



accenture

COMMERCIAL AEROSPACE INSIGHT REPORT

LEAD IN THE NEW

MARCH 2019

EXECUTIVE SUMMARY

Narrow-body production ramp-up and aftermarket growth to persist amid record aircraft deliveries and declining orders.

The combined aircraft net order book of Boeing and Airbus is still over 40%, down from their peak in 2014. Increasing MRO demand, low fuel prices and higher aircraft deliveries are driving the commercial market.

Compared to 2018, we anticipate the overall 2019 commercial aerospace market to grow at a healthy 5.4% annual growth rate, year-on-year (YoY). North America is expected to grow at 5.4% YoY in 2019, whereas Europe is expected to witness increasing growth at 5.3% YoY. Asia Pacific will exhibit slower growth of 5.0% in 2019, compared to 2018, amid the weak economic environment in China, but is expected to recover strongly by 2020 as COMAC increases its order book in the region. Middle East aerospace demand is expected to be up 7.7% YoY in 2019 as Middle Eastern suppliers ramp-up production output to enhance their positioning in the global supply chain of aircraft OEMs. LATAM is expected to witness 6.0% YoY growth in 2019, driven significantly by regional jet exports of Embraer as the Boeing deal is expected to enhance its product positioning in the market. For Boeing and Airbus orders have been weaker in 2018 compared to previous year, but a record 1600+ deliveries bodes well for order growth in parallel.

Executives concerned about demand and changing risks

Amid an expansionary period for airlines, there have been warning signs that capacity growth has outstripped demand. Today, there are fresh signs that key players are preparing for an eventual downturn, indicating some vulnerabilities in their business outlook. Major carriers' announcements have given forward warnings on yield erosion or announced significant cost reduction programs.

Macroeconomic risk factors are top of mind for aerospace executives, which is deferring their concerns about geopolitical risks to the future. The effect of a no-deal Brexit is looming large from both a supply chain and regulatory perspective. Aerospace companies are likely to see higher manufacturing costs and face supply chain challenges if EU imports are subject to restrictions. Trade wars and retaliatory tariffs continue to have the potential to broadly drive up costs for raw materials, sub-systems and parts. Companies may or may not be able to pass these through to customers.

More positively, tax reforms by the Trump administration have provided both short and long-term benefits and enabled U.S. aerospace companies to make additional capital investments to ramp-up production. These companies are investing in their people, increasing dividends and evaluating repatriating stranded profits. The lower U.S. corporate tax rate has enabled companies to repatriate cash to fund the expansion of production capacity or invest in research and development activities, as well as funding mergers and acquisitions.

Increasing production capacity

Continued capacity expansion will put pressure on costs and drive additional efficiency, production automation, cost visibility, and supplier development investments. Both Airbus and Boeing have over five years of production backlog for their commercial aircraft models, and both managed book-to-bill marginally higher than one for 2018. These significant backlogs are allowing the commercial aerospace industry to ride through aircraft order volatility.

Lagging aircraft retirements

Lagging aircraft retirements and additional shop visits for older aircraft will provide more opportunity for cost-competitive third-party MROs. This trend may also delay OEMs' ability to differentiate with proprietary service offerings targeted at newer platforms. Geopolitical risks remain the areas of concern for industry executives, with interest rate and exchange rate changes also top of mind.

Increasing air traffic

The era of relatively low fuel costs seems to have come to an end, eliminating a key economic basis for maintaining older aircraft in service. For the time being however, older aircraft (10+ years of age) make up more than 50% of the global commercial fleet and require ongoing maintenance. Overall, Accenture's econometric modeling, together with the results from our aerospace executive poll, support the case for a continued rise in 2019 air traffic growth. This, combined with the large fleets of older aircraft, will fuel the MRO market over the next 18 months.

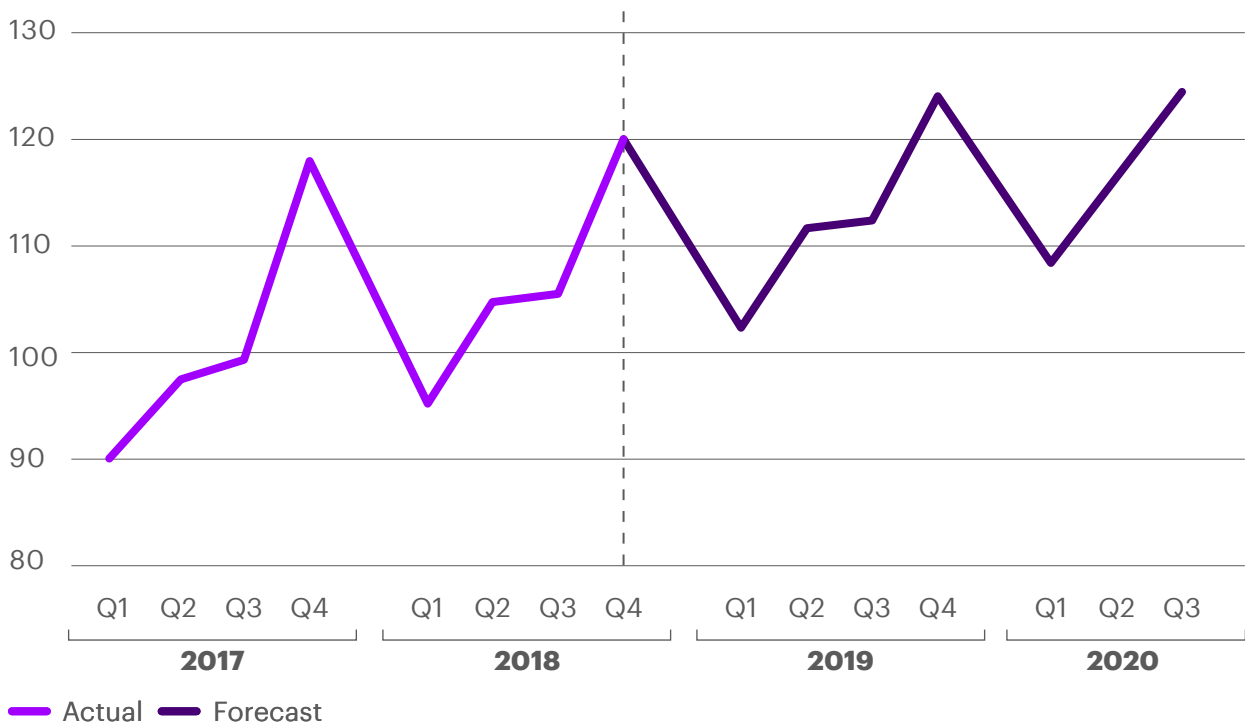
GLOBAL OUTLOOK

2019 builds upon 2018 for higher growth rates across regions

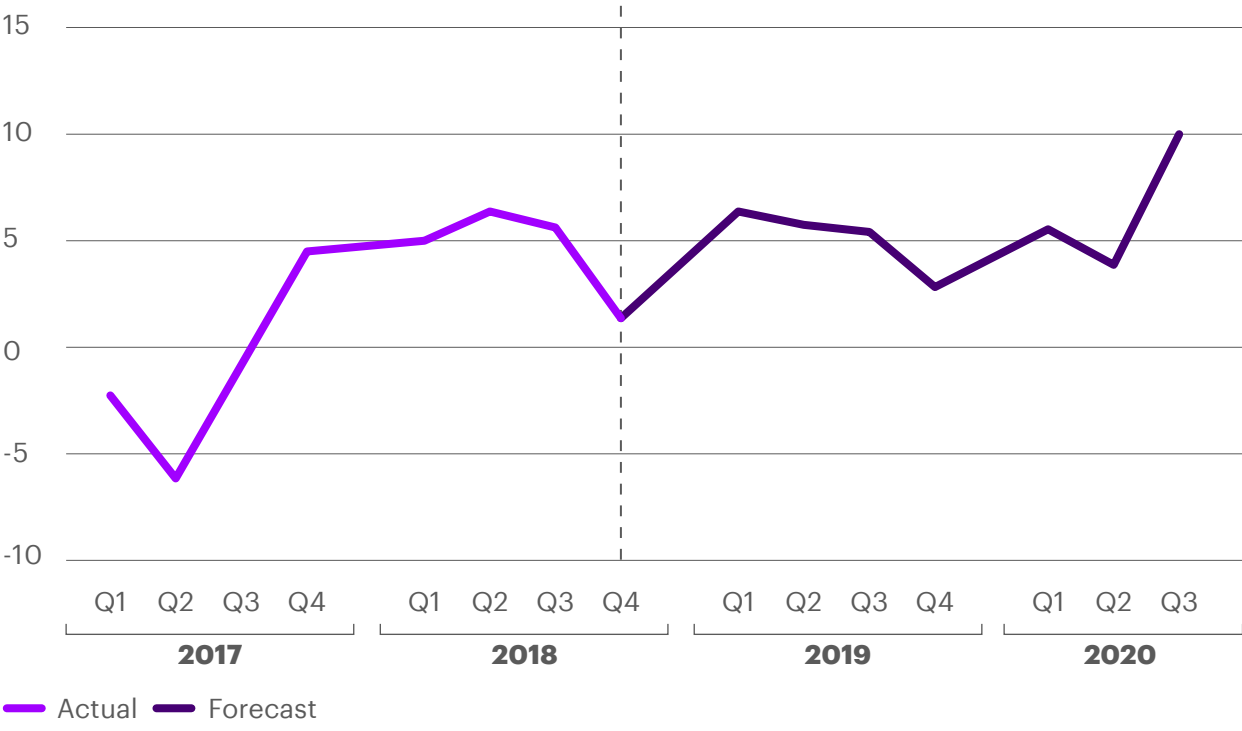
New aircraft deliveries in 2018 met overall expectations, with increases anticipated for 2019.

The aftermarket continues to be healthy, driven mainly by traffic growth and older fleets continuing to fly. These factors are shoring up the overall commercial aerospace market, with both North America and Europe driving global demand for commercial aerospace production in 2019, growing at 5.4% and 5.3% respectively. Economic slowdown in China is slowing growth in the APAC region. The 2019 forecast shows the Middle East witnessing the highest commercial aerospace industry growth rate globally, at 7.7% YoY, followed by 6.0% YoY in Latin America. Growth in APAC is expected to slow down to 5.0% YoY in 2019, as a result of manufacturing slowdown in China amid a weakening economic environment.

Global Commercial Aerospace Index (USD, 2015 = 100)



Global Commercial Aerospace Index Performance
(quarterly YoY percent change)



For 2019, we expect sustained quarterly YoY growth rates, reflecting production rate increases. Relative to 1H18, 1H19 should be stronger, fueling YoY growth of 6.5%, whereas 2H19 is expected to increase 4.4% vs 2H18. Overall, we expect commercial aerospace demand to increase 5.4% YoY globally in 2019. This growth is being driven by increases in North America and Europe which is taking up some of the slack from the growth slowdown in APAC, with supporting strong growth rates in Middle East and LATAM, compared to other regions.

PRODUCTION CAPACITY OUTLOOK

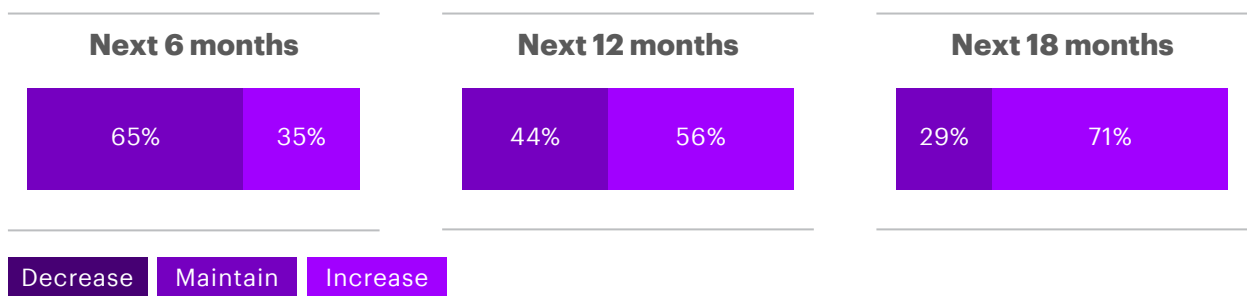
Intelligently keeping up with rate increases.

Narrow-body aircraft production expansion will continue to drive unit volume growth. This capacity increase will allow OEMs to start making a dent in their significant aircraft backlogs. As the entire value chain ramps up, production input costs are certainly important, but we are also seeing rapid change in how those inputs are transformed into final products, as well as efforts to maximize capacity utilization. Production capacity increases are driving demand for solutions aimed at bringing innovation into existing manufacturing process, as well as additional capacity investments.

In our executive survey, over 60% of executives cited current production capacity and lack of factory automation as two of the top reasons hindering their company from meeting production rate levels over the next 12 months. In response to these production rate challenges, 56% of executives expect their production capacity to increase over the next 12 months, with 70% expecting an increase over the next two years.

Production Capacity Outlook

(Percent of executives surveyed)



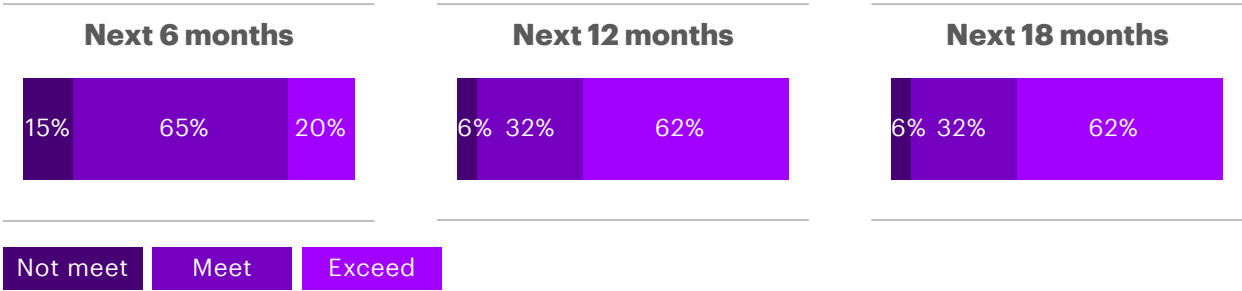
SUPPLIER DELIVERY OUTLOOK

Need for an Agile Supply Chain.

While the supply chain will ultimately meet OEM demands, many continue to be challenged by the sustained increases in the production rate. The top reason cited for not meeting short-term production rate levels is the lack of an agile supply chain. Continued capacity expansion is exerting pressure on costs and driving the search for additional efficiency, production automation, cost visibility, and supplier development investments.

Supplier Delivery Outlook

(Percent of executives surveyed)



PRODUCTION INPUT COST OUTLOOK

Increase in costs anticipated.

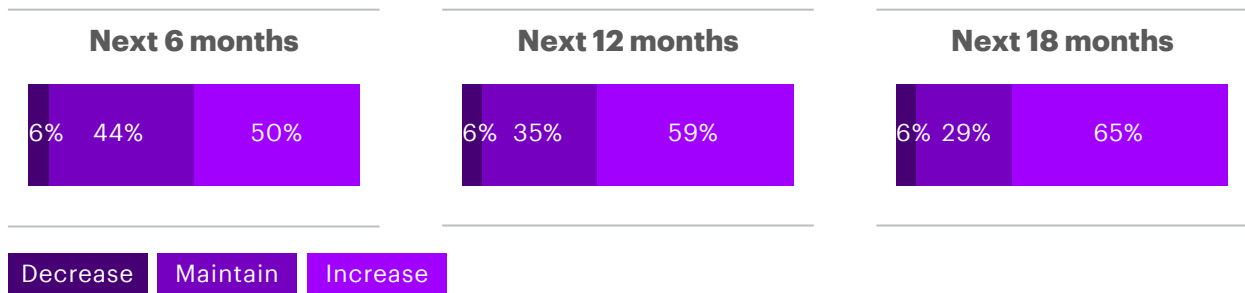
Material and labor costs for 2019 are not expected to decrease vs 2018 levels. One-third of respondents indicated similar costs to 2018, but more than half registered increasing costs across production labor, raw materials and sub-system or parts costs.

Over the next 12 to 18 months, almost 60% of respondents expect costs to rise across all categories.

The market for highly-skilled workers, whether in manufacturing or design, will remain highly competitive, with competition for talent coming from other industries, such as high-tech. At the same time, driving innovation and culture change across the variety of functions in the typical aerospace company remains a top challenge for leadership. According to our recent industry research, 74% of aerospace and defense executives believe corporate bureaucracies are stifling productivity and innovation.

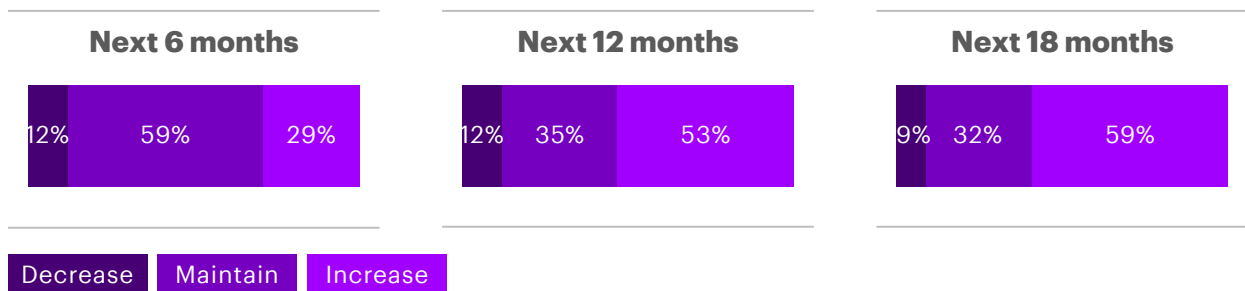
Raw Materials Cost Outlook

(Percent of executives surveyed)



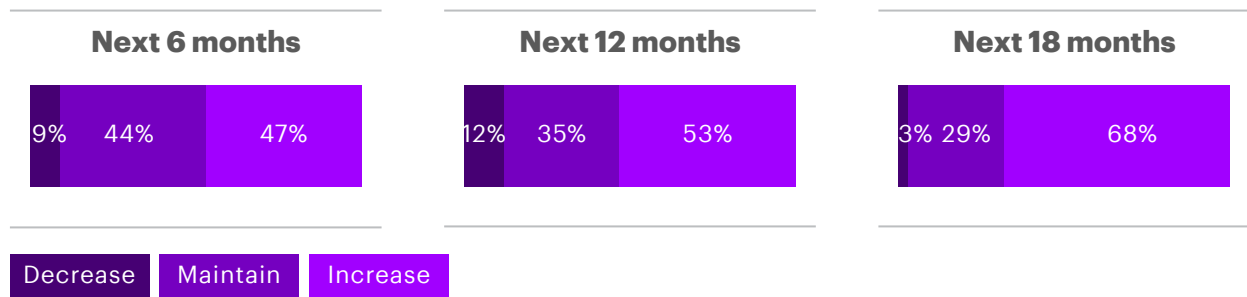
Sub-System or Parts Cost Outlook

(Percent of executives surveyed)



Production Labor Cost Outlook

(Percent of executives surveyed)



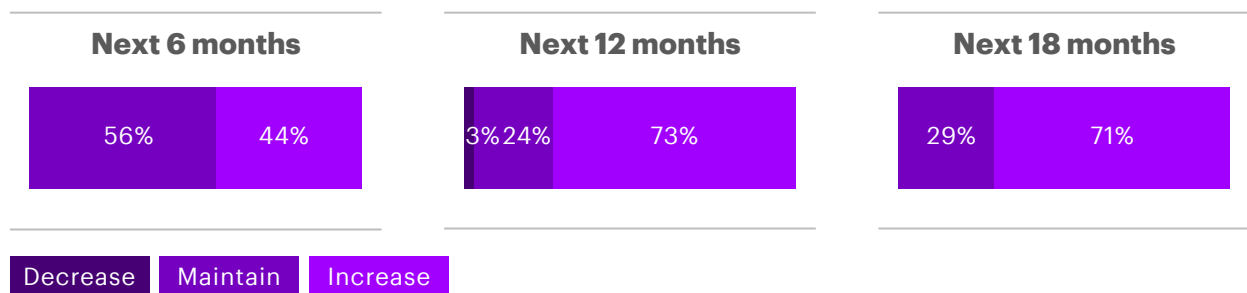
BUSINESS CYCLE STANCE

A promising 2019.

We do not expect a dramatic increase in new aircraft orders over the next 18 months. The main drivers of market growth are a very strong MRO market and delivering on current backlogs. Respondents generally see increased revenues over the next 6 to 18 months. These combine to deliver an estimated 5.4% YoY increase in 2019, a healthy improvement over the 4.7% growth seen in 2018. **More than 70% of aerospace and defense respondents expect their commercial aerospace revenues to increase over the next 12-18 months.** While, encouragingly, more than 50% of aerospace and defense firms are driving new sources of growth, only 10% are simultaneously driving both operational efficiency and new business growth.

Business Cycle Stance (Commercial Aerospace Revenues) Outlook

(Percent of executives surveyed)



AIRCRAFT OPERATIONS

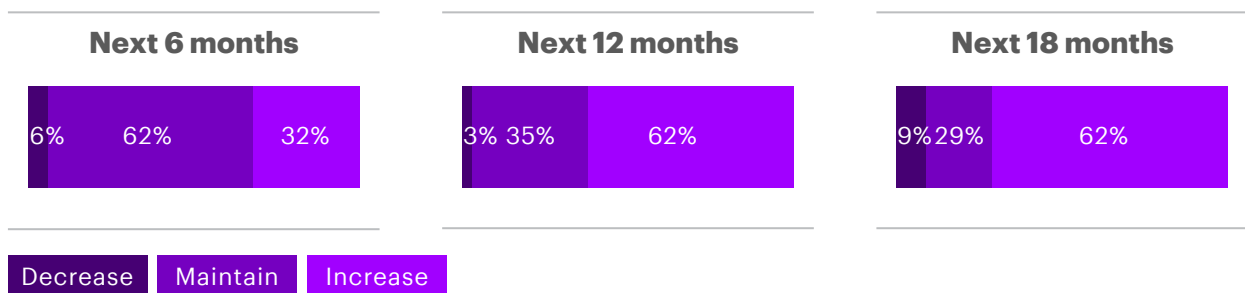
The fleets keep flying, driving MRO demand.

The rise in air traffic and load factors, coupled with older fleets continuing to fly, will have an overall positive impact on MRO. This trend, likely to continue over the next 18 months, is reflected in our survey results, which show that more than 60% of aerospace and defense executives expect MRO spending to increase over the next 12 to 18 months. Sustained by the continued demands of both legacy and new aircraft fleets, the MRO market is becoming a significant driver of digital innovation, with companies utilizing connected and intelligent products to enhance their operational efficiency. Aerospace executives are optimistic about their innovation capabilities.

73% of aerospace executives believe that their operations are ready to innovate with connected and intelligent products to drive higher operational efficiency, deliver new hyper-personalized experiences, and create new businesses. We're seeing a flourishing of intelligent solutions, such as predictive analytics platforms, digital records management, reliability analysis and AR/VR solutions that promise to improve operator ROI. **This is reflected in over half of the aerospace executives surveyed attributing connected and intelligent products as a key driver of their revenues.**

Maintenance, Repair and Overhaul (MRO) Activity Outlook

(Percent of executives surveyed)



DIGITAL REINVENTION

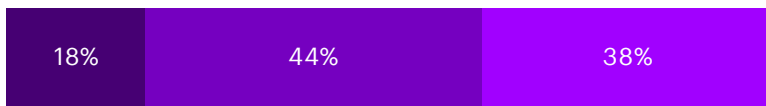
Are digital investments paying off?

Implementing digital technologies (such as 3D printing, Digital Twin, IoT, AI) that impact manufacturing remains challenging. **Only 38% of the aerospace executives surveyed believe that the investments they have made in digital technologies over the past three years are allowing their company to fully meet target levels of manufacturing production rates.** Executives remain optimistic on the potential of digital technologies to reduce costs. The majority (59%) of executives expect 20-40% cost reduction in their operating and capital costs from the use of connected and intelligent products.

While aerospace and defense companies continue to invest in digital technologies to realize the benefits in their production capacity, increasing the readiness of talent for these new technologies will help to achieve more pervasive digital adoption. Accordingly, there has been a shift in emphasis from legacy engineering skills to new digital skills that are needed in order to accelerate commercial aerospace production. **29% of aerospace and defense executives surveyed cited cyber security, manufacturing process engineering and AI as among the top three skills that are needed in order to meet their current and planned production rates.**

C-Suite Perception of Digital Investments Over Last Three Years

(Percent of executives surveyed)



Somewhat meet production levels

Mostly meet production levels

Fully meet production levels

AIRLINE PERFORMANCE

Clouds looming ahead.

The tail-end of recent global economic expansion has been favorable to airlines and more specifically to the industry's capacity growth. However, amid this period of expansion there have been warning signs that capacity growth has outstripped demand. Today, there are fresh signs of key players preparing for an eventual downturn, indicating some vulnerabilities in their business outlook.

Looking back, from 2014 industry capacity growth has been strong at 6-7% annually. Profitability was relatively stable through 2017, helped by lower fuel prices and efficiency gains, including from the benefits of newer fleets. These factors enabled airlines to support pricing strategies that allowed them to successfully fill new capacity. During this period prices fell by 3-6% per annum across major traffic flows, with very few markets escaping the downward pressure on pricing.

2018 may serve as a transitional year. Based on IATA data, industry margins fell ~20% in 2018 as favorable tailwinds driving better cost performance dissipated. Pricing power remains elusive given the high levels of capacity growth and continued competition from new entrants and new business models.

Fast forward to today, and the industry is seeking ways to improve its performance and prepare for an eventual downturn in demand. Announcements from major carriers have provided forward warnings on yield erosion (e.g. American Airlines, Delta, Ryanair) or have announced significant cost reduction programs (e.g. United, Cathay Pacific, Etihad, WestJet). Meanwhile, growth from new entrants is also showing signs of weakness. For example, the largest Middle Eastern carriers have slowed their expansion and the viability of some new entrants' business models (e.g. transatlantic low cost) are coming into question. The severity of these pressures remains unclear, including what their impact will be on new aircraft deliveries.

RISKS

What keeps aerospace executives up at night?

Macroeconomic risk factors continue to weigh on industry executives' minds.

Interest rate changes and regional armed conflicts are laying the groundwork for executive concerns in the near term.

They show a little more optimism about the decreasing risk potential of political instability and terrorism. While still considered threats, these are not at the same levels as interest and exchange rate changes.

	Next 6 months	Next 12 months	Next 2 years
Terrorism	Low	Low	Low
Political instability	Low	Medium	Low
Worsening economic conditions	Medium	Low	Medium
Interest rate changes	Medium	Medium	Medium
Regional armed conflicts	Medium	Medium	High
Exchange rate changes	Low	Medium	High

NORTH AMERICA OUTLOOK

Rebounding to sustained and strong growth

2019 North America aerospace annual demand is expected to be up 5.4%.

While we will see the typical softness in demand in the first quarter, quarterly YoY growth will be largely higher in the second and third quarter of 2019. Overall, yearly commercial aerospace industry growth is forecast at 5.4%. Both 1H19 and 2H19 are expected to be strong compared to the prior year, almost equally driving overall annual YoY growth.

For example, American Airlines' order of 47 Boeing 787 Jets valued at \$12B is expected to be the key revenue driver for the region. 2018 set up a promising 2019, with growth anticipated to increase 5.4% YoY from 2018. Growth is expected to sustain in 2020, slowing in the first half but accelerating in the second half of the year.

1H19 vs. 1H18



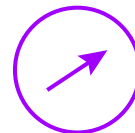
Increasing

2019 vs. 2018



Increasing

1H20 vs. 1H19



Increasing

ASIA PACIFIC OUTLOOK

Witnessing slowdown in growth but expected to recover in 2020

2019 annual demand is expected to be up 5.0% YoY showing a decline in growth rate due to China witnessing economic slowdown and contraction in manufacturing.

Relative to 2018, the first half of 2019 is expected to post 4.9% YoY growth increasing to 5.2% in the second half of the year. While 2019 is anticipated to post moderate growth for the Asia Pacific region due to the slowdown in China, our forecast hints at growth increasing in 2020, primarily driven by the first half of the year's activity.

For example, China's HNA Group's order of 200 C919 and 100 ARJ-21 from COMAC, Japan's regional Jet MRJ production and MRO growth in India are expected to drive growth in the region. Overall, APAC is expected to see 5.0% annual growth for 2019. Growth is anticipated to bounce back in 2020, growing at 7.8% YoY compared to 2019.

1H19 vs. 1H18



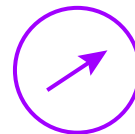
Increasing

2019 vs. 2018



Increasing

1H20 vs. 1H19



Increasing

EUROPEAN OUTLOOK

Rise in growth but risk of a no-deal Brexit looming large over aerospace manufacturing in the UK

European aerospace demand is expected to be up 5.3% YoY in 2019, showing a rise in the growth rate compared with the previous year.

Relative to 2018, the first half of 2019 is expected to see strong growth in commercial aerospace demand but the growth rate is likely to slow down marginally in the second half of the year leading to a promising 2019 with 5.3% growth overall YoY. For example, Airbus's \$11.5 billion order book from China's HNA group comprising of 100 single-aisle aircraft from the A320 Neo family is expected to provide a major boost to the region's export revenues.

The risk of a no-deal Brexit threatens to disrupt the aerospace supply chain which could negatively impact Airbus' manufacturing in the UK. Growth is anticipated to slow down in the second half of 2020, with overall growth reaching 3.6% YoY from 2019.

1H19 vs. 1H18



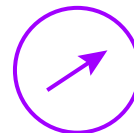
Increasing

2019 vs. 2018



Increasing

1H20 vs. 1H19



Increasing

MIDDLE EAST OUTLOOK

Sustaining strong growth with emerging supply chain visibility for parts manufacturing

Middle East aerospace demand is expected to be up 7.7% YoY in 2019.

In 2019, we expect to see annual commercial aerospace industry demand increase by 7.7%, driven by the first half with strong growth in the first quarter. 1H19 is anticipated to be 8.3% higher than 1H18 which, overall, sets up for a solid year.

UAE's Strata Manufacturing's combined orderbook of \$7.5 billion from Boeing and Airbus for parts manufacturing over the next decade is expected to be the major revenue driver for the region. As Middle Eastern suppliers enhance their position in the aircraft OEM's global supply chain, growth is expected to sustain in the first half of 2020, growing at 7.3% YoY compared to 1H19.

1H19 vs. 1H18



Increasing

2019 vs. 2018



Increasing

1H20 vs. 1H19



Increasing

LATAM OUTLOOK

Positive outlook in 2019 as Boeing Embraer deal to boost local manufacturing and drive regional jet sales

LATAM aerospace demand is expected to be up 6.0% YoY in 2019.

In 2019, we expect to see annual commercial aerospace industry demand increase by 6.0%, driven significantly by the first half as regional jet exports are expected to increase, with slowdown expected for the second half of the year. 1H19 is anticipated to be significantly higher than the same period last year, with double-digit growth, which sets up a solid year.

Embraer's \$1.1 billion order with United Airlines for 25 E175 jets will be the key driver for the region's export revenues. As LATAM aerospace revenues are primarily driven by Embraer, the deal with Boeing is expected to impact revenues in 2020 and we expect LATAM growth to be flat YoY in 2020.

1H19 vs. 1H18



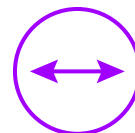
Increasing

2019 vs. 2018



Increasing

1H20 vs. 1H19



Flat

IMPLICATIONS

Steady on course

2018 was a strong year for commercial aerospace with record commercial aircraft deliveries.

Boeing and Airbus together accounted for 1600+ deliveries, growing at 7.8% YoY compared with aircraft delivered in 2017. However, net orders have declined 18.9% YoY in 2018 and we see overall production rates and in-service demand continuing to stress the supply chain.

With record aircraft deliveries in 2018, Boeing overtook Airbus in new aircraft orders. With several changes in leadership and suffering from production delays, Airbus had a difficult year, but the deal with Bombardier helped to boost its commercial aerospace production output. Excluding a few events (such as the fire at the manufacturing plant of Airbus subsidiary Premium Aerotec, which may have an impact on the production of certain models) we expect the narrow-body ramp-up to continue in Europe. Uncertainty around a no-deal Brexit might impact aerospace manufacturing in the UK, however the outlook remains positive for Europe overall.

Boeing has been continuing to increase production of its narrow-body aircraft and expects the rate to increase from 52 to 57 per month in 2019. Airbus aims to achieve a production rate of 60 per month for the A320 by mid-2019.

Megadeals such as narrow-bodies for Dubai Aerospace Enterprise will likely make price as a decisive factor that determines the OEM split of the anticipated 400 aircraft order. Deep order books will afford some negotiating position for OEMs, but bragging rights on winning the orders battle is always a powerful pull.

Both Airbus and Boeing have commercial aircraft backlogs of more than five years. Suppliers are struggling to keep up with the reality of production rate increases, with efficiency gains and investment the order of the day to keep up with new and announced product rate increases. Significant backlogs will allow both Airbus and Boeing to ride out order volatility.

Lagging retirements and additional shop visits for older platforms will provide additional opportunities for cost-competitive third-party MROs and may delay the ability of OEMs to differentiate themselves through proprietary service offerings targeted at newer platforms. These factors all contribute to an estimated \$76 billion 2019 global commercial MRO market.

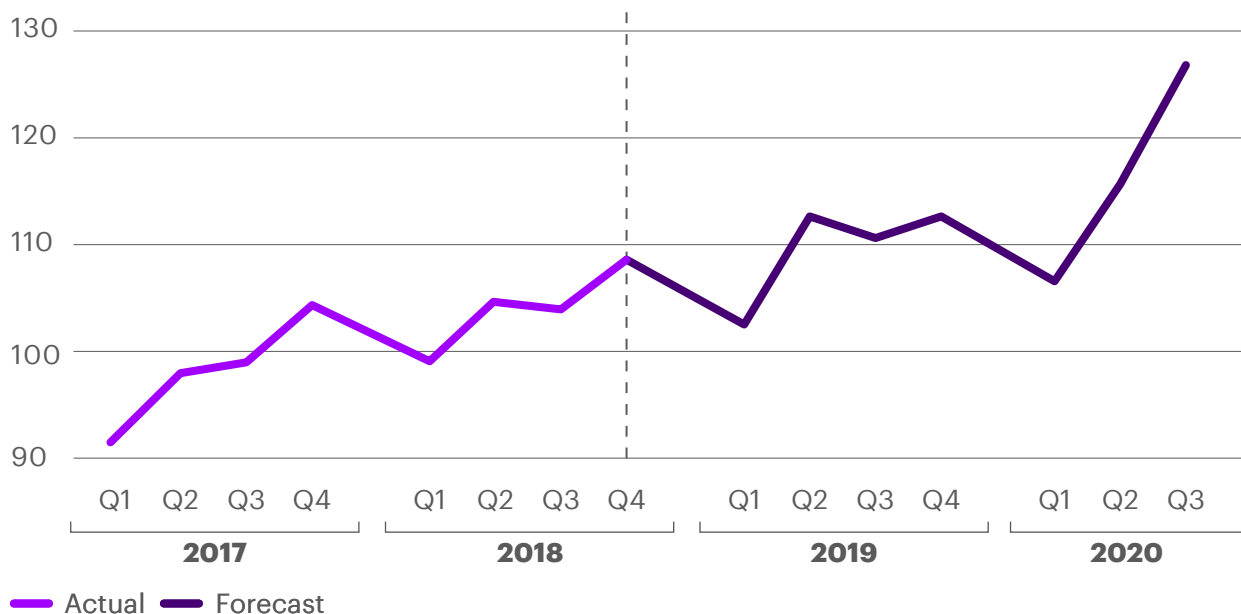
Ongoing production ramp-ups will continue to put pressure on costs and drive additional investments in efficiency, production automation, cost visibility, and supplier development. As our research has found, only one in ten aerospace firms are successfully driving new growth and operational efficiencies at the same time.

APPENDIX: REGIONAL INDEXES

North America

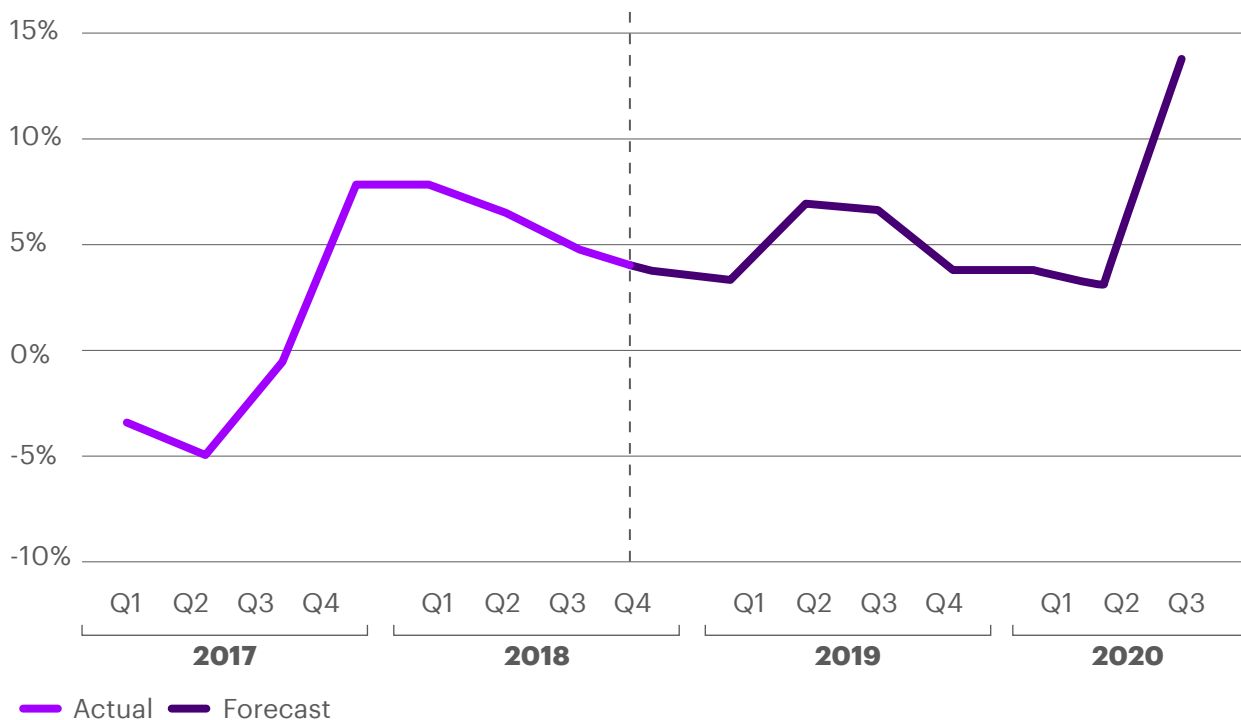
North America Commercial Aerospace Index

(USD, 2015 = 100)



North America Commercial Aerospace Index Performance

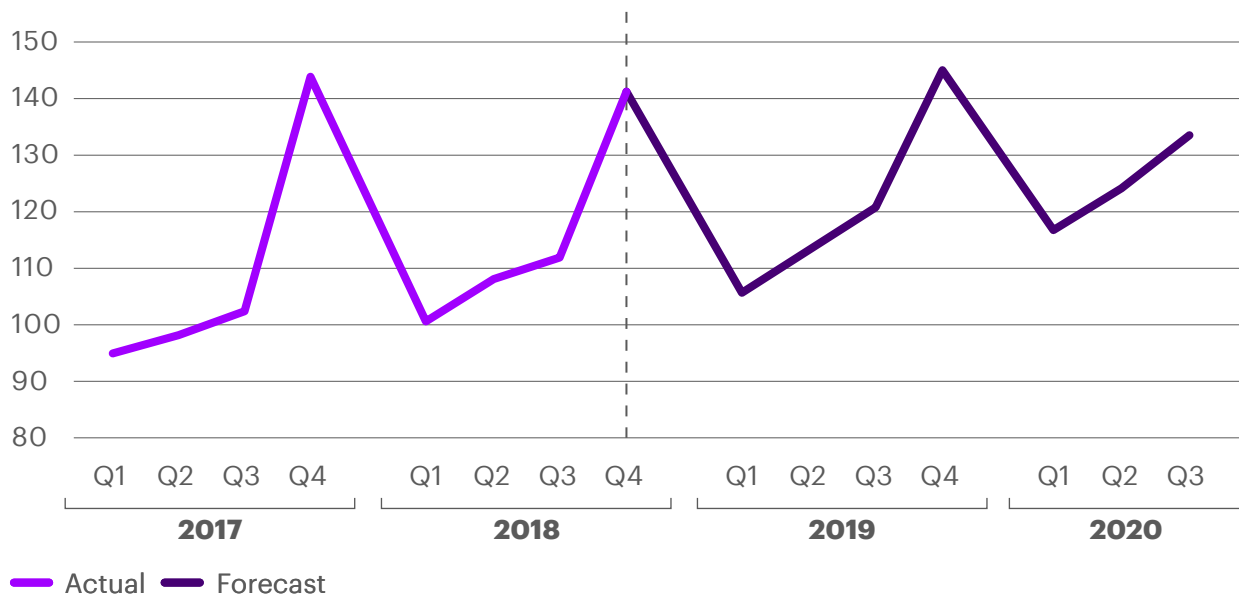
(quarterly YoY percent change)



Asia Pacific

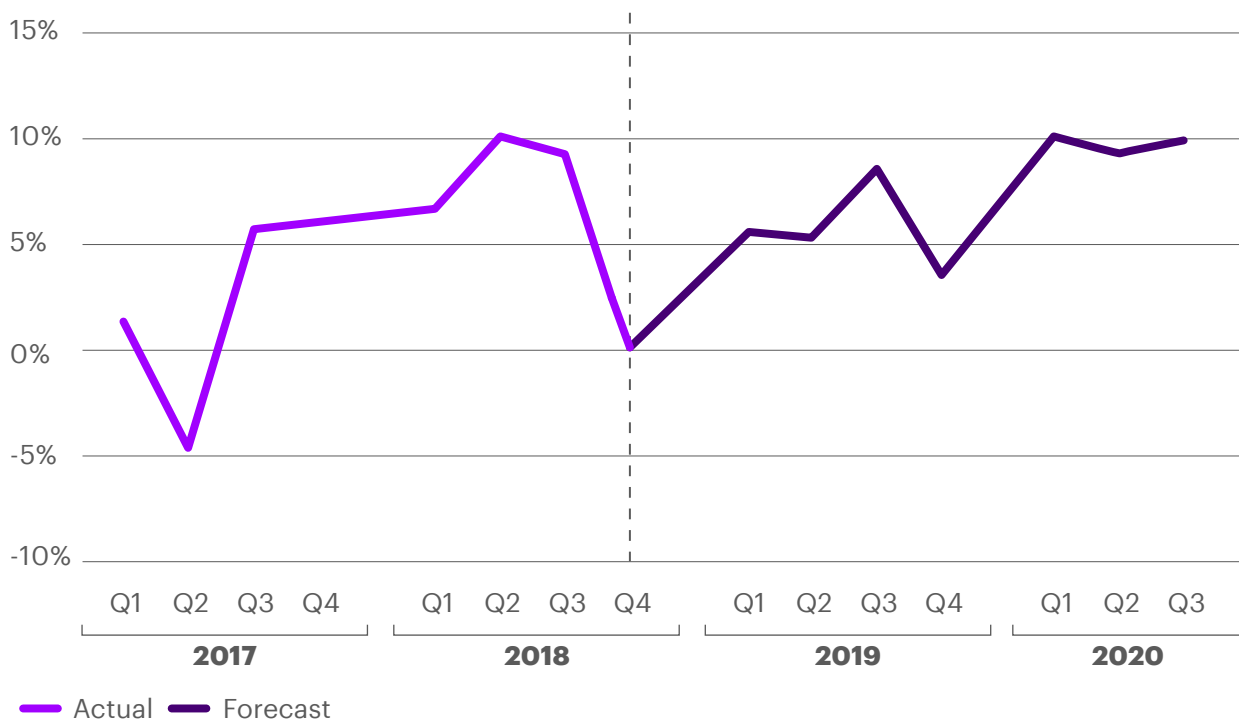
Asia Pacific Commercial Aerospace Index

(USD, 2015 = 100)



Asia Pacific Commercial Aerospace Index Performance

(quarterly YoY percent change)

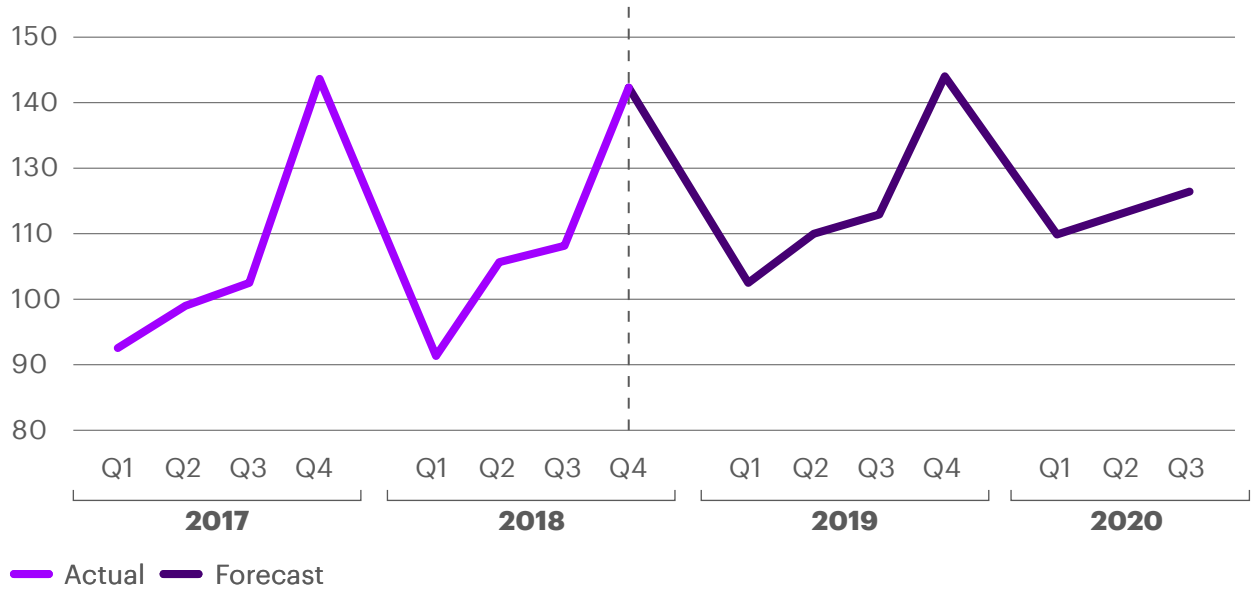


NOTE: that due to half-year reporting periods for most Asia aerospace companies, quarterly results are amplified when compared to other regions.

Europe

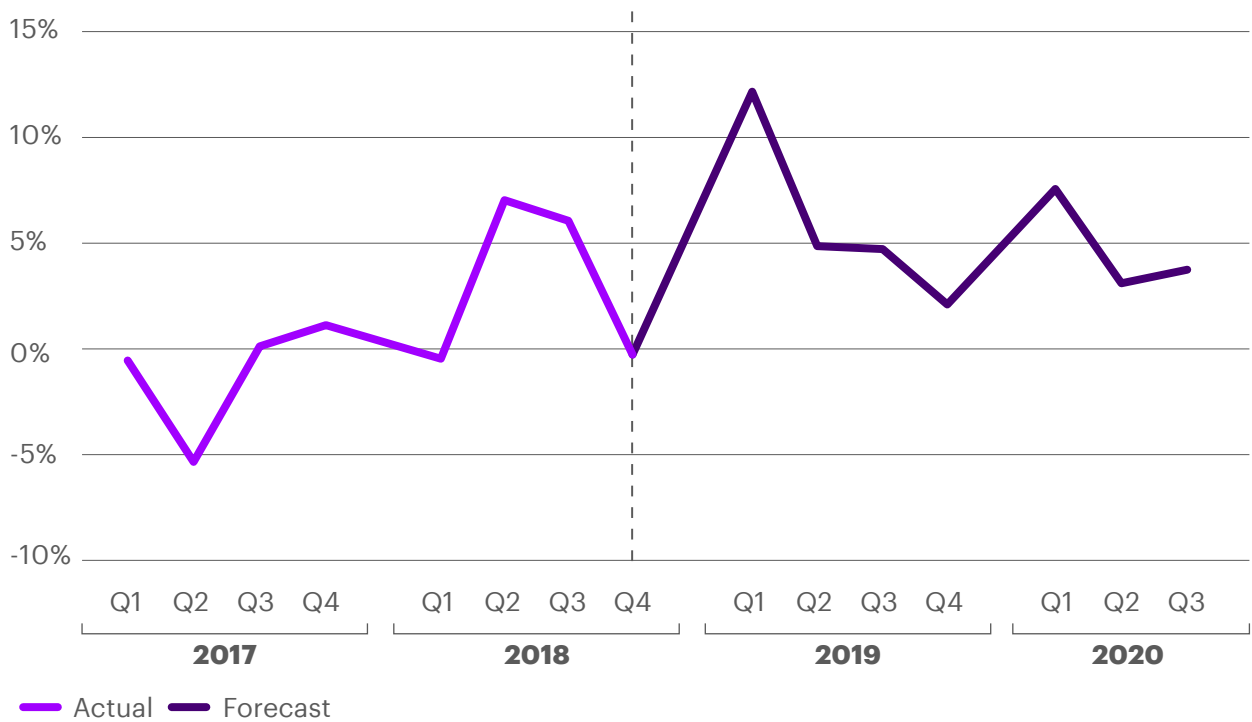
Europe Commercial Aerospace Index

(USD, 2015 = 100)



Europe Commercial Aerospace Index Performance

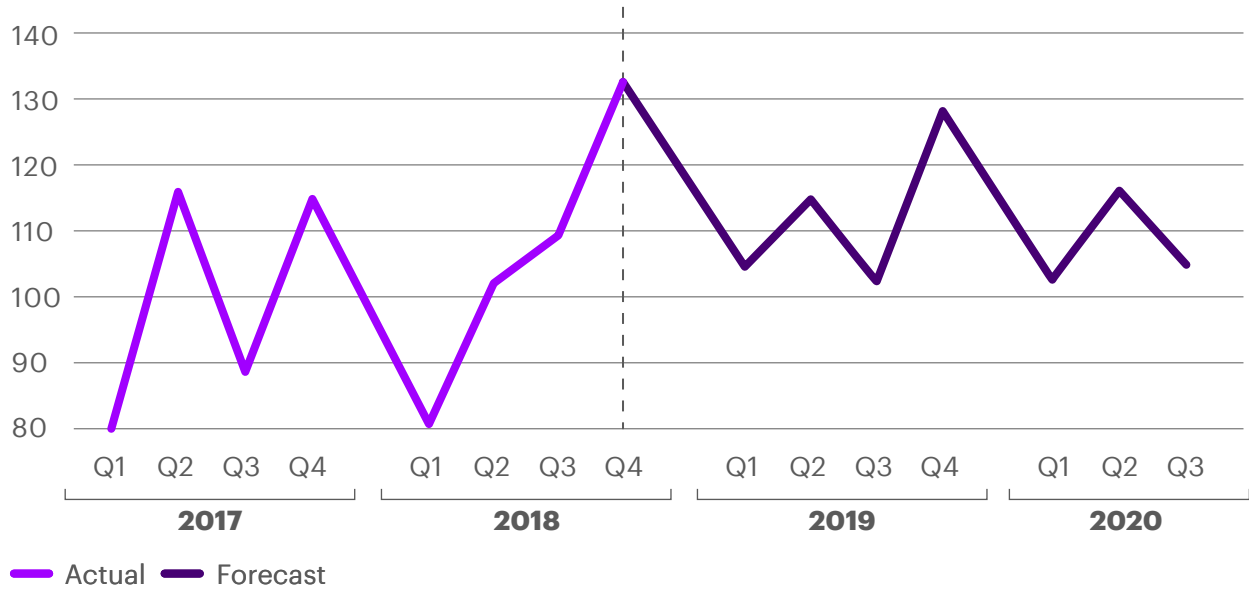
(quarterly YoY percent change)



Latin America

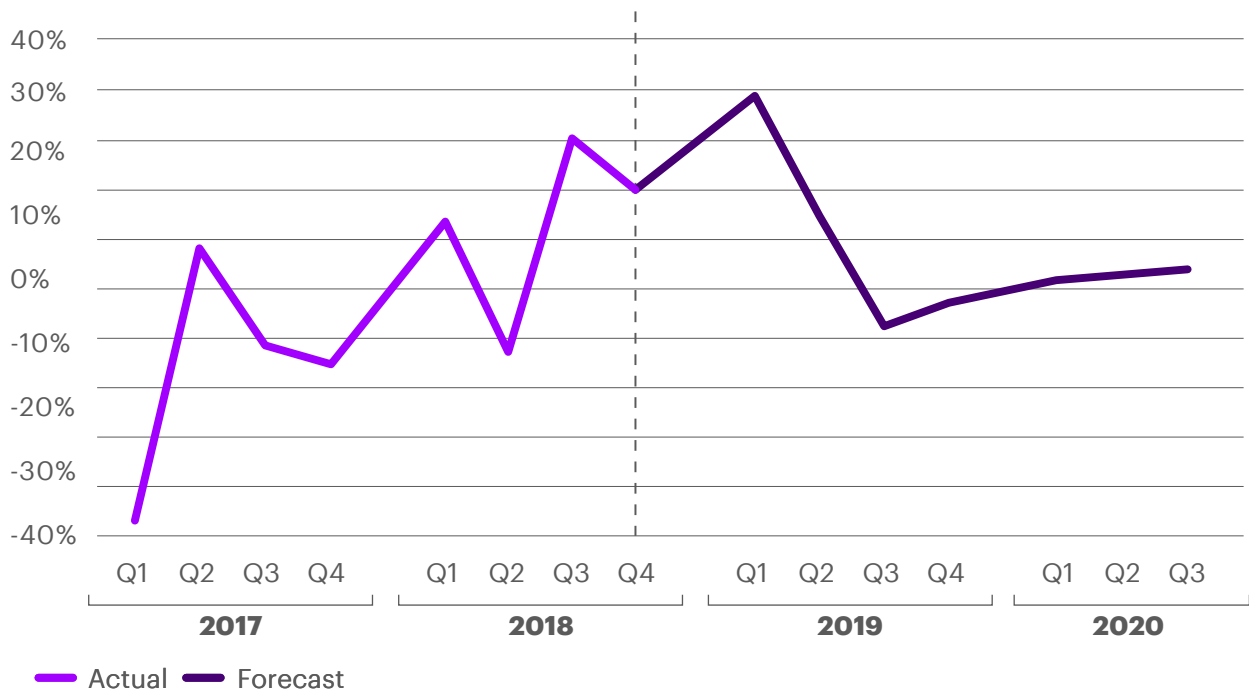
LATAM Commercial Aerospace Index

(USD, 2015 = 100)



LATAM Commercial Aerospace Index Performance

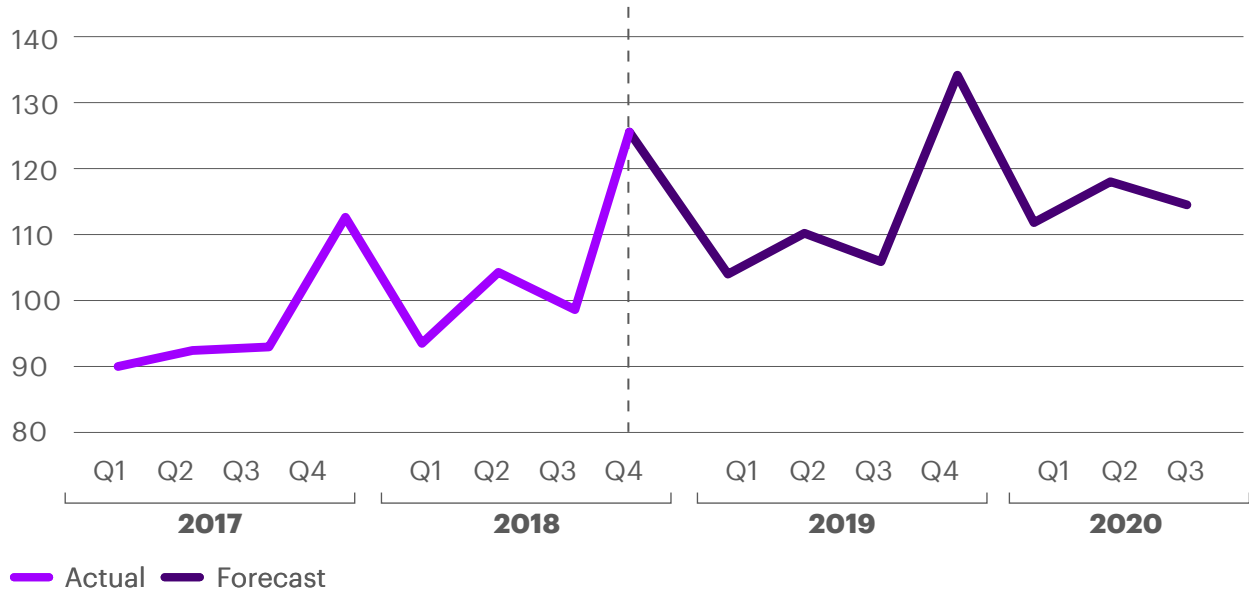
(quarterly YoY percent change)



Middle East

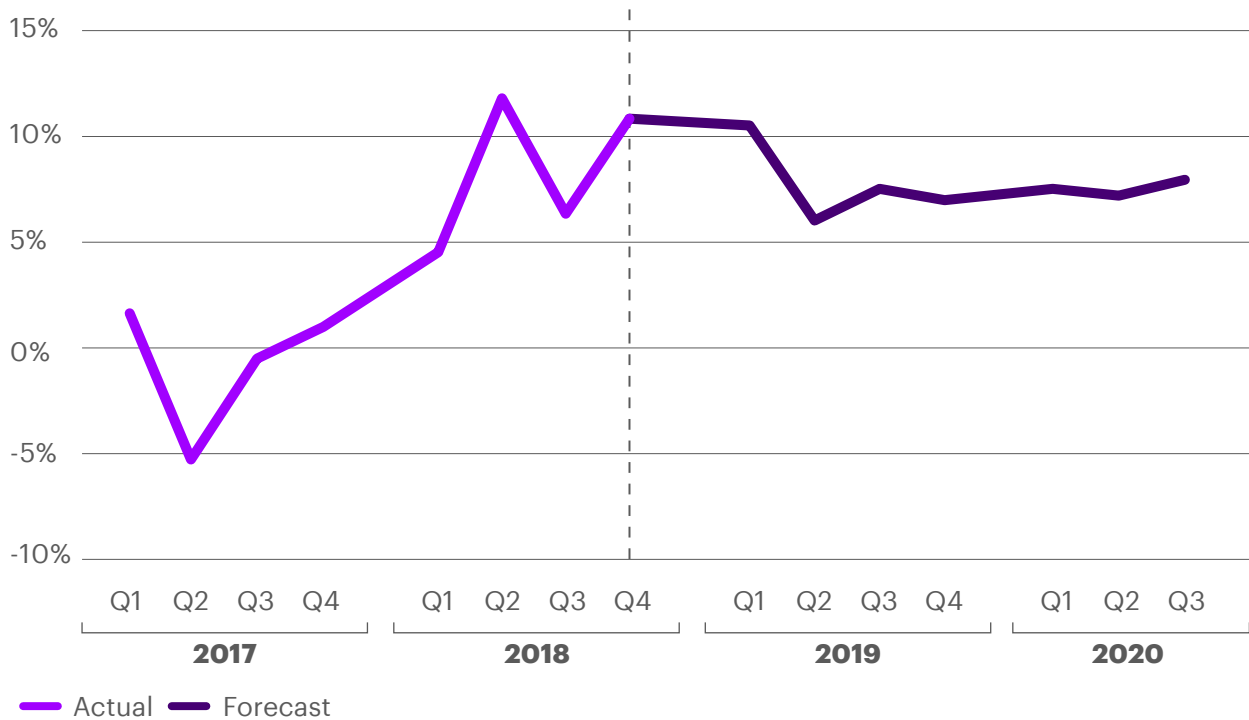
Middle East Commercial Aerospace Index

(USD, 2015 = 100)



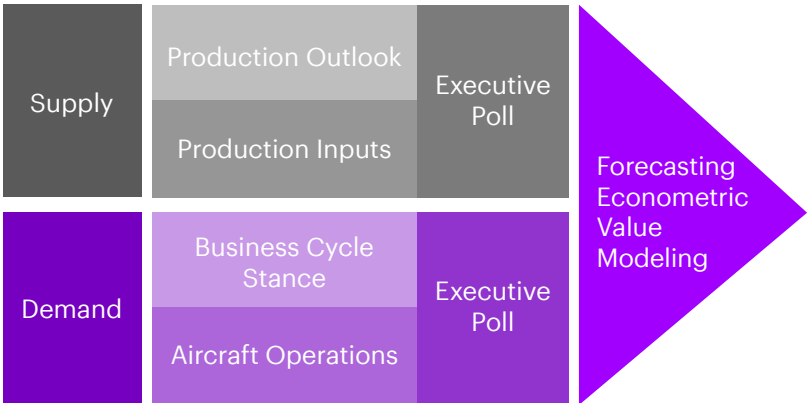
Middle East Commercial Aerospace Index Performance

(quarterly YoY percent change)



ABOUT THE ACCENTURE COMMERCIAL AEROSPACE MARKET INSIGHT REPORT

Combining sophisticated econometric modeling methodologies to drive quantitative quarterly forecasts on the health of the commercial aviation market, together with insights from leading industry executives worldwide, the “Accenture Commercial Aerospace Insight Report” provides a unique perspective on short- and medium-term trends and drivers in this market. Instead of focusing solely on OEM sales, the report covers a wide range of activities, from suppliers to MRO.



Notes: Regional forecasts and the global index are aggregated in constant currency US Dollars (USD as of Q4 2018). The index baseline year is 2015, both regional and global indices are based from this year.

To complement the econometric modeling, executives at major commercial aerospace companies were polled for their insights on future supply and demand outlook. The outlook indicators in this report are based on the combination of the econometric modeling and the executive poll.

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