

Several aircraft markets have been discussed over the past few years. A clearer picture of the outcome may now finally be in sight. There will be plenty to be split between Airbus and Boeing. What share can the regional manufacturers expect?

20-year fleet growth predicts \$1 trillion of new aircraft

Last year, despite the regional and spreading Asian crisis, Airbus and Boeing posted more than 1,200 firm orders worth more than \$80 billion.

That order peak has now passed and both manufacturers are entering a tough period for which every order is important. Nevertheless, they remain confident, especially about three markets: the 70 to 100-seat, the 200 to 400-seat and the 'larger than 400-seat' markets. The 70 to 100-seat and the larger than 400-seat markets are still at an early stage of development, indicating that a fierce battle between both giants is imminent.

The long-term outlook for air travel is positive. According to most aircraft manufacturers, annual growth for traffic will exceed 5% over the next 20 years. In the meantime, at least 16,000 new aircraft are forecast to be delivered. About half of these could replace the passenger aircraft already in service today.

The growth in air travel is likely to vary between regions, with China and Southeast Asia leading in the long term. Demand for new aircraft in these regions has fallen dramatically in the past 12 months and airlines have been confronted with the problem of deferring or even cancelling deliveries.

Some markets are approaching maturity (North America and Europe) while others still need to develop.

Today, there are about 12,500 aircraft worldwide and Boeing forecasts about 8,500 of these will be retained in 2017. This means that it expects only 4,000 of the current fleet to retire in the next 20 years. Boeing also forecasts that to

accommodate traffic growth and to replace retired aircraft, the industry will require more than 17,500 new jets. The world fleet is projected to reach more than 26,000 airplanes by 2017. Boeing has estimated the value of this requirement is hovering around US\$1.25 trillion and that a quarter of this is for the replacement of older in-service aircraft.

Airbus' forecasts a total of 17,900 new aircraft. About 8,500 will replace existing ones and 8,200 will be required to accommodate market growth from 1997 to 2017. This will leave only 1,150 of today's fleet in service. Airbus therefore expects the number of retirements to be double what Boeing predicts.

Although both manufacturers agree on which market are likely to grow the most and what will be the future requirements, their opinions differ on the future of the large aircraft market.

70-100 seat market

Airbus predicts a demand for 2,124 new aircraft in this category, including 1,649 for growth. Airbus emphasises that this figure does not represent the total demand for aircraft in this size bracket, since more will be needed by smaller airlines and current turboprop operators as replacements.

Boeing forecasts a fleet of 3,600 units for the 91 to 120-seat market by the year 2017. This is an increase of about 700 from the current fleet. The problem for Boeing is that its 717 may overlap its 737-600 which entered service last year.

Airbus offers its A318, a shrinkage of the A319. The A318 is fully part of the

A320 family. Therefore, in expanding its product line Airbus will give airlines more choice and greater market coverage with a single type.

There are more than 2,100 jet aircraft in this category to be retired over the next 22 years. This includes: 737-200s, DC-9s, BAC 1-11s, Avro RJs/BAe 146s, F.28s and Fokker 70s and 100s.

The 717 and A318 market is for 737-200 and DC-9 replacements. Although the 737-200 represents the major share among aircraft the being retired, the DC-9 is the real target for manufacturers.

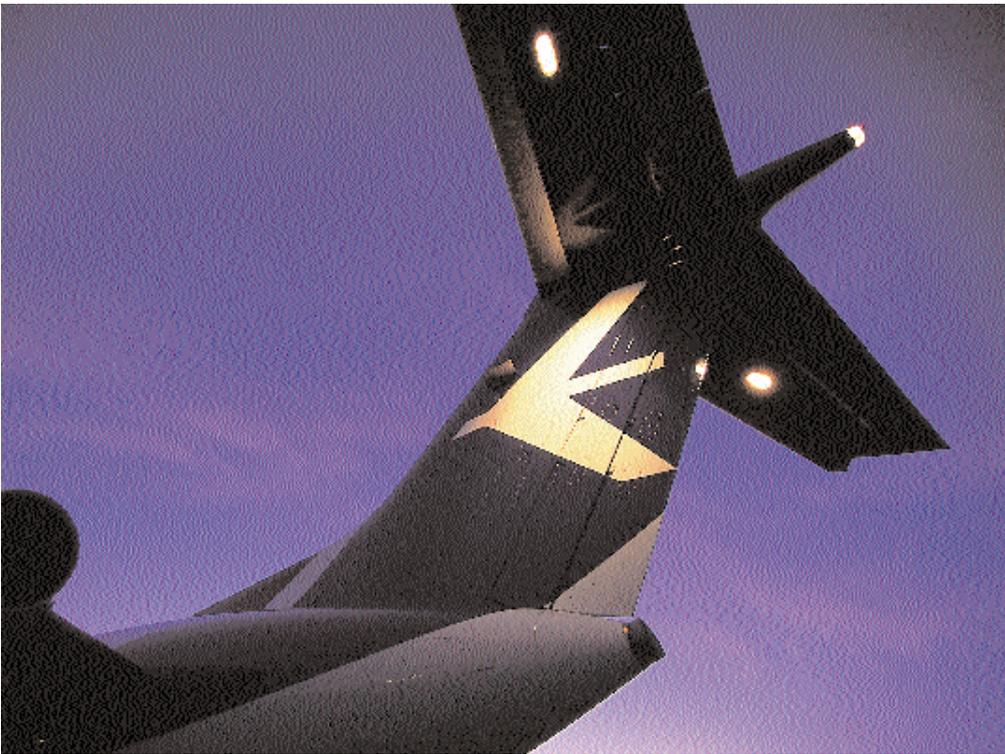
Almost 750 DC-9s will be retired by 2020. US airlines are the main target, although larger European airlines are poised to place firm orders soon.

All eyes are on Northwest Airlines, which has still not decided which aircraft will replace its 116 DC-9-30 fleet. Northwest, once regarded as a potential 717 launch customer, could now place a large order for the A318.

Orders for the 100-seat market totalled 195 units at April 1999, with Airbus and Boeing relying on AirTran and TWA.

Regional manufacturers

There has been a great deal of speculation about regional aircraft manufacturers in this market over the past two years. The difficulty is there is no clear indication where the demand for aircraft of this size will come from. The aircraft are too small for main-line carriers and are not permitted by many of the regionals because of scope clauses.



Many of the aircraft will have development costs that are too high for the manufacturers to digest. The aircraft proposed by the regional manufacturers will also compete very closely with Airbus and Boeing – and then may not offer operating costs low enough to attract sales.

Bombardier Regional Aircraft Division (BRAD) revealed its 90/100-seat BRJ-X in 1999. BRAD strongly denied competing in the same market, but intends to grab some market share.

Fairchild Dornier attempted to launch its 728Jet programme last year. But the company suffered a major blow when Lufthansa, one of the major airlines invited for the design of the 728Jet, ordered 20 CRJ-700s instead. Since Crossair has not confirmed orders either, the 728Jet programme needs to secure another two launch customers.

There are also rumours that ATR may join the US-German manufacturer to develop a partnership, although ATR's 70-seat AirJet programme is reportedly 'still alive'.

British Aerospace (BAe) left the AI(R) consortium last year to go solo in re-launching its RJX family. BAe does not believe the market will justify the investment required for a new aircraft and therefore offers a re-engineered aircraft. BAe's view of the market is that it is limited, hence the airlines' annual production rate of just 21.

BRAD's most serious threat remains undoubtedly Embraer. Following discussions with regional airlines and market studies which concluded that there was a need for 2,500 aircraft in the 70 to 90-seat category, the Brazilian manufacturer revealed its 70-seat

ERJ-170 and stretched 90-seat ERJ-190 earlier this year.

200 to 400-seat market

The 200 to 400-seat market remains vital for Airbus and Boeing. The latter, with its 767, is the leader in this market and the airline forecasts that its market share of this category will grow to 24% in 2017 from the current 19%.

Two factors may explain Boeing's prediction. First, a substantial number of DC-10s, L-1011s and A300s are near the end of their production life. Second, this market is driven mainly by route developments resulting from bilateral talks and liberalisation of air routes. Some aircraft are now capable of serving long-range international markets that in the past could only have been served by 747s.

Boeing forecasts the fleet in this category will be 6,450 units in 20 years, with intermediate twin-aisle 230 to 310-seat aircraft representing 51% of the market.

Airbus' view is less optimistic. The airline estimates that 6,027 aircraft in the 210 to 400-seat category will be in operation.

Both Airbus and Boeing have designed their latest A340s and 777s to allow airlines to operate in long-haul markets, bypassing congested airports. Emphasis is on the trans-Pacific market, where both manufacturers, and notably Boeing, offer point-to-point service with aircraft smaller than the 747. This market is also served by the 767 and A330.

More than 1,000 aircraft in this category are expected to be retired by 2020. This includes 767s, 747s, DC-10s, A300s and L-1011s. Boeing and Airbus

Breaking in to the 70 to 100-seat market and taking Airbus and Boeing head-on could prove hard and even costly for regional aircraft manufacturers.

are competing to replace these types.

The A330-200 is an ideal replacement for the A300/310 family and 767-200/-300s. Austrian Airlines, Sabena and Swissair have introduced A330-200s on A310 routes. The A330-200 is intended to add efficiency on routes currently served by DC-10s, L-1011s and 767ERs.

The 767-300ER was introduced to take part in one of the most lucrative battlegrounds of the 1980s and 1990s. The 767-300ER was one of the most popular aircraft in terms of asset value, but has been overshadowed by the launch of the 777.

Boeing is also targeting DC-10s and L-1011s and 767-200/-300 growth, with its new 767-400ER. Boeing sold an encouraging 56 767-400s in 1997, but reported only three orders in 1998.

Boeing has recently announced it will delay the projected entry into service of its 767-400ER to 2003. According to the latest reports, Boeing is waiting for American Airlines' decision to launch the 767-400ERX to replace the 767-200s.

777

Boeing offers three versions of the 777: the medium-range 777-200, and the long range 777-200ER and 777-300.

Originally, the 777 was designed to serve US domestic routes such as New York-San Francisco and intra-Asian markets, as well as trans-Atlantic (London-New York) and trans-Pacific routes (Tokyo-San Francisco). Its increased gross-weight 777-200ER model is capable of flying sectors, such as Tokyo-Sydney with 305 passengers.

Firm orders for the 777 total 472, and Boeing has a backlog of 226 aircraft. Boeing has also won the crucial Japanese market with 56 orders for the aircraft. China is another target area where forecast growth remains high and where the 777 is an ideal aircraft for long distances. Finally, US customers represent 31% of the total market.

Having been first in the market, the -200 has posted a reasonable number of orders, mainly in Asia. It should be noted that many airlines have switched orders for -200s into 200ERs.

Asia is the only market for the stretched 777-300 series. However, it has suffered because of the Asian crisis, with many deferrals and cancellations over the last 12 months. All Nippon Airways (ANA) had to defer and eventually cancel some deliveries. South Korean Asiana was

Airbus has managed to take a large part of Boeing's market share while also avoiding the affects of the Asia Pacific crisis.

also hit at a time when it was pursuing a radical fleet programme. As a result the airline cancelled seven out of eight 777-300s ordered. Malaysia, like Asiana, has been badly hit by currency devaluation and has converted its five 777-300s into -200s with deferred deliveries dates.

A330/340

Launched and developed in conjunction with the twin-engine A330, the A340 is the longest-range airliner in service. The aircraft is Airbus' response to airlines' need for a new mid-size aircraft able to cover ultra-long ranges.

The standard A340-300 has performed extremely well and has 206 firm orders. The shorter fuselage, long-range A340-200, on the other hand, does not enjoy such a record.

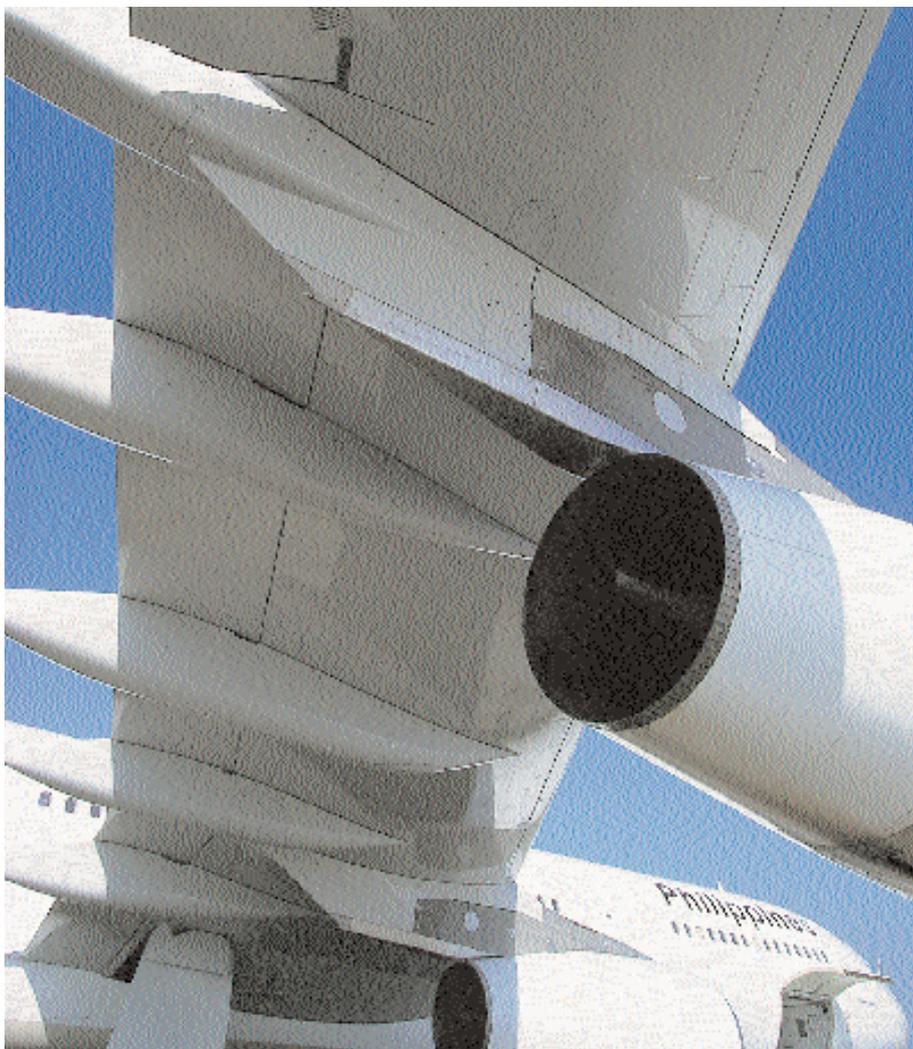
The A340 market share is mainly in Europe. GECAS, ILFC and Air Canada are the only North American customers. Asia, and especially China, is naturally one of the Airbus' main target since there are more than 440 747s in service in the region, including 105 -200s and 40 -300s. Compared to that of Boeing, Airbus' presence in the region has been marginal. Nevertheless, it has still managed to grab some valuable orders from Singapore Airlines, Cathay Pacific and PAL.

The problem for Airbus is that it offers too many aircraft types in the 300 to 350-seat market. The A340-300 and its long-range sister the A340-500, have in total reported less orders than their arch-rival, the 777-200ER.

The 350-seat A330-300, had difficult times in its early days but is now bouncing back. The first was delivered in 1994, a year before the first 777, and was intended to provide the 777-200 with a competitor. It failed dramatically. Of 84 firm orders, 45 have been cancelled, leaving TWA, Air Canada and US Airways as its main customers, with 10, six and seven aircraft, respectively.

The A330-300 is seen as an opportunity to upgrade existing trans-Atlantic capacity and to introduce new markets. As an example, US Airways argues the that aircraft is suitable for serving Athens, Brussels, Manchester, Milan and Zurich in addition to its current European network. It now operates 12 767-200s. The smaller A330-200 is proving to be more popular for upgrading 767s than the A330-300.

Airbus extended its product range with the A340-500/-600. The A340-500/-600 will offer airlines a family range of



widebodies with capacity from 250 seats with the A330/340-200 to almost 380 seats with the A340-600. The aim is also to provide a competitors to the 767, 777 and the well-established 747.

The A340-500 will offer airlines a 8,500nm range for a full capacity of 315 passengers.

The A340-600 series will have a shorter range than the -500, but will seat 380 passengers. Airbus emphasises the A340-600 as a natural replacement for ageing 747s and a cost-effective alternative to the 747-400.

Although it will enter service in March 2002, the A340-600 has already established itself as a competitor for the 777-300. Airbus has received firm orders for 36 aircraft.

Summary

The benefits can be summarised as follows. The 777 and A330/340 have filled the gap between the A300/767 and 747. The 777 and A340 have given airlines more flexibility in route planning. The 777 and A340 have delayed the introduction of a 747-400 replacement.

Despite some signs of recovery, most Asian carriers are still confronted with financing problems. As an example, Eva Air dropped plans to purchase 12 A340-

500s last September after posting its first net loss over three years.

The wide-bodied aircraft market has entered recession and Airbus has been far less hit by the Asian turmoil than Boeing. An estimated 25 A300B4s are in excess, and about 10 A310s and less than 10 A340s are for sale or lease. The number of Boeing aircraft, including McDonnell Douglas, currently available exceeds 120. Boeing has already cut 747 and 777 production rates.

Some airlines are benefiting from used aircraft. For example, Virgin Atlantic bought two 747-200s from Cathay Pacific.

Airbus' ambitious challenge

Airbus predicts a substantial need for very large aircraft. The four-nation consortium forecasts that 1,330 larger than 400 seats will be needed by 2017. Airbus' target naturally is the 747, especially the -400.

Airbus claims it is possible to build an aircraft compatible with the design of current airports. The A3XX will have the highest seat capacity and the longest range at a significantly lower cost.

Airbus sees the Asia-Pacific region and China as having the most potential airline growth and so is highly concentrated on this region. The airline



Boeing predicts the 400-seat fleet to increase by 70% over the next 20 years, but still concludes a larger aircraft is not required.

estimates that Asian airlines will account for 60% of total deliveries.

The proposed A3XX would seat between 480 and 660 passengers and, if constructed, Airbus anticipates to capture 50% of the market. Airbus has placed lots of faith in Asian carriers, notably in Japanese airlines.

Airbus makes the point that slot restriction at busy airports such as Tokyo-Narita or Osaka-Kansai may force airlines to operate larger than 400-seat aircraft. However, are airlines ready to invest at least \$200 million for the aircraft?

Japan Airlines, which is not an Airbus customer, has a backlog of 13 747-400s to be delivered within the next three years. Having failed to report a profit for the last seven years, the airline does not seem in position to place orders just yet.

ANA, Japan's largest domestic airline, reported last year its first profit for three years. However, the airline deferred some 747s and 777s in the meantime, blaming the economic downturn as well as competition in its domestic market. Additionally, the airline recently announced that losses for the year ending March 31, 1999 will be almost double earlier forecasts.

Trans-Pacific routes have seen a substantial growth in capacity, as a result of an open skies agreement signed last year by the US and Japanese governments. Japanese carriers operate the low seat-mile cost of the 747 between Tokyo and Fukuoka, Osaka and Sapporo. Not surprisingly, they have been pushing plans forward to buy very large capacity aircraft.

Routes from London to Hong Kong, Singapore and Tokyo or San Francisco-Hong Kong are regularly mentioned, since five major airports, namely Frankfurt,

London Heathrow, Paris CDG, Washington Dulles and Hong Kong Chek Lap Kok have presented their plans for accommodating the A3XX. London-Heathrow, Frankfurt and Paris-Charles de Gaulle are ideally placed to intercept the traffic flows between Europe, North America, the Middle East, Africa and Asia making it the crossroads of air transport.

Japanese carriers are not the only ones struggling in the region. Cathay Pacific, one of the key players in the design of the A3XX, reported its first loss since 1963 earlier this year, blaming a sharp regional downturn and excess capacity. The airline is committed to the 367-seat 777-300 to replace 747-100/200s on regional routes, but in the meantime it has reduced capacity.

SIA, although in a better financial situation, has an impressive backlog of 33 widebody aircraft, including 16 777s, nine 747-400s and eight A340s.

Boeing's view of the market is different. Its 747-400 remains unchallenged. Although it admitted that it is still interested in a future large aircraft, the Seattle-based manufacturer questions whether or not there is sufficient demand to justify the cost of development.

Boeing officials have concluded that the industry is not ready for a 500-seat plus aircraft and believe that their airline can cover the segment with its new 747-400IGW. This will be virtually the same as the current 747-400, except it will have one or two additional fuel tanks.

The new 747-400 range will vary between 7,500nm and 7,700nm. Boeing estimates the fleet of 400-seat aircraft will not increase by more than 700 aircraft from the current 1,016 747s already in service.

Boeing is also studying a -400 series upgrade, dubbed the -400X. Although no capacity replacement is mentioned, the -400X would have a range of 8,000nm and technology improvements. It also claims it can fill the market with the 777-300 as replacement for early 747s.

Summary

Boeing's sales outlook for the 747 has plummeted along with the weaknesses in Asian economies. In the meantime, Airbus, which already done far more damage to Boeing than expected, is accelerating work on the A3XX in the hope of offering the aircraft, and perhaps securing a launch customer by the end of this year.

Although, there will be a market for a 400-seat plus aircraft, the opinion is divided about the required number of aircraft and when they will be needed.

Boeing states that the market is not yet ready. Airbus is perhaps not so optimistic as it was, it still has a target set for 1,300 units.

The current climate means it is definitively the wrong time for the A3XX. The Asia-Pacific crisis has constrained airlines to revise their fleet programmes.

Global airline profits peaked in 1998. However, the A3XX project may be confronted with some difficulties, since 1998's performance is expected to be a peak year.

Asian carriers' recovery is not around the corner and this may explain why Airbus has recently delayed the A3XX's entry into commercial service by one year to 2005. Airbus would definitively need a significant number of launch orders for the final go-ahead. **AC**