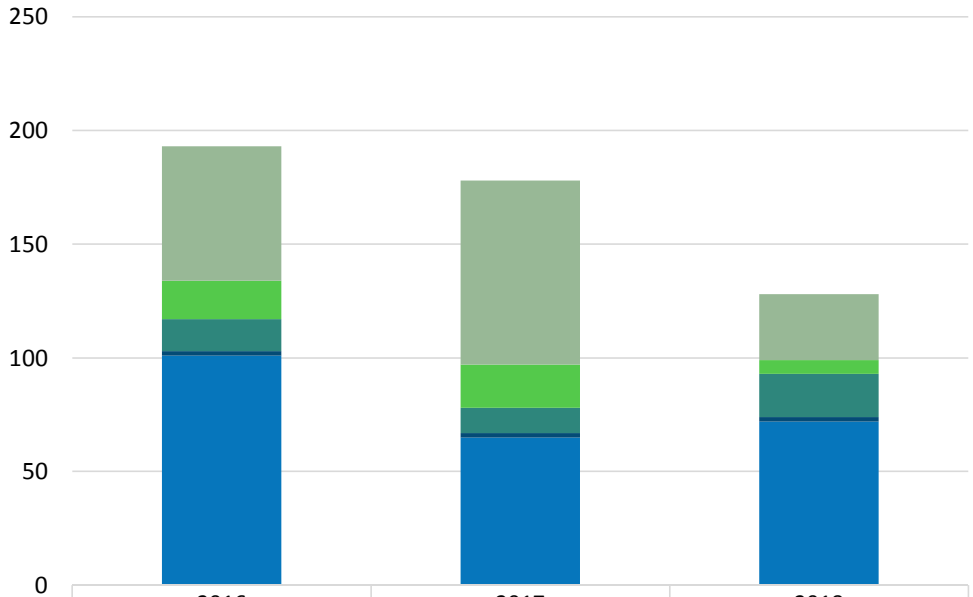


	2016	2017	2018
Sold with lease	126	210	43
Sold to ABS	53	72	50
Sold off lease	62	60	26
Retired	26	33	20
Lease start	200	216	224

Airbus A321-200ceo Secondary Market Activity

- Transaction volumes for the A321 are lower than for the A319 and A320 due to a smaller fleet size.
- The aircraft often forms part of ABS portfolio transactions, however typically in smaller numbers.
- Due to its popularity and smaller fleet size, retirements of A321-200s are minimal.
- New operating leases are reducing as production transitions to the neo aircraft models.
- Much like the A319 and A321, 2017 sold with lease transaction volumes were supported by M&A.

Airbus A321-200ceo Market Activity 2016 – 2018 YTD

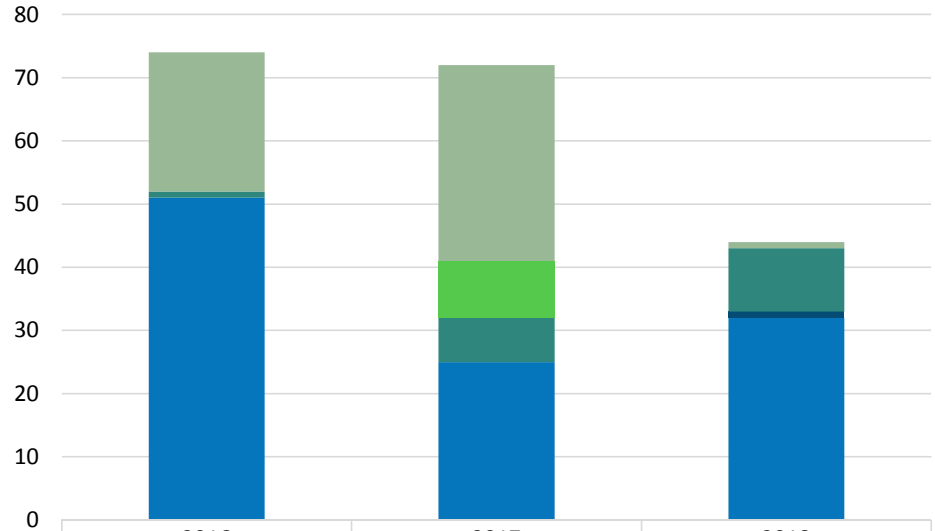


	2016	2017	2018
Sold with lease	59	81	29
Sold to ABS	17	19	6
Sold off lease	14	11	19
Retired	2	2	2
Lease start	101	65	72

ATR72-600 Secondary Market Overview

- Most secondary market activity involving ATR72-600 aircraft is through new leases being agreed.
- 2016 and 2017 both saw a high number of sold with lease transactions, with aircraft transitioning between a number of lessors and not due to consolidation activity within the sector.
- Aircraft involved in sold with lease transactions have generally moved from larger leasing firms to the more focussed regional aircraft leasing firms.
- Due to niche regional lessors having significant proportion of leased ATR72-600 aircraft ABS activity has been relatively quiet as ABS activity involving such lessors has been limited.

ATR72-600 Market Activity 2016 - 2018

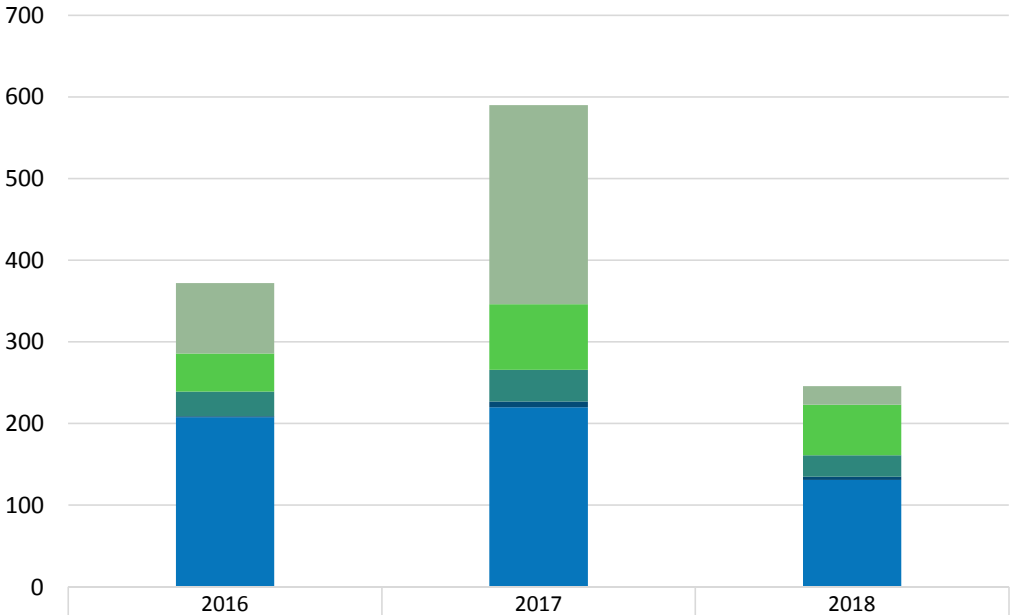


	2016	2017	2018
Sold with lease	22	31	1
Sold to ABS	0	9	0
Sold off lease	1	7	10
Retired	0	0	1
Lease start	51	25	32

Boeing 737-800 Secondary Market Overview

- Much like the Airbus A320-200, the Boeing 737-800 is one of the most liquid assets within the aviation market currently and this is shown through its secondary market activity over the past three years.
- Lessor consolidation in 2017 has contributed to the high volume of sold with lease transactions which took place during that year.
- The type is popular for forming the core of ABS portfolios and this looks to continue in 2018 and beyond.
- Retirements of Boeing 737-800 aircraft remains low, with most of the retired fleet utilising the lower rated CFM56-7B24 engines.

Boeing 737-800 Market Activity 2016 - 2018



	2016	2017	2018
Sold with lease	86	244	23
Sold to ABS	47	80	62
Sold off lease	30	39	26
Retired	1	7	4
Lease start	208	220	131

Single Aisle Market

- The sale leaseback space is expected to remain competitive amongst new investors but margins are still weak.
- Consolidation and portfolio trading amongst lessors will drive sales of aircraft with leases attached.
- Rising input costs will favour new generation aircraft.
- Interest rate rises should push lease rates higher – lessor competition will counter this effect.
- Continued domestic and regional traffic growth will maintain strong demand in the narrowbody sector.
- Bankruptcies could push aircraft into secondary market – so far values have remained robust.
- Expect to see an increase in retirements as new gen deliveries rise.
- The market is increasingly turning to the new generation B737-800 for feedstock as Classic feedstock dwindles.
- New engine technology issues still present, although being resolved. New gen production is not yet up to targeted levels.

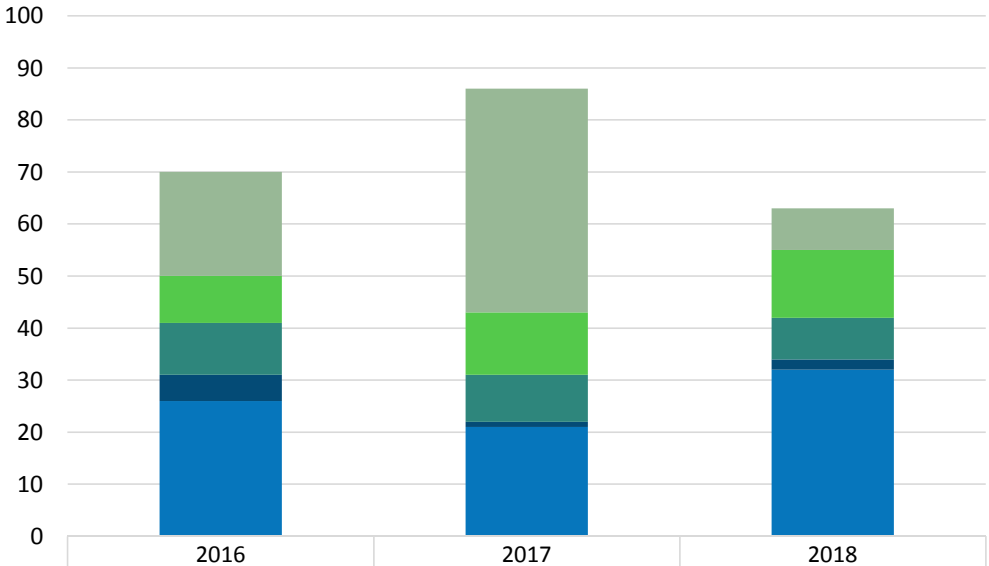
Trends

Sale & Leaseback Pricing	
Sales with leases attached	
Lease Rate Premium for new gen	
Values of mature aircraft	
Retirements	
Fuel	

Airbus A330-200 Secondary Market Overview

- The majority of secondary market activity for the Airbus A330-200 is centred around sold with lease and new operating leases.
- The number of new leases in 2018 is the highest we have seen for three years, with 32 confirmed lease deliveries.
- The Airbus A330-200 is popular in ABS deals is with 13 aircraft being involved in such transactions so far this year.
- Retirements of Airbus A330-200s remains low, though some of the early build examples may be earmarked for retirement in the coming months if new homes cannot be found.
- As values decline, P2F could present an option. IBA is aware that Egyptair is pursuing conversion for some of its older examples.

Airbus A330-200 Market Activity 2016 – 2018 YTD

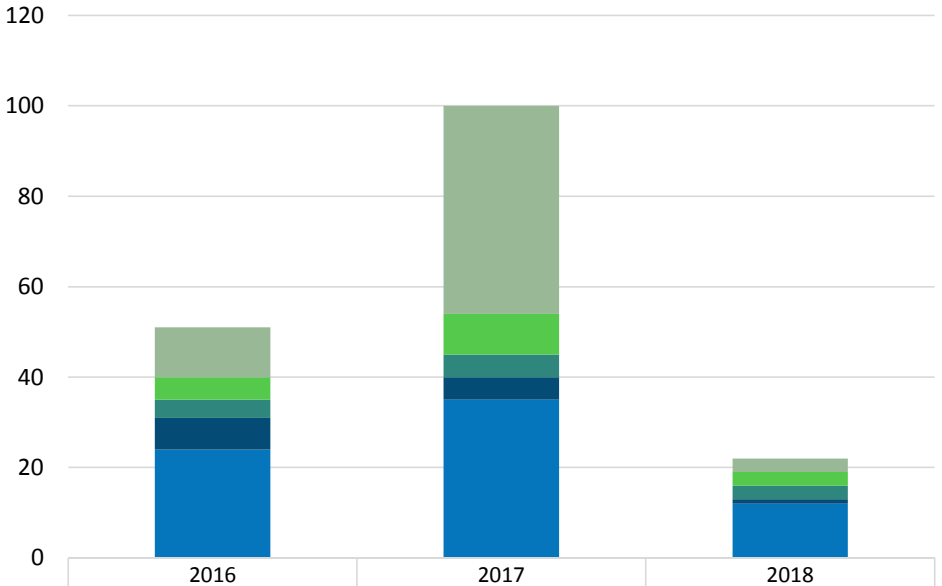


	2016	2017	2018
Sold with lease	20	43	8
Sold to ABS	9	12	13
Sold off lease	10	9	8
Retired	5	1	2
Lease start	26	21	32

Airbus A330-300 Secondary Market Overview

- Whilst 2018 may look like it has seen a slowdown in secondary market activity involving Airbus A330-300s, it must be remembered that we still have three months of the year to go, which should allow for events to reach 2016 levels of activity.
- 2017 saw a spike in activity primarily due to consolidation activity within the leasing sector, DAE Capital acquired a number of examples when it purchased AWAS, while Avolon also received some examples through its acquisition of CIT Aerospace.
- YTD figures suggest a decline in the number of retirements compared with recent years.

Airbus A330-300 Market Activity 2016 – 2018 YTD



	2016	2017	2018
Sold with lease	11	46	3
Sold to ABS	5	9	3
Sold off lease	4	5	3
Retired	7	5	1
Lease start	24	35	12

Boeing 777 Secondary Market Overview

777 secondary market define: aircraft age >= 3 years

Scenario:

- **New lease**
- **Sold with lease attached & Sold to ABS**
- **SLB & Sold to current operator & Sold to SPV**

Availability:

Based on Airfax 2018 Oct, there is one B777-200ER for sale 19Q1 from Skytech –AIC.

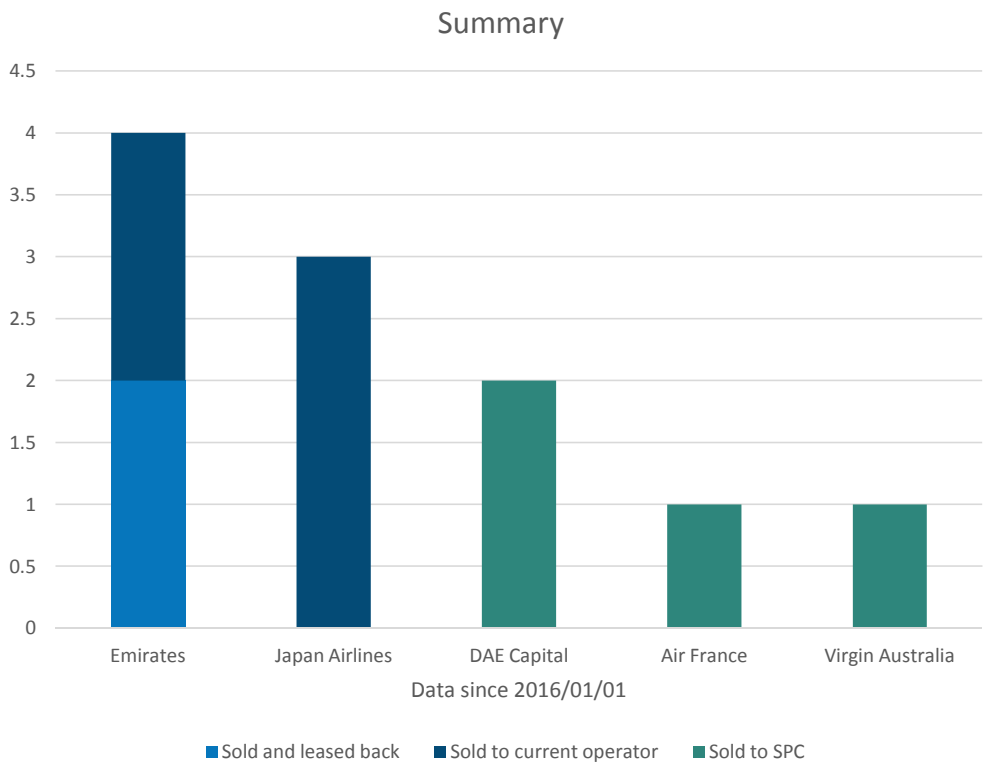
GE90-94B engines

Manf.1998

MTOW =287.8t

24F+24J+225Y pax configuration.

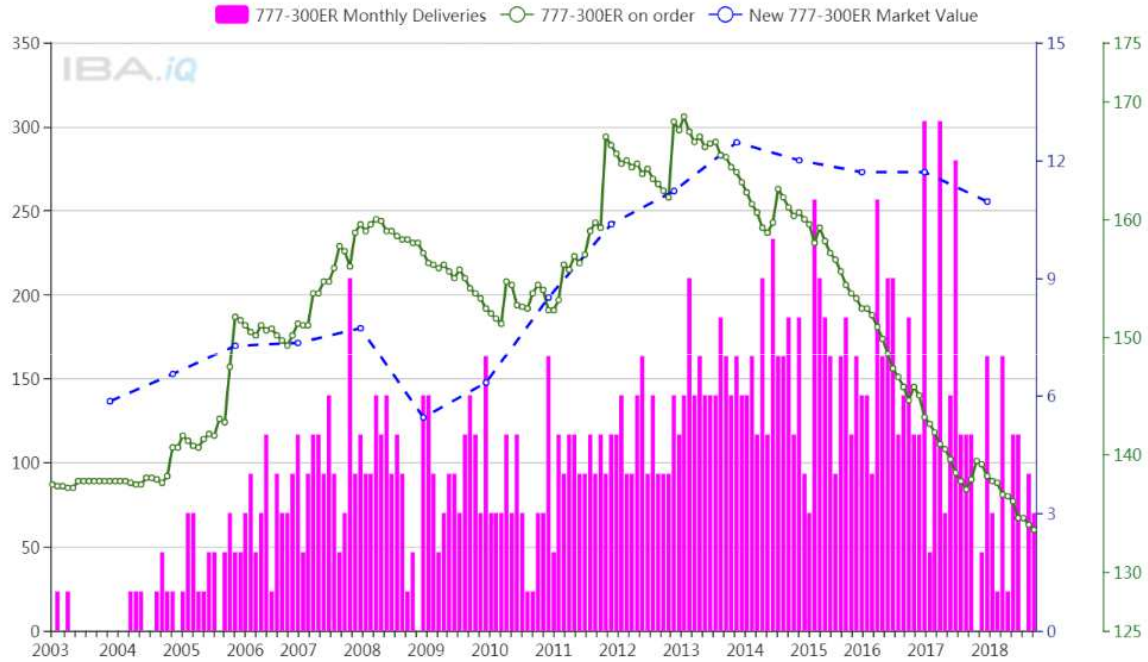
Boeing 777 SLB & Sold to Current Operator & Sold to SPV



Comments:

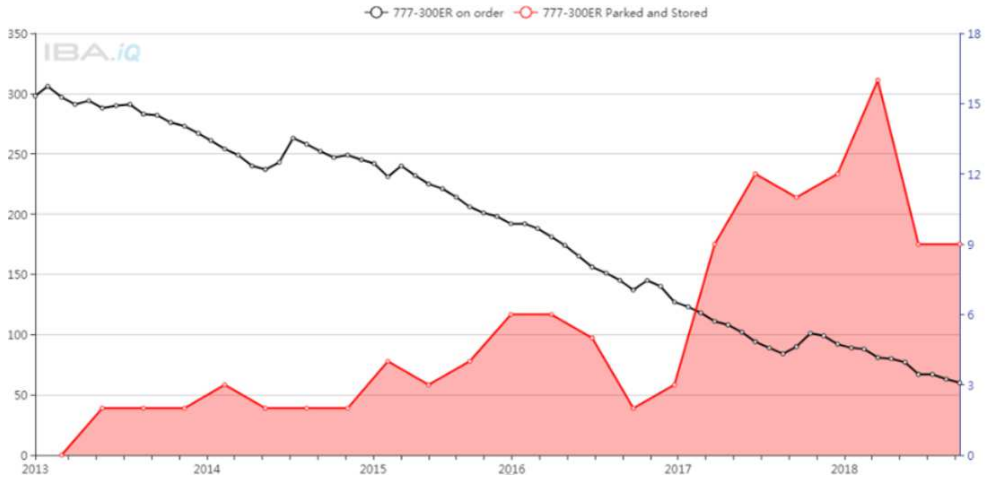
- The demand for secondary 777 with sold and lease back & sold to current operator & sold to SPC covers different jurisdictions.
- Emirates remains the biggest player in the market.

Boeing 777-300ER



- Parking and Storage of Boeing 777-300ER aircraft is trending upwards.
- There have been placements however achievable lease rates are below base expectations.

- Values of New Boeing 777-300ER have declined.
- Dwindling backlogs have placed pressure on pricing to stimulate demand to maintain production.



Twin Aisle Market

- A350-1000 gaining traction with a new commitment at FAS 2018 from Starlux Airlines.
- A330neo orders have shown an uptick with commitment from AirAsia X that was firmed at FAS 2018.
- Boeing 787-9 and Airbus A350-900 continue to perform well. Both received new commitments at FAS 2018.
- The A380 program still struggles for new orders. First secondary placements have occurred – also first part-outs announced.
- Boeing 777-300ER availability is expected to increase, lessee placement profile sub-optimal.
- Values and lease rates compression of A330ceo remains evident. More aircraft coming into the market over the coming years.
- No NMA launch at FAS 2018 – is this still on the horizon?
- Demand for mid-sized widebody freighter conversions is strong but pricing and rates are still lower than they need to be.

Trends

Widebody Models in service	
Lease Rates	
P2F Conversions	
Storage of mature widebodies	
Mature widebody values and lease rates	
Redeliveries	

M&A Overview

M&A Analysis

▶Apollo Aviation & Carlyle (Announced Oct. 15, 2018)

- The Carlyle Group has agreed to acquire 100% of Apollo Aviation Group from its owners Robert Korn and Bill Hoffman
- Apollo will become a new business line, operating as Carlyle Aviation Partners, within Carlyle's global credit segment. The transaction is expected to close no later than 31 January 2019

▶Goshawk & SKY Leasing (Closed Sept. 13, 2018)

- Goshawk Aviation closed the acquisition of Sky Leasing's Irish subsidiary on 13 September 2018.
- Creates a top 10 aircraft lessor with a combined $11.4 billion fleet
- Accelerates Goshawk's already fast growth trajectory: the addition of 51 young aircraft with long leases brings its owned, managed and committed fleet to 223 aircraft
- Narrow-body represent 77% of the portfolio which has an average age of three years and an average lease term of 7.7 years
- Increased Goshawk's diversification by adding 17 new lessees and six new countries bringing total reach to 64 lessees and 34 countries

M&A Analysis

▶Avolon & Orix (Announced Aug. 7, 2018)

- Orix Aviation pays $2.2 billion for a 30% stake in fellow Dublin-based lessor Avolon Aug 2018

▶Amedeo & Intrepid (Announced Jul. 2, 2018)

- Intrepid Aviation Group Holdings has rebranded as Voyager Aviation Holdings (Voyager)
- The move represents the next step in the evolution of the company following the announcement of the strategic partnership entered into with Amedeo on 2 July, 2018
- The combined portfolio of leased aircraft and assets under management is comprised of 50 aircraft, including 14 Airbus A380s, 10 Boeing 777s, four A350s, 18 A330s, two 747-8Fs, 1 787-8 and one A321, on lease to 15 airline customers

M&A Analysis

▶ AWAS & DAE (Closed Aug. 20, 2018)

- Raised $2.3 billion to finance the acquisition from private equity firm Terra Firma Capital Partners [TERA.UL] and the Canadian Pension Plan Investment Board (CPPIB)
- Triples the Dubai government-controlled aircraft leasing and maintenance company's portfolio of owned, managed and committed fleet to about 400 aircraft worth more than $14 billion

▶ Avolon & CIT Aviation (Closed Jul. 2, 2018)

- Avolon, a subsidiary of Bohai Leasing, has agreed to buy CIT Group's aircraft leasing platform for $10 billion
- Combined in-service portfolios will total 561 owned and managed aircraft with an average age of 4.6 years
- New entity will also have orders and commitments for 349 aircraft, including 195 Airbus aircraft (A320neos, A330neos and A350s), 59 Boeing 737 MAX aircraft and 28 Boeing 787s

▶ Fly Leasing AirAsia portfolio (Closed May 16, 2018)

- BBAM's affiliates Fly Leasing, Incline Aviation, NBB and AirAsia to acquire aircraft on lease to AirAsia affiliated airlines
- First phase valued at $1.2 billion (portfolio of 84 aircraft and 14 engines)
- Fly and Incline plans to acquire 48 to-be-delivered planes and have an option to acquire a further 50 aircraft to be delivered

M&A Analysis

▶Aldus & Nordic (Closed May 18, 2018)

- Nordic Aviation Capital (NAC) has acquired all aircraft owned by sister company Aldus Aviation
- The Danish lessor bought Aldus in 2016, since when it has managed the 29 Embraer jets owned by Aldus Aviation Fund
- The aircraft are on lease to nine airlines including Hop, Flybe and Royal Air Maroc
- NAC's purchase takes its portfolio to 413 aircraft
- NAC bought Jetscape Mar 2016
- EQT bought ~50% NAC from Martin Moller Aug 2015

▶GIC & Nordic (Announced Oct. 15, 2018)

- Purchases minority share alongside current investors EQT and Martin Moller

The Rise of Lessors in China

Status in 2007	
Chinese Lessors in top 20 globally	**0**
Aircraft managed by Chinese lessors	**30**
Backlog owned by Chinese lessors	**108**

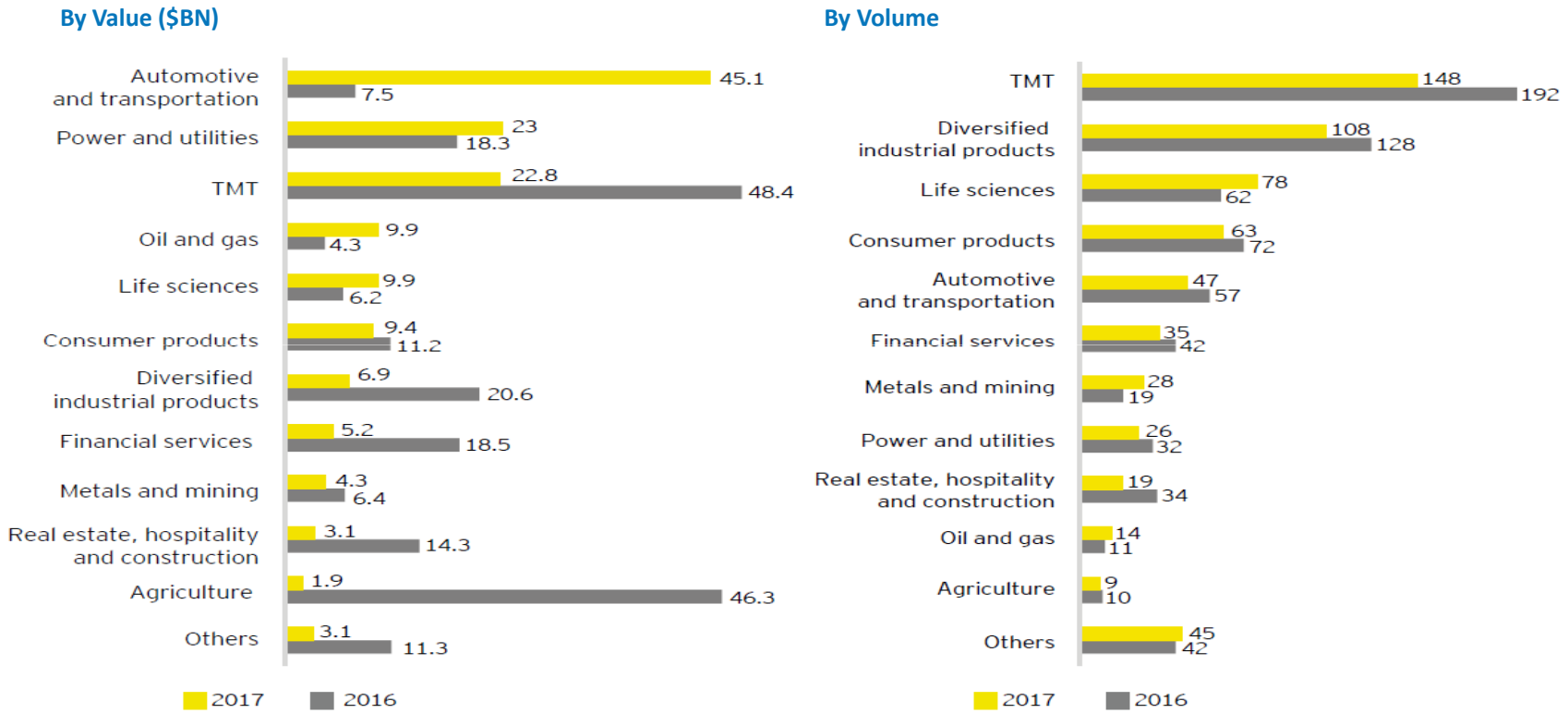
Status in 2017	
Chinese Lessors in top 20 globally	**6**
Aircraft managed by Chinese lessors	**1,592**
Backlog owned by Chinese lessors	**1,190**

Source: IBA's iQ

Ranking	Top 20 lessors by aircraft number
1	AerCap
2	GECAS
3	Air Lease Corporation
4	SMBC Aviation Capital
5	BOC Aviation
6	Avolon
7	BBAM
8	Aviation Capital Group
9	ICBC Leasing Co
10	AWAS
11	Macquarie AirFinance
12	CDB Aviation Lease Finance
13	Aircastle Limited
14	ALAFCO
15	Boeing Capital Corp
16	China Aircraft Leasing Limited
17	ORIX Aviation
18	Standard Chartered Aviation
19	Jackson Square Aviation
20	BoCom Leasing

Source: IBA's iQ

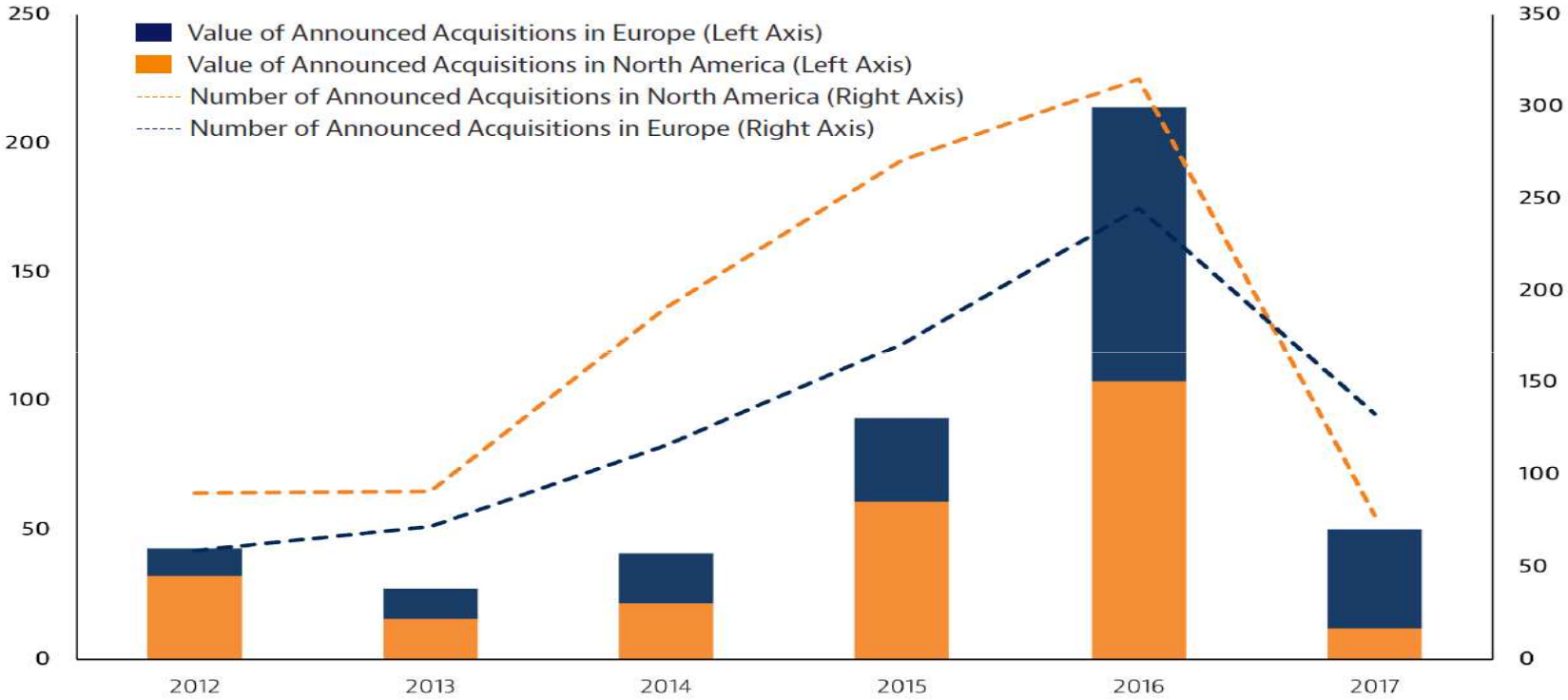
China's Overseas M&A By Sector



Source: EY, Mergermarket (includes HK, Macau, Taiwan), Prof. Yu's research

- Notes: Overseas attracted investments in transportation, life sciences, power & utilities in 2017 while TMT, real estate and hospitality sectors and agriculture were large in 2016

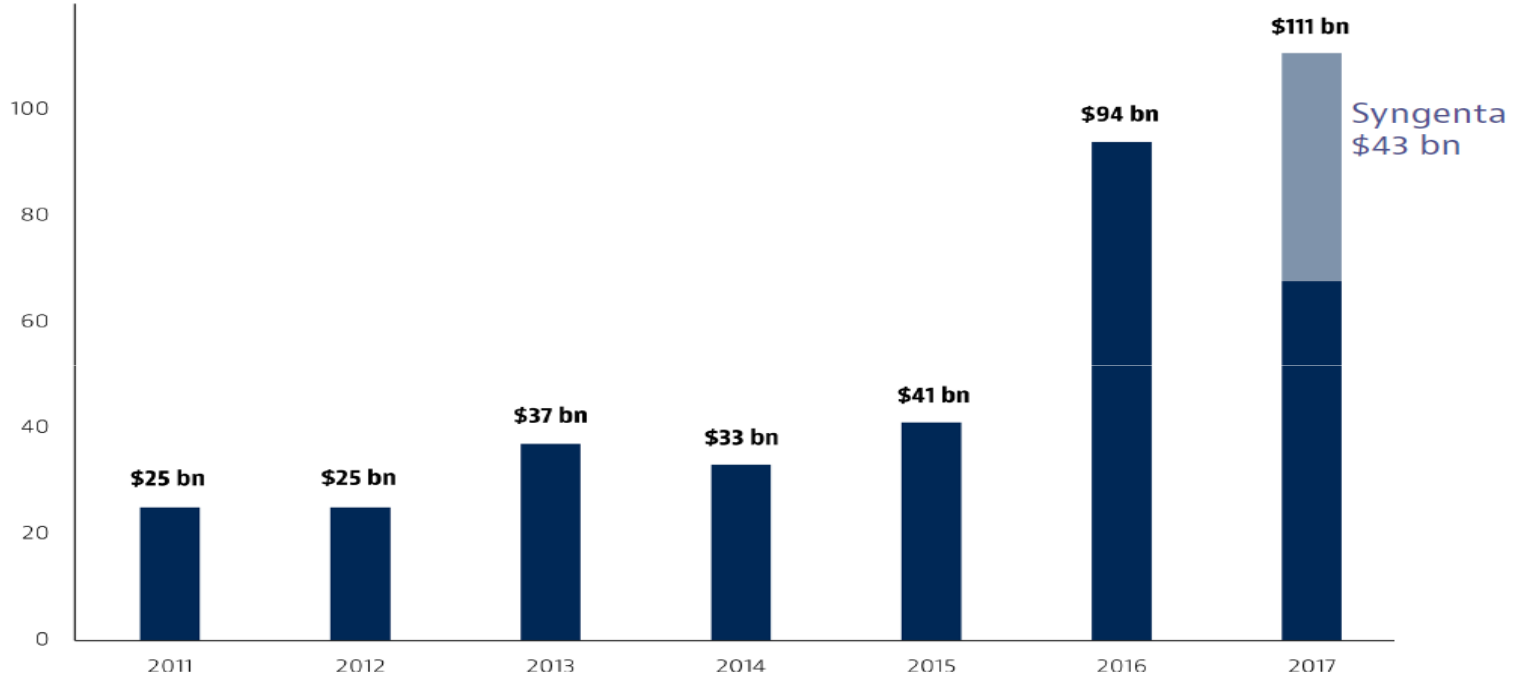
Value of Announced China's Europe and N. America M&A Deals 2012-17



Source: Baker McKenzie, Rhodium Group. Includes acquisitions of over 10% stake by ultimately mainland Chinese companies., Prof. Yu's research

- **Notes: New deal by value and by number decreased significantly in 2017. Europe had more 2017 FDI than N. America (ChemChina/Syngenta most of the big differences)**

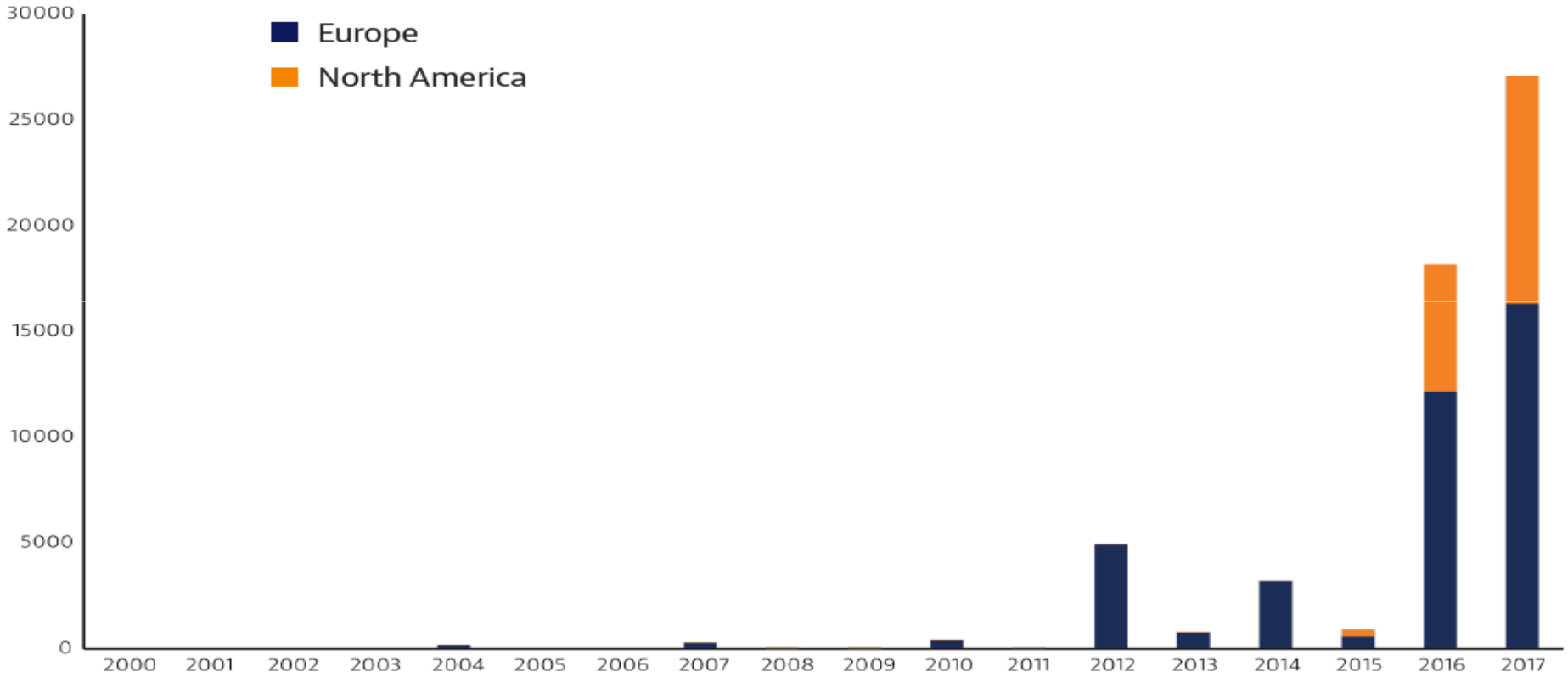
Value of Closed China's Europe and N. America M&A Deals 2011-17



Source: Baker McKenzie, Rhodium Group. Includes acquisitions of over 10% stake by ultimately mainland Chinese companies, Prof. Yu's research

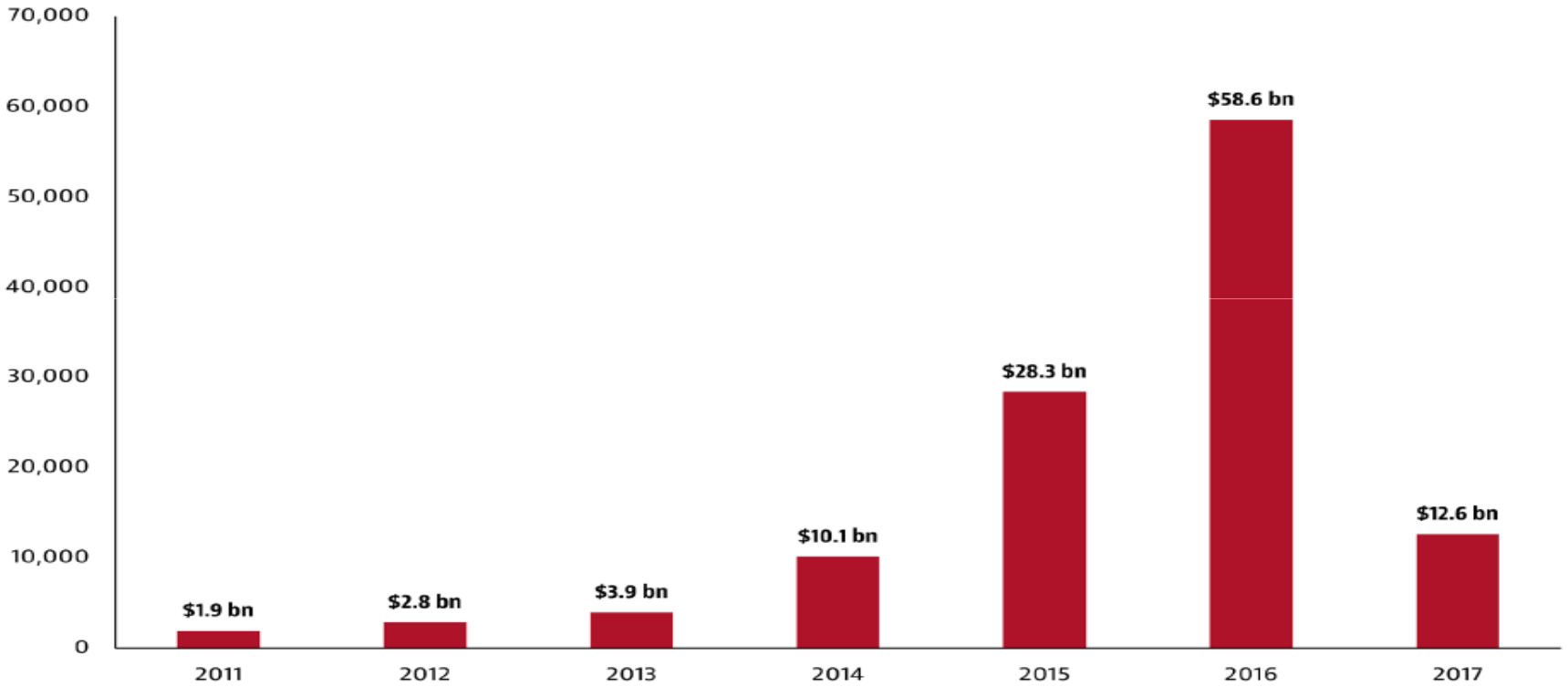
- **Notes: Although the 2017 completed by value increased 18% to $111 billion, it would have dropped by more than 30% discounting the completion of ChemChina's $43 billion acquisition of Syngenta and other pending transactions carried over from 2016 to $68bn.**
- **Other 2016 carryovers include HNA/CIT aviation for $10.4 billion and HNA/Hilton Worldwide (25%) for $6.5 billion.**

Value of Chinese OBOR Related Industry Deals (Transport, Utilities, Infrastructure) 2000-17



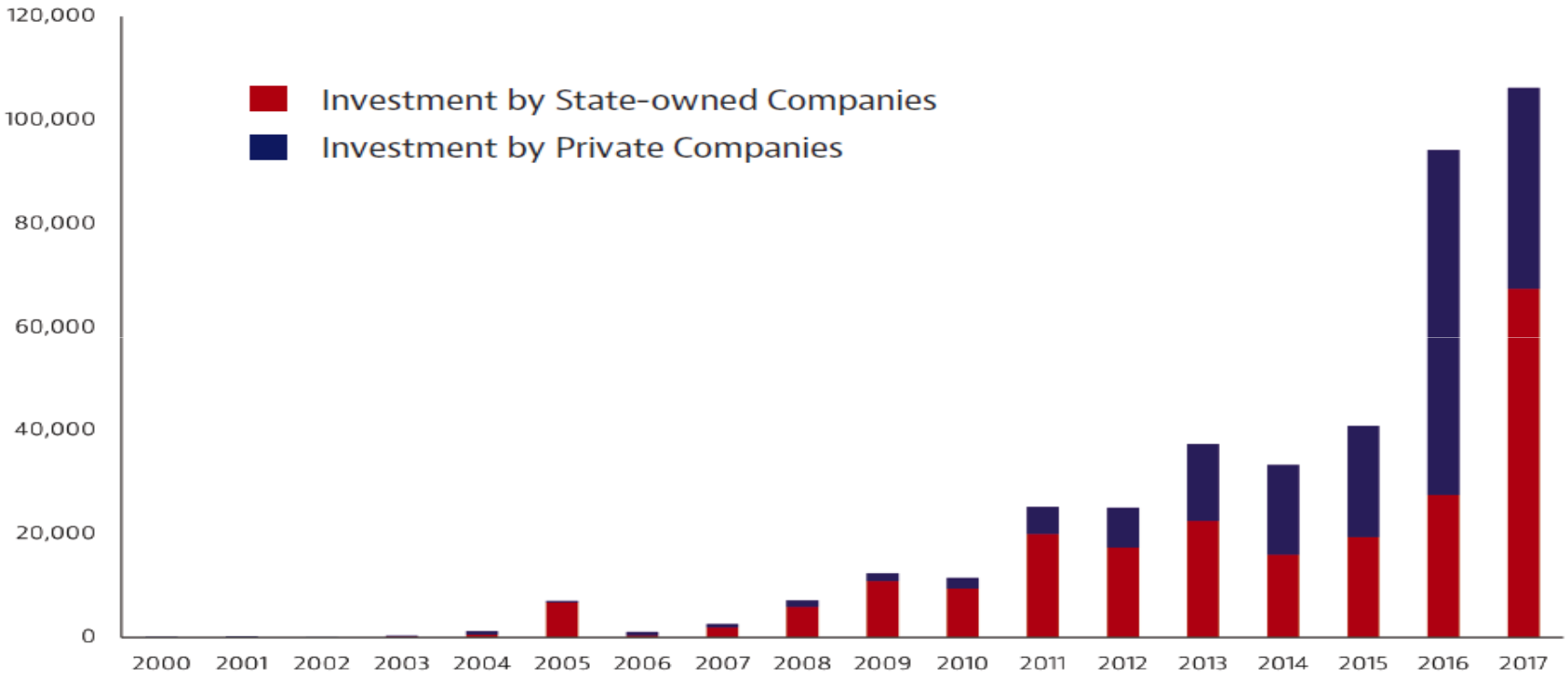
Source: Baker McKenzie, Rhodium Group. Includes acquisitions of over 10% stake by ultimately mainland Chinese companies, Prof. Yu's research

Value of HNA, Anbang, Wanda, Fosun Outbound Deals 2011-17



Source: Baker McKenzie, Rhodium Group. Includes acquisitions of over 10% stake by ultimately mainland Chinese companies, Prof. Yu's research

Value of Completed China's Europe and N. America M&A Deals Ownership Split 2000-17



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- **Notes: New deal by value and by number decreased significantly in 2017. Europe had more 2017 FDI than N. America (ChemChina/Syngenta most of the big differences)**

Thank you! Do you have any questions?

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