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The World Is Flat: From GDP forecasts to Aerospace outlook

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Seabury Aviation & Aerospace
### Aviation and Aerospace are “under siege”

<table>
<thead>
<tr>
<th>Airlines</th>
<th>Aerospace</th>
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<tbody>
<tr>
<td>Capacity cuts to address soaring oil prices implemented in 2008</td>
<td>Production cuts and new program delays have hurt most players</td>
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<td>Evaporating demand replaced soaring oil as biggest concern</td>
<td>Cash flows did not materialize to offset R&amp;D, inventories grew</td>
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<td>Traffic and fares plummeted driving capacity cuts and deferrals</td>
<td>Aftermarket revenues declined as aircraft were grounded and utilization fell</td>
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<td>Oil prices returned to $70/bbl, eliminating hopes of low oil leading to profits</td>
<td>Recovery in air travel critical to production and aftermarket recovery</td>
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<td>Tight financing hindered ability to replace older aircraft</td>
<td>Additional programs announced, stretching current resources</td>
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**How long until a recovery?**
Constantly changing economic inputs add to the chaos...

Understanding the dynamics of these changes on airline and aerospace revenues is critical.

**Global GDP forecast (IMF)**

- Apr '08: 3.8%
- Oct '08: 3.0%
- Nov '08: 2.2%
- Jan '09: 0.5%
- Current: -1.4%

**Global GDP forecast (EIU)**

- Jan: 0.7%
- Feb: 0.2%
- Mar: -0.8%
- Apr: -1.5%
- May: -1.8%
- Current: -1.4%

**Oil price ($/bbl)**

- Jan '08: 89
- Jul '08: 134
- Jan '09: 40
- Jul '09: 65
- Current: 71

**LIBOR-OIS spread (credit market stress, bps)**

- 2003-07: 364
- Oct '08: 11
- Current: 13

Source: Economist Intelligence Unit; IMF; Bloomberg
...but correlations and trends can still shape future decisions

1. The economy will come back, but how rapidly remains unknown

2. Air travel demand will return to growth, but slower and from a lower baseline

3. Capacity cuts will continue to deal with reduced demand

4. Current and new-generation aircraft will replace old, particularly as oil rises

5. Further production cuts may prove necessary to balance supply and demand

Aerospace must prepare for a slow recovery
How did we get there?

Y-o-Y change in US consumption, %

As in every previous downturn, airlines are hit harder

Note: Retail spend includes clothing, household equipment, and other
Source: IMF World Economic Outlook, November update; Bureau of Economic Analysis, Seabury forecasts
Are we at the bottom and how quick the rebound?

Real revenue forecasts (% change vs. 2008)

- North America: -13%
- Europe: -14%
- Developed Asia: -16%
- Emerging markets: 29%
- World: -11%

Developed economies still below 2008 real revenue, offset by growth in developing markets; slow recovery expected

Note: Developed Asia includes Hong Kong, Singapore, Japan, Australia, New Zealand, Korea; Emerging Asia is Asia excluding China, India, and Developed Asia; 1 Based 2008 split of RPKs: India adjusted to reflect significant ramp-down in YOY capacity
Source: IMF, EIU, IATA, Seabury analysis
What does it mean for airlines and their fleets?

**Cut capacity to maintain yields and load factors**
- Immediate

**Drive cost reduction to improve profitability**
- Short-to-medium term
- Low in North America - most opportunity already achieved
- Medium in rest of world

**Pursue strategic opportunities**
- Opportunistic
- Variable

### Timing
- Immediate

### Impact
- High

### Recent examples
- American – 14%
- Delta – 8%
- Continental – 7%
- SAS – 13%
- British Airways – 4%
- Lufthansa – €1B “CLIMB 2011”
- SAS – SEK 2B
- Air Canada – CAD $500M
- Qantas – Q Future A$1.5B
- Lufthansa-Austrian/Brussels/JetBlue
- British Airways-Iberia
- Delta-Virgin Blue/Air France
- OneWorld transatlantic alliance

### Source
- Company announcements, Financial Times, Reuters
Global capacity will fall in 2009, grow slowly to 2013

Y-o-Y change in ASMs

| Capacity year-over-year growth is unlikely to occur until 2010 |

Note: Passenger capacity only
Current-generation fleet continues to grow, old-gens retire

2009 change in capacity (ASMs)

2009 aircraft retirements

Old-generation aircraft increasingly unlikely to return to passenger service

Note: Passenger capacity only; New-gen (A320Fam, 737NG, A330, 777), Mid-gen (757, A340, 747-400, 767), Old-gen (737CL, MD80/90, 747CL, A300)
How is the pain shared around the World?

% change in scheduled capacity (H1 ’09 vs. H1 ‘08)

- Intra-N.A. -10%
- N.A.-Asia -10%
- N.A.-Europe -8%
- Intra-Europe -7%
- Europe-Asia -5%
- Intra-Asia 3%
- N.A. based carriers -9%
- Europe Based Carriers -6%
- Asia/ Australasia based carriers 1%

Capacity reductions to date have been concentrated in US, EU; further capacity cuts announced in all regions for H2 ‘09

Note: Capacity based on total ASK; Scheduled capacity as of 06/0909
Source: Innovata; Seabury analysis
What does it mean for the aircraft manufacturers?

Narrowbody aircraft deliveries

Narrowbody production cuts could be around the corner

Note: Western-built aircraft only
Source: Back Aviation iFleet
How long can they hide?

Quarters between start of recession and narrowbody production cuts

Narrowbody production cuts could occur in the next 3-6 months, although slower ramp up before recession could mitigate

Note: Production rates include all narrowbody aircraft produced by 3 OEMs; Recession timing based on US GDP
Source: Bureau of Economic Analysis; Ascend; Seabury analysis
How quickly will airlines recover?

Airline demand recovery pattern (illustrative)

Recessionary period

Recovery

Snapback

Trend/Normal

Historical pattern indicates 12-month lag in return to growth as personal consumption recovery will not immediately translate into growth in airline demand

Source: Bureau of Economic Analysis; Seabury analysis
So what does all of this mean for Aerospace Titanium companies?

OEM Production flat or declining

- Narrowbody production cuts may be required, further impacting production revenues
- Current-generation widebody production flat, with A330 and 777 production cuts already planned
- New-generation widebody production ramp up likely slower, due to 787 delays and A380 deferrals
- New programs unlikely to be major contributors, at least not in the next 5 years

Expected civil aerospace consumption of Ti (indexed to 2009)

Commercial aircraft production has yet to reflect the crisis

Note: Calculation based on Seabury’s monthly production rate forecast vs. current OEM announced rate
Source: Seabury analysis, Airbus, Boeing
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