INDUSTRY OUTLOOK / February 2019

AEROSPACE AND DEFENSE

INVESTMENT BANKING

2018: Year-End Review

M&A Overview

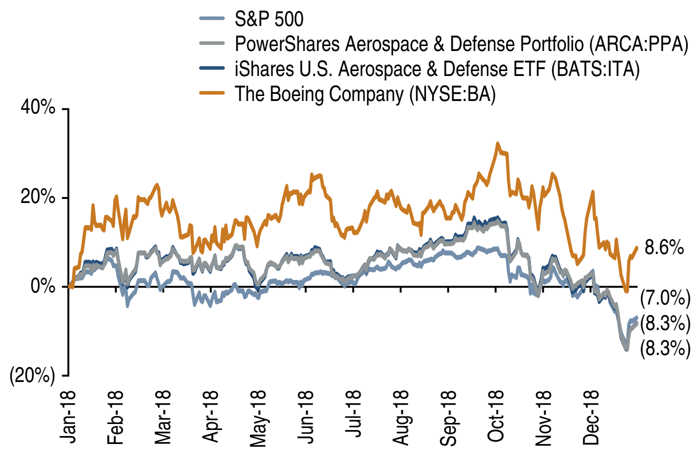
While 2018 was a turbulent year in both the markets and in the press, the outlook for the Aerospace and Defense ("A&D") industry in 2019 and beyond remains positive. Despite headlines consisting of trade wars, market volatility and business cycle concerns, A&D continues to benefit from numerous long-term trends unaffected by the day-to-day noise. While these concerns are certainly valid and will remain present in the new year, Mesirow Financial believes that larger, slower-moving trends will continue to make the A&D sector attractive for investors and give cause for cautious optimism. A few of the highlights from 2018 include:

- Total passenger traffic continued its impressive growth trajectory.
- Over $40 billion in merger and acquisition ("M&A") deals were announced with five deals valued more than $1 billion.
- Rockwell Collins and United Technologies finally consummated their deal after receiving regulatory approval from Chinese authorities and subsequently announced a spin-off of combined aerospace operations from United Technologies' other business lines.
- Boeing edged out Airbus in both deliveries and order pipeline at the end of a year of record production.
- Escalating trade war rhetoric between the United States and China threatened the export-heavy U.S. aerospace industry, though nothing substantial has yet to materialize.
- Defense budgets of the United States and near-peer global powers continued to rise with the Trump administration proposing one of the largest military budgets since the height of Cold War tensions.

IN THIS ISSUE

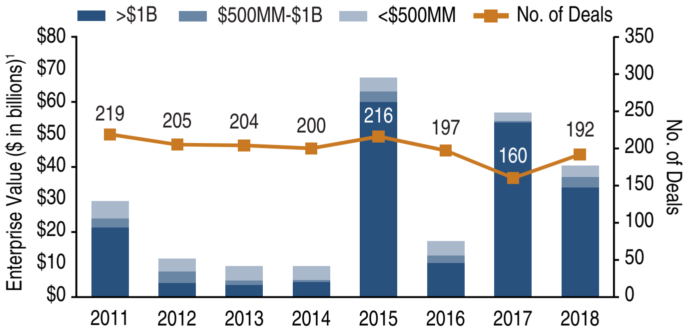
A&D equities saw their modest gains through October 2018 erased as they followed the S&P 500 index to its worst annual performance in nearly a decade. As shown in *Chart 1*, the PowerShares Aerospace & Defense Portfolio and the iShares U.S. Aerospace and Defense ETF both ended the year more than 7 percent below 2017 year-end levels. While discouraging, Mesirow Financial believes that the downward movement toward the end of 2018 is indicative of the broader equity market declines rather than sector-specific concerns. In contrast to its peers, Boeing performed more favorably in 2018, ending the year up 8.6 percent on record deliveries and new orders.

CHART 1 | **Aerospace & Defense ETF Share Price Performance Against the S&P 500 (2018)**



Source: S&P Capital IQ.

CHART 2 | **Aggregate A&D Deal Volume by Transaction Range: (2010 – 2018)**



Source: S&P Capital IQ.
1. Only includes deals with disclosed deal value.

Despite the drag on public A&D company valuations toward the end of 2018, it proved to be a strong year for both large and small M&A transactions. Compared to 2017, deal activity in 2018 consisted of fewer large transactions and more overall announced deals as evident in *Chart 2*. Both results were high on a relative historical basis. While the total deal value was down in 2018 as compared to 2017, several of the blockbuster deals announced in 2017 ultimately closed in 2018. Despite the longer merger timeline of deals requiring state approval and the historically high deal volume over the last two years, the recent strength of M&A activity in the A&D sector is evident.

TABLE 1 | **Notable Transaction Developments in 2018**

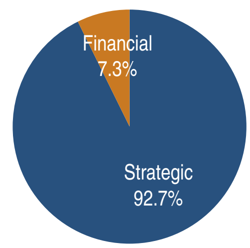
Closed Date	Acquirer	Target
Pending	The Boeing Company	Commercial Operations of Embraer S.A.
Pending	Transdigm Group Incorporated	Esterline Technologies Corporation
Pending	Harris Corporation	L3 Technologies, Inc.
Nov-18	United Technologies Corporation	Rockwell Collins, Inc.
Oct-18	The Boeing Company	KLX Inc.
Mar-18	Safran SA	Zodiac Aerospace

Sources: Company websites, S&P Capital IQ. Note: Mesirow Financial did not represent any of the acquirers or targets in connection with the transactions noted on this page and is not currently representing any of the listed acquirers or targets.

Top industry heavyweights and middle-market A&D investors alike continue to look down the supply chain for acquisition opportunities with access to recurring revenue streams, such as servicing and replacement parts. Popular segments continue to include precision machining and composites and advanced materials, among others. Additionally, Mesirow Financial continues to believe that cost-cutting measures such as Boeing's "Partnering for Success 2.0" program will create margin pressure on suppliers that, together with recent in-sourcing initiatives from both Airbus and Boeing, will continue to drive supply chain consolidation. As such, consolidation by strategic buyers in the subsector is expected to remain popular and valuation multiples for private transactions are not expected to be impacted through 2019.

As indicated by *Chart 3* and in line with the industry dynamics discussed above, strategic buyers continued to make up a disproportionate percentage of A&D buyers. While strategic acquirers have been more successful in completing transactions, private equity firms continue to look for opportunistic plays in the sector because of continued healthy financial markets and growing market opportunities. Increasing trepidation surrounding the length of the current business cycle has led many financial investors to look toward exiting existing positions at attractive valuations and to resist the temptation to pay up in competitive processes.

CHART 3 | **Number of A&D Transactions by Buyer Type (% of total deal count): 2018**



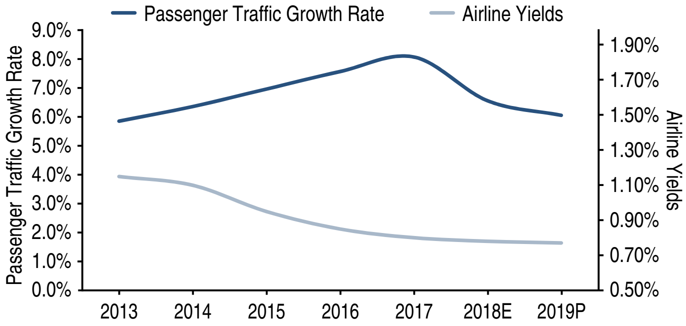
Source: S&P Capital IQ.

Commercial Aerospace

Despite unease surrounding the late stage of the economic cycle and the looming threat of trade disputes, the commercial aerospace industry executed another strong year in 2018 and is poised to remain fundamentally solid for the foreseeable future. Trends such as the growing middle class worldwide, relatively low fuel prices and globalization will continue to drive the industry for years to come. Boeing and Airbus (collectively, the Original Equipment Manufacturers ("OEMs")) have proven their ability to scale production and secure a growing pipeline despite short-term market noise, while excess short-term demand is met by delaying aircraft retirements. For the most part, the OEMs have not seen any material cancellations.

Relatively little has changed regarding the fundamentals driving global growth in commercial air travel. The rising middle class in China and other key emerging markets will introduce new demand worldwide for international and domestic travel. Boeing estimates China to account for 18 percent of the world's commercial travel by 2037, growth that requires the purchase of $1.2 trillion in new aircraft. Currently, nearly one in every four jets built by Boeing is destined for Chinese buyers. In addition, increased globalization, connectivity and complexity in the global supply chain makes traveling greater distances both a business necessity and a viable leisure activity. As shown in *Chart 4*, total passenger traffic saw a 6 percent increase in 2018, a level of growth in line with recent historical trends. At the same time, airline yield, a measure of revenue per mile per airline customer, continued to decline, signaling lower travel prices for consumers. As these favorable global macroeconomic trends continue and airfare yields continue to decline, total passenger traffic is expected to continue to grow up to 6 percent in 2019.

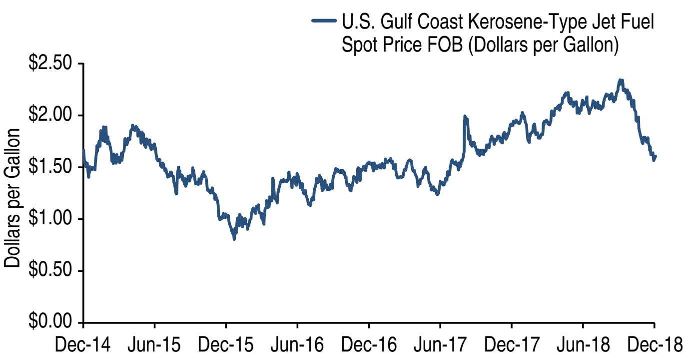
CHART 4 | **Passenger Traffic Growth and Airline Yield (2013 – 2019P)**



Source: IATA.

Beneficial cost trends for commercial air travel serve to complement the positive outlook from growing global demand. Amid increases in airline activity, recent drops in jet fuel prices provide cost relief that is set to impact both airlines and consumers. After reaching a peak of approximately $2.23 per gallon in September 2018, global oversupply miscues and industrial demand below forecasted levels resulted in the U.S. Gulf Coast Kerosene-Type Jet Fuel spot price ending 2018 at approximately $1.56 per gallon, a 30 percent decline. While recent price declines are likely less structural than a result of geopolitics and a short-term supply influx, the correction ended a multi-year period of relatively steady cost increases. As a result, this gives optimism toward the potential for more modest levels of fuel cost growth going forward.

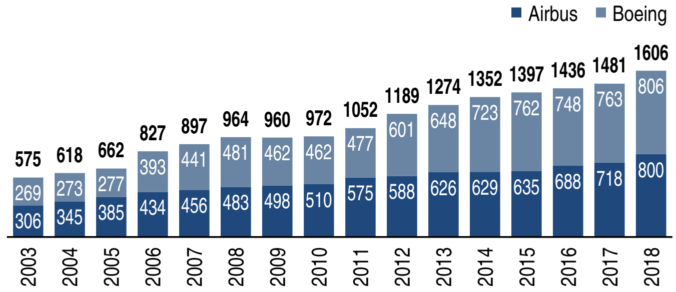
CHART 5 | **Gulf Coast Kerosene-Type Jet Fuel Spot Prices**



Source: U.S. Energy Information Administration.

Strong order backlogs and optimism on commercial travel is reflected across production schedules for passenger aircraft with Boeing and Airbus both executing record deliveries and orders in 2018. Boeing reclaimed the title as the world's largest aircraft maker with the delivery of 806 commercial aircraft in 2018, up from 763 in 2017. The boost in production is augmented by continued strength in order backlog which includes 4,708 planes for its 737 narrow-body aircraft. Boeing will lean heavily on its suppliers over the coming years as production rates will continue to climb above the impressive 48 planes per month in 2018. By comparison, Airbus delivered roughly 52 aircraft per month of its narrow-body competitor, the A320, in 2018 and is also expecting to continue to ramp up production into 2019.

CHART 6 | **OEM Historical Production Rates (2003 – 2018)**

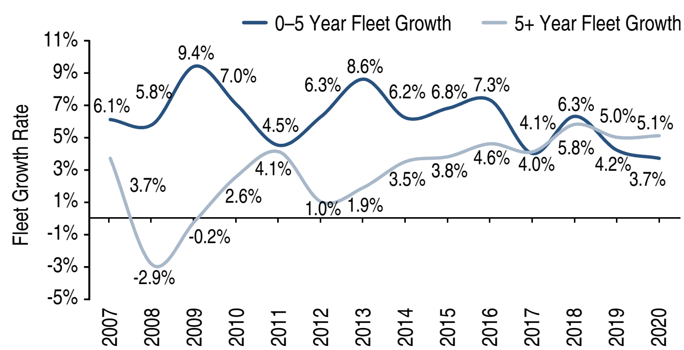


Sources: Deutsche Bank, JETNET.

Just as the production race was close between the two OEMs, Boeing and Airbus also competed fiercely on orders with Boeing taking the lead in 2018. Boeing secured 673 orders in 2018 compared to Airbus' 431. Boeing's dominant year included more than $100 billion in announced total orders and commitments at the Farnborough International Airshow and the largest aircraft deal ever in Africa with the sale of 100 737 Max planes to Green Africa Airways in Nigeria.

Ramped up OEM production is also complemented by a trend toward later retirement of aircraft in service. The aging fleet, especially aircraft older than five years, is expected to continue to positively impact aftermarket vendors. In addition, the mix in fleet age and decreased number of aircraft being retired suggest that the aftermarket will continue to be an attractive area for consolidators to focus their M&A efforts. *Chart 7* details the accelerating increase in growth of these aircraft, a trend that is expected to continue to outpace growth of newly delivered aircraft, assuming low fuel prices allow operators to fly older, less-efficient aircraft at little cost.

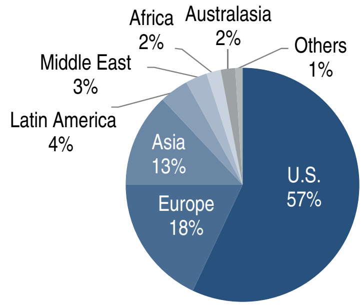
CHART 7 | **Fleet Growth Rate by Age Segment**



Sources: IATA, Goldman Sachs.

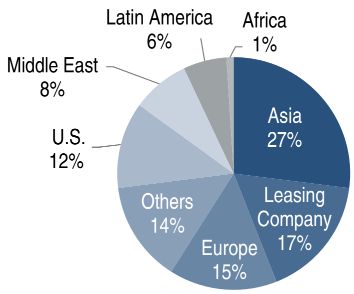
While overall active fleet growth trends have been sustained by both record production and extended utilization of aircraft in service, a dramatic shift continues to take place in the ultimate location of new aircraft sales. The continual expansion of commercial aircraft orders outside of historically strong markets into those with high GDP growth reflects the opportunity for growth for years to come. *Chart 8* and *Chart 9* show the shift in regional commercial aircraft backlogs from 2001 to today.

CHART 8 | **Commercial Aircraft Backlog – 2001**



Sources: Deutsche Bank, Fleets Analyzer.

CHART 9 | **Commercial Aircraft Backlog – Today**



Sources: Deutsche Bank, Fleets Analyzer.

Potential Trade Wars

While trade hostilities between the U.S. and China captured headlines during 2018, relatively little operational impact has occurred. Even as China represents a "cannot miss" opportunity for the A&D sector, China is equally reliant on the U.S. to achieve timely fleet growth and meet sky-high demand. Given the significant OEM pipeline, lengthy new order delivery time and limited options for commercial carriers, Boeing and other key OEM suppliers are unlikely to be directly implicated in a trade war. Though OEMs and their direct suppliers are shielded to some extent, suppliers and vendors further down the supply chain could potentially struggle if access to aftermarket and servicing is impacted or priced out by tariffs. Without an end in sight, trade concerns will likely continue to play into the general anxiety of investors throughout 2019.

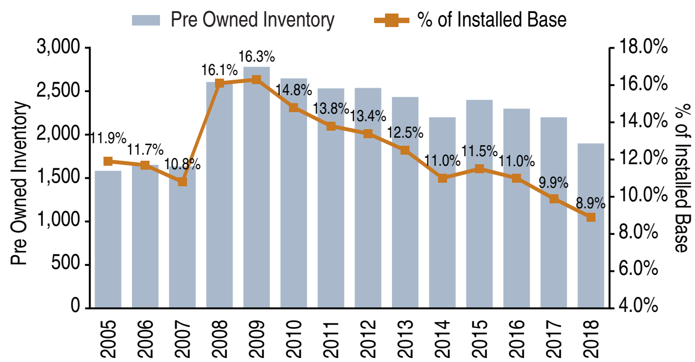
Commercial Aerospace Outlook

Despite the anxiety surrounding the economic cycle and geopolitical issues, Mesirow Financial remains cautiously optimistic in our outlook for the commercial aerospace industry. The industry's global reach stands to benefit from long-term secular trends that should be unaffected by the turbulence of market volatility and trade rhetoric. We believe 2019 will see continued robust M&A activity as strains on the supply chain from cost-cutting and increased production demands drive suppliers to new economies of scale. Buyers will also focus on companies with a strong aftermarket presence. Mesirow Financial believes that recent declines in public A&D stocks are likely a reflection of overall market movements rather than an indictment of the A&D industry. Should stock declines extend into 2019, it is likely that opportunistic private equity buyers would take advantage of a pullback in valuations as opposed to A&D deal-making coming to a halt. Though investors are likely to remain wary, M&A levels can reasonably be expected to continue at their current trajectory without material declines to valuations.

Business Aviation

As the business aviation market recovers from higher-than-average pre-owned inventory levels, the industry positions itself for a positive result in 2019. While 2018 saw the sell-off of a significant portion of the inventory on the secondary market, new jet sales remained stagnant. These trends are evident in *Chart 10* where pre-owned inventory as a percentage of the installed fleet has dipped below the pre-crisis levels of 2007.

CHART 10 | **Ratio of Used Business Jet Inventory as a $ of Installed Fleet (2005 – Fiscal Year 2018[1])**



Sources: Deutsche Bank, JETNET.
1. Only includes the first nine months of 2018.

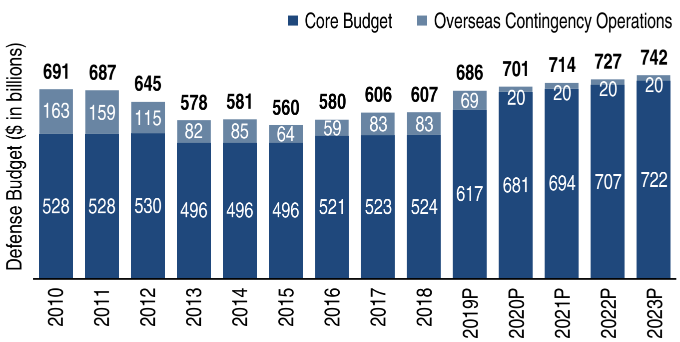
Despite 2018's disappointing new jet sales, there is good reason to believe that the tightness in used inventory will soon translate into new deliveries. In addition to the bottoming out of the used market, several industry trends benefit new jets over alternatives. Increased consumer focus on jet range, technological features, larger cabin sizes and heightened cruising speed lend themselves to new aircraft orders able to fit the specifications and utilize the most up-to-date technology. According to Honeywell International, approximately 7,700 new business jets worth $251 billion will be delivered worldwide through 2028, representing a 1–2 percent increase from the 2017 10-year forecast. While the table is set for success in 2019, business jet producers remain cautious that broader market slowdowns could impact the sector similar to the prior downturn in 2008–2009.

Defense

2018 saw numerous world events with implications, both positive and negative, for the defense industry. Escalating geopolitical tensions was one such theme that reaffirmed the importance of defense spending. Simmering in global hot zones such as the South China Sea, Eastern Ukraine and the Middle East continued as near-peer powers to the U.S. (namely China and Russia) asserted claims to contested regions and revealed an unwillingness to bend to international pressure. As a result, the U.S. defense industry is set to benefit from a push to modernize the weapons capabilities necessary to maintain a technological edge over global rivals. Other geopolitical developments during 2018 had a murkier impact on the defense industry, calling into question U.S. alliances and the permissibility of arms deal arrangements. The killing of Saudi journalist Jamal Khashoggi by the Saudi Arabian government on October 2, 2018 raised flags on the ethicality of U.S. weapon sales to the nation which accounted for approximately 18 percent of American weapons exports during the five years leading up to 2017. Additionally, recently announced plans for a quick U.S. withdrawal from Syria thrust into focus questions on the future of United States' military operations in the Middle East as a whole.

Uncertainty extended to domestic U.S. Government spending where a partial shutdown through the end of 2018 prevented the finalization of the FY2020 budget. Current proposals by the Trump administration have varied from $700 billion to $750 billion, both of which represent significant growth from recent historical levels. 2019's budget presents more certainty with $617 billion of base budget and an additional $69 billion allocated for Overseas Contingency Operations (OCO) funding. The combined $686 million 2019 defense budget represents a 13 percent increase compared to 2018. As evident in *Chart 11*, conservative estimates for the resolution of current budget issues still reflect significant expansion to the base budget through 2023.

CHART 11 | **U.S. Department of Defense Budget (Fiscal Year 2008 – Fiscal Year 2023P)**



Sources: Goldman Sachs Global Investment Research, Department of Defense.

While the global defense market is at a point of low visibility and several causes of concern remain unaddressed, there is reason for cautious optimism in the defense sector as well. Rising threats from China and Russia are likely to serve as the impetus for significant upgrades of military capabilities. In addition, periods of elevated defense spending have historically aligned with defense sector M&A as well as market outperformance.

Transaction Spotlight

United Technologies, Inc.'s Purchase of Rockwell Collins, Inc.

Deal Value $30.4 Billion

Enterprise Value / Revenue 3.50x

Enterprise Value / EBITDA 14.4x

In September 2017, United Technologies announced that they had entered into a definitive agreement to acquire Rockwell Collins, Inc., a leader in aviation and high-integrity solutions for commercial and military customers. Rockwell Collins is globally recognized for its leading-edge avionics, flight controls, aircraft interior and data connectivity solutions. The combination will create a premier aerospace system supplier that is well-positioned to meet rapidly evolving global customer demands. Further, the combined portfolio will enhance innovative systems capabilities and integrated digital product offerings, including avionics, flight controls and data services. After a series of delays associated with regulatory requirements, the transaction finally received approval from China's State Administration on November 23, 2018 and subsequently closed on November 26, 2018. Concurrent with the closing, United Technologies announced plans to spin-off the newly-combined aerospace operations, resulting in a slimmed-down United Technologies consisting of the operations of Pratt & Whitney and Collins Aerospace that is unencumbered by the company's elevator and refrigeration businesses.

Sources: S&P Capital IQ, Public Filings.
Note: Mesirow Financial did not represent any of the acquirers or targets in connection with the transactions noted on this page, and is not currently representing any of the listed acquirers or targets.

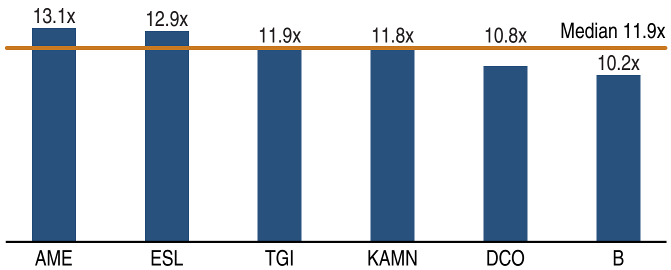
Market Outlook

While potential headwinds and pitfalls for the A&D industry certainly have the ear of the market, the same long-term trends remain intact that have encouraged investors over the past decade. Growth in world GDP and an emerging global middle class continue to fuel growth in the commercial aerospace industry despite concerns over a business cycle long in the tooth. Business jet sales are poised for a rebound as inventory issues lingering from the prior financial downturn have finally normalized. Defense spending is set to benefit from the peacetime escalation of tensions worldwide, though vulnerability exists on the macro level as well. Ultimately, deal activity should continue through the turbulence with little change to valuations for highly sought-after targets. The continuation will likely be a result of supply chains tightening in preparation to accommodate increased travel as global powers increase spending amid lingering tensions.

Public Company Trading Analysis

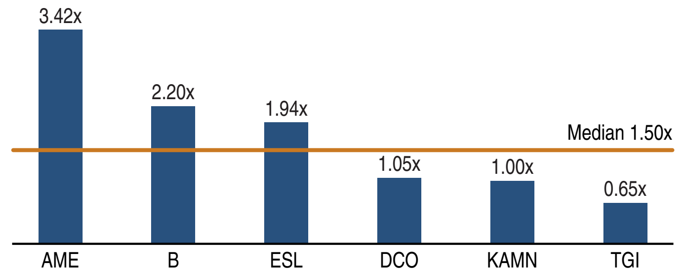
Selected Aerospace Suppliers

CHART 12 | **Enterprise Value / LTM EBITDA**



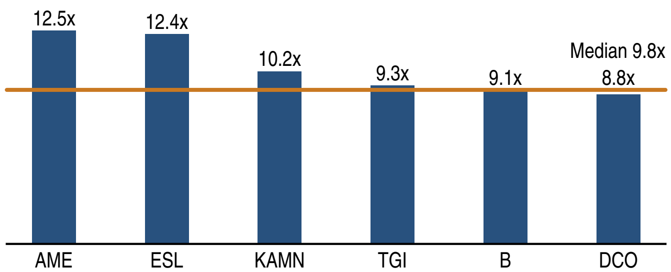
Sources: Bloomberg, S&P Capital IQ.

CHART 13 | **Enterprise Value / LTM Revenue**



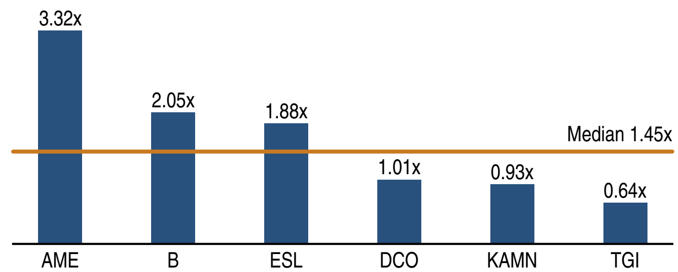
Sources: Bloomberg, S&P Capital IQ.

CHART 14 | **Enterprise Value / NTM EBITDA**



Sources: Bloomberg, S&P Capital IQ.

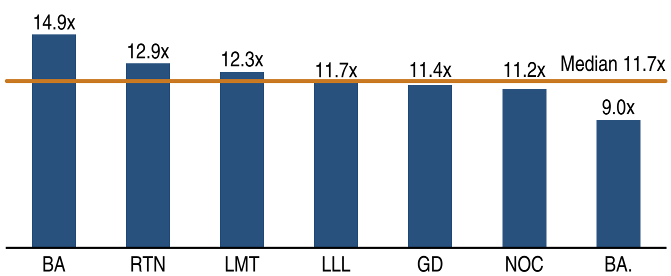
CHART 15 | **Enterprise Value / NTM Revenue**



Sources: Bloomberg, S&P Capital IQ.

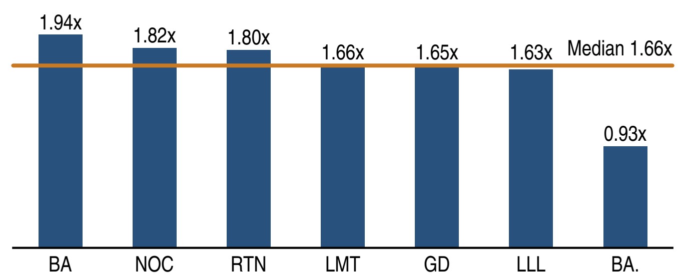
Selected Defense and Prime Contractors

CHART 16 | **Enterprise Value / LTM EBITDA**



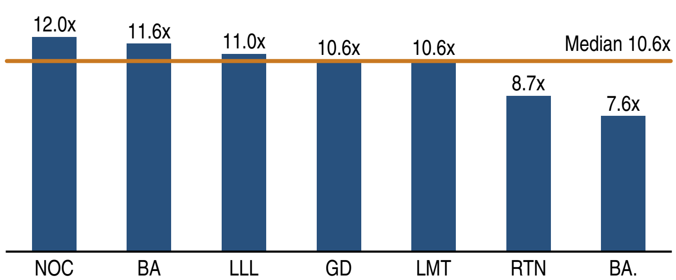
Sources: Bloomberg, S&P Capital IQ.

CHART 17 | **Enterprise Value / LTM Revenue**



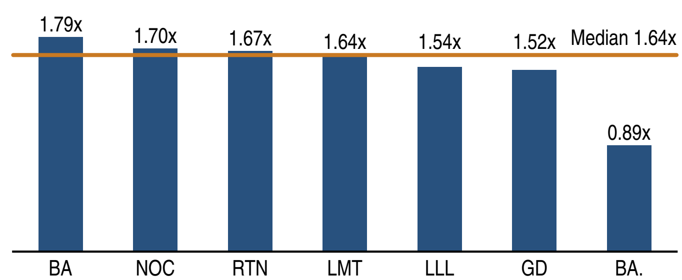
Sources: Bloomberg, S&P Capital IQ.

CHART 18 | **Enterprise Value / NTM EBITDA**



Sources: Bloomberg, S&P Capital IQ.

CHART 19 | **Enterprise Value / NTM Revenue**



Sources: Bloomberg, S&P Capital IQ.

AME: Ametek, Inc., B: Barnes Group Inc., DCO: Ducommun Inc., ESL: Esterline Technologies Corp., KAMN: Kaman Corporation, TGI: Triumph Group Inc. BA.: BAE Systems plc, BA: The Boeing Company, GD: General Dynamics Corp., LLL: L-3 Communications Holdings Inc., LMT: Lockheed Martin Corporation, NOC: Northrop Grumman Corporation, OA: Orbital ATK, Inc., RTN: Raytheon Co.

Dedicated M&A Advisor to the Aerospace and Defense Sector

Mesirow Financial Investment Banking is consistently focused on elevating the experience for our clients. With extensive sector-specific expertise and deep long-standing relationships, our dedicated aerospace and defense team has a proven track record of completing highly complex and successful transactions. Our highest priority is helping individuals and organizations achieve their financial and strategic goals.

Contact Us

Andrew Carolus
312.595.7802
acarolus@mesirowfinancial.com

Adam Oakley
312.595.6692
aoakley@mesirowfinancial.com

Visit us online at mesirowfinancial.com/investmentbanking

Mesirow Financial®