The industry's capital requirement for new aircraft should peak at around $60 billion in 1999 and in 2000. Airlines are increasingly able to finance aircraft through internal financing, but there is still a requirement for up to $30 billion of external financing. The source of these funds are varied.

Sourcing finance for new aircraft

Securing enough financing for new aircraft has always been a problem. Every year enough sources of finance are allocated in anticipation of this, despite the fact that financing techniques move in and out of popularity or become prohibited. Nevertheless sources of finance still present the industry with a new challenge each year.

Airbus and Boeing will deliver more than 900 new aircraft this year, with a probable total acquisition cost of about $54 billion. This does not include capital expenditure on other associated equipment, such as spare parts and ground equipment.

The number of aircraft deliveries each year varies. It must average about 550 units, worth between $35and $40 billion a year. However, the past few years have witnessed a rise in the delivery rate, following the slump in the mid-1990s, which, in turn, was an after-effect of the recession of the early 1990s . This year will see deliveries increase on 1998 to an unprecedented level. But even this rate of production will be exceeded next year, with more than 1,000 deliveries scheduled.

Internal & external sources

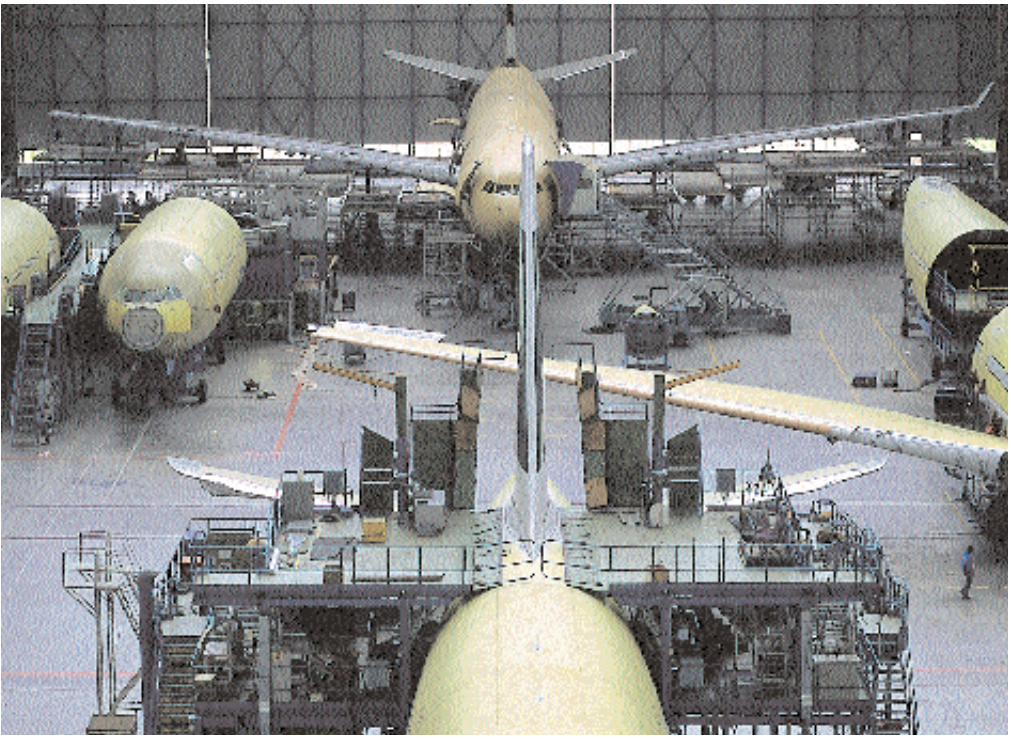
About 50% of the average annual financing requirement of $40 billion is met by airlines themselves. Although not all internal cashflow is used for this percentage, airlines can still use their financial strength to raise financing off the backs of their own balance sheets.

The other 50% of annual expenditure is divided into finance leasing and operating leasing. These two methods represent about 30% and 20%, respectively, of the total market. The portion of aircraft acquired through operating leasing is also climbing. About $10 billion worth of new aircraft deliveries will be financed in this way in 1999.

The first sources of finance are airline internal funds. That is, annual cashflows are available as a source of finance and regularly fund a larger portion of total annual capital expenditure than many are aware of. Airlines generally have an image of poor profitability. However, they actually tend to depreciate their aircraft over 12 or 15 years, but operate them for 25 years or more. They therefore have a much higher internal cashflow than it actually appears from their profits. Indeed, most airlines use the depreciation portion of internal funds (rather than profits) for new aircraft financing.

The table *(see page 12)* shows that since 1994 average annual internal financing has been more than $20 billion. This has generally risen over the past few years as airline profitability has improved. Internal airline funds are the combination of net income and annual depreciation charges; which are of course just a book cost and not a cash expense.

The internal cashflow has been sufficient to finance more than 50% of capital expenditure on new aircraft in some years. Although this has been available it has not always been used for



About 50% of annual expenditure is estimated to be supported by airline internal cashflows. The remaining 50% is split between finance leasing and operating leasing, with the portion of operating leasing increasing.

NEW AIRCRAFT DELIVERIES, EXPENDITURE AND INTERNAL AND EXTERNAL FINANCING REQUIREMENTS 1994 TO 1999

Year	1994	1995	1996	1997	1998	1999
New aircraft * deliveries	432	382	396	558	791	903
Capital expenditure $ million	27,684	26,751	28,209	37,864	50,300	54,600**
Average expenditure per aircraft $ million	64	70	71	68	64	60
Airline net profit $ million	(200)	4,500	5,300	7,600	3,237	1,455
Airline depreciation $ million	18,000	18,420	19,180	19,500	20,266	21,505
Total airline internal financing $ million	17,800	22,920	24,480	27,100	23,503	22,960
External financing required $ million	9,884	3,831	3,729	10,764	26,797	31,040
US airline capital expenditure $ million	4,131	4,904	6,585	9,986	11,566	11,516
US airline net profit $ million	(902)	2,340	2,804	5,209	5,526	4,958
US airline depreciation $ million	5,019	4,869	5,360	5,214	5,723	6,015
Total US airline internal financing $ million	14	(2,304)	(1,579)	(437)	317	542

Sources: Airline Monitor, *BACK Information Services **Aircraft Commerce

new aircraft acquisitions. Airlines have other things in which to invest their profits. Financing techniques, using external funds, are often a more efficient way of acquiring new aircraft.

US carriers tend to have generated large enough internal cashflows to finance new aircraft. They are also the largest consumers of new aircraft financing, accounting for about 40% of the world's annual deliveries. US airlines made their highest ever profits in 1998. Internal cashflows have been so high for many US carriers that they could have almost avoided any need for external funding *(see table, this page)*. In fact it is probable that they could be entirely self-financing for another 10 years.

Nevertheless, airlines in the US have chosen external methods of financing. Their credits are good and they have plenty of alternative methods of financing aircraft, many of which have not been available to carriers in other parts of the world, and they also have access to a large source of external funds. US airlines, after all, have not always been in this this position. Record net profits of $5.5 billion in 1998 are a big change from the record losses of $7.9 billion and $4.4 billion made in 1992 and 1993.

The constant increase in the number of aircraft that are leased and the reduction in those that are owned partially underlines some airlines' desire to use external financing, even when they do not require it. The favourable position in which US airlines find themselves has still not increased their willingness to own aircraft.

The difference in the external financing requirements of US and non-US airlines is clear. US carriers are tending to need less, while the requirements of others are increasing.

This increased need for external financing by non-US airlines presents enough problems on its own. This will be compounded by US carriers competing for external finance sources, even though they could manage without them.

A second problem further compounds the issue. The secondary market also competes for debt. The Asia Pacific crisis and Japanese bank reforms have led many Japanese banks to sell their portfolios. For example, Sanwa's portfolio was sold to BCI for $1 billion and Long Term Credit Bank of Japan sold its portfolio to Deutsche Verkhers for $750 million.

This has caused difficulties, since portfolio acquisition requires secondary market debt. This provides higher rates of return than primary debt. The sale of portfolios has therefore been consuming a lot of debt which would otherwise have been available for new aircraft financing.

This competition for debt has forced up cost and has made the market tighter for aircraft financiers. With the exodus of Japanese banks there has been an influx of German banks keen to build portfolios. German banks have offered debt at competitive rates.

External sources

There has been a steady increase in the amount of aircraft acquired through operating leases and consequently a fall in finance leasing. This is explained by greater demand from airlines for off-balance sheet financing which is also regarded as being flexible because of the shorter lease terms. Operating leasing allows airlines to off-load aircraft after a few years, rather than being committed to them for longer periods.

Airlines have therefore sub-divided their fleets into aircraft that are owned, on operating leases and on finance leases.

The increased popularity of operating leasing has led to banks, previously big in the finance lease market, buying operating lessors. For example, Deutsche Morgan Grenfell bought Boullioun.

The area not covered by operating leases in external financing is the availability of finance.

There are many different financing techniques available to source external funds. These broadly fall into the four categories of bank debt, institutional finance, export credit financing and tax- or asset-based financing.

Each year the amount of aircraft financed using each of these techniques changes with their popularity and availability *(see table, page 14)*. There is no actual definitive source which says how much is available for each of these

New aircraft deliveries will peak in 2000, dictating a need for $60 billion of financing. Tax-based techniques are dwindling and could soon disappear altogether. EETCs have become the most popular technique of external financing in the US. There could be an international equivalent of the EETC within a year.

techniques and in turn how much can be used for aircraft.

Aircraft financing competes with other industries. Although the requirement for external capital is rising, the air transport sector can only compete at its best to satisfy its annual needs. There are cases where financings – and thus orders – are not possible because of lack of availability. Operators in the Asia Pacific region is one example, where some airlines have had to defer deliveries in the past year because of losses and poor credit ratings.

The quantities of these four sources are listed *(see table, page 14)*. These should not be totalled, however, since they can overlap. For example, export credit financings are basically transactions made for airlines with poor credit ratings that are assisted by US and European government guarantees. They still require commercial bank debt, which is also listed in the table. Export credit structures are also funded by the public markets, or institutional investors, and so gives another example of overlap.

Bank debt

This portion of funds accounts for all types of financing. This includes debt for export credit deals, tax-based finance leases and capital required for used aircraft as well as airline balance sheet borrowings.

The amount of bank debt is shrinking because banks are becoming more conscious of the level of return on equity. Higher returns are being made on other transactions outside of the air transport sector. This is being substituted by the institutional markets, which are becoming more developed and efficient.

Debt generally accounts for 80–85% of all financing, whatever technique is used. Despite the poor margins now achieved in the primary debt market, banks are still willing to supply it to airlines, even as a loss leader. This is because it tends to generate other business with the bank, such as high volume foreign exchange transactions. Although primary debt margins have been eroded, banks are pricing it accordingly because they are generating other business as a result.

There is still undoubtedly less money around. This has been alleviated by institutional finance, especially securitisation financing. Securitisation is, however, only available to lessors and not to airlines.

The debt shortage has also been alleviated by the EETC. This is because the structure of the EETC provides access to capital markets.

Export credit financings

Out of all debt financed aircraft it is estimated that 30–35% is supported by Exim and European Export Credit Agency (ECA) financings.

It is thought that Exim Bank and ECAs could represent about 50% of all civil aircraft finance. In 1998, Exim Bank supported $2.6 billion of financings and European ECAs aided $3.0 billion each in 1997 and 1998. It is estimated that ECAs could support up to $5.0 billion of financings in 1999.

Institutional investors

This is a source of funds that is increasing both in size and popularity. The finance comes from the public markets and acquires capital from pension funds, bonds, mutual trusts and unit trusts.

The deepest of the these institutional capital markets is found in the US. The institutional financing market is predominantly used by US airlines. The funds are used for enhanced equipment trust certificates (EETCs) and securitisation packages.

EETCs have, until recently, been limited to US use only. Securitisations, however, are being used widely overseas. The EETC, in fact, has fast become the only major form of external financing now used by US airlines. EETCs are

SOURCES OF AIRCRAFT DEBT FINANCING

Year	1994	1995	1996	1997	1998
Bank debt $ million	22,691	17,958	18,978	17,945	13,670
Institutional investors $ million	4,714	3,397	8,630	5,187	8,426
Export credit $ million	6,241	4,399	5,000	6,890	N/A
Tax-based leveraged leasing $ million	7,825	9,706	7,013	11,507	N/A

Source: Citibank

proving popular with US carriers partly because the mechanism means there is no recourse to the airline. That is, the bankruptcy rules in the US are beneficial to creditors. This is one reason why the EETC has only been available to US airlines until now.

The EETC is a form of structured financing where the debt is rated by a rating agency. Different tranches of debt are arranged on the asset. For example, where four equal tranches of debt had been arranged and an equal tranche of equity had been provided, the first debt tranche, A tranche, is provided as a guarantee to be re-paid in the event of a lease default.

The other four tranches have less security in order of descent. The A tranche may have an interest rate of 8%, the B tranche a rate of 9.5% and the other two progressively higher rates. The equity provider will get whatever it can in the structure of the deal, but supplies it completely at risk. In the event of a default and the need to re-market the asset, the A tranche is almost certain to get its funds re-bated. The B tranche may get 90% of its funds back and the other two progressively less.

The technique is basically a form of leveraged debt, although the funds are provided by the capital markets rather than bank debt. The structure of the EETC allows airlines with a poor credit rating to obtain finance, since the rating agency rates the risk on each tranche of debt, passing the onus of risk on to the debt provider. The debt providers are therefore aware of the risk prior to commitment.

EETCs have become extremely popular in the US, being used to finance more than 260 aircraft in just four years with a total value of more than $8 billion.

The EETC has been limited to US carriers because of the deep institutional investor market in the US. It has been hard for non-US airlines to access these funds, but Qantas was the first airline outside the US to use an EETC.

The Taca Group will probably use EETCs for some of its A320 acquisitions, but this is probably only possible because the aircraft will be US registered. The airline's revenues are also in US dollars.

There are too many laws in Europe to develop structures that are similar, although it is thought the international equivalent of the EETC is on its way. The forthcoming Unidroit convention will be one vehicle that will make it possible to develop the EETC outside the US.

Tax-based leasing

This method of aircraft financing has been popular in the past and is now in a steep decline. Tax-based leasing utilised generous tax concessions on asset ownership provided by governments of particular countries; sometimes in several other countries. One example is the Japanese Leveraged Lease (JLL) which uses the tax concessions of both Japan and another country to take advantage of tax concessions in two countries.

This form of finance leasing is now in decline. The reason is that governments no longer allow these tax concessions, especially for airlines from outside Japan. Another example of reduced tax concessions is in the United Kingdom, where the annual tax allowance on aircraft ownership has been reduced from a declining balance method of 25% per year to 6%.

Sweden and France still have high tax concessions on aircraft ownership, but the banks have limited amounts of tax capacity, reducing the number of possible transactions. Another tax lease to have dwindled is the German tax lease; again diminishing because of reduced tax concessions.

These reductions have effectively killed most tax leases, forcing airlines to seek alternative methods. This is one reason why operating leasing has become more popular in recent years.

It has also given rise to new forms of operating leasing. Japanese declining balance rates of tax allowances are now only allowed for use by Japanese operators. A straight line rate of 5% is still allowed for aircraft operating outside Japan.

Under Japanese law the operating lease is regarded as a structure where the investor takes the residual value risk on the aircraft. Because the structure is regarded as an operating lease it is hoped the lease will still be allowed declining balance rates of tax concessions, even if the lessee is a foreign airline. It is still not clear whether Japanese tax authorities will allow this loophole. If so, the Japanese operating lease will effectively be born, since declining balance rates of tax concessions are 45%. This could potentially make it very popular, since competitive lease rates could be offered.

However, with Japan in financial crisis over the past five years, there is limited debt available for aircraft.

Recently the German operating lease has arrived on the market. Germany is the biggest private investor market in Europe and so can provide a large volume of financing for operating leases. In 1997 about $2.5 billion was used in aircraft finance leasing.

The nature of the German operating lease is that terms of less than five years are not possible, but nine-year terms are not a problem. Deutsche Structured Finance launched the first operating lease for private investors and argues that the financial efficiency of an operating lease is no less than a typical finance lease. On this basis operating leasing should not be confined by airlines to the part of the fleet they need to be flexible, but also the core of the fleet which will be kept for the longer term.

Summary

Aircraft deliveries will peak in 1999 and 2000 and reduce thereafter. Although the Asia Pacific crisis has been expected to trigger a recession for the past two years, most other global regions have been able to avoid a downturn.

Aircraft deliveries have nevertheless peaked, after rising from the trough of 1995. They will have to fall again for the average annual delivery rate of 550–600 aircraft to be maintained. This reduction of deliveries will ease requirements for external aircraft financing. In the meantime new financing techniques are certain to emerge. AC