



2009 Global Aerospace & Defense Industry Performance Wrap-up

A study of the 2009 financial performance of 91 global
A&D companies

Abstract

Deloitte conducted a study of the 2009 financial performance of the Global Aerospace & Defense (A&D) Industry by evaluating the performance of 91 companies. Since revenues of companies in this study represent most of the overall A&D Industry revenue, we believe the results of our study are indicative of the A&D Industry as a whole, and use the term “Industry” throughout this report in representing our findings.

Although impacted by the 2009 worldwide economic recession, the Industry has continued to demonstrate its resilience by posting stable revenue and less impactful reductions in operating earnings and operating margins compared to many industries in 2009. This is because the Industry generally relies on long term contracts not greatly impacted by short-term economic events, an increasing requirement for global defense, security and humanitarian aid, as well as the need for increasing commercial airline travel especially in growing non-Western economies.

In summary, global Industry revenue remained flat, with a modest 1.3% increase to \$635.0 billion. At the same time, operating earnings decreased 15.3% to \$47.9 billion while operating margins fell by 16.4% to 7.6%. However, were it not for the program writeoffs principally at Boeing, EADS, and BAE Systems, Industry operating earnings would have also remained essential flat. Financial performance varied by subsector and region-specific factors, impacting key metrics. Key study findings are as follows:

- The global A&D Industry slowed in 2009 compared to the record performance of the Industry in 2008 and several years of compounded growth.
- Sales bookings (Book-to-Bill ratio) fell significantly from 1.40x in 2008 to 0.89x in 2009, a substantial 36.9% decrease, due to fewer new bookings and existing order cancellations, portending slower times ahead.
- Boeing had higher sales revenue than EADS and regained its position as the world’s largest

A&D Industry company, reversing its 2nd place performance in 2008.

- American A&D companies in this study grew faster in 2009, at 3.2%, than European companies in this study, whose revenue fell by 2.1%.
- American companies in this study were more profitable again in 2009, with operating margins of 9.3%, than European companies in this study, with operating margins of 4.6%, a reflection of the long term difficulty in rationalizing costs for the Industry in countries with higher government intervention and stricter job protection scheme.
- Specific events that impacted the Industry, contributing to the lower level of relative performance, include: 1) lower revenue and negative earnings at EADS, resulting from A400M and A380 loss provisions and negative foreign exchange effects, 2) higher R&D expenses for new programs at Boeing Commercial Airplanes, 3) impairment charges and regulatory penalties at BAE Systems, and 4) significantly lower revenue and operating earnings at Textron, because of underperformance at Cessna and the Finance business.
- Labor reductions were severe in the business jet sub-segment; however, the overall A&D Industry was minimally affected by layoffs, compared to other industries that saw massive job losses during 2009. The total level of global A&D employment remained constant at about 2.0 million employees in 2009, with a very modest growth of 0.2%, versus the larger S&P 500 group that contracted at a rate of 2.9%.

Despite the relatively better performance of the A&D Industry compared to others in 2009, we believe the global A&D Industry continues to be challenged by moderating defense budgets, poor program performance, exchange rate volatility, and credit availability. Global economic recovery is being felt, although the timing and magnitude of the upturn is expected to vary by subsector and region.

Global A&D Industry slowed in 2009, after several years of growth

The following 91 companies were included in this study and represent approximately 95% of the overall A&D Industry revenue. Consequently, we believe the results of our study are indicative of the A&D Industry as a whole, and we will use the term “Industry” throughout this report in representing our findings.

Deloitte conducted this study of the 2009 financial performance of the Industry by assessing key metrics related to revenue growth, operating earnings and margin, asset effectiveness, cash generation, sales bookings, employee productivity, and total level of employment. Industry averages were calculated and compared to prior year performance as well as various segments and groupings within the Industry.

A&D companies or divisions included in this study in sales revenue order (see footnotes)

1. Boeing	24. Harris	47. GKN Aerospace*	70. Bharat Electronics
2. EADS	25. Dassault Aviation	48. ThyssenKrupp Marine*	71. Loral Space & Communications Inc.
3. Lockheed Martin	26. Alliant TechSystems	49. Mantech International	72. Curtiss Wright*
4. BAE Systems	27. Rockwell Collins	50. BE Aerospace	73. Force Protection
5. Northrop Grumman	28. CSC*	51. VT Group	74. Indra Sistemas Services*
6. General Dynamics	29. URS*	52. Parker Hannifin Aerospace*	75. Allegheny Technologies*
7. Finmeccanica	30. Spirit Aerosystems	53. Vought Aircraft Industries	76. Fuji Aerospace*
8. Raytheon	31. Kawasaki Aerospace and Gas Turbines*	54. MOOG	77. Alion Science & Technology Corp
9. United Technologies*	32. Singapore Technologies	55. Meggitt	78. GenCorp
10. GE Aviation*	33. MTU Aero Engine	56. Teledyne Technologies	79. Smiths Detection*
11. Thales	34. Precision Castparts Corp.*	57. BBA Aviation	80. Stanley, Inc.
12. Rolls Royce	35. Babcock International	58. Serco Defense*	81. Chemring
13. L3 Communication	36. SAAB Aerospace	59. SRA International	82. Titanium Metals
14. Safran	37. Hawker Beechcraft	60. CAE	83. Transdigm Group
15. Honeywell Aerospace*	38. DynCorp*	61. Esterline	84. Umeco plc
16. Textron	39. Zodiac SA	62. AAR	85. Woodward Governor*
17. SAIC	40. IHI Aero-engines and Space*	63. Triumph Group	86. FLIR Government Systems*
18. Bombardier Aerospace*	41. Cobham	64. Orbital Sciences	87. Magellan Aerospace
19. Goodrich	42. Elbit Systems	65. Hexcel	88. Crane Aerospace*
20. ITT Defense*	43. QinetiQ	66. Kongsberg Gruppen*	89. HEICO Corporation
21. Halliburton KBR*	44. CACI	67. Barnes Group	90. Kaman Aerospace*
22. Embraer	45. Rheinmetall Defense*	68. Ultra Electronics	91. Senior Aerospace*
23. Mitsubishi Aerospace*	46. Oshkosh Truck Defense*	69. Cubic	

Study included companies with USD \$500 million in sales revenue and does not include government or privately owned companies. A small number of publicly owned companies are not included due to late financial statement filings.

* Partial company results based on business unit A&D activity, identified by A&D-specific business segment, where possible.

See methodology section for further information and definitions of financial metrics

Although the Industry experienced flat revenue growth, it was a reasonably good year compared to others amidst one of the worse recessions on record

Summary financial metrics: Sales revenue increased on a non-inflation adjusted basis a very small 1.3%, from \$626.9 billion to \$635.0 billion. Flat revenue growth during the 2009 economic crisis should be considered good industry performance, compared to other industries heavily impacted during the recession. Boeing outperformed EADS as the world's largest A&D company, after a sales decrease in 2008 due principally to the 52-day labor strike. The global Industry's operating earnings decreased by 15.3% to \$47.9 billion, due to various factors including higher loss provisions for EADS's A400M and A380 programs, higher R&D expenses associated with new Boeing aircraft programs, and impairment charges and regulatory penalties at BAE Systems. Were it not for these and other program related writeoffs, industry operating profits would have been essentially flat. Again, flat earnings during the 2009 recession for this industry compared to others should be considered good performance.

Operating margin, a measure of income statement efficiency, also decreased from 9.0% to 7.6%, a 148 bps decrease YoY, reversing a longer term trend of improving manufacturing and supply chain efficiencies. The global Industry's return on invested capital (ROIC) decreased from 11.1% to 7.0% and Industry free cash flow (FCF) modestly decreased from \$38.8 billion to \$38.0 billion, for a 1.9% decline. Industry Book-to-Bill (BTB) ratio, a key in determining future sales revenue health, fell below 1.0x (considered to be the revenue replacement rate), from 1.40x to 0.89x, a substantial 36.9% decrease, due to fewer new bookings and existing order cancellations.

For equities, the Dow Jones (DJ) A&D index registered a vastly improved performance in 2009 as opposed to 2008, with a 21.6% gain versus a decline of 43.6%. However, this index still lagged slightly behind the S&P 500 index by 190 basis points, only somewhat better than the corresponding 2008 value. Consistent with the performance of the DJ A&D index, the European A&D index showed a markedly better performance in

2009 relative to 2008, 13.5% vs. -33.1%. Still, it underperformed the larger DJ Stoxx index by 1090 basis points in 2009.

The following table summarizes the key performance metrics for the industry. Each performance metric is described in more detail below.

Metrics	2009	2008	Change (2009 vs. 2008)
Revenue (\$B)	634.98	626.87	1.29%
Operating earnings (\$B)	47.93	56.58	-15.30%
Operating margin %	7.55%	9.03%	-16.38% (-148 bps)
ROIC %	7.04%	11.08	-36.49% (-404 bps)
Free cash flow (FCF) (\$B)	38.03	38.75	-1.86%
Book-to-Bill (BTB%)	0.89	1.40	-36.85%
A&D Revenue/employee (\$)	311,268	307,879	1.10%
A&D Operating profit/employee (\$)	23,494	27,790	-15.46%
# A&D Employees	2,039,970	2,036,096	0.19%
DJ A&D Index vs. S&P 500 (bps)	-190	-530	340
European A&D Index vs. DJ Stoxx (bps)	-1090	1370	-2460

The following sections discuss the 2009 financial performance of the Industry, based on type of company, geography, as well as on a consolidated basis:

- **2009 Industry performance details**
- **U.S. versus European**
- **OEM versus suppliers**
- **Services**

2009 industry performance details

Our Deloitte global A&D Industry performance study was based on 91 companies or divisions of companies that recorded sales revenue of greater than \$500 million in 2009 which were neither government nor privately owned. A few companies (not material to the overall study) were excluded as they had not produced public financial reports by the time of our study. Performance metrics assessed were sales revenue, operating earnings, operating margin, return on invested capital, free cash flow, the Book-to-Bill ratio, employee productivity and the changes in the equity markets.

The global A&D marketplace is highly concentrated, with the revenue for the top 10 companies in our study comprising 57.5% of the Industry sales revenue. Thus the performance of these top 10 companies disproportionately impacts the performance of the Industry as a whole.

The discussion of each of these performance metrics is described below.

Sales revenue: Sales revenue for the Industry was essentially flat, with a modest increase of 1.3% on a non inflation-adjusted basis, from \$626.9 billion to \$635.0 billion. Fewer companies in the study experienced \$2+ billion increases in revenue versus last year — only Boeing, Lockheed Martin, General Dynamics, and Finmeccanica, compared to seven companies in 2008.

Boeing's revenue increased by 12.1% in 2009 versus a decline of 8.3% in 2008, due to higher deliveries of commercial aircraft and higher revenues in defense. General Dynamics' sales revenue also increased 9.2%, due to a strong performance in its defense businesses that offset the decline in the business jet market. In addition, Finmeccanica's sales revenue grew by 20.9% to \$25.3 billion, primarily driven by higher volumes of its civil and government helicopters and positive contributions from the DRS acquisition. Revenues of a few smaller companies in the study such as DynCorp and Oshkosh Truck also grew by approximately 40.0%, due to large U.S. DOD contracts for services or equipment related to the Iraq or Afghanistan conflicts, contributing to the Industry growth.

However, many companies in the study negatively impacted the Industry's increase in sales revenue. EADS, the second largest A&D company globally, saw a revenue decline of 1.0% YoY, owing to lower revenue recognition in the A400M program, price reductions on commercial aircraft, and negative foreign currency movements. Textron's revenue also decreased 25.1% YoY, because of lower volumes at its Cessna and Bell aircraft divisions, amid the economic slowdown. In addition, Honeywell Aerospace recorded revenue that was 14.9% lower than 2008, due to weaker aerospace equipment and aftermarket equipment deliveries.

Operating earnings: The Industry's operating earnings decreased 15.3% to \$47.9 billion in 2009, as barely half of the companies in the study recorded growth in this metric. The companies that turned in the best performance were Lockheed Martin, GE Aviation, General Dynamics, and Raytheon, posting \$3+ billion each in operating earnings. These four companies in aggregate turned in almost one third of the total Industry's operating profit for 2009.

In a reversal, Northrop Grumman recorded operating income of \$2.5 billion in 2009, versus an operating loss of \$263 million in 2008, which was due to the \$3.1 billion goodwill impairment charge that the company incurred in 2008 related to its Shipbuilding and Space Technology businesses. Finmeccanica, Raytheon, Rolls Royce, and Safran also registered operating earnings growth of 15.0%, 16.1%, 37.3%, and 33.5% in 2009, respectively, largely due to higher volumes and cost efficiencies.

Many large companies in the sector experienced lower operating earnings in 2009 versus 2008. These include Boeing, EADS, and BAE Systems. Boeing's operating earnings decreased by \$1.9 billion (46.9%), attributable to higher R&D expenses associated with three 787 test aircraft that were later declared as non-saleable, resulting in a \$2.693 billion writeoff. EADS took an impairment charge of \$3.445 billion for program performance issues on the A400M military transport development program as well as the A380 commercial aircraft production program, and thus recorded an operating loss of \$530 million, a decrease of 113.7% in 2009. BAE Systems' operating profit fell by 42.8% to \$1.5 billion in 2009, because of impairment charges of \$1.524 billion, largely relating to its ex-Armor Holdings business as well as regulatory penalties of \$435 million in 2009. In the absence of these specific events at EADS, Boeing and BAE Systems, the Industry's operating earnings would have declined by a modest 1.0%. As such, were it not for the negative impact of these program related writeoffs and a few others, the Industry's operating profits would have experienced essentially flat growth, a notable accomplishment compared to other industries heavily impacted by the 2009 recession.

Hawker Beechcraft recorded an operating loss of \$712 million in 2009, compared to an operating profit of \$140 million in 2008, due to greatly reduced sales and a goodwill and intangible asset impairment charge of \$448 million, mainly in its Business and General Aviation segment. Thales's operating earnings fell

by 93.1% to \$72 million in 2009, as the company was affected by significant charges on its programs and a difficult economic environment in aerospace and security markets. Textron also contributed to the Industry's lower operating earnings in 2009. The company's operating profit fell by 67.3% owing to lower sales volumes in its Cessna segment and higher portfolio losses and lower securitization gains in its Finance segment.

Operating Margin: A measure of income statement efficiency, operating margin for the Industry decreased from 9.0% to 7.6%, a 148 bps decrease, reversing a trend of improving manufacturing and supply chain efficiencies. In the absence of the three specific events at EADS, Boeing, and BAE Systems mentioned above, the global Industry's operating margin would have declined by only 20 bps.

The top 3 operating margin performers in the Industry were posted by smaller companies, none in the top 2/3 in revenue size. Transdigm Group had the highest operating margin, at 44.0%, up from 41.9% in 2008. FLIR Systems had the next highest operating margin at 43.7%, up from 41.1% in 2008. Ranking third was Bharat Electronics, with operating margins of 23.7%, down from 28.6% in 2008. These high operating margins are attributable to innovative products that command premium pricing in the marketplace, higher volumes and operational efficiencies.

Other companies in the study that generated operating margin in excess of 20% are GE Aviation, Precision Castparts, Meggitt, and Chemring. These companies, somewhat typical of high performing Tier 1 & 2 suppliers in the propulsion and electronics sub-sector, are the leaders, and are able to drive premium value-added pricing in products that are innovative, and save their customers money. In many cases, they do not participate as much in risk sharing development programs, nor are involved in problematic development programs prone to cost and schedule overruns.

Return on invested capital: In 2009, the Industry's ROIC decreased from 11.1% to 7.0%, a significant decrease of 404 bps (36.5%). Three companies that pulled down the Industry average ROIC, given their high revenue weighting — Boeing (#1 company in terms of revenue), EADS (#2), and BAE Systems (#5).

Boeing registered an ROIC of just 1.9% versus 49.6% in 2008, as the company net income fell by approximately 50% — from \$2.7 billion in 2008 to \$1.3 billion in 2009. EADS generated a negative ROIC of 10.4% in 2009, versus a positive 16.9% in 2008, largely because of net income losses of \$1.1 billion in 2009. BAE Systems also registered negative ROIC of 13.6% over a positive 17.5% in 2008, owing to its net loss of \$71 million in 2009, compared to positive net income in 2008.

Conversely, Lockheed Martin, General Dynamics, and Rolls Royce recorded ROIC of 19.9%, 17.8%, and 81.1%, respectively, and hence boosted the Industry's average ROIC due to their heavy weighting of the Industry average. Rolls Royce recorded 81.1% ROIC, primarily due to high net income (\$3.5 billion) and high negative net debt (\$1.6 billion) in 2009. This contrasts with the company's negative ROIC of 123% in 2008, because of high net income losses (\$2.5 billion) and high negative net debt (\$2.1 billion). Lockheed Martin and General Dynamics generated higher ROIC primarily due to higher net earnings.

Free cash flow: In 2009, Industry FCF decreased marginally from \$38.8 billion to \$38.0 billion, a 1.9% decrease, principally due to a slowdown in both commercial and defense volumes and lower earnings.

Three companies with the highest FCF levels accounted for 32.3% of Industry FCF: United Technologies (\$4.5 billion), Boeing (\$4.4 billion), and Honeywell (\$3.3 billion). Overall, the top 10 companies in the study contributing the most FCF accounted for 67.1% of Industry FCF.

In terms of FCF growth, two companies that are worthy to note are Boeing and Safran. Boeing's FCF grew to \$4.4 billion in 2009 compared to negative \$2.1 billion in 2008, when the company suffered a setback of \$5.5 billion revenue principally due to the labor strike — corresponding to lower operating cash flows. However, Boeing resumed production to normal levels in 2009, hence improving its operating cash flow and FCF. Safran's FCF grew by 297.8% to \$1.5 billion in 2009, as its cash from operating activities almost doubled, due to higher net profit and lower capital expenditures versus those in 2008.

Three big companies that recorded a decrease in their respective FCF in 2009 are EADS, Northrop Grumman, and Finmeccanica. EADS's FCF decreased by 65.7% to \$1.4 billion in 2009, principally due to a net loss vis-à-vis positive net income in 2008. Northrop Grumman generated FCF of \$1.4 billion, a decrease of 41.7% over 2008, attributable to lower operating cash flow— a result of higher pension contributions and income tax paid on the sale of some of its businesses. Finally, Finmeccanica generated negative FCF of \$2.3 billion in 2009, resulting from negative operating cash flows, because of higher working capital and higher income taxes paid.

Book-to-Bill ratio: The Industry's BTB ratio is a key indicator in determining future sales revenue health. In 2009, the Industry performance decreased from 1.40x to 0.89x, for a 36.9% decrease. Despite a slight rise of 1.3% in Industry revenue, the aggregate BTB value fell as Industry total backlogs fell from \$1.9 trillion in 2008 to \$1.8 trillion in 2009, a decrease of 2.3%. Out of the 91 companies in the study, only 42 companies registered a BTB ratio equal to or more than 1x.

Boeing and EADS, together accounting for 20.2% of the Industry revenue, pulled down the average BTB ratio due to their heavy weighting in the average. Boeing recorded a BTB ratio of 0.47x in 2009 versus 1.41x in 2008, as its backlog fell by \$36.4 billion in 2009, largely due to lower backlogs of its commercial aircraft. EADS recorded a BTB ratio of 0.74x in 2009, a decrease of 69.3% over 2008, as the company's total backlog fell by \$16.0 billion in 2009.

Three other companies that impacted the Industry's BTB ratio growth negatively are BAE Systems, Northrop Grumman, and General Dynamics. BAE Systems' BTB ratio fell as the company's total backlogs were almost stable, but revenue grew by 20.9%, due to higher sales of its Typhoon aircraft. Northrop Grumman's BTB ratio also fell, from 1.45x in 2008 to 0.79x in 2009, as their 2009 backlog reflects a decline of \$5.8 billion for the Kinetic Energy Interceptor program termination and the DDG 1000 program restructure. Also, Northrop Grumman's total backlogs for both years were adjusted by \$1.6 billion for the divestiture of TASC, Inc. Lastly, Lockheed Martin's BTB ratio fell from 1.10x to 0.94x in 2009, as the company lost \$2.9 billion in backlog, largely due to the termination of two of its key programs, the VH-71 Presidential Helicopter Replacement program and the TSAT Mission Operations System (TMOS) contract .

A&D Industry employment: Total level of employment remained stable, totaling 2,039,970 in 2009, a slight 0.2% increase over 2008's figure. Some companies in the study undertook workforce reductions, as part of various restructuring actions to sustain performance amid the economic downturn.

Four companies that reduced headcount significantly are Hawker Beechcraft, Textron, Lockheed Martin, and Boeing. Textron launched an aggressive restructuring program at the end of 2008, under which the company reduced its workforce by 10,400 employees (24.2% YoY decrease) to 32,000 employees as of 2009 end. Textron's workforce rationalization can be attributed in part to reductions at Cessna (the cancellation of the Citation Columbus development project), Bell, as well as Textron's exit from some portions of its commercial finance business. Under the restructuring program, Textron also closed 23 leased and owned facilities and plants since 2008 end.

Lockheed Martin's total headcount also declined by 6,000 (4.1% YoY decrease) to 140,000 employees as of 2009 end. The company reduced workforce, primarily in its Space Systems and Mission Systems operations, so as to adjust for a forecasted decline in business and improve its competitive position. In addition, Hawker Beechcraft reduced its headcount, along with the others in the business and general aviation sub segment due to the significant reduction in production experienced in 2009.

Boeing's total workforce also declined by 5,100 employees, for a 3.1% YoY decrease, to 157,100 in 2009. The company undertook workforce reduction owing to restructuring of its Future Combat Systems (FCS) program, Ground-based Midcourse Defense (GMD) program, as well as a slowdown in the commercial airplane business.

However, a few companies in the study increased their headcount to augment their offerings and expand geographically, such as DynCorp and Bombardier Aerospace.

The Industry's backlog shrank in 2009, with the book to bill ratio dropping from 1.40x to 0.89x, for a 36.9% decrease

Employee productivity: Operating profit per employee is one of the best indicators of company efficiency, whereas revenue per employee does not take into account the increasing outsourcing and differential make/buy supply chain practices which can skew the results and lead to misguided interpretations of efficiency.

Operating profit per employee decreased 15.5% YoY in 2009, as the Industry's aggregate operating earnings fell 15.3% while Industry employment levels remained essentially constant as described above. In the absence of the provisions, write-offs, and impairment and regulatory charges at EADS, Boeing, and BAE Systems — as previously discussed — the Industry's operating profit per employee would have declined by only 1.2% YoY in 2009. Among the top 10 performers in terms of operating profit per employee, there are only 2 large sector companies — GE Aviation and Rolls Royce — with the rest all companies in the revenue range of under \$5 billion.

FLIR Systems and Transdigm were the top two performers in this category and had significantly higher operating profit than the average for the Industry, \$241.7 thousand and \$167.7 thousand, respectively, compared to \$23.5 thousand as the average for all of the firms in the study.

Three companies that had particularly negative impact on the Industry's operating earnings per employee metric were Hawker Beechcraft, ThyssenKrupp Marine, and Mitsubishi Aerospace, as these companies incurred operating losses in 2009, leading to negative operating earnings per employee.

Equity markets: For the second straight year, the DJ A&D index underperformed the S&P 500 index, although the magnitude was less so in 2009. While the DJ A&D index registered a vastly improved performance in 2009 as opposed to 2008, a 21.6% gain versus a decline of 43.6%, the index still lagged behind the S&P 500 index by 190 basis points, only somewhat better than the corresponding 2008 value. It is noteworthy that the DJ A&D index outperformed the S&P 500 index by 390 basis points in the second

half of 2009. Despite the DJ A&D index's relatively weak performance in the last couple of years, it still outperformed the S&P 500 index by 2160 basis points between 2005 and 2009.

One key driver in the DJ A&D index's better absolute performance in 2009 was Boeing's share price gain of 26.9%, in contrast to its share price decline of 51.2% in 2008, given its heavy Industry weighting in this study.

Share price performance	2009	2008	2007	2006	05 to 09	05 to 08	1H 2009	2H 2009
DJ A&D Index	21.6%	-43.6%	19.6%	24.4%	10.9%	-8.8%	-2.8%	25.2%
S&P 500 Index	23.5%	-38.3%	3.2%	13.7%	-10.7%	-27.6%	1.8%	21.3%
Basis point difference	-190	-530	1640	1070	2160	1880	-460	390

Consistent with the performance of the DJ A&D index, the European A&D index showed a markedly better performance in 2009 relative to 2008, with 13.5% vs. -33.1%. Still, it underperformed the larger DJ Stoxx index by 1090 basis points in 2009. Overall, the European A&D index underperformed the DJ Stoxx index by 1520 basis points from 2005 to 2009, reflecting the Industry's continuing performance issues.

The improvement in the European A&D index's 2009 absolute performance relative to 2008 was partially attributable to the appreciation in EADS' share price by 17.1% compared to a decline of 44.9% in 2008.

Share price performance	2009	2008	2007	2006	05 to 09	05 to 08	1H 2009	2H 2009
European A&D Index	13.5%	-33.1%	8.9%	2.8%	-14.9%	-25.0%	-4.8%	19.3%
DJ Stoxx index	24.4%	-46.8%	18.1%	28.3%	0.3%	-19.4%	-1.2%	25.9%
Basis point difference	-1090	1370	-820	-2550	-1520	-560	-360	-660

U.S. versus European companies in the study

Industry sales revenue is predominantly U.S. based with 60.5%, or \$384.6 billion of 2009 sales revenue generated by companies in the study headquartered in the U.S. Sales revenue for European companies in the study was 33.4% or \$212.3 billion of the 2009 Industry sales revenue. Japanese, Singaporean, Israeli, Canadian, Brazilian, and Indian firms accounted for the remainder of the Industry.

Some of the European companies generate 50% or more of their total revenue from the U.S. customer markets. The dollar appreciated 5.2% against the Euro and 15.6% against the Great British Pound in 2009. These currency fluctuations, among other factors, had a significantly negative impact on the collective financial performance of the European companies.

Total sales revenue for the U.S. companies grew 3.2% in 2009, while the European companies contracted at 2.1%. Key factors impacting these results lie with the performance of the larger companies, given their relative size. Boeing's revenue increased by 12.1%, which boosted the Industry total performance as Boeing alone contributes 17.6% of the U.S. companies' revenue. Three other big companies — Lockheed Martin, General Dynamics, and Raytheon — recorded revenue growth of 5.8%, 9.2%, and 7.4%, respectively, in 2009. EADS, which contributes 28.1% to the total revenue for European companies, registered a reduction of 1.0%. This decline, however, was offset by BAE Systems and Finmeccanica, which registered a growth of 20.9% each, and Rolls Royce, which registered a growth of 10.5%, in their respective 2009 sales revenue numbers.

Regarding operating earnings, the performance of the U.S. companies in the study fell by 4.5% and operating margin fell by 75 bps. Boeing, Lockheed Martin, and Textron had a negative impact on the operating earnings and operating margin percentage for the U.S. companies, given their relative size, as discussed above.

The European companies experienced a greater fall in their operating earnings and operating margin compared to their U.S. peers. Operating earnings of the European group fell by 40.5% and operating margin fell by 294 bps in 2009. EADS, BAE Systems, and Thales had significant impact on the operating earnings and operating margin of the European subset, given their size as discussed earlier.

Regarding ROIC, the U.S. companies experienced higher ROIC% of 9.0% in 2009, compared to the European companies at 2.9% in 2009, due to higher profitability and other factors. The U.S. group's ROIC fell from 17.6% in 2008 to 9.0% in 2009, largely since the group's highest revenue company, Boeing, generated ROIC of 1.9% in 2009 versus 49.6% in 2008, as the company's net income fell by approximately 50% in 2009.

EADS, BAE Systems, Thales, that together contribute 53.1% of the total European Industry revenue, were primarily responsible for pulling down the average ROIC to 2.9% in their geography. These companies generated negative ROICs primarily due to net losses in 2009.

The European companies, in particular, have had difficulty in rationalizing their property, plant and equipment by closing facilities and integrating acquisitions in an ROIC accretive manner. European labor unions and governments have in many cases created or protected employment and jobs in cases where companies could take measure to reduce employment to increase efficiency. In some cases, due to national interests, duplicate final assembly facilities are operated in the interests of maintaining aerospace jobs in legacy locations. These characteristics put downward pressures on the ROIC performance of the European companies, due to the relative inefficient utilization of assets, compared to U.S. companies.

The U.S. companies also performed better compared to their European counterparts in terms of FCF. In the global Industry, the six companies that generated FCF in excess of \$2 billion are all U.S. companies. U.S. FCF increased 37.2% to \$32.9 billion in 2009. Boeing's FCF rose to a positive \$4.4 billion in 2009, in contrast to a negative \$2.1 billion in 2008, for reasons as described earlier.

Two other companies that boosted the U.S. group's FCF are Raytheon and Textron. Raytheon recorded FCF of \$2.4 billion, 42.9% higher than that in 2008, due to higher net income and lower capital expenditures. Textron's FCF also grew by 279.0% to \$7.8 billion in 2009, owing to working capital improvements and lower capital expenditures.

However, the European companies recorded FCF of \$7.9 billion, a decline of little more than one third, in contrast to the U.S. group's increase of 37.2%. Three companies that negatively impacted the European group's FCF are EADS, BAE Systems, and Finmeccanica, as discussed earlier.

The BTB ratio for U.S. companies' fell 34.5% to 0.82x. In contrast, the BTB ratio of European companies fell 42.2% to 1.01x. Although the BTB ratio of European companies fell more than that of U.S. companies in 2009 in percentage terms, the European companies registered a higher overall BTB ratio value in 2009.

The BTB ratio of the U.S. companies was impacted mainly by decreased BTB results of Boeing, Lockheed Martin, and Northrop Grumman, as discussed earlier. The European average BTB was lowered by companies such as EADS and BAE Systems, as their backlogs fell.

The U.S. companies registered a decline in the level of employment of 0.4% in 2009 YoY; however, the European companies grew their total workforce marginally by 0.7%, reflecting the difficulty to rationalize workforce in Europe compared to the U.S. Also, the European companies fared better than the U.S. group in terms of revenue per employee but worse in terms of operating profit per employee. However, as described, operating profit per employee is the more accurate measure of productivity that is not influenced by make/buy supply chain practices and the amount of outsourcing that is performed by companies.

OEM versus supplier companies in the study

The total revenue of the OEMs in the study increased a moderate 2.3%, although higher than the Industry growth of 1.4%. While Boeing and Finmeccanica contributed to the revenues of the OEM group, companies like EADS and Textron decreased the average growth rate, for reasons cited previously. The Suppliers in the study displayed mixed performance in terms of revenue growth in 2009: Tier 1: -3.8%, Tier 2: -5.8%, Defense electronics: +6.1%, Aerostructures: +8.7%, and Services: +4.7%.

Regarding operating earnings, the OEMs' 2009 performance decreased 28.2% relative to the prior year, a worse YoY performance than the Industry decline of 15.3%. Their operating margin fell by 227 bps; the Industry's operating margin fell by 148 bps. Boeing, EADS, Textron, and Hawker Beechcraft recorded the steepest fall in their operating earnings and operating margins among all OEMs, as indicated above. With operating margins of 5.4%, the OEMs were outperformed by all suppliers, except the Aerostructures sub segment.

ROIC % values for the OEMs fell 1421 bps in 2009, versus the Industry's decline of 404 bps. Of the top 10 ROIC performers, there is just one OEM, Loral Space & Communications Inc. Tier 1 and Tier 2 suppliers dominate the top slot in terms of high ROIC performance.

Regarding cash flow, the OEMs' total FCF in 2009 was \$14.6 billion, which is 14.0% lower than it was in 2008, as compared to the Industry's FCF which decreased by only 1.9%. Lower FCF for the OEMs could be largely attributed to EADS, Lockheed Martin, and Finmeccanica, for individual reasons as discussed earlier. Tier 1, Tier 2, Services, and Defense Electronics companies all showed an improved FCF picture in 2009 relative to 2008. Aerostructures companies cumulatively generated negative cash flow of \$3.0 billion in 2009, versus positive free cash of \$220 million in 2008. Negative free cash flows for this group can be attributed mainly to higher capital expenditures and lower earnings in 2009. Services businesses fared the best with a 62.6% rise in free cash flows in 2009.

Regarding Book-to-Bill metrics, the OEMs' average BTB in 2009 was 0.77x versus 0.89x for the Industry. Also, the BTB ratio for the OEMs fell 50.2% in 2009, worse than the Industry's decline of 36.9%. Two OEMs that had a remarkable downward impact on the BTB ratio of the group are Boeing and EADS, the world's largest A&D companies that together lost \$52.4 billion in backlogs in 2009. This was responsible for most of the decline in Industry performance in 2009. The Suppliers performed better than the OEMs in terms of BTB ratio, with Tier 1 at 1.05x, Tier 2 at 0.99x, Defense Electronics at 0.95x, Aerostructures at 0.83x, and Services at 1.25x.

Services focused companies in the study

The Services focused companies in the study are becoming increasingly a part of the A&D value chain as software and other services are purchased by commercial and military customers. In terms of revenue, while the total Industry grew 1.4%, the Services companies grew faster at 4.7% in 2009 YoY. These firms have also improved their earnings over last year, and they recorded an increase of 7.0% and 15 bps in their operating earnings and operating margin, respectively. The Services companies still lag the Industry in terms of operating margins, although that gap narrowed in 2009 relative to 2008. Key Services firms that performed well in 2009 are SAIC, CSC, and

DynCorp. At 62.6%, the Services companies registered the highest rise in FCF of any Industry subset. The group also recorded the best BTB ratio of 1.25x among any Industry subsector, indicating a strong future revenue trend. However, the Services firms score lower in operating earnings efficiency performance than the Industry average due to the competitiveness, commoditization and labor-based cost structure in the subsector.

Summary: The following chart compares and contrasts the growth rates for each of the key performance metrics used in this study.

Industry performance 2009 growth

	Revenue growth	Operating earnings growth	Operating margin growth	ROIC % growth	FCF growth	Book-to-Bill growth	# A&D employees growth	Revenue per employee growth	Operating earnings per employee growth
Industry	1.29%	-15.30%	-16.38% (-148 bps)	-36.49% (-404 bps)	-1.86%	-36.85%	0.19%	1.10%	-15.46%
U.S.	3.18%	-4.49%	-75 bps	-858 bps	37.18%	-34.51%	-0.44%	3.64%	-4.07%
Europe 1 (differential conversion)	-2.10%	-40.51%	-294 bps	220 bps	-33.82%	-42.15%	0.67%	-2.76%	-40.91%
Europe 2 (constant conversion)	7.59%	-34.59%	-293 bps	145 bps	-30.53%	-42.42%	0.67%	6.87%	-35.03%
OEM	2.28%	-28.22%	-227 bps	-1421 bps	-13.97%	-50.24%	-2.03%	4.40%	-26.74%
Tier 1	-3.81%	-7.43%	-45 bps	1997 bps	14.49%	-15.14%	-0.50%	-3.32%	-6.96%
Tier 2	-5.83%	-0.61%	77 bps	1354 bps	11.14%	-12.12%	-0.67%	-5.19%	0.06%
Defense Electronics	6.06%	4.23%	-19 bps	-32 bps	27.98%	-13.68%	2.67%	3.31%	1.52%
Aerostructures	8.69%	-36.60%	-263 bps	-3019 bps	-1458.27%	-44.27%	-1.27%	10.09%	-35.79%
Services	4.68%	6.97%	15 bps	-7 bps	62.61%	1.72%	7.44%	-2.57%	-0.43%

Growth represents the difference between 2009 and 2008 performance

The following chart further illustrates the absolute level of financial performance for the Industry, with types of businesses and geography identified.

Industry performance 2009

	Revenue (\$ million)	Operating earnings (\$ million)	Operating margin %	ROIC %	FCF (\$ million)	BTB ratio	# A&D employees	A&D Revenue/ employee (\$)	A&D Operating earnings/ employee (\$)
Industry	\$626,872	\$56,583	9.03%	11.08%	\$38,746	1.40	2036096	\$307,879	\$27,790
U.S.	\$372,759	\$37,489	10.06%	17.59%	\$24,016	1.25	1277085	\$291,883	\$29,355
Europe	\$197,326	\$14,759	7.48%	1.40%	\$10,751	1.76	635042	\$310,730	\$23,241
OEM	\$345,438	\$26,330	7.62%	17.67%	\$16,929	1.54	992606	\$348,011	\$26,527
Tier 1	\$139,108	\$16,730	12.03%	-3.51%	\$11,674	1.23	457884	\$303,807	\$36,538
Tier 2	\$24,808	\$3,429	13.82%	10.05%	\$3,491	1.13	96759	\$256,393	\$35,440
Defense Electronics	\$44,564	\$5,132	11.52%	10.47%	\$3,401	1.10	161300	\$276,281	\$31,819
Aerostructures	\$19,341	\$1,223	6.32%	-1.25%	\$221	1.49	60524	\$319,559	\$20,208
Services	\$53,612	\$3,738	6.97%	11.97%	\$3,030	1.24	267024	\$200,776	\$13,997

Summary observations on 2009 performance of the Industry

In 2009, the global A&D Industry experienced a year of mixed financial performance against the backdrop of a widespread recessionary environment from which the world was only beginning to emerge toward the end of the year. On the one hand, global Industry revenues were flat, with a nominal increase of 1.3%, probably not even keeping pace with inflation. On the other hand, the global Industry's operating margin, ROIC, Book-to-Bill ratio, and free cash flow all declined, as it was more difficult to adjust the Industry cost structure fast enough, in the right places, as well as "right size" the asset base (e.g., property plant and equipment) in a fashion commensurate with declining revenue levels. At the same time, new orders were hard to come by and the Industry was not able to replenish its backlog as fast as it booked revenue, portending leaner times ahead.

The past year capped a decade that started on a high note for the global A&D Industry, with outstanding financial performance around the world—only to be followed by the dot.com bust, the tragedy of 9/11, the ensuing wars in Afghanistan and Iraq, and the worst global economic downturn in nearly 80 years. While some subsectors ended the decade in better shape than others, the global Industry, overall, is trying to regain its footing as the global economic recovery takes hold.

To be sure, even with the anticipated renewal of economic growth, challenges for the global Industry remain including potential additional cutbacks in large weapons programs, a transformation in the defense acquisition process, evolving technological requirements, and the uncertain legacy of an historic global credit crisis and economic downturn, among others.

Still, there are positive signs for the global Industry in 2010, despite these and other challenges. Orders for new commercial aircraft are projected to rebound in 2010 to over 800 units, reversing the steep decline experienced in 2009. Likewise, orders for business jets are showing signs of improvement, and new requirements for innovative technologies in cyber security, intelligence, surveillance, reconnaissance, remotely piloted vehicles, and data fusion are expected to drive demand for the Industry. New efficiencies should be gained by continued consolidation within the Tiers 1 and 2 supplier ranks and emerging market opportunities in China, India and other developing regions should give spark to the global Industry's economic engine.

Just how well, exactly, the global Industry responds to the opportunities and challenges before it remain to be seen. But if history is any guide, the global Industry's prowess for resourceful innovation, self renewal, and unceasing contribution should continue and 2010 and the new decade ahead should mark a period of robust prosperity.

Study Methodology

This analysis is based on the key financial performance metrics for 91 global A&D public companies which generated A&D sales revenue greater than \$500 million in 2009. By using the data from the companies' respective 10-Ks or Annual reports into the calculation framework, we analyzed the Industry's performance in 2009. We used audited results for 90 companies and unaudited data for one company—Embraer—as the company's audited results were not available until after the final stage of data collection and analysis. We highlighted specific companies that had positive or negative impact on the Industry's performance and also analyzed categorical performance on the basis of business types and geographical identifications. The presentation of the companies' 2009 financial performance data is based on the companies' respective fiscal year 2009, regardless of when in calendar year 2009 the fiscal year ends. Analogous treatment applies to the presentation of the companies' 2008 financial performance data.

Certain companies, with revenues up to \$3.5 billion, were excluded either because they failed to exceed the \$500 million threshold, were private or state-owned, or were companies for which adequately reliable and sufficient data were not available. The cumulative 2009 revenue of those excluded companies was \$29.9 billion.

All data in this study are presented in US\$ currency. Approximately 41.7% of the companies under analysis in this study are headquartered in countries other than the United States. For such companies, we applied a dual foreign currency conversion method to calculate Industry aggregate figures in US\$. On the one hand, we applied the appropriate fiscal year-end conversion rate to a non-US company's "static" data such as shareholder equity, debt, backlogs etc... On the other hand, for "flow" data such as revenue, income, etc..., we applied a 365-days daily average conversion rate corresponding to the company's fiscal year. Embraer, Elbit Systems, and Bombardier Aerospace are three non-U.S. companies that report in US\$, hence their financials were taken without currency conversions. When referring to the growth rate of the European group of companies, we use the standard differential approach to incorporate the effect of significant currency fluctuations during 2008-2009. However, where we explicitly refer to the growth rate of a non-US company's "flow" data such as revenue, we state the growth rate based on home currency data values, so as to assess the pure performance of the company and minimize the impact of currency conversions.

1. Industry revenue:

- To calculate Industry revenue for an individual company, it was necessary to determine the percentage of revenue associated with A&D activities. In calculating such percentage, we first checked to see whether the company explicitly stated an A&D revenue figure. In such a case, we used that explicitly stated percentage directly. If such percentage was not explicitly stated, we analyzed the company's various business segments and considered those which were related to A&D in estimating its Industry revenue percentage.
- Once we assigned Industry revenue percentages to all companies, we put them into two categories: those

companies that derived less than 60% of their respective revenue from A&D and those companies that derived equal to or greater than 60% of their respective revenue from A&D. If a company derived less than 60% of its revenue from A&D, we took only the revenue generated by the A&D part. However, if the company derived equal to or greater than 60% of its revenue from A&D, we used total revenue for the company.

- None of the companies in the study, except one, changed its revenue category from equal to or greater than 60% to less than 60% or vice-versa. MOOG is the only company where A&D revenue was less than 60% in 2008, but it rose above 60% in 2009. We used MOOG's total revenue for 2009 and 2008 to ensure a fair comparison of its performance in both of the years.
- In determining Industry revenue, we calculated a summation of the Industry revenue of all the constituent 91 companies.

2. Operating earnings/margin:

- In calculating Industry operating earnings, we took a two-pronged approach (same as above), which states that if a company derived less than 60% of its revenue from A&D, we took only the operating earnings clearly associated with the A&D part. However, if the company derived equal to or more than 60% of its revenue from A&D, we took the total operating earnings for the company.
- In the cases of United Technologies, Precision Castparts, URS, Serco Defense, Allegheny Technologies, GKN Aerospace, ThyssenKrupp Marine, Curtiss Wright, Indra Sistemas Services, and Woodward Governor (all these companies derive less than 60% of their respective revenues from A&D), it was not possible to clearly assign operating earnings to the A&D part. In these cases, we derived the companies' respective A&D operating earnings by multiplying the companies' respective A&D revenue by the companies' respective total operating margin percentages.
- Operating earnings for the Industry is a summation of operating earnings of all constituent companies.
- The companies' respective Industry operating margins were calculated by dividing their respective A&D operating earnings by their respective A&D revenues.
- Operating margin for the Industry was calculated as: total Industry operating earnings as a percentage of total Industry revenue.

3. Return on invested capital (ROIC)

- ROIC was considered for the entire company, as companies report it at the company level and not at the segmental level.
- We took the ROIC value as stated, if reported by the company. Lockheed Martin, General Dynamics, Raytheon, GE, Textron, GKN, and Babcock International published their ROIC values and the same were incorporated into the study. GE states its ROIC excluding GECS (General Electric Capital Services). We took GE's ROIC excluding GECS, as inclusion of GECS would have had a distorting effect on GE's ROIC performance.
- If the ROIC value was not published by the company, it was calculated as:
$$\text{ROIC} = (\text{Net income from continuing operations} - \text{Dividends paid}) / (\text{Shareholder Equity} + \text{Net Financial Debt})$$
- All the components in the ROIC calculation were reflective of the entire company.
- Net Financial Debt: If the Net Financial Debt value was published by the company, we included it as stated, as in

- cases of United Technologies, ITT, Hawker Beechcraft, Safran, Serco Defense, and BBA Aviation.
- If Net Financial Debt is not explicitly stated, it was calculated as:

$$\text{Net Financial Debt} = \text{Short Term Debt} + \text{Long Term Debt} - (\text{Cash} \& \text{Cash Equivalents})$$
 - Short Term and Long Term Debt as well as Cash & Cash Equivalents were taken from the companies' balance sheets.
 - ROIC for the Industry is a revenue - weighted average. It was calculated as:

$$\sum (\text{Company ROIC} * \text{Company revenue}) / \text{Total Industry Revenue}$$
 - ROIC (Return on invested capital) stated in the study differs from ROCE (Return on capital employed). Some companies—such as Rolls Royce, Embraer, MTU Aero engines, SAAB, and Reinmettal—publish their ROCE%. Despite this fact, for purposes of this study, we calculated these companies' ROIC%. A company's ROCE% should not be compared with its ROIC%.
 - ROIC was calculated based on component values in home currencies to eliminate the impact of currency conversion.
- 4. Free cash flow (FCF):**
- Free cash flow was calculated for the entire company, as it is impractical to allocate cash flows to a company's A&D and non-A&D segments.
 - If the FCF value was published by the company, we used it directly as in the cases of Northrop Grumman, ITT, DRS, Bombardier, EADS, BAE Systems, Serco, BBA Aviation, Smiths Group, CSC, CAE, Senior plc, ThyssenKrupp, and GKN.
 - If the FCF value was not published by the company, it was calculated as:

$$\text{FCF} = \text{Operating Cash Flow} - \text{Capital Expenditures}$$
 - We calculated the Industry FCF as a summation of the FCFs of all constituent companies.
 - The FCF of GE and Dassault Aviation were not included in calculating the Industry FCF. Inclusion of GE would have had a distorting effect on the calculation of Industry FCF. Dassault Aviation's FCF was not included for lack of data.
- 5. Book-to-Bill ratio (BTB):**
- We took the BTB ratio as stated, if reported by the company. Bombardier Aerospace, QinetiQ, and BE Aerospace published their BTB ratios and the same were incorporated in the study.
 - If the BTB ratio was not published by the company, it was calculated as follows:

$$(\text{Change in total backlog between current fiscal year and previous fiscal year divided by revenue for current fiscal year}) + 1$$
 - In calculating BTB ratio, we used a two-pronged approach which states that if a company derived less than 60% of its revenue from A&D, we took the backlogs and revenues of the A&D part. However, if the company derived equal to or more than 60% of its revenue from A&D, we took backlogs and revenues for the entire company.
- There were cases in which the company derived less than 60% of its revenue from A&D, but we based our calculation of BTB ratio on backlog and revenue for the entire company. Such was made necessary for the lack of A&D segmental backlog information. These exceptions are: Precision Castparts, United Technologies, GE Aviation, Honeywell Aerospace, Serco Defense, and KBR.
 - The BTB ratio for the Industry is a revenue weighted average. It was calculated as:

$$\sum (\text{Company BTB} * \text{Company revenue}) / \text{total Industry revenue}$$
 - BTB ratio was calculated based on component values as reported in home currencies to eliminate the impact of currency conversion.
 - BTB ratios for Services firms such as CSC, Indra Sistemas Services, and BBA Aviation were not included in the calculation of the Industry BTB ratio for lack of backlog data. The BTB of certain other companies could not be calculated for lack of backlog data. These companies were Safran, Mitsubishi Aerospace, Zodiac, GKN Aerospace, Allegheny Technologies, Hexcel, Force Protection, Senior Aerospace, Dassault Aviation, ThyssenKrupp Marine, Magellan Aerospace, Fuji Aerospace, and Smiths Aerospace.
- 6. Number of A&D employees:**
- We applied the 60% approach in assessing A&D employees of companies, such that if a company derives 60% or more of its total revenue from A&D, we take its total number of employees. However, if the company derives less than 60% of its total revenue from A&D, we consider only the employees associated specifically with the A&D business of a company.
 - If the company derives less than 60% revenue from A&D, and it explicitly states the number of employees associated with its A&D activities, we take it as stated. There are only five such companies—GKN Aerospace, Crane, Kongsberg Gruppen, Smiths Aerospace, and Bombardier Aerospace.
 - If the company derives less than 60% revenue from A&D, however, and it doesn't explicitly state the number of employees associated with its A&D business, we estimate that A&D employees as a percentage of total employees would be the same as the A&D revenue percentage of total revenue. We used this approach for companies such as Dyncorp, Flir Government Systems, Curtiss Wright, Indra Sistemas Services, Woodward Governor, Mitsubishi Aerospace, ITT Defense, Senior Aerospace, ThyssenKrupp Marine, CSC, Fuji Aerospace and others, as they do not explicitly state the workforce aligned to their A&D related businesses.
- 7. Employee productivity:**
- We considered two parameters—revenue per employee and operating earnings per employee in order to measure employee productivity for individual companies and the Industry.
 - Revenue per employee and operating earnings per employee for the Industry are calculated as:

$$\text{Revenue per employee} = \frac{\sum \text{Total Revenue of the Industry}}{\text{Total number of employees}}$$
 - Operating earnings per employee = $\frac{\sum \text{Total operating earnings of the Industry}}{\text{Total number of employees}}$

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