Abstract:
The airline industry is uniquely exposed to the impacts of high oil prices, especially in a slowing global economy. As the price of jet fuel has spiked to unprecedented levels in the first half of 2008, airlines have been forced to adapt their operations in a variety of ways. This presentation examines evolving airline strategies and assesses the prospects of the industry as it deals with the fuel price shock. It then addresses how the industry may emerge from the near term period of adjustment, restructured for long term viability, and able to return to trend growth rates.
High Fuel Prices And The Airline Industry: Disruption, Restructuring, & Return To Trend Growth

John Griffiths
Chief Economist
Boeing Commercial Airplanes
September 2008
Implications of high fuel prices will extend over many years

- Fuel price **shock** is buffeting airlines and the economy
- Airlines will have to **restructure** in reaction to high fuel prices
- **Long-term** outlook driven by economic fundamentals
**Oil Prices and Volatility Remain High**

Updated on: 09/10/08

<table>
<thead>
<tr>
<th>Avg Ann Prices</th>
<th>$/Barrel (Brent Crude Oil / Rotterdam Jet Fuel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>$29</td>
</tr>
<tr>
<td>2004</td>
<td>$38</td>
</tr>
<tr>
<td>2005</td>
<td>$55</td>
</tr>
<tr>
<td>2006</td>
<td>$65</td>
</tr>
<tr>
<td>2007</td>
<td>$72</td>
</tr>
<tr>
<td>2008YTD</td>
<td>$113</td>
</tr>
</tbody>
</table>

2008 average annual oil price forecasts as of Sept 2008

Copyright © 2008 Boeing. All rights reserved.

Business Strategy & Marketing 3
The big picture


thousand barrels per day

North America

267

102

-21

Europe

9

-19

-3

FSU

20

62

141

Middle East

129

Global

Middle East

2008

308

388

Africa

66

86

66

Avg Global Demand Growth

(mb/d)

1998-2003

2003-2008

2008-2013

1.07

1.45

1.4%

1.8%

1.6%

© OECD/IEA

2008
Developing countries and transport

- **Usage shift**: transportation fuels will account for the bulk of oil demand
- **Geographical shift**: oil demand growth will come from non-OECD countries
Supply Growth Looks Front End Loaded

- Underlying forecast is 2.6 mb/d lower than last year for 2012
- OPEC crude & liquids drive 2008-2010 growth
- Lull in 2011/2012 on project slippage and mature field decline
- But fledgling signs of recovery from 2013?
Mature Field Decline an Ever-Present

Global net decline seen around 5% pa for 2008-2013
Implies that over 3.5mb/d of new start-ups needed every year just to stand still
OECD facing mature field decline >10% pa, but no sign that aggregate non-OPEC rate accelerating in past decade
Key Projects are Slipping & Getting Costlier

- Non-exhaustive look at key recent project announcements suggests average 1 mb/d loss due to slippage
- A doubling of investment costs...
- ...and 12-15 months slippage on average
Non-OPEC Output: Headed for a dip in 2010-2012

- Net increase of 1.2 mb/d expected for 2008-2013
- Total masks a weak OECD picture....
- ...and the fact that gas liquids, non-conventionals and biofuels are drivers of growth, not crude
Saudi Arabia drives OPEC crude growth

- Strong 2009/2010 capacity growth driven by Saudi lighter/sweeter crude additions, plus initial Iraqi recovery
- Later phase growth comes from Saudi Arab Heavy additions plus Nigerian deepwater
Airlines improved profitability as fuel prices rose over the last several years

- Airlines have been adapting to high fuel prices since 2004
  - Reducing non-fuel costs
  - Increasing productivity with higher load factors and utilization
  - Exercising capacity discipline
  - Implementing fare increases and surcharges
  - Introducing or continuing fuel hedging

- New fuel efficient airplanes for growth and replacement viewed as one of the best tools to reduce fuel expenses

*Airlines achieved profitability in 2007 and were on pace for even better performance in 2008, but fuel price surge will truncate industry profit cycle*
Fuel price surge is challenging industry fundamentals

Source: IATA, June 2008 Financial Forecast
Surging fuel prices have reduced 2008 operating profit forecast by $20B

Operating Profit/Loss (Billions)

Operating Margin


Updated on: 09/03/08
US airlines hit first and hardest, but this is a challenging environment for all airlines.

Updated on: 09/03/08

Operating Profit (billions $)

- Limited Hedging
- US dollar
- Economy
- Older fleet

Source: IATA, September 2008
Fuel price shock has already led to bankruptcies, more are likely.
## Airlines – Bankruptcies and Ceased Operations

Updated on: 7 August 2008

<table>
<thead>
<tr>
<th>Category</th>
<th>Region</th>
<th>Airline</th>
<th>In-Service Fleet</th>
<th>On Order</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boeing</td>
<td>Airbus</td>
<td>Boeing</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>US</td>
<td>Maxjet (12/07)</td>
<td>5</td>
<td>767</td>
<td></td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>US</td>
<td>Aloha (3/08)</td>
<td>15 737J</td>
<td></td>
<td>9 737N</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Asia</td>
<td>Adam Air (3/08)</td>
<td>4</td>
<td>737J</td>
<td>17 737C</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>US</td>
<td>ATA (4/08)</td>
<td>12</td>
<td>737N</td>
<td>10 757</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>US</td>
<td>Skybus (4/08)</td>
<td></td>
<td></td>
<td>11 A320</td>
</tr>
<tr>
<td>Chapter 11</td>
<td>US</td>
<td>Frontier (4/08)</td>
<td></td>
<td></td>
<td>62 A320</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>US</td>
<td>Eos (4/08)</td>
<td>4</td>
<td>757</td>
<td></td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Asia</td>
<td>Oasis (4/08)</td>
<td>4</td>
<td>747</td>
<td></td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Africa</td>
<td>Nationwide Air (4/08)</td>
<td>6 737J</td>
<td>2 737C</td>
<td>1 767</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Asia</td>
<td>Far East Air Trans (5/08)</td>
<td>6 757</td>
<td>9 MD80</td>
<td></td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Europe</td>
<td>Silverjet (6/08)</td>
<td>3</td>
<td>767</td>
<td></td>
</tr>
<tr>
<td>Chapter 11</td>
<td>US</td>
<td>Gemini Air Cargo (6/08)</td>
<td>6 DC10F</td>
<td>4 MD11F</td>
<td></td>
</tr>
</tbody>
</table>

**Totals**                                               **See next page**
## Airlines – Bankruptcies and Ceased Operations (con’t)

Updated on: 12 Sept 2008

<table>
<thead>
<tr>
<th>Category</th>
<th>Region</th>
<th>Airline</th>
<th>In-Service Fleet</th>
<th>On Order</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceased Ops</td>
<td>Asia</td>
<td>One-Two-Go</td>
<td>4 MD80</td>
<td></td>
<td>Safety issues – temporary grounding for at least 30 days</td>
</tr>
<tr>
<td>Ch. 11</td>
<td>US</td>
<td>Tradewinds</td>
<td>4 A300</td>
<td></td>
<td>Rising fuel prices and falling demand</td>
</tr>
<tr>
<td>Ceasing Ops</td>
<td>Asia</td>
<td>Galaxy</td>
<td>2 A300</td>
<td></td>
<td>Effective Oct. 5th 2008; growing losses on 4 domestic routes</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>CIS</td>
<td>Aviaprad (8/08)</td>
<td>2 737C</td>
<td></td>
<td>Also operated TU154 and Yak42s.</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Canada</td>
<td>Zoom (8/08)</td>
<td>1 757</td>
<td></td>
<td>Fuel, financing</td>
</tr>
<tr>
<td>Bankruptcy</td>
<td>Europe</td>
<td>Alitalia (8/08)</td>
<td>10 767 10 777 72 MD80 5 MD11</td>
<td>46 A320</td>
<td>Italian bankruptcy and antitrust laws amended to facilitate Italian control. Plans for restructure with Air One focusing on short/medium haul.</td>
</tr>
<tr>
<td>Bankruptcy</td>
<td>Europe</td>
<td>Futura (9/08)</td>
<td>10 737C 9 737N</td>
<td></td>
<td>Fuel prices, weakening British pound; temp. ops suspension</td>
</tr>
<tr>
<td>Ceased Ops</td>
<td>Europe</td>
<td>XL Airways UK</td>
<td>15 737N 3 767</td>
<td>1 A330</td>
<td>Fuel prices, slowing economy, financing</td>
</tr>
<tr>
<td>Totals (incl. previous page)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>265 126 3 73</td>
</tr>
</tbody>
</table>
Agenda

- Shock
- Restructuring
- Long-term
Recent announcements to surge in fuel prices show airlines reacting quickly

- Additional fares increases and fuel surcharges
- Introducing new fees and raising existing ones
- Postponing entry into announced new markets and withdrawing from some recently opened markets
- Reducing planned frequencies in winter season
- Reducing planned capacity by parking older airplanes
- Accelerating fleet renewal plans
Airlines recovering 1/3-2/3 of fuel price increase from passengers; rest from operations and cost reductions

• raising ticket prices by an average of $5 across ~55% of Australian domestic routes
• $50M cost reduction initiative + salary freeze for all management positions
• 6% reduction in planned 2008/9 capacity, removing 4 aircraft
• 2% domestic capacity redeployed from loss-making services into identified better performing, new or uncontested markets
• cessation of some non-stop flights but markets maintained via hub service

• >10% yield increase on improved pricing and traffic mix
• Hedging offset 9% of fuel bill in the past 12 months; hedged for fiscal 2008-2009 ranging from 70% at $82/bbl in Q1 to 55% at $90/bbl in Q4
• Non-fuel costs reduced 3% in last 12 months: selling costs (-17%), employee costs (-5%), and misc. (-6%)

• 3-15% fare increases for first and business class seats
• Redeploying capacity to high demand Middle East routes (Riyadh, Dubai), scaling back Vancouver and Toronto

• Implementing a $25 service fee for a second checked bag plus numerous fuel surcharge and fare increases
• Beginning Sept 2008, cutting 10% decline in domestic mainline capacity
• Accelerating the retirement of 67 Boeing 737-300 and 737-500 aircraft by the end of 2009
• Eliminating approximately 3,000 positions across all work groups
• New regional agreement with ExpressJet Airlines resulting in approximately $50 million of annual savings
• Transitioning to Star Alliance for revenue opportunities, cost savings and other efficiencies

Source: Company press releases
Airlines cutting capacity to reduce costs and improve yields due to high fuel prices

- Most cuts to older generation single aisle fleet, and RJs (US)
- Largest cuts in U.S. domestic market, bulk starting in fall. Year-end 2008 capacity anticipated to be down 10+% vs. 2007
- Parked fleet impact anticipated to begin in September

<table>
<thead>
<tr>
<th>Airline</th>
<th>2008 YoY Domestic Capacity Growth</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>Other</td>
<td>27%</td>
<td>-6%</td>
</tr>
<tr>
<td>Frontier</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>United</td>
<td>-6%</td>
<td>-4%</td>
</tr>
<tr>
<td>Delta</td>
<td>-3%</td>
<td>-7%</td>
</tr>
<tr>
<td>American</td>
<td>-4%</td>
<td>-3%</td>
</tr>
<tr>
<td>Jetblue</td>
<td>8%</td>
<td>1%</td>
</tr>
<tr>
<td>Continental</td>
<td>-1%</td>
<td>-1%</td>
</tr>
<tr>
<td>Northwest</td>
<td>-1%</td>
<td>-2%</td>
</tr>
<tr>
<td>US Airways</td>
<td>-4%</td>
<td>-2%</td>
</tr>
<tr>
<td>Air Tran</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>Alaska</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Southwest</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Industry</td>
<td>1%</td>
<td>-2%</td>
</tr>
</tbody>
</table>

Source: Lehman Brothers, industry reports

- Targeted European cuts in 2008, but more anticipated in 2009 due to fuel hedge expirations and slowing traffic growth v. capacity
- Some Asian cuts, but generally smaller as economy and traffic/capacity balance still holding up

<table>
<thead>
<tr>
<th>Airline</th>
<th>Capacity Reduction/Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aer Lingus (6/08)</td>
<td>+15% long-haul, suspending Dubin-LAX, A330 deliveries now for replacement v. growth</td>
</tr>
<tr>
<td>Air Berlin (6/08)</td>
<td>+10% capacity, up to 30% on long-haul routes</td>
</tr>
<tr>
<td>Air France-KLM (7/08)</td>
<td>2009 plans reduced to 2% growth from 4%</td>
</tr>
<tr>
<td>BA (8/08)</td>
<td>Lowering winter capacity 3%, no airplanes grounded to maintain slots</td>
</tr>
<tr>
<td>Easyjet (7/08)</td>
<td>Winter growth reduced to 4-6% (Q2-18%)</td>
</tr>
<tr>
<td>Iberia (5/08)</td>
<td>15% domestic capacity in H2 2008</td>
</tr>
<tr>
<td>SAS (4/08)</td>
<td>5% in autumn, 11 airplanes</td>
</tr>
<tr>
<td>Cathay Pacific 8/08)</td>
<td>2009 growth ~3% vs. initial plans for 8%</td>
</tr>
<tr>
<td>EVA (7/08)</td>
<td>5-10% in Q4 on routes to Europe, US, Vietnam</td>
</tr>
<tr>
<td>Jet Airways (7/08)</td>
<td>10% domestic capacity reduction in Q2</td>
</tr>
<tr>
<td>Korean (5/08)</td>
<td>Cutting services on 5 intra-Asia routes and frequencies on 12 additional routes in H2 2008.</td>
</tr>
<tr>
<td>Qantas (7/08)</td>
<td>+2008/9 growth plans reduced from 8% to 0%, retiring up to 22 airplanes</td>
</tr>
<tr>
<td>Virgin Blue (7/08)</td>
<td>+12% cut in domestic capacity in Q4 through 2009, 6 airplanes parked + 5 E190 deferrals</td>
</tr>
</tbody>
</table>
Airline Capacity Reductions will be Targeted

- Cuts will be based on route/flight profitability.
- Airlines will strive to maintain market coverage by cutting marginal flights
  - Reductions in “utilization flying” e.g. red-eyes and weekend flights
- Leisure routes more vulnerable e.g. USAirways “midnight” hub in Las Vegas, Delta RJ service in Orlando
- Long-haul routes with little premium traffic likely to be cut to minimize “carrying fuel to carry fuel”
- International reductions primarily in newly-entered markets where time for demand spool-up entails prohibitive cash burn
  - Recently announced planned routes are being delayed or dropped entirely
Scope for Further Adjustments Reduced

<table>
<thead>
<tr>
<th>Lever</th>
<th>Outlook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
</tr>
<tr>
<td>Fuel surcharges, fare increases</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td></td>
</tr>
<tr>
<td>Hedging</td>
<td></td>
</tr>
<tr>
<td>Reduce non-fuel costs</td>
<td></td>
</tr>
<tr>
<td>Increase load factors</td>
<td></td>
</tr>
<tr>
<td>Improve ground ops efficiency (e.g. one-engine taxi)</td>
<td></td>
</tr>
<tr>
<td>Improve ATC practices and routings</td>
<td></td>
</tr>
<tr>
<td>Eliminate unprofitable frequencies/routes</td>
<td></td>
</tr>
<tr>
<td>Fleet</td>
<td></td>
</tr>
<tr>
<td>Reduce weight (e.g. food service reduction)</td>
<td></td>
</tr>
<tr>
<td>Reduce drag (e.g. winglets)</td>
<td></td>
</tr>
<tr>
<td>Implement PIPs</td>
<td></td>
</tr>
<tr>
<td>Replace or park less fuel efficient airplanes</td>
<td></td>
</tr>
</tbody>
</table>

**Despite parking and other cost cutting and revenue raising measures, challenges could be greater in 2009 than 2008**
High fuel prices pose varying challenges to different business models

- Full Service
- Mixed Offering
- Low Cost

- Short Haul
- Medium Haul
- Long Haul

- All-Premium / Business
- Global Network
- Long-Haul Dependents
- Short/Medium Haul Dependents
- Broad Network
- Regionals
- Low Fare
- ...Long-haul Low Fare
- Charter/Inclusive Tour
## Airlines will adapt their strategies

### More Judicious Network Planning
- Business travel demand will be essential to new route openings
- Leisure markets will be increasingly biased toward peak day-of-week service
- Airlines will look closer at the frequency growth vs. passenger preference trade-off
- Need to aggregate thinner markets (alliance partners, fifth freedom, scissor hubs)

"True" Point-to-Point flying

<table>
<thead>
<tr>
<th>Short-haul:</th>
<th>Long-haul:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will continue to grow and coexist with Hub n’ Spoke</td>
<td>Challenging; will require sustainable demands and yields</td>
</tr>
</tbody>
</table>

### Some airplane size adjustments likely
- Focus on Seat-mile cost economics and Size vs. Efficiency trade

<table>
<thead>
<tr>
<th>Short-haul:</th>
<th>Long-haul:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgauging …Pressure on RJs</td>
<td>Some upgauge potential in large, dense markets</td>
</tr>
</tbody>
</table>

### Hubs and Airplanes utilized more efficiently
- Maximized-utilization will be traded vs. selective profitable flying
- Fewer long-haul airplanes assigned to short-haul tags/hops
- Less duplicative flying from dual/ multiple hubs by the same airline

### Grow via Alliances and Partnerships
- Revenue & cost pooling agreements
- Less rewarding, but far less risk
Slowing demand growth will lead to accelerated parking of older airplanes and small RJs

<table>
<thead>
<tr>
<th>Region</th>
<th>2007</th>
<th>2008F</th>
<th>2009F</th>
<th>Dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>2%</td>
<td>-1%</td>
<td>-3%</td>
<td>Full fuel price exposure, little fuel hedging, weakest economic outlook</td>
</tr>
<tr>
<td>Europe</td>
<td>6%</td>
<td>3%</td>
<td>-1%</td>
<td>Better economic outlook than U.S. and stronger euro, plus fuel hedging until 2009</td>
</tr>
<tr>
<td>Asia</td>
<td>8%</td>
<td>6%</td>
<td>5%</td>
<td>Stronger economic growth and liberalization effects cushion against higher oil prices</td>
</tr>
<tr>
<td>ROW</td>
<td>12%</td>
<td>9%</td>
<td>8%</td>
<td>Stronger economic growth and liberalization effects cushion against higher oil prices</td>
</tr>
<tr>
<td>World</td>
<td>7%</td>
<td>3%</td>
<td>1-2%</td>
<td>North America + Europe ~ 60% of world traffic</td>
</tr>
</tbody>
</table>

Source: BCA Market Analysis, Lehman Brothers, Citigroup, IATA,

Despite parking and other cost cutting and revenue raising measures, losses are likely to be greater in 2009 than 2008.
More Rapid Retirement of Older Generation Airplanes

- Very little parking of in-production models anticipated
- Up to 700 airplanes may be parked by the end of 2009
  - Almost all parking will be single aisle out-of-production models
  - Smaller RJs particularly exposed
- Percentage of parked airplanes likely to approach post-9/11 levels
- Long-term outlook varies by model
  - MD80s unlikely to return to in-service fleet
  - 737 Classics have better long-term market potential
  - Some freighter conversions
Typical trip costs have increased by about 15-20% over the last year due to fuel price increases.

737-800 trip cost (500nm mission, no hedging)

- $2/gallon: ($70/bbl crude + $15/bbl crack spread, Jun '07)
  - +18%
  - +$2,100
  - +$13/seat

- $4/gallon: ($140/bbl crude + $30/bbl crack spread, Jun '08)

Source: Boeing OpCost, US Domestic Majors rule set
Industry analysts generally see delivery up-cycle continuing through 2010/2011
Large, diversified backlog reduce cancellation and slide risk

Model:
- Large: 8%
- Single-Aisle: 31%
- Intermediate Twin-Aisle: 61%

Backlog:
- $64
- $70
- $124
- $174
- $255

Regions:
- Americas
- Europe, Russia & Central Asia
- Middle East & Africa
- Asia Pacific
- China & East Asia
- South & Southeast Asia
- Leasing & Gov't

Year:
- 2003
- 2004
- 2005
- 2006
- 2007
Agenda

- Shock
- Restructuring
- Long-term
Air travel is fundamental

- Air travel is, and will continue to be, a highly valued and integral part of the social and economic fabric of our world.
- Air travel is crucial to business, personal relationships, transporting goods and improving the standard of living around the world.
- Today, the air transport industry supports (directly and indirectly) more than 32-million jobs... about 8% of World GDP*.
- In 20 years, these economic benefits have the potential to more than double.

*The Economic and Social Benefits of Air Transport 2008, ATAG
Long-term Outlook

MARKET GROWTH RATES

2007-2027

- World economy (GDP) 3.2%
- Number of airplanes in service 3.2%
- Number of passengers 4.0%
- Airline traffic (RPK) 5.0%
- Cargo traffic (RTK) 5.8%
2008 CMO forecast is shaped by higher long-term fuel price assumption

- Smaller fleet size at end of 20-year period (35,800) than previous outlook (36,400)
- Replacement airplanes a greater share of demand (43%) than in previous forecast (36%)
- Less efficient models retiring. About half of MD80s removed in 10-years

**NEW AIRPLANE DELIVERIES**
2008-2027

- RJ forecast down 32% from last year. Small RJ forecast down 68%, medium RJ down 60%
- Average seat size increasing from 158 today, to 181 in 20-years, reflecting upgauging due to fuel, environment and congestion
Summary

- High fuel prices are challenging the airline industry
- Airlines are currently reacting with fare/surcharge increases and cost-cutting initiatives
- If prices remain high, airlines will restructure their business models and operations in response to the new business environment; some will fail
- Long-term air travel demand remains robust
  - Underlying fundamentals unchanged
  - The industry will emerge from challenging current environment restructured and more efficient
  - Airlines will adapt to efficiently and profitably serve air travel demand growth