Still The World’s Strongest Industry… For Now

Aviation/Defense Overview And Forecast

Presentation To Titanium 2016
Phoenix, AZ
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Teal Group Corporation
www.tealgroup.com
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Civil And Military Aircraft Deliveries

Aggregate 2006-2015: 53% Growth (4.8% CAGR)

(Market Value in 2016 $ Bns)

'06-'15: 63.9% Growth (5.5% CAGR)

'06-'15: 25.1% Growth (2.4% CAGR)

Civil Military

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## Aircraft Markets, Through Good And Bad Years

<table>
<thead>
<tr>
<th>World New Deliveries In 2015 (2016 $)</th>
<th>CAGR '03-'08</th>
<th>CAGR '08-'13</th>
<th>Change '13-'14</th>
<th>Change '14-'15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Jetliners ($103.6 b)</td>
<td>7.5%</td>
<td>10.3%</td>
<td>7.9%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Business Aircraft ($22.9 b)</td>
<td>17.1%</td>
<td>-3.7%</td>
<td>5.1%</td>
<td>-6.3%</td>
</tr>
<tr>
<td>Regionals ($7.1 b)</td>
<td>4.6%</td>
<td>-6.5%</td>
<td>17.7%</td>
<td>-10.5%</td>
</tr>
<tr>
<td>Civil Rotorcraft ($5.4 b)</td>
<td>18.2%</td>
<td>-1.5%</td>
<td>-2.6%</td>
<td>-9.4%</td>
</tr>
<tr>
<td>Military Rotorcraft ($13.6 b)</td>
<td>10.3%</td>
<td>8.9%</td>
<td>15.0%</td>
<td>-16.7%</td>
</tr>
<tr>
<td>Military Transports ($5.9b)</td>
<td>3.2%</td>
<td>-1.2%</td>
<td>-4.9%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Fighters ($18.2 b)</td>
<td>1.8%</td>
<td>1.1%</td>
<td>1.8%</td>
<td>6.4%</td>
</tr>
<tr>
<td>All Civil ($139.2 b)</td>
<td>10.0%</td>
<td>5.0%</td>
<td>7.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>All Military ($41.4 b)</td>
<td>3.9%</td>
<td>3.2%</td>
<td>7.1%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Total ($180.6 b)</td>
<td>8.2%</td>
<td>4.6%</td>
<td>7.3%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Our Forgotten Nemesis... Cyclicality
Large Jetliner Deliveries By Value

(Value in '16 $Bns)

'68-'77 -11% CAGR; -65% peak-trough

'80-'84 -13.9% CAGR; -45% peak-trough

'84-'91 16.1% CAGR

'91-'95 -12.5% CAGR; -41% peak-trough

'95-'99 20.8% CAGR

'99-'03 -11% CAGR; -37.3% peak-trough

'01-'03 -10.7% CAGR; -28.8% peak-trough

'04-'06 -11% CAGR

'07-'09 -28.8% peak-trough

'09-'15 9.2% CAGR; A 12-Year Supercycle

'15-'16 20.8% peak-trough

OR

'16-'18 16.1% CAGR

'18-'20 12.5% CAGR; -41% peak-trough

'20-'22 9.2% CAGR; -40% peak-trough

'22-'24 0% CAGR; -28.8% peak-trough

'24-'26 -11% CAGR; -37.3% peak-trough

'26-'28 -12.5% CAGR; -41% peak-trough

'28-'30 9.2% CAGR; -40% peak-trough

'30-'32 0% CAGR; -28.8% peak-trough

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Oil Prices And Interest Rates

EIA Annual Average Imported Crude Oil Price; Federal Funds Effective Rate
Y/Y Traffic: Respectably Strong Numbers

2015 Totals: RPKs 6.5%, ASKs 5.6%, FTKs 2.2%; 2014 Totals: RPKs 5.9%, ASKs 5.6%, FTKs 4.5%; 2013 Totals: RPKs 5.2%, ASKs 4.8%, FTKs 1.4%

Source: IATA
Historical Jetliner Orders And Deliveries

(Number of aircraft)

'69 '71 '73 '75 '77 '79 '81 '83 '85 '87 '89 '91 '93 '95 '97 '99 '01 '03 '05 '07 '09 '11 '13 '15 '16

All Airbus and Boeing aircraft
BRIC Market Large Jet Deliveries

Number of Aircraft Delivered


China Russia India Brazil

Number of Aircraft Delivered:
- 2000: 3, 31, 9, 25
- 2001: 4, 28, 20, 9
- 2002: 8, 40, 20, 7
- 2003: 9, 58, 15, 8
- 2004: 15, 106, 32, 15
- 2005: 9, 107, 19, 17
- 2006: 7, 104, 70, 22
- 2007: 6, 151, 24, 42
- 2008: 25, 156, 21, 40
- 2009: 21, 167, 18, 22
- 2010: 17, 200, 18, 24
- 2011: 20, 248, 19, 19
- 2012: 18, 268, 30, 29
- 2013: 18, 301, 40, 32
- 2014: 24, 301, 23, 18
- 2015: 18, 301, 40, 18
Single And Twin Aisle Deliveries
Powered By...Hubris

(Market Value in '15 $Bns)

'05-'14 CAGR:
8.1% Single,
11.6% Twin

'09-'14 CAGR:
6.5% Single,
17.8% Twin

'15-'19 Plan:
13.1% Single,
9.4% Twin

Single Aisles
Twin Aisles
Commercial Jetliners History And Forecast

An Inevitable Correction Looms

Airbus, Boeing, CSeries, C919, MS-21; includes KC-30, KC-46, P-8
Regional Market: Re-engining Also Triumphs

(Value of deliveries in '16$ Bns)

- Bombardier
- Embraer (pre E2)
- E2
- Other
- ATR
- Saab
- BAE
- Fokker
- MRJ
- SuperJet
Engine Deliveries By Value

(Deliveries By Value In '16 $bns)

- PW1100/1500
- Leap
- CFM
- Trent
- GE90
- GE9X
- GEnx
- Other
Bottom Half Bizjet Segment V. Top Half

(Market Value in '16 $ Bns)

'03-'08 CAGR: 19.7% Bottom, 15.3% Top

'10-'15: 2.9% Bottom, 2.2% Top

'08-'10: -56.8% Bottom, 3.5% Top

Bottom Half (<$26M) • Top Half (>=$26M)
Business Aircraft Market By Class

A Gradual Shift Towards Larger Aircraft

('16$ Billions)

- Very Light
- Entry Level
- Mid-Sized
- Super Mid-Sized
- Large
- Very Large
- Ultra
- Jetliners+RJs
- Turboprops

'06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25
DoD Investment, O&M Funding

($ bns)

FY01 FY03 FY05 FY07 FY09 FY11 FY13 FY15 FY17 FY19 FY21

Procurement RDT&E O&M

Then-year dollars

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DoD Tactical Aircraft Procurement, FY1986-2017
A Sudden Return To The Peak, But Still A Fundamental Problem
World Fighter Production Shares

(Deliveries in '16 $bns Value)
The US Military Fixed Wing Waterfall

Much Riding On The F-35...But There’s A New Wave Coming

(Value in '16$ Bns)

Excludes jetliner derivatives
Boeing Military Fixed Wing Deliveries

(Value in '16$ Bns)

C-17 AV-8B F/A-18 F-15 P-8 KC-46
US Military Rotorcraft Market Falling; International Military Growing; Civil Falling

(Market Value in '16 $ Bns)

'06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25

Civil Military (US) Military (International)
World Military UAV Market 2002-2024

(Market value in '15 $bns)

Thousands

'02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24

Includes UCAVs; excludes R&D.
Aircraft Production 2006-2025

Still Growing, For Now....

(Market Value in '16 $ Bns)

Fighters  Business Aircraft  Rotorcraft
Military Transports/Trainers/Other  Jetliners/Regional AC
US Aircraft Parts/Structures Imports By Origin

Top 12 Countries

Source: ITC NAIC 336413; in order, as of 2015
Composites V. Metals

• Producibility costs.

• Scalability and minimum thickness.

• Risk v. Reward (pricing power); the re-engining factor.
  — Derivatives v. “Moonshots.”

• Structural weight v. total weight.

• Maintainability.

• Dismal business jet experiences.
# Global Aircraft Market Outlook In One Page

<table>
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<tr>
<th>Market</th>
<th>2016</th>
<th>Risk</th>
<th>Elevator Comment</th>
</tr>
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<tbody>
<tr>
<td>Large Jetliners</td>
<td>0.1%</td>
<td>-</td>
<td>Tough to de-rail the ramp, but fuel prices and China are big concerns. Execution too.</td>
</tr>
<tr>
<td>Business Aircraft</td>
<td>-8.5%</td>
<td>-</td>
<td>Weak emerging markets and resource-extraction country/company demand.</td>
</tr>
<tr>
<td>Regionals</td>
<td>-1.1%</td>
<td>-</td>
<td>Scope clause is only big risk.</td>
</tr>
<tr>
<td>Civil Rotorcraft</td>
<td>-32.5%</td>
<td>-</td>
<td>Getting ugly. Too many new models aimed at a weak Segment (oil).</td>
</tr>
<tr>
<td>Military Rotorcraft</td>
<td>3.7%</td>
<td>-</td>
<td>Will trend down as programs of record end/slow; no risk of accelerated downturn.</td>
</tr>
<tr>
<td>Military Transports</td>
<td>24.6%</td>
<td>-</td>
<td>Last of C-17s/A400M ramp; Only risk is A400M execution; C130J benefits if it’s a problem.</td>
</tr>
<tr>
<td>Fighters</td>
<td>0.1%</td>
<td>-</td>
<td>I like this market.</td>
</tr>
<tr>
<td>All Civil</td>
<td>-2.7%</td>
<td>-</td>
<td>Jetliner growth not compensating for weakness in other segments; more risk from emerging markets, oil.</td>
</tr>
<tr>
<td>All Military</td>
<td>4.5%</td>
<td>-</td>
<td>Global insecurity, Tension, Malice.</td>
</tr>
<tr>
<td>Total Industry</td>
<td>-1.0%</td>
<td>-</td>
<td>Downshifting, with more risk</td>
</tr>
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</table>