Aviation Strategy

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June 2021

Airline valuations Recovering from Covid

According to the global stockmarkets, airline values, measured by stockmarket capitalisations, have just about recovered from Covid-19. Our survey of 23 stockmarket-quoted airlines (see table below) shows that their total market capitalisation has fallen by $23.6bn or 9% since the beginning of 2020. Over the same time period there has been a 20% increase in the Dow Jones and a 34% growth in the S&P 500, both indices driven by tech stocks, while London's FTSE 100, without the benefit of a large tech component, is down by 7%.

There has been a wide variation in the value trends. A third of the airlines have seen their stockmarket value increase, and those by an average of 14%. Two thirds have seen a reduction in total value averaging -21%. Excluded from the list are the, surprisingly few, carriers that have gone into some form of bankruptcy (HNA, LATAM, for instance).

Equity has flowed into the industry from public and private sources. In total our selection of airlines have raised $37.5bn in new equity from shareholders and governments over the past eighteen months.

Partly because so much of their government aid has come in the form of loans rather than grants, the Legacy carriers in the US and Europe have on the whole been the worst affected. Delta, United, IAG, Lufthansa and Air France-KLM saw their equity values fall by an average of 30% from the level at the beginning of 2020.

IAG was particularly, and probably unfairly, hit with its market cap falling by 39% in dollar terms despite a successful deeply discounted rights issue of $3.3bn: but then it had had no real government aid of any form, and its shareholders (including Qatar Airways, aka the State of Qatar) were left to support out the premier network airline group in Europe.

Strangely, American Airlines has seen an increase in the total value of its shares. It also had a massive share issue, raising $2.9bn but this included convertible quasi-debt. Adding back capacity more quickly than the rest of

This issue includes

AIRLINE MARKET CAPITALISATION

	Market Cap			
$bn	1 Jan 2020	30 Jun 2021	Pct Chg	Equity raised
Southwest	27.9	31.5	+13%	2.3
Delta	37.9	28.0	-26%	
Ryanair	17.9	20.9	+17%	0.5
United	22.1	16.7	-24%	2.6
American	12.2	13.6	+12%	2.9
China Southern	10.5	11.2	+7%	2.1
ANA	11.2	11.1	-1%	2.7
SIA	8.0	10.7	+34%	10.9
Air China	13.3	10.5	-21%	
IAG	16.4	10.0	-39%	3.3
China Eastern	11.1	9.5	-14%	
JAL	10.5	9.5	-10%	1.7
Alaska	8.4	7.6	-9%	
Lufthansa	8.8	6.7	-24%	0.4
Qantas	7.8	6.6	-15%	1.1
Cathay	5.8	5.5	-6%	4.0
JetBlue	5.6	5.3	-5%	0.6
easyJet	7.2	4.7	-34%	0.5
Wizz	4.4	4.6	+4%	
Allegiant	2.8	3.3	+21%	0.3
Spirit	2.8	3.3	+20%	0.4
Air France-KLM	4.8	3.1	-35%	1.2
AirAsia	1.4	0.8	-41%	0.1
Total	**258.6**	**235.0**	**-9%**	**37.5**

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Publisher:

Keith McMullan
James Halstead

Editorial Team

Keith McMullan
kgm@aviationstrategy.aero

James Halstead
jch@aviationstrategy.aero

Subscriptions:

info@aviationstrategy.aero

Aviation Strategy Ltd
Registered No: 8511732 (England)
Registered Office:
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London SW15 5QT
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the US industry, it is perceived to be more of a beneficiary of domestic US recovery than its Legacy peers.

In South East Asia, both Singapore Airlines and Cathay Pacific received strong government support from equity injections. In Singapore's case Temasek, the state holding company and 55% shareholder, underwrote a deeply discounted rights issue to raise S$8.8bn ($6.5bn) in March 2020 — 115% of SIA's then market capitalisation. This was effected through a 3-for-2 rights issue of new shares to raise S$6.2bn along with S$3.5bn nominal amount of mandatory convertible bonds (MCBs). The MCBs have a ten-year life, carry no coupon, are convertible (or redeemable) at the company's option and can conveniently be treated as equity on the balance sheet. A further S$6.2bn MCBs were issued by rights in June 2021.

Singapore's support of $10bn for its flag carrier provided it with equity, which contrasts with the German Government's support of a similar amount for Lufthansa which loaded it with debt. SIA's equity value is, remarkably, 34% higher than at the beginning of 2020.

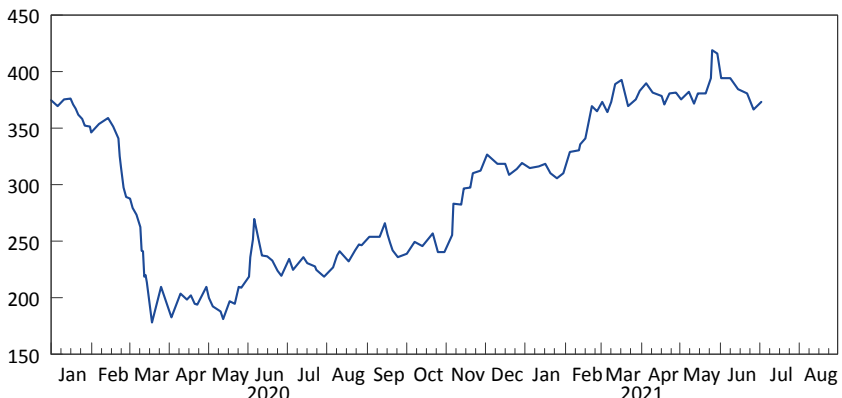
Among the Chinese carriers, things are a bit more complicated (as usual). China Southern carried out a successful capital raising of $2.1bn and has seen its equity valuation rise: it, Air China and China Eastern are all state-owned and have parent companies whose financial position is opaque.

Persuasive growth stories and expectations of recovery in short haul and leisure have attracted strong investor interest. The market values of Southwest, Ryanair, Allegiant, Spirit and Wizz are all above early 2020 levels, despite parking most of their aircraft for long periods throughout the pandemic.

An LCC model is not necessarily a guarantee. AirAsia's valuation has been battered, down 41%. Investors are clearly not yet buying its strategy of developing a "super-app" to turn itself from an airline to some form of e-retail group.

EasyJet is the other underperformer with its stockmarket valuation dropping by 34% since the beginning of 2020. Its value probably hasn't been helped by its founder and major shareholder, Stelios Haji-Ioannou unloading stock, but, a more fundamental problem may be that investors now regard it as more of a Legacy than an LCC.

AIRLINE SECTOR MARKET CAP ($bn)



Source: Economist, Bloomberg

JAL and ANA: Zen and the Art of Airline Maintenance

As they emerge from the pandemic JAL and ANA seem set on preserving their domestic market as an island of competitive tranquillity while moderating, as far as is possible, the impact of further incursions from foreign carriers in their international markets.

Japan's experience of Covid-19 has been different from that of Western countries. Vaccination rates until very recently have been very low but so has been the Covid mortality rate (about 5% of the UK's rate, for example). A national lockdown has not been imposed, apparently because it would be unconstitutional, but most prefectures introduced local restrictions, and international travel to/from the country has been very severely curtailed.

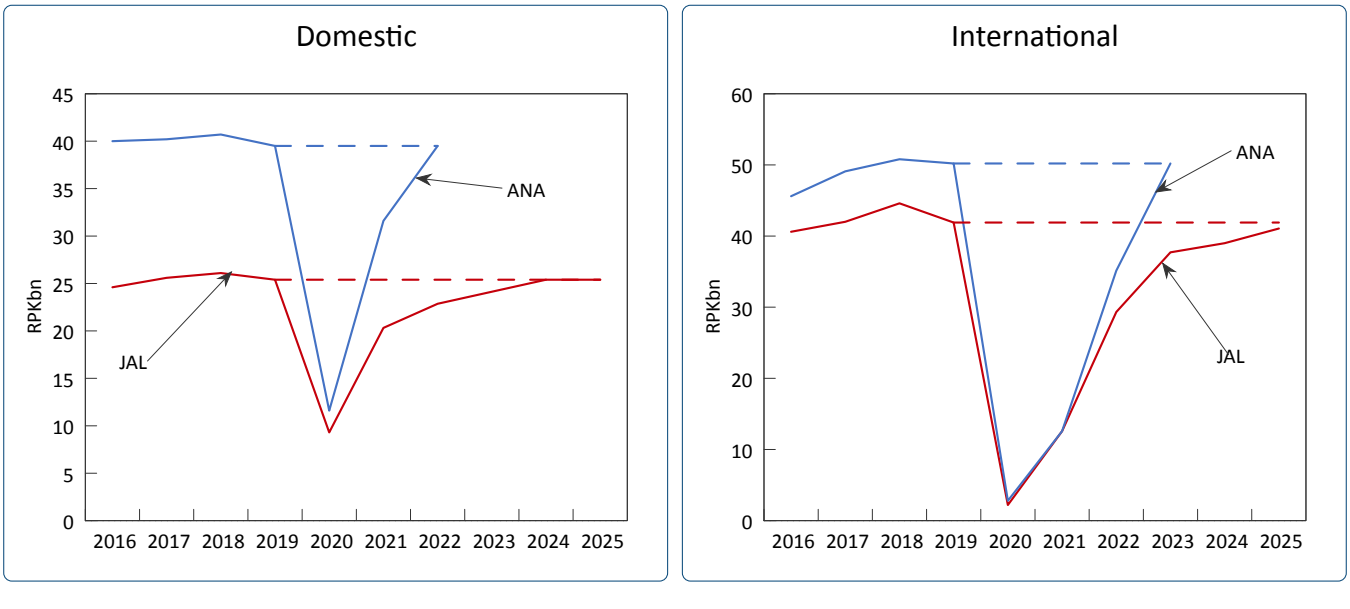
Remarkably, the Olympic Games will go ahead in July, albeit with few spectators. The airlines and airports had been gearing up for the Olympics for some years, but the crowd-free event may not be a serious blow — the boost to traffic demand from such events is usually well overestimated — and, in any case, the lost Olympics business has been swamped by the Covid effect.

In FY2020 (year to March 31, 2021) ANA reported a 75% collapse in overall passenger numbers, to 13.1m from 52.3m, with domestic passengers down 71% to 12.7m and international passengers down 96% to 0.4m. JAL's percentages were almost the same: overall passenger volume down 72% to 12.6m from 45.4m, with domestic passengers down 74% to 12.2m and international passengers down 96% to 0.4m. For the record, the annual systemwide passenger load factors for ANA and JAL were 34.8% and 36.6% respectively.

Domestic traffic is recovering — by mid-year schedules had been restored to about 70% of 2019 levels, and both carriers are relatively optimistic about this market, with ANA projecting a return to 2019 RPKs by the end of 2022, JAL by 2023 or 2024. International is much more uncertain — ANA estimates 2023 as the full traffic recovery year; JAL is more tentative, indicating that volumes will not get back to 2019 levels until 2025.

Repairing the financial damage is going to be even more problematic. ANA recorded a ¥545bn ($490m) pretax loss in FY2020, a -84% margin on revenues. JAL's pretax loss was ¥404bn ($364m), a -75% margin.

RECOVERY PROFILES: RETURN TO 2019 TRAFFIC



JAL

FY (Apr 1-Mar 31)	2016	2017	2018	2019	2020	Total 5 years
Revenues	1229.0	1383.0	1487.0	1385.9	481.2	5966.1
PBT	162.8	162.5	156.2	88.1	-404.1	165.5
Operating Cashflow	253.2	281.5	296.7	80.8	-219.5	692.7
Capex	-233.1	-208.0	-222.1	-239.6	-89.6	-992.4
Other Income (Expenditure)	65.0	41.4	32.4	5.9	-1.4	143.3
Free Cashflow	85.1	114.9	107.0	-152.9	-310.5	-156.4
Increase (decrease) in debt	-7.2	-1.4	5.9	1.7	205.9	204.9
Equity inflows					182.7	182.7
X-rate effects	-0.3	-0.4		-1.2	1.1	-0.8
Dividends paid	-46.3	-54.4	-42.9	-40.5		-184.1
Total Cashflow	31.3	58.7	70.0	-192.9	79.2	46.3

Note: FY 2020 is year to March 31 2021. ¥1bn=US$0.9m

JAL Balance Sheet

¥bn	End March 2021
Fleet assets	1045.4
Investments etc	494.1
Cash	*408.3*
Other current assets	159.5
Total Assets	**2107.3**
Long term debt	495.6
Retirement liabilities	153.2
Current liabilities	476.9
Total Liabilities	**1125.7**
Shareholders' Equity	**981.6**

The impact on cashflow is summarised in the tables on the current page. Adjusting the reported loss for depreciation and other items to obtain operating cashflow roughly halves the PBT losses, but, even with Capex rigorously cut back, Free Cashflow was ¥-310bn at JAL and ¥-866bn at ANA (inflated somewhat as this includes ANA's purchase of financial bonds).

In the summer of 2020 the Japanese airline industry made a joint request, through the Scheduled Airlines Association, to the government for aid to survive the Covid crisis, but the government has been remarkably reluctant to provide *direct* loans or grants to the airlines, though it has supported regional airports which in turn have cut landing fees, and the airlines have had access to general furlough schemes. A large part of this reluctance stems from the 2010 experience of having to bail out JAL to the tune of ¥350bn. Just before the pandemic struck, the JAL President, Yuji Akasaka, was still apologising for that episode, stating in an interview with the *Japan Times*: "We caused trouble to many parties concerned, including our shareholders, related government agencies and ministries, as well as partner financial institutions."

The impact of the 2010 JAL bankruptcy and the subsequent restructuring and recapitalisation was seen as detrimental to ANA — in the period 2016-19 its pre-tax profit margin averaged 6.9% against 10.4% at JAL. The government has attempted to redress this situation by restricting the award of new routes to JAL and generally favouring ANA in new slot allocation at Tokyo Haneda.

Pre-pandemic competition between the two airlines was controlled, both officially and informally, by the powerful Ministry for Land, Infrastructure, Transport and Tourism (MLITT), to the extent that the Covid crisis led to speculation at the end of last year that a full-scale merger between JAL and ANA was possible. The suggestion came from a close advisor to the new Prime Minister

ANA Holdings

FY (Apl 1-Mar 31)	2016	2017	2018	2019	2020	Total 5 years
Revenues	1765.3	1971.8	2053.3	1974.2	728.7	8493.3
PBT	139.5	196.6	154.0	51.5	-545.4	-3.8
Operating Cashflow	237.1	316.0	296.1	130.2	-270.4	709.0
Capex	-224.9	-265.5	-336.8	-317.6	-134.1	-1278.9
Other Income (Expenditure)	30.3	-59.0	28.1	87.4	-461.5	-374.7
Free Cashflow	42.5	-8.5	-12.6	-100.0	-866.0	-944.6
Increase (decrease) in debt	20.8	-9.0	-26.4	49.0	801.7	836.1
Equity inflows					296.4	296.4
X-rate effects	-1.9		0.3	-0.3	2.6	0.7
Dividends paid	-17.5	-21.0	-20.1	-25.1		-83.7
Total Cashflow	43.9	-38.5	-58.8	-76.4	234.7	104.9

Note: FY 2020 is year to March 31 2021. ¥1bn=US$0.9m

ANA Balance Sheet

¥bn	End March 2021
Fleet assets	1446.3
Investments etc	*533.1*
Cash	*464.7*
Other current assets	763.7
Total Assets	**3207.8**
Long term debt	1530.5
Retirement liabilities	161.7
Current liabilities	503.4
Total Liabilities	**2195.6**
Shareholders' Equity	**1012.2**

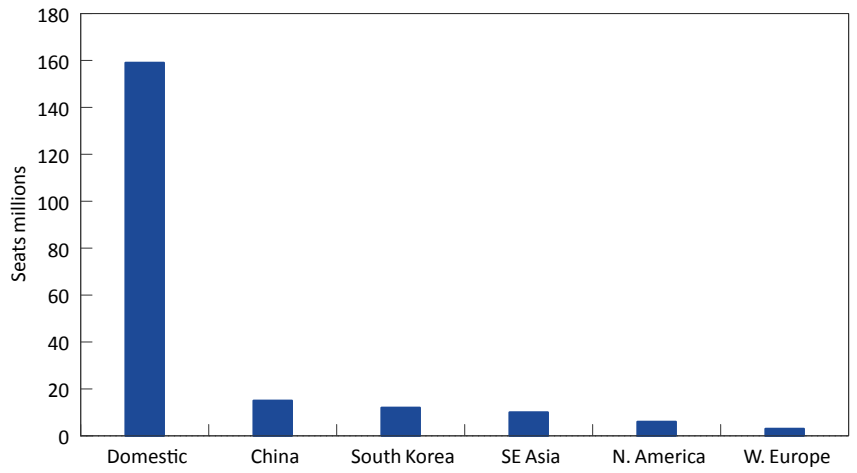
Yoshihide Suga, who raised the idea of major capital injections from the state into the airline industry, on a Lufthansa-type scale, and stated that "ANA and JAL should come together at this time."

The precise meaning of this exhortation is unclear, but there would appear to be little logic for such a merger, given the level of collusion between the two carriers and the potential logistical nightmare in operational terms. Moreover, the Japanese banks and investment community have been more than willing to support the two carriers. Almost 90% of ANA's shares and over 75% of JAL's are Japanese owned, and in both companies roughly half the Japanese holding is from individual investors.

JAL and ANA appear to have coordinated their respective rights issues at the end of 2020 and the beginning of 2021 which raised ¥183bn for JAL and ¥298bn for ANA. In addition, JAL in FY2020 raised a net ¥206bn in debt while ANA increased its borrowing by a remarkable ¥802bn. The major Japanese banks are almost obliged to support the national carriers. And the monetary stimulus policy of the central Bank of Japan means that it not only buys government and corporate bonds but also invests in shares — it now owns about 7% of the Japanese equity market.

The fund raising has left the two carriers with reasonably solid balance sheets — as at March 2020, a debt/equity ratio of 1.1/1 at JAL and 2.2/1 at ANA — and enough cash on hand to absorb another 12 months of 2020-type losses. In fact, ANA is officially forecasting break-even at the net profit level for FY2021. JAL hasn't yet come up with a forecast.

MAIN JAPANESE MARKETS



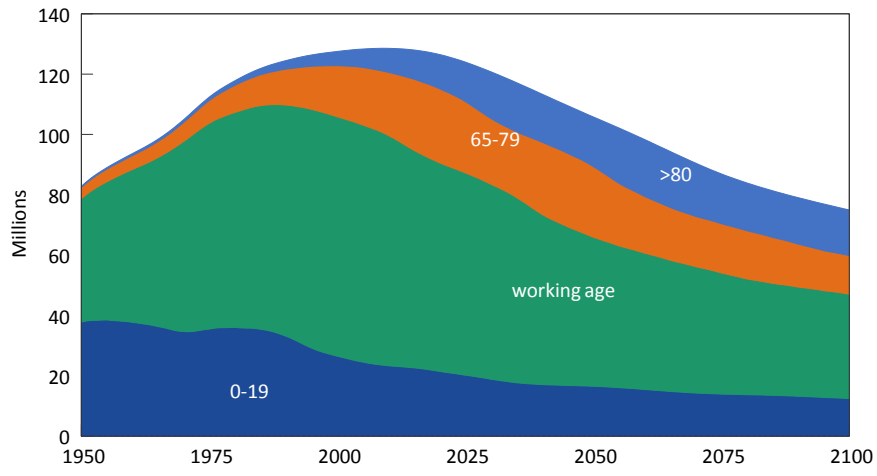
Note: All Japanese and foreign airlines

Japan's economy pre-pandemic was characterised by a 20 year deflationary period with insipid real GDP growth and zero or negative price inflation rates — perhaps a vision of the future for some European economies. There was only a minor recovery from the Global Financial Crisis, with GDP growth averaging 1.1% during 2014-19 before falling by 4.8% in 2020. Nevertheless, it should not be forgotten that Japan is still the third largest economy in the world (after the USA and China), and its GDP per capita, $45,000 in 2019) is one of the highest in the world. Plus it ranks very highly on most social indicators, and it is a fascinating country.

Closely related to its weak economic performance is Japan's demographic profile. The country's population peaked around 2010 and has started to decline, a trend which is expected to accelerate throughout this century, with the working age population being supplanted by retirees — see chart left.

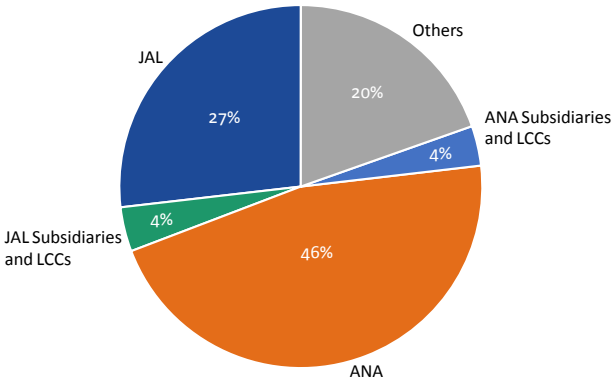
This is the set of problems that Abenomics (named after Prime Minister Shinzo Abe who retired earlier

JAPAN DEMOGRAPHICS

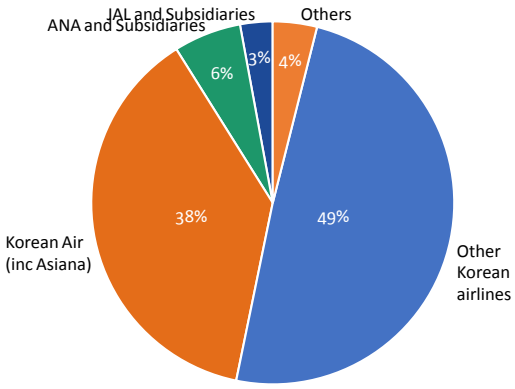


STRUCTURE OF JAPANESE MARKETS

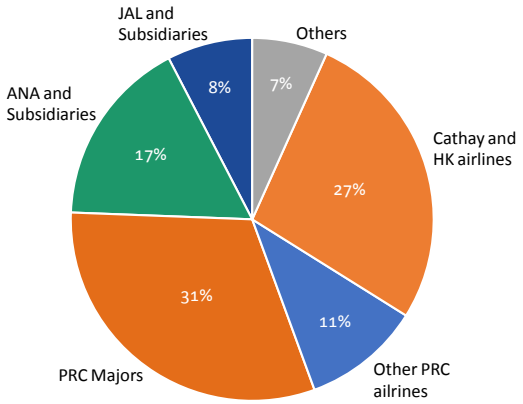
Domestic Japan



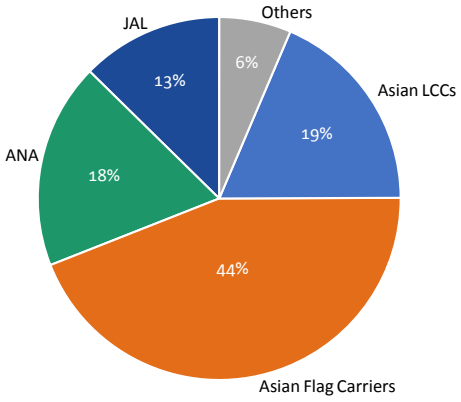
South Korea



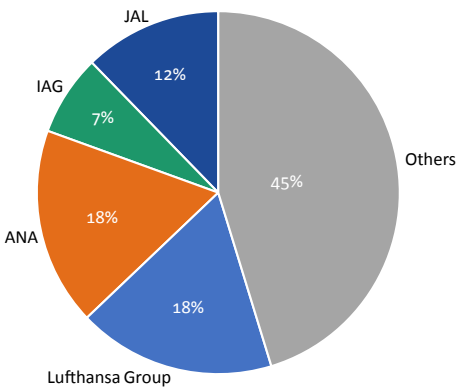
PRC and Hong Kong



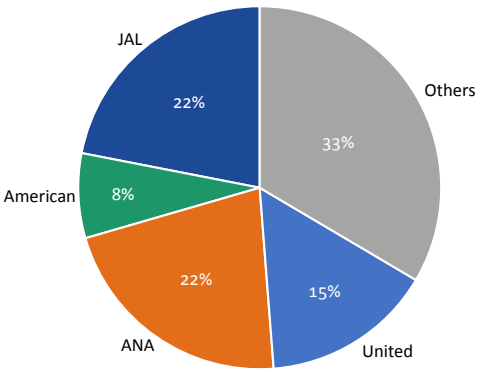
SE Asia



Europe



North America



Note: based on 2018/19 scheduled seat capacity, all airlines (foreign and Japanese)

this year) was supposed to resolve through structural reforms, increased labour market flexibility, encouragement of inbound tourism and an inflationary fiscal policy, but which has had only limited success. ANA and JAL have to find post-Covid strategies to meet the same challenges.

Visions and markets

JAL's mission statement in its medium term management plan, evidently losing something in translation, is: "To become the world's most preferred and valued airline group, where many people and goods lively move around" — an almost zen-like aviation vision. ANA proclaims its aim of being: "The world's leading airline group in customer satisfaction and value creation".

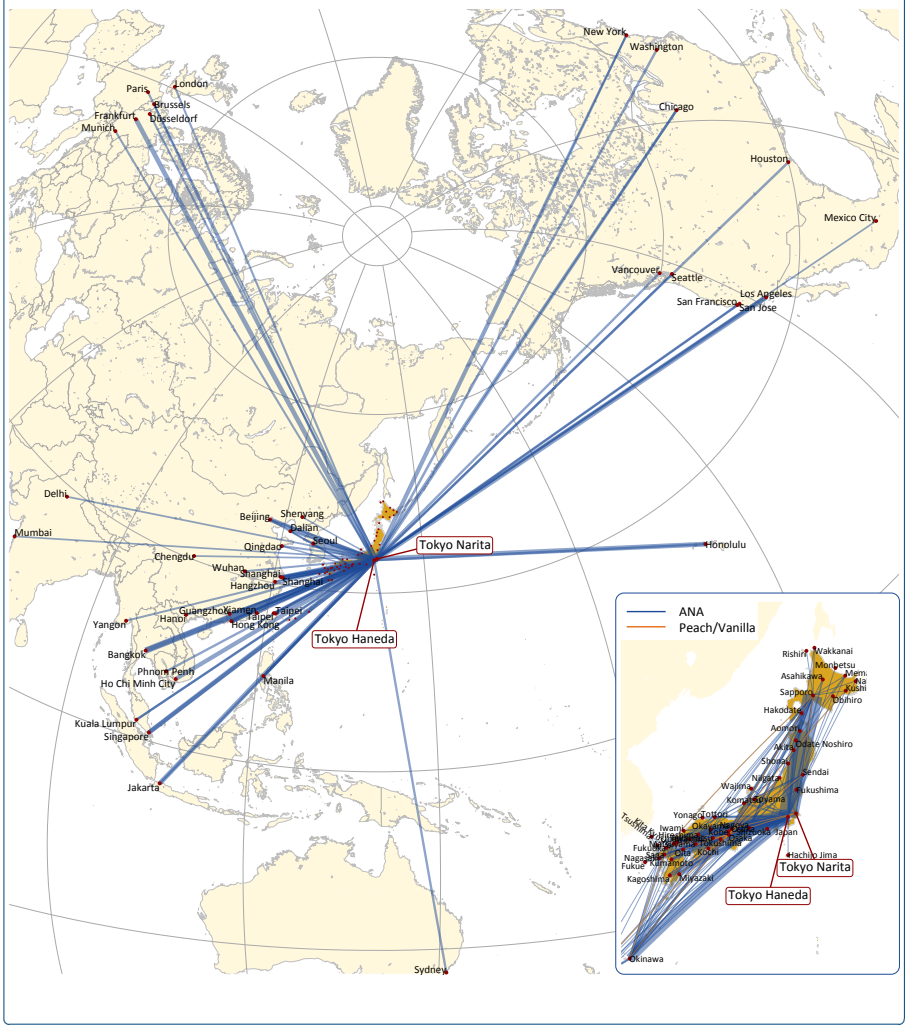
Before looking at how JAL and ANA intend to realise these lofty aspirations it is worth reviewing the relative sizes and competitive structure of Japanese aviation markets. The bar chart on page 5 and the pie charts on the facing page are constructed from pre-Covid (2018/19) schedules, cover all Japanese and foreign airlines and are measured in one-way seats.

✈Domestic

The Japanese domestic market is huge in terms of seat capacity — pre-Covid the annual total was around 159m seats or 75% of the total Japanese air transport market. In revenue terms the domestic market accounts for about 53% of both ANA's and JAL's total passenger revenues.

Only about a third of this capacity is on routes to/from Tokyo Haneda and Narita, the rest is flown between the other 70-plus cities. The average sector length is about 940km yet nearly 40% of domestic capacity is provided by widebodies, 50% by narrowbodies and the rest by RJs and turboprops.

ALL NIPPON: PRE-COVID ROUTE NETWORK



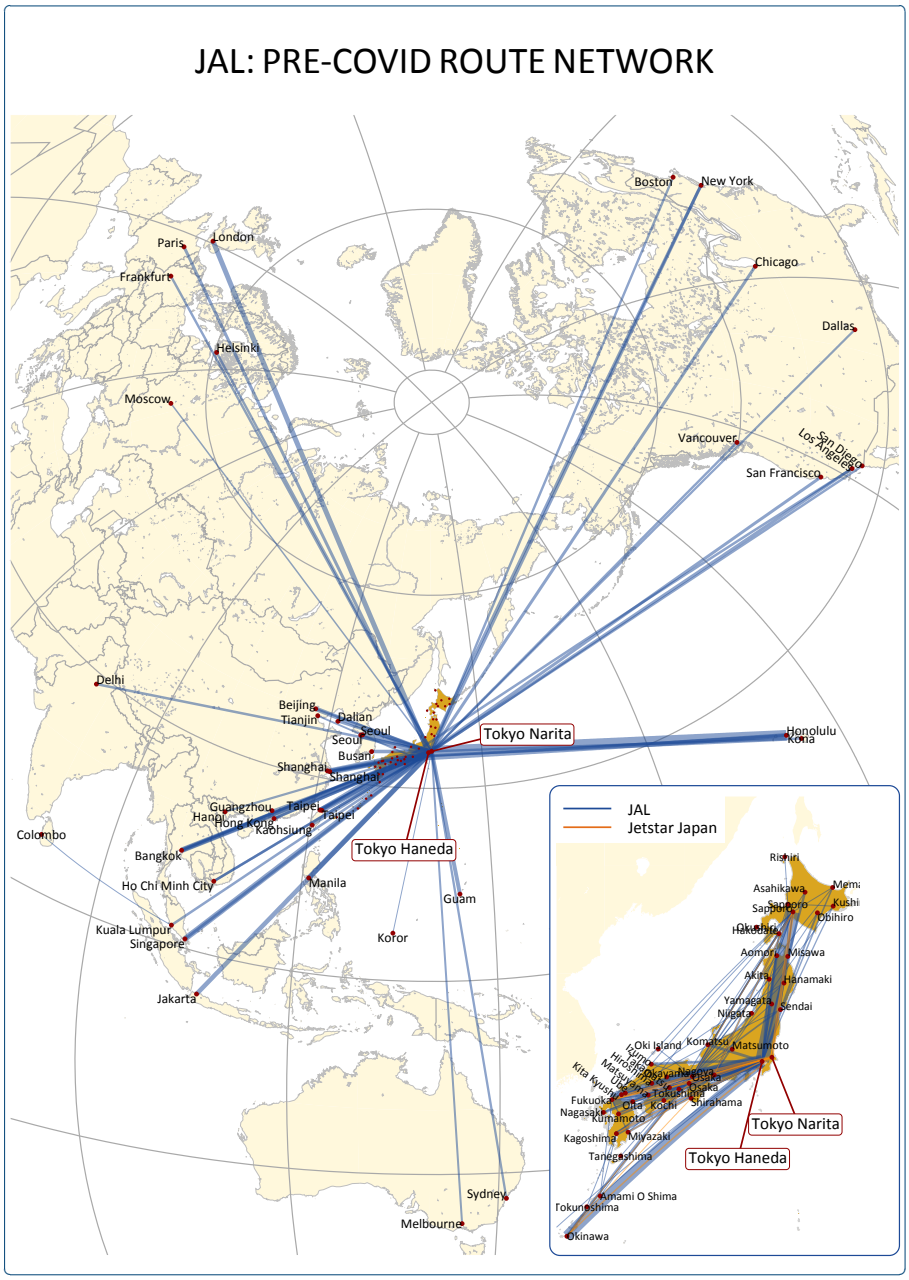
As the pie chart on the preceding page shows, the two carriers and their subsidiaries (more on the LCCs below) control 80% of the market, with ANA being the dominant force. For both carriers, the domestic market is vital for their long-term survival and has to be impregnable.

The 20% of capacity offered by other airlines does not represent real competition. ANA has extensive codesharing agreements with, and holds minority stakes in, the significant regional airlines — IBEX, AIRDO, Solaseed and Star Flyer. And these regionals have responded to the Covid crisis by consolidating — AIRDO and Solaseed will complete a merger in 2022.

✈China

The government's tourism plan envisaged an increase in tourist arrivals from 30m in 2018 to 60m by 2030. Despite the pandemic that target is still regarded as realistic and most of the increase is to come from Mainland China.

In this market JAL and ANA risk being overwhelmed by the Chinese Majors (Air China, China Southern, China Eastern and Cathay Pacific) and the dynamic new entrants (notably Spring Airlines). The two Japanese airlines had only 25% of the market



pre-Covid; to retain this share in the future ANA is relying on Peach and JAL on Spring Japan (see LCC section below).

✈South Korea

Almost as large as China in seat capacity, the South Korean market has very different characteristics. Korean Air's Incheon hub competes directly with Narita and Haneda for connecting medium/long-haul traffic, and much of its traffic to/from Japan is feed. Following the takeover of Asiana last year Korean has potentially increased its share of the Japan-Korea market to nearly 40% leaving just 10% for JAL and ANA.

This is also an important market for the other Korean carriers which provide nearly half the capacity — LCC-types like Jeju Air, Jin Air and T'Way Air dwarf Peach on Korea-Japan routes.

✈South East Asia

This is a leisure-orientated market with strong Japanese outbound tourism, which JAL and ANA intend to exploit through their new medium haul subsidiaries.

The market is volatile. Pre-Covid JAL and ANA had about 29% capacity while the SE Asian flag carriers took 44%. But it is not all certain that the likes of MAS, Garuda, PAL and Thai will survive the Covid crisis. And AirAsia X is the largest of the LCCs that accounted for 19% of the market.

✈North America

About 30% of this market is to the classic honeymoon resort of Honolulu, with flights operated by Hawaiian, JAL, ANA, various associated Japanese charters and in the future by the new medium/long-haul brands.

The other 70% covers routes from Japan to all the major US and Canadian cities. This is a market largely operated under antitrust-immunised, deep codesharing agreements whereby the Japanese and US carriers in effect operate as one airline on scheduling, pricing, etc. JAL plus American have 30% of the market, ANA plus United about 37% — in short, this is a controlled market for the Japanese carriers (the other US major Delta has its immunised agreement with Korean).

✈Europe

Japan-Europe too is characterised by deep alliance agreements, but is more diverse. Paris is the favoured destination for Japanese tourists, and Air France is the largest airline on the Japan-Europe market, with 13%. However, JAL and IAG (mostly BA) combined account for 19% of capacity, while ANA plus Lufthansa Group airlines take 36%. Again, this is, on a country pair basis, a controlled or controllable market for JAL and ANA.

Elements of their strategies

Against this background, the key elements of JAL and ANA's current strategies are condensed below.

✈Japanese version of low cost

LCCs were an alien concept in the Japanese market until about ten years ago when JAL and ANA started small scale experiments with lower cost associates, setting up joint ventures with established operators, notably Air Asia and Jetstar/Qantas. The idea promoted by the MLITT was for the Japanese carriers to examine all aspects of established LCC models, take the best bits and build a super-efficient Japanese version.

The LCC policy was linked to the new policy of privatising regional airports, of which there are about 90 in Japan. By observing European experience, it became clear that without an LCC presence there would be little impetus behind traffic growth at the airports.

However, the JAL/ANA instinct to control competition appears to have prevailed. Most of the LCCs that emerged — Vanilla, Peach, Jetstar — were partly owned by ANA or JAL, and certainly were not allowed to expand in a rapid LCC manner or compete vigorously against the incumbents. The LCC share of the Japanese domestic market peaked at about 15% in 2019 but since then the pandemic has accelerated the trend to concentration around the two mainstream carriers and elimination of independent LCCs.

AirAsia Japan, a joint venture between AirAsia and Japanese partners, closed at the end of 2020, and will not resume operations. Jetstar Japan closed down too at the end of 2020, although temporarily, with its A320s being repatriated to Australia. Spring Airlines Japan, a subsidiary of the Chinese LCC with an initial 5% stake from JAL, was taken over by JAL last summer.

JAL and ANA now have parallel LCC strategies. JAL has three business models:

✈ Jetstar: Focusing on domestic leisure routes with a fleet of 22 A320s and utilising Australian marketing and revenue management expertise.

✈ Spring Japan: Using Spring's brand to bring in Chinese tourists to Japan, flying 737-800s.

✈ ZIPAIR, a new medium/long-haul venture using 787s — ten aircraft are planned for 2024 — on leisure-orientated routes to/from Hawaii, California and SE Asia.

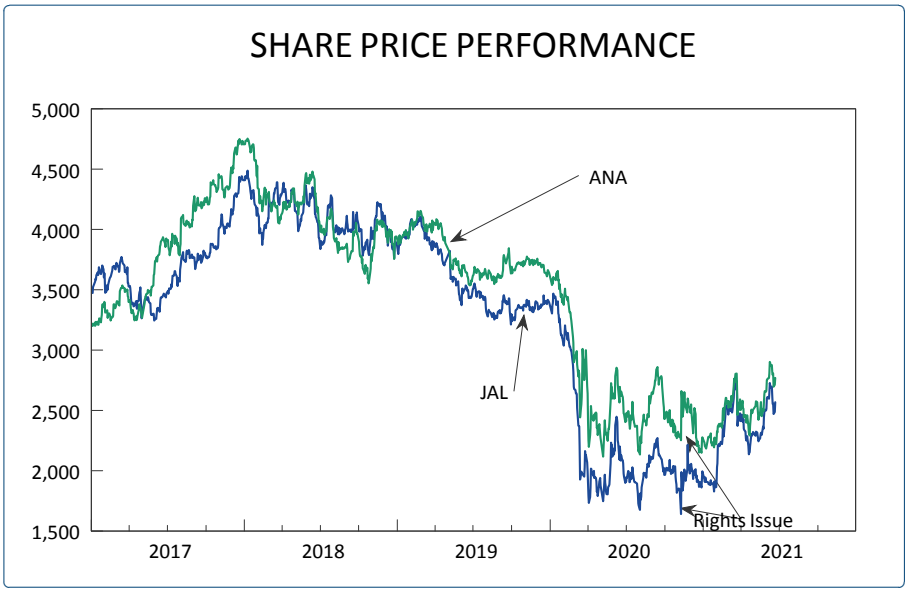
ANA, meanwhile, is promoting:

✈ Peach: Positioned as "the LCC market leader", and since 2019 incorporating Vanilla, Peach is expected to expand from 35 A320s today to a maximum of 40 by the end of 2022, consolidating its position domestically, with some international expansion into SE Asia when its two postponed A321LRs are delivered. At the same time, ANA plans strengthen cooperation between Peach and the mainstream airline, coordinating schedules and, presumably, pricing.

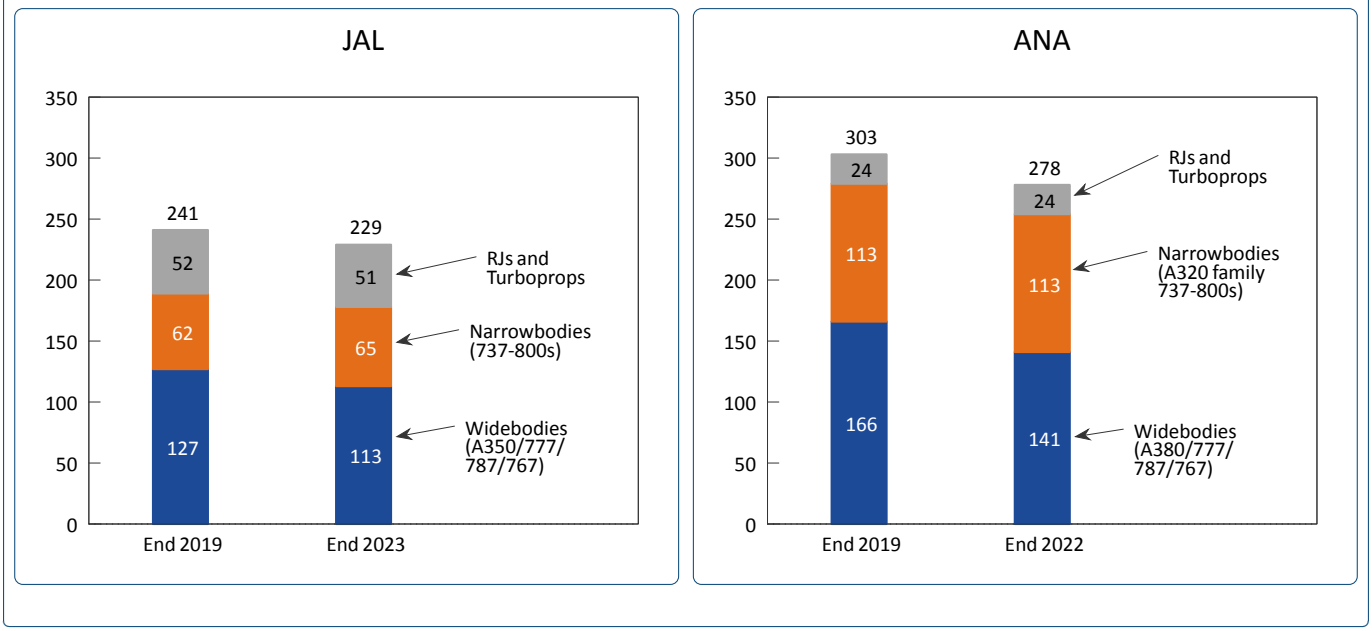
✈ "Third Brand": As yet unnamed, this will be a 787 operation to the same markets as JAL. The main source of cost saving relative to the mainstream airline would appear to be seat density — the low cost 787 will have 300-plus seats (though still offering two cabins) against 169-240 seats on the existing international 787-8s.

So the Japanese LCC sector remains relatively small-scale and tightly bound in with their parents. Despite exploring Western LCC operations in detail, there is little of Southwest in the LCC units, let alone Ryanair. Indeed, the Japanese strategy appears to be a variation on SIA's multi-brand operation (SIA, SilkAir, Scoot), though it may prove superior to SIA's.

While emphasising the (modest) expansion of the LCCs, the two carriers are also promoting new, if a little obscure, enhancements to their full-service products. ANA has set up a "Regional Revitalisation Company" which will assign "concierges" to solve local issues. JAL has ambitions to capture more international connecting business traffic over its Narita hub through "leveraging joint ven-



SUMMARY FLEET PLANS



tures" (presumably with its oneworld partners, BA, American and Finnair).

✈Fleet shrinking

Both carriers have short/medium term plans to reduce the overall sizes of their fleets (see chart above), relative to 2019 through the disposal of older widebodies.

JAL's planned fleet for 2023 is 229 units, down from 241 in 2019. 26 777s are being taken out of the fleet to be replaced on domestic routes by A350-900s. 350-1000s are due to make their appearance in 2023, replacing 777-300ERs

ANA's planned fleet for the end of 2022 is 275-280 units, down from 303 in 2019. It has accelerated the retirement of 17 777s and 767s as well as 18 737s and A320s. Scheduled deliveries of 787s and A320neos have been postponed, and its final A380, colourfully paint-jobbed for the Hawaiian market, remains temporarily in France.

✈Labour relations and cost flexibility

Japanese labour relations contrast with those in the Western corporate world. Despite Covid and the planned downsizing JAL has not reduced at all its 35,600 workforce. It has redeployed surplus employees from the main airline to new business units, seconded them to other companies and encouraged them to go on training and educational programmes.

In the recovery phase there will be no net increase in employee numbers though the company expects productivity improvements by shifting employees from declining to expanding units within the corporation (in contrast to IAG's strategy of moving capital from declining to expanding units). JAL continues to highlight what it calls its *amoeba* management system, under which "every employee strives to contribute to increasing profits by maintaining a steady focus on maximising revenues and minimising expenses" (whether workers care to be likened to amoeba is open to question).

ANA is as usual is little more prosaic. It plans a 4,000 reduction on workforce from 46,500 to 42,5000 by the end of 2022. But this reduction will be effected through natural retirements, voluntary retirements and curbs on graduate hiring.

It had to suspend winter bonuses in 2020, the first time since 1962, which is significant as bonuses, summer and winter, make up about a quarter of annual income, and the decision did seem to be genuinely traumatic for the management : "I feel very sorry, as the decision has a big impact on your life," said ANA Holdings CEO Shinya Katanozaka in a statement to employees.

Both airlines promise that they will emerge from the Covid crisis with more flexible cost structures. ANA states that it will change the ratio of fixed to variable costs from 60/40 in 2019 to 50/50 in the "mid term"; JAL intends to retain its fixed costs at 2020 levels throughout the recovery period. They reference renegotiated supplier contracts, new labour agreements, fleet renewal, etc, but

it is difficult to see how any fundamental change can be made given the fixed nature of labour costs at the companies, or, to put it another way, their long-term commitment to harmonious labour relations.

Nebulous Lifestyle

Asian network carriers — not just JAL and ANA but also Cathay Pacific and SIA — have latched onto the idea that they can exploit their passenger databases to become quality service companies rather than just airlines. Air Asia too has been a strong proponent of this concept.

Looking at JAL's "Path to Profit" plan, it is apparent that "Mileage and Lifestyle" is expected to be a more important generator of profits than LCC growth or FSC revenue enhancement. M&L includes finding new partners for the FFP programmes, and expanding into banking services, insurance and equity trading,

It may all seem a bit nebulous, but there is potential in Japan because this country, surprisingly, lags well behind the West in online retail and e-commerce. And the US Legacies have demonstrated over the past year how to successfully monetise Loyalty Programmes.

SDGs by 2050

JAL and ANA of course espouse SDGs (Sustainable Development Goals) as being of equal importance to ROIs or ROEs. They both commit to achieving net zero CO2 emissions by 2050, but are not being radical in the short/medium term.

JAL's 2030 target is to keep emissions below 90% of the 2019 level (which shouldn't be difficult given the modest expansion plans). ANA has a long history of experimenting with bio-fuels, but it is only committing to maintaining emissions in 2030 at a lower level than in 2019. It all seems a bit underwhelming.

Overall JAL and ANA will emerge from the Covid crisis through collaboration rather than competition. They are both essentially conservative, dedicated to preserving the status quo. The share chart on page 9 indicates that the stock market has taken a more or less identical view of the two carriers. Recent performance has been rather weak, but the chances are that both carriers will still be around in 20-years' time.

Lufthansa: Transforming from Sprawling Conglomerate to ... ?

DESPITE having one of the healthier balance sheets as it entered the pandemic crisis, Lufthansa, Europe's largest airline group, was laid low by Covid-19. It could easily have been terminal had it not been for a massive €9bn government support package — which gave the German State 20% of the equity making it the group's largest shareholder.

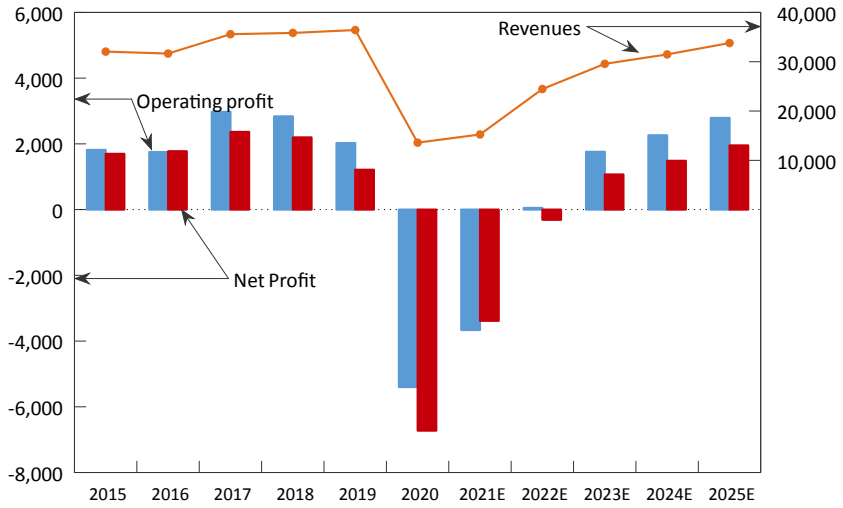
Through the crisis Lufthansa took early action. Cash drain, at €1m an hour (c€780m a month) was more than halved (with a run rate in the first quarter of 2021 of €232m a month); capital expenditure was reduced by two thirds; and fixed cash costs reduced by 35% (helped by *kurzarbeit* aid of around €1bn). The group ended 2020 with revenues down by 63%, operating losses of €5.4bn (before deducting aircraft and other asset impairment writedowns of €1.8bn and charges for fuel overhedging of €0.8bn) and net losses of €6.7bn. There was another €1bn loss in the first quarter of 2021.

Total cash outflow since the beginning of 2020 has been €4.6bn, funded almost entirely by debt. As the chart right shows, net debt increased from €6.6bn at the beginning of 2020 to €10.8bn at the end of March 2021. Total balance sheet debt grew from €10bn to €16bn, excluding pension liabilities of a further €8bn. Shareholders' equity was decimated, standing at €2bn at the end of the first quarter.

It did not seek recourse to the equity markets (the small €300m increase in equity in 2020 was part of the German Government's rescue package). This is about to change: the group's virtual AGM in April gave authorisation for a capital increase of up to €5.5bn, and Lufthansa seems set to try to raise €2-3bn in a rights issue.

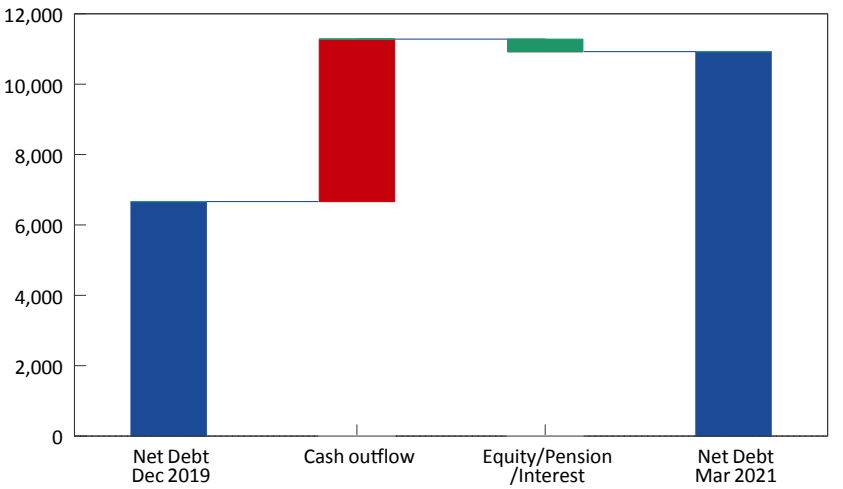
The fundamental focus over the next few years will be to pay back the significant debt the group has had to raise to survive the pandemic, and especially the funds made available by the German, Austrian, Swiss and Belgian governments: all of these funds came with restrictive conditions, including on the ability to transfer funds

LUFTHANSA GROUP FINANCIAL RESULTS (€m)



Source: Company reports, Bernstein estimates.

LUFTHANSA NET DEBT EVOLUTION (€m)



between group companies.

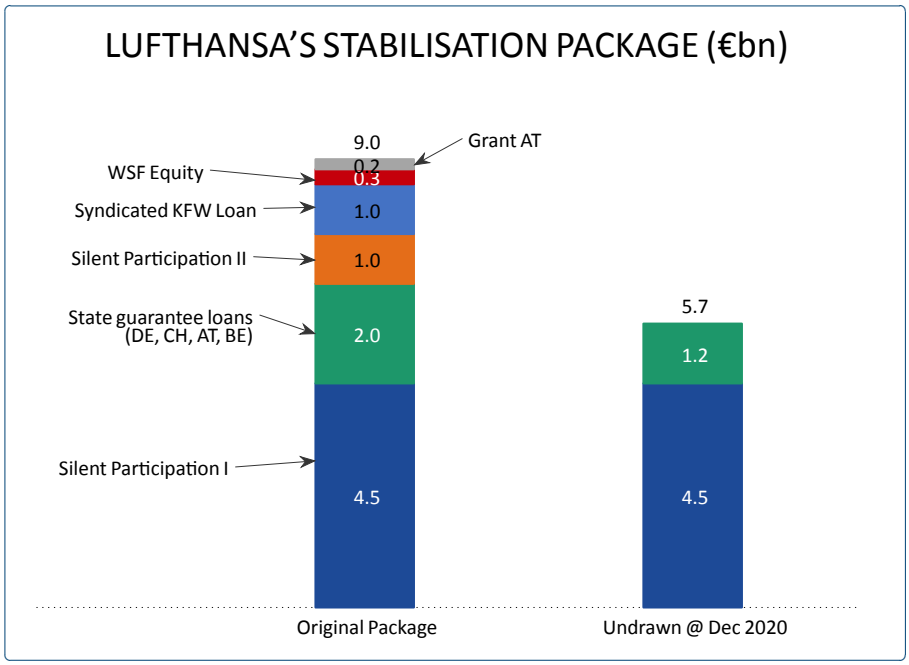
The agreed "Stabilisation Package" provided a €9bn source of liquidity to ensure the group did not fail. The German State provided the lion's share: its Economic Stabilisation Fund (WSF) took 20% of the equity for €300m, becoming Lufthansa's largest shareholder, and provided the facility for up to €5.5bn in two *stille Einlagen* (or "silent contributions" — an idiosyncratically German debt and equity hybrid instrument); national bank KFW provided a €1bn syndicated loan; and there were facilities for up to €2bn in state-guaranteed loans (half provided by Switzerland, Austria and Belgium).

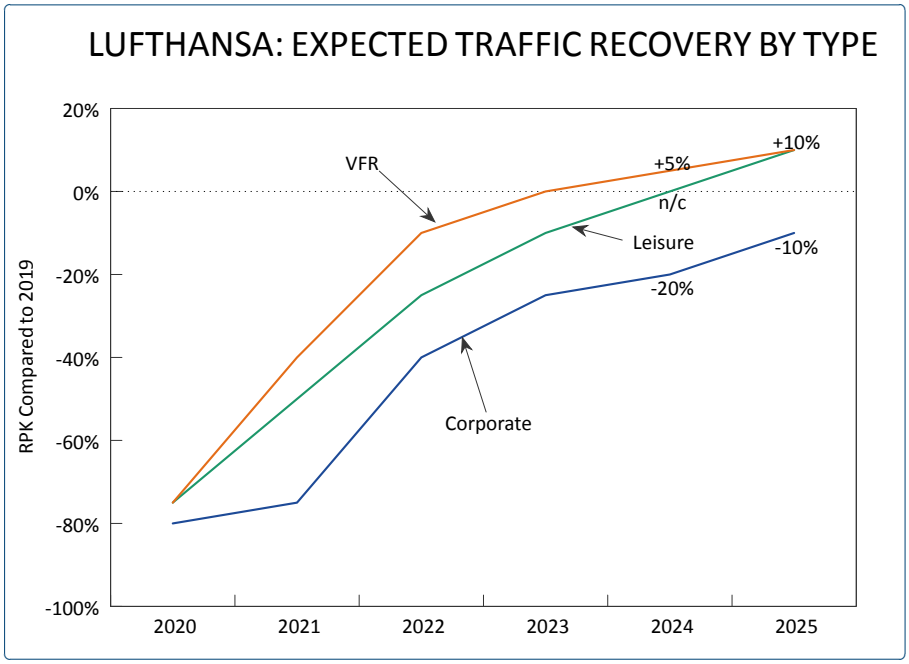
Lufthansa had drawn €3.3bn of the available funding by the end of December (in February it raised €1.6bn in in a straight bond to repay, among other things, the whole of the syndicated KFW loan) and still has €5.7bn to call on if necessary before the end of 2021.

To be able to cover repayment of the debt, Lufthansa will need to see recovery in traffic and profits to levels that will enable it to generate healthy free cash flow from operations of €2-3bn a year. That recovery is likely to take time. As the chart below shows, Lufthansa currently anticipates that its VFR based traffic will recover fastest followed by leisure tourist traffic: both should have recovered to pre-pandemic levels by 2024. But Lufthansa is strongly dependent on corporate and business travel which it expects by 2025 will still be 10% below the levels seen in 2019. This suggests that it will be an uphill struggle to achieve the right mix of yields to achieve reasonable profitability without other measures.

Lufthansa is also heavily dependent on feeding traffic. Its three main hubs at Frankfurt, Munich and Zürich have relatively small catchment areas and O&D markets (in comparison with London and Paris — see chart on the following page). 70% of Lufthansa's traffic transferred at Frankfurt compared with about 50% for Air France at Paris and 30% for British Airways at Heathrow.

Lufthansa sees itself as well-positioned to benefit from recovery in the long haul sectors when that comes. It has joint venture agreements — providing joint distribution, revenue sharing, mutual market access, joint capacity management and joint pricing) on the North Atlantic (with United and Air Canada), to Japan (with ANA), to China (with China Southern), and to South East Asia (with SIA). In pre-pandemic times the joint ventures accounted for 70% of long-haul revenues.





But the group will also need a drastic change in management philosophy: in the past it has not been good at concentrating on Free Cash Flow generation. In the past cycle (see chart right) it spent heavily and net capex rose from €2.1bn in 2016 to an average of €3.7bn in each of 2018 and 2019. In those years, when it should have been benefitting from the demise of domestic competitor Air Berlin, it achieved free cash flow averaging €400m a year.

Creating opportunity out of a crisis

In one sense the pandemic has presented a unique opportunity for Lufthansa to impose a deep restructuring of the business. CEO, Carsten Spohr describes it as a journey to a "new normal" that involves a modernised fleet, a focused portfolio of businesses, and a lean and cost efficient organisation:

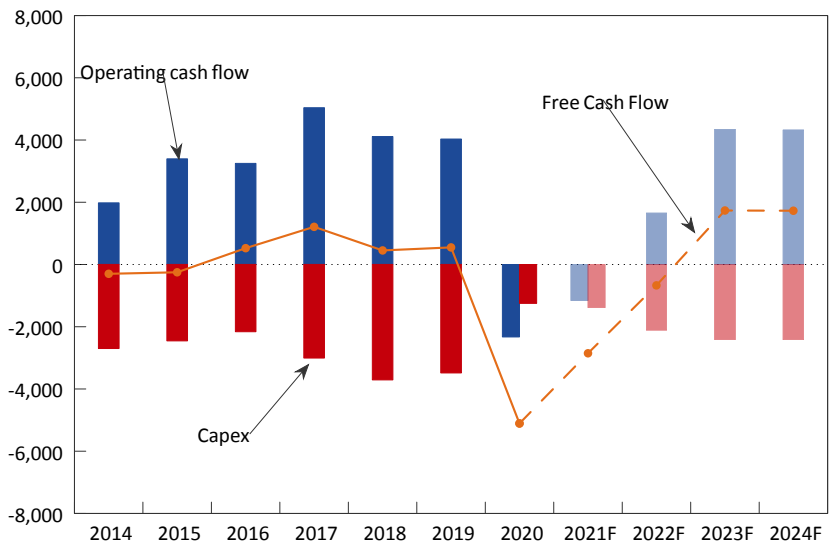
- ✈ Resize the organisation: get leaner and faster;
- ✈ Focus the group on its core airline business;
- ✈ Integrate sustainability into everything it does;
- ✈ Create value by restoring profitability and balance sheet, ensuring efficient capital use.

The group is targeting cost reductions (from 2019 levels) of €3.5bn by 2024 (equivalent to 10% of total costs in 2019). It has pursued various cost saving programmes in the past, but none as intense as this (for comparison the savings planned are three times the size (inflation adjusted) of the programme "Climb 2011" introduced in 2009 and twice the size of the SCORE programme of 2012/13). The main elements of the cost savings come from fleet modernisation and standardisation, personnel cost reductions, and simplifying operations (and reducing overheads).

The fleet will be smaller for some time to come. In 2020, Lufthansa had already phased out 115 aircraft. It anticipates that by summer 2023 it will have disposed of a total of 230 from the 800-strong fleet it had been operating in summer 2019. After allowing for new deliveries of around 60 short-haul and 20 long haul aircraft, it will be operating a fleet of 650 units in 2023, from which modest future growth could be anticipated.

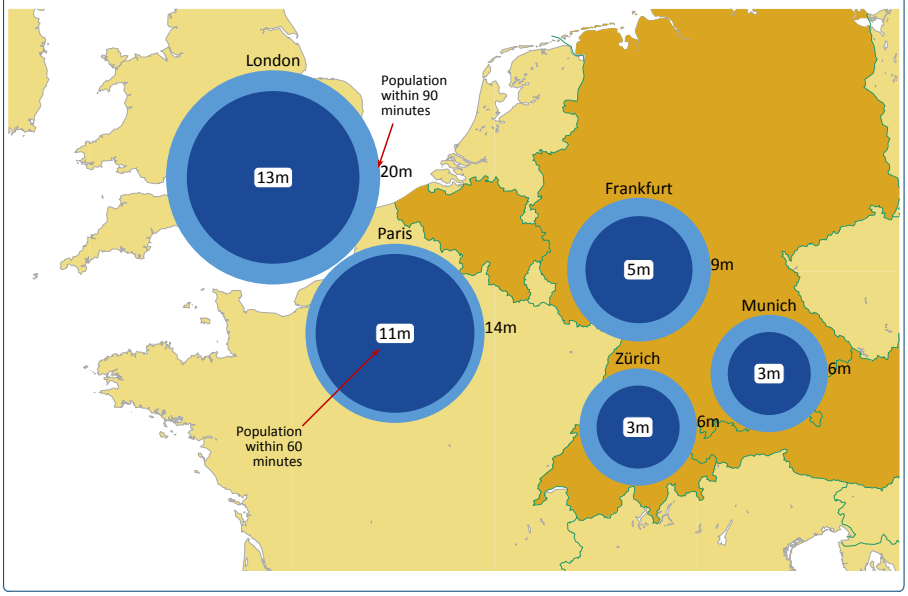
In the fleet restructuring it plans to reduce the number of types and complexity, and increase the size of subfleets to drive productivity. In the widebody passenger fleet it is dis-

LUFTHANSA GROUP: CASH FLOW (€m)



Source: Company reports. Forecasts Bernstein

LHAG's DECENTRALISED HUBS NEED FEEDING



posing of its A380s, 747-400s, A340s, 767s, A330-200s and 777-200s — reducing the number of types operated from 12 to six (747-8i, 777-900, 777-300, A350-900, 787-900, and A330-300). In the cargo operation it is disposing of its 22-year old MD11Fs to concentrate on an all-777F fleet.

In this process, the overall seating configurations will densify (the long haul aircraft disposed of in 2020 accounted for a third of the group's premium seat capacity) and the group will end up with 30% fewer first and business class seats.

Lufthansa has already cut headcount by 26,000 jobs (24,000 full time equivalent positions) or 20% of pre-pandemic levels: the total workforce had fallen to 117,000 (93,500FTE) at the end of March 2021 down from 137,000 (117,500FTE) at the end of March 2020. Two thirds of the reduction was accounted for by the catering operations at LSG (including 6,500 positions as a result of the divestment of LSG Europe last year to Gategroup). It states it has achieved a structural annualised saving of €0.9bn, but is targeting twice this amount.

Two thirds of the total job reductions were outside Germany, on target with plans. Within Germany employment fell by 8,000 positions (13%) to 52,200, but Lufthansa says it needs to achieve a further 10,000 job cuts (or corresponding costs).

This it states will need to be based on a combination of union agreements, voluntary and compulsory redundancies. The group has not always had brilliant relations with its unions, and may find negotiations tough. There is probably not much it can do until the kurzarbeit provisions come to an end in December. It has a long term collective agreement with the cabin-crew union UFO, agreed after its 2019 strike, that lasts to the end of 2023. The current agreements with VC, the pilot's union, and ver.di, who look after the ground staff, both come to and end in the first quarter of 2022.

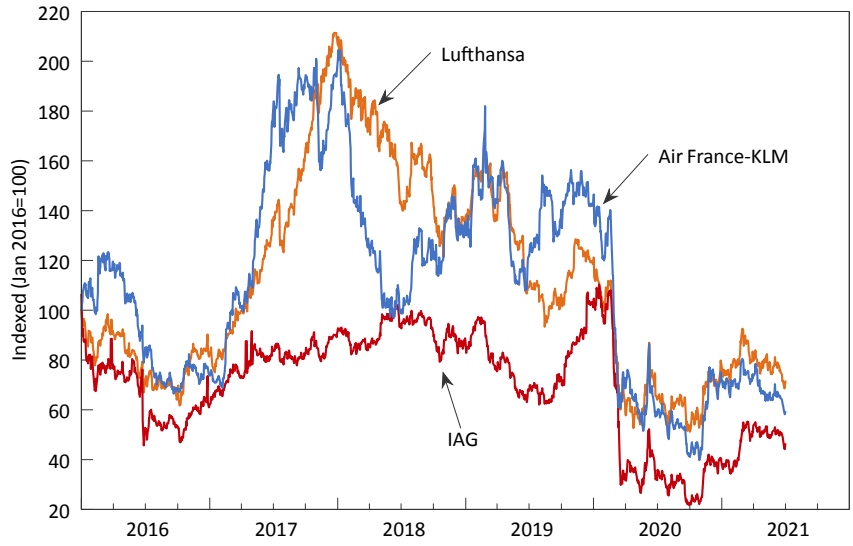
On the matter of operational streamlining, Lufthansa has made some progress. It closed operations at Germanwings and SunExpress Deutschland, and cut 30% of office space in use. It consolidated Eurowings — the group's point-to-point "low cost" operator — under a single AOC in Germany, and has streamlined the fleet around the A320-family of aircraft, dropping long haul leisure ambitions. By 2023 it is expected that Eurowings will be operating a fleet of 75 aircraft, down from 130 in 2019, and even slightly smaller than it was in 2014 before the Air Berlin acquisition.

However, to add a little complexity back, Lufthansa has established a separate "Eurowings Discover" to serve premium long haul leisure markets (similar to the model adopted by Swiss subsidiary Eidelweiss). Based at Frankfurt with an initial fleet of A330s it will be integrated in Lufthansa feeder and global sales platforms, focusing on German outbound leisure demand.

A prime element of the transformation plan is to recognise the core business as an airline group rather than an aviation-based congolomerate. Consequently it has taken the decision to dispose of a handful of businesses within its sprawling portfolio:

- ✈ AirPlus is a travel-oriented and B2B credit-card issuer with revenues of around €300m, 92m transactions and transaction value of €19m in 2019. It may be the easiest to dispose of though unlikely to attract a value of much more than a few hundred million euros.
- ✈ LSG (having sold the loss-making European operations) is a market leader in airline catering with brands including LSG SkyChefs and Retail inMotion. With sales of over €2bn and estimated operating profits approaching €200m in 2019, serving 300 airlines with operations in 46 countries round the world, in normal times it might attract a reasonable value in the billions. Lufthansa will not want to dispose of it at fire sale prices.

LUFTHANSA GROUP: SHARE PRICE PERFORMANCE



✈ The group has also identified the possibility of the sale of a minority stake in Lufthansa Technik (it had already discussed such plans before the pandemic struck). The world's leading MRO operation, it generated €6.9bn in sales (one third of which were to customers outside the group) and operating profits of €0.5bn in 2019.

Transformation

One of the more fascinating aspects of the transformation plan relates to corporate structure. The old conglomerate was an integrated Aviation Group with Lufthansa German Airlines controlling the group functions and owning the subsidiaries (Swiss, Austrian, Brussels, Eurowings, LH Cargo, LH Technik etc).

Spohr's new vision is of an Airline Group running the group functions and holding *all* the branded airlines as its subsidiaries (including LH German Airlines). The business units would have full P&L responsibility, while the Group management board would be focused on strategy, capital allocation and driving improved capital returns.

This is the structure set up by IAG on the merger between BA and Iberia in 2011 (having learnt from the mistakes of Air France-KLM and Lufthansa itself). The holding company has to be agnostic to the requirements of individual subsidiaries: each has to fight for the right to capital.

The structure as proposed gives hope that Lufthansa Group will indeed be able to achieve targets of 8% operating margins and a 10% return on capital by 2024.

It should also look like a very different beast from what it is today.

United goes Boom: A Passion for Superspeed

AMIDST great fanfare at the beginning of June, United Airlines announced that it had decided to go supersonic. It has agreed to acquire 15 Overture aircraft (with options for an additional 35) from start-up manufacturer Boom Supersonic for delivery from 2029, giving it the opportunity to provide services between for example New York and London in three and a half hours for the first time since Concorde's last flight in 2003.

The aircraft is still in the process of being designed. The current specifications suggest a single aisle fuselage with seating for 65-88 passengers in a 1x1 format, flying at an altitude of up to 60,000ft at a speed of Mach 1.7. Could it be a realistic successor to the iconic Anglo-French Concorde?

UNITED OVERTURE MOCK UP

Boom Supersonic was established in Denver in 2014, the brainchild of founder and CEO Blake Scholl — a man seemingly passionate about speed of travel, but with little clear background in aviation. He started his career at Amazon in 2001 as a software engineer (he proudly states that he introduced Amazon to Google's AdWords programme) and went on to join the Bezos-backed Pelago mobile app start-up; subsequently founding his own, Kima Labs, acquired by Groupon in 2012.

He does fly though: he started flying for fun in college and acquired his private pilot's licence in 2008 and instrument rating in 2011. But he says that he has only seen Concorde in a museum.

Although only eight years' old, and never having built a passenger plane, Boom states that it had $270m in funding at the beginning of 2021 with investors that include Bessemer Ventures, Prime Movers Lab, Emerson Collective, Celesta Capital and American Express. In 2016 it announced that Virgin Group had inked a deal to take the first ten aircraft (and Virgin Galactica, which itself is developing a Mach 3 aircraft, would help to build it); in 2018 JAL took options for 20 aircraft and invested $10m saying it "will assist efforts to hone the aircraft's design and passenger experience". Boom states that it has an order book, including purchases and options, of 70 aircraft — but only mentions three customers: United Airlines, JAL and the US Air Force.

The company's plans suggest a rollout of the first Overture aircraft in 2025 and its first flight in the following year. Given the certification and testing processes, commercial passenger flights could possibly start in 2029.

Boom has built one aircraft — the XB-1 — which it proudly claims to be the world's first independently developed supersonic jet. This is a "demonstrator" aircraft: a piloted test aircraft built to prove key technologies and materials for efficient supersonic flight. 71ft long and powered by three GE J85-15 engines it was rolled out in October 2020, is currently undergoing ground testing with flight testing anticipated for late 2021 or early 2022.

Concorde was the flagship for British Airways and Air France, but as an aircraft programme it was a resounding failure. The development costs of the programme exceeded

NEW SUPERSONIC COMPARISON

	Overture	Concorde
First service	2029	1977
Price	$200m	$46m
Fleet size	1,000?	14
Routes	500+	3+
Cruising altitude	60,000ft	60,000ft
Range	4,250nm (7,871km)	3,600nm (6,667km)
Speed	Mach 1.7 / c1,900kph	Mach 2.0 / c2,200kph
Seat capacity	65-88	100 (+2.5t cargo)
Flight crew	2	3
Cabin crew	?4	9
Length	205ft / 62.4m	203ft9in† / 62.1m
Wingspan	60ft / 18m	83ft8in/25.5m
MTOW	77 tonnes	185 tonnes
Power plant	tbd ? Rolls-Royce (Three medium-bypass turbofans ea ?20,000lb without reheat)	Four Rolls-Royce/Snecma Olympus-593 turbo jet ea 38,000lb thrust w reheat
Fuel efficiency	??	7 RPK/litre

† up to 12 inches longer in cruise

£1.1bn sixty years ago, funded by the British and French governments. 16 production aircraft were built at a cost of £654m, of which £278m was recovered through sales returns. Only 14 of the type were used in passenger service — seven each by British Airways and Air France.

It was also exceedingly expensive to run. Half of its 95-tonne fuel capacity was used getting off the ground and through the sound barrier. For those of us who have been lucky enough to have flown on Concorde, the experience is unforgettable: a kick of acceleration on the runway from the afterburners to get the aircraft airborne; momentary weightlessness immediately after take-off as the reheat was switched off to reduce noise; another kick of acceleration to push through the sound barrier into peaceful cruise 11 miles above the earth's surface.

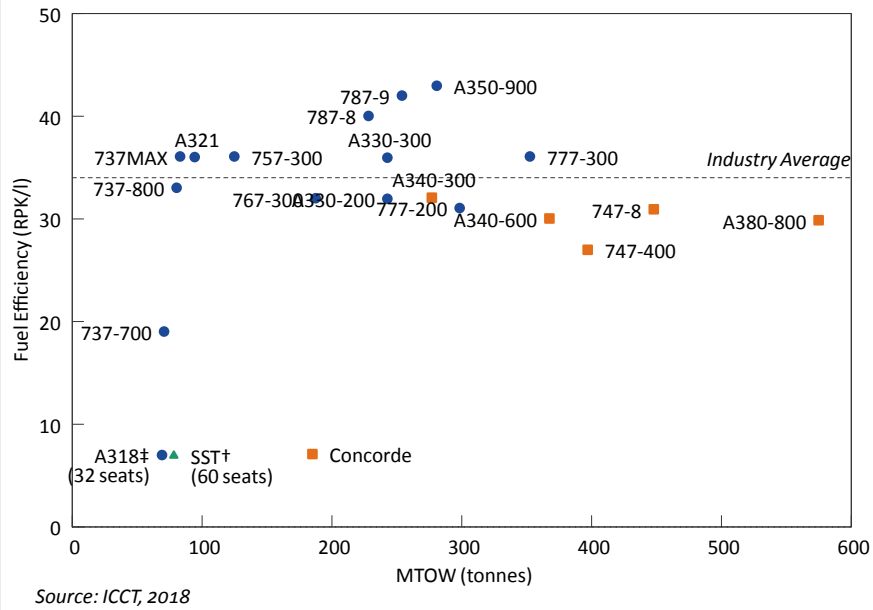
Blake Scholl is adamant that Boom's Overture will operate at a quarter of the costs of Concorde and that airlines will be able to operate the aircraft profitably at business class prices (referring to fares — pre-Covid — of $5,000-$6,000 on the Atlantic).

A prime reason behind this claim is the significant technological developments made in the sixty years since Concorde was on the drawing board. Scholl has more advanced methods than slide-rules, pens and paper.

Boom will use composites to get around the limitations of aluminium and the extreme aerodynamics needed at supersonic speeds. At cruise Concorde's hull temperature would reach 100°C, leading edges 105°C, and the nose 127°C — and this with outside air temperatures of -56°C. For this reason it *had* to be painted white. It would also be up to a foot longer at cruise than when on the ground. (On *my* first flight on Concorde I sat in a window-seat to glory in the view of the curvature of the earth and deep- to light-blue gradient of the sky at 56,000ft. Never again: it was just too hot.)

But in claiming operating costs to be a quarter of Concorde's, Scholl is possibly being a little disingenuous. Unit operating costs in the industry have fallen by an average annual 2% in real terms, and that rate compounded over the 45 years since Concorde first flew mathematically produces a 70% reduction.

Boom cannot get away from the fact that its aircraft will be very thirsty: it takes a lot of power to reach the speeds to broach the sound barrier. It says Overture will be powered by three medium by-pass turbo fan engines each providing thrust of up to 20,000lbs (efficient high-bypass fans will apparently not provide the aerodynamics required, while having three engines presumably



Source: ICCT, 2018
Notes: † ICCT estimate of a reference supersonic jet. ‡ based on the BA all-business class operation between London City and New York.

removes the complications of ETOPS certification) and has teamed up with Rolls-Royce to find, or design, the right powerplant.

But to offset environmental criticism, Scholl has stated that the aircraft is being designed from the start to operate entirely on sustainable aviation fuels (SAF) and that it will through this, and an offset programme, be carbon neutral. Unfortunately, at the moment, SAF are at least 50% more expensive than jet kerosene.

In 2018, the International Council on Clean Transportation (ICCT) published a paper estimating the likely fuel efficiency of potential new SST aircraft, comparing it with current (2017) fuel efficiency on the Atlantic, and trying to verify Scholl's claim of business class pricing. Their conclusion was that it could produce a fuel efficiency of around 7 passenger kilometres per litre (see chart above), very similar to what Concorde achieved when it flew, and similar to British Airway's all-business class A318 operation between London City and New York (introduced in 2009 as a surrogate for Concorde, but which had to refuel at Shannon westbound).

This first Overture aircraft will be an all-premium aircraft — but the premium it will provide will be time and not necessarily comfort (Scholl has ambitions for later generations of faster, bigger equipment with economics that would favour economy class pricing) — and it will under current regulations only be able to operate efficiently on transoceanic routes. Any operator will price it at a significant premium to business class fares.

Premium class long haul operations have been tried before and seem to do well in the good times. But, for network carriers, removing some premium demand could reduce some of the flexibility needed to maximise flight revenues on existing subsonic flights.

Boom makes the assertion that "there are more than 500 supersonically viable routes airlines can profitably fly" without giving any evidence.

Concorde in the 1980s and 1990s was only able to sustain three routes consistently: twice daily London to New York (representing 4% of the total seats on the route), daily service Paris to New York (c8%), a weekly service London to Barbados (7%); and the daily London-Washington service of the 1980s had petered out by the following decade.

A further complication for estimating demand is understanding that supersonic flight involves time travel. A west-bound supersonic flight from London to New York could take 3.5 hours to cover five time zones, letting you land an hour and a half before you took off (local time). So for example the 6pm Concorde departure from Heathrow would give you a full day's work in London and allow you to make a dinner appointment in New York. The eastbound service was the converse: to arrive in time to beat the airport curfews and allow you time to get home or to your hotel, the last flight time possible was 1pm out of New York (too early to allow meaningful morning work) and arrive in London 8.5 hours (local time) after you left. Many who took the eastbound service would prefer an overnight subsonic flight on the return to maximise working time, and Concorde's eastbound load factors tended to be significantly lower than the westbound.

Another factor to consider is that the premium value of supersonic services — time — is only really apparent for direct point-to-point O&D markets. Long haul air travel is a small part of the total market. In normal times it accounts for less than 10% of demand, and there are very few

long haul markets with strong O&D demand. On the Atlantic for example New York and London stand-out supreme. London lays claim to ten of the top 12 long haul O&D routes: and London has twice the level of O&D demand as Paris, which in turn has more than twice the level of demand at Frankfurt. Many long haul services require feed at one (or both) ends of the route. Taking transfer times into account the time advantage of speed on one leg of a route dissipates.

The presentation material accompanying United's announcement proposes the opportunity of Newark to London in 3h30m instead of 6h30m, to Frankfurt in 4h in place of 7h; and San Francisco to Tokyo in 6h compared with the usual 10h15m (although this route, with a length of 8,246km, is a little beyond Overture's planned range and would presumably have to weight-limited or require a refuelling stop).

And in one of Boom's promotional videos, Scholl waxes lyrical about a flight from Los Angeles to Sydney in 8 hours (even though this would involve a refuelling stop in Honolulu).

Furthermore, Boom's plans were developed before the Covid pandemic struck. Corporate travel has been significantly hit, and possibly permanently. It will resume, but the effectiveness of online videoconferencing and remote working through the pandemic has taught corporate entities that travel budgets can be cut without necessarily affecting productivity. Corporate premium air travel will probably have recovered beyond pre-Covid levels by 2029, but the economic drivers influencing it will have changed.

In addition, there is a substantially increased emphasis on corporate entities to take account of their ESG credentials — and air travel is at the top of the list of industries with a high carbon footprint (no matter the use of SAF). Not all premium travel is corporate and not all corporate travel is premium, but the post-Covid recovery may well see a very different pricing structure on long-haul operations and particularly the Atlantic.

The long term prospects for Overture may not be as great as Scholl believes. The risks are high. He needs an engine (he's partnered with Rolls-Royce which has its own post-Covid problems); he's planning to manufacture a supersonic aircraft for service within fifteen years of concept (Bombardier's attempt to produce the C-Series killed their aviation division); he has yet to demonstrate a clear view for pilots on the peculiar take-off or landing of a delta-wing aircraft (Concorde's nose was designed to droop for that purpose); he has yet to find the billions of dollars needed to build them (Aerion Supersonic, even with $11bn of orders for its Mach 1.4 private jet, folded for that reason in May). But he has vision.

United has an escape clause in the agreement: it will only take the aircraft "once Overture meets United's demanding safety, operating and sustainability requirements".

The agreement with Boom pales into insignificance in comparison with United's decision at the end of June to order 200 737MAX from Boeing and 70 A321neos from Airbus. But United has achieved some excellent publicity.

OVERTURE INTERIOR

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