

Corporate Aviation

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Anxious sector awaits upturn

It is unclear whether negative publicity or the business cycle is behind weak demand, reports *Robert Wright*

When the corporate aviation industry executives gather in Orlando for the National Business Aviation Association's annual conference today, a single Gulfstream G550 owned by Tesco, the UK's largest retailer, will feature in many conversations.

Tesco took delivery of the aircraft, its fifth corporate jet, this month. Yet, when the Financial Times reported the aircraft's delivery at the beginning of October, it heightened shareholders' unease about how the struggling retailer was managed.

Tesco was quick to announce that the new jet and the rest of the company's fleet were all up for sale.

The controversy is reminiscent of the row that erupted in November 2008 after it emerged that the chief executives of General Motors, Ford and Chrysler, the automakers, had used a corporate jet to travel to Washington for a congressional hearing where they would ask for government rescue money for GM and Chrysler.

The question for the corporate aviation industry is whether public scepticism about the value of private aircraft for corporate customers is acting as a significant brake on demand. Alternatively, the industry might simply be slumped towards the bottom of a normal supply-demand cycle.



The issue is critical because industry activity levels remain so far below those at the 2008 peak of the industry's last cycle.

There were only 678 business jets delivered worldwide last year, accord-

ing to the General Aviation Manufacturers' Association, only just up from 672 in 2012 and barely half the 1,313 in 2008.

Everyone in the industry is still waiting for a more rapid recovery in demand that had been expected in 2012 and

Economies: proponents of corporate jets say they ultimately save companies time and money - Alamy

2013, Shawn O'Day, manager of business aviation marketing for GE Aviation, the aero engine maker, says. "We're in 2014," he says. "It's still not coming back in the way that we hoped."

There are certainly some reasons for optimism. Pat Gallagher, head of sales for NetJets, which offers customers "fractional ownership" of aircraft - the right to use aircraft for set amounts of flying annually - points out that flight hours for business jets worldwide are up 5 per cent on last year.

"The market is doing quite well year on year," he says, although he notes that levels are nowhere close to their peak in 2005 or 2006.

According to Kriya Shortt, head of sales and marketing for Textron Aviation, which builds Cessna jets, the paucity of second-hand aircraft available could push would-be buyers towards new aircraft. Only 2 per cent of Cessna Citations 10 years old or less are currently for sale, against more than 10 per cent in 2013.

"That's what really drives the new aircraft market," Ms Shortt says. "If [customers are] having a difficult time sourcing a pre-owned aircraft, their attention is very focused on the new aircraft market."

Dustin Dryden, chief executive of Hangar8, a corporate aviation charter and management company, suggests the continuing robustness of demand for the largest, longest-range jets might fit a pattern from previous business cycles.

"The big market grows, then the mid then the light," he says.

Yet the continued bias in demand towards the larger aircraft can also be read as a sign of the market's problems.

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Corporate Aviation

Infrastructure and politics hamper market ripe for growth

China

Private jet industry is years behind global norms in flexibility and service, writes *Cameron Dueck*

China's business jet fleet is growing rapidly and the aviation industry sees great opportunity in the country. However, challenges ranging from infrastructure to public perception mean that it will be years before the country's private fliers get the same flexibility and service that are found in more developed markets.

Industry executives say demand for corporate jets in China has been rising and are positive about long term prospects for the industry.

They point out that it is a large country - both geographically and in terms of

population - and those factors combined with strong economic growth mean the market is full of potential.

However, growth is expected to slow over the short term because of insufficient infrastructure and the national mood against public displays of wealth.

"There has been a crackdown on conspicuous spending in China, and the effects will extend well into next year," says Jeffrey Lowe of Asian Sky Group, a business aviation consulting firm.

He adds: "The last thing the chairman of a company wants right now is a microblog publishing a picture of him walking down the stairs of a private jet."

Private jet ownership in China began as a personal luxury for the country's wealthy elite and only now is beginning to evolve into a service demanded by Chinese companies as they expand overseas.

With that shift in demand come changes in service requirements, buyer

preferences, and public perception.

While nearly all early buyers paid cash, financing has become increasingly popular.

Chinese buyers still prefer wide-body jets, in part for the prestigious image, as jets, like private yachts, are seen as platforms for entertaining clients and business partners.

The distances Chinese executives need to fly on a regular basis also influence their tastes, as they are as likely to fly to Sydney or Tokyo as to a Chinese city.

Wealth-X, a research company that collects data on wealthy individuals, says Asia's billionaire population grew by 10 per cent in 2014. The region provided 52 new entrants to the billionaire club, 33 of which were from China. China now has 190 billionaires.

Jackie Wu, an aviation specialist with Jetsolution International Services, which provides aircraft transaction,

maintenance and operations support, notes that many wealthy Chinese are basing themselves and their businesses in Hong Kong or Singapore.

Ms Wu, who predicts 10 per cent annual growth in aircraft numbers over the next few years, says there are 377 private jets in China, with an additional 344 Chinese-owned jets stationed

377 Number of private jets in China with 344 more Chinese-owned jets around the region	190 Total number of Chinese billionaires after 33 were added to the club in 2014
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around the region - a relatively small number given there are about 20,000 private jets operating globally, according to aviation experts.

China's private jet sector is facing many of the same infrastructure constraints that the commercial industry is

facing, which result in frequent and lengthy delays for passengers.

Brian Foley, an independent aviation consultant, says the industry is being stymied by lengthy application processes for entry permits, flight plan approvals and routing requests, which undermine the efficiency and flexibility that appeal to corporate executives.

There are fewer than 200 civil airports available to private jets, and landing at many of them requires application processes that take days. The US has some 5,200 airports open for private jets and permissions take only a few hours.

China is seen as one of the few developing markets which could support a fractional ownership model in which customers buy shares in the service rather than in a specific aircraft. This gives them guaranteed access for a predetermined number of days, hours or miles.

The model requires a large and liquid private jet market, because if the operator of the fleet cannot provide an aircraft when and where needed, it must charter another one to fulfil the order.

Eric Wong, China vice-chairman of Netjets, which pioneered the fractional ownership model, says: "In China, the infrastructure does not support such a product. The congestion in the air and on the airport tarmac, the restrictions on operations mean that a fractional product is not yet attractive."

Netjets has partnered with Chinese private equity firm Hony Capital and an investment unit of the Fung family to provide services in China, and last month secured a licence to fly from the Chinese civil aviation authority.

Mr Wong estimates that the market needs several more years of development before fractional ownership can be introduced.

Industry hopes next generation of aircraft will encourage sales

New models Modified engines, wings and controls bring improved efficiency, writes *Robert Wright*

It is far from obvious visiting General Electric's sprawling Peebles test site that the work it is undertaking should give hard-pressed chief executives more time with their families.

But the GE Passport engine that hangs from one of the testing gantries at the former US military rocket-testing range is designed to give the largest business jets increased range and greater reliability, getting executives to meetings - and home - faster.

The Passport will power Bombardier's new Global 7000 and Global 8000 aircraft, the longest-range and most expensive of a range of new aircraft developed to exploit an expected upswing in business jet demand following the trough since 2008.

Pat Gallagher, head of sales for Netjets, which allows customers to buy predetermined slots to use private jets, says the new models will eliminate some of the frustrations users have faced. They are due to enter service this decade.

"You used to have to make trade-offs, which might be baggage for passengers, or speed for range, or fuel load for payload," he says. "The new aircraft are far more capable, with far fewer trade-offs."

Many improvements are thanks to a new generation of engines such as the Passport, which use advanced materials to produce higher pressures and more thrust for a given amount of fuel. Many aircraft also feature more efficient wing designs and new control systems.

Shawn O'Day, business aviation marketing manager for GE Aviation, says their fuel efficiency will mean the Global 7000 and 8000 will be able to fly nonstop from New York to Singapore.

The Passport is a variant on the Leap engine. This was developed for narrow-body commercial jets by GE's



Bombardier's Global 7000, above, will be powered by the Passport engine, below

CFM joint venture with Snecma of France. The Passport is adapted to the rigours of operating at up to 51,000ft, higher than normal commercial jets. It will also feature titanium turbine blades, rather than the Leap's carbon-fibre ones, because, on the smaller Passport, carbon-fibre blades would be vulnerable to a bird strike.

"These aeroplanes are being designed for these very long-range missions," Mr O'Day says. "We think we're a big part of that with the technology and design we're bringing in."

The question is how the new designs are using the improved fuel efficiency made possible by the engines, lighter-weight materials and wing designs.

Only the highest-end aircraft are using improved efficiency mainly to prolong the aircraft's range. The shorter-range Cessna Citation Latitude uses

the improved efficiency to provide a larger cabin for up to nine passengers. Textron Aviation, Cessna's parent has announced that the aircraft would have a 2,700 nautical mile range - 200 miles more than expected - and be able to use shorter runways than expected.

"Those great performance announcements... coupled with the large cabin are going to make this a game-changer for us," Kriya Shortt, Textron Aviation's head of sales and marketing, says.

Other designs - such as Cessna's CJ3+, which has just received certification - are using efficiency gains to reduce the cost of private aviation and bring it in reach of a wider range of buyers.

Dustin Dryden, chief executive of Hangar8, a corporate aviation charter and management company, predicts a growing role for such aircraft, which can compete with the price of a business class ticket for a party of three or four.

Yet the challenge facing the corporate aviation industry, after development of the new jets, may be to persuade customers to buy them. Demand col-

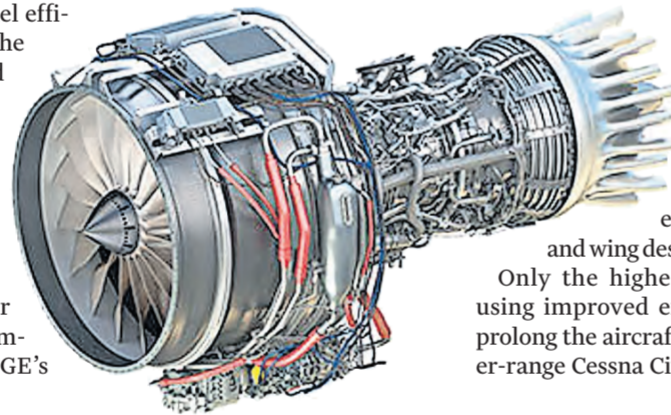
lapsed after the 2008 financial crisis and remains flat or declining across much of the industry.

Mr O'Day says many in the industry hope the new products will encourage sales. Mr Dryden points to their ample room and sophisticated entertainment and in-cabin systems. But at a list price of \$72m, those who purchase them might consider buying and outfitting a commercial airliner instead.

"There are folks that are expecting the stimulus of new products perhaps to stimulate some more purchasers," he says.

It bears eloquent testimony to the continued depressed demand across much of the market that the greatest optimism surrounds the Global 7000 and 8000 products, whose list prices are around \$72m.

"If you'd announced [the launches of the 7000 and 8000] three years ago, people would have laughed at you and said, 'Not in a million years would someone produce that and expect to get an order,'" Mr Dryden says.



Larger aeroplanes still dominate business skies

Midsize jets

Customers are demanding longer range aircraft with larger cabins but the market for smaller models is also recovering, says *Jane Wild*

Midsize jets are still losing out to larger jets, which are going to continue to dominate the business aviation market, according to Honeywell's latest forecast of the industry.

The annual survey, released as the industry gathers in Orlando for its biggest annual convention, suggests larger aircraft ranging from the so-called "super midsize" to the "ultra-long range" will make up more than three-quarters of all spending on new business jets. This larger category will account for 60 per cent of new business jets bought during the next decade.

Driving the market are large numbers of super midsize jets ordered by fractional service providers. There are order backlog for the Gulfstream G650, says Brian Sill, president of business and general aviation at Honeywell Aerospace.

Honeywell defines the large class as super midsize up to the high-speed long-range class, taking in aircraft such as Bombardier's Challenger 350, the Gulfstream G280 and G650 and aircraft such as Bombardier's Global 7000 and 8000, currently under development.

"We are expecting new airplanes that are coming on line in the next few years to also do very, very well because of their performance characteristics," he

says. "That will include some of the new Falcon models that are coming out of Dassault, as well as the [Bombardier] Global 7000 and 8000."

Honeywell raised its forecast for total deliveries of business jets over the next decade by 7 per cent to 9,450.

Range was the main reason cited for choice of jet, Mr Sill says - as the nature of business becomes more globalised - followed by cabin comfort.

But the midsize jet category has been recovering, after sales in that class were hit by the global financial crisis.

The Honeywell survey recorded improved interest in the midsize and small cabin models of aircraft this year, which picked up market share for the first time in several years.

New models have attracted interest, such as the PC-24 twin-engined business jet under development by Pilatus Aircraft in Switzerland. There is steady demand for Embraer's Phenom 300, the Cessna Citation 3 and 4 and the Bombardier Learjet 75.

Cessna is upgrading its Latitude range, which is expected to receive certification next year. A close competitor, the Embraer Legacy 450, is also due to enter service at the same time.

Marco Túlio Pellegrini, president and chief executive of Embraer Executive Jets, is confident about prospects for the midsize market. "The midsize [segment] will be the next one to show positive growth," he says.

Kriya Shortt, head of sales and marketing for Textron Aviation, insists the mid-market has been resilient. "The market as a whole continues to be very good. The XLS [a midsize jet] is unique in its class," she says. "It has a great com-



Under development: the Pilatus PC-24 twin-engined business jet

bination of range, speed and performance. Customers on both the corporate and charter side consistently select this model." Cessna's Citation XLS is the world's best-selling business jet.

In June, the Cessna Citation X+ was certified, featuring improvements in speed, range and cabin size. "We see folks coming into the segment asking for larger cabins. They want big," she says.

Prospects for the midsize market will improve as the global economy picks up, Mr Sill says. "We're bullish on the medium-class aircraft and we're expecting that part of the market to expand."

"There are some nice new models that are coming on line in the next few years and there's also been suppressed demand in that class for the past few years, so there may be some catch-up demand as we get past the current economic concerns," Mr Sill says, adding that manufacturers would also offer improvements to aircraft in that class to win new customers.

Eric Martel, president of Bombardier business aircraft, is bullish about the outlook for business jets as a whole.

"The market is going to be strong in the next 20 years," he says. "The large segment has been a significant driver in growth, despite the [economic] situation."

Race is on for the fastest corporate jet - if it can get off the drawing board

Supersonic travel

Designers and engineers must solve problems of fuel efficiency and sonic boom, writes *Michael Dempsey*

Graphics depicting a supersonic business jet hurtling through the heavens have graced air shows since the 1990s. But these projects never get off the runway. The engineering challenges presented by supersonic flight are daunting, the market remains untested and regulators do not like the noise.

It is a cycle that Peter Coen knows well. Mr Coen has spent his career researching the outer limits of aircraft speed at Nasa. During the late 1980s, he worked on designs for a high speed passenger jet and today he is back on the same beat in charge of Nasa's High Speed Project. "I keep returning to high speed, and you never throw anything out in supersonics," Mr Coen says.

Mr Coen is striving to solve two problems. One is environmental: the effect of the sonic boom and associated regulatory restrictions. The other is efficiency: the ruinous fuel burn that jet engines demand at sustained high speed.

There is some good news. "We have learnt a lot about how to reduce the sonic boom in the past 10 years" says Mr Coen. The boom can be redistributed, smoothing it into a more aurally pleasing thump.

This involves modifying the shape of the airframe - Boeing and Lockheed Martin have been recruited to build

demonstrator civil aircraft that will test Nasa's computer-based theories.

Nasa's demonstrators are not due to fly until 2019 at the earliest and will only carry pilots. But Aerion, based in Reno, Nevada has a more ambitious schedule in mind. The company says it will achieve official certification of a supersonic business jet by 2021. The Aerion AS2 is an elegant design with short wings set far back along its fuselage.

Aerion maintains it has made breakthroughs in the way air flows over its novel wing design at supersonic speeds, but its real coup came last month when Airbus announced a formal tie-up with it. The European aerospace group will assign staff to the AS2 project while it investigates Aerion's ideas on supersonic flight.

Life's work
Peter Coen of Nasa says a new engine is needed to achieve the required noise and efficiency improvements



Doug Nichols, Aerion chief executive, describes the Airbus deal as "an intersection of interest". It opens the door to Airbus's engineering resources, and helps lend credibility to Aerion which is a relative newcomer to the business jet industry.

Mr Nichols concedes the project's final identity is yet to be agreed and Airbus may wind up with its own brand attached to the AS2. What also remains undecided is the engine design for the plane. He insists that Aerion is "in deep discussions" with engine makers and believes existing designs can be adapted

'The new aircraft are just far more capable, with far fewer trade-offs'

to allow fuel efficiency above the speed of sound, Mach 1. Nasa's Mr Coen cautions that the scale of the engine challenge cannot be understated. "In order to achieve the noise and efficiency improvements needed, a new engine is required," he says.

Aerion's thinking involves an aircraft that will fly at subsonic speeds over land and then accelerate to Mach 1.4 or even Mach 1.6 over oceans where sonic boom restrictions do not apply.

Mr Nichols is adamant that demand for such a jet exists, suggesting Silicon Valley leaders, Middle-Eastern royal families and international corporations. But they will be paying about \$100m for an aircraft that spends much of its life flying over land at subsonic speeds.

Airbus's impressive credentials and the promise of shaving hours off inter-continental journeys may be enough to haul AS2 into the air. Yet the precedents are not encouraging.

Gulfstream manufactures very fast executive jets that can cover long legs between continents flying at extremely high altitudes just below the speed of sound at 0.925 Mach. It did have a short-lived association with Russia's Sukhoi during the 1990s aimed at building a supersonic business jet. This dissolved after Gulfstream concluded the ability to fly supersonic over land was a deal-breaker. It has not abandoned the dream, but instead focuses its long-term thinking on sonic boom mitigation.

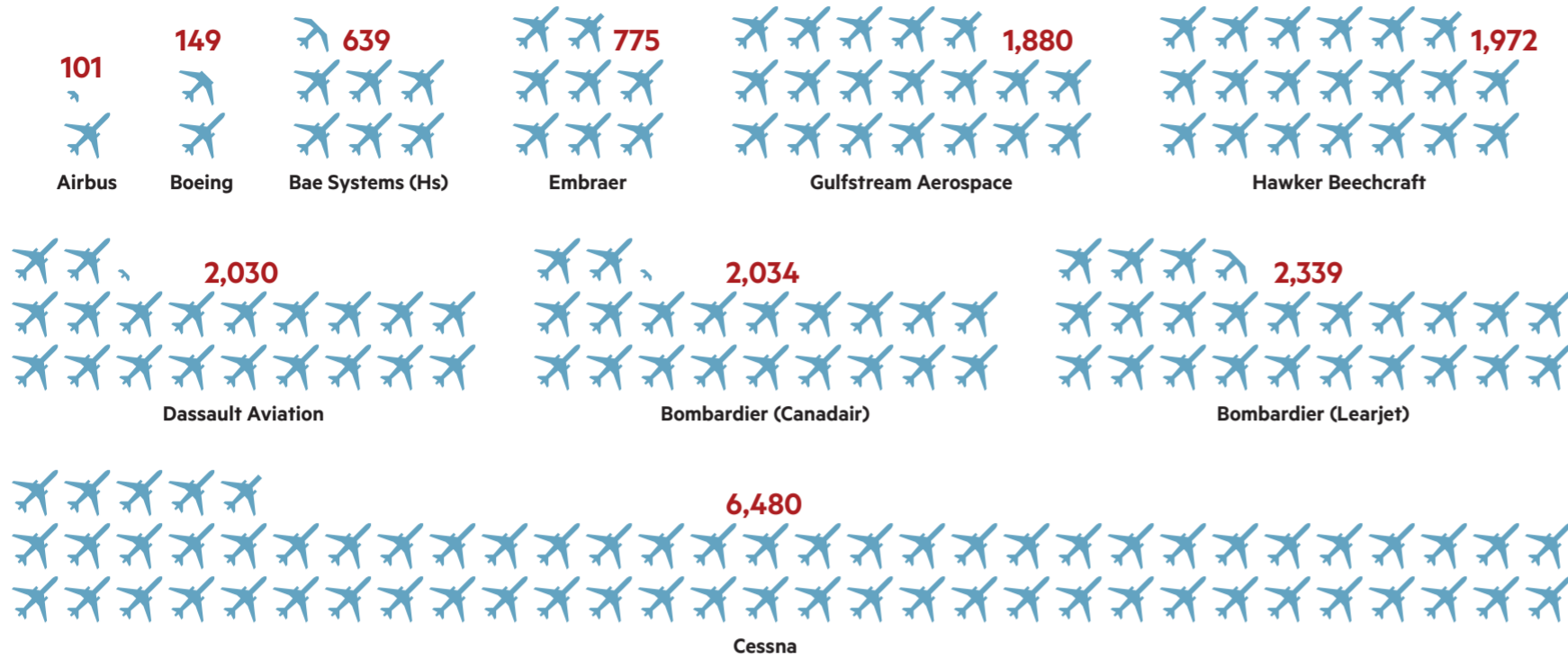
Gulfstream has even constructed a sonic boom simulator to demonstrate mitigated sonic booms. So far, regulators appear unmoved, and until that changes much of today's supersonic work remains at the research stage.

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Market in numbers

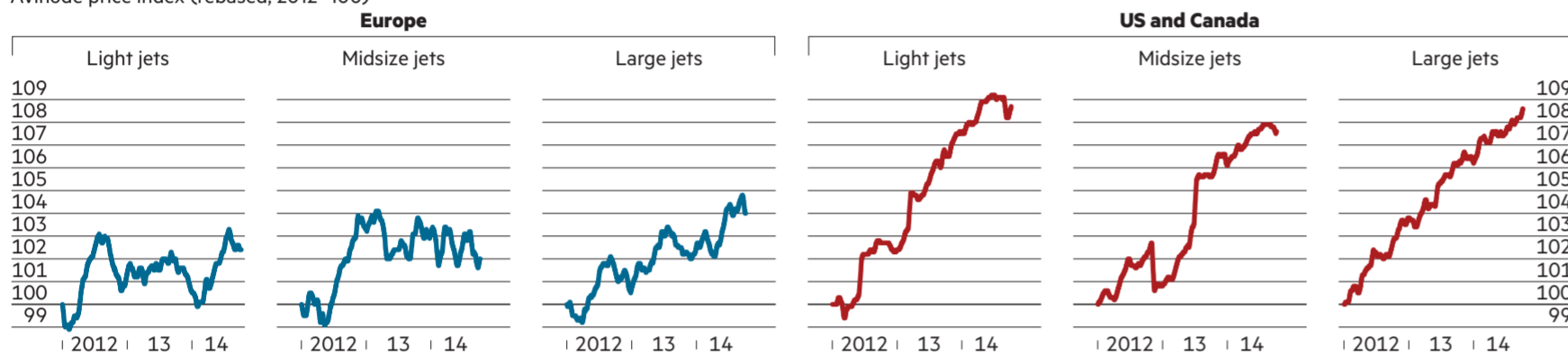
Current fleet by manufacturer

Worldwide, Jul 2014 ✈ = 100 planes



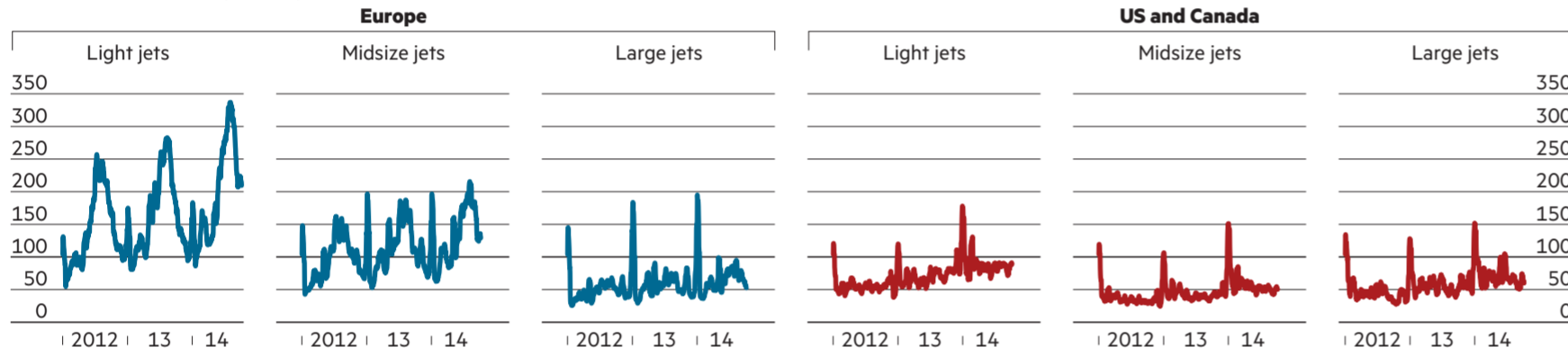
The average per-hour rental price of a charter jet has risen much faster in the US ...

Avinode price index (rebased, 2012=100)



... but demand is subdued apart from for light jets in Europe

Avinode demand index (rebased)



Sources: Ascend; Avinode

Avinode refers to large jets as 'heavy' jets

FT graphic

Anxious sector awaits upturn

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The largest aircraft continue to be popular, according to Mr Dryden, partly because they offer the most senior executives of multinational companies faster journeys - often at close to the speed of sound - and ranges that, with the next generation of aircraft, will reach up to 7,900 nautical miles.

"I don't know any customer who doesn't fly it to the very limit of its range," Mr Dryden says of very long-range aircraft such as Bombardier's Global 6000 and the Gulfstream G650.

Demand for the Global 6000 has increased amid the slump - Bombardier delivered 62 in 2013, against 51 in 2008.

The arguments for corporate customers to make the investment in medium-range aircraft - which offer few time advantages over normal commercial flights - are less compelling. Such aircraft are more vulnerable to the greater wariness about corporate excess that has been the rule since 2008.

The market for the largest aircraft, meanwhile, depends disproportionately on buyers rich enough or powerful enough not to have to worry what shareholders or other potential critics think of their travel choices.

Mr Dryden says much of the demand for long-range aircraft comes from countries in west Africa, central Asia and the Middle East that are growing fast because of their oil, gas or mineral resources.

Regional problems such as the conflict between Russia and Ukraine and Africa's Ebola outbreak only increase such buyers' demand for private aircraft.

"They have to have long-range jets to get to ... where they list [their companies], where they bank: London, New York, Dubai," Mr Dryden says. "The amounts of cash that these types of individuals generate from those types of wealth are significant enough to justify ownership of these aircraft."

Whatever the reasons for the shift in demand from midsize to large-size, the market has changed to reflect the new balance.

The choice of middle-range models on offer has shrunk, partly because of the 2012 bankruptcy of Hawker Beechcraft, whose Hawker jets were once a significant force in the middle-range market.

The company emerged from Chapter



11 protection last year but closed down production of Hawker jets to concentrate exclusively on its Beechcraft models in the less crowded turboprop market. Textron bought Beechcraft earlier this year.

"From a sales and charter perspective, it's not very heavily catered for at the moment by any of the manufacturers," Mr Dryden says of the midsize market.

As far as the larger aircraft are concerned, meanwhile, Bombardier's new Global 7000 and Global 8000 products promise to expand the business jet market into the size and price categories of buyers that might otherwise buy and convert a commercial airliner.

There are clear indications that some manufacturers that currently do not compete in the very large, long-range market are pondering entering it. Many analysts point out that Textron's Cessna, which competes across nearly all the corporate aviation market from small turboprops to the high-end Citation range, lacks a competitor at the very top of the market.

"We're always evaluating all of the segments," says Textron's Ms Shortt. "Right now, our team are focused on making sure we bring an excellent product to market."

Yet, whatever their analysis of the market's current state, there remains an underlying confidence among all involved in corporate aviation that the industry's basic selling point - convenience for the busy and rich - will always remain compelling.

The reasons for people to fly privately are "the same as they have ever been", Mr Gallagher says.

Ukraine crisis casts a cloud over the European market

Europe The conflict has been a drag on recovery, writes David Crouch

It is a long way from New Mexico to southwest Sweden. But when Eclipse Aviation launched the first of the "very light jets" in Albuquerque in 2002, students at Chalmers University, Gothenburg, took notice.

"We read about the Eclipse 500 and had a crazy idea about the future of private jet travel," says Niklas Berg, who was one of those students and is now chief executive and co-founder of Avinode, which provides an online booking system for private jets.

In the next decade, Avinode's vision of accessible private jet travel suffered a series of setbacks. But now the industry in Europe, still reeling after the 2008 financial crash, is ready for a fresh idea.

"When you go on Expedia in five years, you shouldn't only be able to book hotels and airline tickets, but also a private jet," Mr Berg says. "We are getting close to a point where [the business jet industry] can offer the same customer experience."

It has been tried before. During the dotcom boom, there were attempts to enable online booking for private jets, but the customer was not ready.

But change is due and Richard Koe, managing director of the WingX aviation consultancy in Hamburg, says the industry in Europe cannot return to its heyday of 2006-08. Activity in the sector is fundamentally driven by corporate requirements, which are supported by a strong economy, profitability, and opportunities for trade and investment.

"In Europe, these prerequisites were

blown off course by the economic crisis and haven't really recovered," Mr Koe says. And just as private jet activity in the busy south of Europe was showing signs of coming back after the eurozone crisis, the Ukraine crisis hit.

Magnus Henriksson, business development manager at Avinode, says: "Since 2009, there has been no recovery. Europe has been a sad story, just problem after problem."

One bright spot has been the UK, where there appears to be an increased willingness to use business jets to do deals in Europe. London Executive Aviation, which operates a fleet of 27 aircraft, says it has seen radical improvements since March 2014 compared with the previous four years.

"We are seeing a material change in terms of activity," says Patrick Margetson-Rushmore, London Executive Aviation chief executive, who expects 10 per cent growth in the year to March 2015.

However, the fallout from military conflict in eastern Ukraine has taken its toll on business aviation in Russia, a big driver for the industry, with total flights out of the country falling almost 11 per cent year on year in the month of September, according to WingX, while flights to Ukraine have collapsed by more than half.

11%

Year-on-year fall in business flights from Russia as a result of the Ukraine crisis

20%

Year-on-year increase in flight hours on ultra long-range jets from Europe

Western sanctions on Russian business and political leaders have seen private, owner-operated flights from Russia into the rest of Europe down more than 4 per cent year on year in April to August, according to Avinode, suggesting Russia's elite has been affected. But charter flights from Russia are up 1.6 per cent.

With the exception of Russia, the top end of the market has been largely unaffected by the economic crisis. "They are sufficiently wealthy not to have to budget their travel," says Mr Koe.

WingX data suggest flight hours on ultra long-range jets from European destinations were up 20 per cent year on year in August, while Avinode reports a 16 per cent increase in this category from January to August this year, compared with the same period of 2013.

The other segment doing well amid the gloom, Mr Koe says, is very light jets, or VLJs, built for short hops and small numbers of passengers. According to Avinode, flights in this category are up 6.5 per cent, reflecting the cost-consciousness of "entry level" private jet users in a climate of austerity.

With the industry largely dominated by small operators, there is a great deal of spare capacity to be matched with latent demand. Already, some operators and brokers are using the web, including mobile phone apps, to allow direct bookings and drive down costs.

"The next generation expects to get transparent pricing, to search and book online like you would buy just about anything," says Mr Berg.

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Corporate Aviation

Online technology challenges fractional model

Booking systems

Instant pricing for the charter industry erodes the traditional advantages bought with an upfront fee, says *Michael Dempsey*

When Adam Twidell launched online charter service PrivateFly in 2007 he ran into opposition. Mr Twidell, a former RAF pilot, was heckled at a business aviation conference by a delegate who declared confidently that no one would ever book a private jet over the internet.

PrivateFly acts as a rapid broker between supply and demand in the business aviation world and now has 2,000 partners across the globe. Its online service has extended to a smartphone app through which it recently took a \$500,000 booking on a Boeing business jet.

No revolution is without casualties and this one has sent shockwaves through the fractional ownership community. CitationAir, a Cessna-owned business, pulled out of the fractional

business in 2013 and recently announced it would abandon charter aviation as well.

What underpinned the fractional ownership world was rapid access to aviation assets. Clients could pay an upfront fee for a guaranteed number of hours per year, typically between 25 and 100, and be assured that a jet would be free for immediate use. This instant availability has traditionally set it apart from the charter market.

Now online technology has overturned that advantage, and charter firms are using the internet to offer flights at very short notice. In a tough economic climate the question for the fractional players is how they remain distinct from their charter rivals.

Mr Twidell has a clear view on the plus points of fractional. "There are benefits, in terms of safety and knowing your operator and your pilot. You do pay a premium, but you know what your costs are. So this is a very popular option with people who have to allocate budgets."

The key to PrivateFly's success is its own software that checks availability with partner charter operators, matches up clients with the right aircraft and provides a fixed cost quote.

This covers all extras, such as landing fees and hotel accommodation for crew.

Many of the partners accredited by PrivateFly, such as growing US west coast charter business JetSuite, are themselves built around software that opens up the charter process. Mr Twidell notes that these operations have closed the gap with fractional ownership around the world.

"In the past, the disadvantage of charter has been the delay in getting a price. Fractional allowed you to phone up and book. Now charter has responded with instant pricing."

Economic pressures have also militated against the fractional fraternity. GlobeAir is an Austrian-based charter business that has seen dramatic changes in its customer profile since the economic crisis of 2008. Chief executive Bernhard Fragner says: "We started out in 2008. Since the economic crisis hit Europe our typical customer has learnt a lot about costs."

GlobeAir operates a fleet of four-seater jets, Cessna Citation Mustangs, that suit contemporary budgets. "Our average booking lead-time is now 24-48 hours. And 90 per cent of our customers want to fly the next day."

Mr Fragner believes that the

experience of booking aircraft online, and even via smartphone apps, has blurred the difference between his operation and the fractionals.

"There is no need for fractional ownership when you can just book the flight with your mobile."

The fractional world has not taken this lying down. NetJets, the 50 year-old fractional business owned by Warren Buffett's Berkshire Hathaway recently placed a huge \$9.6bn order for up to 425 new jets. Marine Eugene, NetJets head of sales in Europe, says this shopping spree was carefully planned. "This is not speculative, it's about getting rid of older tails and bringing new metal into the fleet."

NetJets claims a client renewal rate of more than 90 per cent, but admits that post-2008 things have not been easy. Now "everyone flies less," says Ms Eugene. Yet she maintains that price is not a deciding factor. "I don't think our clients want to adjust their agenda to catch a better deal. They really just want to send a quick email and get their itinerary." Fractional, she declares, is still "the most simple way of flying private".

But in an online economy the rivalry between these two approaches to corporate aviation is growing fiercer.

Since the economic crisis hit Europe, our typical customer has learnt a lot about costs'

A talent for finding opportunities as customers' fortunes change

Interview **Marine Eugene** The Netjets executive has been busy with fractional deals, says *Rose Jacobs*

Marine Eugene is accustomed to seeing people on their way up to the stratosphere, as well as on their return to earth. Partly, that is because as a 12-year veteran of the private aviation industry, she has spent her fair share of time at airfields. But as NetJets' executive director of sales in Europe, Ms Eugene also regularly encounters people travelling a more metaphorical journey.

"We see first-time users and people who've walked into significant wealth recently, for example in the tech industry... customers who 10 years ago would never even have thought that they would acquire so much wealth and would be able to fly private," she explains. She enjoys these encounters because of what her company can offer: while the decision to fly private is an expensive one, it is also, she argues, one of the first purchases wealthy people make that - unlike the multiple houses, the cars and the artwork - simplify rather than complicate their lives.

"They think, 'I can't cope with all of this together, I need help to optimise my time, to improve the quality of my travelling to make sure that I'm able to enjoy everything.' That's usually the moment when they contact us, and when I meet them for the first time."

But because NetJets' main business is in fractional ownership - owning a share of a private jet rather than the full thing - other meetings are with people or companies moving in the other direction: trading down from full aircraft ownership, or even a small fleet of

private jets, to shares. "This is a very different type of meeting," Ms Eugene admits. With companies, for example, "you usually meet with members of the board, then you get sent to discussions with the procurement department, with the flight department, with the finance team, and you put together a whole package, saying this is how much we're going to resell your aircraft for, this is how much value we're going to give you back, this is how we're going to transfer those funds into a fractional deal. That's a totally different atmosphere... but I enjoy them both."

Lately, Ms Eugene's team, which is scattered across Europe, including Russia, is doing more fractional deals than talking with the newly wealthy - a sign of the times, perhaps. She argues it is also a sign of changing attitudes. Fifty years ago, when NetJets was created, European chief executives might have had a Falcon hidden at Le Bourget, Paris's general aviation airport, and private flying was seen "as some kind of secretive privilege of a very happy few". Today, the audience is much wider.

Her first job at NetJets was assessing whether her fellow Frenchmen - as well as Belgians and Swiss - agreed. She had moved to London with her husband, after a first post-university position in Shanghai, and she answered an advert for young, multilingual Europeans ready to do market research. They were met with huge scepticism, but it didn't daunt the company.



Flight path: a Dassault Falcon 2000 owned by NetJets (above); and Marine Eugene, executive director, who says the client list is now wider



"I spent many years going to every provincial airport in Belgium and France and French Switzerland, talking to the chambers of commerce and the local communities and explaining what private flying brings you. And after years of education - not just mine, it was a team effort - we saw the results really coming in."

Indeed, the company grew by 30-40 per cent a year in the first years of the century. Then came the credit crunch and global recession and a complete nose-dive in the private aviation market.

Ms Eugene says she learnt more in those years and time that followed than in the boom years, but admits, too, that it was a difficult time. "There's no way we would be here today if we didn't have the support of Mr [Warren] Buffett and Berkshire Hathaway," she says of NetJets' owner. "That was a lifeline in those days."

The pressure points are more targeted today: for example

on Russian routes, due to the crisis in Ukraine. That means fewer trips to Moscow for Ms Eugene, who travels within Europe at least once a week. "You've got to focus on where your growth is, and for us at the moment, that's the UK and Germany." She demurs when asked about China, where NetJets recently won the right to operate. Despite her university degree in Chinese and work experience there, she argues that the models NetJets is launching in China - aircraft management and high-end charter - are very different to what she sells in Europe. Would she move if and when fractional ownership was introduced? "There's still so much opportunity in Europe right now."

A move would, moreover, involve uprooting a family with two small children - part of the reason she laughs at the idea that she might try taking the controls of an aircraft herself. There simply isn't the time - and, anyway, "everyone should stick to their areas of expertise. My area of expertise is management and revenue growth."



Large capacity: the EC225 can carry 19 passengers

Helicopters Costs shape market

The international helicopter industry is about to see significant growth in leasing as a form of financing, according to industry executives, writes *Brian Bollen*.

Christopher Grainger, a vice-president, sales and marketing, at Airbus Helicopters (formerly Eurocopter), believes that leasing could account for as much as a third of sales in five years' time, as the big lessors - Milestone Aviation, Waypoint Leasing, Macquarie and Lease Corp International - build their books.

The oil and gas industry is the driving force for change.

As oil operations move to more remote areas, the demand for helicopters to transport staff and equipment will grow, says Chris Seymour, of Ascend Worldwide, a global flight consultancy.

The outsourcing of helicopter services to independent providers is firmly established as the industry's preferred operating and business model, says Mr Grainger.

"Larger oil companies such as Exxon, Chevron and Shell might have their own modestly sized fleets but they are very much the exception."

He puts the cost of a large twin-engined aircraft at €20m-€30m for operation in the North Sea, depending on the requirements.

The bigger 19-seaters will cost service operators or lessors around \$30m each, says Mr Seymour. "But you probably couldn't get one for a couple of years; the production lines are all full."

The external providers market is dominated by the so-called "big three": Bristow Helicopters, CHC Helicopter and Bond Offshore Helicopters.

But there is a long tail of smaller companies with weak balance sheets for which leasing would be a more obvious fit than other forms of financing.

Oil and gas companies pay a monthly commitment fee to their operators - ensuring the operators have income even if no flying takes place - plus utilisation fees charged per flying hour.

Leasing is also popular because of the costs of maintenance.

The sheer complexity of helicopter mechanics and

the impact this has on servicing and maintenance requirements mean that it is arguably a more important consideration than in many other industries.

Illustrating its importance, Mr Grainger calculates that 40 per cent of his company's annual turnover, which amounted to €6,297m in 2013, derives from after-sales service.

"Helicopter operators can deliver a turnkey service including power, pilots, logistics and spare parts, very often in remote and hostile places such as the North Sea, Brazil, Australia and Angola," he says.

"We work closely with them to provide on-time support and services in order to minimise down time. A helicopter idle for just one day can cost a lot in terms of lost production and safety."

Mr Seymour of Ascend Worldwide calculates that there are currently about 1,950 helicopters in action, shuttling to and from some 8,000 offshore platforms and other locations around the world.

The range required of future craft will continue to grow in line with the trend for exploration and extraction to move to even more remote locations.

'Helicopter operators can deliver a turnkey service including power, pilots... and spare parts'

Mr Seymour believes there will be demand for 1,200 new "super-medium" craft over the next 10 years; this is the biggest single market to tackle globally, he adds.

One such helicopter is the EC175 from Airbus Helicopters, which has a radius of action of 130-140 nautical miles (implying a round trip of 260-280nm with a full payload).

Airbus Helicopters says there has been strong demand for the model and it is also reporting sustained interest in its EC225 which can carry 19 passengers and has a radius of action of 220nm.

The EC225e, scheduled for launch in 2016, will have the capacity for longer journeys.

Consumer technologies bring step change to business travel

New technology

Multi-functional headsets and cabin apps are here to stay, writes *Jane Wild*

Step on board your private jet and settle in your seat. Then, by tapping your watch, dim the lights and close the blinds. Wearable tech is coming to private jets.

Smart watches are the next platform for apps that allow users to control the cabin environment. Honeywell, the aircraft systems and component maker, is integrating cabin functions to apps. Apple and Android versions have been released and a Windows version will follow next year.

The developments mean passengers will be able to use a personal electronic device to adjust settings. "With cabin management," says Justin Dye, director

of marketing and product management at Honeywell Aerospace, "users expect two things: one is environmental control, lowering the shades, controlling lights and the temperature; and the other is the in-flight entertainment experience, having integration with smart phones and tablets."

The company has also created cabin control systems for use on Google Glass headsets, so flight attendants can adjust the cabin environment while keeping their hands free.

On the entertainment side, Blu-ray, satellite television and email are a must for passengers. On-board connectivity is essential, as business travellers increasingly expect to be able to continue work at 40,000ft.

Now the industry is looking forward to faster internet connection speeds, which will enable functions such as video conferencing to be easily conducted on board. "Connectivity is hugely important," says Mr Dye.

Broadband connection can also have benefits for the crew. A failure of some piece of equipment could be communicated to the ground staff, ensuring faster replacement.

"This is going to become more important," says Josh Baynes, of Rockwell Collins, which provides avionics and information technology systems. "The future is managing data and information, whether on the flight deck, in the cabin or on the ground, making everything work seamlessly."

On the other side of the cabin wall, technology is changing the cockpit experience too.

Rockwell's "head-up guidance system" with "synthetic vision" allows a high resolution display of the terrain below, depicted on the flight display or a headset visor. This aids landing in mountainous territory or in conditions of low visibility and was first installed by Rockwell Collins on the Bombardier Global 5000 and 6000.

"On approach to landing, an infrared camera can detect an animal on the runway, or a truck, and display that on the head-up guidance system," says Mr Baynes. "At present, it's a toggle [between the guidance system, infrared and synthetic vision views], but we're working on fusing that together."

Among the latest developments are moving maps of airports, to assist pilots landing at unfamiliar airports in steering the jet to the airport gate. The map can highlight the route, knowing where all the taxiways and runways are.

Consumer technologies have a big influence, says Andy Drexler, director of marketing and product management for cockpit systems at Honeywell Aerospace. Touch screens and applications for voice control are being worked on, with the aim of making controls easier to use. "There will be more intuitive interfaces with the flight deck; it is a safety feature," he says. "We are used to interacting with tech in our personal

lives [and it should be no different on the] flight deck.

He explains the advantage of removing functions that lie maybe six levels deep in the operating system and the safety benefits of voice controls. "There isn't yet a standard for using voice to interact with system," says Mr Drexler.

Tablet devices have also ushered in a

'Every week, another aircraft operator moves to a paperless flight deck'

step change in aviation and mark a shift away from the reams of documents that crew have historically been obliged to carry on board. Business jets were the first aircraft to start moving towards paperless flying.

Paper navigation charts might weigh 20-30 kilos or more for worldwide

flights, according to Jeppesen, which provides aeronautical charts, flight planning and navigational data. Since 2010, they have been steadily replaced by software.

From having several binders in the cockpit and a locker full of paper, the change has freed space on board.

"Every week, another aircraft operator moves to a paperless flight deck," says Adam Twidell, chief executive of PrivateFly, a private jet booking website. "It takes work away from the pilot and makes the workload of the job so much easier."

The next stage in the evolution of the electronic flight bag is further integration into the aircraft's systems, says Christopher Dean, senior manager of FliteDeck, the mobile app division, at Jeppesen.

Linking flight planning to fuel management, for instance, would aid fuel efficiency by more accurate knowledge of how much the aircraft requires.