Chapter 7

Airline Privatisation

The trend towards the privatisation of government owned assets gathered pace during the 1980s, as part of overall economic programmes introduced by more capitalist governments. This was encouraged by aid agencies such as The World Bank, the Asian Development Bank and the European Bank for Reconstruction and Development. Policies pursued by the latter became increasingly influenced by the USA, their major donor country.

The justification for privatisation was both strategic and financial. Strategic reasons encompassed:

- Reducing the involvement of the state in the provision of goods and services.
- The promotion of economic efficiency.
- The generation of benefits for consumers.
- The promotion of an enterprise culture.
- The achievement of wider share ownership.

Of equal, or even greater, importance were often the financial reasons: governments welcomed these sources of cash with which to reduce their budget deficits, allow room for reducing taxes, or shift the financial burden to the private sector. However, it is not entirely obvious that an airline would be a financial burden, once it had been prepared for privatisation. Furthermore, while these policies may have looked attractive in the short-term, they might, in some cases, have resulted in fire sales of quality assets at low prices which effectively transferred wealth from the population as a whole to those who were lucky enough to be allocated shares in the newly privatised company.

This chapter focuses on the financial aspects of airline privatisation. Equally important, but beyond the scope of this book, are the economic aspects and the preparation before privatisation. This is discussed in some depth by Doganis, with particular reference to Olympic Airways, an airline which he chaired during its preparation period.[1]

The average government stake in the largest 25 international airlines was 28 per cent in 1996, 19 per cent in 2001 and 16 per cent in 2005 (ranked and weighted by international RTKs in each year). This reduction was caused by the governments of Germany, France, Italy, Spain and the Netherlands all reducing significantly their shareholdings, offset to a small extent by the Malaysian Government re-nationalising

1 Doganis, R. (2001), *The Airline Business In The 21st Century*, Routledge, see Chapter 8.

Malaysia Airlines. This compares with an average of 59 per cent for the next 25 largest international airlines in 2001 (up from 51 per cent in 1996).

The trend towards airline privatisation began over the period before 1996, but was mainly in these top 25 airlines: this is evident from the reduction in average government stake for these airlines from 48 per cent in the early 1980s, with the privatisation of British Airways, JAL, KLM, Qantas, Malaysian and Air Canada.

Table 7.1 Government shareholdings (per cent) in top 20 international airlines, 2005

		International RTKs (million)	% government owned
1	Lufthansa	18,710	0.0
2	Singapore Airlines	15,447	56.4
3	Air France*	15,200	0.0
4	British Airways	14,528	0.0
5	Korean Air	13,449	0.0
6	Cathay Pacific	12,809	0.0
7	KLM*	11,672	0.0
8	Japan Airlines	10,574	0.0
9	Emirates	9,894	100.0
10	American Airlines	9,582	0.0
11	United Airlines	9,193	0.0
12	China Airlines	8,896	70.1
13	Qantas	7,563	0.0
14	EVA Air	7,336	0.0
15	NortwestNorth-west Airlines	7,297	0.0
16	Malaysian Airline System	6,457	69.3
17	Thai Airways	6,298	54.0
18	Federal Express	5,695	0.0
19	Air Canada	5,588	0.0
20	Delta Air Lines	5,350	0.0

* full merger agreed

Source: IATA WATS 2006 for 2005 RTK weights and airline annual reports

Since 1996, the privatisation process has been completed for some of the top 25, with others such as Iberia and Air France added to the list. However, little progress has taken place amongst the next 25 largest, with the average government share in fact increasing. This was because of the entry into the top 50 of state owned airlines such as China Eastern, and the disappearance of part privately owned Finnair. Boeing estimated that, among the top 25 airlines, the share of total capacity offered by government controlled airlines has fallen in the past 20 years from 38 per cent to 10 per cent.[2]

2 Boeing, (2001), Current market outlook 2001.

British Airways is one of the early examples of a total privatisation. Before the airline could be privatised, it had to go through a radical shake-up, resulting in drastic staff cuts, axing unprofitable routes and disposing of loss-making subsidiaries.

Privatisation can involve the sale of a minority government stake to the private sector (as in the case of Finnair), the sale of a majority in a number of stages (*e.g.*, Lufthansa) or in one stage (*e.g.*, Kenya Airways), or an outright sale of a 100 per cent government shareholding (*e.g.*, British Airways). Examples of each of these paths are discussed in more detail below.

Methods of privatisation are one or a combination of the following:

- Flotation (public subscription).
- Private placement (a number of different private investors).
- Trade sale (one large investor which also operates in the same or related industry).
- Employee or management buy-out.

A flotation is only possible where there is a strong domestic equity market (with good volume trading in a number of different companies and industry sectors), and the local stock market regulations can be complied with by the airline. Success will depend on the airline having a good track record (at least two or three years' of profitable trading), and an appropriate capital and issue structure. Iberia's privatisation was repeatedly postponed in the early 1990s because it had not been profitable and needed more time to restructure.

7.1 Full Privatisation through Flotation − British Airways

The conservative government of Margaret Thatcher was elected in 1979 with a programme which included the privatisation of many of the state owned firms. British Airways was one of the first candidates for this process, and John King was appointed as its chairman in 1980 with the task of preparing the airline for privatisation.

Most airlines had suffered badly as a result of the economic recession of the early 1980s. In 1981/1982, British Airways were technically insolvent,[3] with long-term debts of over £1 billion and negative equity of almost £200 million. The privately owned Laker Airways was in a similar position in that year. A snapshot of the two British airlines at end March 1981 and 1982 is shown in Table 7.2.

Apart from their contrasting ownership, a major factor in BA's subsequent recovery, and Laker Airways' 1982 bankruptcy was the sterling/US$ exchange rate: the strengthening of sterling before 1981 had an adverse effect on the national flag carrier, but had the opposite effect on Laker, which had low foreign exchange revenues relative to its foreign exchange costs. The dramatic weakening of sterling

3 Gordon Dunlop, BA's Finance Director stated in 1982 that had the airline been in the private sector it would have gone through the bankruptcy courts, Reed, Arthur, (1990), *Airline: the inside story of British Airways*, p. 47.

against the dollar after 1982 helped BA's recovery, while sealing the fate of Laker Airways.

Table 7.2 British Airways' and Laker Airways' liabilities

	British Airways		Laker Airways	
£ million	1980/1981	1981/1982	1980/1981	1981/1982
Current liabilities	594	751	38	24
Long-term debt	739	1,074	177	226
Shareholders' funds	350	− 192	25	− 20
Total liabilities	1,683	1,633	240	230

The exchange rate, however, was only one factor in BA's recovery. The new management team introduced a radical restructuring of the airline, which involved the reduction in staff numbers from just under 54,000 in 1980/1981 to 36,000 in 1983/1984. The measures taken to prepare the airline for privatisation are well documented,[4] the overall outcome being the reduction in long-term debt to £626 million by the end of March 1985, and a return to a positive figure for shareholders' funds of £287 million. Helped by further growth in the world economies, the balance sheet was in even better shape by the time the privatisation prospectus was issued in January 1987 (long-term debt down to £316 million and shareholders' funds standing at £620 million at end September 1986).

The method of valuation for a share issue such as this was described in the previous chapter. Early on in the UK privatisation programme, the government set a higher priority on making the issue a success with small investors, and were thus erring on the low side in determining the price at which the shares were to be sold. They later faced a substantial amount of criticism in selling state assets too cheaply, so that other mechanisms for flotation were used for subsequent privatisation issues which did not command such high premiums in early trading.

The prospectus was issued in January 1987, and contained much information on the airline, the industry environment and outlook, as well as the procedures for application for shares, and arrangements for employees and airline pensioners.[5]

Table 7.3 summarises the key ratios predicted in the prospectus for the financial year 1986/1987, and compares these with the actual outcome which was published in May of the same year. The prospective P/E ratio was considerably below the UK market average of 14, and the prospective dividend yield compared favourably with the equity market average of 4.2 per cent.

4 Ashworth, M. and Forsythe, P., (1984), *Civil aviation policy and the privatisation of British Airways*, Institute for Fiscal Studies.

5 British Airways, (1987), *Offer for sale on behalf of the Secretary of State for Transport*, Hill Samuel & Co. Ltd., January.

Table 7.3 British Airways privatisation factsheet (1987)

	Prospectus	Outcome
Issue price per share	£1.25	£1.68–£1.78[1]
Market capitalisation	£900 million	£1.21-1.28 billion[1]
Forecast profits for 1986/1987	£145 million	£162 m[2]
Prospective P/E (Based on 1986/1987 pre-tax profit)	× 6.3	
Historic P/E (Based on 1985/1986 pre-tax profit)	× 4.7	× 5.3[3]
Net dividend yield	3.2%	2.3%[3]
Dividend cover	× 3.3	× 4.9
Net tangible assets per share	£0.86	£0.84

1. Price range on first day's trading
2. Actual pre-tax profit for the financial year 1986/1987
3. Based on the market price per ordinary share of 181p on 31 March 1987

A further inducement to subscribe to the offer was given in the form of a loyalty bonus. Individuals obtaining shares under the offer would be eligible to receive one additional free share for every 10 shares held continuously until the end of February 1990, or for three years. This was to dissuade individuals from taking their profit early on, and thus to support the government's policy of a shareholding society.

To provide some incentive for BA staff, a number of arrangements were made for the distribution of both free and paid shares:

- The free offer of 76 shares for each BA employee.
- The matching offer of two free shares for each share employees purchased at the offer price (for up to 120 paid shares).
- The priority offer, whereby BA employees would receive priority for any further applications, subject to any scaling down that might occur.
- The discount offer under which 1,600 shares applied for by BA staff under the above priority offer could be purchased at a 10 per cent discount.

The share offer was 11 times oversubscribed, reflecting both the attractive offer price and the considerable advertising effort undertaken by the government. This meant that applications had to be scaled down, and the employee scheme had the effect of making a substantial bonus payment to them of just under £30 million (62 million shares multiplied by a first day average premium of 48 pence).

Only around 4 per cent of shares were held by employees by 1996, with two-thirds of the airline's staff holding shares. A profit sharing scheme was first introduced in 1983/1984 whereby, if profits exceeded a certain target, all eligible (UK based) employees would receive a given number of weeks' additional salary as a bonus. This could be taken in cash or used by trustees to buy shares in the airline on behalf of the employees (an incentive to take shares was introduced in 1996 in the form of a 20 per cent increase in value of the bonus taken as shares). The bonus amounted to

£94 million in 1995/1996, or one week's basic pay for every eligible staff member for every £100 million in pre-tax profits earned over a target of £269 million.[6]

Table 7.4 Initial post-privatisation British Airways share distribution

Shareholder category	Share %
Employees	8.6
UK public (individuals)	35.4
UK institutions	36.1
Overseas	17.2
Loyalty bonus retention	2.7
Total	100.0

Around 20 per cent of the total offer of 720 million BA shares was made under a separate overseas offer in the USA, Canada, Japan and Switzerland. An application was made to list the shares on the New York Stock Exchange, in addition to the London exchange, and it was intended to obtain a listing on the Toronto exchange at a later date. These listings would clearly increase the attraction of the shares to foreign investors, but, on the other hand there would be problems if too large a proportion of shares were held by foreign nationals.

This is because air services agreements, which give the airline its right to operate international routes, require that the airlines designated by the UK Government are *substantially owned and effectively controlled* by UK nationals. The implication of this clause for the exact percentage of foreign owned shares allowed is subject to interpretation. Substantial ownership implies foreign ownership of perhaps 50 per cent and over, but effective control might be exercised if one foreign corporation or individual held, say 25−30 per cent of the issued share capital, and the remainder of shares were widely distributed among a large number of entities. No maximum percentage was stated in the prospectus, but in the event of BA's traffic rights being removed or reduced as a result of this clause in the air services agreement, a mechanism was introduced to refuse to register the shares which caused such a situation (a nationality declaration is required for shares to be registered in any new owner's name).

In practice, BA's foreign ownership has reached 41 per cent in 1992 without any problems for traffic rights, and without the need to refuse registration. The level subsequently fell to 26 per cent in March 1993, was 35 per cent at year ends 1994 and 1995, 27 per cent at the end of March 1996, rising to 43 per cent in early 2001 (of which around three-quarters are held in the US) and back to 38 per cent at end December 2005, with only half of these held in the US. This compares with the initial US allocation of just over 17 per cent.

BA has outperformed its home market following privatisation (see Figure 7.1), especially in the period after the effects of the Gulf War had been fully digested.

6 *British Airways News*, (24 May 1996).

However, since 1997, the airline has faced considerable problems, and its performance declined in relation to the UK market and other airlines.

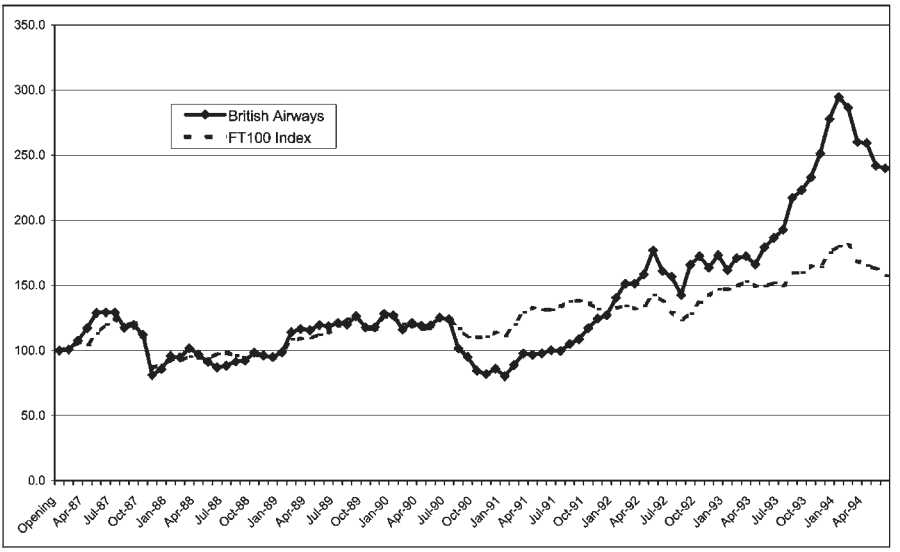

Figure 7.1 British Airways share price *trend vs UK* market

7.2 Full Privatisation through Trade Sale and Flotation − Qantas

The privatisation of Qantas Airways Ltd was achieved by taking a number of steps. First, the airline was merged with one of the two major domestic airlines, Australian Airlines, in September 1992. This was to give it control over domestic feeder services, as well as to improve crew, aircraft and overall productivity. Next, in March 1993, a trade sale was made of 25 per cent of the share capital to an international airline that could give the airline a stronger presence in international markets. This was done by tender, and BA's bid of A$666 million was successful against the only other contender that could realistically be considered, Singapore Airlines.

At the same time, BA also entered into a 10-year commercial agreement with Qantas, thus cementing a strategic alliance between the two airlines. The final step was the sale of the remaining 75 per cent of the shares in Qantas, which were held by the Commonwealth (government) of Australia. This was done through an offer of 750 million shares to both the public and institutions. The price of the issue was determined by tenders from the institutions, with the final price being set at A$2.00. The price of public offer was then set at 10 per cent below the institutional price, or A$1.90. Thus, the total issue was valued at A$1.45 billion.[7] The issue was 2.5 times oversubscribed at the bottom end of the price range and 2.2 times oversubscribed at the institutional final price of A$2 (individual subscriptions were allocated in full).

7 Qantas Airways Limited (1995), *Offering Memorandum*, 22nd June.

Table 7.5 Qantas Airways' post-offer share distribution

Shareholder category	Share %
Australian individuals and employees	27
Australian institutions	27
Foreign institutions	20
British Airways plc	25
Loyalty bonus retention	1
Total	100

Source: SBC Warburg

The 20 per cent foreign institutional demand was principally from the US and UK/Europe, with 47 per cent and 43 per cent respectively, leaving only 10 per cent from Asian investors.

As with the BA issue, it was necessary to limit foreign ownership in the airline. The government passed the Qantas Sale Act to ensure that Qantas remained an Australian airline. In the act, the total amount of foreign ownership was limited to 49 per cent of the shares. To enforce this restriction, the directors of the airline have powers to remove the voting rights of a share, to require the disposal of shares and to transfer shares which exceed the limit.

In the days following the issue, foreign investors pushed their share up from the 45 per cent at allocation (see table above) to the maximum 49 per cent allowed. To satisfy foreign demand, which was running at a higher level than the shares available, finance houses issued derivatives which shadowed the Qantas share price and dividend distribution, but which did not give the holder any claims on Qantas assets or any votes. Air New Zealand's privatisation contained similar foreign ownership limits: 49 per cent overall, 25 per cent from any one airline, and 35 per cent from any group of airlines.

Table 7.6 Qantas Airways privatisation factsheet (1995)

	Prospectus	Outcome
Issue price per share	A$ 1.90 − A$2.00	A$2.15[1]
Market capitalisation	A$1.9-2.0 billion	A$ 2.15 billion[1]
Forecast profit after tax:		
1995/1996 (to end June)	A$ 237 million	A$ 247 million
Prospective P/E (1994/1995)	× 11.1	
(Based on A$2 issue price)		
Prospective P/E (19951996)	× 8.5	
(Based on A$2 issue price)		
Historic P/E (1993/1994)	× 12.8	
Dividend yield (1995/1996)	6.5 per cent	
Net tangible assets per share	A$ 2.27	

1. Highest price on first day's trading

Each employee was given free shares with a total value of A$500 at the then market price. During the financial year 1996/1997, a similar free distribution would be made to employees, subject to a performance target for the year ending 30 June 1995 being met.

The shares opened at A$2.15, giving individual investors a 13 per cent day one premium. The shares moved ahead to almost A$2.30 over the next few months. After a good start, Qantas has underperformed compared to its home market in the two years years following privatisation (see Figure 7.2).

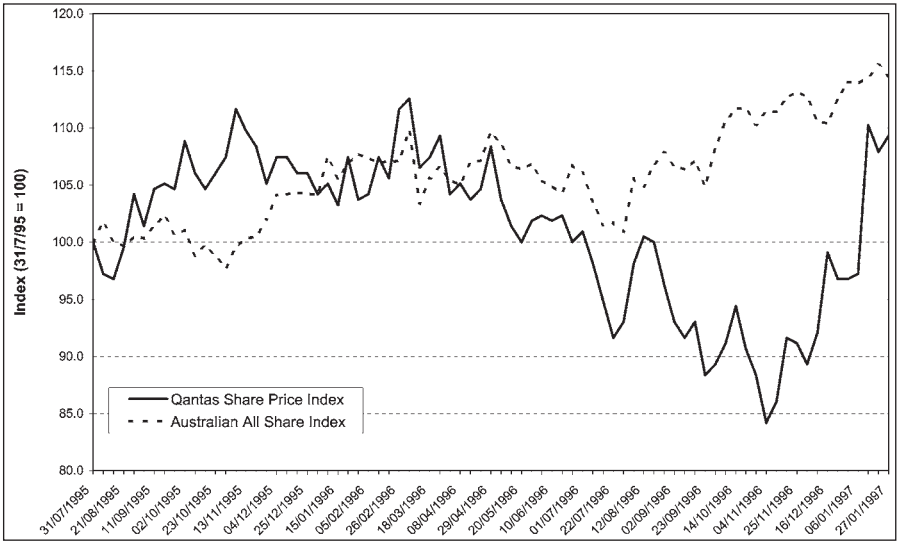

Figure 7.2 Qantas Airways share price trend *vs* Australian market

Subsequently BA's 25 per cent stake was diluted to 18.25 per cent as a result of not taking up their allotment in a rights issue. They finally sold their remaining shares by placing them with institutions in 2004. By then this was no longer seen as a necessary strategic investment and BA's major concern was to reduce its long-term debt. The sale raised A$1.1 billion (around £430 million).[8] This gave them a book profit of 165 per cent, aside from the dividends received each year and the benefits from the alliance.

7.3 Gradual Privatisation − Lufthansa

Lufthansa has had private shareholders and its shares have been traded on the Frankfurt market for many years. The Federal government's stake fluctuated between 72 per cent and 85 per cent over the years 1953−1987, when it declined to 65 per cent. In 1989, however, the German Government took the first step in

8 British Airways Press Release, (9 September 2004).

pursuit of their policy of eventual privatisation of the airline. In the autumn of 1989, Lufthansa issued DM304 million worth of shares (nominal value), and the Federal Government and other state entities (the Federal Railways and the Kreditanstallt für Wiederaufbau) did not subscribe to the issue. This resulted in the government share falling from around 60 to 52 per cent.

Further progress towards privatisation was halted first by the serious financial consequences of the Gulf War recession, and second by the staff pensions problem. Lufthansa employees were covered by the government backed supplemental pension fund (VBL), and the fund's constitution would have resulted in the loss of pension rights if the government's share in the airline were to drop below 50 per cent. Lufthansa did not have the financial resources to fund these benefits themselves.

The issue was finally resolved in 1994, when the Federal government agreed to provide DM1.567 billion to maintain the pension benefits of existing staff, following Lufthansa's withdrawal from VBL. The airline would fund a separate pension plan for new staff themselves. The withdrawal took place at the end of December 1994.

Once the pensions problem had been resolved, the way was clear for the government to reduce their take to below 50 per cent. This occurred in October 1994, with a share issue of DM1.2 billion not taken up by the government, and a placement of 2 million shares held by the Federal government with institutions.

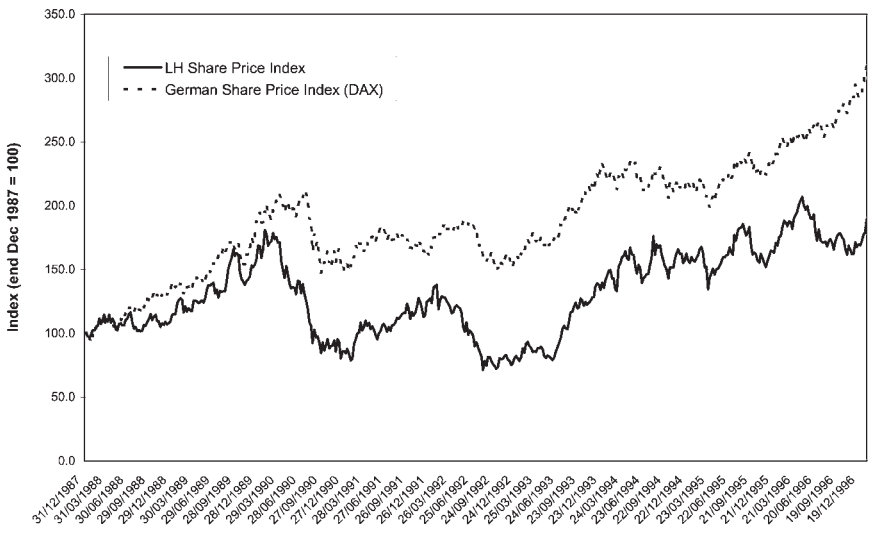

Figure 7.3 Lufthansa share price trend *vs* the German market

During the 1995 financial year, Lufthansa bought 105,531 of its own shares in the market, representing 0.28 per cent of its nominal share capital. The shares were offered to employees of the various companies in the group between August and December 1995 as part share in the profits earned in 1995.[9]

9 Deutsche Lufthansa (1995), *Annual Report*.

One final problem relating to Lufthansa's privatisation was solved in 1999. Most shares in German companies are 'bearer,' rather than registered in the shareholder's name. Bearer shares are similar to banknotes in that their owners are not known and cannot be traced. Dividends have thus to be claimed by holders, since payments cannot be sent to known holders. It is thus impossible to know who is holding the shares. This becomes a problem once the government only holds a minority of the shares, since many of Germany's air services agreements with other non-EU countries require their designated airline to be wholly owned and controlled by German nationals.

Table 7.7 Lufthansa shareholding − 1996 and 1997

Shareholder	January 1996 %	January 1997 %
Federal Republic of Germany	35.68	—
Kreditanstallt für Wiederaufbau*	1.82	37.50
Deutsche Postbank and Deutsche Bahn	1.38	1.38
State of North Rhine-Westfalia	1.77	1.77
Munich Air Transport Securities Company (MGL)	10.05	10.05
Total above known German shareholders	50.70	50.70
Other shareholders	49.30	49.30
Total	100.00	100.00

* 100 per cent owned by the Federal Republic of Germany

The group of state companies and institutions that, following full privatisation, had agreed to retain their holdings to ensure majority German ownership (see Table 7.7), no longer needed to do so. In 2001, 62 per cent of the airline's shares were held by German nationals, with a further 14 per cent held by UK nationals, and another 4 per cent and 3 per cent held in Luxembourg and Belgium respectively. By the end of 2005, 79 per cent of their shares were owned by German nationals, and only 5 per cent US nationals.

However, Lufthansa reported that in August 2006 the share of foreign investors in their share capital had reached 40.29 per cent, or above the threshold level when it is authorised to buy back its own shares. It added that it did not need to do so because it did not see a threat of excessive foreign control.[10]

7.4 Partial Privatisation − Kenya Airways

As with Qantas, the Kenya Airways privatisation involved both a trade sale and a public offering of shares. The trade sale took place in December 1995, with KLM acquiring 26 per cent of the shares of the airline for US$26 million in cash and the provision of various services to the value of US$3 million. This followed a period

10 *Deutsche Lufthansa*, Corporate Communications, Press Release, (3 August 2006).

of restructuring and rationalisation under a management contract with Speedwing Consulting, which is owned by British Airways, following an unsatisfactory relationship with Swissair.

The public offering took place in March 1996, with a flotation of 34 per cent of the company's shares on the Nairobi stock exchange, as well as an international sale of a further 14 per cent of shares, with 3 per cent allocated to employees. This left the Kenyan Government with a minority stake of 23 per cent of the issued share capital, and limited foreign ownership to a maximum of 40 per cent.[11]

The shares were offered at KShs 11.25 (or around 20 US cents) per share to international investors. This compared with the cash price KLM paid of about 22 cents per share.

It should be noted that the net financial charge disappeared in 1995/1996, and was replaced by net financial income. This was partly because of a US$7 million foreign exchange gain, but also resulted from the government having previously swapped US$33.1 million of long-term debt into equity. At the same time, the airline had built up cash and bank balances to US$52.5 million by the end of September 1995.

Table 7.8 Kenya Airways' pre-privatisation financial data

	1993/1994 (12 months)	1994/1995 (12 months)	1995/1996 (6 months)
Total revenues (US$ million)	168.7	172.7	90.4
Total costs (US$ million)	*n/a*	141.4	73.3
Operating profit (US$ million)	*n/a*	31.3	17.1
Net financial income (US$ million)	*n/a*	(14.4)	2.8
After-tax profit (US$ million)	*n/a*	29.3	13.6
Passenger yield (US cents per RPK)	7.1	7.4	7.9
Passenger load factor (%)	69.6	68.9	67.7

Source: Kenya Airways Initial Public Offer Document, Citibank, March 1996

No profit forecast was included in the prospectus. On the pessimistic assumption that the audited results for the six-month period in 1995/1996 (which covered the more profitable summer season) could only be maintained, then earnings per share would have been KShs 1.56, and the price-earnings ratio of 7.2 at the issue price of KShs 11.25 a share. This compared with the average *P*/*E* ratio of 12.4 for the Kenyan market as a whole in 1995. Net assets per share amounted to just over KShs 5 at the end of September 1995, compared to the issue price of KShs 11.25 per share.

11 Kenya Airways, *Initial Public Offer Document*, Citibank (March,1996).

Table 7.9 Kenya Airways' post-privatisation results*

	1994/1995	1995/1996	per cent change
Total revenues (US$ million)	170.5	181.3	+ 6.3
Total costs (US$ million)	105.8	112.8	+ 6.7
Operating profit (US$ million)	64.7	68.5	+ 5.9
Net profit (US$ million)	40.7	25.6	− 37.1
Passengers (000)	754	743	− 1.3
Passenger-kms (million)	1,737	1,757	+ 1.2
Passenger yield(US cents/RPK)	8.2	8.7	+ 6.1
Passenger load factor (%)	68.9	66.8	− 2.1pts
No. of employees	2,365	2,339	− 1.1

* Financial year ended 31 March (released after public offering)
Source: Air Transport World, December 1996, from Kenya Airways Annual Report

The March 1996 prospectus warned potential investors that the Nairobi stock exchange is smaller and more volatile than most US or European exchanges.[12] The exchange's index of 52 listed shares (the NSE Index) had increased by 115 per cent in 1993 and by 81 per cent in 1994, followed by a fall of 24 per cent in 1995 (to which foreign investors would need to add an allowance for currency movements). It had also experienced some delays in settlement, so holders of shares that wished to sell them on this exchange would have to wait some time before receiving payment. Investors were also warned of differences in Kenyan accounting standards and principles compared to those in the UK and US, although these did not appear very significant.

The historical figures for the financial year 1994/1995 in Table 7.9 are not identical to those in Table 7.8, which may be due to the exchange rate used for the translation into US dollars. However, the net profit for the year was almost double the position after six months, giving a historical *P*/*E* ratio of only 3.8 at the issue price. Even though demand was reported to be twice the number of shares available,[13] the share price fell immediately once trading started, and by October 1996 the shares were quoted at KShs 9.5, or *a P*/*E* ratio of 4.5. By the end of 1996, the price had fallen to KShs 8.4.

The airline's results for the remainder of the decade were positive, with the net result reaching US$40 million in 1999/2000 before falling back to US$17.5 million in 2000/2001.

The KLM co-operation agreement envisaged Nairobi being the hub for KLM's services to Sub-Saharan Africa. From March 1997, KLM would stop flying to all points below Kenya, except for South Africa which is regarded as a key KLM market. Kenya Airways would connect to KLM's Nairobi−Amsterdam flights from 11 African points. The agreement also covered a comprehensive alliance which

12 The exchange's 1996 turnover was only $60 million, compared to almost $100 billion for the Johannesburg exchange.

13 KLM (1995/1996), *Annual Report and Accounts.*

would include code-sharing, route and systems integration, fare coordination, shared sales and ground resources and joint purchasing.

The KLM shareholders agreement contained a provision to protect KLM's interest at 26 per cent of the issued share capital. KLM would appoint two board directors and nominate candidates for the positions of managing director and finance director for approval by the 11 member board. They agreed not to dispose of any of their shares for at least five years, but Kenya Airways would require the prior approval from KLM if it wished to make any major strategic decisions or changes. In 2006, Air France-KLM still retained 26 per cent in the airline, with the Kenya government holding 23 per cent.

7.5 Full Privatisation and Trade Sale − Iberia

The privatisation of the Spanish national carrier, Iberia, was originally contemplated in the mid-1990s, but only in November 1999 did it look like becoming reality. However, it was postponed until the following year owing to global equity turbulence and continuing problems with Aerolineas Argentinas, and yet again to 2001 because of the impending national elections.

The market value was fixed at US$2.73 billion, down 22 per cent from the November 1999 valuation. A trade sale was completed with British Airways, who took 9 per cent of the total equity, and American Airlines who took 1 per cent. BA's share entitled them to two members of the board. Private institutions then took 30 per cent of the shares with the employees taking a further 6 per cent. All the private institutions were Spanish − Caja Madrid, BBV Bank, El Corte Ingles, Logistica and Ahorro Corp. − so the likelihood of foreign control was minimised.

A public offer was made for the other 53.9 per cent of the shares in March 2001: 492 million shares were offered at €1.19, with a price range of €1.12-1.20 on the first day of trading. Up to the beginning of September 2001 it traded between €1.15 and €1.19.

The Spanish Government retains a 'Golden Share' for at least five years years from the date of the sale, with an option to extend this for a further two years years. This gave them a veto over any major change of objectives, merger or voluntary liquidation.

To prevent more than 25 per cent of the voting control of Iberia falling into non-Spanish hands, the law allows for the board of directors to purchase foreign owned shares to rectify the situation. The directors may also suspend the voting rights of such shares until such time as the re-purchase has taken place.

7.6 Gradual Privatisation and Acquisition − Air France

Air France was partially privatised in February 1999, with a track record of only 18 months of profitable trading. A public offer was carried out (flotation) in February 1999: around half to the French public and remainder to institutions in France and abroad. The French public offer totalled approximately 13.5 million shares, and the international offer to institutions around 21.2 million shares. The offer price was

fixed at €14 and the public offer was 10 times oversubscribed. None of the net proceeds of the sale went to the Air France Group.

At the offer price, Air France was floated on *a P*/*E* ratio of 35.5 based on earnings to the end of March 1999, and 14.2 on forecast earnings to end March 2000.

Ownership at the end of March 1999 was: the state 73.4 per cent, employees 0.8 per cent, and the public: 25.8 per cent. Employees were offered shares on terms preferential to those offered to the public, and by end March 2000 they had increased their share in the airline to 10.9 per cent, with the public/free float at 31.7 per cent and the state down to 56.8 per cent. Two schemes were available, the Aéromixt and the Aérodispo options. Under the former, employees could purchase shares at a 20 per cent discount from the French public offer price, but they would be prohibited from selling or transferring them for two years years. After that time they would be entitled to one free share for one purchased share up to a limit of €609.80, and one for four above that limit. Under the latter scheme, there was no discount on the price, but holders would be entitled to one free share for every three held after only one year.

The share price ranged from €14-18 on the opening day and by the 22 February 2000 was €15.30, following a high of €21.52. Figure 7.4 shows this trend in index form against the French index of major shares. It also shows the pre-privatisation trend, including the big jump in the second quarter of 1997, following the announcement of the airline's first profit since 1989.

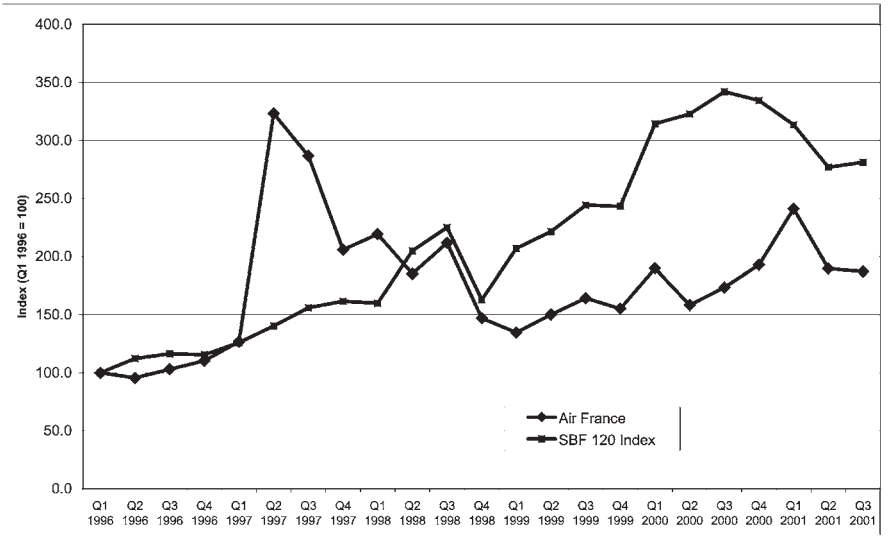

Figure 7.4 Air France share price trend *vs* the French market

The exercise of employee allocation, warrants and conversions decreased the State's stake to 56.8 per cent at end March 2000, and to 54.9 per cent at end March 2003. The next stage in the privatisation which reduced the French Government stake from to below 50 per cent was the acquisition of KLM. Air France purchased KLM shares

by issuing new Air France shares (11 Air France shares and 10 warrants[14] for 10 KLM shares), which resulted in the dilution of the French Government stake to 44.7 per cent.

Figure 7.5 shows the way the acquisition was structured in order to have time to protect the KLM operations from Air Services Agreement restrictions. Although Air France-KLM only holds 49 per cent of the voting rights in KLM, it owns 100 per cent of the economic rights in the operating airline. It was assumed that by 2007 the KLM operations at Amsterdam would enjoy full traffic rights and the merger could be consummated. At that point, the separate identities would still be maintained under assurances given to KLM and the Dutch State by Air France-KLM, applicable until May 2012. These included the continuation of the hub operation at Schiphol Airport. This specifically guarantees the services from Schiphol to 42 key intercontinental destinations up to 2008 and the balanced development of the Schiphol and Paris hubs for a further three years. This would be monitored by the Dutch Government.[15]

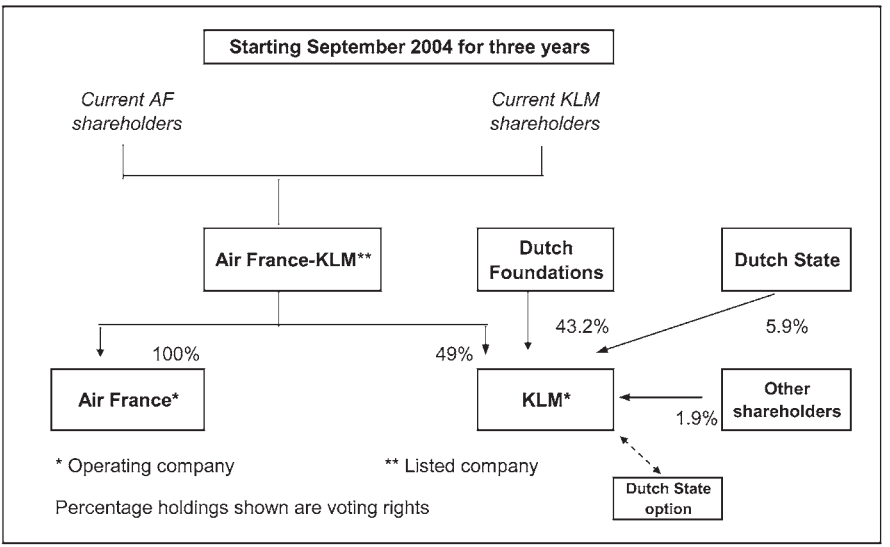

Figure 7.5 Air France-KLM post merger interim structure

In 2004, the French Government placed with institutions 18.4 per cent of the airline for €720 million in January 2005 with an additional 7.6 per cent going to employees (giving them a total of 17.4 per cent), leaving it with 18.7 per cent, a level that it stated it wished to maintain. Since 1999, the Air France share price has ranged from a low of €7.12 to a high of €26.60.

14 Each warrant entitled holders to acquire two Air France-KLM shares at a price of €20, with an expiry date in November 2007.

15 De Wit, Jaap and Burghouwt, Guillaume (2005) *Strategies of multi-hub airlines and the implications for national aviation policies*, AirNeth Workshop Report, The Hague.

7.7 The Results so Far

Privatisation has been most marked amongst the largest 25 international airlines although a number of the next tier have either already moved to the private sector (Turkish) or are planned to do so (AeroMexico and LOT Polish Airlines). The major changes so far will be discussed below by region.

North America

There are no airlines in the US either federally owned or state owned. Following 9/11, the Federal government took steps to assist airlines in the form of compensation payments, loans and loan guarantees through the Air Transportation Stabilization Board (see also Chapter 12). In conjunction with the loan guarantees it also received warrants, or options to acquire shares. These were received from Frontier Airlines and World Airways, the former being sold by auction in May 2006.[16]

Air Canada was privatised through an IPO and subsequent share sales over 1988−1989. It filed for bankruptcy in April 2004 and exited later that year under a reorganised holding company, ACE. As part of the reorganisation, Deutsche Bank underwrote a rights issue to unsecured creditors, and it was agreed to repay the US$84 million loan guaranteed by Lufthansa that was outstanding immediately before bankruptcy over the five years years to 2009. This had been provided jointly by Star Alliance partners Lufthansa and United Airlines in support of a buy-back of shares by Air Canada in 1999 to foil a hostile take-over. United's share (US$92 million) was unlikely to have been settled in full.[17]

The Mexican Government had re-nationalised the countries two major airlines − AeroMexico and Mexicana − by transferring their shares in 1995 into a state-owned holding company, Cintra to avoid their bankruptcy. They had originally been privatised back in 1988/1989. Mexicana was sold in 2005 to a privately owned Mexican hotel group (although legal proceedings were initiated the following year over the sale price), and it was planned to sell AeroMexico to the public by auction towards the end of 2006 but this was postponed to 2007.[18]

Caribbean

Air Jamaica was sold to a private Jamaican corporation involved in the hotel and tourism industry in 1994, but it was re-nationalised in 2004 following financial difficulties. A similar fate befell the Trinidad based airline, BWIA. It was sold to US and Caribbean investors in 1995 (with the government retaining 33.5 per cent of the shares), but the government of Trinidad and Tobago increased its stake to 75 per cent

16 Air Transportation Stabilization Board, US, Treasury, Press Release (31 May 2006).

17 *Air Canada Management Discussion of Financial Results* 2003.

18 It was originally planned to sell AeroMexico at the same time as Mexicana, but bids did not reach the minimum price required by the government (Kerry Ezard, Air Transport Intelligence News, (22 August 2006).

in 2004, following the failure of a rights issue. BWIA was closed down at the end of 2006, and replaced by a new entity, Caribbean Airlines.

Central and South America

South America initially took the lead in airline privatisations, and while there have been some success stories (notably LAN-Chile), there have also been some major problems. Aerolineas Argentinas was 'privatised' through a sale to the former Iberia holding company (SEPI),[19] although this merely changed its control from one government to another. Later, in June 2000 Aerolineas' majority shareholder, the Spanish state holding company SEPI, announced a 'final' restructuring plan to try and return Aerolineas to profitability by 2003. In June 2001, flights to seven international destinations were suspended and the airline went into administration. SEPI agreed the sale of its 92 per cent stake to the private Spanish company, Marsans Group, in November 2001 who in turn committed to inject $50 million in fresh capital. In December 2002 the airline came out of administration after a Buenos Aires judge accepted its debt restructuring agreement with creditors

Another South American carrier, Viasa, was privatised in the early 1990s, but subsequently went bankrupt in 1998. The largest airline in South America, Varig, was owned by a private foundation, but effectively controlled by the government. Following its bankruptcy in 2006, its cargo division was acquired by private investors (Variglog) who later also took over the operating division of the passenger airline.

The government-owned airline of Chile, LAN-Chile, was privatised in 1989, later becoming LAN Airlines, controlled by Chilean family and industrial interests.

The Panama national airline, COPA, had for many years been partly owned by Continental Airlines of the US. In December 2005, this stake was sold to the public through an IPO and listing on the New York Stock Exchange.[20]

Europe

Significant progress has been made in Europe and by 2006 most of the larger airlines had been privatised, the most recent being Alitalia whose government holding had gradually been eroded by the government not taking up their rights. After a number of attempts at privatising the whole airline, Olympic Airways was split into an operating company (Olympic Airlines) and a ground services company (Olympic Air Services). At the end of 2004, the Greek Government launched another attempt to sell both companies with no success by 2006. Another airline that remains 100 per cent government-owned is Aer Lingus. The unions had opposed previous attempts to privatise it, but in 2006 a sale of up to three-quarters of the government stake was offered through an IPO in September 2006. The other airline that remained in government hands was TAP Air Portugal.

Turkish Airlines had a small holding in private hands (1.83 per cent) since 1990, and tried to sell further shares in 2001 without success. IMF pressure to sell

19 American Airlines also took an 8.5 per cent stake via the Spanish holding company.

20 *Aviation Strategy*, March 2006, p. 6.

state-owned assets led to the government selling a 23 per cent stake on the Istanbul exchange in December 2004 at a price of just under seven lira. A further 28.75 per cent was sold in May 2006 leaving the government controlling 46.43 per cent of the airline and a Golden Share.[21] Since 2002 the airline's share price has ranged from a low of five lira to a high of nine lira, and has performed poorly compared to the ISE National 100 index of stocks on the Istanbul exchange. Finnair was still majority government owned at the end of 2005.

In Eastern Europe, LOT Polish Airlines was part-privatised by selling 37.6 per cent to Swissair in 1999. This was later diluted to 25 per cent and, with the bankruptcy of Swissair, remained in the hands of the Swissair administrator until 2005, when it was agreed to offer it for sale in an IPO of the airline. Hungarian national airline, Malev, had also sold a stake to strategic investor, Alitalia, but that was subsequently re-purchased by the Hungarian government. An attempt to sell 99.95 per cent of the airline in 2004 resulted in only one bid that (rumoured to be linked to Aeroflot) was rejected as not meeting the terms of the tender.[22] Bulgaria Air, the national airline of Bulgaria was in 2006 being prepared for privatisation by public tender, with the government retaining a Golden Share.[23]

Africa/Middle East

In Africa, Kenya Airways was an excellent example for others to follow (described above), but this has not yet happened, and South African Airways, a prime candidate, is still 100 per cent state owned. The Nigerian flag carrier, Nigeria Airways, went bankrupt in 2004, and a privately owned Virgin Nigeria Airways was formed to fill the void.[24] The collapse of other state-owned airlines included the multi-nationally owned, Air Afrique, liquidated in 2001, and Ghana Airways in 2004.

Air Madagascar was planned to be privatised in 1999 but the bidders (a consortium that included Air France) suspended their offer when the central bank defaulted on payments to the Ex-Im Bank relating to its B747 aircraft.[25] More recently, in mid-2006 the government of Botswana was considering bids for their national carrier.

Asia/Pacific

Progress in Asia has been mixed. The Thai Airways position in September 2001 was that the government intended to reduce its stake from 93 per cent to 70 per cent later in the year, with the possibility of more than 10 per cent available to a foreign investor. This reversed their previous position, which ruled out foreign investment in the airline. However, the Thai Government gradually reduced their holding to 54 per cent in 2006. Singapore Airlines also remains under majority state control,

21 *Ibid.*, (June 2006).

22 Dunn, Graham (2004) *Air Transport Intelligence*, (November), 23.

23 Airline Business, JulyBusiness, A. and July 2006.

24 Fifty-one per cent owned by Nigerian institutional investors and 49 per cent by Virgin Atlantic Airways.

25 McMillan, Ben (2000) *Air Transport Intelligence*, (30 March).

and the Malaysian Government re-purchased its majority in its national flag carrier. The Malaysian private investor received RM8 per share from the government, the same price that he originally paid when he bought his 29 per cent controlling stake. However, RM8 was more than double the market price of the shares (RM3.68) at the time they were bought back.[26] The Asian financial crisis of 1997 and its aftermath clearly upset some plans, and also made it hard for already privatised airlines, Malaysian and Philippine Airlines,[27] to make profits. The Indian Government's progress towards privatising Air India has also been slow, and their plans to allow substantial foreign stakes were later reversed.[28] In Australasia, one of the first airlines to be privatised, Air New Zealand ran into trouble at the end of summer 2001, with the bankruptcy of its subsidiary Ansett. Its bankruptcy in January 2002 resulted in Singapore Airlines' stake being reduced to 6.47 per cent (with a write-down of their investment by S$380.6 million) and the government re-taking control with 80.4 per cent of the airline.

The national carrier of Sri Lanka was privatised in March 1998 by means of a trade sale to Emirates Airlines. The Middle East airline took 40 per cent of Air Lanka, increasing this to 43.63 per cent by 2006, by which time its name had changed to Sri Lankan Airlines. The government retains 51 per cent and employees hold 5.3 per cent of the shares.

All the three largest Chinese airlines have been part-privatised by IPOs and secondary offerings. Air China's IPO took place in December 2004, with the government selling of a 24 per cent stake through a Hong Kong listing. Cathay later acquired 20 per cent though a share swap. The carrier's secondary offer of a further 16 per cent of the total shares issued or 1,639 million shares (reduced from an initial allocation of 2,700 million due to poor demand) to Chinese investors took place in August 2006, with a Shanghai listing.[29] China Southern had previously taken a similar approach, first selling 35 per cent on the Hong Kong stock exchange in February 1997, and a further one billion shares through a Shanghai listing in July 2003. The State retained 50.3 per cent of the shares of the airlines. China Eastern's IPO occurred soon after in July 1997, with their domestic debut following later.

There have been no studies to date which have successfully separated the impact of privatisation *per se* on efficiency, employment or profitability. Some of these gains have clearly been evident in the lead-up to privatisation, and thus one difficulty is the period over which to examine the data. One study suggested that semi-private and privately owned airlines improved their productivity (in revenue per employee) by 5 per cent more than government owned airlines between 1992 and 1997.[30] Another study found that air fares in both the British Airways' and Air Canada's markets

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26 *Financial Times*, (22 December 2000).

27 Sixty-two per cent of Philippine Airlines was sold to the private PR Holdings in 1992, and by 2006 the government only retained a nominal 4 per cent stake in the airline.

28 Singapore Airlines had planned to join the large industrial conglomerate, the Tata Group, in investing in Air-India, but subsequently withdrew altogether.

29 Philip Tozer in *Aviation Industry News*, 8 August 2006.

30 Baur, U. and Kistner, D. (1999), Airline Privatisation Principles and Lessons Learned, in *Handbook of Airline Finance*, eds Butler and Keller, pp. 71–90.

fell significantly when the control passed from government to private ownership, reflecting expected improvements in economic efficiency and keener competition. At the same time, the stock prices of competitors fell following the announcement.[31]

Privatisation has usually resulted in more liquid market for share trading, but a better working of the marking could only be possible once majority share ownership by foreign nationals is allowed, and restrictive clauses in Air Services Agreements are removed.

31 *Privatization and Competition: Industry Effects of the Sale of British Airways and Air Canada*, Social Science Research Network, Working Paper, (31 July 1994).

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Chapter 8

Airline Financial Planning and Appraisal

Financial planning is the process whereby an airline's corporate goals, and the strategies designed to meet those goals, are translated into numbers. These numbers cover forecasts of market growth and airline market share, and estimates of resources required to achieve this share. Financial planning ranges from the short-term preparation of budgets to long-term planning, the latter often in conjunction with fleet planning. Its main longer term financial aims are:

- The evaluation of the expected future financial condition of the company.
- The estimation of likely future requirements for finance.

The first requires the estimation of items in an airline's future profit and loss statement. The second focuses on cash flow, which might also include assumptions on long-term finance, as well as working capital or short-term financial needs. Both of these will also need to be tested for the impact of alternative strategic options.

Short to medium-term financial planning is generally described as budget planning and control. It is concerned with the achievement of the firm's objectives, but it is also the principal way in which a company controls costs and improves the utilisation of assets. The control process involves four aspects:

- The development of plans.
- The communication of the information contained in the plans.
- The motivation of employees to achieve the plan goals.
- The evaluation and monitoring of performance.

The difference between longer term financial planning and shorter term budgets lies in the latter's greater detail and ability to provide the basis for the improvement in resource utilisation. The remainder of this chapter will be divided into an examination of airlines' approach first to shorter term budgets, and second to longer term financial planning.

8.1 Budget Preparation and Control

The budget is a formal quantification of management's *short-term* plans. It forces managers to think ahead, and to anticipate and prepare for changing conditions. It is generally prepared for the financial year ahead, by month and often also by quarter. The greater the likely problems of control, the shorter the reporting period should be. More frequent reporting and analysis takes time and resources. For airlines, costs are

reported monthly, while the less controllable traffic and revenue side is examined on a daily basis (passenger and cargo reservations, and traffic levels), and as frequently as accounting systems allow for yields.

Continuous budgets are sometimes produced, with an additional month added at the end of the period as soon as one month passes, so as always to give a complete 12-month projection. *Cash budgets* are also useful to avoid situations of idle cash surpluses or worrying cash shortages. A *flexible budget* can be prepared for a range of outputs based, for example, on alternative traffic forecasts and varying levels of aircraft utilisation.

The format of the budget may be broadly similar to that of the longer term corporate or fleet plan. Indeed, the first year of the longer term plan may be the starting point in the preparation of the budget. The integration of the two is clearly important, and longer term goals should not be abandoned for inconsistent short term measures. Budgets are generally coordinated by the finance department, but their preparation involves a high degree of co-operation between departments:

- Passenger and market share forecasts (Marketing).
- Cargo forecasts (Cargo).
- Yield and revenue projections (Marketing/Finance).
- Schedules planning (Marketing, Operations, Engineering).
- Resource and manpower planning (all departments).
- Cost estimates (all departments).
- Budget finalisation (Finance).

Budgets therefore help the coordination between the various parts of the airline. For example, flight operations/scheduling need to liaise closely with engineering on maintenance planning and scheduling.

For an existing firm, budgets are often prepared with reference to the previous year's experience. Zero-based budgets, on the other hand, take nothing as given, and consider the most effective way of achieving output targets. For an airline, capacity plans are converted into a schedule, usually for the coming summer or winter season. This is determined by, and is checked against, passenger and cargo traffic forecasts. Resources are then estimated in order to be able to operate the schedule most effectively, but at a desired level of service. A chart of the daily rotation of each aircraft in the fleet is determined by the requirements of the market, and optimised to take into account airport curfews, maintenance and crew schedules and estimates for turnaround times at airports. Slot constraints are also becoming more important for some airlines. Allowance will be made for contingencies such as flight diversions and delays. Budgets can be built up in various ways and with various levels of detail. They can be for the airline as a whole, by department or by route. A route analysis usually includes the items shown in Table 8.1.

Costs are allocated as far as possible down to the route level to allow a comparison of each route's contribution to overheads. Table 8.1 is one way that this can be done, but airlines might group costs in different ways. This serves as a starting point for an evaluation of the impact of removing, combining or adding routes. It should be stressed, however, that a system-wide or network approach should be adopted. This is because the revenues from one passenger may have to be shared with more than

one route. Similarly the ownership costs of one aircraft would need to be spread across a number of routes. The removal of one loss-making route may appear to improve overall profitability, but this may not be the case: once the revenues have been deducted from other routes that were fed from the route that was removed, the profit may actually decline. Similarly, the aircraft fixed costs *saved* by not operating one route may have to be reallocated across the network, resulting in lower profits on these routes.

Budgetary control consists of comparing the estimates of revenues and costs contained in the monthly budgets with the actual revenues earned and costs incurred. Control will also be exercised through the cash and working capital budgets. The variation between forecasts/estimates and actuals will be calculated, and any significant differences highlighted. The likely causes of such differences should be identified, and any necessary action taken.

Table 8.1 Route profitability analysis

	Route A	Route B	Route C
Block hours	1,000	730	950
Return flights	260	365	156
Passengers	43,000	95,000	32,000
Cargo tonnes	480	1,800	1,050
Revenues ($000):			
− Passenger	8,600	11,400	8,000
− Cargo	50	205	100
− Duty-free	140	250	150
− Total	8,790	11,855	8,250
Operating costs ($000):			
Direct operating costs[1]	5,790	4,745	4,750
Contribution	3,000	7,110	3,500
Aircraft related costs	1,480	1,080	1,400
Ground operations	450	630	270
Commercial costs	800	1,780	600
Commissions	350	590	450
Operating result	− 80	3,030	780

1. These usually include fuel, engineering, airport, ATC, crew allowances, catering, security, handling, delay/diversion and sub-chartering costs

Table 8.2 shows a typical airline management accounts' comparison of monthly budget with the actual monthly result. It gives the summary overall position of the airline, although more detail would be available by route, activity, or cost/profit centre. Changes in actual traffic, operating and financial data can easily be seen both in relation to the budget (the variance) and in relation to the same month of the previous year. The financial year-to-date position would normally also be shown for the current and previous years.

Table 8.2 Typical airline management accounts − Budget 2006

	March 2005	March 2006		
	Actual	Actual	Budget	Variance
Passengers carried	28,520	21,547	21,124	423
Passenger-km (000)	4,363	3,306	3,718	− 412
Seat-kms (000)	6,601	5,654	5,767	− 113
Passenger load factor (%)	66.1	58.5	64.5	− 6
Average stage kms	320	345	350	− 5
Aircraft hours/day	7.5	7.3	8	1
Passenger yield (cents)	45	55	50	5
Cost per seat-km (cents)	29.7	33	30	3
Breakeven load factor	66	60	60	0
Operating ratio (%)	100.2	97.5	107.5	− 10.0pts
Expenditure by department ($m)				
Marketing		9.1	9.3	− 0.2
Operations		13.5	12	1.5
Engineering		4	3.5	0.5
Personnel		6.5	6	0.5
Other		3.3	3.7	− 0.4
Total		36.4	34.5	1.9
Expenditure by type ($m)				
Staff costs		23.2	20	3.2
Depreciation		4.7	4.7	0
Aircraft rentals		0.5	0	0.5
Agent commissions		3.9	4.1	− 0.2
Fuel costs		3.5	4.2	− 0.7
Other materials/services		0.6	1.5	0.9
Total		36.4	34.5	1.9

The variance in total expenditure can be broken down into the principal explanatory factors. These might distinguish between capacity (costs would rise if more seat-kms were operated compared to the plan), or price (fuel prices were above those assumed for the budget). They might also include any exchange rate changes that had not been allowed for. A further analysis might reveal:

Staff costs: + $3.2 million, or 16 per cent over budget;
Number of employees up by 5 per cent
Average wage/salary levels up by 10.5 per cent

Fuel costs: − $0.7 million, or down by 17 per cent compared to budget;

Block hours down by 5 per cent; average price down by 12 per cent

Performance indicators should also be shown to give an idea of underlying changes in productivity or service quality. These could include:

- Regularity, or flights operated *vs.* planned.
- Punctuality, or on-time performance.
- ATK capacity per employee.
- Fuel cost per block hour or ATK.
- Landing fees per aircraft departure.
- Average payroll cost per employee.
- Average flying hours per pilot.
- Average flying hours per cabin crew member.
- Reservations cost per passenger.

For example, SAS introduced a productivity target for cockpit and cabin crew in 2004: they planned to increase the number of flying hours per pilot from 550 in 2004 to 700, and flying hours per cabin crew member from 570 in 2004 to 750. More detailed performance data might include fuel burn by aircraft type, or even for each aircraft, number of transactions per payroll clerk, *etc.*

Some of the differences between actual and budget figures will be due to factors beyond the control of management. For example, bad weather at the home base airport or an unexpected increase in fuel price. A distinction should therefore be drawn between controllable and non-controllable costs.

Budgets are the basis for expenditure limits within a particular department or division for a particular period, usually the financial year. Most budgets lapse at the end of the period, so that funds that were allowed, but not spent, cannot be carried forward to the next period. This has obvious advantages in cost control, but can result in the budget holder finding ways to spend the remaining funds before they are withdrawn.

Table 8.3 Example of airline cash budget

US$1,000	January	February	March	April
Total revenues	1,000	1,300	2,100	2,800
Direct costs	1,500	1,450	1,600	1,800
Payroll costs	50	50	50	50
Aircraft rentals	250	—	—	250
Other costs	20	30	30	40
Net cash from operations	− 820	− 230	420	660
Net capital movements	− 200	− 150	—	—
Net cash surplus/(shortfall)	− 1,020	− 380	420	660
Opening balance	1,500	480	100	520
Monthly movement	− 1,020	− 380	420	660
Closing balance	480	100	520	1,180

The budget can be in account or accrual format, or in terms of cash. The latter is vital in determining future working capital needs, which are described in the next section of this chapter. For the cash budget, assumptions will be made on the delay between the date on which the passenger is carried (the accounts) and the date of receipt of the funds. For airlines, this would be around one month for sales through travel agents, and around the same period for expenditure on credit. Cash sales and revenues would be received and incurred in the same month as shown in the accounts.

Table 8.3 highlights the variation of a leisure traffic airline's cash flow by season. For example, a European charter airline would have a cash shortfall in the low winter months and a surplus in the summer season. The table includes the net inflow or outflow of capital which is obtained from the capital budget, the area covered later in this chapter. This budget would also show capital movements, such as debt and equity financing.

8.2 Working Capital Management

The management of an airline's capital can be divided into short-term working capital management (up to one year) and longer term capital budgeting.

The appropriate level of working capital is determined by the levels of current assets (cash, marketable securities, receivables and stocks) and current liabilities (overdrafts, short-term borrowings, accounts payable, and sales in advance of carriage).

The way in which an airline's assets are financed involves a trade-off between risk and profitability. In general, short-term borrowings cost less than long-term borrowings, and short-term investments earn less than long-term ones; thus on the basis of profitability, the aim should be for a low proportion of current to total assets, and a high proportion of current to total liabilities. However, this would result in a very low or negative level of working capital, and a high risk of technical insolvency (an airline unable to meet its cash obligations).

Ideally, each of the airline's assets would be matched with a liability or financing instrument of approximately the same maturity. This would ensure that cyclical and longer term cash needs were met (*i.e.*, zero risk) at minimum cost. In practice, a cushion would be required because of the difficulty in forecasting cash flows with a high degree of accuracy. This would imply a level of current assets somewhat higher than current liabilities. In fact, many airlines operate with the two broadly equal, or with current liabilities less sales in advance of carriage equal to current assets. This is because many advance sales are not reimbursable with a cash payment, and a cushion is provided by an overdraft facility, which can be used at any time.

Each of the elements of working capital will now be examined in more detail. This expands on the definitions given in Chapter 2 (Section 2.3), and the discussion of current and quick ratios in Chapter 3 (Section 3.3).

8.2.1 Current Assets − Stocks

Manufacturers tend to hold high levels of stocks or inventories, which include materials, work-in-progress and finished goods. The finished goods tend to be sold on credit. Retailers, on the other hand, carry only finished goods, which are sold

for cash. Airlines, and other service industries such as hotels, carry low stocks (mostly materials or consumables), little work-in-progress (repairs on aircraft) and no finished goods. They sell almost entirely on credit.

An airline's product or service is delivered by aircraft and associated equipment, and stocks are required to keep aircraft serviceable. The word *stocks* in the aircraft maintenance context could include spare engines, spare parts, rotables (repairable items) and consumables (short-life items). These are important in maintaining an aircraft in service, and any missing critical items might result in delayed or cancelled flights and substantial costs:

- Overnight and meal costs for delayed passengers.
- Cost of purchasing alternative flights on other airlines.
- Loss of subsequent bookings from dissatisfied customers.

The balance sheet definition of stocks normally covers only consumables or expendables (after an allowance for obsolescence), spare parts and rotables being considered as fixed assets and depreciated in the same way as aircraft. This means that only such items as maintenance consumables, office and catering supplies, fuel and oil are included in the amount shown for stocks.

The normal stock turnover ratio (cost of sales divided by stocks) would be under 10 times for a manufacturer, but is not relevant to services industries such as airlines. The average stock turnover period is another measure that gives an idea of the length of time for which the stocks are held. This is calculated by relating the average stocks held over the period to the cost of stocks of materials consumed during the period:

$$\textit{Average stock turnover period} = \frac{\textit{Average stocks held}}{\textit{Cost of sales} \div 365}$$

For airlines, the cost of sales should only include goods or stockable items consumed, and not services such as airport charges. This figure is not always easily obtainable from published accounts. For BA, the average stocks held can be obtained from current assets in the balance sheet (averaging the beginning and end year positions), and was £72 million in 2000/2001. Cost of sales would include principally fuel and engineering costs, which amounted to just over £1.7 billion in 2000/2001. Assuming, additional relevant costs of in-flight meals, ticket stocks and other items increased this amount to around £2 billion, BA's average stock turnover period for 2000/2001 would have been only 13 days. This stood at 14 days for BA's year ended 31 March 2006.

8.2.2 Current Assets − Debtors or Receivables

Almost all airline sales are on credit, whether through accounts with travel agents or through credit card companies. This involves a cost to the airline of administration, the opportunity cost of the funds not yet received, and the possibility of bad debts (with agents or corporate customers). These will be outweighed by the benefits of increased sales.

Airlines that participate in Bank Settlement Plan arrangements with travel agents do not have to decide the period of credit to extend to their distributors. This is fixed automatically, with funds transferred to net recipients on the 17th day after the month of sale. Agents would also extend credit to their corporate customers, so that reducing the 1 month or so that airlines give to agents would only result in agents having to find extra working capital at high cost.

The average settlement period is calculated by expressing the trade debtors amount on the balance sheet date in terms of the numbers of days' sales.

$$\textit{Average collection period} = \frac{\textit{Trade debtors}}{\textit{Credit sales} \div 365}$$

Ideally, it should be in terms of the number of days' credit sales, but this information is rarely available from the financial statements, and so 'total traffic sales' is used. For British Airways, the average collection period using figures for total sales declined from 36 days in 1999/2000 to 34 days in 2005/2006. The Lufthansa Group recorded 49 days in 2005 and Air France Group 42 days, but both of these include other businesses such as aircraft and engine overhaul and catering. US carriers do not normally separate trade debtors from current debtors or receivables, but using total receivables would result in an American Airlines' period of only 19 days in 2005. Other US carriers have a similar period, with the notable exception of Southwest with only 13 days (because of the low percentage of passengers buying tickets though travel agents). Asian carriers such as Thai and Singapore Airlines had similar periods to BA in 2005/2006, but Cathay Pacific achieved a shorter period of 29 days, well down from its 1997 level of 47 days through different financial arrangements with their travel agents.

8.2.3 Current Assets − Cash and Marketable Securities

Cash holdings would usually cover only money that is immediately available, *i.e.*, petty cash and current account balances. However, funds might be placed on short-term deposit with banks for a term of anything between overnight to one year. These funds will earn interest, and the very near term deposits could be considered as *quasi* cash.

There will be an opportunity cost of holding cash in the interest or higher interest income foregone. At times of high inflation, cash holdings will lose their purchasing power. The major reason for holding cash is the unpredictability of cash flows, and the need to have funds available to meet unexpected demands. Many airlines accumulate cash during the peak season, and retain this (or place it on short-term deposit with banks or in government securities) to meet demands in the low season.

An overdraft facility gives airlines the possibility to reduce cash holdings, but this is an expensive form of borrowing, and should be used to cover events such as aircraft grounding or sharp downturns in traffic and revenue which cannot be predicted.

An airline might build up cash and marketable securities, either because it plans major investments in aircraft in the near future, or to fund acquisitions or investments in other companies. British Airways' liquid assets increased to £2.44 billion (US$4.2 billion) at the end of March 2006, from just over £1 billion at the end of March 2002. Removing depreciation, amortisation and currency adjustments from operating expenditure gives a rough figure for cash spend: this was £7,111 million for the 12 months to 31 March 2006, or an average of £19.5 million/day. Thus, BA's end 2006 cash and cash equivalents of £2,440 million would cover 125 days of expenditure. For AMR, their cash and short-term investments of $3,814 million would have covered only 71 days at their average cash spend in 2005 of $53.8 per day, contrasting with Southwest's 147 days.

8.2.4 Current Liabilities

The two key items of working capital in current liabilities are trade creditors and sales in advance of carriage. Overdrafts were discussed in cash above, and there will also be other short term creditors such as the government (taxes due) and shareholders (dividends payable). A new and growing item is accrued frequent flyer programme liabilities.

Trade creditors are a source of short-term finance which depends on suppliers' terms. A free period of credit will generally be extended to customers, after which interest may be charged on late payment. Delaying payments too long might put critical supplies at risk.

That part of current liabilities described as sales in advance of carriage (or advance sales) has the advantage of being short-term borrowing, but of low risk since most of the money will not have to be re-paid (as long as the airline continues trading). While interest does not have to be paid on this money, there is an implicit cost in the difference between the air fare charged and the fare that would otherwise have been offered without the advance payment and non-reimbursable features.

The average settlement period can be calculated in the same way as the average collection period. There is, however, a similar problem in obtaining data from published accounts on credit purchases.

$$\textit{Average settlement period} = \frac{\textit{Trade creditors}}{\textit{Credit purchases} \div 365}$$

Assuming that credit purchases approximate to operating expenses less staff costs and depreciation, then British Airways' average settlement period was 58 days in 2005/2006 (well down from 76 days in 2000/2001), and the Lufthansa Group 66 days for its year to end December 2005. The settlement period for financial year 2005 for American Airlines (AMR) was 31 days and South-West 53 days. Cathay Pacific reported 37 days for 2005.

8.3 Financial Planning

8.3.1 Cash Flow Forecasts

Financial planning deals with the longer term financial condition of the airline, and in particular the generation of investment proposals, and the process of the analysis and selection of projects from these proposals (capital budgeting). The term *capital* refers to fixed assets, which for the airline is likely to be one or more aircraft, but could also be a major computer or maintenance hangar project. These have a useful life of anything between five and 25 years, and to evaluate whether such investments should be made it is necessary to prepare cash flow forecasts over a similar period.

The starting point for the cash flow forecasts are projections of traffic, yield and revenues. Similarly, operating costs will be estimated from capacity planned to meet the traffic forecasts, as well as input price projections.

Forecasts of cash disbursements should include capital expenditure, progress payments on aircraft acquisitions, future dividend and tax payments, and the proceeds of asset sales. Net cash receipts (receipts less disbursements) are then subtracted from the initial cash balance to give the subsequent cash surplus or cash requirements in each period. If there is a cash shortfall, then the methods of financing should be considered, and the schedule of capital and interest payments incorporated in the cash flow forecasts.

The *pro forma* (projected) profit and loss and balance sheet can be derived from the cash flow forecast. For the profit and loss, the capital expenditures will need to be removed and replaced by a depreciation charge. Profit or loss from asset sales will be substituted for the cash proceeds from such sales.

The *pro forma* balance sheet will be estimated for the end of each forecasting period. The initial balances of fixed assets, current liabilities, *etc.* will be updated using information from the profit and loss and cash flow statements for each period. Thus, the future financial position of the airline will be estimated, and its ability to raise further long-term capital.

In summary, the following financial statements are likely to be prepared in conjunction with any major fleet planning study or other corporate planning exercise:

For investment appraisal
- Investment schedule.
- Cash flow statement.
-

For financial evaluation
- Loan disbursement schedule.
- Summary of finance charges.
- Debt service schedule.
- Debt repayment schedule.
- Cash flow statement.
- Net income statement.
- Balance sheet.

For the investment appraisal, it is not necessary to know likely future sources of finance for the investment being evaluated. For a fuller financial evaluation, however, sources of finance can be evaluated, and their impact on the cash flow, net income or profit and loss statement and balance sheet determined.

The next part of this chapter will deal with the investment appraisal. For this it has been assumed that the investment options have been narrowed down to two alternative aircraft types: the acquisition of a new A330-300 for US$115 million *versus* a new Boeing 777-200 for US$138 million (both including the necessary spares). The aircraft have similar passenger capacity and each will perform the required services between specified or likely future city pairs. Where there is a difference in payload or cargo capacity, this will be reflected in the revenue forecasts. Cost differences will also be reflected in the cost projections. A higher residual value (65 per cent of cost) has been assumed for the B777-200 in the base case, compared to 60 per cent for the A330-300. It should be stressed, however, that this is not necessarily a widely accepted view, and this initial assumption and the figures in Table 8.4 are not based on a real case.

Table 8.4 Aircraft investment appraisal cash flow forecasts (US$ million)

A330-300	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Capital cost (incl.spares)	− 115					
Residual value						69
Cash operating revenues		24	28	30	32	35
Cash operating costs		9	9.5	9.9	10.4	10.9
Cash operating result		15	18.6	20.1	21.6	24.1
Net cash flow		15	18.6	20.1	21.6	93.1
PV cash flows @ 8%	124.9					
NPV @ 8%	9.9					
IRR − %	10.4					
B777-200	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Capital cost (incl. spares)	− 138					
Residual value						89.7
Cash operating revenues		26	30	35	35	42
Cash operating costs		10	10.5	11	11.6	12.2
Cash operating result		16	19.5	24	23.4	29.8
Net cash flow		16	19.5	24	23.4	119.5
PV cash flows @ 8%	149.1					
NPV @ 8%	11.1					
IRR − %	10.2					

The projections for both aircraft have only been made over five years years, to make it easier to understand the calculations in the absence of a PC spreadsheet. This has necessitated the estimation of a residual value of each aircraft at the end of the five years, and the assumption on this would clearly be critical to the outcome. With

forecasts over a longer period, of say 15–20 years, this problem would be less significant. The residual value should ideally be the market value of the aircraft at that time; this is in practice difficult to forecast and the depreciated book value is sometimes used instead.

Taxation should also be incorporated into the financial projections, since they could have a large impact on cash flow. In the UK, unusually high 100 per cent first year capital allowances were allowed against corporation tax for a period ending in 1978. These would have favoured capital intensive fleet replacement decisions.

Expected profitability, or net cash flow, is an essential element in the selection of investment projects, and the following techniques reduce the net revenue streams of different projects (or fleet planning options) to a common measure. This provides a quantitative basis for comparison, although the final selection of aircraft or capital investment may include other non-quantifiable elements. Net cash flows for financial appraisal are normally stated in constant or base year prices. This avoids the problems of forecasting inflation rates for the various cost and revenue items. Above average rates of inflation for particular items will then be reflected in higher real or constant price increases in the item (*e.g.*, fuel costs). Alternatively, all revenues and costs could be forecast in current prices.

8.3.2 Decision Criteria

Various measures are used to combine the project cash flows (or profits) for comparison with the initial investment required. These are used to decide whether to go ahead with a particular project (comparison with the without project case), or to compare a number of different projects.

Accounting rate of return The average rate of return technique measures the average profit per year and expresses this as a rate of return on the capital invested.

Table 8.5 Example of accounting rate of return

US$ (000)	Project A	Project B	Project C
Investment	10,000	10,000	10,000
Annual profits:			
Year 1	4,000	1,000	2,500
Year 2	3,000	2,000	2,500
Year 3	2,000	3,000	2,500
Year 4	1,000	4,000	2,500
Year 5	0	0	2,500
Total profits	10,000	10,000	12,500
Average annual profit	2,500	2,500	2,500
Return on investment %	25	25	25

The example in Table 8.5 shows three projects of similar initial investment but varying profits and project duration. Apart from difficulties about how to measure

profits (pre-tax?) and whether to take the average investment over the life of the project, this technique does not differentiate between profits earned at the end of the first year and profits earned, say, after 20 years. The particular example has been chosen to produce identical rates of return and no preference for any one project; however, even if one project had produced the highest rate of return, selection on this basis might have been misleading due to the different timing of profits.

This ratio cannot be calculated from the data in Table 8.4, since accounting items such as depreciation would have to be deducted from cash profit to get accounting net profit. The ratio is useful in that returns can be compared with the overall return on assets or investments for the firm as a whole, but it is not widely used in investment appraisal.

Pay-back period This technique measures the length of time that a project takes to re-coup the initial investment. Here, cash flows (profits before depreciation) are measured rather than accounting profits. The timing of profits is more important than in the first technique, but no consideration is given to cash flows received after the pay-back period.

Table 8.6 Example of payback period

US$ (1,000)	Project A	Project B
Investment	10,000	10,000
Net cash flows:		
Year 1	4,000	1,000
Year 2	3,000	2,000
Year 3	3,000	1,000
Year 4	0	1,000
Year 5	0	3,000
Year 6	0	3,000
Pay-back period	3.0 years	5.7 years

Project A is selected by this method, although it is possible that the rate of return over its whole life is zero or negative. This illustrates the problem of using this technique, which should only be used as an initial screening device in certain cases. For the airline example shown in Table 8.4, the pay-back period for the used A330-300 is 4.4 years and the Boeing 777-200 is 4.5 years. They are thus very close on this measure, but ideally a longer forecast period would make the results less dependent on the aircraft's residual value which is a large part of the cash return in year five for both aircraft. The assumption on residual value is therefore crucial to the outcome.

Discounted cash flow Discounted cash flow (DCF) techniques take into account the differing timings of cash flows and the variation in project lives. The only mathematical manipulation required is the reciprocal of compound interest.

The essential objective of DCF is to value each year's cash flow on a common time basis. This is usually taken to be the present, although it could equally well be

at the end of the period. Profits earned in year 1 could be re-invested in each of the three subsequent years on a compound interest basis; conversely, profits earned in future years can be discounted back to the present, the mathematics of which is given in the following general formula:

$$\textit{Net Present Value} = \sum_{t=0}^{n} \frac{CF_t}{(1+i)^t}$$

where CF_t = Net cash flow in period t

i = Discount rate or cost of capital

n = Project life (years)

The Internal Rate of Return (IRR) The discount rate (i) required to equate the discounted value of future cash flows with the initial investment, or to reduce net present value to zero. This can be calculated by trial and error; for a project requiring an initial investment of $10,000, followed by cash benefits of $6,500, $5,500, $4,500 and $3,500 at the end of the first, second, third and fourth years, this amounts to solving the following equation:

$$0 = -10{,}000 + \frac{6{,}500}{(1+i)} + \frac{5{,}500}{(1+i)^2} + \frac{4{,}500}{(1+i)^3} + \frac{3{,}500}{(1+i)^4}$$

The internal rate of return (sometimes referred to as the DCF rate of return of the investment) in this example is 40 per cent. Projects can be ranked according to rate of return, and a project selected if its Internal Rate of Return (IRR) is greater than a specified cut-off value. The major drawback of this technique is the possibility of finding two solutions to the above equation, or two internal rates of return for the same investment. (This occurs when there is a change of sign to negative for future cash flows, as in the case of the need to decommission a nuclear power station at the end of its useful life.) For the airline example shown in the Table 6.4, the IRR for the A330-300 is 10.4 per cent and the Boeing 777-200 is 10.2 per cent.

Net Present Value Instead of calculating the discount rate required to equate the Net Present Value (NPV) to zero, the rate of return is specified and the NPV is calculated. Projects may be selected with a positive NPV, the discount rate chosen as a minimum target rate of return, ideally based on the weighted average cost of capital to the firm (WACC). Projects may also be ranked according to NPVs. This is the preferred technique in investment appraisal, although it does require the prior selection of the discount rate. One answer to this is to compute NPVs with more than one discount rate to see how sensitive the outcome of project ranking is to changes in this parameter. For the airline example shown in Table 8.4, the Net Present Value for the A330-300 is US$9.9 million and the Boeing 777-200 is US$11.1 million, both using an 8 per cent discount rate.

Profitability Index This is the ratio of the project's benefits to the project's costs, both discounted to present values at the appropriate discount rate. It is similar to the net present value approach, but has the possible advantage of being independent of the relative size of the projects. For the example in Table 8.4, the A330-300 has an index of 1.064, while the B777-200 has an index of 1.061. This ratio may be useful where there are a number of investments that might be made, but limited capital available for investment (*i.e.*, capital rationing). Here, projects could be ranked by profitability index, and selected from the top of the ranking until the available capital was used up.

8.3.3 Discount Rate Calculation for NPV

The discount rate is selected to represent the cost of capital to the airline, although it should also be appropriate to the particular project that is being evaluated. Since investors do not usually have the opportunity to signal their needs in relation to a particular project, in practice past returns to investors in the airline are taken as a proxy for future returns to the airline and project. This is calculated for both equity and debt finance, or a weighted average based on a past or target future debt/equity ratio.

The cost of debt can be obtained by taking a weighted average rate of interest of existing balance sheet debt. Another approach would be to take the current LIBOR plus the premium suggested by the airline's current credit rating, although that might be affected by shorter-term factors which may not persist over the entire project life.

The cost of equity is computed using the Capital Asset Pricing Model. This assumes that equity markets are 'efficient' in the sense of current stock prices reflecting all relevant available information. Finance theory asserts that shareholders will be compensated for assuming higher risks by receiving higher expected returns. However, the distinction should be made between systematic risk, which is market risk attributable to factors common to all companies (*e.g.*, impact of 11 September 2001 on all airlines), and unsystematic risk, which is unique risk specific to the company or a small group of companies (*e.g.*, US Airways' bankruptcy announcement or the impact of the European Commission's decision on airport charges on Ryanair). CAPM models the expected return related to the systematic risk. According to portfolio theory, unsystematic risk can be diversified away through portfolio selection, and thus no reward is received for assuming this risk.

The covariance between the company's return and the market's return is the company's β value, and is a measure of the systematic risk of the company (see also 3.5). From the β value, CAPM can be used to calculate the equilibrium expected return of a company. The equilibrium expected return of a company, $R_{e,}$ is the sum of the prevailing risk-free rate, R_f, and a 'risk premium' dependent on the β value and the market risk premium ($R_m - R_f$). This can be expressed as follows:

$$R_e = R_f + \beta(R_m - R_f)$$

In order to estimate β, the following regression equation is used:

$$R_e - R_f = a + b_e(R_m - R_f)$$

Where

R_e	=	the return on equity *e*,
R_f	=	the risk-free return,
a	=	constant,
R_m	=	the return on the overall stock market,
b_e	=	the equity β.

Although the calculation of β involves a covariance relationship between company return and market return, the exact methodology of estimating β is not explicitly indicated for published values, nor is it apparently unique.[1] The risk-free return is needed for the above formula, and the yield on government bonds is taken as a proxy for this, adjusting for the expected future rate of inflation. Index-linked government bonds can be used for this, or the inflation rate subtracted from the bond yield. Estimates for this have ranged from 2.5 per cent to 3.5 per cent. AMR used 2.93 per cent as the risk-free rate in their 2005 calculation of stock option values using the Black-Scholes model.

An estimate of the equity risk premium is also required. The UK CAA have used a range of 4−5 per cent in past regulation of airport charges, which they later revised down to 3.5 to 4.5 per cent. The UK CAA's discussion paper on the cost of capital also includes US estimates of 3−4 per cent and even lower.[2]

The formula for WACC uses the β values obtained from the above CAPM methodology:

$$\text{WACC} = g(r_f + \rho).(1\text{-T}) + (1\text{-g})(r_f + \text{ERP}.\ \beta)$$

Where:

g is the gearing for the airline expressed as ratio of debt to (debt + equity)
r_f is the risk-free rate
ρ is the debt premium
T is the airline's rate of corporate or profits tax
ERP is the equity risk premium
β is the beta value estimated from the CAPM regression

1 This is discussed further in Morrell, P. and Turner, S. (2003) 'An evaluation of airline beta values and their application in calculating the cost of equity capital,' in *Journal of Air Transport Management*, 9(4), 201−209.

2 *Heathrow, Gatwick and Stansted Airports' price caps*, 2003−2008: CAA recommendations to the Competition Commission, February 2002, Annex: Cost of capita for Heathrow, Gatwick and Stansted. UK Civil Aviation Authority website.

Gearing (g) can be the airlines existing ratio, or more usually a target future ratio. The first (debt) part of the equation can be replaced by the airline's average existing debt interest rate.

8.3.4 Which Criterion to Choose?

The B777-200 is marginally the preferred alternative using the pay-back period and the NPV criteria, but the Airbus A330-300 comes out better on IRR and profitability index.

The first two criteria do not take into account the time value of money, and can thus be rejected. Both NPV and IRR are valid methods of comparison used in industry, but a different conclusion is drawn depending on which is used. IRR is however widely used, and it is easy to see why this is so, especially in large organisations: the spreadsheet calculations will be done at lower level of management than those making the decision (which for larger projects will be at board level). There might also be a time lag between evaluation and decision. It is thus easier for the board to be given the preferred project IRR and then decide on their target or cut-off rate, taking into account the project's risk, rather than specify the discount rate to be used for each NPV calculation.

Table 8.7 Financial evaluation of alternatives

	A330-300	B777-200
Pay-back period (yrs)	4.4	4.5
Net present value (NPV @ 8% in US$ million.)	9.9	11.1
Internal rate of return (%)	10.4	10.2
Profitability index	1.064	1.061

For independent projects, the NPV and IRR criteria always lead to the same accept/reject decision. This is illustrated in Figure 8.1, where it can be seen if the IRR is greater than the project cost of capital or discount rate, then the NPV using that cost of capital as the discount rate will always be greater than zero.

If the projects are mutually exclusive, as in the case of the A330-300 *vs.* the Boeing 777-200, then if the cost of capital is greater than the rate at which the two lines cross the two methods lead to the selection of the same project. In other words, if the cost of capital is greater than 9.3 per cent then the A330-300's NPV is always greater than the Boeing 777-200's NPV, and the A330-300 also has the higher IRR.

If the cost of capital is less than the cross-over rate, then a conflict exists between NPV and IRR; in such a case, it is preferable to take the project with the higher NPV, since this would add most to shareholder wealth, assuming that the airline can obtain the necessary funds to invest in the project.

It should be noted that projects which have relatively high up-front capital costs will have a curve that is steeper sloping (Figure 1.8) . A sensitivity test that assesses the effect of higher than expected capital costs will result in a rotation of each curve to the right.

Second, a long-term project will have a steeper slope than a short-term one. Changing the profile of the project by moving costs from the near term to the longer term will have the effect of rotating the curve in a clockwise direction.

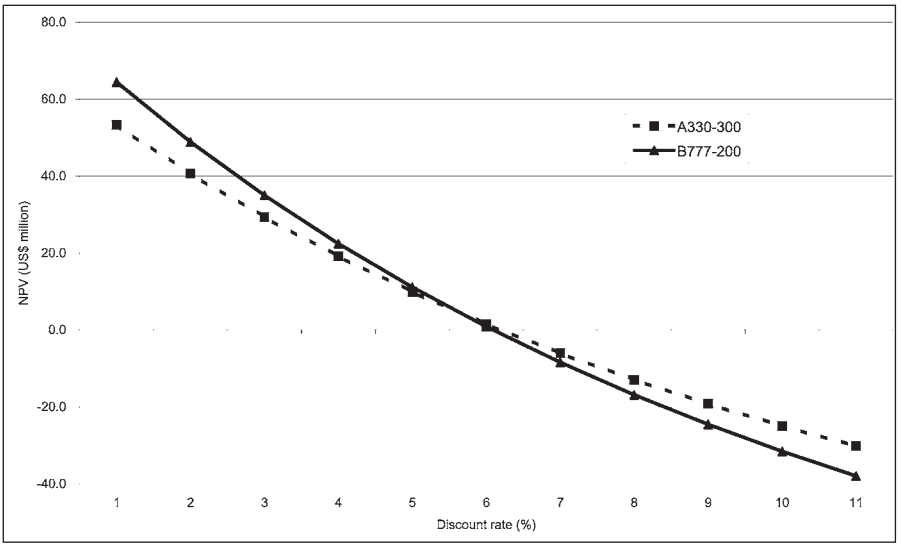

Figure 8.1 NPV *vs* discount rate: A330-300 vs. B777-200

The best decision criterion to use is NPV, assuming that the airline can borrow sufficient funds at the discount rate or cost of capital to finance the investment. In the above example, the B777-200 would be preferred on this basis, but the outcome is very close. In such cases, first a rigorous series of sensitivity tests should be carried out (*see below*). If the B777-200 choice was more sensitive to changes in key assumptions, and might be affected more by, say, external economic shocks, then it may be better to decide on the more robust solution, the A330. Unquantifiable factors, such as the longer term security of spares and other support, may also be taken into account in the final decision.

A survey of airline CFOs in 2005 indicated a strong preference for NPV and pay-back approaches, with accounting rate of return and IRR also widely used.[3]

8.3.5 Risk and uncertainty

Probability (risk) analysis This relatively complex task involves the estimation of ranges of values and probabilities of the financial inputs to each project. Thus, for each aircraft purchase option, these must be estimated for forecasts of traffic,

3 Gibson, W. and Morrell, P. (2005) *Airline finance and aircraft evaluation: evidence from the field.* Paper to ATRS World Conference, Rio de Janeiro, July 2005.

revenues and costs. A series of rate of return calculations is then produced in the form of probability distributions for the rate of return for each aircraft option. The project with the highest probability of exceeding a given rate of return is chosen.

Sensitivity analysis Sensitivity analysis tests the effects on the financial outcome or ranking of projects of changes in some of the key assumptions used in making the projections, assuming other factors remain unchanged. These tests should be applied in areas of greatest uncertainty such as traffic forecasts, market shares, fuel prices or rates of exchange. Judgement would be required to determine which parameters to change and the range of values to be explored. Sensitivity analysis does not involve the assignment of probabilities to changed assumptions: for example if the central plan assumed fuel prices to be constant in real terms over the forecast period, the alternative might be tested of an increase of 3 per cent *per annum* in real terms. Sensitivity analysis would determine the resultant change in NPV, but would not consider the likelihood of the alternative assumptions. In the example in Table 8.4, the outcome would change if identical assumptions had been taken on residual values (*i.e.*, 60 per cent of first cost in both cases). This would have reduced the B777-200 NPV from $11.1 million to $6.4 million, and its IRR from 10.2 per cent to 9.3 per cent.

Scenario analysis This technique considers the sensitivity of the NPV or IRR to changes in the key variables and also the range of likely variable values. Thus, a pessimistic set of variables might be chosen to determine the NPV, or an optimistic set, to give a range of outcomes. The optimistic set might include fuel prices declining or remaining constant in real terms, a high GDP forecast, and high market share or low yield dilution. The pessimistic scenario might take a high fuel price increase, low GDP growth, and low market share. It is important that the assumptions for the key variables are consistent with one another for each scenario, *e.g.*, low fuel price escalation is consistent with high GDP growth. The analysis may involve much work on generating alternative assumptions, as well as workshops where these are challenged and honed into a short-list of scenarios to be evaluated.

In conclusion, it needs to emphasised that investment decisions based on the framework and criteria recommended above are only as good as the assumptions used in the evaluation. As many of the relevant factors as possible should be quantified and included in the appraisal, some sort of risk analysis undertaken, and, where appropriate, other unquantifiable factors also addressed.

Monte Carlo simulation is a procedure whereby random numbers are generated using a normal probability distribution of the expected values of the assumptions that were used for the cash flow forecasts. This is similar to Probability analysis described above, but where the probabilities are not known.

The survey of airline CFOs referred to above found that, of the airline managers using the NPV technique, almost two-thirds raised or lowered the discount rate to allow for risk, rather than changing the cash flow forecasts using the techniques

Table 8.8 Start-up airline business plan

	Jul-Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Profit & Loss Account													
Total revenues	0	3,380	3,040	3,440	3,460	3,080	4,340	7,410	12,600	12,660	14,100	13,800	13,650
Total costs	1,500	3,900	3,640	3,540	3,810	3,480	4,510	7,480	11,850	11,460	12,350	11,900	11,950
Operating result	-1,500	-520	-600	-100	-350	-400	-170	-70	750	1,200	1,750	1,900	1,700
Interest paid	0	25	25	25	25	25	25	25	25	25	25	25	25
Interest received	150	61	61	61	43	43	43	23	23	23	39	39	39
Net result	-1,350	-484	-564	-64	-332	-382	-152	-72	748	1,198	1,764	1,914	1,714
Cash Flow Statement													
Cash revenues	0	15	3,380	3,040	3,440	3,460	3,080	4,340	7,410	12,600	12,660	14,100	13,800
Cash expenditure	1,500	2,250	3,400	3,600	3,500	3,500	4,600	7,100	9,000	11,500	10,900	10,800	11,900
Net interest paid	-150	-36	-36	-36	-18	-18	-18	2	2	2	-14	-14	-14
Net cash suplus	-1,350	-2,199	16	-524	-42	-22	-1,502	-2,762	-1,592	1,098	1,774	3,314	1,914
Cumulative cash													
Opening balance	10,000	8,650	6,451	6,467	5,942	5,900	5,878	4,376	1,614	22	1,120	2,894	6,207
Closing balance	8,650	6,451	6,467	5,942	5,900	5,878	4,376	1,614	22	1,120	2,894	6,207	8,121
Balance Sheet	end Sep			end Dec			end Mar			end Jun			end Sep
Fixed assets	1,000			1,895			2,595			7,325			5,715
Current assets													
Trade debtors	0			3,400			4,300			12,600			13,600
Cash/deposits	8,650			5,942			4,376			1,120			8,121
Total Assets	9,650			11,237			11,271			21,045			27,436
Current liabilities													
Trade creditors	500			3,200			4,100			12,000			13,000
Long-term debt	3,000			3,000			3,000			3,000			3,000
Shareholders' funds													
Ordinary shares	7,500			7,500			7,500			7,500			7,500
Retained earnings	-1,350			-2,463			-3,329			-1,455			3,936
Total Liabilities	9,650			11,237			11,271			21,045			27,436
Debt/equity ratio	0.5			0.6			0.7			0.5			0.3

described above.[4] This is clearly easier, but does not provide the discipline of re-visiting the major assumptions upon which the evaluation is based.

8.4 Start-up Airline Business Plan

Many of the essentials of preparing the financial part of a start-up airline business plan have been discussed in the preceding sections of this chapter. The fleet plan will be crucial, in that it brings together decisions on many aspects of marketing, operations and engineering. For a start-up airline, however, the investment appraisal might point to a particular solution, but the realities of the marketplace might dictate something else. There might, for example, be an attractive offer of the right number of aircraft at the right time at a low operating lease rate. ValuJet in the US started with used ex Delta Air Lines DC-9*s* purchased with cash,[5] and Debonair in the UK with a fleet of used BAe 146s on 16-month operating lease.[6] Other European low cost carriers such as Ryanair, easyJet and Go all started with used B737-200s and -300s, but later ordered new aircraft. JetBlue in the US started with new A320s, but was well financed and presumably had a very attractive offer from Airbus.

Aircraft operating economics in these circumstances take second place to savings, at least in the difficult start-up period, in capital investment. This is because the airline may never take-off at all without the necessary finance; and the last part of this chapter will show that, even when almost all assets are leased rather than owned, the financial requirements to start an airline are still quite substantial.

The three key financial statements in any start-up airline business plan are presented in Table 8.8 for a hypothetical airline. The figures suggest an initial level of traffic of around 500,000 passengers per year, operated perhaps with a fleet of 7−8 short to medium haul aircraft. The investment appraisal has indicated that used, low capital cost, aircraft would produce higher net present values, given the airline's high cost of capital and discount rate. The financial evaluation (see Chapter 10) indicating that an operating lease would be preferable to owning the aircraft, or taking them on finance lease. But considerable working capital will still be needed, and some of the sources of such capital described in Chapter 8 will have been considered.

The scenario described in Table 8.8 is one of an airline starting scheduled operations, say on intra-European routes, at the beginning of October, after spending the previous three months in planning, obtaining licenses, approvals and slots, training, marketing and promotion. In this period no revenues are earned, but considerable expenses would have been incurred. The particular example shows a winter start-up, which might have been dictated by aircraft availability, and gives the airline a chance to become better known before the peak summer season. But it may mean a greater working capital requirement.

The discussion of working capital in 8.2 above suggested that perhaps a short-term capital requirement could be financed on a short-term basis with, say, an overdraft. This would not be appropriate here: first, the airline would not have the security to

4 Gibson and Morrell. Supra.

5 *The Avmark Aviation Economist*, 19 (April/May 1996).

6 *Airfinance Journal*, 13 (July/August 1996).

get past the loss-making earlier months or even years, and would need to spend a considerable amount of time on refinancing their working capital; second, the banks would only offer such finance in conjunction with more permanent finance, and even then only on a self-liquidating basis; and finally the regulatory authorities would be unlikely to license a start-up airline on this basis.

Regulatory authorities in most countries have various financial fitness criteria for licensing start-up airlines. Countries that have more liberal air transport policies and a more competitive environment are likely to have both stricter and less secretive financial requirements. The European Commission published in 1992 common criteria to be used by member states in granting operating licenses for start-up airlines. They required that such airlines should provide a business plan for at least the first two years years of the applicant's operation.[7] In an annex to the regulation, the following information was required from first time applicants:

1. The most recent internal management accounts, and, if available audited accounts for the previous financial year.
2. A projected balance sheet, including (*sic*) profit and loss account, for the following two years.[8]
3. The basis for projected expenditure and income figures on such items as fuel, fares and rates, salaries, maintenance, depreciation, exchange rate fluctuations, airport charges, insurance, *etc.* Traffic/revenue forecasts.
4. Details of the start-up costs incurred in the period from submission of application to commencement of operations and an explanation of how it is (*sic*) proposes to finance these costs.
5. Details of existing and projected sources of finance.
6. Details of shareholders, including nationality and type of shares to be held, and the Articles of Association. If parts of a group of undertakings, information on the relationship between them.
7. Projected cash-flow statements and liquidity plans for the first two years years of operation.
8. Details of the financing of aircraft purchase/leasing including, in the case of leasing, the terms and conditions of contract.[9]

Other provisions were also included for the continuing assessment of existing license holders. It can be seen that Table 8.8 provides some of the information required, but a second year of operation would have to be added, as well as more details on operating revenues and expenses, sources of finance and shareholdings.

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7 This was increased to three years in Article 5 of a Proposal for a regulation on common rules for the operation of air transport services in the Community, European Commission, COM(2006) 396 final, 18 July 2006.

8 This was increased to three years in Article 5 of a Proposal for a regulation on common rules for the operation of air transport services in the Community, European Commission, COM(2006) 396 final, 18 July 2006.

9 *Official Journal of the European Communities*, *No* L240, (24 August 1992) p. 7.

Article 5 paragraph 1 of the EU regulation gives two hurdles that need to be overcome before a license can be granted.[10] First, the airline needs to demonstrate that 'it can meet at any time its actual and potential obligations, established under realistic assumptions, for a period of 24 months from the start of operations'. From Table 8.8, it would appear from the projected balance sheet that the airline could at least meet the requirement for the first year. Second, the airline would be able to 'meet its fixed and operational costs incurred from operations according to its business plan and established under realistic assumptions, for a period of three months from the start of operations, without taking into account any income from operations'.[11] This can be tested by looking at the cash flow statement for the imaginary start-up airline in Table 8.8. If all revenues are removed from the first three months, then the cash balance at the end of December would be $6.4 million lower, or a −$493,000. The airline would not therefore pass this hurdle.

However, if some of the future income were already contracted for, it might be possible to include that in the calculations. For example, if the airline had a legal contract to provide charter services for a tour operator in November and December, and that the combined revenues under this contract of $500,000 were included in the planned cash revenues in those months, then this revenue could be included and the airline would pass the test. This modification was not written into the regulation, but it would seem to be a sensible approach to take where significant charter operations are concerned.

In the USA a similar approach is taken by the Department of Transportation before granting an operating certificate. The Air Carrier Fitness Division of DOT states in its guidelines that applicants must provide 'independent third-party verification that it has available to it resources (*e.g.*, cash, lines-of-credit or bank loans) sufficient to cover all of its pre-operating costs ... plus the operating expenses that are reasonably projected to be incurred ... during three months of "normal" operations'.[12] No revenues can be assumed for these first three months, and expenses should be based on projected traffic and revenues, and not reduced because of reduced or no traffic. They prescribe the estimation of the first three months' operating expenses by dividing expenses for the first 12 months by four.

The EU regulations could, in certain cases, be somewhat less strict than those of the US DOT. The interpretation of the EU Regulation by the UK CAA states that 'in considering the extent to which all of the operational costs should be included the CAA may take into account the proportion of flying which could be cancelled without impact on the core business…'.[13] This is in the context of licensing charter carriers that operate *ad hoc* flights outside their core business of series charters for tour operators. Such airlines are less common in the US.

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10 *Official Journal of the European Communities*, supra, p. 4.

11 This is considerably less strict that the rule applied by Microsoft, where enough cash must be available to operate the company for at least one year, even if no one paid them; see Gates, W. (1996), *The Road Ahead*, revised edn, p. 45.

12 Air Carrier Fitness Division (2002) *How to Become a Certificated Air Carrier*, Office of the Secretary, US Department of Transportation, 202-366-9721.

13 Financial framework for the grant of a Type A operating license, UK CAA, www.caa.co.uk, Section 4.2.

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Chapter 9

Risk Management: Foreign Currency and Fuel Price

9.1 Exchange Rate Volatility

International airlines sell tickets in many different countries and currencies, even in places where they do not have their own operations. They also incur operating expenses in the currencies of the countries they serve, and buy capital equipment from the major aerospace exporting countries such as the US, Canada, UK, France, Brazil and Germany.

It would be impossible for there to be a perfect match in both amounts and timing of foreign currency receipts and expenses. An airline may achieve some sort of balance over the year as a whole in receipts and expenses in a certain currency, but there will be weeks and months of surpluses followed by periods of shortfall. This can be managed by borrowing and lending in this one currency, and thus not involving conversion into another currency or any exchange risk. But net surpluses in a foreign currency would have to be exchanged into the local currency, which is the currency in which most costs are incurred and ultimately any profits would be retained or distributed. Here, there will be a time lag between income and expenditure which involves a risk of a movement in the exchange rate, and therefore a foreign exchange loss or gain. An airline's treasury has the task of managing revenues, expenditures, assets and liabilities in both local and foreign currencies, and thus minimising the risks of exposure to large currency movements.

Since the late 1960s, exchange rates of currencies have floated with respect to other major currencies, subject to central bank intervention, in pursuit of economic and monetary goals. Some currencies are pegged to major currencies, such as the US dollar, or a basket of the currencies of their major trading partners. Some countries do not manage their exchange rates as a policy objective, leaving them to float freely.

The Bank for International Settlements (BIS) estimates the importance of the various currencies in global foreign exchange market trading: the US dollar accounted for 45 per cent of daily turnover in April 1989, falling only slightly to 44.5 per cent in April 2004. The second most important currency is the Euro with just under 19 per cent, followed by the Japanese Yen with around 10 per cent and the UK pound with 8.5 per cent. The UK pound has increased somewhat in importance (up from 7.5 per cent in 1989) while the Yen has fallen from 14.5 per cent.

The European exchange rate mechanism attempted to limit the fluctuations between European currencies, but market pressures and a lack of coordination of

EU monetary policies had placed the future of this system in doubt. However, 12 EU countries introduced a common currency (the 'euro' or €) in 2000, with the complete phasing out of national currencies by March 2002. Only the UK, Denmark and Sweden remained outside the euro area, such that their monetary policy was not applied by the European Central Bank, as was the case with the others. This change made life easier for Europe's major airlines (not only the ones whose countries have signed up), in terms of reduced currency risks and transaction costs, but there are also costs involved in the change-over.

Fluctuations occur because of changes in the supply of and demand for the currency. For example, if the UK was running a balance of trade deficit, then more traders would be selling pounds to pay for imports than exporters are buying pounds with the foreign currency proceeds from their foreign sales. This would weaken the pound, or the pound would depreciate against the currencies it traded with. Exporters might delay invoicing in a currency that they expect to depreciate, in the hope of gain, while importers might do the opposite. These 'leads and lags' would further increase downward pressure on the currency.

Here exporters and importers are taking a position on future currency movements which is no different from money traders, often called speculators.[1] The latter execute orders for others, as well as trying to profit on their own account from movements in currencies and interest rates. This can also add considerable buying or selling pressures to a currency that cannot be counteracted by buying or selling by that country's central bank, even if it wished to. However, the argument that governments and central bankers are now increasingly powerless in the face of global market dealers has been rebutted by the strength of the dollar, following statements and actions by central bankers from the G7 countries in April 1995.

In the past few years, exporters of capital have also become more important in exchange rate determination. Foreign direct investment has been high from countries like Japan which have a high domestic savings rate and visible trade surplus. This has taken the form of Japanese investors buying foreign assets (see Chapter 10, Japanese leveraged leases) or foreign stocks and shares, or of Japanese companies establishing offshore manufacturing plant in countries such as China and Federation of Malaysia. This has the effect of weakening the yen against other currencies.

Market economics suggests that currency depreciation resulting from a trade deficit would automatically make exports more competitive and lead to a reduction in the trade deficit and thus an appreciation of the currency. One of the problems of this equilibrium theory is that depreciation leads to higher import prices and increases domestic inflation, which in turn reduces the move towards greater international competitiveness. Thus, a country is trapped in a downwards spiral of inflation and depreciation. Extreme examples of this have occurred at various times in the past, notable in Brazil and other Latin American countries, many African countries, and more recently Russia and some CIS countries.

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1 The now well-known fund manager and investor, George Soros, was reported to have made a considerable sum from speculating on sterling's depreciation in 1992; see Kaletsky, A. *The Times*, 26 October 1992.

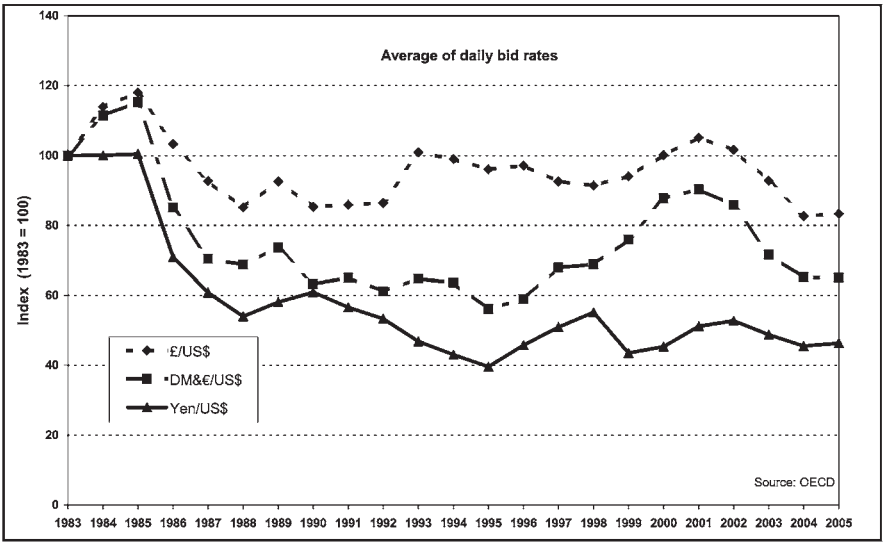

Figure 9.1 Key currency exchange rates *vs* US dollar, 1983–2005

It can be seen from Figure 9.1 that even the world's major currencies are subject to quite sharp fluctuations in the space of only one or two years years. A fall of the US dollar against the yen and Deutschemark (DM) between 1985 and 1988 of above 40 per cent, and the pound by just under 30 per cent, illustrates this point. The Euro (€) joined the list of major world currencies in 1999, and completely replaced the Deutschemark and other EU currencies in 2002. Since, its introduction, however, it has weakened against the US dollar, falling 15 per cent between 1999 and 2000.

Purchasing power parity (PPP) theory states that under liberalised international trade a basket of goods in one country should cost the same as a basket of goods in another country. If domestic prices rise in one country, then the exchange rate between that country and another should change to restore the price equality between the two baskets of goods. Exchange rates should, according to this theory, be determined purely by relative price movements. It is doubtful if this would happen even in the long term because of the increasing element of goods and services that are not traded internationally in the basket of typical domestic purchases; in the short or even medium-term many exchange rates persist in being significantly out of line with the rates that equate the price levels in each country. For this reason, the use of market exchange rates causes distortions in international comparisons, for example of airline costs or yields. These can be removed by the use of PPP rates of exchange which are published on a regular basis by the Organisation for Economic Co-operation and Development (OECD) for most major currencies.[2]

Currency changes can have a significant effect on the pattern, and in some cases the size, of air travel demand. An improvement in the pound against the US dollar

2 These are based on the consumer prices of a basket of goods, and are published in the OECD's Main Economic Indicators.

between 1986 and 1989 encouraged some UK sun-seekers to switch from European destinations such as Spain to Florida. On the other hand, the greater depreciation of the pound against the French franc compared to the Spanish peseta and Italian lira between 1992 and 1994/1995 led to the latter countries becoming relatively more attractive to UK tourists. In 1997, Thailand, Federation of Malaysia, Indonesia and other Asian countries also became much more attractive to foreign tourists, following their currency depreciation, but it also seriously inhibited foreign travel by residents.

Few tourists buy the foreign currency needed for a foreign holiday in advance, although there was some evidence that Germans did this when the US dollar was particularly weak against the mark in spring 1995.[3] However, many still plan and book their holidays well in advance of travel, even though some leave booking until the last minute to try to take advantage of special offers. This means that currency depreciation would result in less spending on discretionary items while on holiday, rather than cancellation, and perhaps only affect demand in the following season.

9.2 Airline Trading Exposure to Currency Movements

Currency changes can also have a serious impact on an airline's reported profitability. This might stem from its trading activities, which are examined here, or it may come from the restatement of foreign currency denominated assets or liabilities, which are discussed in the next section. For example, Singapore Airlines announced in October 1996 that its results for the first half of the financial year had been hit by both higher fuel prices and the strong Singapore dollar.[4] The depreciation of key revenue earning currencies such as the yen and DM contributed to a decline in yields expressed in Singapore dollars of 6.7 per cent.

Airlines often report the adverse effect of foreign exchange movements on profits, but rarely the converse. In order to explore the possible trading impact of marked exchange rate movements, a simplified example has been constructed. This assumes trading only in the local currency (£ sterling) and one foreign currency (US$), and treats airlines either as exporters or importers, depending on the currencies in which its operating revenues and expenses are incurred.

For an international airline to be an exporter, the following is likely to hold true:

- Its costs will be primarily in the local currency.
- The majority of its revenues will be in foreign currency.

The example in Table 9.1 assumes 60 per cent of revenues will be in foreign currencies and 60 per cent of expenses will be in the local currency, which is a fairly good approximation of many major international scheduled airlines (*e.g.*, KLM in 1995/1996).

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3 *Financial Times* Foreign Exchange Supplement, (6 June 1995), p. vi.

4 *Financial Times*, (29 October 1996), p. 27.

Table 9.1 Effect of exchange rate depreciation on profits of exporter airline

	Revenues	Expenses	Difference
Local Currency (£)	40	60	− 20
Foreign Currency in $	*120*	*80*	*40*
Foreign Currency in £			
(At exchange rate of $2.00 per £)	60	40	20
TOTAL (£)	100	100	0
Profit in £			0
Foreign Currency in £			
(At exchange rate of $1.50 per £)	80	53	27
Local Currency (£)	40	60	− 20
TOTAL (£)	120	113	7
Change in Profit (£)			+7

The initial position is one of zero local currency trading profit at the rate of exchange of $2 to the £. The impact on profits of a depreciation of sterling of 25 per cent to $1.50 to the £ (which actually occurred between 1990 and 1993) is then evaluated, assuming other factors remaining constant.

This example has shown how the depreciation of a currency helps exporter airlines by increasing the local value of their foreign earnings by a greater amount (£20) than the increase in the local value of foreign expenses (£13), resulting in a profit improvement (£7). However, it would also allow them to reduce foreign selling prices or fares and stimulate traffic without risk of reducing their sterling revenues.

International charter airlines whose revenues are almost entirely from their own country's residents will be net importers (they will need to import aircraft and fuel, both incurred in foreign currency). Foreign currency revenues for these carriers are unlikely to exceed 20 per cent. Finnair, a scheduled airline with a large charter operation, also provides an example of an airline which has relatively low foreign exchange revenues (35 per cent in 1995/1996) and high local currency costs (65 per cent). The impact of a similar sterling depreciation is shown in Table 9.2.

For the importer airline, the depreciation of a currency increases the local value of their foreign earnings by a smaller amount (£7) than the increase in the local value of foreign expenses (£13), resulting in a profit deterioration (£6). There would also be very little scope for them to increase revenues or stimulate traffic by reducing foreign selling prices or fares.

Thus, the depreciation of the UK pound sterling will have a beneficial impact on British Airways, but will hurt a charter carrier such as Britannia Airways (and contributed to the bankruptcy of Laker Airways). But it should be noted that a currency depreciation also has an initially adverse effect on the net exporter by making its costs incurred in foreign currency immediately more expensive. The effect on revenues will generally take longer because of the advance nature of ticket sales. It will also depend on whether the airline uses the depreciation as an opportunity to lower local currency fares, or offer more attractive discount fares, and the price elasticity of its potential markets. This last effect is clearly very difficult to quantify, but often neglected in airline profit announcements and related commentaries.

Table 9.2 Effect of exchange rate depreciation on profits of importer airline

	Revenues	Expenses	Difference
Local Currency (£)	80	60	20
Foreign Currency in $	*40*	*80*	*− 40*
Foreign Currency in £			
(At exchange rate of $2.00 per £)	20	40	20
TOTAL (£)	100	100	0
Profit in £			0
Foreign Currency in £			
(At exchange rate of $1.50 per £)	27	53	− 26
Local Currency (£)	80	60	20
TOTAL (£)	107	113	− 6
Change in Profit (£)			− 6

Furthermore, in the longer term the rate of inflation of prices in general in the local currency will increase, increasing the exporter's local currency costs and eroding the profit increase. There might also be an effect on the exporter airline's local market, which will find foreign holidays more expensive as a result of the depreciation of their currency. But in reality airlines operate to many different countries, some of whose currencies are bound to fare worse than the local one, and switching between countries is the more likely response.

It is the major currencies in which an airline trades that will provide the greatest exposure to large foreign exchange movements. One example of an international airline that has regularly published details of the importance of this is SAS, which does not fit easily into the above example, since it has three *domestic* currencies. With quite large domestic markets, it tends to be long in two of its home currencies. However, its long-haul hub is in Denmark resulting in quite high costs there, but revenues are smaller partly due to the smaller domestic market. It is short in US dollars, a common position for many airlines stemming from the fact that capital costs,[5] fuel, some airport charges and US station and sales costs are all in dollars.

Table 9.3 SAS revenue and cost currency breakdown in 2005 (per cent)

Currency	Revenues	Costs	± % Pts
Swedish krona	21	18	+ 3
Norwegian krona	28	19	+ 9
Danish krona	11	14	− 3
Euro (€)	24	18	+ 6
US$	7	26	− 19
Pound sterling (£)	5	3	+ 2
Other	4	2	+ 2
Total	100	100	+ 0

Source: SAS Group Annual Report, 2005

5 Airbus now prices its aircraft in both US dollars and Euros (€), although € deals are rare.

The data in Table 9.3 meant that, of SAS's 2005 EBITDA of SEK3,000 million, the airline had surpluses of SEK5,900 million of Norwegian Krona, SEK3,900 million of euros, SEK2,200 million of Swedish Krona and SEK1,300 million of UK sterling. It had a deficit of SEK11,000 million in US dollars, and SEK1,600 million of Danish Krona. In contrast to SAS which earns a large part of revenues in its home currency, Turkish Airlines derived only 16 per cent of operating revenues from Turkish New Lira in 2004, 45 per cent coming from euros and as much as 16 per cent from US dollars. This is because of its strong sales to incoming European tourists and those of Turkish origin living in Germany. The airline's expenditure was split between its home currency (48 per cent), US dollars (32 per cent), euros (13 per cent) and other currencies (7 per cent).

British Airways earns just under 60 per cent of its revenues in around 140 different foreign currencies (30 per cent in US$), and incurs about 50 per cent of its costs abroad (30 per cent in US$). US carriers like Delta Air Lines have 75−80 per cent of their revenues and an even higher percentage of expenses in US dollars, and are thus affected little by changes in exchange rates. A 1992 study of American Airlines did, however, find that a weaker US dollar boosted short-run cash flows, but that this might also in the longer run weaken the US economy and reduce American travel.[6]

Qantas estimated the sensitivity of their profit forecasts with respect to the key currencies in which it trades, namely the US dollar, the Japanese yen and the UK pound.[7] They examined the effect of a 5 per cent movement in the exchange rates of these currencies, and estimated the following impacts:

Table 9.4 Impact of currency changes on Qantas after-tax profit for 1995/1996

	Depreciation	Appreciation
Uniform movement of 5 per cent in A$ against all currencies	11%	−10%
Movement of 5 per cent in A$ against US$	−22%	20%
Movement of 5 per cent in A$ against Japanese Yen	3%	−3%
Movement of 5 per cent in A$ against UK pound	3%	−3%

The after-tax profit forecast for Qantas stated in the prospectus of A$237 million for the financial year 1995/1996 assumed an A$/US$ exchange rate to average 0.76 over the year, A$/Yen to average 72.2, and A$/UK£ to average 0.47. Profits actually turned out to be higher than expected at A$247 million, not helped by an appreciation of the Australian dollar, which averaged 76.6, or 6 per cent higher then predicted. The A$/£ rate was 0.49, or a 4 per cent appreciation of Australian dollar, which again

6 Bilson, J. (1992), Managing Economic Exposure to Foreign Exchange Risk: A Case Study of American Airlines, *The Economist*, 6 June.

7 Qantas Airways Limited, Offering Memorandum, (22 June 1995).

would have tended to reduce profits. (The forecast of A$ 0.76 to the US dollar turned out to be right.)

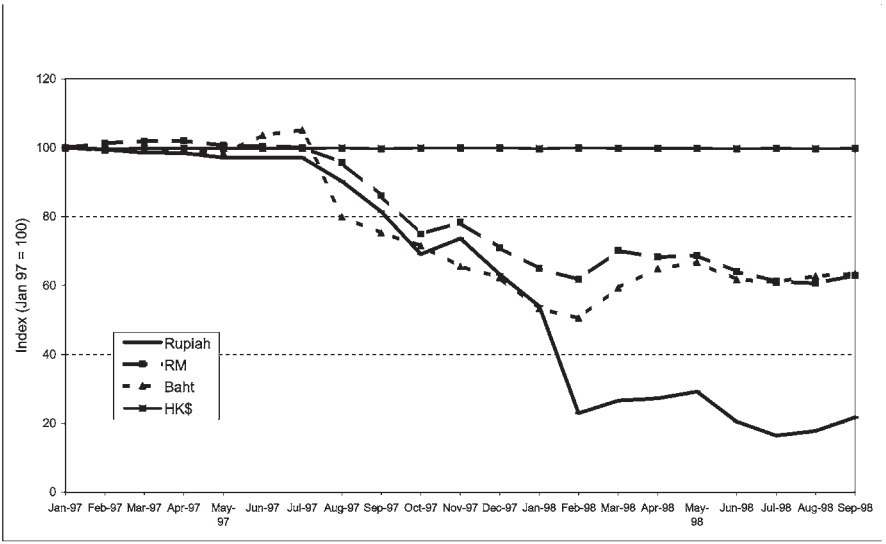

Figure 9.2 Selected Asian exchange rates *vs* US dollar, 1997/1998

The Asian financial crisis of 1997 and 1998 resulted in the very rapid depreciation of many Asian currencies. Those airlines that were short of US dollars found themselves having to buy them at significantly higher prices post-1997 compared to before.

Table 9.5 Asian airline US dollar mismatch

Airline	US$ revenues % total	US$ costs as % total	Net impact* (%)
Air New Zealand	15	23	− 0.4
Cathay Pacific	20	20	0
Japan Airlines	10	15	− 0.2
Korean Air	20	25	− 0.3
Asiana	18	52	− 1.6
Malaysian Airlines	10	28	− 0.8
Singapore Airlines	25	23	0.1
Qantas Airways	5	15	− 0.5
Philippine Airlines	15	33	− 0.9
Thai Airways	15	24	− 0.4

* Net impact on operating margin of a 5 per cent average local currency depreciation against the US$

Source: US-Asean Business Council (1999)

Table 9.5 gives an idea of how sensitive various Asian airlines were to the depreciation of their local currencies.[8] Unfortunately, the source did not give data for Garuda, but it is likely that its situation was not dissimilar to Malaysian, both having large domestic markets generating negligible foreign currency revenues. The net impact on operating ratios is shown for a 5 per cent depreciation. In the case of Thai Airways the local currency fell by around 50 per cent, which would have shaved 4 per cent points off their operating ratio. This is without considering any net economic effects of a reduction in travel by nationals, offset by the boost to tourism from the more attractive rates. The most extreme example, Asiana was faced with a 30 per cent drop in its local currency between 1997 and 1998, which would have reduced its operating ratio by almost 10 per cent points.

The analysis in Table 9.5 ignores the possible benefits from revenues generated in relative strong currencies other than the US dollar. Philippine Airlines carries a large number of nationals living and working abroad who buy their tickets in foreign currency. The table also misses the important impact of foreign debt repayments, which are addressed in the next section.

9.3 Airline Balance Sheet Exposure to Currency Movements

Airlines can also experience large reported foreign exchange profits or losses as a result of borrowing money or acquiring aircraft in foreign currencies. SAS provides an example of this, with large exchange losses being charged against 1992 profits as a result of a revaluation of long-term debt, following the November 1992 float of the Swedish krona, and its subsequent decline of 20 per cent against the DM and 15 per cent against the ECU.[9] This was somewhat offset by exchange gains from liquid funds placed in foreign currencies.

An example of two transactions involving foreign currencies and an airline's balance sheet is given below.

Example 1

An airline sells tickets to the value of US$100,000 on 1 December, but has not received the funds by the end of the financial year at end December. The sale is translated into £ at the rate ruling at the date of the transaction (or the rate for the month through the IATA clearing house), say US$2.00/£. The passengers travelled before the end of the year, so that revenue amounting to £50,000 will be included in the Profit and Loss statement for the year. However, since the invoice had not been paid by year end, debtors (accounts receivable) will have to include the $100,000 outstanding, but this will be converted into sterling at the year end rate of exchange, which is perhaps only US$1.5/£. Thus, debtors will include £66,667, the difference between this and the revenue amount of £50,000 being credited to the profit and loss

8 US-ASEAN Business Council Inc. (1999), *ASEA and Asia Pacific: Civil aviation and airport development*.

9 SAS Annual Report (1992), p. 27.

statement as an exchange gain, such that retained earnings will ultimately offset the change in debtors or current assets.

Once the money is received in the following January, the dollars are converted to pounds at the new spot rate (US$1.60/£), and the £62,500 is added to cash balances in current assets. The exchange gain is thus £12,500, rather less than the £16,667 allowed for in the previous financial year, so an adjustment is made in the current financial year for the difference of £4,167.

Example 2

An airline buys an aircraft for US$1 million on 1 March, and this is entered in the balance sheet under fixed assets at the rate of exchange ruling at the date of the transaction. It will then be depreciated in the normal way based on this sterling amount, say £500,000 (US$2.00/£). At the end of the financial year, this amount is not adjusted to reflect any change in the $/£ rate since the date of acquisition. The aircraft is, however, a foreign asset and any foreign exchange gain or loss will eventually be realised, but only once the asset is sold. Alternatively, the aircraft value can be adjusted at the end of each reporting period, using the new rate of exchange. Long-term debt associated with the acquisition of such aircraft, however, is usually adjusted periodically for exchange rate changes.

British Airways (and many other airlines) generally translate foreign currency balances into sterling (or their reporting currencies) at the rates of exchange ruling at the balance sheet date. Changes in the sterling value of outstanding foreign currency loans and finance leases used for the acquisition of aircraft and investments are reflected in the cost of those assets. Profits and losses arising on translation are normally dealt with through the profit and loss account, although some airlines make adjustments solely on the balance sheet.

9.4 Airline Foreign Exchange Risk Management

Airlines will try to reduce foreign exchange exposure, or the risk of loss, by matching revenues and payments, as well as assets and liabilities, in each currency. This is called a natural hedge. It may be possible to achieve this is some currencies, and, where there is an imbalance, increase expenditure in the countries where excess revenues are earned.

For example, British Airways earns a surplus in French francs, and reduces this by buying wine and food in France for its in-flight catering. In some countries, revenues cannot be remitted to the home currency and are effectively blocked in a rapidly depreciating local currency. The advantages of adopting a similar strategy here are clearly much more sizeable, but there is generally less scope for making such purchases in these countries. The possibility of running sales conferences there might not achieve the desired result if the local hotels insist on charging in US dollars or another hard currency (as the airline would probably now be doing for its own local sales). Sometimes, however, state owned airlines come to some

arrangement for funding the local embassy in return for payments to the airline in the home country.

Where surpluses are earned, and natural hedges impossible, they can either be sold on the spot market (for immediate delivery into the local currency), or they can be sold on the forward market (and *vice versa*). The forward market is a realistic alternative for delivery of the local (or foreign) currency equivalent in up to 12 months into the future, but beyond that period would tend to be too expensive, or there would be no market available. Forward market prices are quoted for major currencies for three, six, nine and 12 months ahead. A forward market contract will commit the airline to buy a fixed amount of a given currency at a future date at a given exchange rate.

An alternative to dealing on the forward market is to buy or sell an option which gives the holder the right, but not obligation to exchange a given amount of currency at a certain rate, at a future date. A premium will have to be paid for buying the option to purchase currency (a put option), or sell currency (a call option). This money is lost, but the holder can then either exercise the option if the subsequent trend in the spot rate is unfavourable, or throw away the option if the spot market is favourable. A European option remains with the buyer until the exercise date, but an American option can be traded in the intervening period, and there will be a market price for buying and selling options.

A major investment paid for in a foreign currency is a good example of whether to hedge, and which method an airline should choose. Once a firm order has been signed for an aircraft, an airline will be committed to delivering the cost of the aircraft in one or two years years' time. The example below is based on a UK based airline contracting to buy a B747-400 for delivery in one years' time at a cost of US$140 million. It is assumed that down-payments and natural hedges result in US$100 being required at delivery date. There are three possible strategies:

a) Do nothing; wait until delivery date and then buy the US$100 million in the *spot market*, at the then rate of exchange;
b) Hedge the risk of an adverse movement in the $/£ exchange rate by buying the $100 million *forward*;
c) Hedge the risk of an adverse movement in the $/£ exchange rate by buying a *call option* to buy the US$100 million in one year's time at the current forward rate;

or a combination of the above.

Do nothing (Strategy A)

The spot rate is the exchange rate at which dollars can be purchased with pounds for immediate delivery. It changes continuously as a result of supply and demand. Assume that it was $1.5205 to the £ at the time the contract was signed. In 12 months' time, however, it could be lower, hence the exchange risk. On the other hand, if it rose, then the aircraft's price would effectively be reduced.

Hedge with forward Purchase (Strategy B)

The forward exchange rate is the rate at which pounds can be purchased with dollars at a future date. Assume the 12 months' forward rate was $1.4905 at the time the contract was signed. The airline could therefore purchase US dollars forward with the local currency it would have available in 12 months' time. It would then do nothing until the forward contract due date (*i.e.*, in 12 months) when it would buy the $100 million with £67 million of local currency (*i.e.*, the pounds converted at the contract rate of $1.4905).

Hedge with Call Option (Strategy C)

A call option is the right to buy a currency at some future date at an agreed rate of exchange. This right must be purchased at a price which varies according to supply and demand. Assume that a call option to buy US dollars in one year's time at the current forward rate of £1 = $1.4905 costs 5.1 per cent of the US$ amount. This option can either be exercised in one year's time, with the dollars purchased at the forward rate ($1.4905) costing £67 million, plus the 5.1 per cent cost of the option. Depending on how the spot rate actually moves over the year ahead, the option might not be exercised, with the dollars instead bought at the spot rate ruling at the time, plus 5.1 per cent, which is the cost of the option.

Figure 9.3 shows how the local currency cost of the remaining payment for the aircraft will vary with the eventual spot rate in one year's time. It can be seen that if the spot rate had turned out to be below 1.4905 (the original forward rate), then alternative (b) of assuring in the cost of £67 million with a forward contract would have been best. If the spot rate had turned out to be above 1.4905, then the 'do nothing' strategy (a) would have been best (*i.e.*, dealing on the spot market at the time of delivery). In retrospect, the option strategy is never the best strategy, regardless of how the spot market actually moves over the year. The option is the worst strategy if the spot rate moves very little, and better than the worst strategy if rates move significantly up or down. The forward purchase is the least risky strategy, locking in the cost of the aircraft in £ sterling at £67 million, but the aircraft might have cost less if the rate had hardened.

An actual example of a hedging strategy which involved a combination of (a) and (b) above was provided by Lufthansa. In early 1985, the airline bought 20 Boeing 737−300 aircraft at a cost of $500 million to be paid in on delivery in a year's time. The spot $/DM rate at the time was around DM3.20. The airline decided that a decline in the dollar was imminent, but that they should hedge 50 per cent of the cost with a forward contract, just in case the markets once again confounded the forecasters. The forward exchange rate was DM3.20, thus locking in half the cost of $250 million at DM800 million.

The dollar in fact rallied to about DM 3.45 before falling to DM 2.30 over the next 12 months. The total cost of the aircraft in local currency was then the DM 800 million from the forward deal plus a further DM 575 million at the spot price of DM 2.30, giving a total of DM 1.375 billion. In retrospect, the 'do nothing' strategy on the full $500 million would have cost only DM1.15 billion, or DM 225 million

less than they ended up paying. Alternatively, a forward hedge for the full $500 million would have resulted in a total cost of DM1.6 billion, or DM225 million more. It is, of course, easy to be wise after the event, and the subsequent summoning of Lufthansa's chief executive to the Transport Minister[10] was probably more of a gesture to calm the political storm that had arisen than a reprimand.

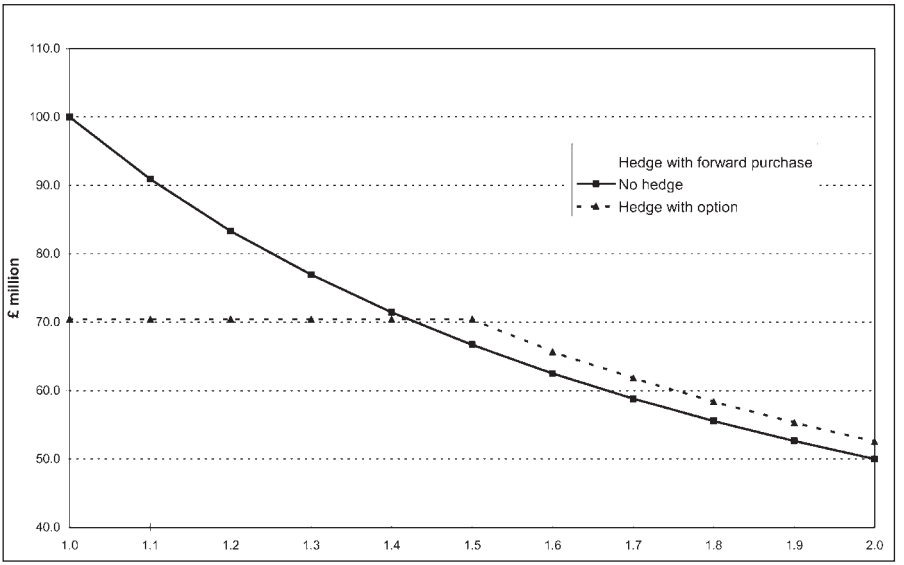

Figure 9.3 Cost of hedging *vs* eventual spot rate

Perhaps a better way of looking at Lufthansa's dilemma would be to go back to the fleet planning and NPV analysis that the airline would have undertaken before confirming the order for the aircraft (see Section 8.3). This would have included assumptions on the DM/$ exchange rate, and ought to have been tested against various possible exchange rate outcomes. Because of the impact of any subsequent exchange rate movements on both costs and revenues, it may not have been necessary to hedge the purchase cost at all. However, the effect on the project NPV of alternative foreign exchange strategies could have been tested against actual spot rate outcomes. These strategies should also have included options, particularly in view of the volatility of the exchange rate in question.

It should be concluded that dealing in the forward or options markets (also called 'derivatives') is a way of managing risk, but it does not remove it altogether. It is rather the exchange of an unacceptable risk (*i.e.*, that the aircraft end up costing significantly more than planned for) for an acceptable risk (*e.g.*, that other airlines might acquire aircraft more cheaply). It could also be seen as the payment of a premium to insure against the risk of a serious financial loss in the future.

10 *Financial Times*, 24 February 1986.

In a 1992 survey of 23 major international airlines,[11] it was found that 21 used natural foreign currency hedges (matching foreign currency revenues with expenses), while 17 airlines hedged with forward contracts. Eight airlines used options for hedging, with only two of those trading in options. Only seven airlines borrowed in currencies with operating revenue surpluses, the majority either borrowing in local currencies or borrowing in US$ to finance US$ assets.

9.5 Fuel Price Exposure

9.5.1 The Need and Means to Hedge Fuel

Airlines use three approaches in dealing with fuel prices. First, they try to increase the fuel efficiency of their operations. Second, they try to pass cost increase on to their customers as price increases or surcharges. And third, they hedge fuel costs using physical or derivative markets.

Increasing fuel efficiency in the short-term relies on changing operating procedures (*e.g.*, cruise speed) or tankering policies.[12] Most of these are already exhausted, and there are limits to how much can be achieved, given safety requirements. Replacing existing aircraft with more fuel efficient ones can take place gradually. This has the same effect as a permanent policy of hedging fuel, as it reduces profit volatility from fuel price changes.

Airlines have passed fuel increases on to customers on the cargo side of the business for many years. Lufthansa and others published an index of fuel prices, the trigger points, and the resulting surcharge amounts. FedEx does not hedge fuel at all since it can rely largely on these surcharges.

On the passenger side, surcharges were rarer, but recently most of the major EU and Asian airlines have done this with some success. On the other hand, US airlines operating within the US seldom make such increases stick (ATA, 2004).[13] Low cost airlines there now account for near one-third of capacity, and the competitive situation is more intense than in other parts of the world.

It is also the norm in many other industries to pass on increases in input prices in the short term, while investing in more fuel-efficient systems in the longer term. Table 9.6 shows that many European airlines differentiated their surcharges between short and long-haul trips. Interestingly, KLM's approach was very different from that of their new owner, Air France. In Asia, there was a larger variation in surcharge

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11 KPMG/IATA (1992), *Accounting Policies, Disclosure and Financial Trends in the International Airline Industry*, KPMG, August. p. 24

12 Modern jet aircraft minimum cost speeds can be slightly higher than minimum fuel burn speeds, because labour, maintenance, and ownership costs accrue with time. However, the differences are small. Tankering fuel from low-cost to higher-cost airports costs fuel burn, and can be reduced when costs are high everywhere. Again, tankering involves a small fraction of most airline operations.

13 Air Transport Association of America (2004), *ATA's Response in Unisys*, R2A *Scorecard*, 2, No. 11, September p. 5.

amounts, while only one US airline had introduced surcharges on international flights by August 2004.

Airlines are exposed to unexpected movements in fuel prices in the same way as they are for the price of foreign currencies. This is not strictly a financial risk, since fuel is a commodity, similar to others used by airlines such food or maintenance materials. The difference is the amount of fuel they require, and the fact that they use the same type of refined crude oil product, jet A1 kerosene, throughout the world for their jet and turbo-prop operations. The fact that it is a commodity means that airlines can avail themselves of similar derivative contracts that they do in the foreign exchange markets, and it is for this reason that it has been included here.

Table 9.6 Fuel surcharges announced by major airlines in 2004

		US$ or equivalent*	
Airline	Date	Short/medium haul	Long haul
Europe:			
Air France	August 2004	3.66	14.64
British Airways	August 2004	4.55	10.92
BMI	August 2004	4.55	10.92
KLM	August 2004	4.88	4.88
Lufthansa	August 2004	2.44	8.54
North America:			
United Airlines	June 2004	*n/a*	5%
Asia/Pacific:			
Air China	2004	7.00	7.00
Air New Zealand	May 2004	3.93–9.83	13.11
All Nippon	May 2004	5%	5%
Cathay Pacific	August 2004	*n/a*	13.85–18.97
China Eastern	2004	7.00	7.00
China Southern	2004	7.00	7.00
Dragonair	August 2004	5.38–6.92	*n/a*
Qantas	August 2004	7.11	15.64
Singapore	August 2004	4–7	12
Virgin Blue	August 2004	7.11	*n/a*

* converted at average exchange rates in August 2004

Airlines buy fuel at the major airports around the world from the major multinational fuel companies or their subsidiaries.[14] These companies are responsible for fuel storage and its delivery to the aircraft on the apron at the airport.

14 Very occasionally, airlines have jointly purchased and stored their own fuel at certain airports to assure supply at a reasonable price.

For short/medium haul flights, airlines do not always need to pick up fuel at the destination airport, and at smaller airports it is sometimes not available. However, if the fuel is cheaper at the destination, they may top up their tanks, and engage in tankering fuel to reduce fuel costs.

The contracts with the major oil companies all include a clause which allows them to adjust price in line with world market price movements. They also add a handling charge to recover their costs of storage, tankering or hydrant installations, and sometimes an airport concession fee. Thus, if world markets increase sharply, as they did in 1999/2000 and again in 2005/2006, then airlines experience marked upward pressures on costs, with little time lag after significant crude oil price increases.

To hedge the risk of these strong upward pressures on fuel costs, which can easily result in an operating profit becoming a loss, airlines have a number of derivatives which they can buy, involving one of the following. Fuel price risk can be managed in a three ways: forward contracts, futures contracts, and derivatives such as options, collars, and swaps

Forward contracts are 'over the counter' agreements between two parties whereby one purchases a fixed amount of fuel from the other at a fixed price at some future date. Airline fuel suppliers such as Air BP enter into such agreements, but their tailor-made nature is not a convenient instrument for third parties or speculators. Parties also have full counter-party risk − that is risk that the airline or the supplier goes bankrupt before the deal is closed.

Futures contracts are better suited to both hedging and trading, since they are usually set up through exchanges that set standard contracts and protect against counter-party risk. One party to the contract agrees to deliver to another a standardised quantity of oil at an agreed price (the 'strike' price) on an agreed date in the future. These are conventionally reversed on the due date, so no physical delivery takes place. In fact, according to NYMEX, less than 1 per cent of trades result in the delivery of the underlying commodity, in this case crude oil and related products.

The main exchanges offering oil futures contracts are the International Petroleum Exchange (IPE) in London and NYMEX in New York. The former's futures are in Brent crude oil, one contract being for 1,000 barrels. The quality of the oil is assured, and contracts can be fixed for each month up to two years ahead, and then half-yearly to three years out. The liquidity for contracts beyond one year forward declines significantly and there is a Clearing House that guarantees the financial performance of contracts with the help of margin requirements.

Derivatives consist of an option or a right to buy (or sell) a given amount of fuel at a specific date at a stated 'strike' price. Strike prices are available spaced both above and below current futures prices. The cost of an option is based on the underlying futures, and if exercised (there no obligation to do so) will result in a corresponding futures position. A call option (right to purchase) offers flexibility over a future, because it gives the holder the possibility to protect against a price rise, while at the same time giving the opportunity to participate in a decline. Options (and swaps) can also be taken out with other parties (*e.g.*, approved counter-parties such as banks) in aviation fuel, in addition to crude oil. Jet fuel is rarely traded on any exchanges and thus must be 'over the counter'. These involve counter-party risk

for both sides, and thus financially weak airlines find it hard to find others willing to take this risk.[15] Options are available in both Brent gas oil and crude at IPE.

More recently, airlines have moved toward using combinations of a call and a put option called a 'collar'. The call protects the holder from price increases above a strike price above the current future, at a cost of the option premium that must be paid at the outset. The holder of this call also sells a put option that limits the advantage it can take of price reductions below another strike price, below the current future. The total cost of taking the two options is the call option premium paid less the put option premium received. This is popular with airlines since it locks in the price that will be paid for fuel between two known values. A collar limits the speculative risk to a small range of price moves.

Swaps are tailor-made futures contracts whereby an airline locks in payments at future dates based on current fuel or oil price. These could be arranged with a supplier such as Air BP. The airline would buy a swap for a period of, say, one year at a certain strike price for a specified amount of jet fuel per month. The actual prices for each month is then compared with the swap price, and if the price is higher the counter-party would pay the airline the price difference times the amount of fuel. However, if the prices were lower, then the airline would pay the difference. They lock in a given price, as with forward contracts.

In summary, aviation fuel itself can only be hedged through over-the-counter arrangements with the additional counter-party risk. Hedging oil on exchanges such as NYMEX or SIMEX (that regulate standardised contracts) eliminates counter-party risk. These markets also are more liquid, and allow an airline to sell before due date. For longer periods into the future only crude oil instruments have good liquidity. Jet fuel contracts only have liquidity for shorter periods.

Hedging using jet kerosene clearly fully reflects price movements in the commodity that the airline actually needs to operate its aircraft.[16]Apart from a little-traded Japanese market, there are no exchange-traded futures available in aviation fuel, although over-the-counter contracts can be arranged.

The most liquid market available for the most closely related product is crude oil, with contracts available in both Brent and US WTI crude. No markets exist for OPEC produced oil products, although the market prices for these track very closely the above two supplies.

Aviation fuel prices have in the past tracked crude prices fairly closely, apart from period of very steep increases in crude prices, for example at the beginning of the 1970s, 1980s and 2000s.[17] Thus, crude oil derivatives are seen by some as a good proxy for fuel price movements. On the other hand, it is at times of instability when crude is a less good hedge that airlines need hedging most.

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15 Jet Fuel Intelligence (2005), New Asian Carriers View Hedging as two-Edged Sword, *Energy Intelligence*, XV, No. 6, February.

16 Leaving aside the aviation gasoline that airlines operating small piston-engined aircraft require.

17 At these times, a sharp increase in the demand for jet aviation fuel by the military tends to increase its price relative to crude.

9.5.2 Airline Fuel Hedging Practice

Most major passenger airlines in the US, Europe, and Asia now hedge at least part of their future fuel needs. State-owned airlines hedge when they are allowed to, and they have a uniquely valid reason for doing so. Most newer carriers do not hedge at first, because they are using their credit to finance high growth rates. The oldest low-cost carrier, Southwest, has excellent credit and does hedge, although Southwest also has ties to the Texas oil industry and local relationships may have influenced this decision. A survey of treasurers from 25 of the world's largest airlines in 1991 revealed that 13 engaged in fuel futures transactions, managing exposures six months to two years years into the future (KPMG/IATA, 1992).[18]

Three of the eight largest US majors were not hedged for 2004, and one (American Airlines) was only hedged for six months of that year.

Table 9.7 Percentage of 2004 fuel needs hedged at 31 December 2003: US majors

	% hedged	Av. US cents/gallon	Value $ million	Product	Instruments
Southwest	82	*n/a*	251	Crude and heating oil	Options, collars and swaps
Delta	32	76.46	97	Crude and heating oil	
US Airways	30	*n/a*	38	Crude and heating oil	Swaps and collars
American*	12	*n/a*	54	Jet fuel and crude	Swaps and options
America West	11	*n/a*	21	*n/a*	Collars
Continental	0				
Northwest	0				
United	0				

* Approximate average for whole year; 21 per cent hedged for first quarter

Source: Airline 10K reports for 2003

All the major European network airlines had hedged a significant part of their 2005/2006 fuel needs at the date of publication of their 2004 annual report. British Airways were somewhat under-covered, but subsequently increased their hedging activity (Table 9.8).

Less information was available from the annual reports of Asian airlines. However, in general, less hedging seems to have been undertaken by the still predominately state owned airlines. Both Thai Airways and Malaysian reported an upper limit of 50

18 KPMG/IATA (1992) *Accounting Policies, Disclosure and Financial Trends in the International Airline Industry*, KPMG, August.

per cent on the volume of expected fuel uplift that could be hedged, with All Nippon also reporting an unspecified limit.

State-owned Air India gained permission to hedge in 2003. Since the state is not a portfolio investor, reducing profit swings may be more justified for such owners.

Table 9.8 FY2004/2005 fuel needs hedged at YE2003/2004: Largest non-US carriers

	% hedged*	Av. cents/ gallon*	Value** $m	Products	Instruments
British Airways (2003/2004)	41	68.1	53	*n/a*	Collars and swaps
KLM (2003/2004)	80	*n/a*	*n/a*		*n/a*
Air France (2003/2004)	78	*n/a*	*n/a*		*n/a*
Iberia (2003)	54	55–62	*n/a*	Jet NWE	Swaps and options
Lufthansa (2003)	72	72.6*	72	Crude/ heating oil	*n/a*
Air New Zealand (2003/2004)	47	bands	84	WTI crude and jet	Options and collars
Cathay Pacific (2003)	25	*n/a*	*n/a*	*n/a*	Various
Singapore Airlines (2003/2004)	*n/a*	*n/a*	59		Options and swaps
Thai Airways (2003/2004)	12				Various
Emirates (2003/2004)	19	*n/a*	*n/a*	*n/a*	Options and futures

* average price locked into to hedge contracts (for Lufthansa on only 35 per cent of annual needs); ** market value of fuel hedge derivatives at financial year end

Source: Airline annual reports and websites.

Korean Airlines reported a gain of Won 282 million from a forward fuel contract in FY2003, reducing their average fuel price paid by 34 per cent. Qantas offset 73 per cent of their 2003/2004 increased fuel price paid through various unspecified hedging activities. Singapore Airlines were able to offset almost all the price element of their 2002/2003 increase in fuel costs by hedging, and in the following financial year a S$135 million fuel cost increase from higher prices was made S$1 million worse by hedging losses.

The major Chinese airlines (*e.g.*, China Southern, China Eastern and Air China) were (as of end 2004) obliged to purchase their domestic fuel needs from the state

oil company at Chinese (PRC) spot prices. They were not permitted to hedge fuel (or foreign exchange) price risks.

As discussed above, futures are used by some airlines, but the growing forms of fuel price hedging are options, swaps and collars, with collars seen as being less speculative. Crude and heating oil contracts are more widely used than jet kerosene, since they can be traded on an exchange. Airlines rarely cover more than 18 months to two years into the future, with most treasurers looking to cover a part of their requirements over the next budget or financial year.

Many airlines are finding it increasingly difficult and expensive to access credit for fuel hedging purposes. To alleviate this problem and to reduce the costs associated with risk premiums, IATA is working with leading banks worldwide to use the IATA Clearing House for the settlement of hedging transactions.

Chapter 10

Aircraft Leasing

A lease is a contract whereby the owner of an asset (the lessor) grants to another party (the lessee) the exclusive right to the use of the asset for an agreed period, in return for the periodic payment of rent. Leases may be for houses, offices, telephones, cars trucks or computers. In this chapter, the focus will be on aircraft, although there is no difference in principle with the arrangements for aircraft and any other asset.

Leasing should not be confused with hire purchase, which also features periodic payments from the user to the owner of the asset. The key difference between the two is that hire purchase agreements are essentially a deferred payment mechanism for the user eventually to own the asset. This could be over a five-year period for a fax or photocopy machine. Since the intention is to own the asset after a few years, the tax benefits of ownership can be used by the asset operator from the outset. It is this ownership feature that distinguishes hire purchase from leasing.

An aircraft lease is a contract between a lessor and a lessee such that the lessee:

- Selects the aircraft specifications.
- Makes specified payments to the lessor for an obligatory period.
- Is granted exclusive use of the aircraft for that period.
- Does not own the aircraft at any time during the lease term.

The lessor could be a bank or specialist leasing company, or it could be a company set up by high tax-paying investors seeking capital allowances to offset against their income, thereby reducing their tax payments. The lessee will normally be an airline.

The airline may or may not have an option to acquire the leased aircraft, or share in the proceeds from the sale of the aircraft at the end of the lease term. Certain characteristics of a lease follow from these broad definitions:

- The lessor cannot terminate the lease provided the lessee meets the conditions specified.
- The lessor is not responsible for the suitability of the aircraft to the lessee's business.
- The lease may be extended at the end of the obligatory period for a further period.

The advantages of leasing to the airline are:

- Volume discounts for aircraft purchase can be passed on to airline (particularly attractive to smaller airlines).
- The conservation of an airline's working capital and credit capacity.
- The provision of up to 100 per cent of finance, with no deposits or pre-payments (up to 33 per cent of the cost of the aircraft paid in advance to

manufacturers, or 15 per cent of the cost required by banks to be paid by the airline as a condition of loan finance).
- Shifting the obsolescence risk of aircraft to lessor (shorter term leases).
- No aircraft trading experience needed.
- The possibility of excluding lease finance from the balance sheet (see Appendix 2.2 at the end of Chapter 2 for more on this).

Possible disadvantages could be:

- A higher cost than, say, debt finance for purchase.
- The profit from eventual sale of the aircraft going to the lessor (as title holder).
- Higher gearing than, say, purchase with equity finance.
- Aircraft specification not tailor-made for lessee airline (short-term leases).

Leasing is clearly advantageous to manufacturers and lessors, since it increases opportunities for business. The documentation for leasing is usually simpler than debt or equity financing. The greatest disadvantage is the risk that insufficient care will be taken of the equipment.

The fastest growth in leasing was during the 1980s, especially the second half. In 1980, the share of commercial jets owned or managed by operating lessors was around 4 per cent, climbing to almost 18 per cent in 1990, and to 28 per cent by 2004.[1] The number of airlines either leasing all or some of their fleet rose from 59 per cent in 1986 to 85 per cent in 1999, and those with an all leased fleet from 46 airlines (15 per cent) in 1986 to 278 airlines (40 per cent) in 1999 (Figure 10.1).

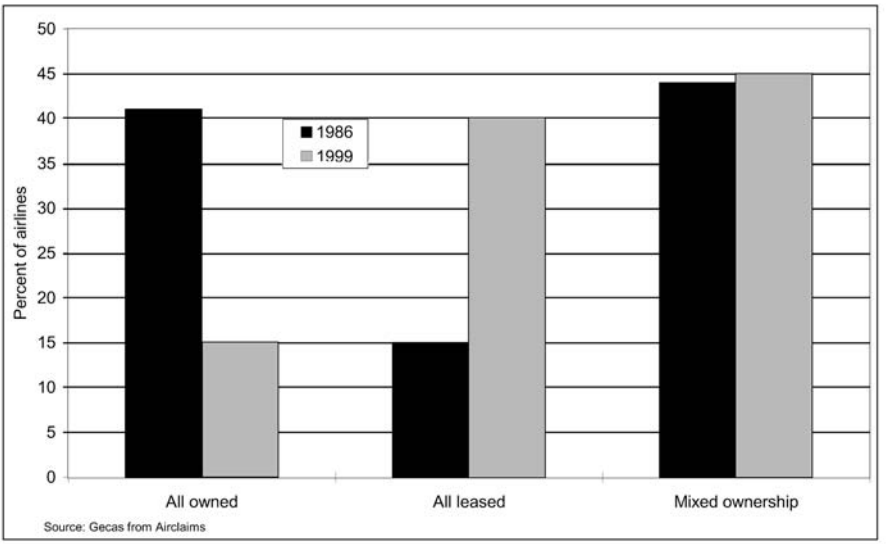

Figure 10.1 Number of airlines owning and leasing aircraft

Source: GECAS, from Airclaims

1 Ashcroft, Robert (2005) *A Powerful Force in Commercial Aviation*, UBS Investment Research Q-Series.

Table 10.1 gives the share of the total fleet acquired through finance or operating leases for some of the largest world airlines. Data were not available for some of the larger Asian airlines, and others did not break down finance leased aircraft. Operating leases accounted for 35.3 per cent of the fleet for all regions combined, with a slightly higher share for the North American airlines. Finance leases have been popular in the US, but the European airlines find this an attractive form of finance, especially BA (mainly through Japanese Leveraged Leases) and Iberia.

Of the LCCs included in Table 10.1, easyJet and Air Asia both make considerable use of operating leases, and to a lesser extent JetBlue in the US. Of the network carriers, Iberia also has a high share of its fleet on operating lease, as does Continental in the US and Air New Zealand in the Asia/Pacific region.

Table 10.1 Leased aircraft shares by region for selected airlines

	Total	% finance lease	% operating lease
AMR (end 12/2005)	1,001	9.4	24.0
Delta (end 12/2005)	649	6.6	31.3
Continental (end 12/2005)	630	0.5	76.5
Northwest (end 12/2005)	580	1.0	43.3
United (end 12/2005)	460	12.4	37.6
Southwest (end 12/2005)	445	2.0	18.9
JetBlue (end 12/2005)	92	0.0	33.7
Total/average US	3,857	5.5	38.0
Lufthansa (end 12/2005)	432	5.1	16.4
Air France-KLM (end 3/2006)	397	16.9	36.8
British Airways (end 3/2006)	284	0.0	27.1
Alitalia (end 12/2005)	175	6.9	24.0
Iberia (end 12/2005)	149	9.4	59.7
EasyJet (end 9/2005)	109	0.0	83.5
Ryanair (end 3/2005)	87	0.0	14.9
Total/average Europe	1,633	12.2	32.4
Qantas (end 6/2005)	200	*n/a*	26.0
Air China (end 6/2004)	136	36.8	16.9
SIA Group (end 3/2006)	118	4.2	21.2
Cathay Pacific (end 12/2005)	96	56.3	13.5
Air New Zealand (end 6/2005)	89	*n/a*	49.4
Air Asia (end 2005)	26	0.0	84.6
Total/average Asia/Pacific	665	*n/a*	26.9

Source: Airline annual reports

10.1 Finance Lease

Finance leases accounted for around 30 per cent of newer jet aircraft financing in 1997 for the world, and around one-half of financing for North American airlines, but has declined significantly since then due to the withdrawal of Japanese Leveraged

Leases and the decline of US tax leases. A finance lease can be for between 10 and 26 years but more likely for a period of at least 10−12 years. It is non-cancellable, or cancellable only with a major penalty. The lessor expects to gain a normal profit on the asset from one airline through a combination of rentals, tax benefits and conservative residual value assumptions, without being involved in, or necessarily having an understanding of, the lessee's business. The lessee is likely to have a purchase option at the end of the lease term, at fair market value, for a percentage of the cost, or for a nominal (very low) price.

The normal risks and benefits of ownership are the responsibility of the lessee, although they are not the legal owner of the aircraft at any time during the lease period (title may or may not be eventually transferred to the lessee). Because the lease period is for the major part of the aircraft's life, finance leases are often called *full pay-out* leases. It follows that the lessee is responsible for repairs, maintenance and insurance of the aircraft, and that the risk of obsolescence lies with the lessee. The lessor does not consider the residual value of the aircraft at the end of the lease period important, and does not need to be technically knowledgeable about the aircraft or airline business.

The lessor may demand that the lessee pay a specified number of rentals on the first day of the lease payment, with a corresponding rental holiday at the end of the lease term.

10.1.1 Japanese Leveraged Leases

A leveraged lease is one where the aircraft is acquired using a large amount of debt finance and a small amount of equity finance. Equity is normally between 20 and 40 per cent of the total value of the aircraft, resulting in high gearing and thus high risk and potential reward for the equity investors. Equity investors are prepared to accept this risk, often because they are able to capture significant tax benefits from having title to the asset.

One form of leveraged lease is the Japanese Leveraged Lease (JLL). This involves the establishment of a special purpose company to acquire the aircraft, with between 20 per cent and 30 per cent of the finance coming from equity provided by Japanese investors, and the remainder from a bank or group of banks. The equity share must exceed 20 per cent to satisfy the Japanese tax authorities.[2] The aircraft is acquired by an airline, immediately sold to the special purpose company, and leased back under normal finance lease terms for 10 years (narrow bodied aircraft) or 12 years (wide bodies). This approach permits the airline to claim tax allowances from the tax authorities in its own country, and the Japanese investors also to claim full tax allowances on the same asset. This is known as 'double dipping'. It clearly gives substantial benefits to both lessee and lessor, and results in the airline having a very attractive cost of finance. The discounted present value of the allowances could amount to between 6−11 per cent of the cost of the aircraft.

2 One group of Japanese investors, who have in the past supplied such equity, has been Petinko (Pinball) game operators, having few capital investments which can be used to reduce their taxable profits.

Four other conditions must be fulfilled: the aircraft must be new, the rental payments must not vary over the lease term, the lease must not exceed 120 per cent of the depreciation life, and the final payment from the lessee must not be greater than 45 per cent of the original value of the aircraft.

In 1990, approximately US$9 billion, or about 20 per cent of the value of all aircraft deliveries, was financed by JLLs. By 1992, this had halved to around $4.5 billion.[3] In 1994, $4.9 billion was arranged, followed by $3.7 billion in 1995. The largest equity providers and arrangers in 1995/1996 were Orix Aviation (15.7 per cent of the total), NBB (10.8 per cent) and Fuji (10.3 per cent).[4] The leading JLL borrowers in 1995/1996 were All Nippon Airways ($652 million), BA ($411 million) and United ($403 million).

The attractiveness of this form of financing can be seen in the cost of borrowing: the margin over LIBOR has ranged from a low of just under 30 basis points (0.3 per cent) for British Airways in 1995 to 120 basis points for China Southern in 1993.[5] To put this in perspective, the inter-bank rates for lending between major international banks are around 22−23 basis points over LIBOR.

However, JLLs were not available to any airline. Japanese equity investors prefer well-known airlines, preferably those with government guarantees or high credit ratings such as British Airways, KLM or Lufthansa.

Unfortunately, at the end of the 1990s, JLLs were withdrawn, and an attractive source of finance that was made considerable use of by airlines such as BA disappeared. Japanese Operating Leases were then offered with similar, albeit not so large, advantages, but these did not fill the gap left by JLLs. JLLs were originally encouraged as a way of exporting the foreign currency generated by Japan's large trade surpluses; these surpluses have recently disappeared, and so there was less need to encourage these and other ways of capital exports.

10.1.2 US Leveraged Leases

Financial leases at favourable rates have also been available in other countries, such as the US and in recent years Germany. US based leveraged leases provide the maximum benefits for deals relating to aircraft based and registered in that country. However, foreign airlines had been able to make use of the US Foreign Sales Corporation (FSC) provisions, which were designed to foster exports of US manufactured aircraft. Tax exemptions were available on foreign generated lease income for FSCs, as long as the aircraft has at least a 50 per cent US content, and at least 50 per cent of the flight miles operated by the aircraft are outside the USA. FSCs were, however, quite costly in terms of documentation and administration, and only high value aircraft, such as JAL's B747-400s, could support these costs. Lease terms ranged between 10 and 20 years, with typical terms for aircraft leased to non-US airlines of between 12 and 15 years. FSC's were subsequently outlawed, following EU country claims to the World Trade Organization that they provided

3 *Airfinance Journal* (1994), No. 160, p. 22.

4 *Airfinance Journal* (1996), *Where on Earth Is the Slump?*, May.

5 *Airfinance Journal* (1994), No. 160, pp. 26−27.

unfair subsidies. However, they were soon replaced by a similar cross-border lease structure, the Extra Territorial Income (ETI).

Before the development of FSCs, US leases required a lessee to be placed between the US lessor and the non-US lessee. This was necessary to avoid the provisions of the 1984 Pickle Bill (named after its sponsor, a Texas congressman named Pickle), which disallowed investment tax credits for property leased to non-US taxpayers. These leases were called 'Pickle leases', but were not economically very attractive.

10.1.3 European Leveraged Leases

The German aircraft lease market increased rapidly over the three years to 1996 to reach more than $1.5 billion. These leases have been similar in structure to JLLs, and their growth has been dependent on the high marginal tax rates that also apply in Japan. Air France, Cathay Pacific and Lufthansa were the three leading lessees in 1995/1996, and a high percentage of leases involved Airbus aircraft (65 per cent).[6] Of the other European aircraft finance lease markets, the next largest was the UK with only around $0.5 million of aircraft financed a year.

10.1.4 Extendible Operating Leases

Finance leases, with walk-away options at various break-points, appear to be more like operating leases (*see below*), but the intention of both lessor and lessee is generally to pay off the full cost of the aircraft. An example of this was British Airways' extendible operating leases on their Boeing 767s, where the airline could walk away at no cost after 5, 7, 9, 11, and 13-year breakpoints. Manufacturer's guarantees were used to underwrite the aircraft values at each breakpoint.

A slightly different example was United Airlines' lease of 29 A320-200 aircraft from Airbus. These are on 22- to 24-year operating leases, which are cancellable on 11 months' notice during the initial 10 years of the lease period. As operating leases, these are not placed on United's balance sheet. United also benefits from the early termination option in the assessment of the airline by the ratings agencies (*e.g.*, S&P and Moody).

10.2 Operating Lease

Although the dividing line between finance and operating leases has recently become more blurred, but the key features of an operating lease are:

- It allows airlines to respond rapidly to changes in market conditions.
- It is of shorter term, usually between one and seven years, or an average of five years, and can be returned to the lessor at relatively short notice and without major penalty.
- The lessee cannot choose the aircraft specification (except for good customer first user of aircraft).

6 *Airfinance Journal*, (May 1996), pp. 31−32.

- An airline gains the use of an aircraft without the obligation to pay off its full cost.
- The lessor expects to profit from either selling or re-leasing the aircraft.
- The lessee is usually responsible for the maintenance of the aircraft but often has to pay to the lessor a maintenance reserve.

The aircraft's residual value is important to the lessor, and is a key factor in determining the lease rentals that can be offered. The cost of re-marketing or placing the aircraft with another lessor also needs to be considered in rate negotiations, given that aircraft may be placed with at least three different operators over their lifetime. Operating lease rentals vary quite significantly over the economic cycle, with lessors often accepting a short-term drop in monthly rentals to avoid re-marketing or even parking aircraft.

Operating leases may have a purchase option for the lessee to buy the aircraft at the end of the lease term, sometimes at a fair market value and sometimes at a stated price. There will almost definitely be an option for the lessee to extend the lease for a further two to four period.

The lessor assumes the risks of aircraft obsolescence and needs to know the aircraft and airline business (and ensure that maintenance and overhaul is carried out to high standards). There are specialist asset management firms that take care of the technical management of operating leases for the aircraft owners. They can also deal with the commercial side of the business (rent collection, contracts, *etc.*) as well as re-marketing, repossession, placing and sales. Examples of such firms are Airstream International, ALM, Fortis, Babcock and Brown and Pembroke Capital. The last two jointly manage the ALPs securitisation portfolio of aircraft described in the next chapter.[7] With the increasing trend towards the separation of ownership and operation of aircraft, firms like these have an assured future. The lease rental in the example in Table 10.2 was largely fixed. An alternative might assume an initial monthly rental of $300,000 based on the six-month US dollar LIBOR of, say, 6 per cent. This rental would be adjusted up or down every six months, depending on LIBOR on the revision date.

The return condition of the aircraft is very important to an operating lessor, since they will wish to place it with another operator with the minimum of delay. For example, if an aircraft had been delivered to an airline fresh from its 'C' check (an intermediate maintenance check on an airframe that is required every 3,500−4,500 hours of operation), the lessee would be expected to return it in a similar condition at the end of the lease term. A fund, or maintenance reserve, is usually established for the major overhauls (or 'D' checks), which the lessee will contribute to, and out of which any such work that needs to be performed will be paid. For better risk airlines, this would be dealt with at the end of the lease term.

7 *Aircraft Economics*, No. 28, November/December 1996.

Table 10.2 Typical operating lease terms

Aircraft type:	2 used Airbus A320-200 aircraft, each with IAE V2500-A1 engines
Delivery date:	April 1996
Lease term:	Three years from delivery date
Lease rental:	Payable monthly in advance to a bank account nominated by the Lessor, in accordance with the following schedule: Months 1−9 — US$300,000; fixed Months 10−12 — US$1,000 per block hour Months 13−24 — US$350,000; fixed Months 25−36 — US$400,000; fixed
Security deposit:	US$900,000 per aircraft
Maintenance reserves:	On the 10th day of each month, the Lessee shall pay a Maintenance reserve in respect of the hours operated during the previous month. *Airframe*: US$125.00 per block hour *Engines*: US$150.00 per engine, per block hour *APU*: US$30.00 per block hour *Landing gear*: US$10.00 per block hour
Delivery condition:	On delivery, the aircraft shall conform to the following conditions: *Configuration*: 180Y Galleys: G1 and G5 *Toilets*: LA, LE and LD *Engines*: Approx. 6,500 hours and 3,250 cycles *Airframe*: Approx. 6,500 hours and 3,250 cycles *IFE*: Lessor shall install at its own expense a Sony Transcom IFE system. Lessee shall pay lessor additional monthly rental equivalent to 1.5 per cent of the total installed cost of such system.

The lessee will have to comply with any airworthiness directives and service bulletins that are issued by the regulatory authorities or manufacturers. These will usually require a hangar inspection and sometimes modification of airframe or components. Since such work adds value to the aircraft, the cost is often shared between the two parties, sometimes once a certain threshold has been reached.

Other contract conditions required by the lessor will be a security deposit, which will depend on the creditworthiness of the lessee, and could amount to 1−2 months' worth of rentals. If the lease terms are complied with, then this money will be returned in full. Interest on the deposit (and the maintenance reserve) is subject to negotiation, and may be applied as part of the rental payment. Approval would be required for sub-leasing the aircraft, and the use and installation of other equipment

on the aircraft.[8] The terms of the aircraft hull insurance would also be reviewed by the lessor

Operating lessors have usually signed contracts for most of the aircraft that they will take delivery of over the next two years, but after that the orders are more speculative. For example, in March 2000, ILFC had contracts for the lease of all of its 67 aircraft to be delivered in 2001, 62 out of the 66 aircraft arriving in 2002, 25 out of the 68 aircraft expected in 2003, 5 out of 67 in 2004, and four out of the remaining 220 deliveries.[9]

Many airlines in Russia and the CIS countries have had to rely on operating leases to obtain western aircraft, due to the problems with export credits and debt finance. Few of these countries have the aircraft registers, legal and accounting systems which satisfy western lenders. Even operating leases run into problems: ILFC leased a B757-200 to Baikal Airlines in June 1994 for a five-year term, but the aircraft was returned to the lessor in summer 1996 because of the government's insistence that $16 million were paid in backdated import tax.[10]

Start-up airlines in both the US and Europe also tend to take aircraft on operating lease: the Colorado based airline, Western Pacific Airlines, obtained its first 12 B737-300s on five- to ten-year operating lease, while the UK start-up Debonair leased their seven BAe 146s from US Air Leasing for a short initial 16-month period, with power by the hour maintenance on airframe and engines.[11] More recently, both easyJet and Air Asia both expanded rapidly using operating leases.

10.3 Japanese Operating Lease (JOL)

Japanese Operating Leases (JOL) effective took over from the Japanese Leveraged Leases (JLL) that were discontinued at the end of the 1990s (see 10.1 above). The starting point for both is the demand from Japanese investors for tax benefits from capital investments, the aircraft providing a convenient vehicle. The first crucial difference between the two is that the aircraft is placed with the airline on an operating and not a finance lease, with a maximum term of 10 years for narrow bodied and 12 years for wide bodied aircraft. The second that stems from the first is that tax benefits are only available in Japan and not to the aircraft operator (apart from the rentals). However, the Japanese investors obtain generous tax write-offs such that an attractive lease rental is possible (although not as attractive as for the JLL). JOLs took off in 2001, and were running at around US$2–3 billion a year for the next five years, with a range of operators benefiting from them (both network carriers and smaller LCCs).

As with the JLLs, it seemed possible by the end of 2005 that the Japanese permissive treatment of JOLs might be terminated, as occurred with JLLs in 1999.

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8 Margo, R. (1996) Aircraft leasing: the airline's objectives, *Air and Space Law*, Vol. XXI, No. 4/5.

9 International Lease Finance Corporation, SEC, *Form 10-K filing for fiscal year ended December 31, 2000*.

10 *Airfinance Journal*, November (1996).

11 *Airfinance Journal*, November (1996).

10.4 Wet Lease

A wet lease is the leasing of an aircraft complete with cockpit and cabin crew, and other technical support. The lessor is usually responsible for maintenance and hull insurance. This type of lease is generally for a very short period, say for operations over a number of months or summer season. Haj pilgrimage flights are often operated on this basis. The aircraft retains the paint scheme and logo of the lessor, although a temporary sticker can be used to show the lessee's name on the fuselage. A wet lease is often described as an ACMI lease (*i.e.*, an aircraft, crew, maintenance and insurance lease), although in this case the aircraft is generally considered to be an integral part of the lessee's fleet.

Quite often the lessor will provide only the aircraft and some of the operational support services. For example, the lessee may wish to use their own cabin crew because of language requirements. This can be described as a 'damp lease,' the name given to a lease that falls between a dry lease and a wet lease.

A wet lease has many similarities with the chartering of an aircraft, the key difference being the fact that the lessee would have the necessary operating licenses and permits, and operate flights with the wet leased aircraft under its own flight designator.[12] A chartered aircraft would operate under the designator of the owner/operator or the aircraft.

Since 1990 a number of wet leasing specialists have established themselves, notably Atlas Air (which spent six months in Chapter 11 in 2004 following the post 9/11 downturn) and Gemini in the US and Air Atlanta Icelandic. These generally operate freighter aircraft and try to negotiate two- to three-year contracts, although two to 12 months is the norm, possibly because of opposition from regulatory authorities to longer wet lease contracts with foreign registered aircraft.[13] The longer term contract is likely to include painting the aircraft in the lessee's livery (*e.g.*, Atlas Air's lease to British Airways World Cargo), and the agreement is based on a price per block hour operated with a minimum number of hours charged.[14]

10.5 Sale and Leaseback

Sales and leaseback occurs when airlines which own aircraft often decide to realise the capital value of the aircraft, but at the same time continue to operate them. This may be because they have cash flow problems, but it may also be for the following reasons:

- To meet capital requirements for new aircraft or investments.
- To realise the current value of an aircraft that is likely to be retired in a few years' time, especially when the market price of the aircraft will probably decline significantly over that period.

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12 This is important for the lessor, since the owner of the flight code (lessee) is invoiced for charges such as airport and en-route.

13 The UK CAA required Atlas Air to lease their B747 freighter aircraft to BA through a majority UK owned company, Global Supply Systems.

14 Endres, G. (2006) Surrogate supply, *Airline Business*, July.

The typical duration for such deals is three to five years. The other party involved (the lessor) is likely to be a bank, which will structure the lease to gain tax benefits. The risk to the bank is relatively low, first because the term is short and second because the lessee will probably be a good credit risk airline, perhaps one that is already well known to the bank.

In 1990, British Airways sold 20 B737-200s at what in retrospect was a very advantageous price ($6–7 million more per aircraft than the market value six years later) and leased them back. Ten of the same aircraft type were sold and leased back for six years by Varig, and 11 by Canadian International for five and a half years.

Appendix 10.1 Lease Rental Calculations

The formula for calculating lease rentals varies according to whether the payment is in advance or arrears, although the structure is similar to the one for term loans:

$$\text{Periodic rental payment} = PV \div a$$

where: PV = the present value, or equipment cost
a = the rental factor, which for payments in *arrears* is:

$$\frac{1-(1+i)^{-n}}{i}$$

And for *payments in advance*:

$$a = \frac{1-(1+i)^{-(n-x)}}{i} + x$$

where: x = number of rentals payable in advance
n = number of payments in lease term
i = interest rate per period

Assuming the Equipment Cost (PV) is $10 million

Lease term = 10 years, or n = 120

Lease or interest rate = 12.5 per cent, or i = 12.5 ÷ (12 × 100)

The rental factor (a) for payment in arrears is:

$$\frac{1-(1+0.010417)^{-120}}{0.010417} = 68.317$$

Thus, the Monthly Rental Amount = $10,000,000 ÷ $68.317 = $146,376

Using the formula for payments in advance ($x = 1$) gives a monthly rental of $144,867.

Appendix 10.2 Lease *vs* Buy Decision

Major considerations in the choice of financing for the acquisition of an aircraft are the cost, taxation issues, and flexibility. If the purchase option is selected, then a term loan is generally the instrument used by the majority of airlines outside the US. The Eurobond market can be cheaper than a term loan, but is only available to household names of high credit rating. US public bond markets are accessed by US carriers, with high risk, low credit rating airlines issuing high interest bonds to investors (also called *junk* bonds).

For term loans, in addition to the interest charges, the airline must also pay the bank for the preparation of the loan documents and commitment fees. Underwriting fees are also payable for bond issues.

Equity finance may be considered, either to expand the capital base of an airline in line with increased turnover, or when other avenues are not available, for example when the level of gearing is already too high to obtain loan finance at reasonable cost. Equity finance may be raised through a private transaction, *i.e.*, when a 100 per cent government owner subscribes more capital. This may be less expensive than a public offer of shares which may subsequently be quoted on a stock market.

Leasing, whether for short or longer periods is becoming increasingly popular, not always where an airline has no other sources of finance available.

Whether an airline leases or purchases outright an aircraft an evaluation will be made of the expected return from the investment, from projections of revenues and costs. If the results are positive, then alternative methods of finance will be considered by calculating the net present value of the financing costs for each option:

- Calculate the NPV of the lease alternative.
- Calculate the NPV of the buy alternative.
- Choose the alternative with the lowest NPV cost.

Simplified example:

Aircraft cost:	US$10,000,000
Acquisition date:	31 December 2000
Remaining asset life:	5 years
Lease terms:	US$ 2.8 million *per annum* in arrears
Airline bank borrowing rate:	13 per cent *per annum*
Airline financial year end:	31 December
Airline Pays no Corporation Tax	
'Buy alternative' financing:	100 per cent from retained earnings

From the table below it can be seen that the airline would be marginally better off by leasing than buying. The actual calculation would be much more complex, and would include taxation issues, purchase progress payments, commitment fees, residual values, *etc.*

Date	Rentals (US$)	Discount factor	PV (US$)
31/12/2001	2,800,000	0.885	2,478,000
31/12/2002	2,800,000	0.783	2,192,400
31/12/2003	2,800,000	0.693	1,940,400
31/13/2004	2,800,000	0.613	1,716,400
31/12/2005	2,800,000	0.543	1,520,400
Aggregate present value of rentals			9,847,600
Aircraft purchase price			− 10,000,000
Difference			152,400

Tax paying lessee

An evaluation for a tax paying lessee must take into account the delay between the payment of interest or rental and the cash benefit of tax relief. The following formula derives an acceptable approximation (for small values of *n*) for the after tax discount rate from the pre-tax rate:

$$R_2 = R_1 - \frac{R_1 * T}{(1+R1*T)^n}$$

where: R_1 = Lessee's pre-tax borrowing rate (13 per cent)

R_2 = Lessee's after tax rate

T = Rate of corporation tax (35 per cent)

n = Delay of tax payment in years

Assuming the average tax delay is 18 months from the mid-point of the year, R_2 is calculated from the above formula to be 8.74 per cent. The tax credit has been determined by assuming that the asset could be written off over four years, with the airline paying corporation tax at 35 per cent. The discount factor in the NPV calculation is shown on the opposite page.

Thus, the difference in the present values of the buy and lease alternative in the table below show the former to be more costly by $289,265. With accelerated tax allowances, purchasing the aircraft would become the cheaper option.

These examples have shown how increasing complexity can be introduced into the evaluation. On the purchase side, advance payments to manufacturers would also need to be introduced, as well as alternative financing options (see Appendix 5.1 for term loan calculations). This would require a breakdown of the annual periods into quarters or even months, and the use of computerised spreadsheets.

Date	Rental or cost ($)	Tax credit (@ 35 per cent)	Total net benefits ($)	Discount factor	Present value of net benefits ($)
Purchase:					
31/12/2000	− 10,000,000	—	− 10,000,000	1	− 10,000,000
31/12/2001	—	875,000	875,000	0.92	805,000
31/12/2002	—	875,000	875,000	0.846	740,250
31/12/2003	—	875,000	875,000	0.778	680,750
31/12/2004	—	875,000	875,000	0.715	625,625
				NPV =	− 7,148,375
Lease:					
31/12/2000	—		—		—
31/12/2001	− 2,800,000	—	− 2,800,000	0.92	− 2,576,000
31/12/2002	− 2,800,000	980,000	− 1,820,000	0.846	− 1,539,720
31/12/2003	− 2,800,000	980,000	− 1,820,000	0.778	− 1,415,960
31/12/2004	− 2,800,000	980,000	− 1,820,000	0.715	− 1,301,300
31/12/2005	− 2,800,000	980,000	− 1,820,000	0.658	− 1,197,560
31/12/2006	—	980,000	980,000	0.605	592,900
				NPV =	− 7,437,640

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Chapter 11

Aircraft Securitisation

Securitisation, which started in the US in the mid-1970s, is the conversion of identifiable and predictable cash flows into securities. The advantages of this to lenders are:

- Risk is spread over a number of lenders.
- Risk may be spread over a number of world regions.
- Greater size reduces costs of administration.
- The loan or asset is removed from the balance sheet.

For the borrower, the cost of finance would be significantly lower than would otherwise be the case.

Securitisation involves the re-packaging of cash flows or receivables into securities which are then sold to investors. This is often done in different tranches, each tranche having different rights and risks attached. Higher credit ratings, and thus lower borrowing costs, can be achieved than would be possible for the separate parties involved in each lease or mortgage. Ratings are given to each of the securities by agencies such as Standard & Poor's or Moody, thereby making them more saleable to institutions. The cash flows could be short-term, for example with the sale of accounts receivables from travel agents, or on credit cards. They could be medium-term, with the sale of five- to ten-year aircraft operating lease or vehicle loan receivables. Or they could be long-term, with the sale of home mortgage receivables of loan principal and interest.

In the case of house mortgages, the loan portfolio is sold to a third party company by the bank that originally provided the finance. This bank would continue to earn fees from the management of the portfolio, and the loans would be removed from the balance sheet to allow it to expand its business.

There has, however, been some debate about whether securitised assets should be removed from the balance sheet, even though substantially all of the risks and rewards of owning the assets has been transferred (sold) to another company. A London law firm, Freshfields, described securitisation as:

> The packaging of assets, backed by appropriate credit enhancement and liquidity support, into a tradable form through an issue of highly rated securities, which are secured on the assets and serviced from the cash flows which they yield.[1]

1 Verchère, I. (1994) *The Air Transport Industry in Crisis*, EIU, p. 119.

Aircraft finance ranges from the traditional structures which rely on airline credit to those which rely on aircraft value. As one goes from left to right along the spectrum shown in Figure 11.1, the financing is less related to the airline's corporate credit rating and more to the aircraft asset risk. On the far right, the securitisations are not linked at all to an airline's credit rating.[2]

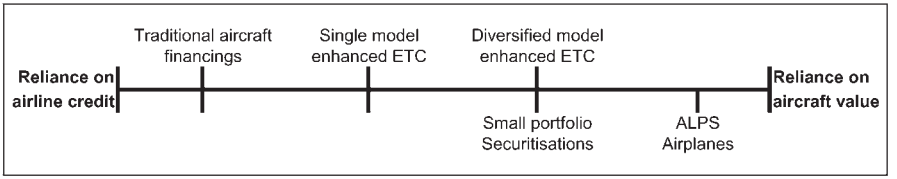

Figure 11.1 Aircraft financing spectrum

Source: Standard and Poor's

The remainder of this chapter will describe the securitisation of aircraft and similar financing structures, which has important implications for the long-term financing of the industry. They also provided one of the means for Guinness Peat Aviation (GPA) to recover from near bankruptcy (see 5.3.3).

11.1 Equipment Trust Certificates

The Equipment Trust Certificate (ETC) is often described as a securitisation. However, the ETC is created more for tax reasons than for the spreading of risk and lowering borrowing costs. It would typically include only one or two aircraft.

A trustee issues equipment trust certificates to investors, and uses the funds raised to buy the aircraft, which is then leased to the airline which ordered it. It is, however, a form of secured debt financing, and not a true lease since the aircraft is ultimately owned by the airline. It would provide protection from airline bankruptcy in the same way as securitisation, but so would secured debt finance.

The certificates can generally be sold to institutions at a slightly higher rating than that of the airline. They often have the added attraction of being tradable.

A modified version of the, ETC is the Enhanced Equipment Trust Certificate (EETC), which looks more like the aircraft securitisations described below, and is further to the right in terms of relying more on asset risk in Figure 11.1. Rather than selling one type of certificate or bond, the EETC divides these into different categories, each of which has a different risk/reward profile in terms of security and access to lease rental cash flows. A structure of this type will give the senior (lower risk) certificates a much higher credit rating than under the, ETC. But the essential difference of aircraft ownership between EETC and securitisation still remains, the latter spreading the risk over more than one airline.

2 Standard & Poor's, (2001), *Aircraft Securitization Criteria*, www.standardandpoors.com/ratings, pp. 3–4.

The EETC was developed in the US in the 1990s as a means for non-investment grade airlines to source funds using investment grade ratings, with the added advantage of giving more protection to the owner of the aircraft in the event of Chapter 11 bankruptcy.

An example of an EETC was the refinancing of 13 A320s operated by Northwest Airlines, and originally financed by Airbus. This involved the sale by a trustee of $352m of notes of four classes, with the highest class rated A by Standard & Poor's. The notes are secured by the 13 aircraft, which are leased back from the trust/partnership by Northwest.[3]

More recently, American Airlines refinanced its acquisition of TWA with a $1.3 billion EETC. This offered five classes of securities or notes, with the A class rated AAA and A2 by S&P and Moody respectively. The initial loan to value ratio for the top class was 41 per cent, giving a large cushion in case the underlying aircraft needed to be sold in a weak market. The lowest class, the D notes, were rated BBB/Baa2, and had a loan to value ratio of 66.5 per cent. Maturities of the notes ranged from seven to 20 years, and the coupons (interest rates) ranged from 142 basis points (1.42 per cent) over prime rate to 270 basis points. The collateral was 32 MD-11s, 10 B737-800s and four B777s, all belonging to TWA.[4]

Outside the US, EETCs are still rare, with only Qantas and Iberia using them by the middle of 2001, the latter denominated in euros. Iberia later issued Iberbond, 2004, a complex deal that combined an EETC structure with Japanese Operating Leases. It was secured against 20 A319/A320/A321 aircraft valued at US$933 million, and the debt was denominated in a mixture of US dollars and Euros.

11.2 ALPS 92-1 Securitisation

The first international securitisation of aircraft was offered by Guinness Peat Aviation (GPA) in mid-1992, with the help of Citicorp Investment Bank and Lehman Brothers International. A total of 14 aircraft valued at US$380 million were leased to the the various airlines at the time of launch of ALPS 92-1, with their share of aircraft appraisal value indicated in brackets as seen in Table 11.1.[5]

The North and Central America regional share of aircraft value was 28.5 per cent, the European share 42.2 per cent and the Asian share 29.4 per cent. All except Malev and China Southern are now majority owned by private interests, although BWIA, Air Jamaica and Philippine Airlines were government controlled at the time of the issue.

The portfolio of aircraft consisted of six B737s (various series), one B757, one B767ER, one B747, 2 MD-82/83, one A300, one A320 and one Fokker 100. This gave a spread of manufacturers and sizes, but not of range capability (only two long-haul aircraft).

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3 *Transport Finance* (13 January 1995).

4 *Airfinance Journal* (June 2001), 18.

5 Radley, A.B. (1994), *Future Strategies in Aircraft Leasing*, MSc Thesis, Cranfield University, September.

The assets were sold to a Jersey-based special purpose company, which was financed by equity and $380 million worth of bonds (the senior debt portion of which was rated AA by Standard and Poor) to be repaid from the cash flows generated from the lease payments, plus the proceeds of any subsequent sales of aircraft in the portfolio. Equity investors would get 10−12 per cent semi-annual dividends, plus a share in any residual value of the aircraft at maturity. Investors in the company were various European financial institutions, principally banks (39 per cent), fund managers (32 per cent) and insurance companies (16 per cent).

Table 11.1 ALPS 92-1 aircraft portfolio

North America:	Canadian (7.4%)
Caribbean:	Air Jamaica (6.0%), BWIA (5.4%)
Latin America:	TAESA (9.7%)
Europe:	Sun Express (5.5%), Malev (5.6%), Istanbul Airlines (5.%), British Midland (5.7%), Spanair (15.0%, Portugalia (4.6%)
Asia:	Asiana (5.6%), China Southern (5.0%), Philippine Airlines (13.4%), Korean Air (5.4%)

Table 11.2 ALPS 92-1 bond amounts and interest rates

	Amount $ million	Interest Rate
Subclass *A*-1 Certificates	208.4	7.75% fixed
Subclass *A*-2 Certificates	104.2	6 million LIBOR + 0.8%
Subclass *A*-3 Certificates	70.4	3 million LIBOR + 0.7%
Class M Certificates	34.0	6 million LIBOR + 6.1%
Class B Certificates	104.0	12.00%
Total	521.0	

Source: ALPS 92-1 Offering Circular

GPA was appointed to provide administrative and management services to the company for a fee of 0.15 per cent of the initial purchase price of the aircraft. They would also provide support in the form of re-marketing and re-leasing the aircraft.

11.3 ALPS 94-1 Securitisation

GPA's second aircraft securitisation in 1994 packaged 18 aircraft valued at US$980 million. Aircraft included in the portfolio had a low average age, and the success of the sale was helped by the upturn in aircraft values and lease rates, although some concern was expressed by potential investors that any forced sale of a number of aircraft at the next downturn might result in low values and losses.

The special purpose company was given more flexibility than under the terms of ALPS 92-1 in selling aircraft to pay down the debt. Aircraft were also required to be sold, once their lease term had expired. If any lessee defaulted, then a new lease and aircraft should be substituted in the portfolio from a designated back-up pool of aircraft.

11.4 Airplanes 96 Securitisation

The main purpose of the Airplanes securitisation in early 1996 was to further downsize GPA and remove just over $4 billion in debt off its balance sheet. The number of aircraft remaining under GPA ownership was reduced by 229 aircraft to 129 (down from its high of 380 in 1993). This left GPA with around $1 billion in debt, secured on individual aircraft in their fleet.

This securitisation dwarfed previous ones in sheer size. The portfolio of 229 aircraft were placed with 83 lessees. The $4 billion in bonds were successfully placed on the market by emphasising the growing attraction of operating leases to both large and small airlines, the spread of risk across regions (see Table 11.3), and the involvement of GE in the management of the leases. Investors would also be totally insulated from any further problems that might be faced by GPA. Morgan Stanley was the bank responsible for selling the bonds, in return for which they earned $20 million in fees (or 0.5 per cent of the total value).

Table 11.3 Airplanes securitisation − Aircraft numbers and values

Lessee region	Number of aircraft	% of total value
Africa	3	0.7
Asia	24	15.0
Australia	4	0.3
Europe	66	34.4
North America	44	17.3
Latin America	75	28.4
Other	4	1.1
Off-lease	9	2.8
Total	229	100.0

Source: Airfinance Journal, July/August 1996

One concern of potential investors in the bonds was the numbers of aircraft involved and the possible affect on aircraft prices, at for example the bottom of the next recession, if even 10 per cent of the total portfolio were offered for sale as a result of a lessee bankruptcy. This was addressed by a greater emphasis of the cash flows from the lease rentals as opposed to the security from aircraft residual values.

As with previous securitisations, efforts were made to give a spread of both regions of operation and of aircraft types. As with ALPS 92-1, the senior bonds were rated AA by Standard & Poor's, ensuring their acceptance by institutional investors.

Table 11.4 Airplanes securitisation − Bond amounts and interest rates

	Initial amount (US $ million)	Interest Rate
Subclass *A*-1 Certificates	850	LIBOR +0.25%
Subclass *A*-2 Certificates	750	LIBOR +0.32%
Subclass *A*-3 Certificates	500	LIBOR +0.47%
Subclass *A*-4 Certificates	200	LIBOR +0.62%
Subclass *A*-5 Certificates	598	LIBOR +0.35%
Class B Certificates	375	LIBOR +1.1%
Class C Certificates	375	8.15%
Class D Certificates	400	10.88%
Total	4,048	

Source: *Airfinance Journal*, July/August 1996

11.5 ALPS 96-1 Securitisation

ALPS 96-1 was the refinancing of the original ALPS 92-1 securitisation which resulted in the withdrawal of GPA and GECAS. GPA was repaid its share of the class M bonds. Babcock and Brown took over as the managers of the portfolio from GPA.[6]

Only one of the original 14 aircraft was replaced:[7] the B737-300 originally leased to the Turkish carrier, Sun Express, was sold for US$25 million at a book loss of $1.6 million. This aircraft was replaced by a B767-300ER belonging to Whirlpool Financial Corporation, which had recently come off lease. Otherwise all the original lessees were unchanged with the exception of an MD 82 which was now leased to TWA (replacing Korean Air) and a B757-200 now with Transwede (replacing TAESA).

6 *Airfinance Journal*, (July/August 1996), pp. 20−21.

7 GPA did have problems with a number of other leases, for example in connection with eight DC9s to a Mexican carrier and a number of leases with the Brazilian airline, VASP, but these were not in the portfolio.

The new appraised value of the 14 aircraft was $455 million, compared to the $522 million value under ALPS 92-1. Aircraft like the Airbus A300B4 had seen their value fall from $31 million in 1992 to only $13 million in 1996. The B767-300ER leased to Spanair, however, only declined from $78 million in 1992 to $68 million in 1996.

11.6 More Recent Securitisations (2005/2006)

The first securitisation since 2003 was offered by AerCap (previously debisdebís Airfinance) in September 2005 for US$942 million. This was followed at the end of 2006 by Aviation Capital Group which securitised leases on 74 aircraft to finance its purchase of operating lessor, Boullioun. The ACG Trust III deal raised US$1.86 billion, by issuing a triple A rated *G*-1 tranche ($1.62 billion), an A-rated *B*-1 tranche ($117.5 million) and a tranche ($122.5 million) rated at BBB − (non investment grade). Most of the aircraft portfolio consisted of newer narrow bodied aircraft, with over 50 per cent B737-800s and A320-200s, and an overall average age of only 4.8 years.[8]

Aircastle, a fast growing operating lessor, securitised leases valued at US$560 million in June 2006, in addition to their IPO which raised $194 million to repay debt.

11.7 Conclusions

Securitisation has not been widely used since its establishment at the beginning of the 1990s. If were solely a device for GPA to avoid bankruptcy, then the next major economic downturn may see another impetus to its use. Its future will also clearly depend on future trends in operating leases: will they continue to increase in importance, particularly in areas like Asia, where they have not to date been so popular? This is part of the larger question of the separation of ownership and operation of assets. Next is the question of accounting practice, and whether securitised assets will be removed from balance sheets.

The advantages are persuasive, and centre on the reduced cost of borrowing for airlines: before the ALPS 92-192−1 securitisation, banks had lent GPA 75 per cent of the value of its leases at LIBOR plus 2 per cent. When the leases were securitised, the special purpose company could borrow 87 per cent of their value at LIBOR plus 1.4 per cent.[9]

Possible disadvantages of securitisation are a weakening of the relationship between the lessee and the lessor, as well as the additional workload imposed on the airline as a result of the increased number of parties involved. Second, it might be argued that the contracting out of the monitoring and technical administration tasks to specialist firms might prove to be less thorough than when they were performed by the operating lessors themselves.

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8 *Airfinance Journal*, February (2006).

9 *Financial Times*, Supplement on International Capital Markets, (10 June 1996).

EETCs, as an alternative form of securitisation not involving operating lessors, look likely to become popular outside the US, and if they took off in other parts of the world they could provide a replacement to JLLs and other taxed based financing.

Chapter 12

Airline Bankruptcy

The term 'bankruptcy' is often limited to personal insolvency, but has become widely used in relation to business failures. Insolvency is the inability of a company to meet its debts as they become due. Creditors may give the company more time to pay, but eventually they may force the company to liquidate what assets it can to meet its debts. This process of liquidation is normally also referred to as bankruptcy. It may be forced by outside creditors, or it may be a voluntary liquidation suggested by directors and agreed by shareholders. The company may cease trading or operating at this point, or it may continue trading while it is re-structured and measures introduced to return at least part of the company to profitability.

Airline bankruptcy, or the risk of bankruptcy, has become more likely with increasing airline privatisation. While government-owned airlines do not generally go bankrupt, even larger privately owned ones do, as was the case with Sabena once it had moved to the private sector. Terrorist and health scares add further instability to an industry that is in any case very cyclical. The airline industry is also characterised by high operational and financial gearing (see Chapter 3). This leads to severe cash shortfalls during periods of unanticipated, sometimes prolonged downturns.

Bankruptcy or the liquidation of an airline clearly involves laying off staff and the stranding of passengers who have completed only one leg of a multi-sector trip. Thus, many countries have legislation to try to re-organise the company, and to continue its operation while this process is undertaken.

It is important to note that most of an airline's assets will probably already be mortgaged or used for security for loans at the time it is close to bankruptcy. This will reduce the possibility of selling assets to raise cash to keep going. Pan American managed to defer bankruptcy by selling off assets such as its New York City tower block offices and route rights, but this was an exception.

The second point is that most of an airline's assets are aircraft, and the owners of these aircraft (lessors) or secured creditors probably prefer to keep those aircraft flying and earning some revenue, rather than to have to re-possess them and try to sell them in a very weak market (a 'fire' or 'distress sale').

The number of privately owned airlines that are susceptible to bankruptcy varies widely throughout the world, with the majority experienced in North America. Bankruptcy laws also differ by country. The next sections examine these by major world region, taking the most prominent airline failures as examples.

12.1 North America

The US Bankruptcy code is designed to avoid the adverse effects of liquidation by giving a company time to reorganise and some protection from creditors during this

period. Liquidation ('Chapter 7' of the code) would mean the grounding of aircraft, stranding passengers, cutting off air service to some cities and unemployment.

The code gives a company the chance to file for this protection, known as 'Chapter 11'. In doing so, it is often referred to as Debtor-in-Possession (DIP). When a firm gets to this point, it has generally (but not always) almost depleted its cash reserves, so that finance is needed to continue operations in Chapter 11. Loans are thus sought that are described as DIP financing, and which are accorded higher security than would be available outside Chapter 11. The arguments as to whether the availability of this finance prolongs the reorganisation period and leads to over-investment are summarised in Dahiya *et al.* (2003). They concluded that there was no evidence that this was the case.

The debtors are given more time to come up with a credible business plan than in many other countries. However, creditors need to approve this before the airline can emerge from Chapter 11. Such agreement to the plan discharges the debtor from all debts arising up to the effective date of the plan.

The US bankruptcy code gives companies in Chapter 11 relief from creditors, which includes the deferment of principal and interest payments on lending. This would normally cover payments to operating lessors and those extending certain types of lending secured on aircraft. However, the code's Section 1,110 forces the airline to put right any arrears in rental or related payments and continue paying them, or return the aircraft to the owners (after a grace period). The law was amended in 1994 to strengthen further the rights of these creditors and broaden the scope of transactions that qualify.

The Air Transport Association of America (ATA) has listed all US airlines that went bankrupt since deregulation in 1978. Before that time, bankruptcies were very rare, since the Civil Aeronautics Board tended to prevent this happening by arranging marriages between weak and stronger airlines.

Table 12.1 Key US airline Chapter 11 entry and exit

	Entered	Emerged	Months
Braniff (1)	May-82	Apr 84	23
Continental (1)	Sep-83	Sep-86	36
Eastern	Mar-89	Jan-91	22
Braniff (2)	Sep-89	Nov-89	2
Continental (2)	Dec-90	Apr-93	28
Pan American	Jan-91	Dec-91	11
Midway	Mar-91	Nov-91	8
America West	Jun-91	Aug-94	38
TWA	Feb-92	Nov-93	21
US Airways (1)	Aug 02	Mar 03	7
United	Dec 02	Feb 06	37
US Airways (2)	Sep 04	Sep 05	12

Source: *The evolution of the airline industry*, Morrison and Winston, Brookings, 1995 and Author

Up to the end of 2004, ATA listed 144 airlines that had filed for Chapter 11 (many of which later emerged), and only 14 for Chapter 7 liquidation. The only two sizeable airlines that filed for Chapter 7 (Eastern Airlines and Midway Airlines) had previous already filed for Chapter 11 but emerged. Pan Am had filed for Chapter 11 and not emerged. Most recently, US Airways went into Chapter 11 in August 2002, emerged in March 2003 only to return in September 2004.

The most popular month for declaring bankruptcy was January, followed by March, September and December. These were all winter months when airline cash flow is traditionally weaker. As expected, May, June and July had the fewest declarations since both creditors and airline managements tended to persuade each other that positive summer cash flows might prevent the eventual need for such a drastic step.

The first major US airline to file for Chapter 11 bankruptcy following deregulation was Braniff Airlines. They remained under Chapter 11 protection from May 1982 until acquired by the Hyatt Corporation in April 1984. The name was retained and the airline slimmed down and re-focused on the business market.

Continental Airlines was the next to go in September 1983, and did not emerge until three years later.

A number of studies have investigated the role of Chapter 11 in allowing those airlines with temporary relief from incurring some costs to unfairly lower their prices. Barla and Koo (1999) concluded that Chapter 11 airlines did lower their prices after declaring bankruptcy (by an average of 2.3 per cent). This was possible because of cost reductions of around 4 per cent. However, their rivals that had not yet filed for bankruptcy tended to lower prices by an average of 4.4 per cent. Much larger air fare reductions were clearly evident in markets where they competed with the failing carriers, with the intention of driving them permanently out of business.

Borenstein and Rose (1995) concluded in an earlier study that airlines approaching bankruptcy tend to reduce fares, but rivals' fares are largely unaffected and the price discount disappears after filing for Chapter 11.

Another study (Morrison and Winston, 1995) examined all the examples of Chapter 11 airlines (see table above) that entered bankruptcy between 1983 and 1994. They concluded that the effect of bankrupt carriers on the revenues of other carriers was small. They also found that seriously weakened airlines lose market through loss of image, fear of loss of frequent flyer miles and difficulties in negotiating deals with corporations and large travel agents. This allows the other carriers to raise prices. Whether the subsequent price response fitted the first or second model depended on how healthy the airline was when filing for Chapter 11.

Continental first filed in 1983 when it was not in too bad shape,[1] and the industry lost from having to respond to fare discounting by Continental. The converse was true when Eastern filed in March 1989 and Continental for the second time in 1990.

The same study showed that, of the three largest airlines, Delta had tended to gain revenue as a result of the bankruptcies, United lost the most and American lost less.

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1 It had apparently not defaulted on any loans and still had $60 million in cash (Gudmundsson, 1998).

What previous studies have not addressed is the extent to which a bankrupt airline's costs are lower that others, as a result of Chapter 11 protection. Any concessions obtained from labour stem either from a voluntary agreement (from fear of shut-down) or by invoking Section 1113c of the code to force cuts from entirely new contracts.[2] Section 1110 limits protection from interest and rental payments on many secured financings, leaving only some financing and capital charges. However, pension contributions are sometimes suspended, giving some cost advantage.

Other criticisms of Chapter 11 have focused on the large professional fees that are incurred.[3] For example, United Airlines' parent company has hired legal, aircraft, lease and management consultants to help with its reorganisation. A fee committee was established just to examine the detailed submissions for reimbursement of fees from advisers representing the various interests (*e.g.*, McKinsey, Babcock and Brown, Deloittes, PriceWaterhouse and KPMG). Its report to the court was over 500 pages long.

A report to the US President and Congress in 1993 proposed that the time limit on Chapter 11 carriers filing reorganisation plans be strictly enforced, and that time limits should also be placed on such airlines accepting or rejecting scarce airport gate leases. By 2004, nothing had changed in this respect, but another proposal on lessor rights has been addressed.[4] This might have gone some way towards meeting the criticism of Weiss and Wruck (1998), whose analysis of the Eastern Airlines bankruptcy concluded that the Chapter 11 process allowed Eastern's value to drop by over 50 per cent because of 'an over-protective court insulated Eastern from market forces and allowed value-destroying operations to continue long after it was clear that Eastern should have been shut down'.

US Airline Stabilization Board

The Air Transportation Safety and System Stabilization Act was introduced on 22 September 2001 to bring some stability to and restore confidence in the US airline industry following the terrorist attacks of 9/11. The Act established the Board to implement its programmes of compensation and loan guarantees. Its membership comprised representatives from the Department of Transportation, the Treasury and the General Accounting Office, as well as the non-partisan Alan Greenspan, the Federal Reserve Board chairman (later replaced by his nominee, Edward Gramlich).

Compensation was paid to air carriers that suffered losses as a direct result of 9/11, including increased insurance premiums. A total of just above US$4.6 billion was paid to 427 carriers. For example, United Airlines received $774 million, American Airlines $694 million and Southwest $283 million.

2 The bankruptcy code now makes it more difficult for airlines to terminate labour contracts, following the experience of Continental Airlines in the 1980s.

3 *Change, Challenge and Competition, a Report to the President and Congress by the National Commission to Ensure a Strong Competitive Airline Industry*, (August 1993).

4 *Ibid.*

The Act also gave the Board power to offer guarantees on loans of up to $10 billion. By the middle of 2004, applications had been received for $2.9 billion, with approvals for only $1.6 billion. Approvals were granted to US Airways ($900 million), America West ($379.6 million), ATA Airlines ($148.5 million), Frontier ($63 million), Aloha ($40.5 million) and World Airways ($27 million). Nine airlines had their requests turned down, by far the largest being the $1.1 billion from United Airlines.

The loan guarantees usually came with onerous covenants, including security on all unencumbered assets, satisfactory debt ratio, fixed charge coverage ratio and adequate liquidity. The Board also receives warrants entitling it to purchase common stock in the airline.

The US Airways loan guarantees allowed the carrier to obtain loans with a term of six years, and at a much lower rate of interest than it would otherwise have paid (close to that paid by large banks). There was an annual charge set initially at 4 per cent of the guaranteed amount ($900 million). The Board received 7.635 million warrants that gave it the option to purchase common stock at $7.42 per share (which would give it around 14 per cent of the voting shares).

As at the beginning of 2005, no warrants had been exercised, and so the US airlines were still free of government ownership.

Canada has a close equivalent to the US's Chapter 11: The Companies' Creditors Arrangement Act (CCAA). Air Canada filed for and received protection under CCAA on 1 April 2003. The court appointed Ernst and Young as 'Monitors' whose role was manage the process for the court. Air Canada had been struggling for some time, and had been faced with many of the pressures that US carriers faced, post 9/11, with the added constraints that it had agreed to upon the acquisition of CP Air in 2000.

Air Canada published a reorganisation plan in July 2004, and emerged from bankruptcy protection at the end of September 2004. The airline became a subsidiary of ACE Aviation Holdings. Deutsche Bank and other creditors had 88 per cent of the shares in this holding company, Cerberus Capital Management 9.2 per cent, and the balance for management. To comply with foreign ownership restrictions, some owners received a higher percentage of voting shares.

12.2 Latin America

At the end of 2004, there were six Latin American airlines close to bankruptcy: Aerolineas Argentinas, VASP and Varig in Brazil, Avianca and Intercontinental in Colombia, and Nuevo Continente in Peru. Avianca had been in US Chapter 11 since March 2003, but emerged after the court approved a restructuring plan that involved a Brazilian company investing US$63 million for a 75 per cent controlling interest. The Brazilian Government is unlikely to let Varig go under, but the fate of the other three is less assured.[5]

5 *Airline Business*, December (2004).

The Argentinian national carrier had filed for bankruptcy protection in mid-2001, and was later acquired by a Spanish consortium that included a Spanish tour company and Spanair. Its restructuring plan was approved in December 2002. By the end of 2004, it was expected to emerge from bankruptcy protection, with the Spanish owners planning to sell 45 per cent of the equity to the public through an IPO.

12.3 Europe

In Europe, a Chapter 11 equivalent does not exist. The closest to this is the UK's 'administration' where a court appoints an administrator to run the business, usually a firm of accountants. It thus differs significantly from Chapter 11 in the US where the existing management may stay in place. Assets may be sold, but the aim is to save at least part as a going concern.

An example of a UK airline going into administration was Air Europe, or its parent tour operator, International Leisure Group (ILG). This occurred in March 1991, after considerable effort had been expended in trying to get new investors. ILG's bankruptcy was precipitated by the bankruptcy in Switzerland of one of ILG's major shareholders (Omni Group), and Citigroup's (one of the major creditors') desire to repossess and sell the aircraft on which it had secured its lending. Once in 'administration' ILG's tour operator bond of £63 million was called in to repatriate holidaymakers stranded abroad, and at that stage continued operations were not possible. Because of this, it was suggested that there was an overwhelming case for Chapter 11 type of protection to enable a more rational outcome to be obtained.[6]

In Germany, many equity shareholders are the major commercial banks. These try to avoid bankruptcies of their associates or subsidiaries by appointing new management. This gives it a chance to survive, by rationalisation or selling poorly performing assets, with bankruptcy as the last resort.

An example of this was the demise of German charter carrier, Aero Lloyd in October 2003. Bayerischer Landesbank owned 66 per cent of the airline, and had been trying sell it to a strategic investor. Once it decided to stop funding the ailing carrier, an insolvency administrator was appointed by a German court. At that point the re-emergence of a much slimmed-down airline, operating only 12 aircraft with half the number of employees, was possible. However, in spite of some additional funding from the Bavarian bank, nothing came of this plan, and the airline was broken up.

In France, a company that stops paying creditors must declare bankruptcy, and a court appoints officials to help management (usually the existing team) draw up a rationalisation plan. This procedure is similar to Chapter 11, but has a time limit of 18 months for the process to be completed. If not, liquidation takes place.

One of the larger French airline bankruptcies was Air Liberté, which finally stopped operations for good in January 2003. It had filed for bankruptcy in June 2001, about a year after British Airways had sold the airline to Taitbout Antibes, and it had been combined with SAir Group owned Air Littoral and Air Outre-Mer

6 *Avmark Aviation Economist*, (March/April 1991), p. 9.

(AOM), to try to give it a better chance of survival. The then still solvent SAir had a 49.5 per cent stake in the new airline group, and had agreed to inject a further $175 million. easyJet had been interested in buying the airline and its slots at Paris Orly Airport, but was deterred by the level of the company's debts. It was finally kept going by a French Government loan.

SAir Group filed for protection from creditors in October 2001 after two of its largest lenders, UBS and Swiss Bank decided not to extend further loans to the group. By the beginning of December, all main airline leasing and operating companies were granted further protection to allow Crossair to take over a substantial part of Swissair's airline operations. This deal was made possible by financial support from the Swiss Government, which in turn had persuaded some of the largest Swiss corporations to lend to the new national carrier.

The collapse of SAir Group also caused the bankruptcy of the Belgian national carrier, Sabena, in which the Swiss airline had a 49 per cent, and effective control. This occurred at the beginning of November 2001, and resulted in the saving of only a small part of Sabena's operations. These were limited to regional and some intra-EU trunk routes that were sold to a new airline, SN Brussels that acquired Sabena's regional subsidiary, DAT.

Alitalia, a major state-owned EU carrier, has been close to bankruptcy on a number of occasions between 1997 and 2004. The Italian Government has continued to inject new capital into the airline to keep it going, while at the same time trying to prevent the EU competition authorities in Brussels from imposing restrictions on it.

In this respect, the European Commission decided to approve in 1995 the major capital injection of Lira 2,750 billion subject to 10 conditions. One of those was:

> Until 31 December 2000 Alitalia shall refrain from offering fares lower than those offered by its competitors for equivalent services supplied on the routes which it operates.
>
> (*OJ L322/44, Article 1, paragraph 7, European Commission, 25 November 1997*)

In approving a further tranche of state aid to Alitalia (Lira 500 billion), the Commission noted in June 1998 that two conditions imposed in the 1997 decision had not been met. One was the requirement that Alitalia did not engage in price leadership. The Commission did not see this as an obstacle to the further subsidy being paid, given the Italian Government promise that 'Alitalia had discontinued its promotional campaigns (involving low-price tickets) within the European Economic Area and reverted to the basic fare structure.'

However, the Italian authorities presented yet another restructuring plan for Alitalia to the Commission in October 2004. This was soon followed by a complaint from eight European airlines to the Commission on Alitalia's current plan to cut fares while expanding capacity.

The privately owned Italian airline, Volare, went bankrupt in December 2004, after the Italian Government had appointed an administrator to try to rescue the airline. A plan was submitted to the aviation authority, but lack of financing resulted in the withdrawal of their license.[7]

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7 *Aviation Strategy*, (November 2004).

12.4 Australasia

Most of the flag carriers in Asia are still majority owned by their national governments, and thus not likely to be allowed to go bankrupt. Some smaller, privately owned airlines have over the years gone into liquidation: a number of Thai airlines, notably Air Siam, and many small carriers in Indonesia have gone out of business over the years.

In Japan, equity holders and employees tend to have priority, and informal rescues rather than court-administered bankruptcies tend to be most common. All of the three new entrants have been bankrupt or close to it, but all have continued operating as a result of various rescue packages: Skymark received a large capital injection, Air Do was supported by All Nippon Airways and Skynet Asia went into a type of 'Chapter 11'.

Few Asian countries have the procedures for restructuring ailing airlines that North America and Europe do, and creditors tend to have limited rights. Creditors with liens over aircraft have a better chance of re-possession if their aircraft are operated internationally, rather than solely on domestic flights. Steps can more easily be taken to seize aircraft when parked at foreign airports, where legal enforcement of rights is easier.

The most prominent airline bankruptcy in Asia was that of Philippine Airlines (PAL), whose finances deteriorated fast after the 1997 Asian financial crisis. By mid-1998, PAL had debts of over US$2 billion, around half involving US and EU export credit agencies. The airline went into receivership following a pilots' strike in June 1998. A rehabilitation plan was only approved by the country's Securities Exchange Commission in May 1999. This involved a two-year management contract with Lufthansa Consulting, and the dilution of majority owner Lucio Tan's stake from 70 per cent to 54 per cent. Before this approval, the US Exim bank had threatened to re-possess the four B747-400s that were the security for its loans, because the plan did not have the required approval of more than two-thirds of creditors.

In Australia, the long-established airline, Ansett was placed in voluntary administration by its owners (Air New Zealand) on 12 September 2001 (one day after 9/11), and finally ceased operating in March 2002. Some regional subsidiary airlines continued to operate for a while, but assets were gradually sold off over that year (including their Sydney Airport terminal to the airport owners). The proceeds of the sale of assets went to the secured creditors. Creditors had previously voted against liquidation, give the state of the industry at that time. Any such 'fire-sales' would have been at very low prices.

Australia deregulated its domestic market in 1990, which was followed by the entry of Compass Airlines. After about one year's operation they failed to find new equity and a receiver was called in. Regional airline, Impulse, started trunk operations in 2000, but also went out of business in May 2001 after institutional investors withdrew support. Qantas then took over the airline.

The background to Ansett is interesting in that it explains one of the factors behind the bankruptcy of the New Zealand national carrier, which owned 100 per

cent of Ansett at the time of its demise. Air New Zealand had purchased 50 per cent of Ansett from TNT Corporation which jointly owned the Australian domestic carrier alongside News Ltd. Singapore Airlines later tried to buy the 50 per cent stake held by News Ltd, but Air New Zealand exercised its pre-emption right and took 100 per cent control. Singapore Airlines subsequently bought 25 per cent of Air New Zealand.

Following the bankruptcy of Ansett, Air New Zealand came under financial pressure, and trading in its shares was suspended on a number of occasions over the following two months. Its future was assured, however, when the New Zealand government injected NZ$885 million (about US$370 million) into the airline in new equity and convertible stock. This was carried out on 18 January 2002, giving the government 74 per cent of the ordinary stock and 82 per cent of the voting rights. Singapore Airlines' stake was reduced from 24.99 per cent on 31 August 2001 to 6.47 per cent in August 2003. The OECD's report on the New Zealand economy in 2002[8] urged the government to sell its shares in the national airline to focus funds on 'higher social priorities'. The government has announced its commitment to do this, but had not done so by August 2004.

12.5 Summary

Airlines that are close to liquidation do not often lack suitors to acquire part or all of its assets, or take control to implement a survival plan. This often occurs without the necessity to file for Chapter 11 or receivership. In the US, a Chapter 11 filing, or even a threat of this often acts as a catalyst to new agreements by employees and suppliers. Chapter 11 in North America favours existing management, and has been criticised for allowing airlines that have no hope of longer term survival to compete, possibly unfairly, with existing carriers, although there is scant evidence of this.

In Europe, 'administration' hands over the day-to-day management to an independent individual or firm that is appointed by the court. Their remit is to get the best deal for creditors and shareholders: this may be achieved by continued operation of the airline, but this is probably more difficult than in Chapter 11. The administrator is often faced by loss of confidence by one or more major secured creditor, in addition to loss of potential customers and continued cash flow crises. In some cases, the aviation authority withdraws the airline's operating license to prevent further market disruption.

All bankruptcies lead to the significant dilution of the interests of the existing equity holders. Usually, a sizeable part of the outside creditors will be banks and lessors with security over one or more aircraft. This may suggest a lower likelihood of reorganisation and continued operations. In fact, airline financial problems also tend to coincide with a very depressed market for used aircraft sales. This means that secured debtors would prefer that the aircraft is kept in service with the ailing airline and generating some revenue, rather than them incurring the risks and costs of re-possession and sale or re-lease.

8 *Economic Survey of New Zealand 2002*, OECD, May 2002.

Unsecured creditors will be suppliers of airport, ATC and fuel services, passengers and shippers with paid-for tickets and others. Airports often force settlement of outstanding debts by blocking an aircraft of the airline in question if it has landed at its airport. ATC authorities also have similar powers to prevent an aircraft from taking off until its debts have been paid. Other unsecured creditors are not so lucky, although they may be able to vote on a proposed re-organisation plan. With the growing popularity of frequent flyer membership, there may be millions of unsecured creditors who have earned miles but not yet redeemed them. It would be impossible to include all of these in any re-organisation process.

Chapter 13

Industry Financial Prospects

Just as the industry experiences cycles in past financial performance, so does the optimism of forecasters and commentators oscillate even more widely. This depends on where in the cycle the predictions are made. In the midst of the early 1980s downturn dire predictions were being made on the ability of the industry to finance expected growth. A similar prognosis was being offered in the early 1990s, but before the forecasters have decided to make downward adjustments in their demand forecasts, traffic had picked up and profitability had returned to the industry. IATA were then in a better position to issue dire warnings of impending constraints from the lack of airport and ATC capacity.[1] As Chapter 1 has shown signs started to appear in 2000 and 2001 that another industry downturn was beginning, although opinions varied as to the depth and length of the impending recession. The terrorist attacks of 9/11 converted the downturn into a major slump, the consequences of which were obviously very severe in the US, but also spread to other world regions. The recovery took place over the period 2002−2006, against a background of buoyant demand. By 2006, some regions had only just regained traffic levels experienced in the 1999/2000 peak, but by then airlines had to contend with an era of persistently high fuel prices.

This chapter will take as a starting point the latest forecasts of air traffic, revenues and costs, as well as investment (principally aircraft) needs. A forecasting horizon of 10 years is considered as long enough into the future to include any future downturn, even though some industry forecasts extend to 20 years or more.

13.1 World Airline Traffic and Financial Forecasts

Most of the recent longer term forecasts of world air traffic are assuming average growth rates of around 5 per cent a year, with significant regional variations. These tend to be based on simple econometric models which relate traffic growth to growth in world GDP. In this respect, they can only be as good as the GDP forecasts which are produced by firms such as Global Insight, Standard & Poor's, or international organisations like The World Bank. Some forecasting models also try to incorporate a fare or yield variable, given the price elastic nature of a large part of the market.

Short-term forecasts of up to five years years ahead are provided by IATA. These are generally built up from individual airline forecasts. Care needs to be taken in identifying whether the forecasts are measured in passenger-kms or in passengers (or include air cargo). The Avitas forecasts referred to in Table 13.1 are for air traffic, without specifying units of measurement. Generally, passenger-kms would

1 *Janes's Airport Review,* (1996), p. 9.

be expected to grow faster than passengers. There has been a gradual shift for both business and leisure travellers going further afield, and trip length has been increasing at between 0.5 and 1.0 per cent a year. This is evident in the differences between ICAO's two forecasts in Table 13.1.

Table 13.1 World air traffic and GDP forecasts

	Average annual growth rates (%)	
	Total passenger-kms	Real GDP
Airbus (2004–24)	5.3	*n/a*
Boeing (2005–25)	4.8	2.9
Rolls Royce (2004–24)	5.0	*n/a*
ICAO (2002–15)	4.4	2.5
ICAO (2002–15)*	3.5	2.5
Avitas (2004–24)	4.7	3.1

* in terms of passengers

Table 13.2 looks at the projections from the two major aircraft manufacturers in more detail. These are from forecasts published in 2005, and both are in passenger-kms for the more heavily travelled groups of routes. It can be seen that they are largely in agreement on the trans-Pacific, Europe-Asia and domestic China and USA, but Airbus are more bullish overall and especially for intra-European routes. Boeing is somewhat more optimistic on domestic USA, which has a high weight in the total world forecast. Some researchers examine domestic USA markets for signs of maturity. US traffic bounced back with 8 per cent growth domestically in 2004, slowing to 3 per cent growth the following year, and the two major manufacturers expect it to continue to grow at this rate, not much above the GDP forecast growth. Based on past trends, a rough and ready guide to air traffic growth is to assume twice the growth in GDP, with this multiplier declining to one as maturity is approached.

Table 13.2 Air traffic forecasts by region: Airbus *vs* Boeing

	Average annual growth rates (%), 2004/2005 to 2024/2025	
	Airbus	Boeing
Intra-Europe	5.0	3.4
Europe-North America	4.9	4.6
Asia-North America	6.3	6.0
Europe-Asia	5.9	5.4
Domestic USA	3.2	3.5*
Domestic China	8.7	8.8
World	5.3	4.8

* includes domestic Canada, and Canada–US

Both airports and Air Traffic Control organisations also produce long-term forecasts, some of which are published. For example, EUROCONTROL forecast IFR flights 20 years into the future, their December 2004 release giving a range of between 2.3 per cent and 3.4 per cent a year between 2004 and 2025.

Table 13.3 IATA short/medium-term forecasts

	Estimate 2005 *vs* 2004	% pa 2005 to 2009
North Atlantic	5.0	5.3
Trans-Pacific	7.4	5.8
Europe-Asia/Pacific	6.8	5.9
Europe-Middle East	8.4	6.6
Within Asia/Pacific	8.7	6.8
Within Europe	5.7	5.1
Total international	6.7	5.6Sec

The IATA forecasts in Table 13.3 were published in late 2005, and indicate strong traffic growth for all regions in 2005, especially within Asia/Pacific and between Europe and the Middle East. These two regions are also forecast to grow fastest over 2005−2009, the former due to the high growth in China and India and the latter fuelled by a number of start-up airlines based in the region.

13.2 World Airline Capital Expenditure Projections

An average of almost 90 per cent of capital expenditure by the world's airlines has historically gone towards aircraft. Future aircraft needs are derived from the above traffic forecasts by making further key assumptions on load factors, flight frequencies, aircraft utilisation, and aircraft retirements. The latter are hard to predict, given uncertainties in future fuel and maintenance costs, and whether aircraft will be modified to meet new noise and emission rules. For example, most or all aircraft such as B727-200s and B737-200s were phased out by 2002, the year in which these aircraft did not meet the noise standards without expensive hushkitting or re-engining. Assumptions on the future degree of hubbing and passenger transfers are also required, with point-to-point services recently boosting traffic in many world regions. Boeing see a relative decline in hubbing with more hub by-pass flights, while Airbus are more optimistic on hubs. The Boeing argument rests on passenger preference for non-stop flights and increasing hub congestion; the Airbus view is supported by the economics of hubs and concentration of population in Asia with few secondary airports.

Table 13.4 focuses on aircraft deliveries and retirements and reflects the differing philosophies of the major manufacturers. The retirement figures may vary insofar as they include or exclude aircraft that are in storage and never expected to return

to airline service. Boeing's view is of a higher rate of deliveries and also a greater number of retirements a year, the lower average price per delivery indicating higher turnover and demand of smaller capacity aircraft. Rolls-Royce is closer to the Boeing forecast and is probably more optimistic at the regional jet end of the spectrum.

Table 13.4 Commercial jet aircraft delivery/retirement forecasts

	Deliveries per year	Retirements per year	Investment per aircraft/year (million)
Rolls-Royce (2004–2024)	1,395	637	$69.1
Boeing (2005–2024)	1,285	467	$81.7
Airbus (2004–2024)	866	215	$109.6

Embraer forecasts jet deliveries for aircraft of seating capacity between 30 and 120 seats: they expect deliveries of these aircraft to average just under 400 a year between 2005 and 2025, at an average value of US$45 million per aircraft.

The volume of retirements started to increase again at the end of the 1990s, reaching over 300 aircraft in 1998, although some of these were to be converted into freighters. Both Rolls-Royce and Boeing expect retirements to increase in the future.

Deliveries of jet aircraft hit a low of 486 in 1995 and climbed back to 1,200 in 2001, with investment banks forecasting a continuation of this trend to 1,400 in 2003, before turning down again. The delivery forecasts in Table 13.4 obviously include two complete cycles, but there is still a marked difference in manufacturer predictions.

One of the key differences in the last downturn is the increased dependence of the manufacturers on the operating lessors. Thus, for the firm orders outstanding in the first quarter 2001, 38.8 per cent of Airbus's 1,016 aircraft backlog was accounted for by operating lessors (and 31 per cent at that time unplaced with airlines). For Boeing the position was slightly better with 30.6 per cent of its 1,084 aircraft backlog, with 22 per cent unplaced.[2]

13.3 World Airline Financial Requirement Forecasts

If the major aircraft manufacturer forecasts discussed above turn out to be accurate, there will be a need for between US$1.9 trillion (Airbus) and US$2.1 trillion (Boeing) to finance the cost of the aircraft over the next 20 years, both at 2004 prices. This amounts to around $100 billion a year, and looks large in comparison with 2004 cash generated by the world's airlines from internal sources of only $16 billion (see the beginning of Chapter 5). However, 2004 was not a good year for the airlines, with many North American airlines struggling to be cash positive.

2 *European Aviation Review* 3, J P Morgan Securities Ltd, Equity Research (12 June 2001).

Boeing give a detailed breakdown of forecast aircraft demand by region over the 20 years to 2024 (Table 13.5). This shows the continued dominance of North America, Europe and Asia, but with demand in Asia for larger more expensive aircraft.

Table 13.5 Boeing airplane demand by region (2004−2023)

Region of airline	Aircraft	Value US$ billion	Average value per aircraft ($m)
North America	8,799	585	66
Europe	6,695	527	79
Asia Pacific	7,163	769	107
Latin America	1,743	98	56
Middle East	869	115	132
Africa	425	34	80
Total/average	25,694	2,128	83

Source: Boeing Current Market Outlook, 2005

Included in Boeing's projection of 7,163 aircraft for the Asia/Pacific region is a demand for 2,612 aircraft from China, valued at $213 billion in 2,004 dollars. This gives an average of $82 million per aircraft, lower than the Asia/Pacific average due to the need to build up regional and feeder routes with smaller aircraft.

Airbus gives the top 10 end-user nations in their overall forecast of $1.9 trillion passenger and cargo aircraft demand over 2004−2023. The US is top with $412.7 billion worth of passenger aircraft, followed by China with $241.7 billion and the UK with $119.2 billion. Single aisle and small jets account for 40 per cent of total delivered value, 25 per cent for intermediate and long-range twins, large aircraft 22 per cent and small twin aisle and regional aircraft 13 per cent.[3]

Boeing's prediction in 1993 of a large decline in Japanese involvement in future aircraft financing now seems to have been somewhat of an overreaction to the early 1990s Japanese withdrawal. However, the withdrawal of the JLL in the late 1990s left a gap the Japanese Operating Lease (JOL) has not completely filled. JLL had financed up to $12 billion of aircraft a year, whereas the JOL so far only accounts for $2-3 billion a year (see Section 10.3). Equity issues have probably played a more important role than anticipated, as airlines have been privatised and free to raise this type of capital which their owners had been unable to provide in the past. New entrants have also raised equity, both in North America and in Europe, with an increasing number of venture capital firms looking for business. This might be an even greater source of funds in the future, following the collapse of the dot.com bubble, although continued regulatory and ownership restrictions limit the number of such possibilities.

3 Airbus (2005), *Global Market Forecast* 2004−2023.

Public debt has certainly been more important in aircraft financing in the US, principally through the EETCs. For the rest of the world, public debt has been channelled into aircraft finance via the operating lessors. The Boeing forecast was probably wrong on the negligible role of US banks, and certainly on the Japanese Banks.

Export credits still play a large part, in conjunction with bank lending, providing at least $10-15 billion in finance a year. In the longer term, there could well be the *exit* from the industry of some of the household name airlines, as financiers and investors become more selective, and variations in the cost of capital between good and bad risk airlines becomes greater. It will also be interesting to see whether foreign ownership restrictions will be removed, and international mergers and acquisitions allowed. The further growth of the operating lessor sector is also expected by some observers, although aircraft manufacturers view such a trend with some concern.

In the longer term, aircraft orders will adjust to a level that can attract the necessary finance at a price that allows a reasonable return to be made to aircraft owners. Such adjustment may be painful both to existing airlines and lessors that have over-ordered aircraft, but it will also mean many start-up airlines will not attract the necessary finance to satisfy licensing authorities.

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Glossary of Terms

Accelerated depreciation	A rate of depreciation higher than the normal rate, generally for tax purposes.
Accounting concepts	The basic assumptions underlying the preparation of accounts, including 'going concern', 'accruals', 'consistency' and 'prudence'.
Accounting policies	The specific accounting bases judged by the business to be most appropriate to its circumstances and therefore adopted in the preparation of its accounts, *e.g.*, of the various methods of accounting for depreciation, the policy adopted may be to depreciate plant over a five-year period.
Accounting records	The 'books' in which a business records the transactions it has entered into. For companies, minimum standards of accounting records are required by law.
Accrual	An expense or a proportion thereof not invoiced before the balance sheet date but included in the accounts − sometimes on an estimated basis.
Accruals concept	Income and expenses are recognised in the period in which they are earned or incurred, rather than the period in which they happen to be received or paid.
Advance corporation tax	The tax a company is required to pay (at the basic income tax) rate when it makes a distribution. The amount paid can be subsequently set off against the company's corporation tax liability for that year.
American Depositary Receipt (ADR) or Share (ADS)	Certificates issued by a US depository bank, representing foreign shares held by the bank, usually by a branch or correspondent in the country of issue. One ADS may represent a portion of a foreign share, one share or a bundle of shares of a foreign corporation. ADS are subject to the same currency, political, and economic risks as the underlying foreign share.

Amortisation	An estimate of the proportion of the cost of an intangible fixed asset which has been consumed. Also the reduction in loan outstandings in accordance with an agreed repayment schedule.
Asset	Any property or rights owned by the company that have a monetary value.
Asset-based financing	A form of financing in which the risk is related to the value of the equipment, rather than the company.
Associated company	*See* Related company.
Balance sheet	A statement describing the financial position of a business at a particular date.
Balloon payment	A payment which follows a series of lower periodic rentals paid over the term of the lease. Although normally paid at the end of the lease period, balloon payments may also occur during the lease term.
Bank settlement plan (BSP)	Agreement between airlines and travel agents, whereby all air ticket issue and settlements within a particular country are handled by a 'clearing bank'. Although BSPs are established through the IATA mechanism, they are not to be confused with the IATA clearing house for settling inter-airline accounts in different currencies.
Basis point	One basis point is one-hundredth of 1 per cent.
Bond	Documentary promise to repay long-term borrowed money with interest at a definite or determinable future date (usually issued by larger firms with a public listing).
Call option	An option to purchase an asset at a set price at a particular future date.
Cape Town Treaty	The Cape Town Convention on international interests in mobile equipment; signed in Cape Town in November 2001. This is an international registry for security rights in aircraft, aircraft engines and helicopters that will reduce the risks of lending for aircraft financiers, and thus reduce the cost of credit.

Capital allowance	An allowance against profits given for tax purposes in respect of expenditure on fixed assets during the period.
Capital assets	Assets acquired with the expectation that they will remain in service for a number of accounting periods.
Capital costs	Depreciation and interest on capital investment.
Capital employed	The aggregate amount of long-term funds invested in or lent to the business and used by it in carrying out its operations.
Capital lease	A lease which transfers substantially all the risks and benefits of ownership of the leased equipment to the lessee.
Capitalisation	The treatment of costs as assets to be included in the balance sheet rather than as expenses to be written off in the profit and loss account.
Cash flow	In company accounts, a statement of cash balances based on estimated cash inflows and outflows over a given period. In cost-benefit analysis or investment appraisal, the anticipated net benefit or cash stream for a project.
Cash Value Added (CVA)	An economic measure of profit which takes into account the economic cost of capital; provides a better measure of shareholder value than accounting profits.
Consistency concept	The requirements that once an accounting policy for a particular item in the accounts has been adopted the same policy should be used from one period to the next. Any change in policy must be fully disclosed.
Consolidation	Method of combining the accounts of a group of companies into one balance sheet and profit and loss account for the group as a whole.
Contingent liability	A liability dependent upon the outcome of a future event.
Costs of goods sold	Those costs (usually raw materials, labour and production overheads) directly attributed to goods that have been sold. The difference between sales and cost of goods sold gives a measure of gross profit.

Creditors	Amounts due to those who have supplied goods or services to the business.
Cross-border lease	A lease in which the lessor and lessee are in different countries or different legal systems.
Current asset	An asset which, if not already in cash form, is expected to be converted into cash within 12 months of the balance sheet date.
Current cost convention	A basis of accounting under which revenue is compared with the current (rather than the historic) cost of resources used up in earning it in and assets are stated in the balance sheet at their current value to the business (usually equivalent to net current replacement cost).
Current liability	An amount owed which will have to be paid within 12 months of the balance sheet date or money received in advance of carriage.
Current ratio	The comparison between current assets and current liabilities in a balance sheet, providing a measure of business liquidity.
Debentures	Long-term loans, usually secured on the company's assets.
Debt	A form of financing where the borrower pays interest at an agreed rate and is liable to repay the principal by an agreed date.
Debt/equity ratio	A measure of the financial structure of a firm which is used in assessment of financial risk.
Debtors	Amounts due from customers to whom goods or services have been sold but for which they have not yet paid.
Default	An event defined in a lease agreement, such as failure to pay rent or perform some obligation required under the terms of a lease.
Defeasance	A situation where the lessee borrows at one rate and deposits at a higher rate, with the deposit used to fulfil the rental obligations in the lease. Since the deposit is at a higher rate, the sum deposited is less than the total borrowed-financed amount and the lessee obtains an up-front cash benefit which can be used to increase the net present value benefit of the transaction.
Deferred asset/liability	An amount receivable or payable more than 12 months after the balance sheet date.

Deferred taxation	An estimate of a tax liability payable at some estimated future date, resulting from timing differences in the taxation and accounting treatment of certain items of income and expenditure.
Depreciation	An estimate of the proportion of the cost of a tangible fixed asset which has been consumed (whether through use, obsolescence or the passage of time) during the accounting period.
Discounted cash flow	Technique for assessing the present value of future income and payments (cash flow) which takes into account the time value of money.
Distribution	The amount distributed to shareholders out of the profits of the company, usually in the form of a cash dividend.
Dividend yield	The relationship between the amount of dividend per share and the market share price of listed companies.
Dole-Pickle bill	United States legislation by which cross-border leasing was effectively abolished for that country.
Double-dip lease	A lease that takes advantage of tax and funding incentives from two sources, usually situated in two different countries.
Double entry	A system of bookkeeping whereby the amount of each transaction the business enters into is recorded in two places according to the manner in which the transaction increases or decreases any one or more of the business's assets, liabilities, capital, revenue, or expenses.
Dry lease	The lease of an aircraft without the crew.
Earnings per share	The amount of profit (after tax, but before any extraordinary items) attributable to shareholders divided by the number of Ordinary shares in issue.
Economic Value Added	Return over and above a company's average cost of capital (WACC) multiplied by market adjusted capital employed (Equity Value Added considers only equity capital).

Enterprise Value (EV)	The market value of both the equity and quoted debt securities, plus any other debt (both long and short-term) less cash, deposits and short-term loans to others, plus the present value of operating lease contracts.
Equity	A form of financing which provides a share in the ownership of an entity and on which dividends are paid out of the profits earned by the entity concerned.
Equity participation	Where the lessor or one of the group of lessors participates in a leveraged lease. Equity participants hold trust certificates to provide evidence of their beneficial interest as owners under the owner trust.
Exceptional item	Income or expenditure that, although arising from the ordinary course of business, is of such unusual size or incidence that it needs to be disclosed separately.
Expense	A cost incurred, or a proportion of a cost, the benefit of which is wholly used up in the earning of the revenue for a particular accounting period.
Export credit	A long-term sales financing with a non-payment guarantee and (optionally) interest rate support from the government of the manufacturer's country.
Extraordinary item	Any significant amount of income or expenditure arising from events outside the ordinary activities of the business and which, because of its unusual nature, needs to be separately disclosed.
Finance lease	A lease where ownership and the associated benefits and risks, are transferred to the lessee at the end of the lease period. Rentals are net to the lessor. Taxes, insurance, maintenance are the responsibility of the lessor. Rentals over the life of the lease are sufficient to cover the cost of the equipment plus a return on investment.
First loss deficiency guarantee	A guarantee given by the manufacturer on the continued value of the product.
Fixed asset	Assets held for use by the business rather than for sale.

Fixed cost	A cost that does not necessarily vary with changes in the scale of operations, *e.g.*, rent.
Forward contract	An agreement between two parties to exchange a certain underlying asset for a specified price, called the forward or exercise price, at a specified future date.
Futures contract	Similar to a forward contract, but can be traded on an exchange, which regulates the market in terms of contract specification, policing margin payments and providing a clearing house.
Gearing (Debt/Equity Ratio)	The ratio of debt to equity, usually expressed as the proportion which long-term borrowings bear to shareholders' funds.
Going concern concept	The assumption that the business will continue in operation for the foreseeable future, *i.e.*, that there is no intention to curtail or significantly reduce the scale of operations.
Goodwill	Any surplus consideration paid over and above the value of net tangible assets acquired.
Gross profit	The difference between sales and the cost of goods sold.
Group	A number of companies operating under the same controlling ownership.
Historic cost convention	The convention by which assets are valued on the basis of the original cost of acquiring or producing them.
Holding company	A company that controls another company as a result of owning more than 50 per cent of its equity share capital.
Institutional investors	Investors such as banks, insurance companies, trust funds, pension funds, foundations, educational institutions, *etc.*
Interest cover	The relationship between the amount of interest payable during a period and the amount of profit (before interest and before tax).
Internal rate of return (IRR)	The discount rate that equates a project's future net cash flows with the initial investment (or, alternatively, results in a zero net present value).

Japanese leveraged lease	A type of lease originated in Japan in 1986 by which cross-border leasing of commercial aircraft is financed through Japanese funds (equity is provided by blind pool of investors and non-recourse debt is provided by Japanese financial institutions).
LASU	Large Aircraft Sector Understanding: An agreement negotiated through OECD by the countries of the European Community and the USA in 1985, covering export sales of aircraft and helicopters, and ruling cash down payments, credit terms and fixation of interest rates.
Lease	A contract between a lessor and lessee for the right to use an asset. The ownership of the asset is retained by the lessor, but the right to use it is given to the lessee for an agreed period of time in return for a series of rentals paid by the lessee to the lessor.
Lease term	The non-cancellable period for which the lessee has contracted to lease the asset.
Lessee	The user of the equipment which is being leased.
Lessor	The owner of the equipment which is being leased.
Leveraged lease	A lease in which at least three parties are involved: a lessee, a lessor and a provider of long-term debt. The debt is a significant part of the transaction, generally without recourse to the lessor.
Liability	An amount owed.
LIBOR	London Inter-bank Offered Rate; and is usually the rate offered for either 3 month or 6 month US dollars.
Liquidity	A term used to describe the cash resources of a business and its ability to meet is short-term obligations.
Listed investments	Investments the market price for which is quoted on a recognised Stock Exchange.
Long lease	A lease with an unexpired term in excess of 50 years.

Long-term liability	An amount payable more than 12 months after the balance sheet date.
Materiality	A subjective judgement of the extent to which any amount is significant in the context of the financial position of a business as described in the balance sheet or its reported profit or loss.
Minimum lease payments	The payments over the lease term that the lessee is or can be required to make, together with any amounts guaranteed by the lessee (or related party), to the extent that it is likely that these payments will be made.
Minority interest	That part of a group's net assets owned by shareholders other than the holding company.
Net assets	The net amount of total assets less total liabilities.
Net book value	Amount at which an asset could be sold in its existing condition at the balance sheet date, after deducting any costs to be incurred in disposing of it.
Net present value (NPV)	The discounted value of future net revenues, benefits, cash flows or rental streams, allowing for the time value of money.
Nominal value	The face value of a share or other security.
Non − (or limited) recourse	Lenders places a high degree of reliance on the project, and their rights to the borrower's assets are limited.
Over-the-Counter (OTC)	The OTC market is a network of securities dealers or brokers and not an exchange. These firms make the market by posting buy and sell offers on a bulletin board. Issuers of securities traded in the OTC market do not have to comply with SEC or other exchange rules.
Operating lease	A lease where the lessor retains ownership, and the associated risks and property advantages, of the asset at the end of the lease period, which may be quite short.
Option	The right, but not obligation, to buy a specified quantity of an underlying asset at a specified price, called the strike or exercise price.
Overhead	An expense that cannot be attributed to any specific part of the company's operations.

Post balance sheet event	Any event occurring after the balance sheet date, but before the accounts are issued, which is sufficiently significant to be either reflected or noted in the accounts.
Prepayment	The part of a cost which is carried forward as an asset in the balance sheet to be recognised as an expense in the ensuing period(s) in which the benefit will be derived from it.
Price/earnings ratio	The relationship between the latest reported earnings per share and the market price per share.
Profit	The difference between the revenues earned in the period and the costs incurred in earning them. A number of alternative definitions are possible according to whether the figure is struck before or after tax, extraordinary items, distributions, *etc.*
Profit and loss account	A statement summarising the revenues earned and the costs incurred in earning them during an accounting period.
Project finance	Financing where the lender looks to the project's cash flow to repay the debt and pay interest, and to the project's assets for security.
Provision	The amount written off in the current year's profit and loss account in respect of any known or estimated loss or liability.
Prudence concept	The philosophy which says that when measuring profit provision should be made for all known or expected losses and liabilities, but that revenue should only be recognised if it is realised in the form of cash or near-cash.
Purchase option	Option to purchase the asset; bargain purchase option is an option to purchase the asset at below market value.
Put option	An option to sell an asset to another party at a set price at a particular future date.
Quick ratio	The relationship between those current assets readily convertible into cash (usually current assets less stock) and current liabilities.
Related company	A company in which the investing company holds a substantial (generally not less than 20 per cent) and long-term interest and over which it exercises significant influence.

Repossession	The act of recovering the leased asset from the company and country where it is leased.
Repossession insurance	Insurance against the inability to recover leased equipment in the event of a default (for example, non-return of an aircraft by a foreign government or inability of the lender to de-register the aircraft.)
Reserves	The accumulated amount of profit less losses, and any other surpluses, generated by the company since its incorporation and retained in it.
Residual value of an asset	Cost of an asset less any part of the cost that has been depreciated or amortised or treated as an expense or loss. (Also, the value of the leased equipment at the conclusion of the lease term.)
Revenue	Money received from selling the product of the business.
Sale-leaseback	A transaction which involves the sale of equipment by the owner and the subsequent lease of the same equipment back to the seller.
Samurai lease	Japanese-sourced lease designed to fund foreign assets in order to help to reduce the Japanese balance of payments surplus.
Sensitivity analysis	A part of financial or economic appraisal that tests the effect of various forecasting assumptions on the net present value or internal rate of return.
Share capital	Stated in the balance sheet at its nominal value and (if fully paid, and subject to any share premium) representing the amount of money introduced into the company by its shareholders at the time the shares were issued.
Shareholders' 'fund'	A measure of the shareholders' total interest in the company, represented by the total of share capital plus reserves.
Share premium	The surplus over and above nominal value received in consideration for the issue of shares.
Sub-lease	A transaction in which the leased equipment is re-leased by the original lessee to a third party, while the lease agreement between the two original parties remains in effect.

Subsidiary company	Any company in which the investing company has an interest of more than 50 per cent in the voting share capital, or otherwise is a member of it and controls the composition of its board of directors.
Syndicated loan	A loan made available by a group of banks in predefined proportions under the same credit facility.
Tax credit	The amount of tax deducted at source (at the basic rate of income tax) by a company from any dividend payment.
Timing difference	An adjustment to accounting profit in order to arrive at taxable profit which arises from the difference between the accounting and taxation treatment of certain items of income and expenditure.
Total Shareholder Return	Combination of share price performance and dividends paid over a defined period (TSR)
Turnover	Revenue from sales.
Useful life	The period of time during which an asset will have economic value and be usable. Useful life is sometimes called the economic life of the asset.
Variable cost	A cost that increases or decreases in line with changes in the level of activity.
Walkaway lease	A lease which allows the possibility for the lessee to return equipment to the manufacturer providing a short notice is given without having to make penalty payments.
Wet lease	The lease of an aircraft with crew and other back-up.
Working capital	Current assets less current liabilities, representing the amount a business needs to invest − and which is continually circulating − in order to finance its stock, debtors and work-in-progress.
Work-in-progress	Goods (or services) in the course of production (or provision) at the balance sheet date.

Sources: How to Understand and Use Company Accounts by Roy Warren; Aircraft Financing edited by Simon Hall; Guidelines for Infrastructure Development through Build-Operate-Transfer Projects; and the author

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