

Sales of 35- to 50-seat RJs have replaced major turboprop fleets in the US and Europe. Orders are now close to scope clause limits in several cases in the US. This raises the issue of how large the remaining market is for these aircraft.

What is the remaining market for 35- to 50-seat RJs?

The US has been the largest market for 35- to 50-seat regional jets (RJs). With replacement of turboprop fleets now almost complete, Embraer and Bombardier need other markets for 35- to 50-seat RJs.

Europe has been the second largest market for 35- to 50-seat RJs, but replacement of turboprops has been more varied.

With replacement of US and European turboprop fleets nearly complete, how large is the remaining potential market for 35- to 50-seat RJs?

An examination of the immediate market for RJs will be followed by a closer examination of further and future market opportunities.

Short-term opportunities

Short-term sales opportunities for 35- to 50-seat jets come from four main regions: The US, Europe, China, and the Asia Pacific.

US

RJs delivered to date have mainly replaced turboprops. Orders have been limited by pilot union scope clauses between US majors and regional affiliates (see table, page 36). There are few turboprops left serving as feeders for major carriers, operating increasingly shorter routes.

A review of probable fleet developments indicates that the short-term position of the 35- to 50-seat market is limited.

Alaska Airlines

Alaskan has bypassed 35- to 50-seat RJs for 70-seat RJs to complement Q200s and Q400s.

American Airlines

American Eagle's scope clause has changed since spring 2002, and now limits to 67 the number of 45- to 70-seat RJs. However, there is no limit on aircraft with smaller capacity, hence its order for 139 ERJ-140s.

There is a limit, however, on the comparative available seat miles (ASMs) flown by American Eagle and American. American Eagle is expected to hit these limits by the third quarter of 2003 with ERJ-140 deliveries. In the long-term it is a potential source of further ERJ-135/140 orders.

America West

America West, which is served by Mesa Air, will return some of its 25 Canadair RJ200s (CRJ200s) to Mesa, but is continuing to take CRJ700s, and is expecting its first CRJ900 in early 2003. Mesa modified its order to 20 CRJ700s and 20 CRJ900s, all for operation as America West Express. America West has no scope clause limiting the number of 35- to 50-seat jets it can order, and so could acquire more.

Continental Airlines

ExpressJet continues to take delivery of its backlog of 93 ERJ-145XRs for operation as Continental Express. Continental also has no scope clause limit, and so has potential for more 35- to 50-seat orders in the short term.

Delta Air Lines

Delta and its fully-owned regionals, Atlantic Southeast Airlines (ASA) and Comair have only 34 outstanding deliveries out of the 239 CRJ100/200 ordered. Forty eight of the 58 CRJ700s

ordered remain to be delivered.

Comair has achieved an all-jet status, while from 2003 ASA will only operate 30 Brasilias and 19 ATR72s. It therefore seems that there is limited potential for further turboprop orders.

Skywest, Atlantic Coast Airlines (ACA) and Chatauqua also provide Delta with feeder operations. Since Delta's five regional carriers have no scope clause limiting the number of 50-seat RJs it can operate, it is therefore another US major with potential for 35- to 50-seat orders in the short-term.

Midwest Express

Midwest Express signed a letter of intent for 20 ERJ-140s, with deliveries now scheduled to commence in January 2004. These are the airline's only 35- to 50-seat RJ orders, but there is no scope clause limiting the number of 35- to 50-seat RJs Midwest could operate.

Northwest Airlines

Northwest was slow to order 50-seat jets. The initial order for 54 CRJ200s, earmarked for its wholly-owned sister company Pinnacle Airlines (formerly Express I) reached its scope clause limit for 50-seat RJs. Its scope clause, however, has no limit for RJs with less than 45 seats. So Northwest ordered 75 CRJ440s (see table, page 36), and a 175 options.

At least 29 of the CRJ440s are intended for Pinnacle, but the balance could replace Mesaba's Saab 340s. CRJ440 options would require a large-scale expansion of the regional network.

United Airlines

United and its pilots agreed a modified pilot contract in December 2002 that relaxed its scope clause.

GLOBAL 35- TO 50-SEAT REGIONAL JET ORDERS AND OUTSTANDING DELIVERIES

	ORDERS					BACKLOG				
	CRJ100/200	ERJ-135	ERJ-140	ERJ-145	TOTAL	CRJ100/200	ERJ-135	ERJ-140	ERJ-145	TOTAL
USA										
Air Wisconsin	64	-	-	-	64	38	-	-	-	38
Atlantic Coast Airlines	121	-	-	-	121	52	-	-	-	52
Atlantic Southeast	45	-	-	-	45	0	-	-	-	0
Comair	110	-	-	-	110	0	-	-	-	0
Delta Connection	84	-	-	-	84	34	-	-	-	34
Mesa	32	-	-	-	32	0	-	-	-	0
Midway	24	-	-	-	24	0	-	-	-	0
Northwest Airlines	129	-	-	-	129	82	-	-	-	82
Skywest	100	-	-	-	100	46	-	-	-	46
American Eagle	-	40	139	56	235	-	0	99	0	99
Chautauqua	-	15	15	45	75	-	14	0	5	19
Continental Express	-	30	-	245	275	-	0	-	93	93
Mesa Air	-	-	-	36	36	-	-	-	4	4
Midwest	-	-	20	-	20	-	-	20	-	20
Trans States Airlines	-	-	-	12	12	-	-	0	-	0
Total	709	85	174	394	1,362	252	14	119	102	487
EUROPE										
Adria Airways	4	-	-	-	4	0	-	-	-	0
Air Dolomiti	6	-	-	-	6	1	-	-	-	1
Air Littoral	19	-	-	-	19	0	-	-	-	0
Air Nostrum	21	-	-	-	21	4	-	-	-	4
Brit Air	20	-	-	-	20	0	-	-	-	0
British European	4	-	-	-	4	0	-	-	-	0
Cimber Air	2	-	-	-	2	0	-	-	-	0
DAC Air	2	-	-	-	2	0	-	-	-	0
Eurowings	15	-	-	-	15	8	-	-	-	8
Lauda Air	8	-	-	-	8	0	-	-	-	0
Lufthansa CityLine	45	-	-	-	45	0	-	-	-	0
Maersk Air Ltd	11	-	-	-	11	0	-	-	-	0
Malev	4	-	-	-	4	2	-	-	-	2
Tyrolean	15	-	-	-	15	3	-	-	-	3
Air Moldova	-	-	-	2	2	-	-	-	1	1
Alitalia Express	-	-	-	14	14	-	-	-	4	4
Axon Airlines	-	-	-	3	3	-	-	-	0	0
British Midland	-	4	-	11	15	-	2	-	1	3
Brymon	-	-	-	7	7	-	-	-	0	0
Cirrus Airlines	-	-	-	1	1	-	-	-	0	0
City Airline AB	-	2	-	-	2	-	0	-	-	0
ERA Airlines	-	-	-	2	2	-	-	-	0	0
KLM exel	-	-	-	3	3	-	-	-	1	1
LOT Polish	-	-	-	16	16	-	-	-	2	2
Luxair	-	-	-	9	9	-	-	-	0	0
Manx	-	-	-	23	23	-	-	-	0	0
Pan Europeanne	-	1	-	-	1	-	0	-	-	0
Portugalia	-	-	-	8	8	-	-	-	0	0
Regional Airlines	-	9	-	35	44	-	0	-	10	10
Rheintalflug	-	-	-	4	4	-	-	-	1	1
Skyways	-	-	-	4	4	-	-	-	0	0
Swiss	-	-	-	25	25	-	-	-	0	0
Total	176	16	0	167	359	18	2	0	20	40
REST OF THE WORLD										
Air Canada	26	-	-	-	26	0	-	-	-	0
China Yunnan	6	-	-	-	6	1	-	-	-	1
The Fair Inc	2	-	-	-	2	1	-	-	-	1
J-Air	6	-	-	-	6	2	-	-	-	2
Kendell	12	-	-	-	12	0	-	-	-	0
SAEAGA	1	-	-	-	1	0	-	-	-	0
Shandong Airlines	5	-	-	-	5	0	-	-	-	0
Shanghai Airlines	3	-	-	-	3	0	-	-	-	0
South African Express	6	-	-	-	6	0	-	-	-	0
Southern Winds	2	-	-	-	2	0	-	-	-	0
Air Caraibes	-	-	-	2	2	-	-	-	0	0
Regional Air Lines	-	1	-	-	1	-	1	-	-	1
Rio-Sul	-	-	-	16	16	-	-	-	0	0
Sichuan Airlines	-	-	-	5	5	-	-	-	0	0
South African Airlink	-	20	-	-	20	-	16	-	-	16
Total	69	21	0	23	113	4	17	0	0	21
GECAS	16	-	-	-	16	11	-	-	-	11
TOTAL	970	122	174	584	1,850	285	33	119	122	559

Delta has two wholly-owned regionals (ASA & Comair) and three others (Skywest, ACA & Chautauqua). All five have no scope clause limit for 50-seat RJs. Delta is one carrier that has the potential to grow its regional operations and provide some of the orders that Embraer and Bombardier expect for this size of aircraft in the next 20 years.

Prior to September 11th, 2001, United's RJ fleet had been limited by agreement to 215 aircraft of up to 50 seats (operated by Air Wisconsin, ACA and Skywest), plus 18 BAE 146s operated by Air Wisconsin. Further fleet expansion was linked to growth of the mainline fleet beyond a baseline of 451 narrowbodies and 141 widebodies (592 jetliners).

United grounded a large proportion of its fleet after September 11th, which invalidated the agreement and threatened further deliveries of RJ orders.

The now modified pilot contract allows United Express to operate 243 RJs, an increase of 28 aircraft, which it has now ordered. This was on the proviso that United's fleet is larger than 384 narrowbodies and 112 widebodies (496 jetliners).

The new contract allows further additions. Another 25 RJs can be added after June 1st, 2004 and 25 more after January 1st, 2005 as turboprop replacements. The new scope clause therefore allows United Express operators to increase their total number of RJs to 293, thereby limiting the short-term order prospects from United to 50 aircraft.

United Express is still limited to aircraft of no more than 50 seats.

US Airways

In April 2002 US Airways reached an agreement with its pilots to add another 70 RJs to the 70 already operated under its original scope clause. USAirways is served by Mesa, Chautauqua and Trans States Airlines.

There been several developments since April 2002. US Airways pilots ratified a new contract in August 2002 that allows a further 325 RJs, taking the total permitted under its scope clause to 465. This group of 325 is a mix of up to 175 70-seat aircraft and 150 32-seat aircraft. The number of possible new orders for 35- to 50-seat RJs is therefore 220: 70 from the April 2002 agreement and 150 from the August 2002 agreement.

Mesa Air Group

Mesa's experience is important, since it is the only US operator to have had aircraft available without firm contracts to fly them. Of its 32 CRJ200s, 25 are



operated as America West Express. Others were scheduled to be operated on a risk-sharing basis with Frontier Airlines as Frontier Jet Express. No more than five were operated, and it is likely they will be transferred to fly as US Airways.

Mesa's 32 ERJ-145s are all operated for US Airways Express, but Mesa appears in no hurry to take its four outstanding deliveries.

Other US operators

The majority of US demand for regional aircraft is currently met by the carriers described above.

RJs are also being introduced at a number of the smaller independent operators, notably Frontier's agreement with Mesa for it to operate CRJs as Frontier JetExpress and Air Wisconsin's agreement to feed AirTran, as AirTran JetConnect, with a fleet of 10 CRJs.

The number of such opportunities for independent regionals to diversify is limited. Only AirTran Airways, Aloha Airlines, American Trans Air, Frontier Airlines, Hawaiian Airlines, Jetblue Airways, Southwest Airlines and Spirit Airlines remain as potential airlines that might require feeding.

AirTran, Jetblue, Southwest and Spirit are all fairly typical low fare operators operating single type fleets.

AirTran's agreement with Air Wisconsin to operate CRJ200s on a number of thin routes is not likely to see a rush for more orders.

Aloha and Hawaiian both serve the domestic market in Hawaii and the mainland, and are unlikely to require RJs. This leaves only American Trans Air and Frontier. American Trans Air operates regional services through its Chicago

Express subsidiary, which is currently studying how to move forward beyond its existing fleet of 17 Saab 340Bs. It has indicated new RJs are not an option.

US Summary

Potential sources of sizeable orders of 35- to 50-seat RJs in the short-term comes are Continental, American Airlines, Northwest, Delta, United and USAirways.

At least 270 aircraft could be ordered: 220 from USAirways (an ERJ145 operator) and 50 from United (a CRJ200 customer).

Continental, American, Northwest and Delta are unrestricted in the number they could order, but would only place further orders, however, if their current RJ networks continued to grow. Three of these carriers are CRJ100/-200 customers, and only Continental is an ERJ145 customer.

Europe (West)

Lufthansa Cityline launched the RJ revolution in Europe when it introduced the CRJ into service in November 1992. Nearly all the major European airlines or their regional partners have since acquired fleets of RJs, but the number of 35- to 50-seat RJs sold in Europe is 359; less than one-third of the total sold in the US (see table, page 36). This is partly explained by Europe's regionals being free, in the absence of scope clauses, to order larger RJs, which are more appropriate to their needs.

The 50 seaters are to some extent the victim of their own success. Having developed the concept of RJ operations, the traffic on many of the routes has



outgrown the capacity of the aircraft, hence the move in Europe toward larger types. There are numerous examples of European regional airlines disposing of 35- to 50-seat RJs, and in some cases in return for larger RJs, thereby creating the development of a market for used aircraft.

Turboprops in Europe are also less likely to be replaced with RJs than they are in the US. A comparison of daily turboprop and RJ departures in the US shows that 5,228 (55%) are by RJs and 4,209 (45%) are by turboprops. RJ departures have grown by more than 35% in the past year, while turboprops have fallen by nearly 25%.

The turboprop has maintained a larger marketshare in Europe, with 2,675 (61%) turboprop daily departures compared to 1,697 (39%) daily RJ departures. Although the RJ fleet has grown by nearly 10% in the past year, the turboprop fleet has fallen by less than 4%. Of particular note is that the number of daily 30-seat turboprop and RJ departures increased by similar amounts.

European interest in the smaller 35-seat RJs has also been limited (*see table, page 36*). Unlike the US, Europe's regionals have no limits to further 35- to 50-seat orders.

Europe (East)

With the exception of LOT Polish Airlines, Europe's success with RJs is restricted almost entirely to the affluent west. There have been several attempts in eastern Europe to operate RJs, including Romanian start-up DAC Air and Air Moldova.

Russia offers considerable potential,

and Aeroflot has a long stated need for up to 30 50- to 70-seat RJs. However, approval for it to import western RJs without import taxes is unlikely. Aeroflot has signed a memorandum for development of a new RJ family in a joint programme by Ilyushin and Sukhoi in collaboration with Boeing, which appears to prevent any significant potential involvement by Aeroflot in the 35- to 50-seat RJ market.

Rest of the World

Outside of the US and Europe, RJ sales have been limited.

The only African airlines to order RJs to date have been South African Express (six CRJ200s), Cameroon Airlines (CRJ200), Regional Air Lines (five ERJ-135s) and SA Airlink (20 ERJ-135s).

The only Asia Pacific operator to have taken delivery of RJs was SAEAGA Airlines of Malaysia.

Australia has failed to embrace the RJ concept. Flight West and National Jet Systems both ordered the ERJ145, but later cancelled. Kendall ordered 12 CRJs before its parent Ansett collapsed. The operation reverted to an all-turboprop fleet after restructuring. There is currently not a single 35- to 50-seat RJ in Australia.

Canada was an early CRJ customer, with orders 26 from Air Canada. Ten ex-Midway aircraft have been leased to Air Canada Jazz.

There are currently no RJ operators in India, but 737 operator Air Sahara announced that it would lease 12 CRJs (eight CRJ200s and four CRJ700s) from a UK lessor with deliveries to commence in April 2002. These have not yet

American Eagle has no scope clause limit on the number of RJs less than 45 seats it can operate, and so is another customer that could assist in fulfilling Embraer's and Bombardier's predictions of the sale of 1,700 35- to 50-seat RJs over the next 20 years.

materialise.

South America only has one RJ operator: Rio-Sul with 16 ERJ-145s. An additional order for 15 aircraft has never been confirmed.

China

China has ordered 76 RJs from western manufacturers: 10 BAE 146-100s; eight 146-300s; 10 Fokker 100s; and 48 orders for current generation 35- to 50-seat aircraft.

Bombardier has achieved most success with 14 CRJ100/200s in the fleets of China Yunnan, Shandong and Shanghai Airlines. Another seven corporate/VIP configured aircraft have been placed with China Ocean Aviation Group and China United Airlines.

Fairchild Dornier has placed 19 aircraft with Hainan Airlines, while Embraer is struggling, having placed only five aircraft with Sichuan Airlines.

However, sales in China are limited by import taxes on new aircraft, which are in place to protect China's regional aircraft industry.

Long-term opportunities

The RJ market is dominated by the US and Europe, due mainly to the liberalisation these markets have undergone. China, the Asia Pacific, Africa and Latin America which are not as liberalised, are behind the US and Europe in this respect, but are expected to liberalise over the next 20 years and develop their regional markets.

The US is still expected to remain the prime RJ market, as well as retaining large potential for 35- to 50-seat RJs. Since September 11th, US regional carriers have grown by 20%, partly because major carriers have handed down routes to their regional affiliates as a means of reducing capacity.

RJ have so far been used in the US to replace turboprops on feeder routes into hubs. Analysis of the routes that turboprops operate as feeder services for major carriers shows a reduction in their number and average stage length. RJs have replaced turboprops in the role of hub feeding and also increased the average length of routes feeding hubs.

Orlando Neto, director of market intelligence at Embraer explains that RJs have taken more than 50-60 routes from

United has recently negotiated a new scope clause with its pilots that allow it to add another 50 RJs to replace turboprops from June 2004. An order for 50 CRJ200s or ERJ145s may be due in the next year.

turboprops and another 150 from jetliners since September 11th. "Regional Airline Association data show that US regional airline traffic is 34% higher than it was in 2001. We expect the US market for 35- to 50-seat jets to keep growing. This is mainly because we expect turboprop displacement by RJs to continue. Once current turboprops have been replaced by RJs, growth in RJ networks should continue. This will be in the form of increased frequencies on existing routes, as well as new routes being opened," explains Neto. Examples of new routes being opened are long-range sectors by Continental with ERJ145XRs, including Oklahoma-Newark, Omaha-Newark and Richmond-Houston.

Bombardier takes a similar view of development in the RJ market. "RJ departures were up 40% in the past year. This is partly because they have been used to substitute or supplement jetliners because of the fall in traffic volumes, which has all happened within scope clause limits," says Barry MacKinnon, vice president marketing and airline analysis at Bombardier. "We still expect the RJ market in the US to continue, however, because of expansion of RJ networks."

Analysis of new RJ routes in the US shows 36% are new city-pairs. Jetliner replacement and/or supplementation of jetliners and turboprops also contribute to significant numbers of new routes, which indicates continuing RJ network development where unimpeded by scope clauses. Where possible, RJs comprise high proportions of jet fleets. Up to 50% of the jet fleets of Delta and Continental Express, which have unlimited numbers of RJs in their scope clauses, are accounted for by RJs.

Embraer and Bombardier have made 20-year forecasts of the regional market which anticipate that up to 3,500 35- to 50-seat RJs will be sold to airlines, of which 1,700 are expected to be sold to the US. Some of these US sales will replace older RJs in operation, with some modification to scope clauses. MacKinnon explains that Bombardier predicts sales of 40- to 50-seat RJs would be about 1,000 in the US if no major changes to scope clauses took place, on the basis of continued market development.



The US market could develop in several ways. RJs could continue to take over more routes from mainline jets at a similar pace. Major carriers, however, already have large fleets of small narrowbodies and need to continue operating them. The difference in unit costs between regionals is considerable in the US, because of high mainline cost structures, which has contributed to regionals taking traffic. Pilot salaries are a main factor in this. Disparity in cost structures could fall again, since large-scale salary cuts at airlines such as USAirways and United could lead to similar reductions at other US majors to ensure competitiveness. A reduced cost gap would reverse the trend of passing routes from majors to regional affiliates, and so would reduce demand for RJs.

Europe

Europe has developed differently to the US. RJs have been used by carriers to increase regional networks by expanding operations from secondary airports and opening point-to-point routes. Like the US, turboprops have been pushed into shorter routes.

European regional airline traffic has been growing quickly. With an 18% increase in the past year. Europe is expected to require 1,800-2,300 new regional aircraft in the next 20 years. About 40% of these are expected to be in the 35- to 50-seat jet category.

Asia Pacific & China

Asia Pacific and China currently have small regional operations. Embraer and Bombardier forecast that these two

regions will take 1,100 regional aircraft in the next 20 years. Whether this would include 35- to 50-seat jets remains to be seen. Overall development and growth are expected to follow anticipated liberalisation.

Embraer and China's AVIC II have signed a long-awaited agreement to license manufacture the ERJ-135/140/145 in China. The joint venture company, to be known as Harbin Embraer Aircraft Industry Company Ltd, will be responsible for manufacturing, assembly, sales and after-sales support. The first aircraft are scheduled for delivery in December 2003.

Not to be outdone, Bombardier subsequently announced that it had signed a memorandum with AVIC I for the final assembly of the CRJ700 and CRJ900 in Shanghai.

Neither manufacturer's success guarantees a monopoly in China's future market for RJs, as independent airline operators did not unquestioningly accept the Chinese-produced MD-80/-90.

Summary

The market which sustained the initial orders for 35- to 50-seat RJs was the replacement of turboprop fleets in the US and Europe. This is now almost complete. Further orders will materialise of growth in the hub feeding market is maintained. There are signs the growth in the regional market will remain string in the US, but scope clauses will limit this. Manufacturers are also hoping that other markets will develop their regional networks, and follow the US and Europe with orders. There are yet few signs this will happen. **AC**