

Sales of new turboprops have been virtually halted by regional jets and the flood of used turboprops onto the market. Examination shows there is an active turboprop market and high demand for passenger and freighter aircraft from a variety of airline types.

Taking stock of the turboprop market

Examination of new and used turboprop transactions highlights trends in the market. Although deliveries of new aircraft increased in 2001, ATR and Bombardier have low production rates.

Large numbers of turboprops are being placed into a weak market, and aircraft are being placed with small airlines.

New production

Annual ATR production averages six ATR42-500s and 14 ATR72-500s. A major obstacle is the availability of young used aircraft. Two airlines that have taken delivery of aircraft during 2000 and 2001, Aces Colombia and Transportes Aeromar, have acquired used aircraft.

Deliveries of ATR72s to thirteen different operators since January 2000 confirm the ATR family has the widest customer base of any turboprop. The backlog remains at 15 (Air Mauritius 1, Bangkok Airways 4, Iran Aseman Airlines 1, Khalifa Airways 7, Transasia Airways 1 and Vietnam Airlines 1).

Recent production at Bombardier has centred on the Q400 and the Q300 order for Air Nostrum. Backlog for the smallest members of the Dash 8 family, the Q100 and Q200, is limited to a single Q100, for Ryuku Air Commuter. With a recent delivery rate of about one aircraft every quarter, these variants have only survived through the commonality they share with the larger Q300. If production of the Q300 ceases, then so will that of the smaller variants. The Q300 has only survived in production as a result of Air Nostrum's March 2000 order for 29 aircraft. Air Nostrum's outstanding balance of 15 aircraft accounts for most of the backlog of 18 (Air Nippon 2, Air Nostrum 15 and Petroleum Air Service 1).

Bombardier has delivered a total of 56 Q400s since February 2000, equal to 26 aircraft a year. The current backlog of 18 aircraft (Augsburg Airways 1, British European 1, Hydro-Quebec 1, JAS/JAC 5, SAS 4, Tyrolean 3 and Wideroe 3) means that production cannot be sustained beyond the end of 2002.

The Q400's orders have never really developed beyond SAS, Augsburg, Tyrolean and Wideroe. Orders for the Q400 have averaged 15 aircraft a year.

Financing & trade-ins

Not only do the turboprop manufacturers have to contend with falling demand and competition from large numbers of used aircraft, they also face the issues of financing and trade-ins. Whether the manufacturer or the customer arranges financing, organisations willing to finance turboprops are increasingly scarce.

ATR and Bombardier have been willing to take aircraft in trade. ATR has limited itself to taking back earlier generation ATR42s in exchange for new ATR42/72-500s. Bombardier has taken large numbers of Embraer Brasilia, Fokker 50s and Saab 340s.

The collapse in used aircraft values and lease rates has made this practice less attractive. Bombardier has recently sold relatively young aircraft for parting out simply to reduce its portfolio of trade-in aircraft.

Used turboprop market

The biggest factor in the turboprop market is the continuing decline in lease rates. Many aircraft are also increasingly placed under flexible/short-term leases. To show how rapidly rates have reduced we have compared current lease rates with those we published in the

January/February 2000 issue of *Aircraft Commerce* (see table, page 38).

This decline has resulted 30-seaters being available at lease rates which would previously have applied to 19-seaters, and 50-seaters available at rates previously applicable to 30-seaters.

This means that operators will upgrade to larger aircraft. Since these aircraft have higher operating costs, only more traffic justifies additional capacity. Operators may be better off lowering the lease costs of their existing aircraft. Operators like Chicago Express in the US and Aerolitoral of Mexico are both expanding their fleets of Saab 340Bs to replace Jetstream 32s and Metro III/23s.

Transactions

All used turboprop transactions since January 2000 have been analysed. This excludes short-term sub-leases, lease returns, purchase of leased aircraft and transfers between sister airlines. A summary of these transactions according to aircraft type and role (see table, page 38) clearly demonstrates that the ATR42 and Saab 340 are the leading aircraft in the used market.

The large number of aircraft owned by their respective manufacturers and the strength of their asset management organisations, ATR Asset Management and Saab Aircraft Leasing play an important role. There are no equivalent organisations for the Embraer Brasilia and Fokker 50. Although relatively large numbers of these aircraft are the responsibility of Bombardier, Boeing Capital, Pembroke and debis AirFinance, these strong independent organisations cannot offer the ancillary services available from manufacturers. Training, spares and technical assistance are all services which can be used to enhance a transaction.

COMPARATIVE TURBOPROP LEASE RATES JUNE 2002 AND JANUARY 2000

Aircraft type	Monthly lease rate \$	
	January 2000	June 2002
ATR 42	75,000	50,000-55,000
ATR 72	100,000-125,000	80,000-100,000
ATP	65,000	45,000
J41	50,000	20,000-25,000
Dash 8-100	50,000	30,000-55,000
Dash 8-300	-	75,000-80,000
Do 328	65,000	-
EMB-120	37,500	20,000-25,000
Fokker 50	60,000-65,000	40,000-45,000
Saab 340A	35,000-45,000	25,000-30,000
Saab 340B	55,000-60,000	40,000-45,000
Saab 2000	110,000	80,000

ATR42/72

The ATR family is the most traded turboprop, and is driven by ATR's policy of taking earlier models back against new orders. ATR is the most determined organisation, since its future is dependent on turboprop sales. While ATR Asset Management is the largest market player, the merger of two independent ATR lessors, TAT and Magellan, has created a major second force.

The first delivery of the ATR42-500 was in late 1995, and there was already an active used market. This highlights the soft terms under which new aircraft were placed. Eight aircraft originally delivered to Continental Express in 1996 were subsequently returned. The availability of ATR72s continues to be limited, such that no transactions involving used ATR72-500s have taken place to date.

BAE ATP

Recent failures of both Air Europa Express and British World have reduced the active ATP fleet to less than 50% of the global fleet. The largest operator is BRAL, which is also looking to withdraw its 13 aircraft. Biman Bangladesh and Sun Air also have their aircraft on the market.

The only recent passenger aircraft transaction saw SATA lease two additional aircraft. Any future for the type is almost certainly as a freighter. A joint programme with West Air Sweden has seen the latter acquire six ex-Air Wisconsin aircraft for conversion.

BAE Jetstream 41

Most Jetstream 41s are on long-term sub-lease arrangements through BAE Systems. The fleet is largely stable, and the only recent movements have seen one BRAL aircraft placed with Eastern Airways and five IMP owned ex-Air Atlantic aircraft leased to Origin Pacific Airways of New Zealand.

Both are Jetstream 31/32 operators, upgrading to 30 seaters. IMP's experience demonstrates well the challenges that face an independent owner looking to dispose of aircraft. Despite minimal competition from other sources of Jetstream 41s these aircraft were only finally leased to Origin Pacific in 2001/2002, some five years after IMP began advertising the aircraft for sale.

Dash 8

Considering similar numbers of Dash 8s and ATR family were built and that Bombardier has an "enthusiastic" view on trade-ins, it is surprising that more used Dash 8 transactions have not been recorded. Compared with ATR's 107 transactions, the Dash 8 has only had 46.

SUMMARY OF TURBOPROP TRANSACTIONS SINCE JANUARY 2000

Passenger aircraft

	Europe	North America	Latin America	Australasia	Africa/Mid East	Asia	Total
ATR42	37	4	15	0	9	4	69
ATR72	7	7	0	0	0	3	17
ATP	2	0	0	0	0	0	2
J41	1	0	0	5	0	0	6
Dash 8-100/200	0	6	12	3	0	0	21
Dash 8-300	0	10	2	3	3	1	19
Do 328	5	7	0	0	0	0	12
EMB-120	10	2	8	4	1	0	25
Fokker 50	11	0	0	0	3	6	20
Saab 340	20	53	14	4	2	2	95
Saab 2000	10	0	0	0	0	0	10
TOTAL	103	89	51	19	18	16	296
	35%	30%	17%	6%	6%	5%	100%

Freighter aircraft

	Europe	North America	Latin America	Australasia	Africa/Mid East	Asia	Total
ATR42	2	0	3	0	4	0	9
ATR72	4	0	0	0	0	0	4
ATP	6	0	0	0	0	0	6
J41	0	0	0	0	0	0	0
Dash 8-100/200	0	0	0	0	0	0	0
Dash 8-300	0	0	0	0	0	0	0
Do 328	0	0	0	0	0	0	0
EMB-120	3	14	0	0	0	0	17
Fokker 50	0	0	0	0	0	0	0
Saab 340	0	0	0	0	0	0	0
Saab 2000	0	0	0	0	0	0	0
TOTAL	15	14	3	0	4	0	36
	35%	30%	17%	6%	6%	5%	100%



EMB-120 Brasilia

The Brasilia has struggled in the used market because it lacks a manufacturer's own asset management organisation. A small number of aircraft have been placed in the passenger role, but a higher proportion have secured their futures as executive shuttles and freighters. It is ironic that the biggest player in the Brasilia market is Bombardier, as a result of the large number of trade-ins. Bombardier sponsored the development of an EMB-120 freight conversion to hasten their disposal. This was years in advance of the manufacturer's own modification. Bombardier also partnered with Volvo to part-out 13 airframes to improve parts supply.

Fokker 50

The turboprop with the highest availability, after the EMB-120, and the least demand, is probably the Fokker 50. The Fokker 50 also lacks an asset management organisation, but the major lessors/owners are debis AirFinance and Pembroke. The majority of aircraft have been placed with existing operators of a type. The Fokker 50 has struggled to find a secondary market.

Saab 340

Saab Aircraft Leasing has been the only turboprop lessor to have consistent success in the US. Sizeable fleets have been placed with Chautauqua, Chicago Express, Colgan Air and Shuttle America. The Saab 340 has found a natural role as a 19-seat replacement in North America. Aerolitoral in Mexico and both Chautauqua and Chicago Express in the

US have employed the type as a replacement for their Metro III/23s and BAE Jetstream 31s.

Although this success is unique among lessors, Saab Aircraft Leasing's experience in South America, Asia, Africa and the Middle East is comparatively poor, without a single transaction in any of these regions.

The Saab 340A has found particular favour with a number of smaller European operators which have leased single aircraft from Saab under flexible terms. With the exception of Chautauqua/Shuttle America, most of the larger lease transactions have involved the later 340B model.

Saab 2000

Although aircraft have become available over the past few years, these have generally been placed in a managed way. Five aircraft were redirected from SAS to Air Botnia of Finland. Aircraft returned to Saab by Crossair and Regional Airlines have been placed with Golden Air and Lithuanian Airlines. Stability may become difficult to sustain as more aircraft are returned to Saab and as Crossair looks to dispose of its own fleet.

New aircraft markets

The hopes of many turboprop owners and lessors have been in the growth of a new generation of regional operators. These would come in below the established regional operators as they move to all-jet fleets. Although there has been no dramatic revolution, this activity has been quietly developing and a number of new operators have surfaced.

Used Saab340 and 2000s account for the second largest number of used turboprop transactions in the past 18 months. This success is due mainly to Saab Aircraft Leasing, which operates as Saab's asset management organisation.

Analysis of used turboprop transactions has quantified this growth by world region. Europe has the largest share of used aircraft transactions for new airlines, with 35% of the total. North America accounts for 30%, South & Central America 17%, Australasia 6%, Africa/Middle East 6% and Asia 5%.

Europe

Europe can be divided into four distinct markets:

- Large-scale operators topping up their fleets
- Small scale operators expanding to match market opportunities
- New operators of larger turboprops expanding existing operations
- New start-up operators

Air Nostrum, BRAL and Skyways have all added used turboprops to their existing fleets over the last two years, despite all three operators moving into regional jet operations. The numbers of aircraft involved are small, however, and Air Nostrum's future requirements will be met from its order for Q300s.

Many smaller operators have taken advantage of the availability of additional aircraft to expand. Airlinair of France, Danish Air Transport of Denmark and European Air Express of Germany have expanded from a combined total of four ATR42/72s to their current combined total of 26. The rapid expansion of European Air Express was partly the result of the German Competition authorities' approval of the Eurowings takeover by Lufthansa. Lufthansa was forced to hand over both routes and aircraft to European Air Express in return.

Golden Air of Sweden has increased its fleet from seven Saab 340s to a total of 11 and also recently added its first Saab 2000. Similarly Loganair of the UK has increased its fleet from two to five Saab 340Bs. Both operators are good examples of independent operators working closely as feeders for larger airlines, Finnair and British Airways respectively.

Several new operators of larger turboprops include carriers Aer Arann Express of Ireland and Coast Air of Norway. These are independent operators that have grown on the back of Public Service Obligation (PSO) services.

The ATR 42 and 72 account for the largest number of transactions of used turboprops in the past 18 months. This is due to ATR's asset management organisation, which keeps the turboprop market active and enables it to sell new aircraft.

Similar sized operators lacking PSO markets have taken advantage of cheap aircraft to complement their existing 19-seater fleets. Examples include Eastern Airways of the UK, Maxair of Sweden and OLT of Germany.

Airlines in eastern block countries have taken advantage of cheap western aircraft. Moldavian Airlines has leased three Saab 340Bs from Crossair. Carpatair of Romania operates three Saab 340Bs. Air Moldova has added a single EMB-120 leased from Bombardier.

Despite the availability of cheap aircraft, new start-up operators are rare. Two that have succeeded are Metropolis of the Netherlands, with three EMB-120s, and Nordic Airlinck of Sweden, with a single Saab 340B.

US

The number of turboprop transactions highlights how poor the market is for turboprops in the US. The market is mainly for existing carriers topping up existing fleets. ASA has taken ATR72s, Piedmont Airlines Dash 8-300s, and Air Wisconsin and PSA Airlines taking Dornier 328s.

There has been little development of smaller operators upgrading to 30 seater equipment or all-new operators. The only positive developments have seen Chicago Express replace its Jetstream fleet with 11 Saab 340Bs, and Colgan Airways add the same type to complement its Beech 1900Cs. ATR has failed to place a single aircraft in the US since ASA agreed to lease seven used ATR72s in 2000.

South & Central America

South America has been a virtual duopoly for Embraer and ATR. ATR has placed 15 aircraft over the past two years, and Embraer eight. Of the eight operators involved, six were existing airlines expanding their fleets, and only Colombia's West Caribbean and Ecuador's Austro Aereo were new operators for the types.

Bombardier has cornered the market in the Caribbean, with 14 aircraft placed. Six are with Air Jamaica Express and eight with start-up Caribbean Star. The Saab 340 has had its only real success in Mexico with 22 Saab 340Bs operated by Aerolitoral (14 of them delivered in the period 2000-2002).

Asia Pacific

The ATR42/72 continues to build on its strong presence in Asia. Three existing operators have taken aircraft.

Fokker's long history in the region is at least partly responsible for its success. Pembroke has placed six Fokker aircraft, two leased to Indonesia Air Transport and three to Air Andaman of Thailand. The last transaction involved the sale of a single aircraft to Japanese operator Nakanihon, which finally overcame the stigma of Japanese operators having used aircraft. The only other transactions in this region are the lease of a single Dash 8-300 to GMG Airlines of Bangladesh and the lease of two Saab 340As by Elmo Aviation to Cosmic Air of Nepal.

Africa/Middle East

ATR Asset Management is the leading lessor in the region, with recent transactions including the placement of four ATR42-300s to Khaliffa Airways of Algeria and three ATR42-500s to Air Botswana. A third transaction involved the lease of two ATR42-500s to Oman. The only other lease transactions have seen two Dash 8-300s leased to Aero Contractors of Nigeria by GECAS. The remaining transactions in the region have been sales of one Dash 8-300 to South African Express, one Embraer Brasilia to Charlan Air Charter of South Africa; three Fokker 50s to Kish Air of Iran; and two Saab 340Bs to Kenya Flamingo.

Start-ups

Used aircraft still almost exclusively go to established operators. Of the 296 used passenger turboprop transactions

considered in this analysis, only 18 were to all new start-up operators. Eight aircraft were for Caribbean Star, but of the remaining five operators four were European and the last Brazilian.

Alternative markets

Not all the used turboprops will continue to be deployed in the passenger role. Many will be converted into freighters, a few will be used as corporate shuttles and an increasing number will be parted out.

Freighters

The 3-4 tonne category is served principally by the Shorts 360, but the EMB-120 is gradually making inroads into the market. Confidence in the potential for the conversion is high with two parties offering Brasilia cargo modifications, the original Bombardier modification and an Embraer approved design. Since January 2000, 17 EMB-120s have been converted, which makes it the most popular of the latest generation of turboprop freighters. Saab has recently followed this example with a cargo conversion for the Saab 340. This conversion looks expensive with a price tag in the region of US\$250,000-300,000. Bombardier is surprisingly not offering a freighter conversion for the Dash 8.

There is interest around the types that are more readily adapted to the freight role, in particular the ATR42 with nine freighter aircraft transactions. Values of ATR42s in January 2000 were in the region of \$4 million, against a freight door installation cost of about \$1 million accounting for no more than 25% of the total cost of the finished freighter. These

aircraft can be obtained for closer to \$2 million, so that the cost of the door is a higher proportion. It is significant that ATR's launch customer for the ATR42 large freight door conversion, Farnair Europe, has changed its mind and is no longer planning to fit the door on the aircraft. It will still take ATR72s with the large door conversion.

In the absence of a Fokker 50 asset management organisation, both Bombardier and Pembroke have sponsored studies for a freight door installation on the Fokker 50, but this project awaits a go-ahead. Since the doors on the standard passenger aircraft are small, this potentially ideal replacement for the freight workhorse is excluded from the freighter market.

The seven tonne category is a straight contest between the ATR72 and the BAE ATP. Despite the failure of the ATP in the passenger role, its availability compared with the relatively scarce and therefore expensive, ATR72, makes it an interesting proposition as a freighter. Counting against it is the lack of a freight door. This is being addressed in the programme with operator Westair, which is operating the aircraft without the freight door.

Parting out

As aircraft are withdrawn from production there is a tendency for spares to become harder to find and more expensive. Rock bottom aircraft values are encouraging a number of organisations, Volvo Aero Services and International Airline Support Group in particular, to acquire airframes for parting out.

Volvo Aero Services (formerly AGES) has acquired two ATR42s, four Dash 8-100s, thirteen Embraer Brasilias and three Fokker 50s for parting out. All but one of the ATR42s and one of the Dash 8-100s have been acquired through Bombardier. The number of aircraft selected for parting out since January 2000 is 31, including six ATR42s, an accident damaged Dornier 328 and two Saab 340As. Many of these aircraft are older models with high hours. It is a reflection on the market for turboprops that the three Fokker 50s are only 1989-1991 built aircraft and have been flown by SAS since delivery.

Summary

The number of operators demanding new production aircraft is currently low. Bombardier's range of products may diminish as it ceases production of older members, and it concentrates on the Q400.

Future production of both 70-seat turboprops is not assured, but the ATR family has the advantage of a large customer base and a focused organisation behind it. The ATR72 can survive on a modest production rate.

A summary of the used market is:

- A total of 300 used transactions have taken place since the turn of the millennium compared. There have been less than 150 new aircraft deliveries.
- Europe has seen the most used turboprop transactions with 35% of the total, followed by North America with 30%.
- The aircraft types with a strong

Current demand for new turboprops has fallen with the large numbers of used aircraft flooding the market. With falling sales of other Dash 8 family members, the Q400 is likely to remain the only Bombardier turboprop in production.

asset management organisation behind them are fairing best in the used market. That is, ATR42/72 and Saab 340.

- The ATR family is the dominant turboprop in the used aircraft market with a worldwide market base and recent success in all markets with the exception of the US.

- The Saab 340 remains the most popular turboprop in the US market.

- Where the original manufacturer is not involved in the asset management role availability tends to be high. That is, EMB-120s and Fokker 50s.

- In the face of great pressure from the manufacturers asset management organisations, the smaller lessors are increasingly being forced into accepting less creditworthy customers.

- Younger aircraft are the ones being leased to the larger operators. Older and cheaper aircraft are generally being placed as single units with lesser credits or sold.

- The market for passenger aircraft is strongest in Europe with a large number of prospects for small numbers of aircraft.

- The lack of transactions in Asia and Africa highlights the continuing reluctance of lessors to lease aircraft there.

- Start-up operators are a rare commodity and the largest proportion of aircraft are being placed with existing operators looking to either expand or replace existing equipment.

- The freighter market is being cornered by a limited number of aircraft types. The Embraer Brasilia and ATR42/72 have acquired a dominant position. The popularity of both types is confirmed by the availability of two modification centres for freight conversions, one approved by the manufacturer and one independent.

- The corporate/VIP market is unlikely to account for many transactions. There have only been 13 of all types since January 2000.

- The number of aircraft being prematurely scrapped is likely to increase as more productive roles for turboprops cannot be found.

The market is seeing mainly smaller operators taking the opportunity to upgrade their fleets or expand their operations. 