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2015 global aerospace and defense sector financial performance study

Growth slowing, profits improving

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Contents

Executive summary

Revenue growth in the global aerospace and defense sector is declining, with growth at a pace lower than gross domestic product (GDP) growth. Global aerospace and defense (A&D) sector revenues grew by 1.9 percent, adding US$12.7 billion in revenues in 2014 to reach US$682.2 billion. This is a decline from 3.2 percent growth in 2013 and 5.8 percent in 2012. Indeed, the overall sector growth was slower than global gross domestic product growth of 2.6 percent in 2014.[1] Although revenues in the commercial aerospace subsector continue to increase, defense subsector revenues continued to decline for the second consecutive year. Globally, the commercial aerospace subsector increased revenue by US$23.6 billion in 2014, an 8.2 percent increase over 2013. However, this growth was offset by revenue declines in the defense subsector of US$8.2 billion or a 2.2 percent decrease from 2013 to 2014. The key take away is that all sector revenue growth and more has resulted from increased revenues in the commercial aerospace subsector, similar to the last several years.

Commercial aerospace subsector sets new records for sales orders, deliveries, order backlogs, and revenues, but the growth rate is expected to edge down. Global commercial aerospace companies achieved the highest levels of the four key growth metrics in the sector in 2014. Sales orders grew from 2,858 in 2013 to record levels of 2,888 sales orders in 2014, while aircraft deliveries increased by 6.1 percent from 1,274 to 1,352 deliveries. However, the sector growth rate is expected to slow down to 3.0 percent, with a 2015 production level expected at 1,393 aircraft and 1,422 aircraft in 2016, for a 2.1 percent growth rate. The sector's 2014 order backlog grew by 14.4 percent and reached a record high of 12,175 aircraft, compared to 10,639 aircraft in 2013. At the current production rate, this represents a 9.0-year backlog of future production. Revenues grew by 8.2 percent, from US$291.2 billion in 2013 to US$314.9 billion in 2014. The Boeing Company and Airbus Group together added US$6.1 billion in additional revenue in 2014, as a follow up to the US$11.0 billion of combined incremental growth in 2013. Growth in demand for travel, especially in China, India, and the Middle East, as well as the need for more fuel-efficient aircraft continue to drive demand for new aircraft sales. Because of this continued demand for new commercial aircraft, it is estimated that over 34,000 jets over the next 20 years will be produced, with a value of over US$1.78 trillion at list prices.[2]

United States (U.S.) defense subsector revenues continue to decline with the bottom expected next year. Defense subsector revenues in the U.S. have been shrinking or remained stagnant for several years with flat growth in both 2013 and 2012, and a 2.5 percent decline in 2011. In 2014, revenues in the U.S. defense subsector declined by 2.2 percent or equivalent to US$5.4 billion. This is primarily due to the drawdown of large armed forces engaged in operations in the Middle East and continued declines in funding by the U.S. Department of Defense (DOD), the largest sector customer whose budget decreased by 4.7 percent in 2014.[3] Of the top 20 defense subsector companies in the U.S., only six companies experienced revenue growth in 2014. The Budget Control Act of 2011 mandated a reduction (sequestration) of

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Note: Due to rounding, numbers presented throughout this report may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures. Also, the total A&D sector revenues will not precisely match when commercial aerospace and defense revenues are added together. This is because many large A&D companies have corporate eliminations/others as input in their total revenues, which cannot be distributed among commercial aerospace and defense subsectors.

[1]The World Bank, *Global Economic Prospects*, January 2015, http://www.worldbank.org/en/publication/global-economic-prospects.

[2] The Boeing Company, *Current Market Outlook (2014-2033)*, September 2014, http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2014.pdf; and Airbus Group, *Global Market Forecast (2014-2033)*, September 2014, http://www.airbus.com/company/market/forecast/.

[3] Stockholm International Peace Research Institute (SIPRI), SIPRI Military Expenditure Database, accessed on May 2015, http://www.sipri.org/research/armaments/milex/research/armaments/milex/research/armaments/milex/milex_database.

defense spending by about US$490 billion between U.S. government fiscal years 2012 and 2021.[4] Although, the impact of sequestration cuts tapered in 2014, following the enactment of The Bipartisan Budget Act in December 2013, significant uncertainty remains concerning the overall levels of defense spending for future years.[5] Law mandates future sequestration cuts. Unless the U.S. Congress changes it, procurement decisions could result in further reductions, cancellations and/or delays of existing contracts or programs. This is likely to adversely affect the revenues and cash flows of defense companies. However, it is likely that even with sequestration in effect, the DOD base budget will start to bottom out in 2016 with consumer price inflation (CPI) adjusted increases starting to take effect.

Profitability and margins continue to improve. Operating margins have been improving in the A&D sector; 8.4 percent in 2012, 9.6 percent in 2013 and 9.8 percent growth in 2014. The sector added US$2.2 billion in global operating profits, reaching a record US$66.7 billion in 2014. Commercial aerospace grew earnings by 6.0 percent. Defense companies grew earnings by 5.1 percent despite the 2.2 percent revenue decline in 2014. Commercial aerospace margins were 10.2 percent, while defense companies were 9.7 percent in 2014.

Top 20 company revenue rankings increasingly reflect commercial aerospace subsector growth. In terms of 2014 sales revenue, GE Aviation has moved up the list to the seventh spot as both Northrop Grumman and Raytheon have experienced declines in sales revenue, falling to eighth and ninth spots respectively. Bombardier Aerospace has also moved up in ranking to the sixteenth spot ahead of Textron. Spirit AeroSystems has made an entry into the top 20 list with a 14.1 percent increase in revenues in 2014. The changes to the top 20 list of global aerospace and defense companies continue to reflect the rising fortunes of commercial aerospace players, including significant revenue increases in the supplier base, which has resulted from commercial aircraft production growth. Additionally, it depicts the impact of declining growth in global defense spending over the last few years.

The U.S. continues to outperform Europe in profitability. Average operating margins for the U.S. and European companies were strong at 11.4 percent and 8.0 percent respectively. However, the U.S. showed improved operating earnings performance compared to the Europeans with a 9.8 increase in contrast to a decline of 2.0 percent from 2013 to 2014. This slower relative growth rate resulted mainly from continued below average operating performance by European companies compared to their U.S. peers. This brings into focus the challenge for European A&D companies to gain efficiencies in the cost and asset base and their comparative ability to rationalize assets and reduce operating expenses. In addition, within Europe, country specific defense budgets supporting the individual country industrial base may not be large enough to achieve competitive efficiencies and economies of scale in their cost structure.

Sector is becoming more efficient. The global A&D sector has experienced improved operating efficiencies, resulting in higher earnings and operating margins as noted above. Efficiency, defined as operating profit per employee among A&D companies increased from US$31,898 in 2013 to US$33,341 in 2014, a 4.5 percent improvement. Indeed, employment growth in the sector was flat in 2014, holding at approximately 2.0 million workers. However, there were marked differences between regions. For example, profitability per employee in Europe was US$26,335, while in the U.S. this was US$39,379, a 49.5 percent gap between the two regions. Interestingly, while overall revenue declined in the defense subsector, profitability improved due to a base of fewer employees, which significantly increased employee efficiency as measured by profit per employee. Commercial aerospace companies, especially large entities, increased concentration of their supply base, risk sharing with suppliers, and factory automation, all of which improved the profitability per employee metric. Based on these positive trends in productivity, A&D sector customers, such as airlines and their paying passengers, as well as the defense departments of countries, are likely obtaining more for less, thus creating financial value for shareholders, taxpayers, and the global economy.

A&D sector is becoming more commercial. Based on increasing fortunes in the commercial aerospace subsector and recent declines in the defense subsector, the overall makeup and character of the global A&D sector is becoming more commercial. In 2013, 56.5 percent of sector revenue was from defense, space, and security,

[4] The United States Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, "Fiscal Year 2014 Budget Request and FY2013 Update," April 2013, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2014/FY2014_Budget_Request_Overview_Book.pdf.

[5] Ibid.

while 43.5 percent originated from commercial aerospace. However, in 2014, the defense share of the sector dropped to 54.0 percent, while commercial aerospace increased to 46.0 percent. This shift in sector concentration demonstrates a trend toward higher dominance by the commercial aerospace subsector, as well as the long-term decline of the defense subsector. Significant budgetary delays and constraints have resulted in reduced defense spending levels, negatively affecting the revenue growth position for the defense subsector. At the current rate of growth, the commercial aerospace subsector is expected to reach parity with the defense subsector in terms of contribution to total global A&D sector revenues for the first time within the next two years.

Propulsion, avionics and tier two suppliers lead in profit performance, while OEMs, aerostructures and services profit lag. Similar to 2013, profitability was uneven in the A&D supply chain. For example, engine and avionics suppliers demonstrated higher financial performance due to efficiencies, scale economies, and higher value integrated into their products such as increased fuel efficiency, improved reliability, and lower maintenance costs. On the other hand, government services providers that perform systems engineering and technical assistance and base and range staff augmentation for government agencies generated relatively lower operating margins. Margins at propulsion or engine companies were 14.4 percent, while original equipment manufacturers (OEMs) experienced 8.4 percent operating margins in 2014.

Key drivers of 2014 sector sales, revenue, and earnings growth. Financial performance in the global A&D sector can be largely attributed to the sales growth in commercial airplanes at Boeing and Airbus, with a book-to-bill ratio of 2.76 times. This is expected to drive revenues for the sectors for years to come. As these companies add to their sales orders, the backlog of orders continue to increase, which has resulted in increases in production build rates, which are at an all-time high. Indeed, The Boeing Company and Airbus Group alone added US$6.1 billion in additional revenues in 2014. On the other hand, as described earlier, the top 20 U.S. defense subsector companies have been on a downward revenue trend for several years, and in 2014 shrank as a group by US$3.6 billion in revenues. Regarding profits, the U.S. has led the way with a combined US$4.1 billion in additional operating profits. Figure 1 illustrates further the key drivers of sector financial performance in 2014.

Figure 1: Summary of key drivers of A&D sector revenue and earnings performance

Revenue:	In US$ billion
• Growth of The Boeing Company and Airbus Group	$6.1
• Contraction of the top 20 U.S. defense contractors	-$3.6
• Growth of propulsion segment	$3.0
• Growth of Tier one, Tier two, and Tier three suppliers	$5.1
• Contraction from services segment	-$2.0
• Contraction from electronics segment	-$0.5
• Other*	$4.6
• **Total revenue growth**	**$12.7 billion**

Earnings:	In US$ billion
• Increased performance of the U.S. defense subsector	$1.3
• Increased performance of the U.S. commercial aerospace subsector	$2.4
• Increased performance of European defense subsector	$0.4
• Increased performance of European commercial aerospace subsector	$0.9
• Other*	-$2.8
• **Total increase in operating earnings**	**$2.2 billion**

* This includes differences due to our commercial versus defense analysis, and current exchange rates used. Constant exchange rates have been used for the overall sector analysis. The sector figures include some companies from outside of U.S. and Europe regions from Brazil, Canada, Israel, Japan, Singapore, and South Korea. Companies from these regions are not included in the "U.S." and the "European" region totals, but have been included in "Other".

Source: Deloitte Touche Tohmatsu Limited's (DTTL) Global Manufacturing Industry group analysis of the 100 major global aerospace and defense (A&D) companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Summary of key 2014 financial performance measures

Revenues: The global A&D sector's revenue grew to US$682.2 billion in 2014 representing an increase of 1.9 percent or US$12.7 billion revenue increase. In 2014, the U.S. A&D companies' revenues increased by 2.0 percent with significant growth driven by Boeing Commercial Aircraft, however tempered by revenue declines originating from the top 20 U.S. defense companies. Meanwhile revenues for European A&D companies grew around the same pace at 1.5 percent increase, driven primarily by Airbus Group commercial aircraft deliveries. The original equipment manufacturers (OEM) segment revenues were bifurcated. While The Boeing Company and Airbus Group's commercial aerospace revenues grew by 13.2 percent and 10.6 percent respectively in 2014, their defense revenues declined by 7.0 percent and 4.2 percent respectively. This resulted in a combined total OEM segment growth of 1.6 percent, reflecting the weighted impact of the defense company performance on the combined average.

Operating earnings: Reported global A&D sector operating earnings increased by 3.5 percent to US$66.7 billion in 2014 from US$64.5 billion in 2013. U.S. A&D companies' reported operating earnings increased by 9.8 percent in 2014 while European A&D companies' operating profits declined by 2.0 percent. While the Services segment's operating earnings decreased by 27.3 percent, the Aerostructures segment's operating earnings grew by 47.1 percent in 2014. OEM segment's growth of 3.7 percent in operating earnings reflects the strong commercial market, which also offsets declines in the defense subsector.

Operating margins: Reported global A&D sector operating margins improved by 1.5 percent to 9.8 percent in 2014, from 9.6 percent in 2013. This was likely the result of strong profit growth, especially in the Aerostructures segment. U.S. A&D companies reported an 11.4 percent operating margin in 2014, compared to 10.6 percent in 2013. European A&D companies' operating margin declined slightly from 8.2 percent in 2013 to 8.0 percent in 2014.

Return on invested capital (ROIC): Reported global A&D sector ROIC for 2014 improved to 18.0 percent compared to 17.3 percent in 2013, an improvement of 3.9 percent.

Free Cash Flow (FCF): Global A&D sector FCF increased by 10.4 percent to US$53.0 billion in 2014, compared to US$48.0 billion in 2013. This is likely the result of A&D companies' revenue and operating cash flow growth, especially in commercial aerospace, which was offset by decreases in government defense spending and redeployment of cash for acquisitions.

Free Cash Margin (FCM): Global A&D sector FCM improved by 8.3 percent to 7.8 percent in 2014, compared to 7.2 percent in 2013, impacted by a 10.4 percent increase in FCF in 2014. The Boeing Company and General Dynamics combined results added US$1.1 billion FCF in 2014, likely due to strong operational performance.

Book-to-bill ratio (BTB): As an indicator of future financial performance, the global A&D sector BTB ratio increased by 14.2 percent in 2014 to 1.51 times compared to 1.32 times in 2013. This was likely due to significant sales order activity above existing production build rates for commercial aircraft companies. Airbus Group's BTB ratio increased by 30.0 percent in 2014, while The Boeing Company's BTB ratio increased by 8.2 percent. Both commercial aircraft producers have announced further rate increases to turn sales orders into production and therefore revenues at higher levels than in 2014.[6]

Employment: The global A&D sector's total global employment was essentially flat with a nominal decrease of 1.0 percent to approximately 2 million in 2014. Flat growth in employment compared to increases in revenues and earnings helped to boost the productivity in the global A&D sector.

Productivity: Reported operating earnings per employee in 2014 increased 4.5 percent to US$33,341 as the global A&D sector's total operating earnings rose by 3.5 percent compared to a 1.0 percent decrease in sector employment.

[6] Deloitte Touche Tohmatsu Limited (DTTL) Global Manufacturing Industry group analysis of company annual report, May 2015. Please see "Study Methodology" section for further information.

Figure 2 lists the companies that are ranked as the top performers in the 26 metrics among the top 100 global A&D companies in this study, according to the methodology used for this report (see Methodology section for more information). Although this is not a financial performance ranking, it does provide some visibility to the number of times a specific company has been ranked with the highest performance in a given financial metric category.

Figure 2: Top ranked company for each of the 26 key 2014 financial performance metrics

Metric	Top ranked company	2014 result
Revenue	The Boeing Company	US$90,762 million
Revenue growth	Wesco Aircraft	50.4%
Operating earnings	The Boeing Company	US$7,473 million
Operating earnings growth	ManTech International Corp.	333.3%
Operating margin	Transdigm Group	39.1%
Operating margin growth	ManTech International Corp.	464.2%
Return on invested capital (ROIC)	Lockheed Martin	39.8%
ROIC change	ManTech International Corp.	1240.0%
Free Cash Flow (FCF)	The Boeing Company	US$6,622 million
FCF change	GenCorp/Aerojet Rocketdyne Holdings	643.1%
Free Cash Margin (FCM)	Amphenol	70.3%
FCM change	GenCorp/Aerojet Rocketdyne Holdings	643.1%
Cash and cash equivalents	The Boeing Company	US$11,733 million
Cash and cash equivalents change	Curtiss-Wright	156.8%
Book-to-bill (BTB) ratio	Airbus Group	3.94 times
BTB change	Alion Science & Technology Corp	436.8%
Backlog	Airbus Group	US$1,068,250 million
Backlog change	Korea Aerospace Industries	218.9%
Number of A&D employees	The Boeing Company	165,529
Employee additions	General Dynamics	3,500
Employee additions growth	Wesco Aircraft	99.4%
Revenue per employee	Fuji Aerospace	US$797,067
Revenue per employee growth	Exelis	68.7%
Operating profits per employee	Transdigm Group Inc.	US$119,542
Operating profits per employee growth	ManTech International Corp.	376.1%
Share price change	JAMCO Corporation	108.4%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Scope of the study

The DTTL Global Manufacturing Industry group's 2015 global aerospace and defense sector financial performance study analyzes the top global 100 A&D companies or business units of industrial conglomerates with A&D businesses that reported revenue of more than US$500 million in 2014 with financial statements filed by 31 December 2014 unless otherwise specified. Figure 3 below lists the 100 companies and divisions that were analyzed. The study, however, does not include A&D organizations such as government-controlled entities, private companies that do not release public filings or public companies that do not report A&D business segment information. In addition, certain companies from the previous year's study were excluded likely due to conformance with study criteria. That is, companies from previous years with 2014 revenues less than US$500 million in revenue, companies from previous years that have been subsequently acquired, and companies from previous years lists that have or are going private, were not included in the 2014 analysis. Please refer to the Methodology section for further information that includes the company information used to complete this study.

The study was conducted by assessing performance based on calculating 26 key financial metrics. These include key nominal and growth metrics for revenue, operating earnings, operating margin, return on invested capital (ROIC), free cash flow (FCF), free cash margin (FCM), book-to-bill (BTB) ratio, employee productivity, and equity market performance. All financial metrics in the study are based on a constant currency conversion method to eliminate the impact of foreign exchange fluctuations on companies' or the global A&D sector's performance.

Financial performance metrics at the company level are cited throughout this study, especially for the top performing companies and selectively for the lower performers. However, unique metrics for a given company should not be viewed in isolation, as there typically are unique transactions for individual metrics by company, e.g., prior year acquisitions, special circumstances, etc. The combined metrics for a given company, taken as a whole, are more likely to form the basis for an overall assessment of the financial performance of the global A&D sector, as well as individual companies.

Figure 3: A&D companies included in the analysis

A&D companies or divisions included in this study ranked by 2014 sales revenue			
1. The Boeing Company	2. Airbus Group	3. Lockheed Martin	4. United Technologies Corporation*
5. General Dynamics	6. BAE Systems plc	7. GE Aviation*	8. Northrop Grumman
9. Raytheon	10. Safran	11. Honeywell Aerospace*	12. Thales
13. Finmeccanica	14. Rolls-Royce	15. L3 Communication	16. Bombardier Aerospace*
17. Textron	18. Mitsubishi Heavy Industries Aerospace*	19. Huntington Ingalls Industries	20. Spirit Aerosystems
21. Embraer	22. Precision Castparts Corp.	23. Zodiac Aerospace	24. MTU Aero Engines
25. Singapore Technologies Engineering Ltd.	26. Rockwell Collins	27. Dassault Aviation	28. Orbital ATK
29. Babcock International	30. Leidos Holdings Inc.	31. IHI Aero Engine & Space*	32. Triumph Group
33. SAIC	34. GKN Aerospace*	35. SAAB	36. Harris Corp.
37. Exelis	38. Kawasaki Aerospace and Gas Turbines*	39. Cobham	40. Rheinmetall Defence*
41. Elbit Systems	42. B/E Aerospace	43. CACI	44. ThyssenKrupp Marine Systems*
45. Parker Hannifin Aerospace*	46. CSC*	47. BBA Aviation	48. Jacobs Engineering Group*
49. Transdigm Group	50. Meggitt	51. Korea Aerospace Industries	52. Serco Defence*
53. QinetiQ	54. AAR Corp	55. MacDonald, Dettwiler and Associates	56. Eaton Aerospace*
57. CAE Inc.	58. Oshkosh Defense*	59. Esterline Technologies	60. ManTech International Corp.
61. MOOG	62. Hexcel	63. GenCorp/Aerojet Rocketdyne Holdings	64. Allegheny Technologies*
65. Samsung Techwin*	66. Engility	67. Wesco Aircraft	68. Fluor Corp.*
69. Curtiss-Wright	70. DynCorp*	71. Fuji Aerospace*	72. HEICO Corporation
73. Woodward Aerospace*	74. Cytec Industries	75. OHB Technology	76. Amphenol*
77. Ultra Electronics	78. URS/AECOM*	79. Ball Aerospace*	80. Senior Aerospace
81. LISI Aerospace*	82. Kratos Defense &Security Solutions	83. Smiths Detection*	84. Latecoere
85. Alion Science & Technology Corporation	86. Cubic Corp.	87. RTI International Metals	88. Chemring
89. Crane Aerospace and Electronics*	90. Magellan Aerospace	91. Kongsberg Defence Systems*	92. Indra Sistemas*
93. DigitalGlobe Inc*	94. Teledyne Technologies*	95. Kaman Aerospace*	96. JAMCO Corporation
97. SKF*	98. Ducommun	99. Navistar*	100. KBR*

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

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Summary of A&D sector performance: Figure 4 summarizes the key performance metrics of the global A&D sector in constant currency, thereby eliminating potential distortions caused by foreign currency fluctuations. All metrics are based on reported filings. Each performance metric is discussed in detail in this study.

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Figure 4: Average performance of Global A&D companies in 2014, as compared to 2013

Metric	2014	2013	Change (2014 versus 2013)
Revenues (US$ billion)	US$682.2	US$669.4	1.9%
Operating earnings (US$ billion)	US$66.7	US$64.5	3.5%
Operating margin (percent)	9.8%	9.6%	1.5%
ROIC (percent)	18.1%	17.3%	3.9%
FCF (US$ billion)	US$53.0	US$48	10.4%
FCF margin (percent)	7.8%	7.2%	8.3%
BTB ratio	1.51x	1.32x	14.2%
A&D revenue/employee (US$)	US$340,668	US$330,887	3.0%
A&D operating profit/employee (US$)	US$33,341	US$31,898	4.5%
Number of A&D employees	2,002,669	2,023,237	-1.0%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Detailed 2014 global aerospace and defense sector performance

The following sections discuss the 2014 financial performance of the global A&D sector based on company type and geography, as well as on a consolidated basis:

- 2014 A&D sector performance details
- U.S. and European A&D companies
- Commercial aerospace and defense subsector companies
- Sector performance comparisons

Revenue: Global A&D sector revenues grew 1.9 percent to US$682.2 billion in 2014 from US$669.4 billion in 2013 (see Figure 5). This was driven primarily by another year of record commercial aircraft production, which resulted from strong revenue growth for The Boeing Company and Airbus Group. Although the global A&D sector added US$12.7 billion to sector revenue, revenue growth rate declined in 2014, from 3.2 percent to 1.9 percent. The U.S. defense subsector significantly contributed to decreased overall global growth in revenues, with the top 20 U.S. defense contractors' revenues declining US$3.6 billion, or 1.7 percent. This decline was likely driven by continued decreases in funding outlays by the U.S. Department of Defense, the largest subsector customer, whose budget decreased by 4.7 percent in 2014. Of the top 20, only six U.S. defense contractors experienced revenue growth.

However, The Boeing Company and Airbus Group together delivered 1,352 aircraft in 2014, the largest number in commercial aircraft history. The continued increase in production is driving parallel revenue growth for tier one and tier two suppliers and the aerostructures and propulsion segment companies.

The Boeing Company, the largest global A&D company in terms of revenues, reported a 4.8 percent increase in revenues to US$90.8 billion in 2014 (see Figure 6) from US$86.6 billion in 2013, likely due to increased new aircraft deliveries from its Commercial Airplanes division. Boeing Commercial Airplanes' revenues increased 13.2 percent as the company delivered 723 aircraft in 2014 (including 485 of the 737s and 114 of the 787s) compared to 648 aircraft in 2012. Boeing's Defense, Space, and Security division reported revenues of US$30.9 billion, down 7.0 percent year on year. The second largest global A&D company, Airbus Group (see Figure 8), increased revenues 2.5 percent in 2014 to US$80.7 billion. The company delivered 629 aircraft in 2014 including 490 of the A320 family and 30 A380s. The third largest company, Lockheed Martin, experienced a slight revenue increase of 0.5 percent year over year (YoY) to US$45.6 billion, as compared to US$45.4 billion in 2013. Product sales, which constitute 80 percent of the company's net sales, grew 1.0 percent YoY in 2014 due to increased aircraft deliveries, primarily F-16s.

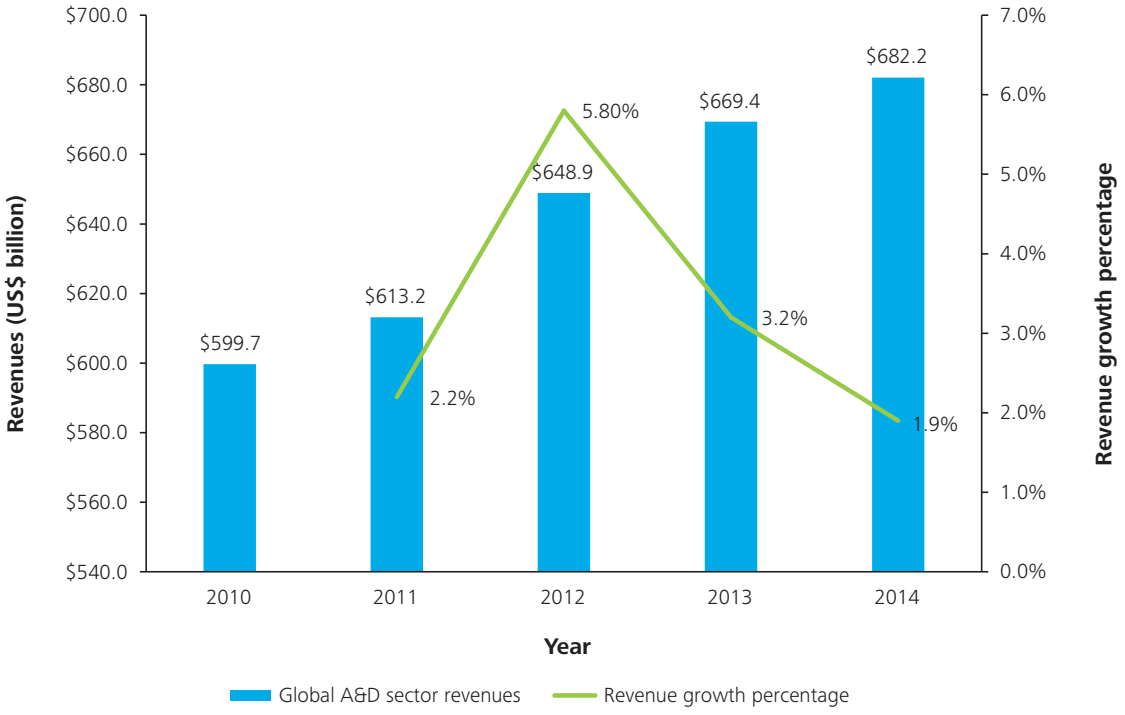
These three companies accounted for 31.8 percent of the total A&D sector revenues in 2014 (compared to 31.5 percent in 2013), and therefore have a disproportionate impact on the performance of the overall sector revenues. Revenues of the top 20 global A&D companies accounted for nearly 75.6 percent of the global A&D sector revenues in 2014 (compared to 75.4 percent in 2013), reflecting sector concentration.

GE Aviation has moved up the list to the seventh spot as both Northrop Grumman and Raytheon have experienced declines in sales revenue and dropped to eight and ninth spots respectively. Bombardier Aerospace, another commercial aerospace company has also moved up in ranking to the sixteenth spot ahead of Textron. Spirit AeroSystems has made an entry into the top 20 list with a 14.1 percent increase in revenues in 2014. This is a continuation of the trend from 2013, when changes in top 20 company rankings saw United Technologies Corporation move from fifth to fourth position and Rolls-Royce move from ninth to eighth position. These ranking movements reflect the rising fortunes of commercial aerospace, including significant revenue increases in the supplier base, which has resulted from commercial aircraft production increases. Additionally, it reflects declining growth in global

defense spending experienced over the last few years. In terms of percentage growth in Figure 7, Wesco Aircraft increased their revenues 50.4 percent in 2014 to US$1,356 million. This higher growth is due to the additional US$356.2 million of sales related to its 2014 acquisition of Haas, and exclusive of this, Wesco's revenues would have grown 10.9 percent.

Of the 36 out of the 100 companies in this study, mostly defense, reported a decline in revenues in 2014 versus 42 that experienced a negative growth in revenues in 2013. This was primarily due to the impact of cancellations or reductions in contracts, because of reduced defense budgets. Oshkosh Defense's revenues decreased US$1.33 billion, or 43.5 percent in 2014 primarily due to decline in sales of US$1.1 billion to the U.S. DOD and lower international sales of Mine Resistant Ambush Protected All-Terrain Vehicles.

Figure 5: Five-year history of A&D sector revenue and growth performance



Note: The actual nominal A&D sector revenues calculations will differ from previous years' DTTL Global Manufacturing Industry group A&D Sector Financial Performance studies, as the set of companies included in this study is not directly comparable across the years.

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Figure 6: Top 21 A&D companies by 2014 revenue (US$ million)

1. The Boeing Company	$90,762
2. Airbus Group	$80,688
3. Lockheed Martin	$45,600
4. United Technologies Corporation	$35,805
5. General Dynamics	$30,852
6. BAE Systems	$25,422
7. GE Aviation	$23,990
8. Northrop Grumman	$23,979
9. Raytheon	$22,826
10. Safran	$19,994
11. Honeywell Aerospace	$15,598
12. Thales	$15,276
13. Finmeccanica	$14,970
14. Rolls-Royce	$14,674
15. L-3 Communication	$12,124
16. Bombardier Aerospace	$10,499
17. Textron	$10,270
18. Mitsubishi Heavy Industries Aerospace	$9,025
19. Huntington Ingalls Industries	$6,957
20. Spirit AeroSystems	$6,799

Figure 7: Top 20 A&D companies by 2014 revenue growth

1. Wesco Aircraft	50.4%
2. ThyssenKrupp Marine Systems	30.7%
3. Fuji Aerospace	28.8%
4. JAMCO Corporation	26.1%
5. Transdigm Group Inc.	23.3%
6. B/E Aerospace	18.0%
7. Senior Aerospace	16.2%
8. Amphenol	15.9%
9. GenCorp/Aerojet Rocketdyne Holdings	15.5%
10. Babcock International	15.2%
11. Textron	14.7%
12. Korea Aerospace Industries	14.3%
13. Spirit AeroSystems	14.1%
14. Crane Aerospace & Electronics	12.7%
15. HEICO Corporation	12.2%
16. Bombardier Aerospace	11.9%
17. Rockwell Collins	11.3%
18. MTU Aero Engines	9.6%
19. GE Aviation	9.5%
20. Cobham	9.0%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Figure 8: Top 10 A&D companies by revenues in 2014 and their movement in rank compared to 2013

Company	2014 Revenues (US$ million)	Rank in 2014	Movement in rank	2013 Revenues (US$ million)	Rank in 2013
The Boeing Company	$90,762	1		$86,623	1
Airbus Group	$80,688	2		$78,692	2
Lockheed Martin	$45,600	3		$45,358	3
United Technologies	$35,805	4		$33,192	4
General Dynamics	$30,852	5		$30,930	5
BAE Systems plc	$25,422	6		$26,380	6
GE Aviation	$23,990	7		$21,991	9
Northrop Grumman	$23,979	8		$24,661	7
Raytheon	$22,826	9		$23,706	8
Safran	$19,994	10		$19,515	10

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Operating earnings: A&D sector earnings outpaced revenue growth globally, adding about US$2.2 billion in global profits. In Figure 9, the sector's reported operating earnings increased 3.5 percent to US$66.7 billion in 2014. This was attributed to strong profit growth, especially among commercial aircraft manufacturers and propulsion equipment manufacturers.

Commercial aerospace grew earnings by 6.0 percent, because of more aircraft delivered at lower costs. Defense companies grew earnings by 5.1 percent despite the revenue decline cited above, which was likely the result from anticipatory cost cuts. In general, profitability is not uniform across the different segment and supplier tiers, because OEMs and platform companies generally experience significantly lower margins than their suppliers do. Top performing engine and avionics tier one suppliers can routinely earn close to 20 percent operating profit margins. Conversely, the services segment and tier three suppliers typically lag A&D sector averages in profitability.

About 57 percent of the companies analyzed reported positive year on year growth in operating profits. The top 20 companies, in terms of operating profits, accounted for US$53.7 billion, or 80.5 percent of the total sector operating profits, reflecting the sector concentration.

In Figure 10, The Boeing Company is the sector leader in terms of profitability, with operating profits of US$7,473 million in 2014, up 13.9 percent year on year, mainly due to higher aircraft deliveries. In second place in terms of operating earnings is Lockheed Martin with 2014 reported operating profits at US$5,592 million, up 24.1 percent year on year. GE Aviation was the third place company with US$4,973 million in operating profits in 2014, up 14.5 percent year on year. The increase in operating profit was mainly due to higher product volume and prices in its commercial engines and services businesses.

The top five companies: The Boeing Company, Lockheed Martin, GE Aviation, United Technologies Corporation and General Dynamics together reported US$26.5 billion in operating profits in 2014, or 39.7 percent of the total A&D sector's operating profits.

In terms of percent growth (see Figure 11), ManTech International Corporation reported the highest growth rate in operating profits at 333.3 percent as its 2013 profit figures included a goodwill impairment charge due to the withdrawal of forces from Afghanistan and slowed services spending across the company's defense customers. The second highest gainer, Fuji Aerospace grew reported operating earnings by 91.2 percent, as sales of its products to the Japanese Ministry of Defense grew because of an increase in sales of the transport aircraft C-2 and the attack helicopter AH-64D. Furthermore, sales to the commercial aerospace subsector increased over 2013 due to the correction of the strong yen and growth in production of the Boeing 777 and Boeing 787 aircraft.

On the other hand, KBR reported the highest decline in operating profits in 2014 at minus 356.2 percent, primarily due to reduction in revenues supporting the U.S. military and U.S. Department of State for the war in Iraq and a decrease from reduction in troop numbers on UK Ministry of Defence and North Atlantic Treaty Organization contracts in Afghanistan.

Figure 9: Five-year history of A&D sector earnings and growth performance metrics

Note: The actual nominal A&D sector operating income calculations will differ from previous years' DTTL Global Manufacturing Industry group A&D Sector Financial Performance studies, as the set of companies included in this study is not directly comparable across the years.

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Figure 10: Top 20 A&D companies by 2014 operating earnings (US$ million)

1. The Boeing Company	$7,473
2. Lockheed Martin	$5,592
3. GE Aviation	$4,973
4. United Technologies	$4,574
5. General Dynamics	$3,889
6. Airbus Group	$3,869
7. Northrop Grumman	$3,196
8. Honeywell Aerospace	$2,915
9. BAE Systems	$2,804
10. Raytheon	$2,179
11. Rolls-Royce	$2,155
12. Safran	$1,851
13. Precision Castparts Corp.	$1,636
14. Thales	$1,495
15. L-3 Communication	$1,085
16. Finmeccanica	$956
17. Textron	$898
18. Transdigm Group Inc.	$872
19. Zodiac Aerospace	$730
20. Babcock International	$623

Figure 11: Top 20 A&D companies by 2014 operating earnings growth

1. ManTech International Corp.	333.3%
2. Fuji Aerospace	91.2%
3. JAMCO Corporation	48.6%
4. ThyssenKrupp Marine Systems	31.9%
5. Ducommun	30.1%
6. Parker Hannifin Aerospace	28.8%
7. Textron	25.9%
8. Lockheed Martin	24.1%
9. Transdigm Group Inc.	23.9%
10. Kawasaki Aerospace and Gas Turbines	23.2%
11. Thales	22.4%
12. Orbital ATK	22.0%
13. Exelis	21.0%
14. Airbus Group	19.6%
15. Curtiss-Wright	18.9%
16. SAAB	18.0%
17. Teledyne Tech	18.0%
18. Korea Aerospace Industries	17.9%
19. Harris Corporation	16.7%
20. Eaton Aerospace	15.6%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Operating margin: Operating margin for the A&D sector improved 1.5 percent to 9.8 percent in 2014 from 9.6 percent in 2013. The operating margin growth mainly benefited from continued commercial aircraft growth that fueled sales volume, scale economies, and productivity gains.

Program performance continues to be a key management challenge of the global A&D sector, although recent data suggest this challenge is abating somewhat.

In Figure 12, Transdigm Group retained its position as the top-ranked A&D company in terms of operating margin, as its margins improved from 38.9 percent in 2013 to 39.1 percent in 2014. The company reported improvement in operating margin likely due to an improvement in both commercial OEM and defense revenues, coupled with operational efficiency. Precision Castparts reported the second-highest operating margin of 28.2 percent in 2014, largely driven by strong operating performance and strong incremental margins.

In terms of percent gainers and in Figure 13, ManTech reported the most significant improvement in operating margin growth at 464.2 percent compared to 2013 as its last year profit figures were lower due to a goodwill impairment charge on account of the withdrawal of forces from Afghanistan and slowed services spending across the company's defense customers. Fuji Aerospace reported the second highest operating margin increase of 48.5 percent year on year likely due to strong growth in revenues and lower operating costs.

Of the 100 companies analyzed, 42 showed an improvement in operating margins in 2014 compared to 2013. Serco Defence's operating margin fell 8,145 bps in 2014, as compared to 2013. This was the largest decline among A&D companies and was likely the result of asset impairment charge of US$300.8 million in 2014 in its UK Central Government division, which also includes businesses other than defense for Serco.

Figure 12: Top 20 A&D companies by 2014 operating margin

1. Transdigm Group	39.1%
2. Precision Castparts	28.2%
3. Meggitt	22.3%
4. GE Aviation	20.7%
5. Amphenol	19.3%
6. Honeywell Aerospace	18.7%
7. HEICO Corporation	18.0%
8. MacDonald, Dettwiler and Associates	16.6%
9. Hexcel Corp.	16.6%
10. Ultra Electronics	16.5%
11. CAE Inc.	15.1%
12. Babcock International	15.0%
13. B/E Aerospace	14.8%
14. Rolls-Royce	14.7%
15. Woodward Aerospace	14.7%
16. Senior Aerospace	14.5%
17. Magellan Aerospace	14.3%
18. Orbital ATK	13.6%
19. Wesco Aircraft	13.6%
20. Northrop Grumman	13.3%

Figure 13: Top 20 A&D companies by 2014 operating margin growth

1. ManTech International Corp	464.2%
2. Fuji Aerospace	48.5%
3. Ducommun	30.8%
4. Fluor Corp.'s Government Segment	30.5%
5. Parker Hannifin Aerospace	26.2%
6. SAAB	24.9%
7. Lockheed Martin	23.5%
8. Exelis	23.4%
9. Harris Corporation	19.1%
10. Thales	18.9%
11. JAMCO Corporation	17.9%
12. Orbital ATK	17.6%
13. Raytheon	17.1%
14. Airbus Group	16.6%
15. Alion Science & Technology Corp	15.7%
16. Teledyne Tech	15.2%
17. Kawasaki Aerospace and Gas Turbines	13.6%
18. Eaton Aerospace	12.9%
19. Curtiss-Wright	12.3%
20. RTI International Metals	11.9%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Return on invested capital (ROIC): The A&D sector's reported ROIC was 18.0 percent in 2014, up 3.9 percent year on year. In Figure 14, Lockheed Martin again topped the list in terms of ROIC with a 39.8 percent return in 2014. This was largely the result of a significant reduction in shareholder equity in 2014. The Boeing Company in a close second place, reported ROIC of 39.4 percent in 2014 as the company's net debt reduced considerably in 2014. Of the 100 companies analyzed, 12 reported negative ROIC metrics, with Serco Defense recording the lowest metric in this study with an ROIC of minus 85.4 percent in 2014, likely due to high cost of sales and an operating loss.

Figure 14: Top 20 A&D companies by 2014 ROIC

1. Lockheed Martin	39.8%
2. The Boeing Company	39.4%
3. Fuji Aerospace	34.5%
4. Fluor Corp.'s Government Segment	29.8%
5. Airbus Group	27.9%
6. Rockwell Collins	27.1%
7. Singapore Technologies (ST) Engineering Ltd.	22.1%
8. Babcock International	20.7%
9. Harris Corporation	20.7%
10. Honeywell Aerospace	20.2%
11. BAE Systems	19.9%
12. SAIC	19.5%
13. Northrop Grumman	18.4%
14. Spirit AeroSystems	18.1%
15. GKN Aerospace	17.7%
16. Huntington Ingalls Industries	17.3%
17. Raytheon	16.7%
18. Zodiac Aerospace	16.5%
19. Amphenol	16.2%
20. Exelis	16.1%

Figure 15: Top 20 A&D companies by 2014 ROIC growth percentage

1. ManTech International Corp.	1,240.0%
2. SKF Aerospace	171.5%
3. Harris Corporation	146.4%
4. Cubic Corporation	139.9%
5. BAE Systems	138.9%
6. Fuji Aerospace	59.2%
7. JAMCO Corporation	52.1%
8. Mitsubishi Heavy Industries Aerospace	50.8%
9. Airbus Group	46.1%
10. Kawasaki Aerospace and Gas Turbines	32.8%
11. SAAB	30.3%
12. Ducommun	27.5%
13. AAR Corporation	24.9%
14. CSC	22.4%
15. MOOG	17.3%
16. MTU Aero Engines	16.9%
17. Transdigm Group Inc.	16.7%
18. SAIC	16.3%
19. The Boeing Company	15.1%
20. RTI International Metals	14.2%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Free cash flow (FCF): A&D sector FCF increased 10.4 percent to US$53 billion in 2014 compared to 2013, driven by increased revenues and operational cash flow growth. FCF benefitted from strong cash flow in the commercial aerospace subsector, which was partially offset by decreases in defense and other non-operational outflows.

The top 10 companies in terms of FCF contributed 60.4 percent of the total sector free cash flows in 2014, compared to 83.6 percent in 2013. In Figure 16, the top three companies, The Boeing Company (US$6,622 million), United Technologies Corporation (US$5,625 million), and Honeywell Aerospace (US$3,930 million), accounted for 30.5 percent of the sector free cash flows, reflecting sector concentration.

In first place, The Boeing Company's FCF increased 8.9 percent to in 2014 likely due to its cash flow from operating activities, increasing to US$8.9 billion in 2014, compared to US$8.2 billion in 2013, likely due to increased customer receipts, reflecting higher delivery and order volumes in 2014. In second place, United Technologies Corporation reported 3.3 percent lower FCF year on year, primarily attributable to an increase in net capital expenditure from US$1.69 billion in 2013 to US$1.79 billion in 2014. In third place, Honeywell Aerospace experienced free cash flow increases of 17.7 percent year on year, largely likely due to improved cash flow from operating activities, which grew from US$4.3 billion in 2013 to US$5.0 billion in 2014.

Of the 100 companies analyzed, 15 reported negative FCF with Bombardier Aerospace's FCF at minus US$1.1 billion in 2014, compared to minus US$0.9 billion in 2013, negatively impacted by increase in net capital expenditure and changes in its working capital.

Figure 16: Top 20 A&D companies by 2014 FCF (US$ million)

1. The Boeing Company	$6,622
2. United Technologies Corporation	$5,625
3. Honeywell Aerospace	$3,930
4. General Dynamics	$3,207
5. Lockheed Martin	$3,021
6. Fuji Aerospace	$2,651
7. Northrop Grumman	$2,032
8. Raytheon	$1,858
9. BAE Systems	$1,572
10. Precision Castparts	$1,527
11. Mitsubishi Heavy Industries Aerospace	$1,495
12. Eaton Aerospace	$1,246
13. Rolls-Royce	$1,183
14. Parker Hannifin Aerospace	$1,171
15. ThyssenKrupp Marine Systems	$1,062
16. Safran	$983
17. L-3 Communication	$942
18. Textron	$782
19. Kawasaki Aerospace and Gas Turbines	$721
20. CSC	$689

Figure 17: Top 20 A&D companies by 2014 FCF growth percentage

1. GenCorp/Aerojet Rocketdyne Holdings	643.1%
2. Huntington Ingalls Industries	468.0%
3. Spirit AeroSystems	435.6%
4. Ducommun	274.9%
5. Kaman Aerospace	236.9%
6. Fuji Aerospace	170.1%
7. Leidos Holdings, Inc.	165.9%
8. CSC	161.0%
9. CAE Inc.	128.7%
10. Textron	111.9%
11. Teledyne Tech	87.0%
12. Jacobs Engineering Group	84.3%
13. HEICO Corporation	82.5%
14. Curtiss-Wright `	58.9%
15. SAIC	52.7%
16. Meggitt	40.7%
17. Orbital ATK	40.1%
18. IHI Aero Engine & Space	36.0%
19. ThyssenKrupp Marine Systems	35.8%
20. Ball Aerospace	34.9%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Free cash margin (FCM): In 2014, the A&D sector FCM was up to 7.8 percent from 7.2 percent in 2013. This was largely because A&D sector FCF increased 10.4 percent to US$53 billion in 2014 compared to 2013. Of the 100 companies analyzed, 65 reported FCM of more than 5.0 percent while 38 companies reported FCM of 10.0 percent or more in 2014.

In Figure 18, Fuji Aerospace topped the 2014 list with a 224.4 percent FCM. Its FCF margin improved significantly from 107.0 percent in 2013. The company's free cash flow increased by 170.1 percent in 2014, while revenues grew at 28.8 percent. In second place was Amphenol whose FCM stood at 70.3 percent in 2014, a decline of 4.9 percent from 2013 when it registered a FCM of 74.0 percent. Eaton Aerospace reported the third ranked FCM metric of 68.6 percent, moving down from 94.2 percent FCM in 2013, likely due to a slip in cash flow from operational activities.

Overall, 15 of the 100 companies analyzed reported negative FCM in 2013. Some of these companies, however, made more significant investments in property, plant and equipment (PP&E) and/or intangible assets resulting in negative FCF during 2014. Such investments negatively affected the FCFs for some of the companies.

Figure 18: Top 20 A&D companies by 2014 FCM performance

1. Fuji Aerospace	224.4%
2. Amphenol	70.3%
3. Eaton Aerospace	68.6%
4. Ball Aerospace	68.5%
5. SKF	64.3%
6. Parker Hannifin Aerospace	50.6%
7. ThyssenKrupp Marine Systems	45.9%
8. Kongsberg Defence Systems	44.4%
9. Teledyne Tech	38.4%
10. URS/AECOM	32.5%
11. Fluor Corp.'s Government Segment	31.3%
12. CSC	30.0%
13. Crane Aerospace & Electronics	29.4%
14. Smiths Detection	28.5%
15. Jacobs Engineering Group	26.3%
16. Precision Castparts Corp.	26.3%
17. Honeywell Aerospace	25.2%
18. Indra Sistemas	24.6%
19. KBR	23.4%
20. Kawasaki Aerospace and Gas Turbines	23.0%

Figure 19: Top 20 A&D companies by 2014 FCM growth percentage

1. GenCorp/Aerojet Rocketdyne Holdings	543.1%
2. Huntington Ingalls Industries	456.9%
3. Spirit AeroSystems	369.6%
4. Ducommun	276.7%
5. Kaman Aerospace	226.2%
6. Leidos Holdings, Inc.	206.6%
7. CSC	172.4%
8. CAE Inc.	131.0%
9. Fuji Aerospace	109.8%
10. Textron	84.8%
11. Jacobs Engineering Group	84.5%
12. Teledyne Tech	82.6%
13. SAIC	77.1%
14. HEICO Corporation	62.6%
15. Curtiss-Wright	50.0%
16. IHI Aero Engine & Space	42.5%
17. Meggitt	41.0%
18. Orbital ATK	35.0%
19. Ball Aerospace	33.3%
20. MOOG	29.9%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Book-to-bill (BTB) ratio: A&D sector's BTB ratio is a key indicator of future revenues, determined by comparing sales order bookings to company revenues. In 2014, the sector BTB ratio increased 14.2 percent to 1.51 times in 2014 from 1.32 times in 2013. The increase in BTB was likely due to increased backlogs at Airbus Group and Boeing Commercial Aircraft divisions, with Airbus Group BTB standing at 3.94 times, the highest in the sector, as seen in Figure 20. The increased orders for new fuel-efficient commercial aircraft have likely been the primary driver for the sector's BTB increase in 2014. The sector backlog increased 11.0 percent in 2014 to US$2.81 trillion as demand for commercial aircraft outpaced a slowdown in defense sales order commitments. If the BTB for Airbus Group and The Boeing Company was excluded, the sector BTB metric is 0.82 times in 2014, below the revenue replacement metric of 1.0 times, reflecting the slowdown in defense orders likely due to defense budget cuts globally. Growth in topline coupled with a BTB ratio of 1.51 times in 2013 signal the potential for A&D sector revenues to expand, with commercial aerospace continuing to offset the decline in the defense sales orders.

Figure 20 illustrates that Airbus Group had the highest BTB ratio in this study at 3.94 times, posting a 30.0 percent increase in BTB in 2014. Its backlog increased to US$1.07 trillion in 2014, compared to US$830.8 billion in 2013. The increase in backlog is likely due to increased order flows for commercial aircraft. In second place, General Dynamics reported BTB of 1.86 times in 2014, with its backlog at US$72.4 billion in 2014, compared to US$45.6 billion in 2013. The increase in backlog at General Dynamics was likely due to the addition of the Virginia-class submarine Block IV contract for 10 submarines at its Marine Systems division. Spirit AeroSystems reported BTB of 1.81 times in 2014, the third highest performance in this study, with a backlog of US$46.6 billion in 2014, compared to US$41.1 billion in 2013. The increased backlog reflects strong demand for commercial aerostructures, which is being driven by demand for new aircraft.

Out of the 100 companies in this study, 49 companies reported a BTB of 1.0 times or more with a majority of the companies being commercial aerospace focused, again reflecting the slowdown in defense. Lockheed Martin reported a decrease in backlog to US$80.5 billion in 2014 from US$82.6 billion in 2013, a 2.5 percent decline likely due to reduced demand from the U.S. government agencies.

Figure 20: Top 20 A&D companies by 2014 BTB performance

1. Airbus Group	3.94
2. General Dynamics	1.86
3. Spirit AeroSystems	1.81
4. The Boeing Company	1.71
5. MTU Aero Engines	1.60
6. Huntington Ingalls Industries	1.49
7. Embraer	1.43
8. Safran	1.42
9. United Technologies	1.40
10. Cubic Corp.	1.38
11. GE Aviation	1.38
12. GenCorp/Aerojet Rocketdyne Holdings	1.38
13. Kongsberg Defence Systems	1.30
14. Rolls-Royce	1.23
15. Dassault Aviation	1.23
16. Thales	1.16
17. Elbit Systems	1.15
18. Finmeccanica	1.12
19. Rockwell Collins	1.12

Figure 21: Top 20 A&D companies by 2014 BTB growth percentage

1. Alion Science & Technology Corp	436.8%
2. Finmeccanica	306.0%
3. Babcock International	160.0%
4. General Dynamics	123.8%
5. United Technologies	62.8%
6. Cubic Corp.	57.0%
7. MTU Aero Engines	56.9%
8. Kongsberg Defence Systems	44.4%
9. Dassault Aviation	41.6%
10. Korea Aerospace Industries	41.5%
11. Airbus Group	30.0%
12. Ultra Electronics	27.1%
13. Kratos Defense & Security Solutions	26.6%
14. Serco Defence	25.9%
15. Northrop Grumman	23.8%
16. CACI	21.0%
17. Harris Corporation	19.1%
18. Thales	18.4%
19. DynCorp	17.6%
20. Rockwell Collins	17.3%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

A&D sector employment: Total A&D sector employment declined 1.0 percent to 2.0 million in 2014 compared to 2.02 million in 2013. The number of companies increasing their headcount in 2014 decreased from 2013, with only 44.0 percent of the companies reporting an increase in the number of employees compared to 49.0 percent in 2013. The increase in employment at 44.0 percent of the companies was likely driven mostly by an increase in commercial aerospace production. Employment at the U.S. A&D companies declined 2.1 percent in 2014, from 1.21 million employees in 2013 to 1.18 million employees in 2014. On the other hand, European A&D companies reported a 1.3 percent increase in employment in 2014, from 0.66 million employees in 2013 to 0.67 million employees in 2014.

With 45.1 percent of the total A&D sector employees, the OEM segment is the single largest segment in the A&D sector in terms of employment. However, employment at this segment declined 0.8 percent year on year. Aerostructures, propulsion, tier one, and tier two segments, which together employ 28.0 percent of the total workforce, added 8,903 more employees in 2014.

In 2014, General Dynamics reported an increase of 3,500 employees, or 3.6 percent, as seen in Figure 22. This increase was likely due to strong demand for its Gulfstream aircraft across geographic regions and customer types, generating orders from public and private companies, as well as governments around the world. GE Aviation reported a 6.9 percent increase in employment, adding 3,180 employees, which is the second highest increase in terms of net employee additions. Zodiac Aerospace reported an increase of 2,853 employees, which translates into a double-digit employment growth of 11.3 percent in 2014.

Owing to declining sales in the defense subsector, many companies continued to reduce personnel. For U.S. companies, this includes Exelis, which reduced its workforce by 7,200 employees and Leidos Holdings reducing 3,000 employees. For European companies, BAE Systems plc and Finmeccanica S.p.A reduced their workforce by 2,000 and 1,902 employees respectively.

Figure 22: Top 20 A&D companies by 2014 employee additions

1. General Dynamics	3,500
2. GE Aviation	3,180
3. Zodiac Aerospace	2,853
4. Safran	2,656
5. Cobham	2,442
6. Textron	2,000
7. Smiths Detection	1,849
8. Rockwell Collins	1,700
9. Wesco Aircraft	1,346
10. Thales	1,314
11. Transdigm Group Inc.	1,200
12. Orbital ATK	1,140
13. Amphenol	1,123
14. Kawasaki Aerospace and Gas Turbines	847
15. Senior Aerospace	758
16. GKN Aerospace	715
17. Esterline Technologies	685
18. Embraer	653
19. Precision Castparts Corp.	600
20. SAAB	576

Figure 23: Top 20 A&D companies by 2014 employee additions growth

1. Wesco Aircraft	99.4%
2. Smiths Detection	82.2%
3. ThyssenKrupp Marine Systems	27.3%
4. Cobham	23.8%
5. Transdigm Group Inc.	19.7%
6. Senior Aerospace	18.6%
7. Fuji Aerospace	15.1%
8. Amphenol	14.0%
9. Ultra Electronics	12.0%
10. Kawasaki Aerospace and Gas Turbines	11.4%
11. Zodiac Aerospace	11.3%
12. Rockwell Collins	9.3%
13. DigitalGlobe Inc	8.4%
14. Orbital ATK	8.3%
15. GE Aviation	6.9%
16. Esterline Technologies	6.8%
17. Textron	6.3%
18. Korea Aerospace Industries	5.9%
19. Hexcel Corp.	5.8%
20. RTI International Metals	5.7%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Employee productivity: Employee productivity at the sector level, using a definition of operating profits per employee, increased 4.5 percent to US$33,341 operating profit per employee in 2014. In 2014, sector operating profits grew 3.5 percent, as compared to a minus 1.0 percent decline in the number of employees. The propulsion segment generated the highest operating profit per employee at US$51,666 in 2014 compared to US$51,388 in 2013, for a 0.5 percent growth. OEM segment's operating profit per employee grew 4.3 percent from US$32,925 in 2013 to US$34,337 in 2014.

Of the top 20 companies in employee productivity, only five companies including GE Aviation, Honeywell Aerospace, Lockheed Martin, Northrop Grumman, and The Boeing Company generated revenue greater than US$10.0 billion. Many but not all of the top 20 performers in this category are companies with revenue of less than US$5.0 billion.

Figure 24 shows ThyssenKrupp Marine Systems, Transdigm Group Inc., and GE Aviation as the top three companies in terms of employee productivity in the A&D sector. ThyssenKrupp Marine Systems reported operating profits per employee at US$223,602 in 2014, up 3.6 percent year on year. The company's operating profits increased 31.9 percent in 2014, while its number of employees increased only 27.3 percent. Transdigm Group saw its operating profits per employee at US$119,452 in 2014, up 3.5 percent year on year, as its operating profits grew 23.9 percent in 2014 but the employee base grew only 19.7 percent. GE Aviation's operating profits per employee were US$100,997 in 2014, up 7.1 percent compared to 2013. Its operating profits grew by 14.5 percent whereas employee count increased only 6.9 percent in 2014.

Figure 24: Top 20 A&D companies by 2014 operating profits per employee (US$)

1. ThyssenKrupp Marine Systems	$223,602
2. Transdigm Group Inc.	$119,452
3. GE Aviation	$100,997
4. Fuji Aerospace	$90,343
5. Wesco Aircraft	$68,111
6. MacDonald, Dettwiler and Associates	$65,708
7. Honeywell Aerospace	$58,853
8. HEICO Corporation	$58,114
9. Ball Aerospace	$57,392
10. Precision Castparts Corp.	$56,220
11. Hexcel Corp.	$54,345
12. MTU Aero Engines	$53,189
13. Cytec Industries	$50,798
14. Lockheed Martin	$49,929
15. Northrop Grumman	$49,705
16. Dassault Aviation	$45,211
17. The Boeing Company	$45,146
18. Woodward Aerospace	$43,182
19. Meggitt	$43,424
20. Korea Aerospace Industries	$41,985

Figure 25: Top 20 A&D companies by 2014 operating profits per employee growth percentage

1. ManTech International Corp.	376.1%
2. Exelis	108.2%
3. Fuji Aerospace	66.1%
4. Fluor Corp.'s Government Segment	44.3%
5. JAMCO Corporation	41.8%
6. Ducommun	36.5%
7. Curtiss-Wright	32.1%
8. Parker Hannifin Aerospace	29.7%
9. Lockheed Martin	27.5%
10. Thales	19.8%
11. Airbus Group	19.4%
12. Textron	18.5%
13. OHB Technology AG	17.1%
14. Harris Corporation	16.7%
15. Raytheon	16.5%
16. CAE Inc.	16.3%
17. The Boeing Company	15.9%
18. Eaton Aerospace	15.5%
19. Teledyne Tech	15.5%
20. SAAB	13.3%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Equity markets: A&D sector share prices moderated in 2014 after a stronger run than most of the global averages in 2013. U.S.-based A&D companies underperformed the S&P 500 index, 10.0 percent versus 11.4 percent, as seen in Figure 26. European A&D companies underperformed the STOXX 600 index, minus 8.5 percent to 5.1 percent, as seen in Figure 27. Likely contributors include decline in defense subsector sales as defense companies continue to see downward pressure from the effects of U.S. Government budget reductions, coupled with an operating environment characterized by both increasing complexity in global security and continuing economic pressures in the U.S. and globally.

JAMCO Corporation (108.4 percent), Magellan Aerospace (59.1 percent), and SAIC (51.8 percent) increased share prices the most in 2014. However, superior increases in share prices do not necessarily correlate to largest gainers in financial performance. Magellan Aerospace revenues increased only 4.6 percent while its share price grew 59.1 percent. Similarly, SAIC's revenues declined 13.8 percent but its share price grew 51.8 percent in 2014.

Figure 26: U.S. equity market comparisons to U.S. A&D sector performance (2009 to 2014)

	2014	2013	2012	2011	2010	2009
DJ A&D Index	10.0%	54.1%	11.2%	3.25%	10.6%	21.6%
S&P500 Index	11.4%	29.6%	13.4%	0.0%	12.8%	23.5%
Basis point difference	-140	2,450	-216	322	-221	-182

Source: DTTL Global Manufacturing Industry group analysis of data from Bloomberg L.P., accessed in May 2015. Figure includes historical prices of the respective indices over the identified periods.

Figure 27: European equity market comparisons to European A&D sector performance (2009 to 2014)

	2014	2013	2012	2011	2010	2009
STOXX Europe TMI A&D	-8.5%	41.6%	22.8%	0.8%	15.2%	24.8%
STOXX Europe 600	5.1%	17.4%	14.4%	-11.3%	8.6%	28.0%
Basis point difference	-1,337	2,420	843	1,213	656	-316

Source: DTTL Global Manufacturing Industry group analysis of data from Bloomberg L.P., accessed in May 2015. Figure includes historical prices of the respective indices over the identified periods.

U.S. compared with European aerospace and defense companies

U.S.-based companies comprise over half of the revenues for the global A&D sector. European headquartered companies represent about a third of total revenues, while companies domiciled in Japan, Canada, Brazil, and other countries share the balance. Although this geographic makeup has been relatively constant for the past few years, over the longer term the U.S. dominance has declined as the growth of non-U.S.-based A&D companies continues.

The following analysis of U.S. companies, compared to European companies uses the constant conversion approach to eliminate the effect of foreign currency fluctuations from year to year.

Revenue: For 2014 and in Figure 28, A&D companies headquartered in the U.S. accounted for 59.9 percent of the global A&D sector revenues, or US$408.5 billion of the global A&D sector's US$682.2 billion revenues. European companies accounted for 32.7 percent, or US$222.8 billion of the A&D sector revenue, while companies domiciled in Japan, Canada, Brazil, and other countries share the balance. In 2014, U.S. companies' revenue increased 2.0 percent, while European companies' revenue grew 1.5 percent. The commercial aerospace subsector drove the growth and more, both in the U.S. and in Europe, while defense companies recorded decreased revenue, compared to their commercial counterparts.

The Boeing Company continues to be the leading U.S.-based A&D company with revenues of US$90.8 billion in 2014, up 4.8 percent year on year likely due to increased aircraft deliveries. Lockheed Martin was the second largest U.S. company with revenues of US$45.6 billion and year on year growth of 0.5 percent as its product sales increased. This was likely due to stable volume and deliveries in its aeronautics, space systems, and mission systems divisions. United Technologies Corporation's A&D revenues increased 7.9 percent to US$35.8 billion in 2014 as the company experienced strong organic sales increases in its commercial aerospace aftermarket and international military helicopters.

Approximately 40 percent of U.S.-based A&D companies reported a decline in revenues in 2014 with a majority of them experiencing the impact of slowing defense contracts likely due to dependence on U.S. government contracts. Oshkosh Defense reported the highest decline in revenues at minus 43.5 percent in 2014 primarily due to a decrease in sales to the DoD and lower international sales of MATVs.

European A&D companies reported a 1.5 percent increase in revenues, with total revenues of US$222.8 billion in 2014. Airbus Group reported revenues of US$80.7 billion in 2014 likely due to increased deliveries in Airbus Group's commercial business. Chemring reported a decline of 19.9 percent in revenues in 2014 primarily due to budgetary pressures on defense spending, which caused delays in order placement in its end markets. In 2014, 28 percent of the European companies analyzed reported a decline in revenues as many companies such as Chemring derive a significant portion of their revenues from the U.S. defense market.

Operating earnings/operating margin: There are still large differences between the U.S. and Europe in operating margins. The U.S. experienced 11.4 percent in 2014 and 10.6 percent in 2013 in operating margins. This is compared to Europe at 8.0 percent in 2014 and 8.2 percent in 2013. Airbus Group, with operating margins of 4.8 percent in 2014, is the largest A&D company in Europe, while The Boeing Company, with margins of 8.2 percent in 2014, is the largest U.S. A&D company. As a proxy for the differences between U.S and Europe, the gap in profit margin performance has existed for many years. It brings into focus the efficiency of the cost and asset base and the comparative ability of the European A&D sector to rationalize assets and reduce operating expenses. Reported operating earnings for U.S. companies increased 9.8 percent in 2014, while European companies reported a 2.0 percent decline in operating profits.

The Boeing Company reported US$7.5 billion operating profits in 2014, up 13.9 percent year on year, and an operating margin of 8.2 percent, driven mainly by a US$616 million increase in the profits of its commercial airplanes division, reflecting higher numbers of new aircraft deliveries. Lockheed Martin, with an operating margin at 12.3 percent, reported a 24.1 percent increase in operating profits year on year, likely due to higher operating profit for the F-35 development contract in absence of the downward revision to the profit booking rate that occurred in 2013, as well as strong volume for its air and missile defense programs (THAAD and PAC-3).

Among U.S. companies, Transdigm Group, Precision Castparts, and GE Aviation reported the highest operating margins, while Meggitt, Ultra Electronics, and Babcock International reported the highest operating margins among the European companies.

Return on invested capital (ROIC): U.S. companies' reported ROIC increased 9.7 percent to 22.2 percent in 2014. Lockheed Martin reported ROIC of 39.8 percent, with The Boeing Company reporting ROIC of 39.4 percent. Out of the 57 U.S. companies, five reported a negative ROIC in 2014, with KBR yielding minus 70.9 percent, Navistar minus 44.4 percent, DynCorp minus 30.9 percent, Leidos Holdings minus 7.3 percent.

European companies reported a 13.6 percent ROIC in 2014 versus 13.8 percent in 2013, a decrease of 2.1 percent year on year. Among the European companies, Airbus Group, Babcock International, and BAE Systems represent the top three highest ROIC performers at 27.9 percent, 20.7 percent, and 19.9 percent ROIC respectively. Four of the European companies experienced negative ROIC with Serco Defence yielding minus 85.4 percent, Safran minus 15.1 percent, Chemring minus 6.0 percent, and Indra Sistemas at minus 3.2 percent respectively.

Free cash flow (FCF)/free cash margin (FCM): U.S. A&D companies reported free cash flow of US$40.9 billion, up 6.7 percent year on year likely due to strong operating profitability. European A&D companies reported free cash flow of US$6.7 billion, up 12.6 percent year on year. U.S. companies reported a 4.6 percent improvement in free cash margins, while European companies saw an 11.0 percent improvement in free cash margins.

SKF, ThyssenKrupp Marine Systems, and Kongsberg Defence Systems were the top three European A&D companies with free cash margins at 64.3 percent, 45.9 percent, and 44.4 percent respectively. Among U.S. companies, Amphenol, Eaton Aerospace, and Ball Aerospace were the top performers with 70.3 percent, 68.6 percent, and 68.5 percent FCM respectively in 2014.

Book-to-bill (BTB) ratio: Airbus Group, with a BTB of 3.94 times, experienced the highest metric in the global A&D sector. The European A&D companies' BTB increased to 2.07 times in 2014, compared to 1.72 times in 2013. However, excluding Airbus Group, the European A&D sector's BTB stood at 1.01 times in 2014 and 0.98 times in 2013, reflecting the impact of Airbus Group on the Europe A&D sector.

U.S. companies' BTB in 2014 was 1.29 times compared to 1.15 times in 2013. General Dynamics and Spirit AeroSystems were the top two performers ahead of The Boeing Company with 1.86 times and 1.81 times BTB respectively. The increase in BTB at General Dynamics was likely due to the addition of the Virginia-class submarine Block IV contracts for 10 submarines at its Marine Systems division. The increased backlog at Spirit AeroSystems reflects strong demand for commercial aerostructures, which is being driven by demand for new aircraft. The Boeing Company's BTB increased to 1.71 times in 2014 compared to 1.58 times in 2013 as its backlog increased 15.2 percent to US$487 billion in 2014 likely due to high order intakes for its commercial aircraft.

Employment productivity: Overall A&D sector employment declined 1.0 percent to 2.0 million in 2014, while employee productivity increased 4.5 percent to US$33,341 likely due to the overall operating profits increasing 3.5 percent. Operating profits per employee in the European A&D sector decreased 3.3 percent year on year, as its workforce increased by 1.3 percent, while its operating profits decreased 2.0 percent in 2014. For the U.S. A&D sector, the employee productivity increased 12.2 percent year on year to US$39,379 as their operating profits increased 9.8 percent, while the employee workforce decreased 2.1 percent to 1.18 million.

Figure 28: U.S. A&D sector compared to European A&D sector (2013 to 2014)

	U.S.			Europe		
	2014	2013	Change (2014 versus 2013)	2014	2013	Change (2014 versus 2013)
Revenues (US$ billion)	$408.5	$400.3	2.0%	$222.8	$219.5	1.5%
Operating earnings (US$ billion)	$46.6	$42.4	9.8%	$17.7	$18.1	-2.0%
Operating margin percentage	11.4%	10.6%	7.6%	8.0%	8.2%	-3.5%
ROIC percentage	22.2%	20.2%	9.7%	13.6%	13.8%	-2.1%
FCF (US$ billion)	$40.9	$38.4	6.7%	$6.7	$5.9	12.6%
FCF margin percentage	10.0%	9.6%	4.6%	3.0%	2.7%	11.0%
Book-to-Bill ratio	1.29x	1.15x	12.4%	2.07x	1.72x	20.9%
A&D revenue/employee (US$)	$345,276	$331,090	4.3%	$330,942	$330,260	0.2%
A&D operating profit/employee (US$)	$39,379	$35,100	12.2%	$26,335	$27,230	-3.3%
Number of A&D employees	1,183,178	1,209,158	-2.1%	673,154	664,645	1.3%

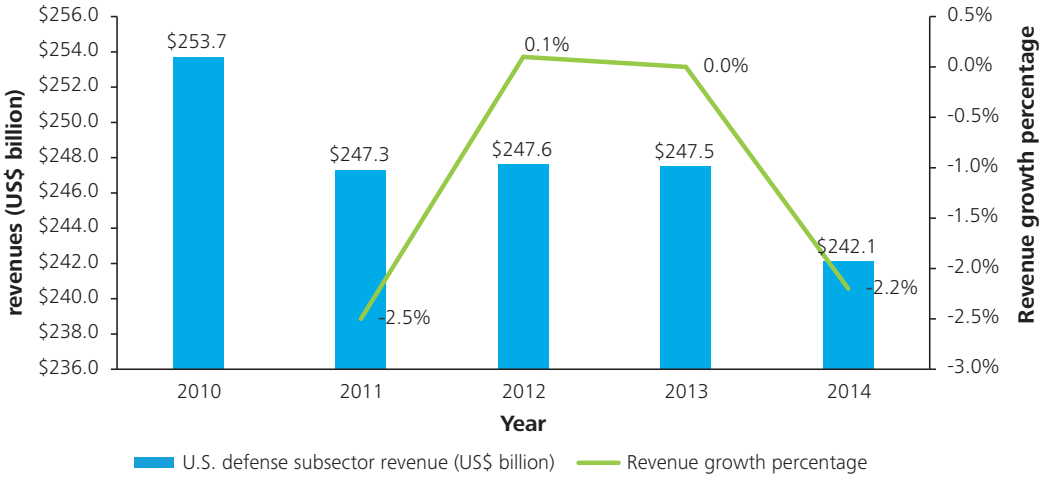
Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

U.S. compared with European defense subsector

U.S defense continues to decline, with the bottom expected next year. In Figure 29, U.S. defense revenues have been shrinking or remained stagnant for several years; 2.5 percent decline in 2011, flat growth in 2012 and 2013 and 2.2 percent or a US$5.4 billion decline in 2014. This is primarily due to the drawdown of large armed forces engaged in operations in the Middle East and continued decline in funding outlays by the U.S. DOD, the largest subsector customer, whose budget decreased by 4.7 percent in 2014. Of the top 20, only six U.S. defense contractors experienced revenue growth in 2014. The Budget Control Act of 2011 mandated a reduction (sequestration) of defense spending by about $490 billion between U.S. government fiscal years 2012 and 2021.[7] Although, the impact of sequestration cuts tapered in FY2014 and FY2015, following the enactment of The Bipartisan Budget Act in December 2013, significant uncertainty remains concerning the overall levels of defense spending for the remaining years.[8] Future sequestration cuts are mandated by law. Unless the U.S. Congress changes it, procurement decisions could result in further reductions, cancellations and/or delays of existing contracts or programs. This is likely to adversely affect the revenues and cash flows of defense companies. However, it is expected that even with sequestration in effect, the DOD base budget will start to bottom out in 2016 with CPI adjusted increases starting to take effect.

U.S. defense subsector revenues declined in 2014 to US$242.1 billion from US$247.5 billion in 2013. The top 20 U.S. defense companies reported a slightly smaller 1.7 percent revenue decline year on year in 2014 as the revenues declined to US$215.7 billion in 2014, compared to US$219.3 billion in 2013. However, in both years, the top 20 U.S companies accounted for 89 percent share of the total U.S. defense subsector revenues with the other companies accounting for the remaining 11 percent. European defense companies reported a year on year decrease of 2.7 percent in revenues as the revenues decreased to US$106.8 billion in 2014 with 11 out of the top 20 defense companies reporting decreased revenues in 2014. Figure 29 shows U.S. defense subsector revenues from 2010 through 2014, illustrating its long-term decline.

Figure 29: Five-year history of U.S. defense subsector revenue and growth performance



Note: The actual nominal US defense subsector revenues calculations will differ from previous years' DTTL Global Manufacturing Industry group A&D Sector Financial Performance studies, as the set of companies included in this study is not directly comparable across the years.

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

[7] Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, "Fiscal Year 2014 Budget Request and FY2013 Update," April 2013, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2014/FY2014_Budget_Request_Overview_Book.pdf.

[8] Ibid.

In Figure 30, the overall defense subsector reported a 5.1 percent increase in operating profits in 2014. U.S. defense companies reported operating earnings of US$26.5 billion in 2014 compared to US$25.1 billion in 2013, an increase of 5.6 percent as the top 20 U.S. defense companies reported a 5.3 percent increase in operating profits year on year. The top 20 U.S. defense companies accounted for 92 percent of the defense subsector-operating profits in the U.S. European defense companies reported an increase of 5.5 percent in their operating profits to US$7.7 billion in 2014.

Average margins for U.S. and European defense companies varied widely. In total, U.S. defense companies recorded operating margins of 10.9 percent, while European defense companies reported 7.2 percent operating margins.

As a proxy for the differences between U.S and Europe, the gap in profit margin performance has existed for many years. It brings into focus the efficiency of the cost and asset base and the comparative ability of the European A&D sector to rationalize assets and reduce operating expenses. In the European A&D sector, country specific defense budgets supporting the individual country industrial base may not be enough to achieve competitive efficiencies. Thus, the European A&D sector may benefit from a certain level of regional consolidation in order to gain scale economies should that coincide with company financial goals, national employment, and defense policies.

Figure 30: U.S. defense as compared to Europe defense performance comparison (2013 to 2014)

	U.S. defense			Europe defense		
	2014	2013	Change (2014 versus 2013)	2014	2013	Change (2014 versus 2013)
Revenues (US$ billion)	$242.1	$247.5	-2.2%	$106.8	$109.8	-2.7%
Operating earnings (US$ billion)	$26.5	$25.1	5.6%	$7.7	$7.3	5.5%
Operating margin	10.9%	10.1%	7.9%	7.2%	6.6%	8.4%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Global commercial aerospace subsector performance compared with defense subsector

While global A&D sector revenues increased 1.9 percent, the commercial aerospace subsector was the revenue driver that provided the growth and offset the continued contraction in defense subsector revenues. In Figure 31, the global commercial aerospace subsector grew 8.2 percent, with 78 more large commercial aircraft delivered in 2014 compared to 2013, when 85 additional aircraft were delivered versus 2012.

Continuing the previous year's momentum, the commercial aerospace subsector attained the highest production level in its history. The Boeing Company and Airbus Group alone added US$6.1 billion in additional revenue in 2014. Backlogs continued to grow as airlines updated their fleet plans with orders for new aircraft to remain competitive and meet the increasing travel demands from emerging markets. Because of this continued demand for new commercial aircraft, it is estimated that over 34,000 jets over the next 20 years will be produced, valued at over US$1.78 trillion at list prices.[9]

Conversely, global defense revenues decreased 2.2 percent in 2014, mostly due to a decrease in U.S. defense budgets. However, going forward, sales by global defense companies to non-domestic markets are likely to offer some upside potential as certain geographies face increasing national security threats, although this is not expected to completely bridge the revenue gap.

Figure 31: Commercial aerospace, as compared to defense performance comparison (2013 to 2014)

	Commercial aerospace			Defense		
	2014	2013	Change (2014 versus 2013)	2014	2013	Change (2014 versus 2013)
Revenues (US$ billion)	$314.9	$291.2	8.1%	$369.4	$377.6	-2.2%
Operating earnings (US$ billion)	$32.0	$30.2	6.0%	$35.9	$34.2	5.0%
Operating margin	10.2%	10.4%	-1.9%	9.7%	9.1%	7.3%

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Note: The total A&D sector revenues will not match when we add commercial aerospace and defense revenues together. The reason is certain large A&D companies have corporate eliminations/others as input in their total revenues, which cannot be distributed among commercial aerospace and defense subsectors.

Figure 31 compares the performance of the commercial aerospace and defense subsectors in 2014 and 2013. Airbus Commercial revenues increased 10.6 percent likely due to the strong order books for commercial aerospace, while Airbus Defence & Space experienced a 4.2 percent decrease year on year. Similarly, The Boeing Company experienced increased commercial and decreased defense revenues. The Boeing Company's commercial aerospace revenues increased 13.2 percent in 2014, while its defense revenues decreased 7.0 percent year on year.

[9] The Boeing Company, *Current Market Outlook (2014-2033)*, September 2014, http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2014.pdf; and Airbus Group, *Global Market Forecast (2014-2033)*, September 2014, http://www.airbus.com/company/market/forecast/.

Segment performance

Original equipment manufacturers and supplier companies

In Figure 32, the 2014 OEM segment revenues reported in this year's study increased 1.6 percent to US$371.6 billion, up from US$365.6 billion in 2013. This is compared to the A&D sector's overall revenue growth of 1.9 percent. Revenue declines in defense subsector companies reduced the growth average for the OEM group. However, revenue growth of the OEM segment leaders, The Boeing Company and Airbus Group, helped offset defense-related declines. Companies among the tier one suppliers and propulsion segment generated relatively stronger revenue growth including tier one at 7.9 percent and propulsion at 4.6 percent. Tier two suppliers with a 6.1 percent increase in revenues and aerostructures with 3.6 percent growth still reported higher revenue growth compared to the A&D sector in 2014. However, companies among the electronics and services segments experienced negative revenue growth at minus 0.6 percent and minus 4.3 percent respectively in 2014.

The OEM segment's reported operating earnings increased 3.7 percent to US$31.1 billion in 2014 from US$30.0 billion in 2013. OEM's operating earnings closely tracked the 3.5 percent increase in overall A&D sector earnings. Tier two suppliers with 5.7 percent, aerostructures with 47.1 percent, electronics with 5.4 percent, and tier 3 suppliers with 100.0 percent operating earnings growth outperformed the A&D sector. However, tier one suppliers with 0.0 percent, propulsion with 3.2 percent, and services with minus 27.3 percent operating earnings growth underperformed the A&D sector.

The A&D sector's average operating margin increased 1.5 percent, to 9.8 percent with OEMs (2.4 percent increase), aerostructures (43.6 percent increase), electronics (5.7 percent increase), and tier three suppliers (91.7 percent increase) performing above sector average. This was offset by tier one suppliers (6.8 percent decline), propulsion (1.4 percent decline), tier two suppliers (0.6 percent decline), and services (24.3 percent decline). The tier two-supplier segment reported the highest operating margins in 2014 at 17.2 percent; however, its year on year performance declined 0.6 percent. Services segment reported the lowest margins in 2014 at 5.3 percent down 24.3 percent year on year.

In Figure 33, the ROIC for the A&D sector increased 3.9 percent in 2014. OEM segment experienced an increase of 17.1 percent in its ROIC and as a result, the segment's ROIC grew from 21.7 percent in 2013 to 25.4 percent in 2014. On the other hand, the tier two supplier segment with an average 8.8 percent ROIC experienced a significant decline of 12.2 percent in 2014.

OEM segment's total FCF grew 22.2 percent to US$17.6 billion in 2014 from US$14.4 billion in 2013, compared to the A&D sector's FCF increase of 10.4 percent. Higher FCF in the OEM segment was largely attributable to The Boeing Company whose FCF increased from U$6.0 billion in 2013 to US$6.6 billion in 2014. Furthermore, OEMs' average BTB ratio in 2014 was 1.89 times versus 1.51 times for the overall A&D sector. The BTB ratio for OEMs increased 20.5 percent in 2014, compared to the average A&D sector increase of 14.2 percent. The Boeing Company's and Airbus Group's impact on the BTB ratio for the segment was significant, given the relatively high-revenue weighting and strong individual BTB performance improvement of these two companies. The OEM segment's higher BTB also reiterates the strong outlook for commercial aerospace as this subsector continues to be a key factor in global A&D sector revenue, profit, and backlog growth.

Figure 32: Segment performance comparison (2013 to 2014)

Segment	Revenues (US$ billion)			Operating earnings (US$ billion)			Operating margin		
	2014	2013	Change (2014 versus 2013)	2014	2013	Change (2014 versus 2013)	2014	2013	Change (2014 versus 2013)
OEM	$371.6	$365.6	1.6%	$31.0	$30.0	3.7%	8.4%	8.2%	2.4%
Tier one	$43.7	$40.5	7.9%	$5.4	$5.4	0.0%	12.4%	13.3%	-6.8%
Tier two	$32.8	$30.9	6.1%	$5.6	$5.3	5.7%	17.1%	17.2%	-0.6%
Tier three	$2.9	$2.8	3.6%	$0.2	$0.1	100%	6.9%	3.6%	91.7%
Electronics	$86.7	$87.2	-0.6%	$9.7	$9.2	5.4%	11.2%	10.6%	5.7%
Aerostructures	$31.8	$30.7	3.6%	$2.5	$1.7	47.1%	7.9%	5.5%	43.6%
Propulsion	$67.8	$64.8	4.6%	$9.8	$9.5	3.2%	14.5%	14.7%	-1.4%
Services	$44.9	$46.9	-4.3%	$2.4	$3.3	-27.3%	5.3%	7.0%	-24.3%

Summary of aerospace and defense sector performance figures

The following figures provide the growth rate for each of the key performance metrics used in this study.

Figure 33: 2014 Reported A&D sector performance growth

	Revenue growth	Operating earnings growth	Operating margin growth	ROIC growth	FCF growth	FCM growth	BTB growth	Number of A&D employees growth	Revenue per employee growth	Operating earnings per employee growth
A&D sector	1.9%	3.5%	1.5%	3.9%	10.4%	8.3%	14.2%	-1.0%	3.0%	4.5%
U.S.	2.0%	9.8%	7.6%	3.9%%	6.7%	4.6%	12.4%	-2.1%	4.3%	12.2%
Europe	1.5%	-2.0%	-3.5%	-2.1%	12.6%	11.0%	20.9%	1.3%	0.2%	-3.3%
OEM	1.6%	3.7%	2.4%	17.1%	22.2%	20.0%	20.5%	-0.8%	2.5%	4.3%
Tier one	7.9%	0.0%	-6.8%	5.6%	-4.6%	-11.5%	-4.0%	3.0%	2.8%	2.3%
Tier two	6.1%	5.7%	-6.8%	-12.2%	7.9%	1.9%	-3.8%	8.6%	-1.4%	-3.4%
Tier three	3.6%	100%	91.7%	13.8%	-14.3%	-17.6%	5.3%	3.5%	0.5%	40.7%
Electronics	-0.6%	5.4%	5.7%	-6.3%	4.2%	4.8%	7.2%	-3.2%	2.7%	8.9%
Aerostructures	3.6%	47.1%	43.6%	393.6%	58.3%	52.5%	20.2%	-1.0%	4.8%	54.1%
Propulsion	4.6%	3.2%	-1.4%	-81.9%	-27.1%	-30.4%	-22.0%	2.7%	1.9%	0.5%
Services	-4.3%	-27.3%	-24.3%	-56.9%	2.2%	6.7%	11.0%	-5.1%	0.9%	-21.3%

Growth represents the difference between 2014 and 2013 performance. Growth across the different segments including OEM, Tier one, Tier two, Tier three, Electronics, Aerostructures, Propulsion and Services are calculated on constant conversion rates.

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Figure 34: 2014 A&D sector performance

	Revenue (US$ billion)	Operating earnings (US$ billion)	Operating margin	ROIC	FCF (US$ billion)	FCM	BTB ratio	Number of A&D employees (million)	A&D Revenue/ employee (US$ '000)	A&D Operating earnings/ employee (US$ '000)
Global A&D sector	$682.2	$66.7	9.8%	18.0%	$53.0	7.8%	1.51	2.00	$340.67	$33.34
U.S.	$408.5	$46.6	11.4%	22.2%	$40.9	10.0%	1.29	1.18	$345.27	$39.38
Europe	$222.8	$17.7	8.0%	13.6%	$6.7	3.0%	2.07	0.67	$330.94	$26.34
OEM	$371.6	$31.1	8.4%	25.4%	$17.6	4.7%	1.89	0.90	$411.06	$34.34
Tier one	$43.7	$5.4	12.4%	13.8%	$6.2	14.2%	1.22	0.14	$299.36	$37.09
Tier two	$32.8	$5.6	17.1%	8.8%	$7.0	21.4%	0.77	0.14	$226.77	$38.73
Tier three	$2.9	$0.2	6.9%	5.1%	$0.3	8.8%	0.82	0.01	$329.50	$20.65
Electronics	$86.7	$9.7	11.2%	14.2%	$9.2	10.6%	1.06	0.30	$289.41	$32.49
Aerostructures	$31.8	$2.5	7.9%	11.7%	$5.6	17.5%	0.81	0.08	$396.18	$31.67
Propulsion	$67.8	$9.8	14.5%	2.7%	$2.4	3.6%	1.36	0.19	$357.96	$51.67
Services	$44.9	$2.4	5.3%	4.2%	$4.7	10.5%	0.82	0.23	$195.20	$10.60

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates. Note that all figures are in US dollars.

Figure 35: Segment revenue performance comparison (2010 to 2014)

Revenue (US$ billion)	2010	2011	2012	2013	2014	2010 – 2014 CAGR %
OEM	$315.5	$322.6	$341.2	$365.6	$371.5	4.2%
Tier one	$31.8	$32.6	$37.2	$40.5	$43.7	8.3%
Tier two	$31.0	$31.7	$35.0	$30.9	$32.8	1.4%
Tier three	$3.2	$3.3	$3.8	$2.8	$2.9	-2.4%
Electronics	$85.2	$87.1	$88.6	$87.2	$86.7	0.4%
Aerostructures	$24.2	$24.7	$26.9	$30.7	$31.8	7.1%
Propulsion	$54.6	$55.8	$61.6	$64.8	$67.8	5.6%
Services	$54.2	$55.4	$54.6	$46.9	$44.9	-4.6%
Total A&D sector	**$599.7**	**$613.2**	**$649.9**	**$669.4**	**$682.2**	**3.3%**

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Figure 36: Segment operating earnings performance comparison (2010 to 2014)

Operating earnings (US$ billion)	2010	2011	2012	2013	2014	2010 – 2014 CAGR %
OEM	$23.5	$22.3	$22.6	$30.0	$31.1	7.3%
Tier one	$4.9	$4.6	$4.9	$5.4	$5.4	2.5%
Tier two	$5.7	$5.4	$5.9	$5.3	$5.6	-0.4%
Tier three	$0.4	$0.4	$0.4	$0.1	$0.2	-15.9%
Electronics	$11.2	$10.7	$10.9	$9.2	$9.7	-3.7%
Aerostructures	$1.4	$1.3	$1.4	$1.7	$2.5	15.6%
Propulsion	$7.4	$7.0	$7.8	$9.5	$9.8	7.3%
Services	$3.5	$3.3	$3.7	$3.3	$2.4	-9.0%
Total A&D sector	**$58.0**	**$55**	**$57.6**	**$64.5**	**$66.7**	**3.6%**

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Figure 37: Segment operating margin performance comparison (2010 to 2014)

Operating earnings (US$ billion)	2010	2011	2012	2013	2014	2010 – 2014 CAGR %
OEM	7.4%	6.9%	6.6%	8.2%	8.4%	3.0%
Tier one	15.4%	14.1%	13.2%	13.3%	12.4%	-5.4%
Tier two	18.4%	17.0%	16.9%	17.2%	17.1%	-1.8%
Tier three	12.5%	12.1%	10.5%	3.6%	6.9%	-13.8%
Electronics	13.1%	12.3%	12.3%	10.6%	11.2%	-4%
Aerostructures	5.8%	5.3%	5.2%	5.5%	7.9%	8%
Propulsion	13.6%	12.5%	12.7%	14.7%	14.5%	1.6%
Services	6.5%	6%	6.6%	7.0%	5.3%	-4.6%
Total A&D sector	**9.7%**	**9%**	**8.9%**	**9.6%**	**9.8%**	**0.3%**

Source: DTTL's Global Manufacturing Industry group analysis of the 100 major global A&D companies using public company filings and press releases. See methodology section for further information and definitions of financial metric, as well as company name, reports, and dates.

Study methodology

This study is based on the key financial performance metrics for 100 global A&D companies or segments of industrial conglomerates with A&D businesses, which generated A&D revenue greater than US$500 million in 2014. By using the data from the companies' respective 10-Ks, annual reports, and other official financial releases in the calculation framework, Deloitte Touche Tohmatsu Limited (DTTL) Global Manufacturing Industry group analyzed the A&D sector's 2014 performance. The study used audited results for all companies. The study highlights specific companies that had a positive or negative impact on the A&D sector's performance and analyzed categorical performance based on business types and geographic identifications.

The presentation of the companies' 2014 financial performance data is based on the companies' respective 2014 fiscal year ending. Similar treatment applies to the presentation of the companies' 2013 financial performance data. The analysis included three companies' 2013 data as 2014 results, as their financial results were not available by the 15 May 2015 cut-off date.

Certain companies were excluded from the analysis including government-controlled entities, private companies that do not release public filings or public companies that do not report A&D segment information. Additionally, certain companies from the previous year's study were excluded likely due to conformance with study criteria; i.e., lower threshold of US$500 million in revenues, companies that were acquired, and companies going private.

All data in this study is presented in U.S. dollar currency. 43 percent of the 100 companies under analysis in this study are headquartered in countries other than the U.S. For such companies, the study applied a 365-day daily average conversion rate to the company's fiscal year. The conversion rates used for Euro/US$ include 2014 average conversion rate of 1.3290 and 2013 average conversion rate of 1.3280. Embraer, Elbit Systems, BBA Aviation, and Bombardier Aerospace are four non-U.S. companies that report financials in U.S. dollars. The study used the standard constant approach to eliminate the effect of significant currency fluctuations from year to year.

In the commercial versus defense subsector section, the study compares and contrasts the performance of the 100 global A&D companies analyzed in the study. Revenues, operating earnings, and operating margins have been calculated for commercial and defense businesses of these companies.

Many companies provided their commercial versus defense revenues. However, there were only a few companies which explicitly stated commercial versus defense operating earnings; in absence of explicit detail, the study used the commercial and defense percentage of revenue as a proxy to estimate the respective operating earnings.

1. A&D sector revenue:

- To calculate the A&D revenue for a company, the percentage of revenue associated with A&D activities was determined. In calculating this percentage, it was first checked to see if the company explicitly stated an A&D revenue figure. In such a case, the explicitly stated percentage was directly used. If the percentage was not explicitly stated, the company's various business segments or end-markets were analyzed and considered only those, which were related to A&D in estimating the revenue percentage.
- In determining A&D sector revenue, a calculated summation of the revenue was included of the constituent 100 companies.

2. Operating earnings/margin:

- Examined in the study were the operating earnings as stated, if reported by the company. If the operating earnings were not published by the company, they were calculated as the following: Operating earnings = Sales – Cost of goods sold – SG&A expenses – Research and development expenses – Restructuring/ acquisition costs – Impairments/amortizations.
- The companies' respective A&D operating margins were calculated by dividing their respective A&D operating earnings by their respective A&D revenues.
- Operating earnings for the A&D sector is a summation of operating earnings of the constituent companies.

Operating margin for the A&D sector was calculated as the total sector operating earnings as a percentage of total sector revenue.

3. ROIC:

- ROIC was calculated for the entire company, as companies report it at the company level and not at the segmental level. ROIC was calculated based on component values in home currencies to eliminate the impact of currency conversion.
- The ROIC value included if the company reported it. If the company did not publish the ROIC value, it was calculated as the following: ROIC = (Net operating earnings after tax) / (average shareholder equity + average net financial debt).
  - Net operating earnings after tax (NOPAT) is calculated as NOPAT = Net income from continuing operations + ((1– country's prevailing tax rate) + (non-operating expenses)).
  - A company's 2014 average shareholder equity is calculated as the simple averages of its 2014 and 2013 fiscal year end shareholder equity values. A company's 2013 average shareholder equity is calculated as the simple averages of its 2013 and 2012 fiscal year end shareholder equity values. Analogous treatment applies to the calculation of a company's 2014 and 2013 average net financial debt values.
  - Net financial debt is calculated as net financial debt = Short-term interest-bearing liabilities + long-term interest-bearing liabilities – ((0.8*(cash and cash equivalents)).
  - Eighty percent of cash and cash equivalents is used in the calculation of net financial debt and assumed that 20 percent of a company's cash is reserved for running the operations of the company and, thus, not available for investment, for the purposes of this study.
- ROIC for the A&D sector is a revenue, weighted average. It was calculated as the following: A&D sector ROIC = $\sum$ (Company ROIC*Company A&D revenue) / Total A&D sector A&D revenue. ROIC stated in the study differs from ROCE (Return on capital employed).

4. FCF/FCM:

- FCF was calculated for the entire company, as it is not practical to allocate cash flows to a company's A&D and non-A&D segments.
- If the company published the FCF value, it was used directly. If the company did not publish the FCF value, it was calculated as FCF = Operating cash flow – net capital expenditures.
  - Net capital expenditures are calculated as net capital expenditure = purchases of PP&E – proceeds from the sale PP&E.
  - A&D sector FCF was calculated as a summation of the FCFs of the constituent companies.
  - FCM was calculated for the entire company, analogous to FCF. FCM for a company was calculated as Company FCM = Company FCF / Company revenue.
  - FCM for the A&D sector is a revenue-weighted average. It was calculated as: A&D sector FCM = $\sum$ (Company FCM*Company A&D revenue) / total A&D sector revenue.

5. BTB ratio

- BTB ratio was taken as stated if reported by the company. If the BTB ratio was not published by the company, it was calculated as BTB = 1+ ((Current fiscal year total backlog - previous fiscal year total backlog) / (current fiscal year revenue)).
- The BTB ratio for the A&D sector is a revenue-weighted average. It was calculated as the following: A&D sector BTB = $\sum$ (Company BTB*Company A&D revenue) / total sector A&D revenue.
- BTB ratio was calculated based on component values as reported in home currencies to eliminate the impact of currency conversion.

6. Number of A&D employees:

- Where stated, the average employee numbers for the respective fiscal years were used. If average employee numbers were not available, employee figures were factored in as of the end of the respective fiscal years.

7. Employee productivity:

- Employee productivity was measured for individual companies and the A&D sector including A&D operating earnings per employee.
- The number of employees associated with the A&D business was used as reported by the company if so stated explicitly. However, if the same is not explicitly stated, the number of employees associated with the A&D business was estimated based on revenues.
- Operating earnings per employee for the sector are calculated as: Operating earnings per employee in the A&D sector = Total operating earnings of the sector/ Total number of employees in the sector.

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