

A Quality Asset

Financiers love the 737NG family of aircraft because of its reliable asset quality, even if a few of the family fall further from the tree, these aircraft are thriving and are a sure bet for airlines seeking financing, even during these tough times. By **Simon Finn**, SVP – Aviation at DVB Bank SE

Those poking fun at the banking industry say mischievously that it will only lend money to those that can prove they do not need it. It is also said that the way to tell if you're solvent is if you don't have to wear a suit and tie when you go for

a loan. For many financial institutions, credit quality dominates the decision of whether or not to offer finance. However, once a default has occurred, asset quality determines the ability to recover the outstanding loan. Credit-related factors including legal/registration issues, maintenance quality, operating environ-

ment and fleet concentrations remain important but DVB is an "asset-based" lender, meaning that asset quality features strongly in the criteria guiding the bank's financing activity.

Developing this philosophy has caused DVB to engage in much research and analysis of aircraft and aero-engines.

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ful commercial aircraft programs ever, from the uniquely independent perspective of an asset-based lender.

Asset-based lenders focus on the ease with which the aircraft can be “converted to cash” and the value that this process may release. Both depend heavily on an aircraft’s characteristics and the nature of its market. Twin-aisle aircraft operator bases tend to feature better airline credit quality but single-aisles are easily deployed, more affordable and have larger markets. Another important consideration is that twin-aisle aircraft tend to feature expensive cabin interiors, unique to each operator that may require changing before a new sale can be concluded. The corresponding transition costs for single-aisle aircraft are usually much lower.

The 737NG journey

The original Boeing 737 was designed as a short-range jet to complement the mid-range 727 and long-range 707. Lower operating costs than the competing DC-9 drew in the airlines. Operational competitiveness has been fundamental to 737 development ever since. Subsequent design changes have adapted the 737 to the times and ensured that it retained a healthy market share against competing aircraft types. Engine choice has been particularly vital to competitiveness. The selection of powerful, quiet, high-bypass CFM56-3 engines was a decisive element for Classic 737s to win the market-share battle against the MD-80. Later, selecting the CFM56-7 engine would ensure that NG737s were

The bank has developed a scoring system known internally as the Aircraft Equipment Rating Overview (AERO). With inputs relating to aircraft liquidity and residual value, this system helps DVB to identify which aircraft types are most suitable for asset-based lending. As might be expected, some members of

the Boeing Next Generation 737 Family (NG737) are among the highest scoring commercial aircraft in the system. But AERO does not pretend to tell “the whole story”. Understanding the assets and their markets still requires human research and analysis. The following is DVB’s view of one of the most success-

competitive against the Airbus A320 Family. As air traffic has grown, so airlines have demanded larger aircraft with greater range and efficiency. Besides more powerful and efficient engines to boost take-off performance, other significant 737 improvements included larger wings with more fuel capacity and aerodynamic enhancements that increased speed and range but reduced drag. However, the dimensions of the 737 fuselage cross-section were so well-chosen that they have formed the basis of passenger cabins for every single-aisle Boeing airliner produced since the 707s of the 1950s. The dimensions may not have changed but the 737 fuselage now benefits from a wider incorporation of weight-saving materials in the construction. This cross-section permits the six-abreast layout preferred by most airlines.

Family values

The result is the Boeing NG737 Family we know today, launched in 1993 and comprising four series (737-600, -700, -800 and -900) and their variants (-

700QC, -700ER, -900ER) with optional winglets. Each series denotes a different fuselage length and therefore varying passenger capacity, weights, range and performance.

Targeting the NG737 aircraft type at one of the largest market segments (by volume of aircraft) ensured strong sales and enduring manufacturer support. In today's market, almost 1,200 operators' fleets comprise nearly 16,800 narrowbody western-built jets in airline service or on order (over twice the volume of wide-bodied aircraft). Production of in-service types such as the Douglas DC-9, MD-80 and earlier 737s is complete while NG737 production has several years remaining but even so, NG737s are almost 30 percent of the narrowbody market and Boeing has over 170 NG737 customers.

Just as some of the original competitors in the narrowbody market are no longer produced, so one day an advanced technology replacement will be offered and production of the current narrow bodies will cease. Airbus indicates an A320 replacement date of post-2020

while Boeing suggests "the latter half of the next decade". Some major Boeing and Airbus customers have demanded a new technology narrowbody sooner, citing pressure on the economics of air travel from rising fuel prices and the prospect of environmental taxes but, Boeing believes that the airlines' target of a 20 percent improvement in operating economics requires technology breakthroughs that will take time to develop. Engine manufacturers General Electric and Pratt & Whitney offer new powerplants from as early as 2016 but currently, neither Airbus nor Boeing appears keen to adopt the initial LEAP-X or Geared Turbofan technologies being offered, as once installed neither seems likely to produce the 20 percent improvement. General Electric's LEAP-X concept could see a second phase open-rotor development that may do the trick but, the new technology is not without risk and could require an all new installation solution with further potential compromises to the economics.

One of two potential outcomes for the 737 replacement therefore seems likely.

SEATS & RANGE-BOEING NEXT GENERATION 737FAMILY

	-600	-700	-700ER	-800	-900	-900ER
Seats (max)	132	149	149	189	189	215
Seats (2-class)	110	126	126	162	177	180
Range(basic)	1,265nmi	1,530nmi	n/a	1,950nmi	2,030nmi	1,795nmi
Range(option)	3,135nmi	3,350nmi	5,510nmi	3,060nmi	2,745nmi	3,175nmi

In paxmode, the -700 Quick Changes shares the -700's payload range attributes.

MARKET INDICATORS -BOEING NEXT GENERATION 737FAMILY

	-600	-700	-700ER	-800	-900	-900ER
In service	69	980	2	1,653	52	57
Stored		18		10		
Current	69	998	2	1,663	52	57
On order		536		1,378		184
Grand total	69	1,534	2	3,041	52	241
# operators	10	84	1	131	6	11
Fleet average	8	6	3	5	7	1

Either airlines will pressure the manufacturers for an interim “15 percent solution”, allowing them to take a step in the right direction, or the airframers will make the market wait until they can deliver the full “20 percent solution”. A slim possibility exists that orders may go to alternatives such as Bombardier’s CSeries but, it looks unlikely that NG737 demand will weaken sufficiently to accelerate Boeing’s 737 replacement aircraft type. The 15 percent solution could enter service by around 2018 but the open rotor concept would take longer. Confirming such speculation is harder. Both Airbus and Boeing have large order backlogs for their current narrow-body types. Engineering resources are largely committed to the A400M, A350, 747-8 and 787 programs and finances are under huge pressure due to recent delays. Add in the risks associated with the technology breakthroughs necessary for the new aircraft and it looks very much as if those hoping for an early and definitive announcement are going to be disappointed. The penalty for choosing the wrong solution would be devastating to the manufacturers. Consequently, it seems improbable today that there is anything less than ten years of NG737 production remaining.

Multi-source engine arrangements can impair aircraft remarketing as airlines operating one engine-maker’s products don’t wish to incur the additional costs associated with operating a second manufacturer’s engine within the same aircraft family. By selecting CFM International (CFMI) as the sole source for the NG737 Family’s CFM56-7B engines, Boeing has avoided the aforementioned reduction of remarketing potential. A double annular combustor (DAC) version of the CFM56-7B was designed to reduce harmful engine emissions, thus making for a “greener” aircraft that was popular with airlines in Northern Europe. Airlines operating DAC-engined NG737s could demonstrate their green credentials and reduce costs at Europe’s environmentally sensitive airports. Early operator experience





with DAC engines was unfavourable as high fuel burn, poor durability and turbine blade failures penalised the values of DAC-engined NG737s. CFMI worked hard to solve the technical issues but subsequent single annular combustor (SAC) designs achieved comparable emissions without such problems, pushing the DAC firmly toward obsolescence. SAS and Lauda Air (merged into Austrian Airways) were widely reported as customers for DAC-engined 737-600, -700 and -800 aircraft. Financing unpopu-

lar DAC-engined aircraft may produce lower advances and balloons than for the SAC-engined NG737 majority.

The asset-based lender's appetite for financing depends largely on each NG737 Family member's market. Market reaction has varied according to the characteristics of each aircraft version.

600 Series

The -600 Series features similar seating capacity to the early 737-200. However, airlines increasingly selected larger or

lighter airplanes. Competitors include the Airbus A318, Bombardier CRJ1000 and CS100, Embraer E-190/195, Sukhoi Superjet 100 and AVIC ARJ21. Some were optimized to serve the 100-seat market more efficiently and the -600 suffered poor market penetration. Airline fleet concentrations at SAS and Westjet have potentially severe value consequences if either decides to abandon the -600. With only seven other commercial airline operators, remarketing options are limited, as values of

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for many airlines and the -700 is one of Boeing's best-selling aircraft. Over 1,500 have been sold since the early 1990s. Its archrival, the Airbus A319, has generated over 1,400 sales in a similar timeframe or the -700 would have sold even more. Financiers have confidence in the -700's value and liquidity thanks to the wide operator base. Fleet concentrations are a worry to financiers, as the failure of one large operator could cause values of the wider fleet to become depressed. While fleet concentrations are also a credit-related risk, aircraft with operator bases featuring such concentrations may suffer greater value volatility from the disproportionate influence on trading that such operators may bring to bear. Southwest has an enormous -700 fleet of 340 in service and another 91 on order. However, its business model and reputation are both well regarded, making failure unlikely. The airline has had a big influence on values of the -700 though, benefitting from discounts appropriate for a customer of such importance but also being the main participant in recent secondary market trading. Southwest has executed sale and lease-back agreements with BOC Aviation for 17 x 737-700s out of 41 sales of the aircraft recorded in the last 12 months. Airtran, WestJet, Continental, China Southern, China Eastern and Aeromexico also have large fleets.

Other well-known operators include Delta, All Nippon, SAS, airBerlin and Alaska Airlines. Less well-known names include Yakutia, Andalou Jet and Lucky Air. Eighty-one airlines is an impressive breadth of market indicating good market acceptance but inevitably, operator quality varies considerably. Aircraft manufacturers encourage the market to view lessor participation as an endorsement of an aircraft's future. The underlying economic value trend for the -700 appears strong but, lessor ownership/management can also cause greater value volatility around the mean, due to increased trading volumes. Leasing companies such as Aviation Capital

Group, BOC Aviation, CIT and DAE Capital hold over 30 percent of the 536 -700s on order backlog. Independent data suggests that less than two percent (18) of the 737-700 fleet (986) is stored at present and 12 are currently advertised available for sale or lease.

700 Variants

Sometimes, a "modest investment" by the manufacturer creates a variant which produces incremental sales. Developments like the 737-700C (Convertible between passenger and freight roles) and the -700ER (Extended Range) can please key customers but often lack a sufficiently broad market acceptance. Traditionally, convertibles have had greater revenue potential and survived longer than passenger aircraft. Unless through cost-effective modification, the aircraft can be made acceptable to a wider market, niche variants are generally not ideal for asset-based finance. These particular 737-700 variants have limited market appeal and this may undermine values, although the operational flexibility of the -700C might prove useful in the longer term, if demand for small freighters persists after the demand the passenger fleet has declined.

800 Series

The -800 Series has become one of the most popular commercial airliners of all time. Rather than produce an identically-sized 737-400 replacement, Boeing cleverly stretched the fuselage until it could accommodate 9-12 more passengers than the rival Airbus A320-200. The intention was to achieve seat-mile economics at least as good as, or better than the A320's. Airlines quickly realized that most of their routes supported the additional seats and the 737-800s reliability, relative economics and performance have helped it to become by far the most successful Series of the NG737 Family.

Boeing has received over 3000 737-800 orders. A staggering 1663 aircraft are already in service and long-term

-600s demonstrate. Advertised available for sale from February 2010 are three SAS 737-600s but all the current -600 Series remains gainfully employed and none are stored. The absence of order backlog indicates a lack of underlying demand.

700 Series

The -700 Series and preceding 737-300 are identically sized but, while trends suggest a stretch would have been desirable, the economics remain compelling

underlying demand is clearly strong, as there are 1378 on order backlog. Airbus has amassed almost 4000 A320 orders but it must be remembered that their first order was placed around ten years before that of the first 737-800.

It is frankly hard to find fault with this highly popular and competitive aircraft but, we will try! After 9/11, several A320 operators entered bankruptcy and availability reduced A320 values. Some observers pointed out that 737-800s had not been similarly affected but, at the time there were 35 fewer 737-800 operators making it statistically less vulnerable than the A320. Today the 737-800 has 131 operators and as such, must be considered more vulnerable than before. The same wide operator base also gives the market confidence that the oversupply (if it ever occurs) will be only temporary. Even so, values would be more affected than in the past.

Ryanair has the largest 737-800 fleet but fortunately, also has one of the more robust business models. Boeing's home market has produced big fleets at American, Continental, Delta and Alaska while other large concentrations include those at Gol, Air China, China Southern, Hainan, Qantas and Turkish. In all, around 20 airlines have fleets large enough to seriously depress values in the event of bankruptcy, but perhaps only two or three might be considered at near-term risk. Bankruptcy may be more likely among smaller operators but the limited size of their fleets naturally limits downside risk to values of the overall -800 fleet. Surprisingly, AWAS and GECAS are the only operating lessors with a significant number of -800s on order. DVB found 24 737-800s advertised for sale or lease and only seven stored.

Despite the moderate health warning on potential availability and assuming a sensible advance, DVB considers the 737-800 to be highly suitable for asset-based finance and as close to a "no brainer" decision on the asset as it is currently possible to achieve.

900 Series

The -900 Series was not launched until 1997 and with 757 demand falling, appeared to be an attempt to prevent sales being lost to the A321. Unfortunately for Boeing, the aircraft fell short in two key respects - those of payload and range. Without additional exit doors, the FAA would not increase the maximum number of passengers from the 189 allowed for the smaller 737-800. Also, the range of around 2700nmi was insufficient for some US transcontinental routes. Just six airlines operate 52 737-900s. The largest operator, Korean, operates 16 while Continental and Alaska operate 12 each. Although none are stored, there are also none on order.

Extended Range

Boeing was not about to give up on the 900 Series and announced the new -900ER (Extended Range) variant in July '05, with an order from Lion Air. Two optional fuel tanks in the lower hold solved the transcontinental range deficit. Additional exits increased passenger capacity to 215 - improving the -900ER's seat-mile economics. Lion Air and Continental make up over 85 percent of the -900ER sales to date. Lion Air alone is responsible for a massive 182 of the total 241 sales currently booked. Unlike the -700 and -800, the -900ER's operator base is not mature, so the near-term risk posed to values by fleet concentration is much greater given the smaller quantity of airlines available to soak up any potential excess supply. Despite Boeing's improvements and the lack of any larger Boeing single-aisle airplane in production, other airlines seem reluctant to order the -900ER. At present, it looks as if developing the 737-900ER market is quite a challenge but there remains the potential to expand the operator base as the market recovers.

Thriving, not just surviving

NG737s exist today because Boeing elected to develop its early 737 design according to the philosophy of "adapt and survive". This approach has been

so successful that the type does not just survive - it positively thrives. Almost all aircraft types are suffering from the current decline in demand for air travel but, while a certain amount of shuffling has been evident for the near-term deliveries, underlying demand for the NG737 Family remains strong. That said, glory is not equally attributable to all members of the family, but has been driven largely by market reaction to the -700 and particularly the -800. The market's verdict on the -600 and -900 is clear, but the jury is still out on the -900ER which must overcome the hurdles of a late service-entry and unfavourable comparisons with the 757's payload/range if liquidity and value retention are to improve. While technology is the means of extending the NG737 family's competitiveness, it is also one of the greatest threats to the type's future. At some point airlines will opt to replace their NG737s and flame of production will flicker and die as the oxygen of orders evaporates. Recognising the approach of this time is vital for financiers deciding the appropriate terms for asset-based finance. In a similar vein, no amount of liquidity or residual value retention is likely to make up for over-ambitious advance levels or an unrealistically high balloon position.

While the risks associated with financing the -600 and -900 require strong mitigation, such restrictions may yet ease for the -900ER depending on future developments. However the 737-700 and more particularly the -800 are very well-suited to pure asset-based finance. Whether the finance solutions are credit or asset-based, the NG737 family looks set to fulfil a large proportion of the demand for new aircraft through the course of the coming recovery cycle. So in keeping with the loan-seeker's dress-code quips, DVB is pleased to conclude that for deals involving the vast majority of NG737 aircraft, it's unlikely that anyone will be losing their shirt. ■

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