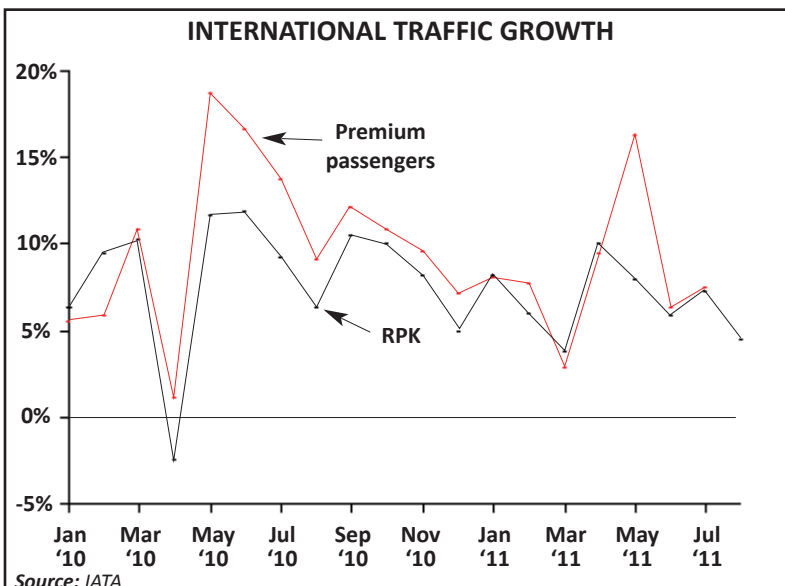


Global economy: A matter of imbalances

In the immediate aftermath of the Lehman Bros' collapse in late 2008, when banks stopped moving money, and the world's economy came to an abrupt halt, the main concerns revolved round the shape of the looming global economic recession; V-shaped, U-shaped, double-dip W-shaped or – in the words of one noted commentator – bath-tub shaped. Three years on from that shock to the global system we now know that there has been a recovery – of sorts. The recession took its full force in 2009 with a reduction in world GDP of some 0.7% (and a near 4% fall in the advanced economies); the inevitable bounce back in 2010 saw increases in global GDP of some 5% - and growth resumed in all but a handful of minor states. The early signs for this year were for continued recovery albeit at slightly lower growth rates than in 2010.

However, since the beginning of the year the economic environment appears to have been deteriorating. Admittedly there have been one-off shocks to the system: the earthquake and after-effects of the consequent tsunami in Japan are estimated to have reduced global economic activity by a noticeable proportion in the second quarter (with some estimates suggesting that global car production was down by around 30% because of the impact on the supply chain, and others suggesting that output in the advanced economies had been reduced by 0.5%-1% in the second quarter as a direct result of the disaster). The disturbances in the Middle East and North Africa following the Jasmine revolution



www.aviationeconomics.com

CONTENTS

Analysis

Global economy
quasi-recovery patterns 1-3

Lufthansa:
Feeding the powerhouse 4-7

Briefing

Delta Airlines:
Deleveraging and de-risking 8-13

Management

FX and Fuel: Their part in
airline risk management -
an econometric approach 14-18

Databases 19-22

European, US and Asian
airline traffic and financials

Regional trends

Orders

PUBLISHER

Aviation Economics

James House, 1st Floor
22/24, Corsham Street
London N1 6DR

Tel: +44 (0)20 7490 5215
Fax: +44 (0)20 7490 5218

email: info@aviationeconomics.com

IMF GDP FORECASTS

	2009	2010	2011P	Previous estimate	2012P estimate	Previous estimate	Downside 1	Downside 2
World Output	-0.7	5.1	4.0	4.3	4.0	4.5	2.2	1.5
Advanced Economies	-3.7	3.1	1.6	2.2	1.9	2.6		
United States	-3.5	3.0	1.5	2.5	1.8	2.7	-0.5	-1.5
Euro Area	-4.3	1.8	1.6	2.0	1.1	1.7	-2.3	-2.5
Germany	-5.1	3.6	2.7	3.2	1.3	2.0		
France	-2.6	1.4	1.7	2.1	1.4	1.9		
Italy	-5.2	1.3	0.6	1.0	0.3	1.3		
Spain	-3.7	-0.1	0.8	0.8	1.1	1.6		
Japan	-6.3	4.0	-0.5	-0.7	2.3	2.9	0.9	0.5
UK	-4.9	1.4	1.1	1.5	1.6	2.3		
Canada	-2.8	3.2	2.1	2.9	1.9	2.6		
Other Advanced Economies	-1.1	5.8	3.6	4.0	3.7	3.8		
Newly Industrialised Asian Economies	-0.7	8.4	4.7	5.1	4.5	4.5		
Emerging and Developing Economies	2.8	7.3	6.4	6.6	6.1	6.4		
Central and Eastern Europe	-3.6	4.5	4.3	5.3	2.7	3.2		
CIS	-6.4	4.6	4.6	5.1	4.4	4.7		
Developing Asia	7.2	9.5	8.2	8.4	8.0	8.4	6.2	5.4
China	9.2	10.3	9.5	9.6	9.0	9.5		
India	6.8	10.1	7.8	8.2	7.5	7.8		
ASEAN-54	1.7	6.9	5.3	5.4	5.6	5.7		
Latin America and the Caribbean	-1.7	6.1	4.5	4.6	4.0	4.1	3.2	3.1
Brazil	-0.6	7.5	3.8	4.1	3.6	3.6		
Mexico	-6.2	5.4	3.8	4.7	3.6	4.0		
Middle East and North Africa	2.6	4.4	4.0	4.2	3.6	4.4		
Sub-Saharan Africa	2.8	5.4	5.2	5.5	5.8	5.9		

Note: Previous estimates April 2011; **Downside 1** = Euro banking shock (mark to market of sovereign debt, further deleveraging); **Downside 2** = Downside 1 + Slower growth in US + further mortgage portfolio losses + in Asia portfolio loan losses
Source: IMF WEO September 2011

Aviation Strategy

is published 10 times a year by
Aviation Economics

Publisher:

Keith McMullan
kgm@aviationeconomics.com

Contributing Editor:

Heini Nuutinen

Production Editor:

Julian Longin
jil@aviationeconomics.com

Subscriptions:

jil@aviationeconomics.com

Tel: +44 (0)20 7490 5215

Copyright:

Aviation Economics
All rights reserved

Aviation Economics

Registered No: 2967706
(England)

Registered Office:

James House, 1st Floor
22/24 Corsham St
London N1 6DR
VAT No: 701780947

ISSN 2041-4021 (Online)

The opinions expressed in this publication do not necessarily reflect the opinions of the editors, publisher or contributors. Every effort is made to ensure that the information contained in this publication is accurate, but no legal responsibility is accepted for any errors or omissions.

The contents of this publication, either in whole or in part, may not be copied, stored or reproduced in any format, printed or electronic, without the written consent of the publisher.

had a significant impact on oil prices because of fears of supply restrictions (and possibly a knock-on effect on other commodities) – and as the price once more edged up over \$120/bbl some aviation commentators suggested invidious comparisons with the events of 2008.

Many commentators and forecasters have been downgrading short term expectations. The IMF, in its latest *World Economic Outlook* bulletin published in September, further shaved its estimates for world GDP growth this year by around half a percentage point for most regions of the world (see table, above). On top of this however it emphasised increasing downside risks to its medium term forecasts; and that this risk seemed to be accelerating.

It is all perhaps a matter of imbalances. The two-speed economic pattern of the 2000s saw reasonable growth in the developed world unusually in conjunction with strong growth in the BRICs. This has been exacerbated through the financial crisis. The developing nations – led by China para-

mount among the BRICs - continue to expand (albeit generally at a slightly slower rate than in the pre-crisis period) but the developed economies (which account for half the world's economic activity but three quarters of the world consumption) remain very sluggish.

Through this year in fact, the growth in the developed nations has been much slower than expected – levels of unemployment remain stubbornly high, consumer confidence low, and fiscal tightening has not been replaced by consumer spending (hardly surprising perhaps when household debt ratios continue at high levels and house prices in those countries most responsible for the asset bubble remain badly subdued), and savings ratios have continued to rise where possible.

On top of this, the fiscal austerity measures necessary in most developed nations to recover fiscal confidence are adding to consumer concerns, further reducing consumer confidence and weakening spending propensity; effectively producing a downward feed-

back loop.

However, in the developing nations there are increasing concerns of the possibility of economic overheating and the dangers of raised inflation expectations; and food price inflation is one of the major concerns (food accounts for an average of about 30% of consumer spending in the developing world against around 17% in the developed).

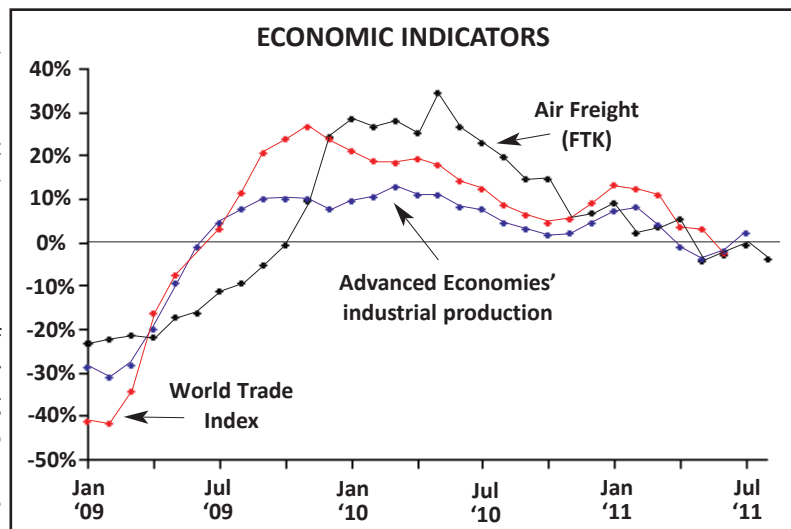
In addition to all of this are the increasing financial and fiscal uncertainties – highlighted by the problems in the peripheral Euro countries of Greece, Portugal, and Spain, but also represented by the budgetary problems in the US.

In conjunction with the tightened capital requirements of the new banking order these appear to be leading major banking institutions once again to question the financial stability of other banks: perhaps suggesting that inter-bank lending and global monetary flows are again under pressure (which was possibly a major contributing factor to the halt in the world economy in 2008/9). At least the reintroduction of another round of quantitative easing by the Bank of England seems to suggest a concern in that direction; and there will possibly be increasing pressure on other central banks to take similar action.

There is a parallel in the aircraft finance sector where the Export Credit Agencies (ECAs) have been obliged to fill the gaps left by exiting commercial banks. Pre 2008, ECAs, according to DVB Bank, accounted for about 20% of new aircraft financing, but that proportion has now risen to about 35%. The retreat from aviation financing has accelerated in recent months; the question is whether this retreat is tactical and temporary or strategic and permanent.

Mixed aviation recovery

Meanwhile there are once again mixed signs emerging from the aviation industry. Total international freight tonne kilometres have been exhibiting modest year-on-year



declines since May this year having experienced a significant recovery in the restocking cycle in 2010/11. Freight traffic does tend to be a coincident if not leading indicator of economic activity and appears closely linked with world trade activity and industrial production (see chart, above). Air freight volumes however are also weighted towards a traditional pre-Christmas peak; the major consumption period in the developed nations' economies. Further disturbing news recently came from both Lufthansa and Cathay (the world's largest and third largest airline freight operators respectively). Cathay highlighted a 10% decline in freight traffic in September blaming slowing Chinese exports; both Cathay and Lufthansa suggested that there were no signs of the usual fourth quarter demand peak.

On the other hand, the latest figures we have from IATA (albeit for July) show continued year-on-year improvements in premium passenger demand – and generally at a higher rate than total traffic growth in RPKs (see chart, page 1); but then perhaps passenger traffic is more naturally a lagging indicator.

The questions posed in 2008-09 are probably still valid; the shape of the recession and recovery is still not certain. The IMF WEO suggests that should all the negative risks manifest themselves we could indeed be looking at the second stage of a double dip recession in 2012 for the major industrialised nations; and that the developing nations (especially in Asia) could also encounter a hard landing.

Lufthansa: Feeding the powerhouse

Lufthansa is the only major carrier to have made success of creating a corporate structure as a conglomerate holding company. This approach is not always appreciated by the stockmarkets; and Lufthansa seems to get little credit for having created a portfolio of aviation businesses that are individually the largest players in their particular segments of the industry.

At the company's investor day in Zurich last month, the management presented their strategy in depth: at the same time berating the analyst community for not looking in detail at the non-passenger airline businesses that make up a third of its total revenues, and for rating the shares so lowly that the group's market capitalisation had fallen to the level it reached in 2001 – when the group very nearly collapsed for lack of cash in the Sept 11 aftermath (and incidentally 2001 was the last time the company held its investor day outside Germany).

However, even despite these complaints, the passenger business remains the most important core part of the group; and the whole investor day series of presentations revolved around the passenger airlines. Nevertheless, little did they realise when they planned their investor day that they would have to preface it with a profit warning (that profits would fall from last year's level): at least, with €5bn in cash and extra credit lines of €2bn, now their financial position is far more secure than a decade ago.

Group Strategy Presentation

New CEO Christophe Franz emphasised the group mission statement; pre-eminent in which were the declarations that Lufthansa is “Europe's airline powerhouse...”, and “as the world's leading aviation group ... the global leader in selected aviation services”, with a target to “grow profitably and maintain a healthy financial structure”. The group has a view (common with many others in the industry) that it needs to grow in line with the market – through organic growth as well as by acquisition – and no doubt believes the standard long range forecasts of 5% RPK growth a year for the industry over the next twenty years.

He presented a brief vision of aviation in 2020 that few would dissent from:

- Increasing globalisation, emerging markets growing fastest
- Gulf carriers putting increasing pressure on yields in key markets
- “Zombie” European flag carriers to disappear or shrink
- Further convergence between network and LCC models
- Technological opportunities of the new generation aircraft changing operating economics and opening new markets
- Continued and rising cost pressures (particularly from fuel and taxes) with OEM pressure on the MRO business
- Further consolidation and emergence of mega-carriers, although restrained by national regulatory obstacles.

As usual the company highlighted its success in generating value to shareholders (ignoring the share price for the moment) having generated some €2.1bn between 2000 and 2010 cash flow in excess of weighted cost of capital, re-emphasising the benefits it saw in the portfolio of businesses and the different cycles of profitability in the separate segments. It also highlighted its active, and what it regards as successful, portfolio management over the past decade (with divestment of stakes in Amadeus, Equant, Globeground, DHL, Tank und Rest, Loyalty, Thomas Cook, and Condor; and acquisition of investments in BMI, Eurowings, SkyChefs, Air Dolomiti, Swiss, Fraport, JetBlue, Austrian and SN Brussels) and gave the strong indication that it would continue the “track record”.

Franz highlighted the intention to strengthen the passenger business through a variety of strategies. Of key importance is the idea of strengthening further the group's presence in its home markets and key European catchment areas to enhance the group's share of long-haul connecting traffic through its hubs. Secondly, it will aim to maintain its market leading position in Europe through organic growth and potential partnerships. It recognises that its short- and long-haul businesses are under pressure from continued

Aviation Strategy

Analysis

LUFTHANSA GROUP PORTFOLIO						
	Revenues (€bn) 12 months to Jun 2011	External revenue share	Operating margin	People	Market position	Portfolio contribution
Passenger Airline Group	22.2	97%	3.3%	58,700	#1 Global passenger revenue #4 Global ASKs 24% share Europe- Intercontinental	Central part of our business
<i>Lufthansa</i>	15.0			38,800		
<i>SWISS</i>	3.7			7,800		
<i>Austrian</i>	2.0			6,900		
<i>bmi</i>	0.9			3,900		
<i>Germanwings</i>	0.7			1,300		
Cargo	3.0	99%	10.3%	4,500	#1 Global FTK (ex. Integrators) 20% share ex Germany	Synergies with belly and sourcing
MRO	4.1	58%	6.5%	19,600	#1 Global independent MRO provider 14% global share	Synergies with airline business Joint pressure on OEMs Stabilising op.result
Catering	2.3	76%	3.6%	29,200	#1 Global Caterer 26% global share	Competitive global catering cost
IT Services	0.6	38%	1.5%	2,900	#4 Systems provider 12% global share	Aviation IT and Technology supplier
Group	32.3	89%	3.7%	114,900	#1 Global aviation group by revenue	

Source: Lufthansa Note: Excludes SN Brussels

incursions of LCCs and Gulf Carriers; but in each business it will either refocus, attack or partner to develop a sustainable long term position.

On the North Atlantic, Lufthansa will focus on extracting benefits from the ATI joint venture with United (which now includes Austrian and SWISS). In South America (where it is well behind SkyTeam and oneworld) it aims to increase footprint and presence through adding new destinations to the network and strengthening relations with existing partners (although LATAM has yet to decide fully which alliance to go for), and may perhaps be inveigled into investing in TAP in the possibly forthcoming privatisation.

On African routes (where again it does not have the presence enjoyed by the colonial heirs at Air France and BA) it should be able at some point fully to add SN Brussels' network presence but in the meantime will emphasise relations with Star Alliance partners and develop new destinations.

On the Asian and Middle East routes it is looking to develop a commercial JV with Star Alliance partner ANA (which now has an ATI joint venture with United on the Pacific) and further strengthen relations with other alliance partners in the regions – while (perhaps nebulously) implementing measures to compete against the super-connectors in the Gulf.

In Europe, the aim is to improve profitability of the short-haul network (the company does not give explicit figures but we would think that the losses are substantial); turnaround Austrian and review the involvement in bmi; close down the failed experiment with Lufthansa Italia; and monitor partnership opportunities.

To summarise the group strategy:

- Adjust the portfolio – reviewing unprofitable businesses
- Improve quality of delivery to customers through product investment and enhanced execution
- Sustain the market leadership position – by pursuing market aligned growth and developing commercial joint ventures
- Increase focus on profitability by strengthening transformation measures and group synergies
- Careful investments in the business, safeguarding the investment grade rating.

Interpretation

Of the three major network groups Lufthansa could be in one of the weaker positions strategically despite its financial strength. Its principal problem is a dependence on network hubs (primarily Frankfurt) with a relatively low natural

catchment area for true point to point travel – at least in comparison with its rivals BA and AF at London and Paris. Part of the reason behind this is the historic federated nature of Germany and the absence of centralisation within the country. The Frankfurt hub has worked extremely well, and has been complemented by the development of the Munich hub, investment in Zurich through SWISS, and adding the Vienna hub through Austrian. It also has a stake in SN Brussels with the option to take a majority stake when the Belgian carrier gains profitability.

These five hubs all have similar needs to create transfer traffic and are relatively close together – lying in what could be seen as a defensive aviation equivalent of a Maginot line to isolate its traffic base from its great rival Air France. With each of these acquisitions the group has retained the local brand and identity while creating synergies through common group functions.

This dependence on transfer traffic requires an emphasis on feed into the hubs, and may require market presence in non-hub traffic to ensure the necessary corporate contracts for the profitable long-haul route network. As such, the short-haul and regional services into the hubs are vital; and Lufthansa also operates its “direct” services serving short-haul non-hub traffic within and from Germany – accounting for some 10% of LH's short-haul flying.

Of course, Lufthansa is suffering traffic and yield erosion from LCC attacks. It set up Germanwings to counter-attack in the same market place – but like all network carriers could not put too much investment in to a product which could undermine its mainline operation and cannibalise its core business. As a result this element of its portfolio has been a little left behind the developments of the major LCC players (fine in the domestic context, but under-represented outside Germany) and is currently apparently losing the equivalent of the German passenger tax (around €8) for each passenger carried; it is reputed to be retrenching to its bases in Hamburg and Köln. Meanwhile the company has been happy to have Air Berlin, even with its financial problems, in what has been described as a “comfortable duopoly” to help keep out incursion from easyJet and Ryanair.

Frankfurt airport itself has been heavily slot constrained for many years; but this autumn with the opening of the fourth runway there is finally the opportunity for new access (and incidentally a new runway will also be opening in Munich in

2015 relieving congestion and allowing growth there). Despite the lack of natural point-to-point demand there may have been the fear that easyJet would move in to attack the German domestic market in the same way it has been approaching that of Italy or France. It has apparently declined to take up slots for the current winter season (but there is always next summer, and despite easyJet's own strategic problems).

Lufthansa's short-haul network is significantly, and maybe inherently, unprofitable. As part of the CLIMB cost savings (or profit enhancement) plans, the company is in the process of increasing aircraft gauge across the fleet. In the regional services it has disposed of all the sub-50 seat aircraft and has cut the regional fleet by 40% in units in doing so – by which it claims to have saved some €200m.

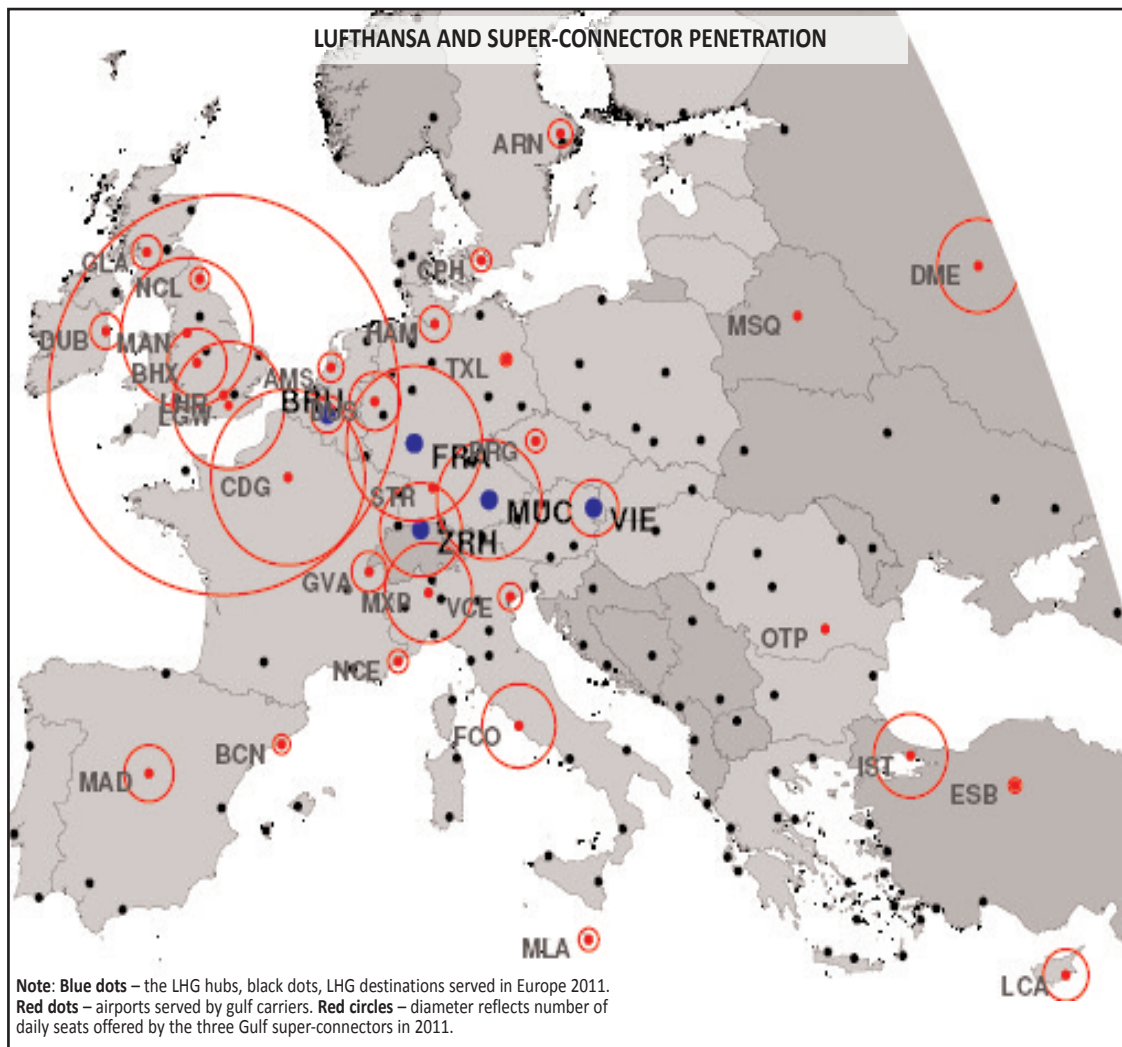
It is rolling out its new short-haul economy class seating, which increases the number of seats on the existing A319/A320 aircraft by around 6% - giving an automatic mathematical 6% reduction in unit costs per seat. On the direct services it claims to have achieved a 13% unit cost reduction through improved staff productivity, fleet commonality, the restructuring of the regional airlines, downsizing stations and a 10% improvement in aircraft productivity: since 2009 direct services, traffic and capacity are up by nearly 40% mostly through increasing aircraft size while there has been an 8% reduction in the number of flights, while yields per passenger have fallen by 4% and direct operating unit costs (ex fuel and taxes) by 40%. It states that it will have halved the losses in the current year, and plans to have a positive contribution by 2013.

Lufthansa was the first of the legacy carriers to try to establish a base in another country in Europe when it established Lufthansa Italia two years ago to move into the vacuum in Milan created by Alitalia's retrenchment to Rome. This has failed; and the company closed the operation at the end of the summer season. The reason may be that they severely underestimated the ability of easyJet to do the same, and successfully; they may also have believed the Italians when told that Milan's Linate would finally close.

On the other perceived threat, meanwhile, there may be little that Lufthansa can actually do about the build-up of the super-connectors in the Gulf and their development of routes out of Europe. Reliant as it is on transfer traffic it may have the most to lose from their development of direct services with large aircraft to regional

Aviation Strategy

Analysis



points in its natural catchment area; and may even suffer from these lower cost competitors (who could overfly the European ETS area) undermining their intercontinental-intercontinental connecting traffic. The concern is not necessarily that they take the premium traffic (who would normally prefer the quickest total journey time) but that they undermine Economy demand.

Meanwhile, the CEO mentioned the group's desire to continue to manage its portfolio of businesses. It is possibly looking for partnerships in the small IT Services division (number four in the world is not good enough) even though (or possibly because) 60% of turnover is intra-group. In time also the group may look to dispose of the catering division. The original investment in bmi was in theory to create a foothold in the prime European gateway at London's Heathrow; and it may at the time have seemed worth it to shoulder (with SAS) all bmi's losses on the ECA joint venture.

Since taking full control of the loss-making airline, they have tried to turn it round (and in doing so have transferred some of its significant portfolio of LHR slots to itself and other Star Alliance partners). However, realising now that the UK is unlikely for the foreseeable future to allow any expansion in its aviation infrastructure in South East England, and given a realisation that bmi cannot fit into the group's network hub structure (it could never hope to have Star Alliance dominance at Heathrow), it has apparently put the company up for sale.

The investment in SWISS has been a good success; and maybe the group felt they could achieve the same with Austrian and SN Brussels. The turnaround at both is a bit further away now than originally planned.

By James Halstead
jch@aviationeconomics.com

Delta Airlines: Deleveraging and de-risking

Delta, the second largest US carrier, is well positioned to weather a potentially tougher economic environment because of its successful 2008 merger with Northwest, its continued capacity and capex discipline and progress in deleveraging the balance sheet. Will it also manage to keep unit operating costs in check?

Delta is fortunate in that, with the merger integration behind it, it is enjoying a period of relative calm. Unlike the other two of the “US Big Three”, it has no major dramas or risks to deal with. American faces serious challenges and in recent weeks has been subject to speculation that it is now headed for Chapter 11 – something that is not likely in the near term because of its strong cash reserves, and because its goal is to avoid bankruptcy (see *Aviation Strategy*, May and July/August 2011, for analysis of AMR’s problems). United Continental, in turn, is performing well financially but still has ahead of it the toughest and riskiest aspects of the merger execution: labour and systems integration (see *Aviation Strategy* May 2011).

This period of relative calm has enabled Delta’s management to focus on managing the airline to the best of their abilities. The results are impressive.

First of all, Delta is earning solid profits and generating significant free cash flow. Its revenue generation has been so strong that it has more than offset a \$3bn higher fuel price impact this year.

Second, Delta is showing remarkable capacity discipline. Its system ASMs will decline by 4-5% in the fourth quarter, with a further 2-3% reduction already pencilled in for 2012.

Third, as part of efforts to “recalibrate the business to high fuel prices”, Delta is seeking to bring its non-fuel unit costs back to the 2009/2010 levels.

Fourth, Delta is exhibiting remarkable capital spending restraint, despite having a relatively old fleet and a much smaller

orderbook than its peers.

Fifth, Delta is determined to deleverage its balance sheet. It is already at the half-way mark in reducing adjusted net debt from \$17bn at year-end 2009 to \$10bn by mid-2013.

Sixth, thanks to its conservative spending and balance sheet management policies, in the future Delta may be the first of the top three carriers to achieve its financial targets – a 10-12% annual operating margin, \$5bn EBITDAR and a sustainable 10%-plus return on invested capital (ROIC).

Of course, despite the capacity cuts and fiscal austerity, Delta also has many exciting product, network and alliance developments in the works. Among other things, it is expanding in Asia and Latin America, strengthening its position in the New York market, acquiring a stake in Aeromexico as part of a deeper commercial alliance - which also offers intriguing longer-term potential for Delta to grow its MRO business and reduce costs – and implementing an immunised codeshare relationship with Virgin Australia on the Pacific.

Virgin Atlantic may make its global alliance decision this autumn. Although Star would seem to have the edge (in light of Virgin’s interest in Lufthansa-owned bmi), SkyTeam and the Delta/Air France-KLM/Alitalia transatlantic JV have undoubtedly presented an offer package worth considering.

Delta’s main challenge is that cost pressures will rise as capacity shrinks, making it harder to reach cost cutting targets and maintain unit costs that are among the lowest in the legacy sector.

Southwest’s aggressive growth in Atlanta following its acquisition of AirTran is another negative, though the impact on Delta may not be material. First, Southwest merely replaced an existing low-fare airline. Second, it is probably a more rational competitor than AirTran (because it has higher costs and is more profit-oriented). Third,

the new routes that Southwest is likely to introduce to Atlanta represent perhaps less than 1% of Delta's system revenue.

Outperforming its peers

Because Delta and Northwest were the last legacy carriers to restructure in Chapter 11 (both emerged in the spring of 2007), the airline that resulted from the October 2008 merger enjoyed a cost advantage over its peers. In 2010 Delta finally showed concrete benefits from the merger, achieving operating and net profits of \$2.7bn and \$1.4bn, respectively, though UAL still beat it in the margin league. Delta generated a respectable 8.4% operating margin and a 10% ROIC.

This year Delta has continued to post solid results. In the June quarter, it grew its revenues by 12% and earned a \$636m operating profit (7% margin), despite \$1bn higher fuel expenses and \$125m negative impact from the Japan crisis (Delta has the highest Japan exposure among the US carriers).

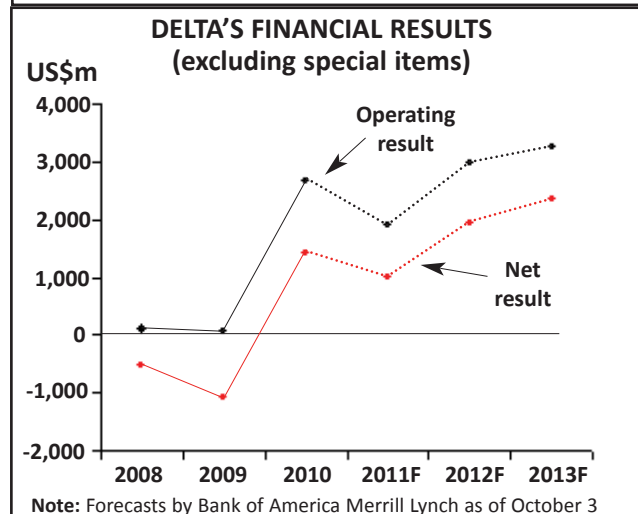
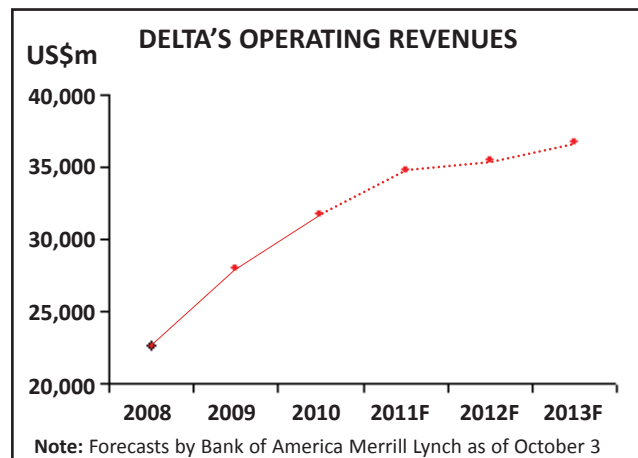
In the September quarter Delta grew revenues by 10% and posted a \$1bn operating profit before special items and profit-sharing. The 10.5% operating margin was expected to be among the highest earned by the large legacies.

In the past six months Delta has been outperforming its peers in terms of unit revenue growth, partly because of its strong corporate contract gains. Bank of America Merrill Lynch estimated last month that the airline's PRASM gains exceeded the sector average by two points in the September quarter and that the lead will widen to four points in the current quarter.

Although the full-year 2011 margin is expected to dip to the mid-single digits because of fuel, at this point analysts are predicting 8-10% operating margins in 2012 and 2013.

Capacity and cost discipline

Delta's impressive capacity restraint and cost cutting efforts reflect a determination to fully adjust the business model for a high fuel cost environment. Since the spring the airline has led the industry in reducing capacity for this winter. Delta's system ASMs are falling by



4-5% in the fourth quarter, with much of the reduction focusing on the transatlantic market (down 10-12%), where RASM performance was disappointing last winter.

In May Delta and its transatlantic JV partners made the unprecedented move of announcing a joint reduction in transatlantic capacity. The JV's 4Q ASMs will now fall by 7-9%, compared to a 7-8% increase planned originally. Although Delta did add capacity rather liberally last winter, the JV's actions are impressive given that the transatlantic is a fiercely competitive market where the three global alliances have similar market shares. (United announced in July that its transatlantic JV with Lufthansa and Air Canada had reduced 4Q growth from 6% to flat.)

Delta's actions have drawn much praise from analysts. JP Morgan's Jamie Baker suggested in mid-September that "among industry management teams, only Delta is

(thus far) taking the threat of weakening global economic trends seriously". Baker commented that "having followed this sector for close to two decades, such proactivity is both unusual and refreshing". (By comparison, United is cutting 4Q consolidated capacity by 3% and is currently targeting flat capacity in 2012. In early October American announced plans to accelerate 4Q mainline capacity cuts to 3% and to retire up to 11 757s in 2012.)

Delta's service reductions will be across all regions except Latin America. The airline is cutting frequencies or getting out of markets where revenue has not kept pace with higher fuel costs. Domestically, Memphis will bear the brunt of the cuts; the small ex-Northwest hub will see a 25% reduction in daily departures, starting in January.

Delta is also making an effort to better match flying to seasonal demand in order to reduce or eliminate seasonal losses. This winter it will fly 20% fewer seats than in the summer – a greater differential than it has ever had historically.

The 4Q capacity cuts are helping Delta maintain relatively strong (10%) RASM performance into the fourth quarter, which otherwise might see deceleration of the positive trend due to growing economic uncertainty.

Delta is determined to remove the costs associated with the "resizing" by trimming its fleet, workforce and facilities. Furthermore, Delta wants to bring its non-fuel CASM back to the 2009/2010 level of 8.25-8.30 cents per ASM (its unit costs have been trending around 3% higher this year).

The fleet reductions include retiring 140 less efficient aircraft by the end of 2012 (half of them this year), including DC9-50s, Saab turboprops and more 50-seat RJs. It is hard to believe that Delta still had 32 DC9-50s in its fleet at the end of June (average age 33.3 years).

This year's retirements are projected to generate \$250m of maintenance cost savings in the second half of 2011. Delta is also consolidating facilities and reducing its headcount by at least 2,000 through a voluntary exit programme this autumn. And efforts are being made to further reduce distribution costs by shifting more book-

ings to lower-cost channels. With the Delta-Northwest integration completed, there is also potential for further efficiency gains resulting from the merger.

However, analysts are sceptical that Delta can achieve the non-fuel CASM target in 2011 or 2012, which would involve reducing costs by \$700-800m, given the magnitude of the capacity cuts. Delta's management too have acknowledged that it could be a "multi-step process" of "gravitating towards the 8.25-8.35 cent range". On the positive side, Delta has a long history of keeping operating costs in check, its unit cost position remains competitive, and the fleet renewal will help.

Capex restraint and balance sheet deleveraging

Recent months have seen a spate of large aircraft orders from global carriers (AMR, Air France-KLM, etc.) keen to get on with necessary fleet renewal, secure delivery positions and take advantage of the great deals that can be had as the Airbus-Boeing market share battles reach new heights (see *Aviation Strategy's* analysis of the AMR orders in the July/August issue). Delta, with its relatively old fleet, had been expected to be among those carriers. In early 2011 Delta's top executives had stated that they would make a decision later in the year on replacing large parts of the airline's short haul fleet and had asked manufacturers for proposals to deliver up to 200 narrowbody aircraft. Delta was believed to be in the market for large, medium and small single-aisle aircraft.

What materialised was an order for 100 737-900ERs in August, for delivery in 2013-2018. And since then Delta has made it clear that there will not be a "part two". President Ed Bastian said at the Deutsche Bank conference in mid-September that the airline would not place more orders from any manufacturer for "the next couple of years".

The 180-seat 737-900ERs will replace the airline's older-technology 757s, 767s and A320s. But Delta has postponed the MD-80/90 replacement decision (for which

Embraer and Bombardier are obviously strong contenders). Notably, at this stage Delta also opted not to include orders for the planned re-engined 737 MAX.

But Delta has continued to acquire used MD-90s. In the first half of 2011 it purchased seven and leased four, and as of June 30 it had firm commitments for another 14 and options for seven. The management has described the type as a “very cost-effective aircraft for fleet replacement”. The MD-80 is a highly flexible aircraft and its economics are apparently still good at \$90 oil.

A year ago Delta deferred the 18 787-8 orders that Northwest brought to the union (the type’s original North American launch customer) to the 2020-2022 period. Instead, Delta opted to upgrade its existing widebody fleet with flat-bed seats and other enhancements.

All of this illustrates Delta’s absolute determination not to be distracted from its main goal – deleveraging the balance sheet. The management says that the 737-900ER order maintains financial and capacity discipline. The aircraft are purely for replacement, offer significant savings from increased fuel efficiency and lower maintenance costs and will be cash flow positive and earnings accretive from the first year of operation.

Delta will receive the first 12 737-900ERs in the second half of 2013, followed by 19 aircraft each year from 2014 to 2017, and the remaining 12 in 2018. The deal includes 30 options, which replaced previously held 737-800 options. Delta has a preference for owning aircraft and has obtained committed long-term financing for a substantial portion of the purchase price. Separately, the airline ordered \$2.2bn of CFM56-7BE engines to power the 737-900ERs.

The size and timing of the order will enable Delta to maintain its total capital expenditure at a modest \$1.2-1.4bn annually in the next three years. Aircraft capex will be only \$210m in 2012 and \$540m in 2013, rising to \$760-780m annually in the subsequent years – all a far cry from the \$2.8bn annual average spending in aircraft by Delta and Northwest collectively in the

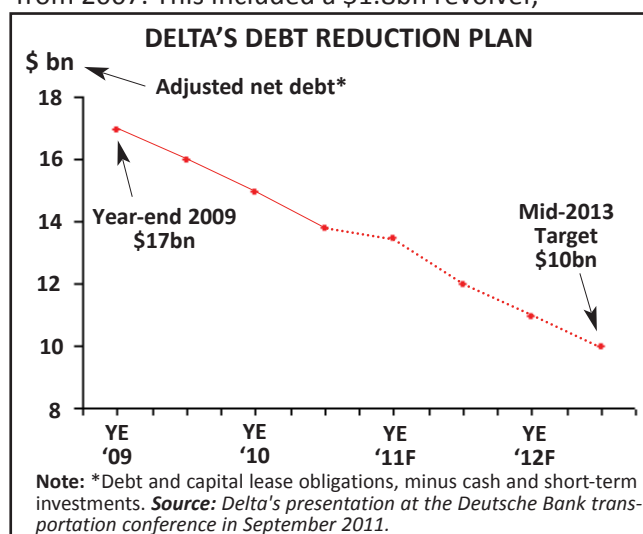
decade preceding their merger.

Delta has staged its capital projects very carefully. In 2008-2010 the focus was on merger integration. Currently, in 2010-2013, the airline is spending on fleet, product and facility improvements. From late 2013 the focus will shift to the domestic narrowbody replacement.

Delta is more than halfway through a \$2bn, three-year investment to “enhance the customer experience as a means of generating a unit revenue premium to the industry”. This means adding flat-bed and “Economy Comfort” seats on international aircraft and more first class seats and WiFi on domestic aircraft, renovating and expanding airport facilities and acquiring slots at key locations (more on these projects in the section below).

With adjusted net debt at the \$13.8bn mark in June, and with plans to use all of the projected \$2bn-plus annual free cash flow to pay down debt, Delta is well on its way to achieving the \$10bn net debt target by mid-2013. The impact will be to de-risk the business and reduce annual interest expenses by around \$500m between 2009 and 2013.

Delta’s scheduled debt maturities over the next three years are “relatively heavy but manageable” (as Fitch put it). The airline has taken advantage of market opportunities to refinance debt. In April it obtained a new \$2.6bn credit facility to refinance the Delta Chapter 11 exit facility from 2007. This included a \$1.8bn revolver,



which came in handy because Delta's cash reserves have been a little on the light side compared to peers. Delta ended the September quarter with total unrestricted liquidity of \$5.1bn.

New revenue opportunities

As a result of its investment projects, Delta is projecting as much as \$1bn of annual incremental revenues by 2013. Those revenues would come from premium up-sell programmes and higher business traffic volumes attracted by the product enhancements.

The products already implemented include "Economy Comfort", a new section in the first few rows of the international economy cabin offering more legroom, more recline and early boarding (similar to the upgraded economy products available on JV partners Air France-KLM and Alitalia). Delta began offering it in June on all 175 international aircraft, and it has been so successful that the carrier is now introducing it also domestically. Domestic fleet enhancements have included increasing first class seating by 13% on some 350 aircraft, interior upgrades and WiFi; the latter is now being installed also on the 228-strong dual-class regional fleet.

Delta is in the middle of installing full flat-bed seats in the Business Elite cabins of its widebody international fleet. So far about one third of the 140-plus aircraft have been re-fitted (including all 777s and 767-400s), and the process is due to be completed by the end of 2013.

Delta is also revamping its e-commerce platforms to facilitate more innovative products and enhancing the FFP to reward the best customers. Almost 40% of Delta's North American bookings are now through its website, making delta.com an attractive platform for selling ancillary items.

Obtaining state-of-the-art facilities at Atlanta (Delta's main hub) and New York (which the airline sees as one of its biggest opportunities, see *Aviation Strategy*, Jan/Feb 2010, page 16) are a key part of Delta's efforts to enhance the customer experience and hence boost revenues.

Atlanta airport's new \$1.4bn internation-

al terminal is set to open in the spring of 2012. It will dramatically improve passenger convenience (among other things, bringing to an end a cumbersome baggage process now required of arriving international passengers). A new concourse with 12 international gates will facilitate growth for Delta and other airlines.

After long been handicapped by its ageing JFK terminal (T3), which was built in 1960 and compares very unfavourably with the modern facilities of competitors, Delta will be able to move its international operations to a redeveloped and expanded T4 in the spring of 2013. This first phase of a five-year \$1.4bn project will give Delta nine new international gates, a passenger connector between T4 and T2 (which Delta will retain for domestic operations) and expanded baggage claim and customs areas. The airline has described it as a "game-changing" project; the many benefits to customers will include faster transit times and one of the largest Sky Club lounges in the Delta system. The project is on schedule; work began in December 2010, when Delta also issued \$800m of special bonds and signed a 30-year agreement with the airport. The second phase of the project (by May 2015) will see demolition of T3 to make way for aircraft parking.

Delta's ambitions to operate a true domestic hub at LGA have just taken a major leap forward with the DOT's approval of the slot swap with US Airways on October 11 (more than two years after it was first proposed). Under the deal, which the airlines revised in May, Delta will acquire 132 slot pairs at LGA, while US Airways will get 42 slot pairs at Reagan National, rights to operate additional daily flights to Sao Paulo from 2015 and \$66.5m in cash. The deal includes divestiture of 16 slot pairs at LGA and eight slot pairs at National. The transaction, which the airlines hope to complete by December 1, will involve Delta taking over most of US Airways' Terminal C at LGA, to create an expanded two-terminal facility at the airport, and spending \$100m on renovations and upgrades over two years.

This deal will enable Delta to double its destinations from LGA, significantly strengthening its position in the New York market

amid intensified competition (from United Continental, American, JetBlue, Southwest and others). Given that LGA is New York's preferred airport for business travel, the positive implications for RASM are obvious. According to Bank of America Merrill Lynch, Delta's management sees \$300-600m upside to annual New York revenues by closing its relative RASM gap with competitors.

Network and alliance opportunities

Despite the need to keep overall capacity in check, Delta has had growth opportunities this year. The most promising of those originally – Tokyo Haneda – has had a very difficult start, because US-originating travel to Japan has remained severely depressed following the March disasters. Delta has suspended its Detroit-Haneda route until April 2012 though continues to operate Los Angeles-Haneda (the other new route introduced in February), as well as services to Narita.

On the positive side, however, because Japan-originating demand has recovered much faster, Delta is now able to add a new seasonal Fukuoka-Honolulu route in December – its ninth resort market out of Japan and a handy use for some 767-300ERs pulled from other markets.

As a result of the BA/AMR alliance slot divestitures, Delta was able to start serving London Heathrow from Boston and Miami in March. The flights are operated as part of the transatlantic JV with AF-KLM and Alitalia.

Delta's position is not strong at either Haneda or Heathrow. At Haneda, it does not have feed because it lacks an airline partner in Japan. At Heathrow, it is a relative newcomer (2008) and SkyTeam has only a 6% share of seats there (compared to oneworld's 47% and Star's 26%). However, Delta needs to have a presence in key business markets such as Haneda and Heathrow, and those destinations offer long-term potential.

The best immediate opportunities are in emerging markets. China has been a major focus of Delta's expansion in recent years. In June the airline restarted Atlanta-Shanghai flights (a route that had been suspended since 2008) and in July it launched Detroit-Beijing.

The other growth market is Latin America. After launching Detroit-Sao Paulo in late 2010, this year Delta has been building frequencies on the Atlanta-Brasilia route and has begun codesharing with Gol. Service expansion this winter will include upgrading Atlanta-Brasilia to a daily service and introducing a new Minneapolis-Costa Rica route.

Delta is an enthusiastic proponent of alliances, all the more so because of its capacity and fiscal discipline and hopes of achieving a decent ROIC. Spearheading its efforts in this area is the transatlantic JV, which was signed in May 2009 (after securing ATI a year earlier), has been aggressively developed and is probably the most deeply integrated of the JVs. The spring saw some nicely coordinated expansion between Florida and three major European cities.

This year Delta has begun codesharing with some of the notable new SkyTeam members, including China Eastern. Also, after two years of regulatory delays, Delta will be finally able to implement its immunised transpacific JV with Virgin Australia in early November.

In August Delta forged a very interesting deeper "long-term exclusive commercial alliance" with its SkyTeam partner Aeromexico. It will involve Delta investing \$65m for a 3.6% stake in Aeromexico and a seat on its board. The two airlines also plan to expand their MRO agreement by investing \$40m to build a joint maintenance facility in Mexico – something that could offer significant cost savings to Delta.

Delta executives have since then commented that they see the Aeromexico relationship eventually developing into a JV with ATI, once an open skies regime is secured. They also suggested that it could be a template for other relationships "particularly in South America". One potential candidate is obviously Gol, which signed an MRO agreement with Delta back in February. Another is Aerolineas Argentinas, which Delta has already secured as a code-share partner ahead of its SkyTeam membership next year.

By Heini Nuutinen
hnuutinen@nyct.net

Airline risk management strategies: fuel is not everything

Airlines face six key financial and economic exposures – economic growth; crude oil prices; the jet-crude refining margin; exchange rates; inflation; and interest rates. Airline risk management strategies that attempt to reduce the impact of these exposures generally treat each exposure in isolation. Evidence suggests, however, that at least some of the six exposures are interdependent. In this article Tony Webber (see page 18) shows that a risk mitigation strategy which treats each exposure in isolation will be both more costly and, in all likelihood, less effective in mitigating risk than a risk strategy that considers interdependency.

He describes how airlines could reduce the amount spent on fuel hedging by taking into consideration the most important interdependency between exposures, specifically that between the price of oil and the exchange rate. He also shows that these cost savings can be achieved without compromising the ultimate objective of fuel hedging, which is to reduce P&L volatility.

Oil/FX interrelationship

When the oil price increases, most European currencies strengthen against the US dollar. As European airlines pay for jet fuel costs in US dollars, this positive relationship generates natural protection against higher oil prices for those airlines.

The degree of protection that the FX movement confers on European airlines

depends on the size of three forces or elasticities – as shown in the diagram at the bottom of this page (Figure 1).

The first of the three forces is a combination of events A and D in Figure 1. Event A says that a higher oil price reduces the general value of the US dollar, as proxied by the US trade weighted index.

From the start of 2007 onwards, the daily price of oil and the US dollar is estimated to have shared a -86% correlation. Econometric modelling estimates that the elasticity between the oil price and the US trade weighted index is currently -0.22, meaning that each time the oil price increases by 10% the US trade weighted index falls by 2.2%.

The effect described as D in Figure 1 says that when the US trade weighted index falls, European currencies strengthen against the US dollar. Econometric modelling identifies the extent to which European currencies strengthen as the US dollar weakens, holding the influence of other variables fixed – refer to the estimates in Table 1 (page 15).

The elasticities in Table 1 indicate that a 10% weaker US trade weighted index results in European currencies that strengthen against the US\$ by as low as 8% (in the case of the GBP) to as high as 14.5% (the Danish Krone).

The product of the elasticities in this table (parameter D in Figure 1) and the -0.22 elasticity of the US trade weighted index to the oil price (parameter A) determines the first component of the impact of the oil price on European currencies.

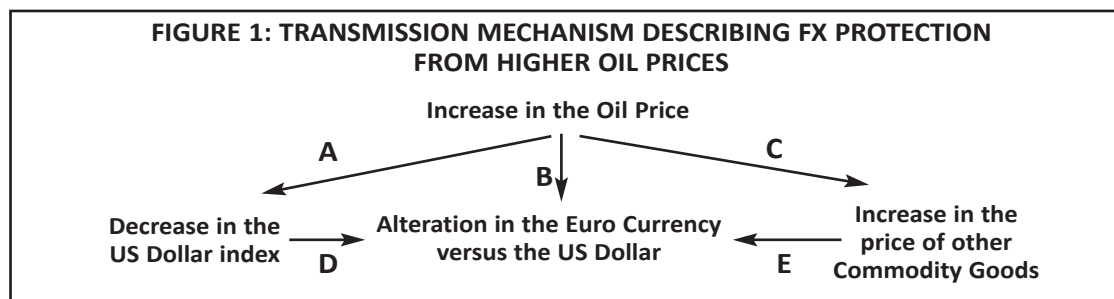


TABLE 1: ELASTICITY OF THE US TWI TO EUROPEAN / US\$ EXCHANGE RATES

	Elasticity Value Past Six Months	Interpretation of Elasticity
Euro	-0.84	A 10 % Weaker US dollar leads to a 8.4% stronger Euro against the US dollar
GB Pound	-0.80	A 10 % Weaker US dollar leads to a 7.7% stronger GB Pound against the US dollar
Swiss Franc	-1.25	A 10 % Weaker US dollar leads to a 12.5% stronger Swiss Franc against the US dollar
Swedish Krona	-1.42	A 10 % Weaker US dollar leads to a 14.2% stronger Swedish Krona against the US dollar
Norwegian Krone	-1.19	A 10 % Weaker US dollar leads to a 11.9% stronger Norwegian Krone against the US dollar
Danish Krone	-1.45	A 10 % Weaker US dollar leads to a 14.5% stronger Danish Krone against the US dollar

The second component of the impact is described by event B in Figure 1. Event B says that an increase in the oil price has a direct impact on European US\$ currencies. The sign and magnitude of this direct impact depends on whether the European country in question is a net importer or exporter of oil and energy – net exporters are likely to experience a positive elasticity. The results of econometric modelling suggest the direct oil impacts described in Table 2, (see below).

Table 2 indicates that the direct effect on European currencies of the oil price varies from as low as -0.13 (Danish Krone), to as high as +0.13 (Norwegian Krone). The Danish and Norwegian Kroner estimates suggest that a 10% increase in the oil price leads to a 1.3% reduction and increase in the Danish

and Norwegian currencies respectively.

Relative to the indirect oil/FX relationship described by arrows A and D in Figure 1, the direct impact appears to be relatively small. Indeed for most currencies (Danish and Norwegian Kroner being exceptions) the direct effect is close enough to zero to be rendered zero.

The final relationship between the oil price and the US Dollar exchange rates involves a combination of events C and E in the transmission mechanism diagram (Figure 1, again). These events indicate that an increase in the oil price coincides with an increase in other commodity prices, which in turn results in a stronger currency. These effects are not found to be statistically significant in the case of the European currencies examined.

TABLE 2: DIRECT ELASTICITY OF EUROPEAN / US\$ EXCHANGE RATES TO BRENT OIL

	Elasticity Value Past Six Months	Interpretation of Elasticity
Euro	0	A 10 % Increase in the US dollar Brent Price has no direct effect on the Euro against the US dollar
GB Pound	+0.06	A 10 % Increase in the US dollar Brent Price leads to a 0.6% stronger GB Pound against the US dollar
Swiss Franc	+0.02	A 10 % Increase in the US dollar Brent Price leads to a 0.2% stronger Swiss Franc against the US dollar
Swedish Krona	-0.01	A 10 % Increase in the US dollar Brent Price leads to a 0.1% weaker Swedish Krona against the US dollar
Norwegian Krone	+0.13	A 10 % Increase in the US dollar Brent Price leads to a 1.3% stronger Norwegian Krone against the US dollar
Danish Krone	-0.13	A 10 % Increase in the US dollar Brent Price leads to a 1.3% weaker Danish Krone against the US dollar

FX/Oil correlation to reduce hedging: Fuel Cost Offset

European airline fuel hedging can be reduced by a percentage that is equal to the amount of fuel cost protection that an airline enjoys as a result of its home currency strengthening when the oil price increases. This FX protection can be calculated by using the following formula:

$$\begin{array}{c}
 \text{TRANSMISSION B} \\
 \left[\frac{\% \text{ Change in European Currency}}{\% \text{ Change in Oil Price}} \right. \\
 + \\
 \left. \frac{\% \text{ Change in European Currency}}{\% \text{ Change in US TWI}} \right] \\
 \times \\
 \left[\frac{\% \text{ Change in US TWI}}{\% \text{ Change in Oil Price}} \right] \\
 \text{TRANSMISSION A and D}
 \end{array}$$

Each of the components of this formula have been estimated and presented in the two elasticity tables (Tables 1 and 2). If we substitute this estimated information into the formula we obtain the estimated fuel cost protection from the FX/oil price correlation – see Table 3, right. The table indicates that airlines domiciled in Norway need only hedge 59% of their jet fuel consumption because of the 41% natural fuel cost protection they receive from a stronger Norwegian Krone when the oil price increases. Conversely, airlines domiciled in Euro countries must set fuel hedges much higher at 82%.

FX/Oil correlation to reduce hedging: Other costs

The FX fuel cost protection described above is not the only protection that European airlines enjoy as a result of stronger exchange rate in a high oil price environment. They also enjoy lower non-fuel unit costs. The types of non-fuel airline costs that decline in response to a

TABLE 3: FX FUEL COST PROTECTION FROM HIGHER OIL PRICES

Euro	18%
Danish Krone	18%
GB Pound	24%
Swiss Franc	28%
Swedish Krona	32%
Norwegian Krone	41%

stronger currency include:

- foreign airport costs;
- aircraft purchase costs;
- aircraft operating leases;
- aircraft spare parts; and
- servicing foreign currency denominated debt.

A stronger currency also results in lower foreign point of sale revenue by virtue of translation effects. This adverse revenue impact must be offset against a favourable non-fuel unit cost effect when determining the extent of **net** FX protection.

There is a formula that allows us to determine the extent to which fuel hedging can be reduced because of the FX protection provided to non-fuel costs net of revenue effects. This formula says the degree of FX protection is equal to the following:

$$\begin{array}{c}
 \frac{\text{Non-fuel costs denominated in US\$}}{\text{as \% of total cost}} \\
 \hline
 \text{fuel cost \% total cost} \\
 - \\
 \text{(Foreign Point Of Sale revenue as} \\
 \text{a \% of elasticity of exchange rate} \\
 \text{to US\$ crude price)}
 \end{array}$$

To illustrate how this formula is used we assume the following parameter values:

- Non-Fuel costs denominated in US\$ as % total cost = 55%;
- Fuel costs as % total cost = 15%;
- Foreign point of sale revenue as % total revenue = 45%; and
- Ratio of European Currency Jet Fuel Costs to revenue = 17%.

If we substitute these numbers into the above formula and combine this with the

estimates contained in Tables 3 and 4 (see right) we obtain the additional FX protection that European airlines enjoy. Table 4 indicates that the degree of additional FX protection from higher oil prices varies between 19% in the case of Euro-zone countries up to 41% for Norwegian carriers.

If we add the entries in Tables 3 and 4 together, this yields the extent to which European airlines can reduce their fuel hedging as a result of total FX protection. The estimated amount of fuel hedging in which European airlines should engage after taking into consideration FX protection is presented in Table 5 (below). This table indicates that Euro-zone and Danish airlines should be relatively highly hedged and Norwegian and Swedish airlines should have relatively low fuel hedging levels. UK airlines should have hedge levels of around 50%.

Hedging or operational levers?

The fuel hedge percentages presented in the Table 5 represent the percentage of jet fuel consumption that should be hedged to account for the residual exposure to higher oil prices after taking into consideration FX protection.

The risks associated with this residual exposure can be minimised, ex ante, by using financial instruments such as swaps, options and collars or, ex post, by using operational levers such as fuel surcharges, higher base prices and capacity reduction. Most airlines tend to use a combination of both financial instruments and operational levers to hedge against this residual exposure.

In an environment in which the oil price cycles around an upward trend, which has been the case since early 2000, financial instruments will only delay the onset of higher oil prices. This is because hedge contracts must be re-set at higher strikes or swap prices. This delay buys the airline time to determine how it should operationally respond to higher oil prices. If the cycle around the upward trend is volatile, the price paid for buying this time can be extremely expensive (at the money call

TABLE 4: NON-FUEL COST NET OF REVENUE FX PROTECTION FROM HIGHER OIL PRICES

Euro	19%
Danish Krone	19%
GB Pound	24%
Swiss Franc	28%
Swedish Krona	33%
Norwegian Krone	41%

options exceeded US\$20 per barrel just prior to the GFC).

Hedging using financial instruments also carries risk. While the use of financial instruments delays the exposure to the spot price, it introduces new risks related to choosing the right instrument; the right product (WTI or Brent); and the right timing (how far out to hedge). These are difficult decisions that can cost the airline an enormous amount of money if made incorrectly. For example, an airline may use swaps to lock in an oil price of \$80 for the next six months only to see spooked global financial markets drive the spot price of oil down by US\$20 over that period, generating substantial hedge losses that must be taken to the P&L.

The cost of using financial instruments together with the additional risks that they carry has driven many carriers to increasingly use operational levers as defence against the residual exposure to oil.

When used properly, operational levers can be highly successful devices in the fight against higher oil prices. The first step in their proper use, however, is an acceptance that higher oil prices will deliver lower profitability, no matter what opera-

TABLE 5: FUEL HEDGING REQUIRED AFTER CONSIDERING TOTAL FX PROTECTION

Euro	63.0%
Danish Krone	62.9%
Great British Pound	52.2%
Swiss Franc	43.9%
Swedish Krona	35.2%
Norwegian Krone	18.0%

tional levers are pulled. Airlines often live in oil denial – they believe that raising prices by an amount that is equal to the increase in unit fuel costs will deliver an oil-unaffected profit outcome.

The second step in determining the most effective use of operational levers is to understand how pricing and capacity decisions impact profitability. The reason operational levers are being flexed in response to higher oil prices is because there is a belief that doing so will result in a better profit performance than doing nothing. To support this belief, airlines must understand how changing operational levers affects profitability.

This understanding depends on the following critical parameters:

- the sensitivity of passenger demand to a change in own price (we will call this parameter A);
- the sensitivity of yield to a change in own and competitor capacity (parameter B);
- the impact on (passenger driven) costs of a change in load factors (parameter C); and
- the impact on costs of a change in capacity (parameter D).

It is only when the airline has estimates of these parameters that it can make an informed assessment of whether imposing fuel surcharges or reducing capacity will improve profitability relative to a do nothing situation.

For example, suppose an airline increases its fuel surcharges, without altering capacity, in response to an increase in oil prices. This leads to a reduction in passenger demand that is determined by parameter A. The size of parameter A depends on two forces – the extent of competitor follow (i.e. whether competitors also raise fuel surcharges) and

the financial confidence of consumers (the stronger the financial confidence the more resilient demand will be to price). The reduction in demand will lead to a reduction in those costs that are driven by passenger volumes, as described by parameter C. Airline revenue can either increase or decrease – the greater is the size of parameter A (the elasticity of demand) the more likely it is that revenue will fall. As long as passenger driven costs fall by more than revenue falls then profitability increases and the airline is better off increasing fuel surcharges compared to a do nothing response.

Suppose now that an airline decides to reduce its capacity compared to planned levels in response to higher oil prices. This leads to a reduction in costs that vary with capacity, as described by parameter D. Revenue will fall in response to lower capacity, with the size of the fall dependent on the extent to which yields rise in response to a reduction in capacity (parameter B). The size of B depends on whether competitor airlines follow or steal – they follow if they also reduce capacity and they steal if they decide to expand capacity. Profitability rises, and thus a strategy of capacity reduction is superior to the do nothing case, when costs fall by more than revenue.

Operational responses to higher oil prices are therefore complex. The profit maximising response will depend on the ability of the airline to gain access to information about critical parameters. These critical parameters are in the airline data somewhere, however it takes significant expertise and airline experience for it to be retrieved and properly used and communicated.

FUEL AND FOREX HEDGING EXPERTISE

This analysis is by Dr Tony Webber, an Aviation Economics Associate, and former Chief Economist of the Qantas Group, who has developed aviation-specific, econometric products for -

- fuel and forex hedging
- exposure identification and risk quantification
- yield and revenue modelling
- elasticity of demand and capacity estimation
- passenger demand forecasting

For further information, please refer to our website www.aviationeconomics.com or contact us at info@aviationeconomics.com or +44 2074905215

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 emp.
Air France/ KLM Group YE 31/03	Apr-Jun 09	7,042	7,717	-676	-580	-9.6%	-8.2%	63,578	50,467	79.4%	18,703	106,800
	Jul-Sep 09	8,015	8,082	-67	-210	-0.8%	-2.6%	66,862	56,141	84.0%	19,668	105,444
	Oct-Dec 09	7,679	8,041	-362	-436	-4.7%	-5.7%	61,407	49,220	80.2%	17,264	105,925
	Year 2009/10	29,096	31,357	-2,261	-2,162	-7.8%	-7.4%	251,012	202,453	80.7%	71,394	104,721
	Apr-Jun 10	7,301	7,469	-168	939	-2.3%	12.9%	60,345	49,283	81.7%	17,623	102,918
	Jul-Sep 10	8,579	7,835	743	374	8.7%	4.4%	66,558	56,457	84.8%	19,704	
	Oct-Dec 10	7,956	7,847	109	-62	1.4%	-0.8%	62,379	50,753	81.4%	17,551	101,946
	Year 2010/11	31,219	19,236	1,171	810	3.8%	2.6%	250,836	204,737	81.6%	71,320	102,012
Apr-Jun 11	8,947	9,153	-206	-283	-2.3%	-3.2%	66,531	53,931	81.1%	19,653		
British Airways YE 31/03	Year 2008/09	15,481	15,860	-379	-616	-2.4%	-4.0%	148,504	114,346	77.0%	33,117	41,473
	Year 2009/10	12,761	13,130	-369	-678	-2.9%	-5.3%	141,178	110,851	78.5%	31,825	37,595
	Apr-Jun 10	3,092	3,207	-115	-195	-3.7%	-6.3%	32,496	24,192	74.4%	7,013	
	Jul-Sep 10	3,908	3,332	576	365	14.7%	9.3%	37,163	31,066	83.6%	9,339	
IAG Group	Oct-Dec 10	5,124	5,116	8	121	0.2%	2.4%	50,417	39,305	78.0%		56,243
	Jan-Mar 11	4,969	5,109	-139	45	-2.8%	0.9%	51,118	37,768	73.9%	11,527	56,159
	Apr-Jun 11	5,951	5,678	273	135	4.6%	2.3%	53,425	42,635	79.8%	13,288	56,649
Iberia YE 31/12	Year 2009	6,149	6,796	-647	-381	-10.5%	-6.2%	62,158	49,612	79.8%		20,671
	Jan-Mar 10	1,453	1,552	-98	-72	-6.8%	-5.0%	14,360	11,605	80.8%		19,643
	Apr-Jun 10	1,502	1,498	27	40	1.8%	2.6%	15,324	12,648	82.5%		20,045
	Jul-Sep 10	1,730	1,637	93	95	5.4%	5.5%	16,834	14,404	85.6%		20,668
Lufthansa YE 31/12	Jan-Mar 09	6,560	6,617	-58	-335	-0.9%	-5.1%	44,179	32,681	74.0%	15,033	106,840
	Apr-Jun 09	7,098	7,027	71	54	1.0%	0.8%	49,939	38,076	76.2%	18,142	105,499
	Jul-Sep 09	8,484	8,061	423	272	5.0%	3.2%	56,756	46,780	82.4%	22,164	118,945
	Year 2009	31,077	30,699	378	-139	1.2%	-0.4%	206,269	160,647	77.9%	76,543	112,320
	Jan-Mar 10	7,978	8,435	-457	-413	-5.7%	-5.2%	52,292	39,181	74.9%	19,031	117,732
	Apr-Jun 10	8,763	8,560	203	248	2.3%	2.8%	57,565	45,788	79.5%	22,713	116,844
	Jul-Sep 10	9,764	8,754	1,010	810	10.3%	8.3%	63,883	53,355	83.5%	26,089	116,838
	Year 2010	36,057	34,420	1,636	1,492	4.5%	4.1%	235,837	187,700	79.3%	91,157	117,019
	Jan-Mar 11	8,792	9,031	-239	-692	-2.7%	-7.9%	60,326	43,726	72.5%	22,078	117,000
	Apr-Jun 11	10,967	10,636	331	433	3.0%	3.9%	68,763	53,603	78.0%	28,147	118,766
SAS YE 31/12	Jan-Mar 09	1,352	1,469	-118	-90	-8.7%	-6.6%	8,870	5,541	62.5%	5,748	22,133
	Apr-Jun 09	1,546	1,665	-119	-132	-7.7%	-8.6%	9,584	7,055	73.6%	6,850	18,676
	Jul-Sep 09	1,522	1,486	36	21	2.3%	1.4%	8,958	6,868	76.7%	6,245	17,825
	Oct-Dec 09	1,474	1,676	-202	-186	-13.7%	-12.6%	8,160	5,764	70.6%	6,055	16,510
	Year 2009	5,914	6,320	-406	-388	-6.9%	-6.6%	35,571	25,228	70.9%	24,898	18,786
	Jan-Mar 10	1,322	1,428	-106	-99	-8.0%	-7.5%	7,951	5,471	68.8%	5,735	15,835
	Apr-Jun 10	1,321	1,367	-46	-66	-3.5%	-5.0%	8,769	6,612	75.4%	6,282	15,709
	Jul-Sep 10	1,471	1,538	-67	-145	-4.6%	-9.8%	9,180	7,239	78.9%	6,655	15,570
	Oct-Dec 10	1,556	1,606	-51	7	-3.2%	0.4%	8,761	6,389	72.9%	6,557	15,123
	Year 2010	5,660	5,930	-270	-308	-4.8%	-5.4%	34,660	25,711	74.2%	25,228	15,559
	Jan-Mar 11	1,336	1,395	-59	-54	-4.4%	-4.0%	8,528	5,655	66.3%	6,093	14,972
Apr-Jun 11	1,793	1,648	145	88	8.1%	4.9%	9,848	7,494	76.1%	7,397	15,264	
Ryanair YE 31/03	Year 2008/09	4,191	3,986	205	-241	4.9%	-5.7%			81.0%	58,559	
	Apr-Jun 09	1,055	844	211	168	20.0%	15.9%			83.0%	16,600	
	Jul-Sep 09	1,418	992	426	358	30.0%	25.2%			88.0%	19,800	
	Oct-Dec 09	904	902	2	-16	0.2%	-1.8%			82.0%	16,021	
	Year 2009/10	4,244	3,656	568	431	13.5%	10.2%			82.0%	66,500	
	Apr-Jun 10	1,145	992	152	120	13.3%	10.5%			83.0%	18,000	7,828
	Jul-Sep 10	1,658	1,150	508	426	30.7%	25.7%			85.0%	22,000	8,100
	Oct-Dec 10	1,015	1,016	-1	-14	-0.1%	-1.3%			85.0%	17,060	8,045
Year 2010/11	4,797	4,114	682	530	14.2%	11.0%			83.0%	72,100		
Apr-Jun 11	1,661	1,418	245	201	14.7%	12.1%			83.0%	21,300		
easyJet YE 30/09	Apr-Sep 08	2,867	2,710	157	251	5.5%	8.7%	32,245	28,390	88.0%	24,800	
	Year 2007/08	4,662	4,483	180	164	3.9%	3.5%	55,687	47,690	85.6%	43,700	6,107
	Oct 08-Mar 09	1,557	1,731	-174	-130	-11.2%	-8.3%	24,754	21,017	84.9%	19,400	
	Year 2008/09	4,138	3,789	93	110	2.3%	2.7%	58,165	50,566	86.9%	45,200	
	Oct 09 - Mar 10	1,871	1,995	-106	-94	-5.6%	-5.0%	27,077	23,633	87.3%	21,500	
	Year 2009/10	4,635	4,364	271	240	5.9%	5.2%	62,945	56,128	87.0%	48,800	
Oct 10 - Mar 11	1,950	2,243	-229	-181	-11.7%	-9.3%	29,988	26,085	87.0%	23,900		

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation.

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 emp.
Alaska	Year 2009	3,399	3,132	267	122	7.9%	3.6%	37,246	29,550	79.3%	15,561	8,915
	Jan - Mar 10	830	804	26	5	3.1%	0.6%	8,917	7,197	80.7%	3,641	8,537
	Apr - Jun 10	976	866	110	59	11.3%	6.0%	9,836	8,162	83.0%	4,170	8,621
	Jul - Sep 10	1,068	851	216	122	20.2%	11.4%	10,531	8,980	85.3%	4,562	8,737
	Oct - Dec 10	959	839	119	65	12.4%	6.8%	10,037	8,410	83.8%	4,141	8,711
	Year 2010	3,832	3,361	472	251	12.3%	6.6%	39,322	32,749	83.3%	16,514	8,651
	Jan - Mar 11	965	831	134	74	13.9%	7.7%	11,445	9,419	82.3%	5,752	11,884
	Apr - Jun 11	1,110	1,052	58	29	5.2%	2.6%	12,020	10,127	84.3%	6,246	11,907
American	Year 2009	19,917	20,921	-1,004	-1,468	-5.0%	-7.4%	244,250	197,007	80.7%	85,719	78,900
	Jan - Mar 10	5,068	5,366	-298	-505	-5.9%	-10.0%	59,296	46,187	77.9%	20,168	77,800
	Apr - Jun 10	5,674	5,478	196	-11	3.5%	-0.2%	61,788	51,821	83.9%	22,166	78,300
	Jul - Sep 10	5,842	5,500	342	143	5.9%	2.4%	64,277	53,985	84.0%	22,468	78,600
	Oct - Dec 10	5,586	5,518	68	-97	1.2%	-1.7%	61,219	49,927	81.6%	21,299	78,300
	Year 2010	22,170	21,862	308	-471	1.4%	-2.1%	246,611	201,945	81.9%	86,130	78,250
	Jan - Mar 11	5,533	5,765	-232	-436	-4.2%	-7.9%	60,912	46,935	77.1%	20,102	79,000
	Apr - Jun 11	6,114	6,192	-78	-286	-1.3%	-4.7%	63,130	52,766	83.6%	22,188	80,500
Continental	Year 2009	12,586	12,732	-146	-282	-1.2%	-2.2%	176,305	143,447	81.4%	62,809	41,000
	Jan - Mar 10	3,169	3,220	-51	-146	-1.6%	-4.6%	42,350	33,665	79.5%	14,535	39,365
	Apr - Jun 10	3,708	3,380	328	233	8.8%	6.3%	39,893	33,910	85.0%	16,300	38,800
	Jul - Sep 10	3,953	3,512	441	354	11.2%	9.0%	46,844	40,257	85.9%	16,587	38,900
Delta	Year 2009	28,063	28,387	-324	-1,237	-1.2%	-4.4%	370,672	304,066	82.0%	161,049	81,106
	Jan - Mar 10	6,848	6,780	68	-256	1.0%	-3.7%	85,777	68,181	79.5%	36,553	81,096
	Apr - Jun 10	8,168	7,316	852	467	10.4%	5.7%	94,463	80,294	85.0%	42,207	81,916
	Jul - Sep 10	8,950	7,947	1,003	363	11.2%	4.1%	102,445	87,644	85.6%	44,165	79,005
	Oct - Dec 10	7,789	7,495	294	19	3.8%	0.2%	91,774	74,403	81.1%	39,695	79,684
	Year 2010	31,755	29,538	2,217	593	7.0%	1.9%	374,458	310,867	83.0%	162,620	79,684
	Jan - Mar 11	7,747	7,839	-92	-318	-1.2%	-4.1%	90,473	69,086	76.4%	36,764	81,563
	Apr - Jun 11	9,153	8,672	481	198	5.3%	2.2%	96,785	81,054	83.7%	42,918	82,347
Southwest	Year 2009	10,350	10,088	262	99	2.5%	1.0%	157,714	119,823	76.0%	86,310	34,726
	Jan - Mar 10	2,630	2,576	54	11	2.1%	0.4%	36,401	27,618	75.9%	23,694	34,637
	Apr - Jun 10	3,168	2,805	363	112	11.5%	3.5%	40,992	32,517	79.3%	22,883	34,636
	Jul - Sep 10	3,192	2,837	355	205	11.1%	6.4%	41,130	33,269	80.9%	22,879	34,836
	Oct - Dec 10	3,114	2,898	216	131	6.9%	4.2%	38,891	32,196	80.7%	22,452	34,901
	Year 2010	12,104	11,116	988	459	8.2%	3.8%	158,415	125,601	79.3%	88,191	34,901
	Jan - Mar 11	3,103	2,989	114	5	3.7%	0.2%	39,438	30,892	78.3%	25,599	35,452
	Apr - Jun 11	4,136	3,929	207	161	5.0%	3.9%	50,624	41,654	82.3%	27,114	43,805
United	Year 2009	16,335	16,496	-161	-651	-1.0%	-4.0%	226,454	183,854	81.2%	81,246	43,600
	Jan - Mar 10	4,241	4,172	69	-82	1.6%	-1.9%	53,023	42,614	80.4%	18,818	42,800
	Apr - Jun 10	5,161	4,727	434	273	8.4%	5.3%	58,522	49,319	84.3%	21,234	42,600
	Jul - Sep 10	5,394	4,859	535	387	9.9%	7.2%	61,134	52,534	85.9%	22,253	42,700
United/Continental Pro-forma FY 2010	Oct-Dec 10	8,433	8,515	-82	-325	-1.0%	-3.9%	100,201	82,214	82.0%	35,733	80,800
	Year 2010	34,013	32,195	1,818	854	5.3%	2.5%	407,304	338,824	83.2%	145,550	81,500
	Jan - Mar 11	8,202	8,168	34	-213	0.4%	-2.6%	96,835	75,579	78.0%	32,589	82,000
	Apr - Jun 11	9,809	9,001	808	538	8.2%	5.5%	104,614	87,296	83.4%	37,000	81,100
US Airways Group	Year 2009	10,458	10,340	118	-205	1.1%	-2.0%	136,939	110,171	80.5%	77,965	31,333
	Jan - Mar 10	2,651	2,661	-10	-45	-0.4%	-1.7%	31,957	24,659	77.2%	17,931	30,439
	Apr - Jun 10	3,171	2,800	371	279	11.7%	8.7%	35,517	29,461	82.9%	20,642	30,860
	Jul - Sep 10	3,179	2,864	315	240	9.9%	7.5%	36,808	30,604	83.1%	20,868	30,445
	Oct - Dec 10	2,907	2,802	105	28	3.6%	1.0%	33,823	27,271	80.6%	20,118	
	Year 2010	11,908	11,127	781	502	6.6%	4.2%	138,107	111,996	81.1%	79,560	
	Jan - Mar 11	2,961	3,000	-39	-114	-1.3%	-3.9%	33,034	25,762	78.0%	18,851	30,621
	Apr - Jun 11	3,503	3,326	177	92	5.1%	2.6%	36,698	30,754	83.8%	21,209	31,321
JetBlue	Oct - Dec 09	832	768	64	11	7.7%	1.3%	12,855	10,208	79.4%	5,457	10,704
	Year 2009	3,286	3,007	279	58	8.5%	1.8%	52,396	41,769	79.7%	22,450	10,704
	Jan - Mar 10	870	828	42	-1	4.8%	-0.1%	13,557	10,412	76.8%	5,528	11,084
	Apr - Jun 10	939	845	94	30	10.0%	3.2%	13,981	11,468	82.0%	6,114	10,906
	Jul - Sep 10	1,039	890	140	59	13.5%	5.7%	14,648	12,390	84.6%	6,573	10,669
	Oct - Dec 10	940	883	57	9	6.1%	1.0%	13,727	11,239	81.9%	6,039	11,121
	Year 2010	3,779	3,446	333	97	8.8%	2.6%	55,914	45,509	81.4%	24,254	11,121
	Jan - Mar 11	1,012	967	45	3	4.4%	0.3%	13,696	11,143	81.4%	6,039	11,281
Apr - Jun 11	1,151	1,065	86	25	7.5%	2.2%	15,193	12,379	81.5%	6,622	11,609	

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation. 1 ASM = 1.6093 ASK. All US airline financial year ends are December 31st.

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 emp.
ANA YE 31/03	Year 2006/07	12,763	11,973	790	280	6.2%	2.2%	85,728	58,456	68.2%	49,500	32,460
	Year 2007/08	13,063	12,322	740	563	5.7%	4.3%	90,936	61,219	67.3%	50,384	
	Year 2008/09	13,925	13,849	75	-42	0.5%	-0.3%	87,127	56,957	65.4%	47,185	
	Year 2009/10	13,238	13,831	-582	-614	-4.4%	-4.6%	83,827	55,617	66.3%	44,560	
	Year 2010/11	15,889	15,093	796	269	5.0%	1.7%	85,562	59,458	69.5%	45,748	33,000
Cathay Pacific YE 31/12	Year 2007	9,661	8,670	991	900	10.3%	9.3%	102,462	81,101	79.8%	23,250	19,840
	Jan-Jun 08	5,443	5,461	-18	-71	-0.3%	-1.3%	56,949	45,559	80.0%	12,463	
	Year 2008	11,119	12,138	-1,018	-1,070	-9.2%	-9.6%	115,478	90,975	78.8%	24,959	18,718
	Jan-Jun 09	3,988	3,725	263	119	6.6%	3.0%	55,750	43,758	78.5%	11,938	18,800
	Year 2009	8,640	7,901	740	627	8.6%	7.3%	111,167	96,382	86.7%	24,558	18,511
	Jan-Jun 10	5,320	4,681	917	892	17.2%	16.8%	55,681	46,784	84.0%	12,954	
	Year 2010	11,522	10,099	1,813	1,790	15.7%	15.5%	115,748	96,548	84.0%	26,796	21,592
JAL YE 31/03	Year 2005/06	19,346	19,582	-236	-416	-1.2%	-2.2%	148,591	100,345	67.5%	58,040	53,010
	Year 2006/07	19,723	19,527	196	-139	1.0%	-0.7%	139,851	95,786	68.5%	57,510	
	Year 2007/08	19,583	18,793	790	148	4.0%	0.8%	134,214	92,173	68.7%	55,273	
	Year 2008/09	19,512	20,020	-508	-632	-2.6%	-3.2%	128,744	83,487	64.8%	52,858	
Korean Air YE 31/12	Year 2006	8,498	7,975	523	363	6.2%	4.3%	71,895	52,178	72.6%	22,140	16,623
	Year 2007	9,496	8,809	687	12	7.2%	0.1%	76,181	55,354	72.7%	22,830	16,825
	Year 2008	9,498	9,590	-92	-1,806	-1.0%	-19.0%	77,139	55,054	71.4%	21,960	18,600
	Year 2009	7,421	7,316	105	-49	1.4%	-0.7%	80,139	55,138	68.8%	20,750	19,178
	Year 2010	10,313	8,116	120	421	1.2%	4.1%	79,457	60,553	76.2%	22,930	
Malaysian YE 31/12	Year 2006	3,696	3,751	-55	-37	-1.5%	-1.0%	58,924	41,129	69.8%	15,466	19,596
	Year 2007	4,464	4,208	256	248	5.7%	5.6%	56,104	40,096	71.5%	13,962	19,423
	Year 2008	4,671	4,579	92	74	2.0%	1.6%	52,868	35,868	67.8%	12,630	19,094
	Year 2009	3,296	3,475	-179	140	-5.4%	4.3%	42,790	32,894	76.9%	11,950	19,147
	Year 2010	4,237	4,155	82	73	1.9%	1.7%	49,624	37,838	76.2%	13,110	
Qantas YE 30/6	Year 2007/08	14,515	13,283	1,232	869	8.5%	6.0%	127,019	102,466	80.7%	38,621	33,670
	Jul-Dec 08	6,755	6,521	234	184	3.5%	2.7%	63,853	50,889	79.7%	19,639	34,110
	Year 2008/09	10,855	10,733	152	92	1.4%	0.8%	124,595	99,176	79.6%	38,348	33,966
	Jul-Dec 09	6,014	5,889	124	52	2.1%	0.9%	62,476	51,494	82.4%	21,038	32,386
	Year 2009/10	12,150	11,926	223	102	1.8%	0.8%	124,717	100,727	80.8%	41,428	32,490
	Jul - Dec 10	7,176	6,832	344	226	4.8%	3.1%	66,821	54,592	81.7%	22,948	32,369
Singapore YE 31/03	Year 2005/06	6,201	5,809	392	449	6.3%	7.2%	109,484	82,742	75.6%	17,000	13,729
	Year 2006/07	9,555	8,688	866	1,403	9.1%	14.7%	112,544	89,149	79.2%	18,346	13,847
	Year 2007/08	10,831	9,390	1,441	1,449	13.3%	13.4%	113,919	91,485	80.3%	19,120	14,071
	Year 2008/09	11,135	10,506	629	798	5.6%	7.2%	117,789	90,128	76.5%	18,293	14,343
	Year 2009/10	8,908	8,864	44	196	0.5%	2.2%	105,674	82,882	78.4%	16,480	
	Year 2010/11	10,911	9,956	955	863	8.8%	7.9%	108,060	81,801	75.7%	16,647	
Air China YE 31/12	Year 2006	5,647	5,331	316	338	5.6%	6.0%	79,383	60,276	75.9%	31,490	18,872
	Year 2007	6,770	6,264	506	558	7.5%	8.2%	85,257	66,986	78.6%	34,830	19,334
	Year 2008	7,627	7,902	-275	-1,350	-3.6%	-17.7%	88,078	66,013	74.9%	34,250	19,972
	Year 2009	7,523	6,718	805	710	10.7%	9.4%	95,489	73,374	76.8%	39,840	23,506
	Year 2010	12,203	10,587	1,616	1,825	13.2%	15.0%	107,404	86,193	80.3%	46,420	
China Southern YE 31/12	Year 2006	5,808	5,769	39	26	0.7%	0.4%	97,044	69,575	71.7%	49,200	45,575
	Year 2007	7,188	6,974	214	272	3.0%	3.8%	109,733	81,172	74.0%	56,910	45,474
	Year 2008	7,970	8,912	-942	-690	-11.8%	-8.7%	112,767	83,184	73.8%	58,240	46,209
	Year 2009	8,022	7,811	211	48	2.6%	0.6%	123,440	93,000	75.3%	66,280	50,412
	Year 2010	11,317	10,387	930	857	8.2%	7.6%	140,498	111,328	79.2%	76,460	
China Eastern YE 31/12	Year 2006	3,825	4,201	-376	-416	-9.8%	-10.9%	70,428	50,243	71.3%	35,020	38,392
	Year 2007	5,608	5,603	5	32	0.1%	0.6%	77,713	57,180	73.6%	39,160	40,477
	Year 2008	6,018	8,192	-2,174	-2,201	-36.1%	-36.6%	75,919	53,754	70.8%	37,220	44,153
	Year 2009	5,896	5,629	267	25	4.5%	0.4%	84,422	60,918	72.2%	44,030	45,938
	Year 2010	11,089	10,248	841	734	7.6%	6.6%	119,451	93,153	78.0%	64,930	
Air Asia (Malaysia) YE 31/12	Year 2008	796	592	203	-142	25.5%	-17.9%	14,353	10,515	73.3%	9,183	4,593
	Year 2009	905	539	366	156	40.4%	17.3%	21,977	15,432	70.2%	14,253	
	Year 2010	1,245	887	358	333	28.8%	26.7%	24,362	18,499	75.9%	16,050	

Note: Annual figures may not add up to sum of interim results due to adjustments and consolidation..

Aviation Strategy

Databases

EUROPEAN SCHEDULED TRAFFIC

	Intra-Europe			North Atlantic			Europe-Far East			Total long-haul			Total International		
	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 %
1992	129.6	73.5	56.7	134.5	95.0	70.6	89.4	61.6	68.9	296.8	207.1	69.8	445.8	293.4	65.8
1993	137.8	79.8	57.9	145.1	102.0	70.3	96.3	68.1	70.7	319.1	223.7	70.1	479.7	318.0	66.3
1994	144.7	87.7	60.6	150.3	108.8	72.4	102.8	76.1	74.0	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	73.0	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	72.0
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
2002	197.2	129.3	65.6	181.0	144.4	79.8	129.1	104.4	80.9	447.8	355.1	79.3	679.2	507.7	74.7
2003	210.7	136.7	64.9	215.0	171.3	79.7	131.7	101.2	76.8	497.2	390.8	78.6	742.6	551.3	74.2
2004	220.6	144.2	65.4	224.0	182.9	81.6	153.6	119.9	78.0	535.2	428.7	80.1	795.7	600.7	75.5
2005	309.3	207.7	67.2	225.9	186.6	82.6	168.6	134.4	79.7	562.6	456.4	81.1	830.8	639.3	76.9
2006	329.9	226.6	68.7	230.5	188.0	81.5	182.7	147.5	80.7	588.2	478.4	81.3	874.6	677.3	77.4
2007	346.6	239.9	69.2	241.4	196.1	81.2	184.2	152.1	82.6	610.6	500.4	81.9	915.2	713.9	78.0
2008	354.8	241.5	68.1	244.8	199.2	81.4	191.1	153.8	80.5	634.7	512.4	80.7	955.7	735.0	76.9
2009	322.1	219.3	68.1	227.8	187.7	82.4	181.2	145.8	80.5	603.8	488.7	80.9	912.7	701.1	76.8
2010	332.3	232.6	70.0	224.2	188.1	83.9	180.2	150.0	83.2	604.1	500.4	82.8	922.7	752.8	78.7
July 11	32.4	25.5	78.7	24.2	21.3	88.1	18.2	15.6	85.9	61.3	53.3	86.9	92.8	78.3	84.4
Ann. change	5.0%	7.1%	1.5	8.4%	7.2%	-0.9	14.4%	12.8%	-1.2	9.9%	9.3%	-0.5	8.3%	8.5%	0.1
Jan-July 11	201.4	141.5	70.2	142.7	116.1	81.3	116.9	92.5	79.1	383.4	308.3	80.4	619.2	473.3	76.4
Ann. change	7.3%	9.7%	1.6	12.2%	9.3%	-2.1	14.7%	9.5%	-3.8	12.0%	9.1%	-2.1	9.9%	8.8%	-0.8

Source: AEA.

JET ORDERS

	Date	Buyer	Order	Delivery/other information
Boeing	08 Oct	Arik Air	2 x 747-8	
	27 Sept	UTair Aviation	7 x 737-900ER, 33 x 737-800	
Airbus	06 Oct	Qantas	78 x A320neo, 32 x A320	
	29 Sept	Lufthansa	2 x A380, 4 x A320, 1 x A330-300	
	27 Sept	Avianca	4 x A330-200F	

Note: Only firm orders from identifiable airlines/lessors are included. Source: Manufacturers.

Aviation Strategy Online

Aviation Strategy is distributed electronically –
via email and by downloading from our website: www.aviationeconomics.com
Please email your e-delivery details to Julian Longin: jil@aviationeconomics.com

Aviation Economics

The Principals and Associates of *Aviation Economics* apply a problem-solving, creative and pragmatic approach to commercial aviation projects.

Our expertise is in strategic and financial consulting in Europe, the Americas, Asia, Africa and the Middle East, covering:

- Start-up business plans
- Due diligence
- Antitrust investigations
- Credit analysis
- IPO prospectuses
- Turnaround strategies
- Privatisation projects
- Merger/takeover proposals
- Corporate strategy reviews
- Antitrust investigations
- State aid applications
- Asset valuations
- Competitor analyses
- Market analyses
- Traffic/revenue forecasts

For further information please contact:

Tim Coombs or Keith McMullan

Aviation Economics

James House, 1st Floor, 22/24 Corsham Street, London N1 6DR

Tel: + 44 (0)20 7490 5215 Fax: +44 (0)20 7490 5218. e-mail: kmg@aviationeconomics.com

SUBSCRIPTION FORM

Enter my Aviation Strategy subscription for:

- 1 year (10 issues - January/February and July/August are combined)
- UK: £450 + VAT @20% (Fully reclaimable if VAT-registered)
 - EU: €550 (Tax-free, intra-Community supply, but VAT Registration No. needed)
 - US and RoW: US\$750 (Tax free)

starting with the _____ issue

Delivery address

Name _____
Position _____
Company _____
e-mail _____
VAT No. _____

DATA PROTECTION ACT

The information you provide will be held on our database and may be used to keep you informed of our products and services or for selected third party mailings

I enclose a Sterling, Euro or US Dollar cheque, made payable to: Aviation Economics

Please invoice me

Please charge my AMEX/Mastercard/Visa credit card the relevant sum as per VAT rules

Card number _____
Name on card _____ Expiry date _____

I am sending a direct bank transfer of the relevant sum, net of all charges to Aviation Economics' account: HSBC Bank,
IBAN: GB33MIDL40043791256904
Sort code: 40 04 37 Account no: 91256904

Invoice address (if different from delivery address)

Name _____
Position _____
Company _____
Address _____
Country _____ Postcode _____

PLEASE RETURN THIS FORM TO:

Aviation Economics Ltd.
James House, 22/24 Corsham Street
London N1 6DR
Fax: +44 (0)20 7490 5218
VAT Registration No. 701 7809 47