

## US Majors: Search for solutions

The US industry is on track to lose as much as \$8bn in 2002, roughly the same as last year. The search for solutions continues.

The most obvious course is to approach the government for further support, which is what the ATA did in September. However, the response has so far been very cool. No further aid beyond the loan guarantees will be forthcoming from Congress, with the possible exception of security-related expenses.

This makes life even more difficult for the two most troubled carriers - US Airways and United.

US Airways, which is in Chapter 11, appears to have turned down a \$200m bid from Texas Pacific for 38% of the airline. This seems an odd decision given that Texas Pacific, under David Bonderman, has an excellent reputation for helping turn around airlines, notably Continental. Instead, US Airways have gone for Retirement Systems of Alabama, which offered \$240m. However, the state pension fund also has \$340m of investments in bonds collateralised by US Airways aircraft. Birmingham pensioners can now sleep easy in their beds.

Meanwhile, United's unions (ALPA and IAM, whose members are of course also United shareholders) have presented a plan to Glenn Tilton, the newish CEO, which claims to be able to reduce labour costs by \$1bn a year over the next five years. The unions expect that this plan will add to the credibility of United's application for a \$1.8bn loan guarantee, but the plan apparently does not include any specific wage reductions.

In any case, United's management had been seeking at least \$1.5bn a year of real savings. Options for United's management are now rapidly running out.

In particular, the limits to downsizing are now becoming evident. Between the second quarter of 2001 and the same period this year, United cut capacity (ASMs) by 17%. This has pushed system load factors up to 74.5%, an uncomfortable level for passengers already stressed by the new and cumbersome security measures. Unfortunately, United's high load factor has not succeeded in arresting the decline in yields and unit revenues: RASM in the second quarter was down 9% compared to 2001. Meanwhile, because, most of United's (and the other Majors') cost base is fixed rather than variable, unit costs (CASM) have risen by 2.5%.

The operating result went from a profit of \$20m to a loss of \$175m. So downsizing by itself isn't working. And United's active fleet now comprises almost entirely modern types, which it would be uneconomic to park.

What is clearly needed is a concerted attack on the labour cost base, which means Chapter 11 bankruptcy protection. Then the conditions might be right for a return to controlled expansion, which hopefully would lead to better passenger service and a further reduction in unit costs. Whether yields or unit revenues can be significantly influenced in the new market is questionable.

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## CONTENTS

### Analysis

US Airways and United in crisis 1

Airline share prices: How low can they go? 2-3

Market balance forecast: an ambiguous outlook 4-6

### Briefing

The "Big Three" and the Chinese airline industry: China Eastern, China Southern and Air China 7-12

### Management

Budgeting: Problems and alternative approaches 13-15

Databases 16-19

Airline traffic and financials

Regional trends

Orders

Aircraft available

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# Airline share prices: How low can they go?

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British Airways shares fall out of the FTSE 100 index and the share price dips below its flotation price in 1987. American Airlines' parent AMR Corp sees its shares hit \$4 - a decimation of the price two years ago. Lufthansa and Air France languish at less than half the valuation of a year ago and KLM lies well below half the \$1bn market capitalisation that would mark respectability. In the last week of September the major carriers' share prices have fallen by between 15% (Lufthansa) and 55% (American).

By contrast, the low cost carriers have been less affected by the sell-off in the sector. Ryanair's share price in particular has been resilient, currently trading at the same level at the beginning of 2001 and only 20% below its peak. easyJet meanwhile is nearly 50% below its peak - in part reflecting thoughts that it may be suffering some indigestion from the acquisition of Go. Still, easyJet's market cap is now within a gnat's hair-width of that of British Airways.

We know the reasons for lack of positive sentiment towards traditional airline shares. Weakness in demand started to be felt in the first half of 2001. The operational instability was then severely, suddenly and shockingly disrupted further by September 11. The slow recovery from that shock has been further hit by the now pervasive threat of a US declaration of war against Iraq. If that wasn't enough, the world's stock markets have had confidence completely undermined by the weak global economic environment, the accounting scandals in the US and the collapse of the dotcom and telecoms bubble.

## Where's the floor?

Over time the world's major airlines have performed consistently on the stock markets: they have tended to destroy value for their shareholders. However, through the cycles individual investors have been able to make substantial returns by investing and divesting at the right time. There are two general rules of thumb that have emerged:

- Buy when the share price is below two times prospective cash flow and sell above three times cash flow; and
- In the downturn expect the share price to halve; in the upturn look for a doubling.

However, to paraphrase the financial regulators, "the past is not necessarily an accurate guide to the future". This time it may well be different.

Some fundamentals: the theoretical value of a share can be viewed as the sum of future cash flows of the company's operations discounted to the current day by a risk factor. That risk factor is made up of the risk free rate (such as the interest rate on long-dated government bonds) plus the risk premium present in the market at any one time inflated by the perceived extra risk inherent in the stock being valued.

The world's stock markets are in a bear phase. New York's Dow has fallen 26% since the beginning of the year and London's FTSE nearly 30%. The rot really set in in June, since when the markets have displayed remarkable levels of volatility and limited volumes. In a bear market,

investors retreat to safe havens, switch money out of high risk investments and run away scared from any that provide disappointing shocks.

Broadly speaking institutional investors split market investments into three broad categories: big cap, mid cap and small cap relating to the overall market capitalisation of the stock. In all cases, investors are looking to make money. The higher the market capitalisation, generally the

EUROPEAN SHARE VALUATIONS				
	Share price	Price/	Price/	EV/
	1/10/02 (local	Earnings	Cashflow	EBITDAR
	currency)	ratio		
<b>Air France</b>	€ 7.78	6.7	1.3	3.9
<b>British Airways</b>	96.75p	3.1	1	4.2
<b>KLM</b>	€ 8.36	5.8	0.7	4.7
<b>Lufthansa</b>	€ 9.45	5.7	1.9	3
<b>SAS</b>	SEK52.5	6.9	2.1	4.5

Source: WestLB Panmure

# Aviation Strategy

## Analysis

higher the volume in transactions and the higher the marketability of the shares. For the big cap stocks the view will be for out-performance against peers, industry group or market indices. For mid cap stocks, the investor must be convinced of sustainable returns. For small cap stocks the growth potential must outweigh the increased perceived risk.

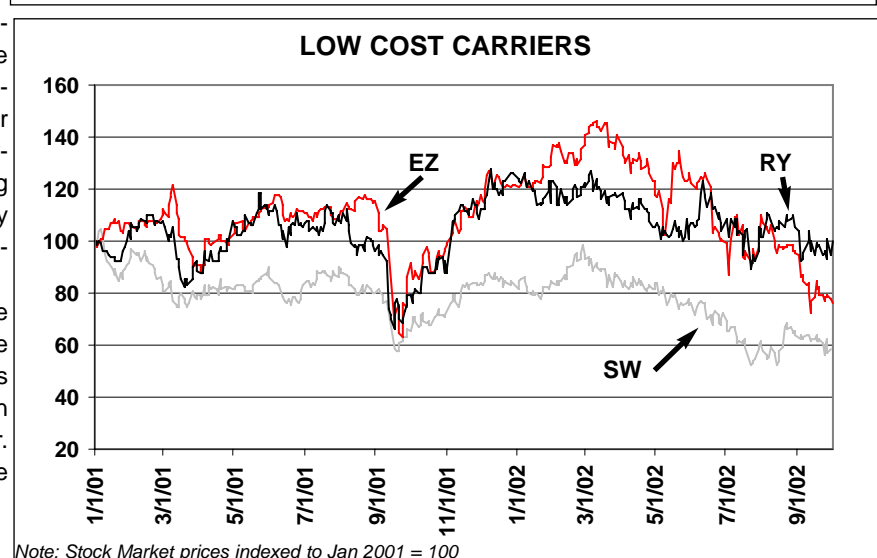
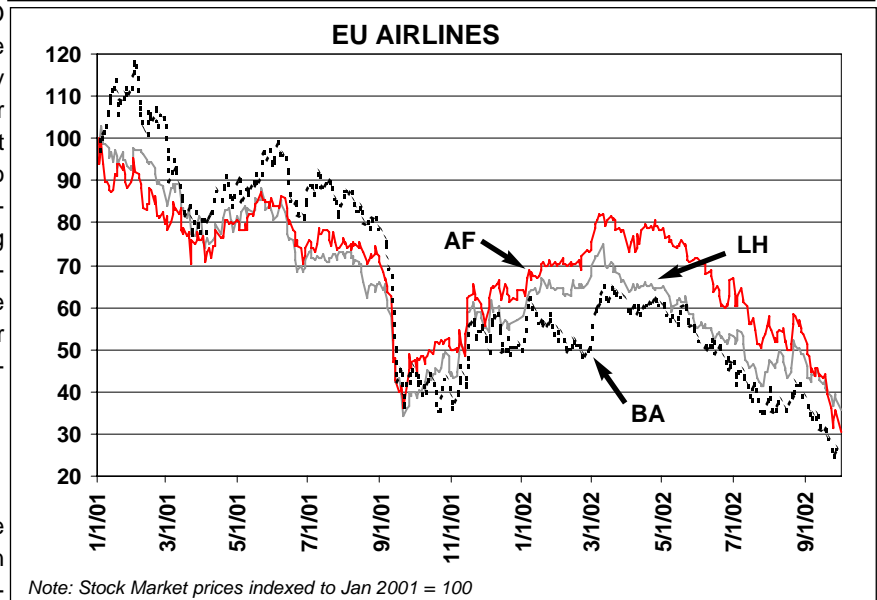
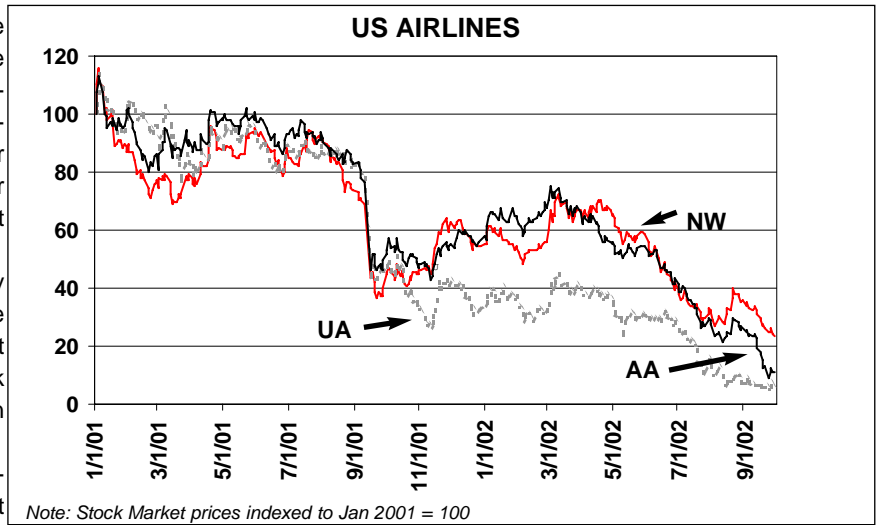
For the big cap stocks - and particularly those included in a stock market index - there is an additional element of demand in that some institutional investors attempt to track the index and have to maintain weightings in each of the constituent stocks.

Airline share prices are notoriously cyclical, volatile and high risk despite the fact that in each cycle there is at least one airline CEO or CFO who tries to say that it is not. (The famed investor Warren Buffet was recently quoted as saying that he kept a 1-800 number for Aeroholics Anonymous close at hand that he could call whenever he felt the urge to invest in an airline, so that someone could dissuade him from doing so). Apart from anything else, so much of an airline's operations lie outside management control: and a small change in fuel prices, exchange rates, demand or yields can have a dramatic impact on the bottom line profitability.

### War!

The real problem at the moment is the threat of war. This is seen to have two main impacts: potential disruption to traffic and substantial increases in fuel prices. Markets dislike uncertainty - and while there is the prospect of the US going into Iraq with or without the backing of the UN they will keep clear of aviation. If war were to be declared the markets will start reviewing the ideas of how long it may last and how quickly the industry may recover and consequently start looking at fundamental valuations.

All in all the environment is not good. The markets dislike uncertainties and here we have uncertainties piled on top of worries mounted by fears. There may be a gut reaction that says a share price cannot go much lower. Equally it is worth remembering that share prices can go to zero.



### Market balance: Outlook ambiguous

While the stock market performance of the major airlines is one of unalleviated gloom, the global supply/demand picture is, if not more optimistic, then more ambiguous.

Our updated traffic projections are shown opposite - another negative result this year followed by a distinct upturn in 2003. Compared with the October 2001 forecast, published just a few weeks after the September 11 atrocity, the outlook is somewhat brighter. The downturn wasn't quite as steep as predicted, -3% in 2001 and -2% in 2002 as against the original -6% and -5%; the 2003 rebound won't be quite as dramatic, though at 11% our prediction is higher than the norm. (We are not in this forecast factoring in the impact of war in Iraq - that would be too painful.)

Unlike some other analysts, we are sticking to the idea that most of the traffic lost following September 11 will be recovered over the next few years. In other words, the forecast assumes that traffic will return to close to the levels - up to 100% for non-US carriers and around 90% for US airlines - that they should have been at had September 11 not happened. The established longer-term relationship between air travel and levels of economic activity will be restored by a marked traffic upturn, as they were, for example, after the Gulf war. But, as in the past, the projected recovery will largely be

REAL GDP FORECASTS (% annual growth)			
	2001	2002	2003
<b>US</b>	1.2	2.5	3.5
<b>EU</b>	1.7	1.5	2.8
<b>Japan</b>	-0.4	-0.7	0.3
<b>World</b>	1.0	1.8	3.0
<b>World trade</b>	0	2.5	9.5

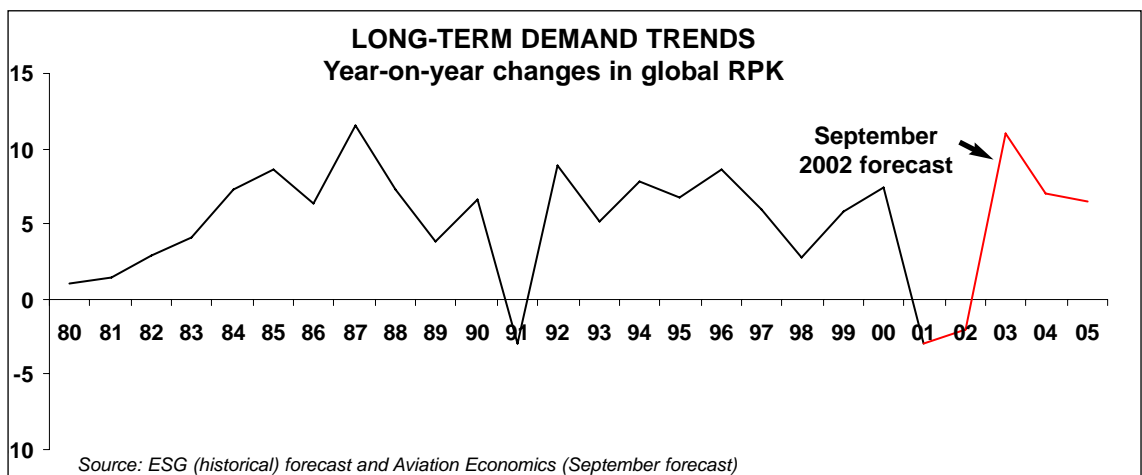
*Source: OECD Economic Outlook, No 71, July 2002*

generated by lower yields.

An immediate test will come with the traffic figures for the final quarter of this year. For example, US international RPKs could show an increase of up to 30%, a startling contrast to the -12% growth figures for the first eight months of 2002. This figure is generated by comparing recent traffic levels against 2000, assuming the trend will continue, then simply calculating the increase against the very depressed period of 2001. Other sectors will also rebound though less dramatically.

This could have an important psychological impact on the industry. It may even encourage reluctant travellers to get on planes again.

It is also worth considering what is happening in the "real" economy. Bombarded by horror stories about plummeting stock



### SEPTEMBER 2002 TRAFFIC FORECAST Year-on-year changes in global RPK

	US			Euro			Asian			World		
	Dom	Int'l	Total	Intra	Int'l	Total	Intra	Int'l	Total	Intra	Int'l	Total
2000	6%	7%	6%	2%	7%	7%	9%	11%	11%	5%	9%	7%
2001	-7%	-6%	-7%	1%	-1%	-1%	1%	0%	0%	-4%	-2%	-3%
2002	-2%	-3%	-2%	1%	-3%	-2%	2%	0%	1%	-1%	-2%	-2%
2003	9%	12%	10%	5%	9%	8%	12%	12%	10%	9%	12%	11%
2004	5%	6%	5%	5%	6%	6%	8%	9%	9%	6%	7%	7%
2005	5%	6%	5%	5%	6%	6%	8%	9%	9%	6%	7%	7%

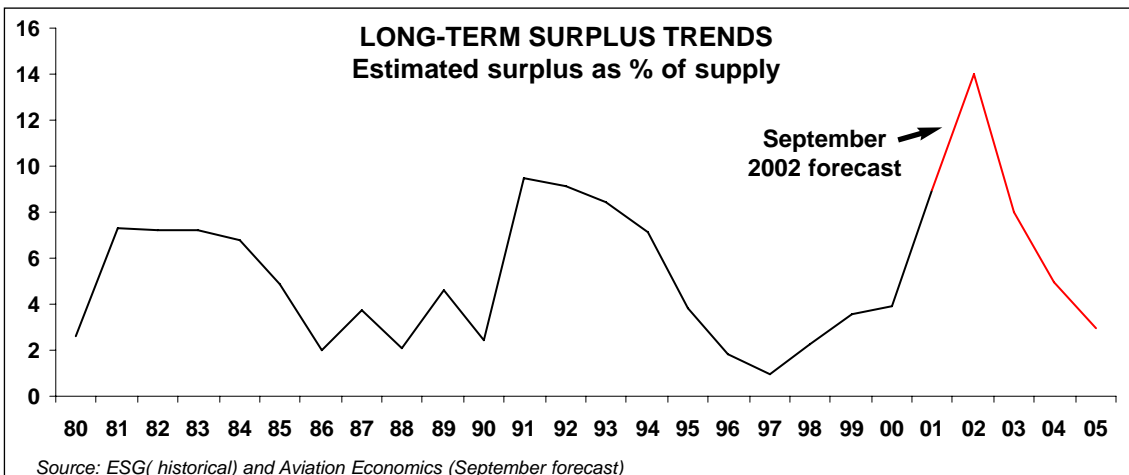
prices, dotcom follies and corporate malpractice, one might think that the industrial economies were in meltdown. Yet the official GDP growth rates and predictions tell a different story. According to the OECD, probably the most influential global forecaster, the real GDP cycle bottomed out in 2001, growth resumed in 2002 and 2003 looks rather good, very good for world trade, and by implication quite promising for traffic demand.

Here are some comments from the latest OECD Economic Outlook (July 2002): "Growth momentum is returning to the OECD area at large ... The correction in the inventory overhang appears to be well advanced ... The collapse of investment in information technologies is generally giving way to a cautious recovery ... Confidence has returned more rapidly than previously expected in the wake of the 11 September terrorist attacks, especially in the United States ... A strong impulse has been provided by economic policies, with low real interest rates helping to boost consumer spending and fiscal policy supportive of demand".

An alternative, and plausible, airline industry view is that there has been a permanent loss of traffic and that a deep airline rationalisation process will lead to a new lower rate of growth than the traditional global average of around 5%. If the US industry consolidates through the Chapter 7 bankruptcy of, say, two majors and the European industry rationalises through the smaller flag-carriers retreating into regional niches, this might result in a new restrained form of competition, focusing on yield maintenance rather than market share.

On the other hand, aggressive carriers will always try their utmost to take advantage of the new opportunities provided by industry restructuring. Expansion is the last thing on the traditional carriers' minds at the moment, but when the upturn does come there will be a ready supply of relatively cheap equipment available from the manufacturers and the lessors. It is also becoming apparent that there are limits to downsizing - see page 1 for an example.

Turning to the supply side, Boeing has so far taken most of the pain: units delivered have fallen from an historic peak of over 500



# Aviation Strategy

## Analysis

in 2001 to about 350 this year and are forecast to drop below 300 in 2003. Airbus has managed to maintain output; units delivered totalled 325 in 2001 and have fallen to about 300 this year with a similar number anticipated for 2003. Regional jet deliveries from Embraer and Bombardier actually peak this year and next at around 330 a year.

Retirement scrapping - aircraft permanently removed from the commercial fleet - was recorded by ESG at 308 in 2001, which was a record. Annual averages of 350 units are expected for the next few years. But interpreting deletions is complicated - see below.

The graph (on page 5) shows the surplus, which is simply the difference between supply and demand. Supply is the actual or projected number of passenger and cargo jets in commercial service or parked. Demand is calculated in terms of jets by converting actual or projected RPKs into units required using "balanced market" productivity factors (load fac-

tors and utilisation) and "network" factors (average speed and average seats per aircraft).

The estimated surplus for 2002 is just under 2,200 or about 14% of supply, compared to the previous record surplus of 9% in the early 90s.

This theoretical total ties in very nicely with the 2,219 jets that are currently parked, according to ACAS. However, as the table below indicates, many, perhaps half these jets are unlikely to return to commercial service (the Chapter 2 types and the Chapter 3s that are over 25 years old add up to about 1,100). This implies that we can be more than confident about the 350 future deletion rate, as these aircraft are already condemned.

So the combination of this supply adjustment plus the demand rebound results in a surprisingly steep decline in the surplus after 2003. In other words, the airline industry could turn round rather quickly. This is not the consensus expectation.

### PARKED AIRCRAFT BY AGE - SEPTEMBER 2002

	CHAPTER 3 COMPLIANT							CHAPTER 2 ONLY				TOTAL		
	<5 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35 years+	Sub Total	15-24 years	25-34 years		35 years +	Sub Total
<b>717-200</b>	24								<b>24</b>					<b>24</b>
<b>727</b>				4	153	80	32	37	<b>306</b>	25	87	25	<b>137</b>	<b>443</b>
<b>737-2/300</b>	1	3	20	70	70	8	9		<b>181</b>	31	66		<b>97</b>	<b>278</b>
<b>737-4/500</b>		4	13						<b>17</b>					<b>17</b>
<b>737-7/800</b>	27								<b>27</b>					<b>27</b>
<b>757</b>	3	5	16	16	1				<b>41</b>					<b>41</b>
<b>A320 family</b>	27	32	15						<b>74</b>	7	42	22	<b>71</b>	<b>145</b>
<b>DC-9</b>					20	29	53	14	<b>116</b>					<b>116</b>
<b>MD80/90</b>	6	9	25	36	34				<b>110</b>					<b>110</b>
<b>747-2/300</b>			1	15	55	16	21		<b>108</b>	7	40		<b>47</b>	<b>155</b>
<b>747-400</b>	3		13		9	4			<b>29</b>					<b>29</b>
<b>767</b>		6	14	25					<b>45</b>					<b>45</b>
<b>777</b>	2	2							<b>4</b>					<b>4</b>
<b>A300/310</b>	3	3	29	32	40	5			<b>112</b>					<b>112</b>
<b>A330/340</b>	10	10							<b>20</b>					<b>20</b>
<b>DC-10</b>			1		33	40	5		<b>79</b>	3	4		<b>7</b>	<b>86</b>
<b>DC-8</b>								65	<b>72</b>		4	10	<b>14</b>	<b>86</b>
<b>L1011</b>				1	46	37	2		<b>86</b>					<b>86</b>
<b>MD11</b>	1	11	4						<b>16</b>					<b>16</b>
<b>BAe 146/F100</b>	7	14	69	11					<b>101</b>					<b>101</b>
<b>RJs</b>	33	5	1						<b>39</b>					<b>39</b>
<b>Others</b>										49	132	58	<b>239</b>	<b>239</b>
<b>TOTAL</b>	<b>147</b>	<b>104</b>	<b>221</b>	<b>210</b>	<b>461</b>	<b>219</b>	<b>187</b>	<b>58</b>	<b>1607</b>	<b>122</b>	<b>375</b>	<b>115</b>	<b>612</b>	<b>2219</b>

Source: ACAS



# Chinese "Big Three": handed pole positions

China's airline industry is undergoing major consolidation as a result of the Chinese government's decision to drastically reduce the number of second- and third-tier airlines in the country.

The so-called "big three" airlines - Air China, China Eastern Airlines and China Southern Airlines - today operate more than a third of China's civil aviation fleet (excluding Hong Kong-based Cathay Pacific and Dragonair, which are not covered in this survey) and hold two-thirds of the country's outstanding new aircraft orders - but these proportions will rise further as consolidation occurs.

The potential for Chinese passenger growth is undeniably large. Of a total population of 1.3bn, only around 50m have ever flown, and the domestic market is forecast to grow by around 7-10% per year according to most forecasts. In addition the tourist market to China is growing considerably, and business travel to/from China is also expected to keep increasing, particularly now that China has joined the WTO. In 2001 75.2m passengers were carried on Chinese airlines, according to the Civil Aviation Administration of China (CAAC), which forecasts that this will grow by just over 10% in 2002.

China's existing airline/aviation infrastructure, however, can be described as poor. With more than 30 airlines and a relatively old fleet (although average fleet age has improved over the last five years as Airbus and Boeing orders have arrived), service levels are on the poor side, and questions have been raised about safety standards after a series of crashes.

These are issues that the CAAC has been concerned about since the 1990s, but decisions that affect a major industry in China such as aviation take time to be debated and approved. Now, however, the decision bottleneck seems to have been broken, ongoing developments at Beijing Capital International Airport and the need to sort out China's economy before the 2008 Beijing Olympics are major factors, and China's aviation industry is changing as never before.

In fact, the first signal of airline consolidation

was given by the CAAC in 2000, when it said that nine airlines under its direct control should be taken over by the "Big Three". Under the consolidation plan, which has been firmed up over the last two years and which was formally approved by China's government in January 2002, it is planned that Air China will merge with China Southwest Airlines and the China National Aviation Corporation; that China Eastern will acquire China Northwest, Great Wall and Yunnan Airlines; and that China Southern will take over China Northern and China Xinjiang Airlines.

Of these planned mergers, only China Eastern's takeover of Great Wall Airlines has been completed, and it is could be another two or even three years until this consolidation is completed, according to aviation observers inside China. But by then, the Big Three will account for approximately 80% of all domestic passengers carried in China.

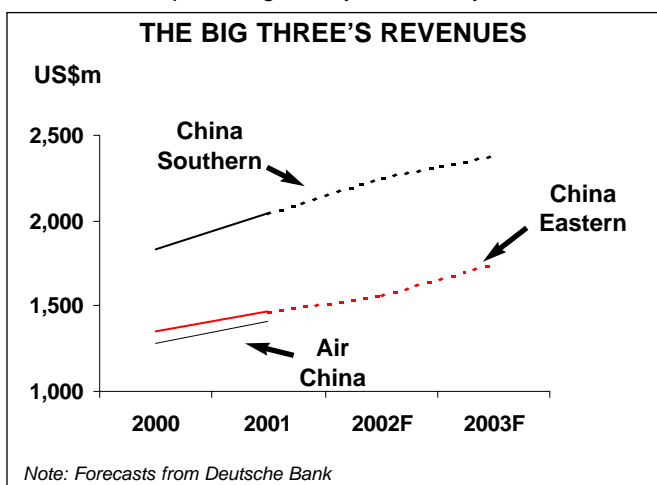
## "Disorderly competition"

In a further move that will also boost the power of the Big Three, the CAAC announced earlier this year that "disorderly competition" would be eliminated by restricting the number of airlines allowed to operate flights between the three largest hubs in China: Beijing, Shanghai and Guangzhou (near Hong Kong) - where, respectively, Air China, China Eastern and China Southern are based. (These airports also account for almost 80% international traffic to/from China.) From this summer only airlines based in those cities have been allowed to operate between them, thereby eliminating all services on these routes by the second-tier airlines based in other cities. Already, load factor and ticket prices on these routes are starting to rise. Volume growth has slowed slightly however, as the CAAC are being given an illustrated lesson in the price elasticity of demand. From this winter all other airlines will be completely banned from using these airports as transit points on internal flights, instead being encouraged to start short-haul feeder flights into these cities. In a very blunt way, CAAC

is encouraging the emergence of a hub and spoke network through China, whether the airlines (or customers) like this or not.

In a complementary move to consolidation, the Chinese government is also easing the limits of foreign ownership in Chinese airlines. From August 2002 foreign shareholders are allowed to increase their stakes in Chinese airlines up to a maximum of 49%, compared with the previous limit of 35% (although individual foreign shareholders are not allowed to hold more than 25% each). This was a move that had been discussed in government circles since 1995 when Hainan Airlines became the first Chinese airline allowed to have a foreign shareholder. However, the recent entry of China into the World Trade Organisation - which will inevitably lead to greater competition from foreign carriers at some point in the future - was the impetus for the CAAC to finally make these changes, and it is likely that further easing of ownership restrictions will come within a few years.

This easing of restrictions on foreign ownership is being closely watched by western airlines,



as well as by Asian ones such as Singapore and Cathay. Many of the larger carriers have already held informal talks with the Big Three, and alliances such as Star and oneworld are eager to get the major Chinese airlines onboard. China is a major gap in the alliances' global network, and the Big Three are expected to sign up with alliances sooner rather than later. (Interestingly, the 14 Star alliance airlines met in Shanghai in June this year.)

However, even after this round of reform and consolidation is completed there is still a long way

to go, as airlines in China simply do not operate in the same way that airlines do in the West or the rest of Asia. Government control is far-reaching - minimum pricing levels are "sent" from the CAAC, and most costs are completely outside the airlines' control: for example, airlines are not allowed to hedge fuel costs. But in terms of pricing, at least, government control is not always successful. Many of China's 5000+ authorised travel/ticket agents heavily discount air fares, a situation that has led to an intense fare wars over the last few years. Coming on top of the general Asia-Pacific economic recession of the late-1990s, discounting has significantly affected the Big Three's (and others') financial results after a long period of steady growth through the 1980s and early-to-mid-1990s. Yet Chinese aviation has escaped relatively lightly from the effects of September 11. Domestic travel was unaffected, and while US traffic has been down, Sino-Asian passenger levels have remained intact. Overall therefore, 2001 was a reasonable year for the Chinese airline industry, with the CAAC reporting combined airline profits of \$83m. (The CAAC forecasts 2002 will see combined profits of \$120m-\$240m.)

Discounting, and the resulting erosion of Chinese airlines' profits, has been one motivation behind the industry's restructuring. (Other determining factors include insufficient asset use, high taxes and jet fuel surcharges) - although whether consolidation into a stronger Big Three will necessarily lead to less discounting and stronger financial results remains to be seen. It may be a long time coming, but when they are free of all artificial constraints the Big Three will compete among themselves and with new entrants as they see fit. The market forces that the CAAC is slowly unleashing may create a Chinese airline industry that few can contemplate today.

Nevertheless, once consolidation is completed, the Chinese government - via the CAAC - is likely to ease up price controls, or abolish them completely. Or, as one analyst puts it, if they don't do this then all CAAC's hard work in consolidating the industry and opening it up to foreign influence would be lost among the criticism it would inevitably receive for not abolishing price controls.

Much depends on the future role and scope of the CAAC, which is also being reformed. The direct stakes that CAAC owns in Chinese airlines

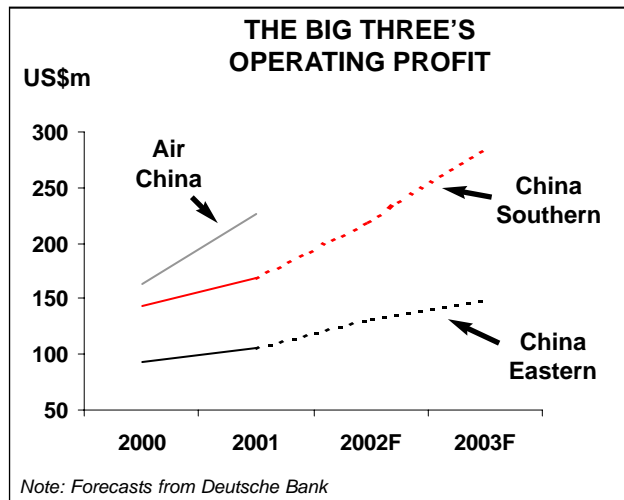


are likely to be moved to other government quangos, and airport management will be passed to local government, thus allowing the CAAC to concentrate on impartial regulation of the industry. Currently the CAAC is composed of 24 regional administrations, or "fiefdoms" according to one analyst, but that will be cut back to six or seven regions, with - theoretically - much reduction of overmanning and bureaucracy, although not in the near term.

As for aircraft orders, Boeing and Airbus's practice of bullish assumptions about CAAC orders to underpin aggressive global market forecasts now seems dubious. In February Liu Jianfeng, the CAAC minister, said that Chinese airlines would need far less orders than the manufacturers had been predicting, primarily due to existing overcapacity. Larger aircraft types are over-represented in China's fleet, and they are often flown with sub-50% load factors - meaning that domestic routes are often unprofitable. Liu added that unless there were persuasive arguments that each specific new aircraft would be beneficial to an individual airline's profits, the CAAC would not authorise new orders. The days of block mega-orders from the CAAC, which are then apportioned out to China's airlines, are gone forever. The current Airbus and Boeing forecasts are for between \$140bn-\$150bn worth of new aircraft orders out of China to the year 2020, but at this point it seems improbable that China's Big Three - even though they will be massive airlines - combined with a host of second-tier carriers could sustain such an orderbook given the current market overcapacity.

## China Eastern

Shanghai-based China Eastern Airlines is going through a tough time at present, and the CAAC's consolidation plans will - theoretically - provide much needed assistance to the Hong Kong-listed airline. In August China Eastern's share price fell almost 10% after it revealed first-half net profits for 2002 of \$3.1m, a fall of 64% compared with January-June 2001, due partly to the fare war that has broken out among China's airlines and partly to forex losses. This result came despite a very favourable reduction in the tax rate payable by China Eastern in the period, with the Shanghai local tax authority reducing the airline's tax rate from 33% to 15% from July 1



2001.

But China Eastern is pushing ahead with its long-term development plans, and in addition to the three airlines lined up by the CAAC for consolidation into China Eastern (China Northwest, Great Wall and Yunnan Airlines), in August China Eastern agreed to pay \$29m for 40% of Wuhan Airlines. Wuhan is based in the Yangtze River basin and has a fleet of eight 373-300s and 800s. It will now be renamed China Eastern Airlines Wuhan and will use China Eastern livery. Although Wuhan is small, the move is significant as the airline is not controlled by the CAAC, and shows that China Eastern at least is intent on hoovering up small, independent airlines in China. (China Eastern may also be exploring other acquisition options in the event that the CAAC consolidation plan does not take place - China Eastern is believed to be concerned about the level of debts run up by designated acquisition China Northwest.)

China Eastern is keen to expand its route network both domestically and internationally. Domestically, China Eastern is looking to expand routes in western China (a move encouraged by the Chinese government), while on international services the airline is increasing capacity on intra-Asian routes.

China Eastern, which employs 15,000 people, is regarded as lagging behind rivals in terms of operational, managerial and financial practices, but it is changing fast. Notable recent moves include:

- Devoting resources to enhancing its online booking facilities;
- Appointing independent directors to the board;

- Recruiting a US national to become Vice President US Sales (a significant move for a Chinese airline);
- Hiring South Korean flight attendants (China Eastern claims it is the first Chinese airline to hire foreign nationals);
- Agreeing a \$2.1bn credit line with the Industrial and Commercial Bank of China until 2003, partly to pay for 20 A320s ordered in April (and which will be delivered in 2003-2005); and
- Changing its aircraft depreciation policy from 10-15 years to 20 years, in order to bring its accounting practices closer to international standards.

Additionally, the airline is working hard to sign partnership airlines with foreign airlines. China Eastern already codeshares with Air France and American, and started codesharing with Japan Airlines in September. It has also maintained a close (but low profile) working relationship with Cathay Pacific and is part of Cathay's "Asia Miles" FFP. Eastern is talking to other prospective code-share partners at present and is also believed to be negotiating with at least one of the major global alliances.

In terms of its fleet, China Eastern operates 67 aircraft, with 31 Airbus and Boeing aircraft on order (see fleet table, page 10). Orders for up to 20 more aircraft (likely to be more short-haul models) are expected to come out of the airline in the next few months as it looks to increase capacity both domestically and internationally.

## China Southern

China Southern Airlines is the largest of the Big Three, employing 19,000 people and with a fleet of 84 aircraft and 21 (all Boeing) on order. Like China Eastern, Hong Kong-listed China Southern's share price fell considerably in August after net profits dropped 39% in the first half of 2002, to \$7.3m. Fare discounting hits yields badly, although in January-June 2002 domestic RPKs increased 16.1% and international RPKs 24.1%, compared with a total ASK rise of 9.8%. Although international traffic held up well post-September 11, China Southern also noted that its aircraft insurance costs have increased by 45% as a result of the terrorist incident. According to Yan Zhi Qing, Chairman of China Southern, there will be a "challenging operating environment in the second half of the year", but the airline intends to keep on expanding its network domes-

tically and internationally.

As well as the CAAC-designated takeover of Shenyang-based China Northern and Urumqi-based China Xinjiang Airlines (which may not be completed until well into 2003), China Southern is pressing ahead with its own acquisition plans. It has already bought a small carrier, Zhongyuan Airlines, and in June it agreed to pay \$18m for 49% of China Postal Airlines (CPA), which operates all Chinese air postal services - (the other 51% will remain with the China State Post Bureau.) However, despite its air post monopoly and its link-up with one of the Big Three, Tianjin-based CPA faces stiff competition from road and rail post services, which already account for the vast majority of internal China mail and freight.

The \$18m purchase price for CPA was funded from China Southern's cash flow, but the airline has also signed a \$1.5bn credit line with the Bank of China, which will be used for other airline acquisitions and aircraft purchases. China Southern bought Sichuan Airline for around \$17m in August. The carrier also plans to issue in A-share (Domestic) market, although cash raised this way will go solely to aircraft purchases, specifically the 20 737-800s ordered in October 2001.

China Southern appears slightly more cautious about linking up with global alliances than its main rivals. Chairman Yan Zhi Qing has said that the fluctuating domestic market and need for intra-airline consolidation means that China Southern (or any other Chinese airline) is unlikely to join an alliance until 2004 at the earliest. Instead China Southern will slowly build on existing relationships with airlines such as Delta and KLM - although if one of its rivals signs up with an alliance before 2004, China Southern may well be tempted to follow suit.

## Air China

Beijing-based Air China - the country's official "flag-carrier" - operates a fleet of 72 aircraft and has a further 15 on order. In 2001 the airline reported revenues of \$1.4bn, 10.4% up on 2000, and a net profit of \$5m, compared with a \$78m loss in 2000. In January Air China cut 230 jobs as part of general cost-cutting - an unusual occurrence in China, let alone in the aviation industry - and is believed to have been as hard hit by the fare wars in China as have been the other mem-

bers of the Big Three. But the airline still employs around 11,000 people and it is also believed to be carrying heavy debts, although the precise amounts are unknown.

The CAAC consolidation plan calls for Air China to merge with China Southwest Airlines and China National Aviation Corporation (CNAC), which operates CNAC-Zhejiang Airlines, after which China-backed conglomerate CITIC Pacific (based in Hong Kong, and which also owns holds 26% of Cathay Pacific and 29% of Dragonair) - is planning to buy a 25% in Air China. Unlike the other Big Three airlines, Air China is not listed, but will obtain a listing in Hong Kong or elsewhere once the mergers are completed. However, this plan may be running into trouble as CNAC is the commercial part of the CAAC, and unconfirmed reports state that CNAC and Air China are "discussing" just what kind of stake CNAC will have in the enlarged Air China once the mergers are complete.

Air China signed a wide-ranging alliance deal with Northwest Airlines in 1998, but reports suggest that this partnership may be waning due to Northwest dropping non-stop services between China and the US over the last year. Northwest's decision has prompted Air China to start non-stop transpolar services between Beijing and New York in late September, but may also be encouraging Air China to look elsewhere for alliances. The most likely candidate appears to be Star, as Air China has been in a codeshare with Lufthansa for a couple of years already, and United are rumoured to want to sign an alliance with Air China if the Northwest deal fades out.

Air China has significant plans for cargo, and believes the immature domestic and intra/extra-China cargo market has great potential. The airline is aware that China Southern has bought into China Postal Airlines, while China Eastern owns 70% of international operator China Cargo Airlines. Air China may therefore spin-off its existing cargo operations (four 747-200Fs) into a new Beijing-based airline owned jointly with the CITIC Pacific, and discussions are believed to be taking place at present.

The airline recently cancelled an existing order for eight A318s, instead replacing them with orders for A319s, which will start arriving in June 2003. Air China was the only Asian customer for the A318, but decided it had to change to A319s due to engine delivery problems on the A318.

## The others

For those existing airlines not part of CAAC's consolidation plan - and not planning to form an alliance with one of the Big Three - the future may be bleak. The other airlines are largely small, regional operations that have only ever known a CAAC-controlled aviation regime.

For example, China Sky Aviation Enterprises - the only real attempt to form an independent alliance against the Big Three - now looks doomed. This informal (non equity-based) alliance included CPA, Shandong, Sichuan, Shanghai, Shenzhen and Wuhan Airlines, and was a brave attempt by mid-level Chinese airlines to fight back against the Big Three. However, with CPA and Sichuan now picked off by China Southern and Wuhan by China Eastern, most observers believe the alliance will fall apart, and that the others will align with one of the Big Three. Shanghai and Shandong, with 23 aircraft each, have the best chance of remaining independent, although in July there were reports in the Chinese press - denied by the parties concerned - that China Eastern was interested in acquiring Shanghai.

Outside this alliance - and firmly in fourth place among China's airlines - is listed carrier Hainan Airlines, which operates a fleet of 43 aircraft. After securing CAAC approval for international services in 1999, the airline has been keen to reduce its dependence on the domestic market via launching routes to Asian destinations, starting with South Korea. Hainan - which counts among its shareholders the US financier George Soros - has also applied for permission to become the fourth designated Chinese airline to operate to-from the US. Closer to home, Hainan has been leasing 737-700/800s from Boulliou and appears the most aggressive of all the airlines outside the Big Three - for example, in 2001 Hainan became the first Chinese airline to hire foreign pilots.

Finally, although Hong-Kong airlines are not covered in this article, it is interesting to note that in August Cathay Pacific applied to resume flights to the Chinese mainland, for the first time since 1990. Flights ceased then because at that time Cathay bought into Hong-Kong based Dragonair, and under a "one airline, one route" policy it was forced to withdraw in favour of Dragonair. Cathay

and its parent Swire still hold a stake in Dragonair but, reportedly, that hasn't stopped Dragonair from protesting at Cathay's application. It's likely that the Big Three are cheering on Dragonair behind the scenes.

As to the future, although consolidation will take time - and there may yet be some upsets to the CAAC's master-plan - there is little doubt that the Big Three are being given unprecedented advantages in China's domestic market. Whether

they will fully exploit their position remains to be seen, particularly when real market forces hit Chinese aviation. Non-Chinese airlines are keen to increase routes into the country, and new, aggressive start-ups - unburdened by the large overheads and historical/political baggage of the Big Three - are sure to spring up in China. But, whatever happens, the Chinese airline industry of the future will look very different to what it does today.

### CHINESE FLEET COMPOSITION

	737- 2/300	737- 4/500	737 NG	747- 2/300	747- 400	757/ 767	777	A300/ 310	A320 fam	A330/340	MD11	MD80	MD90	Rus	Chin	Other	Total
Air China	19		10 (7)	4	12	10	10		(8)	3						4	72 (15)
Air Great Wall	3																3
Air Hong Kong				1				1									2
Air Macau									9 (6)								9 (6)
Beiya AL												3					3
Cathay Pacific				5	24		12 (3)			35 (6)							76 (9)
Changan AL																3	3
China Cargo AL											3						3
China Eastern AL	6		1 (4)					10	30 (22)	5 (5)	3	3	9				67 (31)
China Eastern AL Wuhan	6		2												1		9
China Flying Dragon AV															8	4	12
China Northern AL								6	3 (7)			16	10				35 (7)
China Northern Swan AL											4	3					7
China Northwest AL								6	13							10	29
China Postal AL															5		5
China Southern AL	25	11	(20)		1 (1)	18	9		20								84 (21)
China Southwest AL	14		9 (2)			13				3							39 (2)
China United AL	4													30			34
China Xinhua AL	6	3															9
China Xinjiang AL	2		4			9								3		5	23
Dragonair				2					12 (5)	8 (1)							22 (6)
Guizhou AL															1		1
Hainan AL	5	7	12													19	43
Shandong AL	9															14	23
Shanghai AL			9 (8)			11										3	23 (8)
Shantou AL	2																2
Shenzhen AL	6		10														16
Sichuan AL									7							5	12
Xiamen AL	6	6	6			7											25
Yunnan AL	13		4			3										4 (2)	24 (2)
Zhejiang AL									8								8
<b>Total</b>	<b>126</b>	<b>27</b>	<b>67 (41)</b>	<b>12</b>	<b>37 (1)</b>	<b>71</b>	<b>31 (3)</b>	<b>23</b>	<b>102 (48)</b>	<b>54 (12)</b>	<b>6</b>	<b>29</b>	<b>22</b>	<b>33</b>	<b>15</b>	<b>71 (2)</b>	<b>726 (107)</b>

Note: Aircraft on order in brackets

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## Budgeting: Problems and alternative approaches

In the previous article on Budgeting (*Aviation Strategy*, July/August 2002,) "Planning," "Budgeting," and "Control" were briefly defined in order to place the task of budgeting in its proper sequence. We stressed the notion that to be an effective and cohesive force, preparation of budgets should receive the widest and deepest organisational involvement. A finished budget becomes the guide, commitment, and promise of management.

This article expands the discussion of airline budgeting to explain many of the problems often encountered, and alternative approaches to the annual budgeting process.

A fully integrated budget exercise, requiring participation and preparation at the lowest organisational levels, is the best way to instil cohesiveness within an airline. Because of their involvement in the revenue commitments and the spending forecast decisions required, managers should be able to see the whole corporate picture and their contributions to profit goals.

Knowledge that individual managers will be held accountable for their results sharpens the thought process required for budget preparation.

### **Budget management**

A high level executive within the finance organisation usually manages budgeting. His/her responsibilities include collection and distribution of all relevant "Level of Operations" data from the proposed schedule, preparation of instructions for all budgeters throughout the company (generally in the form of a "manual" or handbook), and dissemination of the specific instructions and forms necessary to return budget inputs back to the finance department.

Remember that the Level of Operations is the collection of schedule-driven data which triggers the (annual) budget process. The manual, or handbook, provides instruc-

tions for each department stating the degree of detail and accuracy required, and the level of explanation demanded with each cost or revenue element. The budgeting forms furnished to each department are tailored to insure ease of data entry by both the budgeters and the finance department consolidators.

The forms, mentioned here, should be pre-printed with necessary account codes and spaces for monthly entries for each account code. Some carriers require that the forms be signed by the preparer as a seal of commitment upon return to the budget office. Some organisations transfer budget data by spreadsheet e-mail. In either case, the data must be viewed as a commitment and must not be changed without the permission of the budget office.

Note that budget input must occur by account code. Budgetary data when compared to actual data will be accomplished by account code. Each responsible manager will be required to explain the deviations from the budget and will be expected to take some form of remedial action as part of the "control" process.

At this point the budget submissions from all responsibility centres are consolidated, and a hierarchical company budget is created. Hierarchical means a consolidated budget is tabulated for each organisational level. So each major department will see a consolidated spending plan for the whole department. Each manager will see the compiled results for all of the budget centres reporting to him or her.

### **Some pitfalls**

Within the budget process risks abound. Sales managers may be too conservative in their revenue assumptions; line managers may be too lavish in padding their spending predictions. The net result of the exercise, when all budgetary inputs are consolidated, is a probable corporate financial loss.

Budgeting is a heuristic, or trial and error, process. The first cut at a budget rarely produces attainable results. High-level management must scrutinise the budgeted data and reinstate the process for another try. At this point, senior managers should increase the guidance provided to their subordinates, issue revised spending or revenue objectives, or insist on greater detail of explanation. This process occurs over and over, until the consolidated financial result is acceptable, yet within management's ability to commit to its plans.

Often the airline's schedule itself must be reworked. The schedule may have too many loss-making routes, or a misallocation of aircraft within the route network, or a region of the network that the airline simply cannot serve profitably. In these situations hard choices must be made. Elimination of a traditional service is always difficult, since staffing, pay levels, tradition, pride and corporate image are often involved. Nevertheless, the airline must never condone a budgeted loss. If an airline cannot schedule and budget a profit, it will sooner or later go out of business. Budgeted losses also weaken the resolve of all employees to produce their work with efficiency and consistency.

### **Level of detail**

Sophisticated budgeting demands that each manageable element of cost and revenue be identified, analysed, and planned. For example, passenger revenue requires assumptions of passenger volume by route, by class of service, by published and discounted fares, adjusted for the algorithms under yield management schemes, and net of promotions, discounts, and commissions. Each of these elements must be identified, quantified, understood, and in the case of commissions, negotiated. Comparison of these assumptions to actual results throughout year must be accomplished to assist in the fine-tuning of corporate strategy and tactics.

The same level of detail is required of costs. For example, the cost of passenger meal service requires assumptions regarding a forecast of the number of passengers and crews consuming meals in flight, the class of

meal consumed, the quality of meal service by class, the consumption of supplies (cups, napkins, condiment packs, etc.) and the degree of over-boarding meals. Comparison of these individual elements throughout the budget year will permit service quality adjustments, analysis of wastage, and more intelligent negotiation of catering contracts.

Several methods for establishing future budgets exist. The simplest is a trend extension of existing cost flows for an expense item, adjusted for a forecast of inflation. Regrettably, this technique produces little analysis or understanding of current or future product structure or requirements. Applied to a projection of revenue, trend budgeting fails to adequately account for specific volume changes, fare promotions, or competitive pressures.

The "programme" approach, wherein spending choices are isolated within boundaries, is more robust. In the meal service example above, a budgeter may develop ranges of meal choices and their associated costs for each route and class of service. The selection of the most desirable meal "programme" can be implemented, modified, swapped or eliminated depending on competitive offerings, or other environmental criteria. The benefit of this approach is the ability of management to intelligently choose a course of action, knowing its potential impact on service quality and financial performance.

Another example of the programme approach is found in the technical services area. Maintenance engineers routinely design new repairs for existing aviation hardware. Each new "fix" should be considered a "programme," wherein the sum of the programme costs of maintenance labour, bills of materials, and other outside vendor costs can be compared to alternative repair methods. Evaluation of the repair scheme may prove that the repair is uneconomical, and that rather than initiate a repair, maintenance management should scrap the hardware and replace with new. Evaluation of programmes of this nature also reveals the need for new tooling and/or test equipment. Investment in additional equipment, amortised over time, may render specific repairs highly economical and thus desirable from a financial per-



omance point of view.

There is no substitute for good budget analysis. From the examples above, providing lavish meal service on routes where no competition exists may simply be a waste of money. And if the technical services group has been repairing parts that should have been scrapped in the first place, no amount of part repair planning/budgeting will provide "bottom line" benefit. At the very least the budget process should point out these mistakes, and thus save expenses before they are incurred.

### Programme approach

The "programme" approach to budgeting, involves the development of "decision packages." An example of a decision package might be a marketing department programme to develop a corporate Internet website, further enhanced with up-to-the-minute schedule information, and the facility for customers to initiate online reservations and ticket purchases. One example might be the positioning of an additional line maintenance station at a remote airport. Another example might be the establishment, or removal, of an airport business class lounge.

In the first case, establishment of a website hopes to increase captured traffic by augmenting the airline's current channels of distribution. The analysis of this package should establish success benchmarks. Has the cost of website creation and maintenance been warranted by increased bookings, or identifiable savings in the reduction of use of other channels of distribution?

In the second example, the airline hopes to reduce costly maintenance delays, improve on-time performance, reduce passenger inconvenience expense, and enhance scheduling flexibility.

The third example hopes to improve competitive appeal by creation of improved station amenities, or save expense where a lack of competitive pressure permits. Has the establishment of a business class lounge increased captured lucrative business class passengers from or to the host airport?

Each of the above examples describes an opportunity to improve the bottom line. Sound budget discipline will thresh out the costs and benefits of each proposal so that

the programmes can be ranked against each other for desirability. As part of the budgeting process, management can thus intelligently evaluate competing proposals and allocate scarce funds for selective implementation.

Creation of decision packages is often arduous as the effort demands imagination, discipline, and clear thinking. Often the best results come from departmental "brain storming" meetings, where a group as a whole tests different ways of accomplishing routine tasks or services. Out of these meetings will come the alternatives which, when analysed, can be ranked for profit desirability and budgetary inclusion.

Individual and group self-discipline is key to the effective use of the decision package creation process. Without focus the process stalls. If the process stalls, the whole budgeting process will grind to a halt and become a managerial irritant. Annual budgeting will become a dreaded task rather than a stimulating means of improving airline efficiency and profitability. Creation of decision packages can be fun.

The intricacy of budget preparation will vary from one responsibility centre to another, depending on the complexity and/or profit impact of the items requiring analysis. For example, while of significant expense magnitude, aircraft lease costs are generally known by contract in advance. The fuel budget, on the other hand, is fraught with unknowns: what is or will be the price of fuel? At which location? Should the airline upload fuel at airport "A," "B," or "C?" At what price is a contract favourable? How should the airline use hedging?

Probably one of the least understood departmental budgets is that of Technical Services (Maintenance, Engineering, Inventory and Purchasing). Tech Services often confounds non-technical management because of its spending rhythm (and hence its budget behaviour) seems out-of-sync with the spending of the rest of the airline. Because of the magnitude of Technical Service expenses, the complexity of accounting and budgeting for these expenses, and the often-misunderstood nature of these expenses Technical Services duties and costs will be sole subject of the next article.

By Tom Weyer

# Aviation Strategy

## Databases

	Group revenue US\$m	Group costs US\$m	Group op. profit US\$m	Group net profit US\$m	Operating margin	Net margin	Total ASK m	Total RPK m	Load factor	Total pax. 000s	Group employees
<b>Alaska</b>											
Year 2000	2,177	2,198	-20.6	-70	-0.9%	-3.2%	27,834	19,277	69.3%	13,512	9,940
Apr-Jun 01	579	568	11.3	4.7	2.0%	0.8%	7,528	5,289	70.3%	3,692	10,966
Jul-Sep 01	583.4	570.6	12.8	25.3	2.2%	4.3%	7,536	5,351	71.0%	3,741	10,826
Oct-Dec 01	462.2	558.6	-96.4	-36.4	-20.9%	-7.9%	6,622	4,389	66.4%	3,025	10,500
Year 2001	2,141	2,263	-121.8	-39.5	-5.7%	-1.8%	28,837	19,712	68.4%	13,668	10,742
Jan-Mar 02	497	548	-51.4	-34.4	-10.3%	-6.9%	7,189	4,791	66.6%	3,193	
Apr-Jun 02	477	480	-2.2	-2.5	-0.5%	-0.5%					
<b>American</b>											
Year 2000	19,703	18,322	1,381	813	7.0%	4.1%	258,951	187,507	72.4%	86,239	99,610
Apr-Jun 01	4,838	5,586	-748	-494	-15.5%	-10.2%	66,007	47,484	71.9%	21,488	128,300
Jul-Sep 01	4,816	5,374	-558	-414	-11.6%	-8.6%	62,676	45,315	72.3%	20,123	127,200
Oct-Dec 01	3,804	4,952	-1148	-798	-30.2%	-21.0%	54,907	35,580	64.8%		109,300
Year 2001	18,963	20,823	-1,860	-1,762	-9.8%	-9.3%	161,030	176,143	69.4%	61,287	102,093
Jan-Mar 02	4,136	4,865	-729	-575	-17.6%	-13.9%	64,515	44,766			
Apr-Jun 02	4,479	5,080	-601	-495	-13.4%	-11.1%	70,724	53,125	71.4%		100,100
<b>America West</b>											
Year 2000	2,344	2,357	-12,637	7,679	-539.1%	327.6%	43,580	30,741	70.5%	19,950	13,869
Apr-Jun 01	587	641	-54	-42	-9.2%	-7.2%	11,098	8,367	75.5%	5,294	13,971
Jul-Sep 01	491	590	-99	-32	-20.2%	-6.5%	10,774	7,973	74.0%	5,034	13,633
Oct-Dec 01	400	538	-138	-61	-34.5%	-15.3%	9,477	6,492	68.5%	4,144	
Year 2001	2,066	2,380	-316	-148	-15.3%	-7.2%	42,709	30,696	71.9%	19,576	13,827
Jan-Mar 02	460	583	-123	-358	-26.7%	-77.8%	9,780	6,859	70.1%	4,303	
Apr-Jun 02	533	534	-1	-15	-0.2%	-2.8%	11,024	8,351	75.8%	5,080	
<b>Continental</b>											
Year 2000	9,899	9,170	729	342	7.4%	3.5%	134,718	100,283	74.4%	45,139	45,072
Apr-Jun 01	2,556	2,419	137	42	5.4%	1.6%	36,713	27,443	74.8%	12,256	
Jul-Sep 01	2,223	2,136	87	3	3.9%	0.1%	35,395	26,086	73.7%	11,254	
Oct-Dec 01	1,738	1,895	-157	-149	-9.0%	-8.6%	29,321	20,554	70.1%	9,508	
Year 2001	8,969	9,119	-150	-95	-1.7%	-1.1%	135,962	98,393	72.4%	44,238	45,166
Jan-Mar 02	1,993	2,180	-187	-166	-9.4%	-8.3%	30,498	22,582	74.0%	10,057	
Apr-Jun 02	2,192	2,307	-115	-139	-5.2%	-6.3%	33,108	24,922	74.6%		
<b>Delta</b>											
Year 2000	16,741	15,104	1,637	828	9.8%	4.9%	236,665	173,453	73.1%	105,591	79,584
Apr-Jun 01	3,776	3,890	-114	-90	-3.0%	-2.4%	61,538	44,784	72.8%	28,130	82,500
Jul-Sep 01	3,398	3,649	-251	-259	-7.4%	-7.6%	60,719	43,260	71.3%	26,441	83,500
Oct-Dec 01	2,863	3,457	-594	-734	-20.7%	-25.6%	51,460	32,798	63.7%		
Year 2001	13,879	15,124	-1,245	-1,216	-9.0%	-8.8%	237,914	163,693	68.8%	104,943	77,654
Jan-Mar 02	3,103	3,538	-435	-397	-14.0%	-12.8%	54,298	37,384	68.9%	24,618	
Apr-Jun 02	3,474	3,601	-127	-186	-3.7%	-5.4%	60,709	42,355	73.4%	27,427	75,700
<b>Northwest</b>											
Year 2000	11,240	10,671	569	256	5.1%	2.3%	171,789	127,298	76.6%	56,836	53,131
Apr-Jun 01	2,715	2,751	-36	-55	-1.3%	-2.0%	42,217	32,887	77.9%		
Jul-Sep 01	2,594	2,749	-155	19	-6.0%	0.7%	41,871	31,753	75.8%		
Oct-Dec 01	1,985	2,426	-441	-216	-22.2%	-10.9%	33,985	23,620	69.5%		
Year 2001	9,905	10,773	-868	-423	-8.8%	-4.3%	158,284	117,682	74.3%	54,056	50,309
Jan-Mar 02	2,180	2,376	-196	-171	-9.0%	-7.8%	35,022	26,611	76.0%	11,899	
Apr-Jun 02	2,406	2,452	-46	-93	-1.9%	-3.9%	39,848	29,902	78.9%		46,260
<b>Southwest</b>											
Year 2000	5,650	4,628	1,021	603	18.1%	10.7%	96,463	67,961	70.5%	72,568	28,752
Apr-Jun 01	1,554	1,263	291	176	18.7%	11.3%	26,430	18,970	71.8%	17,527	30,369
Jul-Sep 01	1,335	1,242	93	151	7.0%	11.3%	26,217	18,121	69.1%	16,208	30,946
Oct-Dec 01	1,238	1,201	37	64	3.0%	5.2%	26,888	17,343	64.5%	14,996	31,580
Year 2001	5,555	4,924	631	511	11.4%	9.2%	105,079	71,604	68.1%	64,447	31,014
Jan-Mar 02	1,257	1,207	49	21	3.9%	1.7%	26,586	16,726	62.9%	14,463	
Apr-Jun 02	1,473	1,284	189	102	12.8%	6.9%	29,074	20,314	69.9%	16,772	33,149
<b>United</b>											
Year 2000	19,351	18,685	666	96	3.4%	0.5%	282,276	204,188	72.3%	83,853	100,976
Apr-Jun 01	4,658	5,011	-353	-292	-7.6%	-6.3%	71,928	52,652	73.2%	21,331	98,000
Jul-Sep 01	4,107	4,819	-712	-542	-17.3%	-13.2%	69,233	50,610	73.1%	19,815	95,900
Oct-Dec 01	2,949	3,835	-886	-308	-30.0%	-10.4%	56,421	38,140	67.6%	15,450	79,300
Year 2001	16,138	18,481	-2,343	-2,145	-14.5%	-13.3%	265,291	187,701	70.8%	75,457	96,142
Jan-Mar 02	3,288	3,999	-711	-510	-21.6%	-15.5%	55,056	39,761	72.2%	15,361	
Apr-Jun 02	3,793	4,278	-485	-341	-12.8%	-9.0%	60,315	44,896	74.4%	17,501	79,800
<b>US Airways</b>											
Year 2000	9,268	9,322	-54	-269	-0.6%	-2.9%	106,999	75,358	70.4%	59,772	45,228
Jan-Mar 01	2,241	2,469	-228	-171	-10.2%	-7.6%	27,752	18,372	66.2%	14,193	44,077
Apr-Jun 01	2,493	2,473	20	-24	0.8%	-1.0%	29,395	21,693	73.8%	16,582	44,673
Jul-Sep 01	1,989	2,739	-750	-766	-37.7%	-38.5%	27,609	19,619	71.1%	14,188	42,723
Oct-Dec 01	1,554	2,101	-547	-906	-35.2%	-58.3%	22,640	14,308	63.2%	11,151	35,232
Year 2001	8,288	9,355	-1,067	-1,969	-12.9%	-23.8%	107,347	73,944	68.9%	56,114	43,846
Jan-Mar 02	1,709	2,079	-370	-269	-21.7%	-15.7%	22,495	15,419	68.5%	11,825	
Apr-Jun 02	1,903	2,078	-175	-248	-9.2%	-13.0%	23,516	17,658	75.1%	13,000	

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation. 1 ASM = 1.6093 ASK.

# Aviation Strategy

## Databases

	Group revenue US\$m	Group costs US\$m	Group op. profit US\$m	Group net profit US\$m	Operating margin	Net margin	Total ASK m	Total RPK m	Load factor	Total pax. 000s	Group employees
<b>Air France</b>											
Year 2000/01	11,148	10,746	402	382	3.6%	3.4%	119,562	93,355	78.1%	42,400	52,310
Apr-Jun 01	3,113	2,887	226		7.3%		32,266	25,515	79.0%		
Jul-Sep 01	2,959	2,895	64		2.2%		31,738	25,481	79.2%		
Oct-Dec 01	2,682	2,785	-103	-121	-3.8%	-4.5%	30,070	20,907	70.6%		
Jan-Mar 02	2,667	2,647	20	1	0.7%	0.0%	29,703	22,925	77.2%		
Year 2001/02	11,234	11,017	217	141	1.9%	1.3%	123,777	94,828	76.6%		
Apr-Jun 02	3,276	3,124	163	157	5.0%	4.8%	31,687	24,435	77.1%		
<b>Alitalia</b>											
Year 2000	4,968	5,210	-242	-236	-4.9%	-4.8%	57,483	41,433	72.1%	26,700	23,478
Jan-Jun 01	2,348	2,504	-156	-228	-6.6%	-9.7%	26,437	18,953	71.7%	12,565	24,023
Jul-Dec 01	2,397	2,503	-106	-590	-4.4%	-24.6%	24,944	17,423	69.8%	12,204	
Year 2001	4,745	5,007	-262	-818	-5.5%	-17.2%	51,392	36,391	70.8%	24,737	23,667
<b>BA</b>											
Year 2000/01	13,700	13,139	561	189	4.1%	1.4%	162,824	116,674	71.7%	44,462	62,844
Apr-Jun 01	3,277	3,206	71	37	2.2%	1.1%	40,980	28,646	69.9%	11,293	58,989
Jul-Sep 01	3,219	3,116	103	33	3.2%	1.0%	39,629	29,297	73.9%	11,306	59,902
Oct-Dec 01	2,616	2,882	-266	-205	-10.2%	-7.8%	35,449	23,106	65.2%	8,574	55,758
Jan-Mar 02	2,842	2,908	-66	-63	-2.3%	-2.2%	34,998	25,221	72.1%	8,831	
Year 2001/02	12,138	12,298	-160	-207	-1.3%	-1.7%	151,046	106,270	70.4%	40,004	
Apr-Jun 02	3,127	2,886	241	61	7.7%	2.0%	35,020	24,679	70.5%	9,665	52,926
<b>Iberia</b>											
Year 2000	4,136	4,075	61	188	1.5%	4.5%	54,120	40,049	73.8%	24,500	26,814
Year 2001	4,240	4,236	4	45	0.1%	1.1%		41,297	70.8%	24,930	
<b>KLM</b>											
Year 2000/01	6,319	6,068	251	70	4.0%	1.1%	75,222	60,047	79.8%	16,100	30,253
Apr-Jun 01	1,507	1,487	20	17	1.3%	1.1%	19,231	15,200	79.0%		27,211
Jul-Sep 01	1,679	1,596	83	24	4.9%	1.4%	19,554	16,049	82.1%		28,911
Oct-Dec 01	1,291	1,358	-67	-82	-5.2%	-6.4%	17,030	12,483	73.3%		27,738
Jan-Mar 02	1,302	1,414	-112	-97	-8.6%	-7.5%	16,473	13,215	79.9%		
Year 2001/02	5,933	6,018	-85	-141	-1.4%	-2.4%	72,228	56,947	78.7%		33,265
Apr-Jun 02	1,639	1,599	40	11	2.4%	0.7%	18,041	14,326	79.4%		34,366
<b>Lufthansa</b>											
Year 2000	14,014	12,648	1,366	635	9.7%	4.5%	123,801	92,160	74.4%	47,000	69,523
Apr-Jun 01	4,119	4,045	74	41	1.8%	1.0%	30,658	22,930	74.8%	12,236	85,771
Jul-Sep 01	4,188	4,027	161	96	3.8%	2.3%	32,454	24,546	75.6%	12,692	83,447
Oct-Dec 01	3,437	3,674					28,293	18,854	67.4%	9,873	
Year 2001	14,966	14,948	18	-530	0.1%	-3.5%	126,400	90,389	71.5%	45,710	87,975
Jan-Mar 02	3,556	3,513	43	-165	1.2%	-4.6%	26,757		71.0%	9,700	
Apr-Jun 02	4,968	4,601	285	138	5.7%	2.8%	30,344			11,300	90,308
<b>SAS</b>											
Year 2000	5,185	4,853	332	233	6.4%	4.5%	33,782	22,647	67.0%	23,240	22,698
Jan-Mar 01	1,183	1,175	8	2	0.7%	0.1691%	8,558	5,286	61.8%	5,482	29,985
Apr-Jun 01	1,345	1,329	16	18	1.2%	1.3%	9,144	6,227	68.1%	6,279	30,499
Jul-Sep 01	1,199	1,220	-21	-20	-1.8%	-1.7%	9,629	6,498	67.5%	6,463	30,896
Oct-Dec 01	1,208	1,316	-108	-108	-8.9%	-8.9%	8,509	5,097	59.9%	5,300	
Year 2001	4,984	5,093	-109	-103	-2.2%	-2.1%	35,521	22,956	64.6%	23,060	22,656
Jan-Mar 02	1,392	1,534	-142	-133	-10.2%	-9.6%	8,228	5,229	63.1%	5,091	
Apr-Jun 02	1,888	1,545	343	102	18.2%	5.4%	8,773	6,240	71.1%	6,034	
<b>Ryanair</b>											
Year 2000/01	442	338	104	95	23.5%	21.5%	6,657	4,656	69.9%	7,000	1,476
Apr-Jun 01	132	107	25	21	18.9%	15.9%				2,400	
Jul-Sep 01	168	105	63	58	37.5%	34.5%			84.0%	2,900	
Oct-Dec 01	122	97	25	26	20.5%	21.3%			79.0%	2,700	
Jan-Mar 02	220	165	55	50	25.0%	22.7%					
Year 2001/02	642	474	168	155	26.2%	24.1%			81.0%	11,900	1,547
Apr-Jun 02	189	153	47	40	24.9%	21.2%			83.0%	3,540	
<b>easyJet</b>											
Sep 00-Mar 01	210	225	-15	-15	-7.1%	-7.1%			80.6%	3,200	
Apr-Sep 01	314	273	41	41	13.1%	13.1%				3,915	
Year 2000/01	513	455	58	54	11.3%	10.5%	7,003	5,903	83.0%	7,115	1,632
Sep-Mar 02	285	279	6	1	2.1%	0.4%			84.2%	4,300	

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation. 1 ASM = 1.6093 ASK

# Aviation Strategy

## Databases

	Group revenue US\$m	Group costs US\$m	Group op. profit US\$m	Group net profit US\$m	Operating margin	Net margin	Total ASK m	Total RPK m	Load factor	Total pax. 000s	Group employees
<b>ANA</b>											
Apr-Sep 00	5,228	4,793	495	359	9.5%	6.9%	47,586	31,753	66.7%	24,958	
Oct 00-Mar 01	5,376	5,186	190	-486	3.5%	-9.0%	46,278	29,168	63.0%	24,471	
<b>Year 2000/01</b>	<b>10,914</b>	<b>10,629</b>	<b>285</b>	<b>-137</b>	<b>2.6%</b>	<b>-1.3%</b>	<b>85,994</b>	<b>58,710</b>	<b>68.3%</b>	<b>43,700</b>	<b>14,303</b>
Apr-Sep 01	5,168	4,811	357	136	6.9%	2.6%	45,756	30,790	67.3%	25,876	
Oct 01-Mar 02											
<b>Year 2001/02</b>	<b>9,714</b>	<b>9,529</b>	<b>185</b>	<b>-76</b>	<b>1.9%</b>	<b>-0.8%</b>	<b>87,908</b>	<b>57,904</b>	<b>64.7%</b>	<b>49,306</b>	
<b>Cathay Pacific</b>											
Jan-Jun 00	2,070	1,765	305	285	14.7%	13.8%	29,839	22,588	75.7%	5,483	
Jul-Dec 00	2,356	1,983	373	382	15.8%	16.2%	32,070	24,587	76.7%	6,147	
<b>Year 2000</b>	<b>4,431</b>	<b>3,752</b>	<b>679</b>	<b>642</b>	<b>15.3%</b>	<b>14.5%</b>	<b>61,909</b>	<b>47,153</b>	<b>76.2%</b>	<b>11,860</b>	<b>14,293</b>
Jan-Jun 01	2,031	1,898	133	170	6.5%	8.4%	32,419	23,309	71.9%	5,936	
Jul-Dec 01	1,871	1,897	-26	-86	-1.4%	-4.6%	30,371	21,497	70.8%	5,378	
<b>Year 2001</b>	<b>3,902</b>	<b>3,795</b>	<b>107</b>	<b>84</b>	<b>2.7%</b>	<b>2.2%</b>	<b>62,790</b>	<b>44,792</b>	<b>71.3%</b>	<b>11,270</b>	<b>15,391</b>
Jan-Jun 02	1,989	1,753	235	181	11.8%	9.1%	29,537		78.1%		14,300
<b>JAL</b>											
<b>Year 1999/00</b>	<b>14,442</b>	<b>14,039</b>	<b>403</b>	<b>177</b>	<b>2.8%</b>	<b>1.2%</b>	<b>119,971</b>	<b>88,479</b>	<b>70.2%</b>	<b>37,200</b>	<b>18,974</b>
<b>Year 2000/01</b>	<b>13,740</b>	<b>13,106</b>	<b>634</b>	<b>331</b>	<b>4.6%</b>	<b>2.4%</b>	<b>129,435</b>	<b>95,264</b>	<b>73.6%</b>	<b>38,700</b>	<b>17,514</b>
<b>Year 2001/02</b>	<b>9,607</b>	<b>9,741</b>	<b>-135</b>	<b>-286</b>	<b>-1.4%</b>	<b>-3.0%</b>				<b>37,183</b>	
<b>Korean Air</b>											
<b>Year 2000</b>	<b>4,916</b>	<b>4,896</b>	<b>20</b>	<b>-409</b>	<b>0.4%</b>	<b>-8.3%</b>	<b>55,824</b>	<b>40,606</b>	<b>72.7%</b>	<b>22,070</b>	<b>16,000</b>
<b>Year 2001</b>	<b>4,309</b>	<b>4,468</b>	<b>-159</b>	<b>-448</b>	<b>-3.7%</b>	<b>-10.4%</b>					
Jan - Mar 02	1,113	1,060	54	23	4.9%	2.1%	13,409	9,799	73.1%	5,399	
<b>Malaysian</b>											
<b>Year 1999/00</b>	<b>2,148</b>	<b>2,120</b>	<b>28</b>	<b>-68</b>	<b>1.3%</b>	<b>-3.2%</b>	<b>48,158</b>	<b>34,930</b>	<b>71.3%</b>	<b>15,370</b>	<b>21,687</b>
<b>Year 2000/01</b>	<b>2,357</b>	<b>2,178</b>	<b>179</b>	<b>-351</b>	<b>7.6%</b>	<b>-14.9%</b>	<b>52,329</b>	<b>39,142</b>	<b>74.8%</b>	<b>16,590</b>	<b>21,518</b>
<b>Qantas</b>											
<b>Year 1999/00</b>	<b>5,710</b>	<b>5,162</b>	<b>548</b>	<b>324</b>	<b>9.6%</b>	<b>5.7%</b>	<b>85,033</b>	<b>64,149</b>	<b>75.4%</b>	<b>20,490</b>	<b>29,217</b>
Jul-Dec 00	2,745	2,492	224	142	8.2%	5.2%	46,060	35,451	77.0%	11,175	31,382
<b>Year 2000/01</b>	<b>5,473</b>	<b>5,099</b>	<b>374</b>	<b>223</b>	<b>6.8%</b>	<b>4.1%</b>	<b>92,943</b>	<b>70,540</b>	<b>75.9%</b>	<b>22,150</b>	<b>31,632</b>
Jul-Dec 01	3,050	2,904	125	84	4.1%	2.8%	48,484	37,262	76.9%	13,335	32,361
<b>Year 2001/02</b>	<b>6,133</b>	<b>5,785</b>	<b>348</b>	<b>232</b>	<b>5.7%</b>	<b>3.8%</b>	<b>95,944</b>	<b>75,134</b>	<b>78.3%</b>	<b>27,128</b>	<b>33,044</b>
<b>Singapore</b>											
Apr-Sep 00	2,864	2,438	426	668	14.9%	23.3%	46,478	36,137	77.8%	7,584	
Oct 00-Mar 01	2,635	2,317	318	209	12.1%	7.9%	46,171	34,982	75.8%	7,416	
<b>Year 2000/01</b>	<b>5,729</b>	<b>4,954</b>	<b>775</b>	<b>892</b>	<b>13.5%</b>	<b>15.6%</b>	<b>92,648</b>	<b>71,118</b>	<b>76.8%</b>	<b>15,000</b>	<b>14,254</b>
Apr-Sep 01	2,592	2,329	263	90	10.1%	3.5%	48,058	36,091	75.1%		
Oct 01-Mar 02	2,807	2,508	299		10.7%		46,501	33,904			
<b>Year 2001/02</b>	<b>5,399</b>	<b>4,837</b>	<b>562</b>	<b>395</b>	<b>10.4%</b>	<b>7.3%</b>	<b>94,559</b>	<b>69,995</b>	<b>74.0%</b>	<b>14,765</b>	

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation. 1 ASM = 1.6093 ASK.

### JET AND TURBOPROP ORDERS

	Date	Buyer	Order	Price	Delivery	Other information/engines
<b>Airbus</b>	Oct 1	Lufthansa	10 A330-300s		Jan 04	Converted MoU
<b>Boeing</b>	Sept 2	All Nippon	5 777-300s		2004-06	
	Sept 20	Korean Air	9 767-300ERS			
	Sept 26	JAL	1 777-200ER 2 747-400F		2004	CF6-80C2B1F
<b>Bombardier</b>	Sept 6	Shandong AL	2 CRJ 700s		2H03	First operator of CRJ700 in China

Note: Prices in US\$. Only firm orders from identifiable airlines/lessors are included. Source: Manufacturers.

### MoUs and LoIs

# Aviation Strategy

## Databases

### EUROPEAN SCHEDULED TRAFFIC

	Intra-Europe			North Atlantic			Europe-Far East			Total long-haul			Total Int'l		
	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %
1994	144.7	87.7	60.6	150.3	108.8	72.4	102.8	76.1	74	334.0	243.6	72.9	503.7	346.7	68.8
1995	154.8	94.9	61.3	154.1	117.6	76.3	111.1	81.1	73	362.6	269.5	74.3	532.8	373.7	70.1
1996	165.1	100.8	61.1	163.9	126.4	77.1	121.1	88.8	73.3	391.9	292.8	74.7	583.5	410.9	70.4
1997	174.8	110.9	63.4	176.5	138.2	78.3	130.4	96.9	74.3	419.0	320.5	76.5	621.9	450.2	72.4
1998	188.3	120.3	63.9	194.2	149.7	77.1	135.4	100.6	74.3	453.6	344.2	75.9	673.2	484.8	72
1999	200.0	124.9	62.5	218.9	166.5	76.1	134.5	103.1	76.7	492.3	371.0	75.4	727.2	519.5	71.4
2000	208.2	132.8	63.8	229.9	179.4	78.1	137.8	108.0	78.3	508.9	396.5	77.9	755.0	555.2	73.5
2001	212.9	133.4	62.7	217.6	161.3	74.1	131.7	100.9	76.6	492.2	372.6	75.7	743.3	530.5	71.4
Jul-02	18.7	13.4	71.5	17.6	14.9	84.5	11.2	9.1	81.5	40.6	33.3	82.2	62.3	48.9	78.4
Ann. chng	-10.1%	-9.0%	0.9	-18.5%	-16.5%	2.0	-4.3%	-7.2%	-2.5	-11.7%	-12.2%	-0.5	-11.3%	-11.3%	-0.1
Jan-July 02	114.5	75.4	65.9	106.7	85.3	80.0	74.0	59.6	80.6	260.8	205.9	79.0	394.8	294.6	74.6
Ann. chng	-12.7%	-8.7%	2.9	-21.4%	-17.1%	4.2	-8.4%	-5.3%	2.6	-13.2%	-10.9%	2.1	-13.2%	-10.4%	2.3

Source: AEA

### US MAJORS' SCHEDULED TRAFFIC

	Domestic			North Atlantic			Pacific			Latin America			Total Int'l		
	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %
1994	886.9	575.6	64.9	136.1	99.5	73.0	107.3	78.2	72.9	56.8	35.2	62	300.3	212.9	70.9
1995	900.4	591.4	65.7	130.4	98.5	75.6	114.3	83.7	73.2	62.1	39.1	63	306.7	221.3	72.1
1996	925.7	634.4	68.5	132.6	101.9	76.8	118.0	89.2	75.6	66.1	42.3	64	316.7	233.3	73.7
1997	953.3	663.7	69.6	138.1	108.9	78.9	122.0	91.2	74.7	71.3	46.4	65.1	331.2	246.5	74.4
1998	960.8	678.8	70.7	150.5	117.8	78.3	112.7	82.5	73.2	83.5	52.4	62.8	346.7	252.7	72.9
1999	1,007.3	707.5	70.2	164.2	128.2	78.1	113.2	84.7	74.8	81.3	54.3	66.8	358.7	267.2	74.5
2000	1,033.5	740.1	71.6	178.9	141.4	79.0	127.7	97.7	76.5	83.0	57.6	69.4	380.9	289.9	76.1
2001	1,025.4	712.2	69.5	173.7	128.8	74.2	120.1	88.0	73.3	83.4	56.9	68.2	377.2	273.7	72.6
Aug-02	89.7	68.6	76.4	15.1	12.6	83.4	9.3	7.8	83.8	7.4	5.5	73.6	31.9	25.9	81.2
Ann. chng	-7.5%	-7.3%	0.2	-11.1%	-10.0%	1.0	-17.3%	-17.0%	0.2	1.3%	-1.1%	-1.8	-10.5%	-10.6%	0.1
Jan-Aug 02	663.0	479.3	72.3	105.6	84.1	80.0	67.7	55.5	82.1	57.3	39.8	69.5	230.6	179.9	78.0
Ann. chng	-9.3%	-8.5%	0.6	-14.7%	-12.4%	2.2	-21.5%	-16.1%	5.3	-1.4%	-4.1%	-1.9	-14.0%	-11.9%	1.9

Note: US Majors = Aloha, Alaska, American, Am. West, American Transair, Continental, Cont. Micronesia, Delta, Hawaiian JetBlue, MidWest Express, Northwest, Southwest, United and US Airways Source: ATA

### ICAO WORLD TRAFFIC AND ESG FORECAST

	Domestic			International			Total			Domestic growth rate		International growth rate		Total growth rate	
	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK bn	RPK bn	LF %	ASK %	RPK %	ASK %	RPK %	ASK %	RPK %
1993	1,349	855	63.3	1,785	1,205	67.5	3,135	2,060	65.7	3.4	2.0	4.4	4.8	3.9	3.6
1994	1,410	922	65.3	1,909	1,320	69.1	3,318	2,240	67.5	4.6	7.9	6.9	9.4	5.9	8.8
1995	1,468	970	66.1	2,070	1,444	69.8	3,537	2,414	68.3	4.1	5.4	8.5	9.4	6.6	7.8
1996	1,540	1,043	67.7	2,211	1,559	70.5	3,751	2,602	79.4	4.9	7.4	6.8	8.0	6.0	7.8
1997	1,584	1,089	68.8	2,346	1,672	71.3	3,930	2,763	70.3	2.9	4.5	6.1	7.2	4.8	6.1
1998	1,638	1,147	70.0	2,428	1,709	70.4	4,067	2,856	70.3	3.4	5.2	3.5	2.2	3.4	3.4
1999	1,911	1,297	67.9	2,600	1,858	71.5	4,512	3,157	70.0	5.4	5.0	5.7	7.4	5.6	6.4
2000	2,005	1,392	69.4	2,745	1,969	71.8	4,750	3,390	70.8	4.9	7.2	5.6	6.0	5.3	6.5
*2001							4,698	3,262	69.4					-1.1	-3.9
*2002							4,607	3,294	71.1					-1.9	0.4
*2003							4,903	3,584	73.1					6.4	9.4
*2004							5,154	3,8819	74.1					5.1	6.6

Note: \* = Forecast; ICAO traffic includes charters. Source: Airline Monitor, June 2002

### AIRCRAFT AVAILABLE FOR SALE OR LEASE

	Old		Total old	New		Total new	Total
	narrowbodies	widebodies		narrowbodies	widebodies		
1997	162	104	266	54	13	67	333
1998	187	125	312	67	55	122	434
1999	243	134	377	101	53	154	531
2000	302	172	474	160	42	202	676
2001	368	188	556	291	101	392	948
2002-July	374	166	540	299	105	404	944

Source: BACK Notes: As at end year; Old narrowbodies = 707, DC8, DC9, 727, 737-100/200, F28, BAC 1-11, Caravelle; Old widebodies = L1011, DC10, 747-100/200, A300B4; New narrowbodies = 737-300+, 757, A320 types, BAe 146, F100, RJ; New widebodies = 747-300+, 767, 777, A600, A310, A330, A340.

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