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Aerospace & Defense Electronics

July 11, 2017

Aerospace & Defense Electronics Jefferies Business Jet Survey: Moving in the Right Direction

Key Takeaway

Our third semi-annual business jet survey indicates continued improvement in market tone. From June 15th through July 1st, we surveyed nearly 650 new and used business jet brokers globally and have received detailed responses from about 70. The aggregate response reflected improving market conditions. The outlook index rose to 5.9 on a 10 point scale vs. a 5.6 rating in our January survey and 4.2 in our July 2016 survey.

Demand Outlook - Significant Change in Past Six months. Our survey found 94% of respondents expected an increase in unit sales volume for 2017/2018 versus 2016. This compares to 70% of respondents that stated they expect an increase in our January 2017 survey for 2017. As we consider the reasons for the lack of an upturn in aggregate demand for business jets, we note that a significant number of respondents (37%) cited the used market as continuing to lure new buyers.

Highest Demand OEM and End Markets. Gulfstream was called out as the OEM with the most appeal according to 37% of respondents. Cessna placed second with 34% of respondents. From an industry perspective, 45% stated Industrial customers are leading the enthusiasm, with 26% calling out Consumer and 17% highlighting Financial customers (Exhibit 25). Energy fell the most as the industry had been expected to improve the most, but it was the weakest industry, followed by Government and Healthcare sectors.

High favorability ratings were given to the Citation XLS, Challenger 300/350, and G550. The **CJ2** and **G650** fell off as having high demand. The former's production line has come to an end. The **Hawker** models were unsurprisingly the most difficult to sell, followed by the **Falcon 7X** then the Falcon 900. The Bombardier Global platforms including the Global Express and **Global 5000** which were on prior lists were removed. One can infer that the lower used inventories has helped demand for these aircraft because Bombardier has cut production (Exhibit 14). A sizeable portion of respondents noted the **G500** was the new aircraft with greatest customer interest. This was followed by **G600** with another 20% expressing strong interest.

Change in Demand Trends. About 65% noted a change in buying and selling behavior since the election, while 35% stated no change. It appeared most responses noted a positive change. Potential benefits to stimulating new business jet demand were the retention of the current accelerated depreciation rules vs. lower corporate taxes which is a change from our January 2017 survey.

Impact of Fractional Market. According to the survey, 60% of respondents stated that fractional sales have impacted new purchases. About 42% stated that buyers find fractional ownership a viable option vs. a direct purchase. This was similar to results in our January 2017 survey. The benchmark for individual ownership appears to be over 100 hours a year of utilization (Exhibit 24).

Pricing - Decline in Residual Values Impacts Market Most. A significant portion of respondents, 63%, stated that the average discount between a new and large jet is 10-20%. This figure is far lower than we have seen in recent surveys and may help spur new demand of jets as the decline in residual values is often cited as one area that has hurt new jet purchases. The Latitude was the model cited most often according to about one-third of respondents. On a combined basis, the Legacy 500 and Legacy 450 were cited one-third of the time as well (Exhibit 20).

JEF Forecast. Our forecast continues to assume minimal market recovery with 2017 unit deliveries down 5% in 2017, but growing 5% in 2018. We figure model transitions should mark the bottom in 2017, with volumes up somewhat in 2018. Low deliveries could lead to upside revisions for GD and TXT in our view.

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^Prior trading day's closing price unless otherwise noted.

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Investment Summary

This report covers our third semi-annual business jet survey, which seeks to gauge activity for the year ahead. The survey focuses on the following:

- 1) Jefferies Semi -Annual Business Jet Survey
 - Volume Expectations
 - Pricing Conditions
 - Purchasing Process and Behavior
 - Survey Respondents
- 2) Jefferies State of the Market
 - o Business Jet Fleet and Delivery Outlook

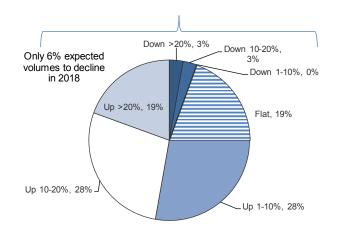
1. Jefferies Semi-Annual Business Jet Survey

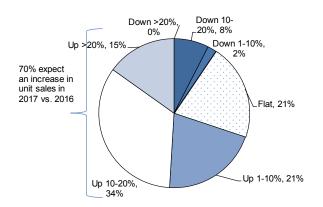
Volume Expectations

We asked respondents to state their expectations for sales volume for the business jet market in 2017/2018. Of our 68 respondents, 94% stated they expect business jet volumes, on a unit basis, to increase in 2018/2017 versus 2016. This compares to 70% of respondents who expected an increase in our January 2017 survey. Only 6% of respondents expect unit volumes to decline in 2018/2017 versus 10% which expected a decrease just six months ago.

Exhibit 1: How do you expect your sales volume to shake out in 2018 vs. 2017 (unit basis) – JULY 2017 SURVEY

Exhibit 2: How do you expect your sales volume to shake out in 2017 vs. 2016 (unit basis) – JAN. 2017 SURVEY





Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

Source: Jefferies Business Jet Survey. Note: Based on 90 respondents.

Survey Ranking

When asked to define market sentiment considering both demand and price, the survey indicated a rating of **5.9** on a 10 point scale, with 10 being the strongest. This compares to **5.6** and **4.2** ratings in our January 2017 and July 2016 survey, respectively.

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Exhibit 3: Assess Sentiment of the Market Factoring in Demand, Pricing Both New and Used Models, Technology, Inventories

1 = Weakest, 10 = Strongest

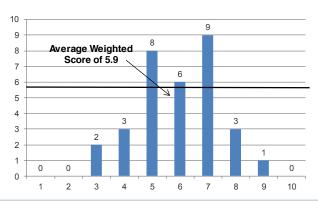
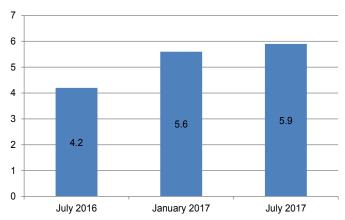


Exhibit 4: Market Activity Comparison



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

Source: Jefferies Business Jet Survey.

Respondents were also asked how they gauge *used jet* market activity today. The average ranking experienced a move up to **6.2**. This compares to **5.7 and 4.3** rating in our January 2017 and July 2016 surveys, respectively.

Exhibit 5: Gauge Current Used Market Activity 1 = Weakest, 10 = Strongest

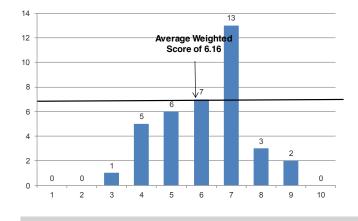
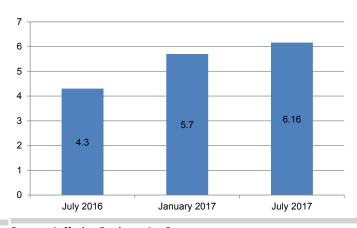


Exhibit 6: Used Market Activity Comparison



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

Source: Jefferies Business Jet Survey.

Rationale for Improved Demand Dynamics

As we consider the reasons for the lack of an upturn in aggregate demand for business jets, we note that a significant number of respondents (37%) cited the used market as continuing to lure new buyers. The decline in used prices has also not been helpful (20%). These results are comparable to our January 2017 and July 2016 surveys. Other reasons which were cited included macroeconomic factors according to 30% of respondents. Another 6% stated that the U.S. political environment discouraged ownership. None of the respondents stated that fractional and charter demand has cannibalized new aircraft demand.

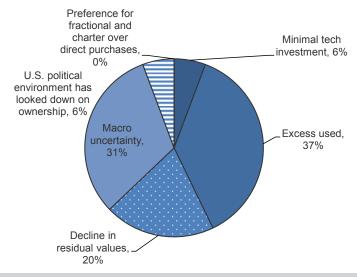
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Reasons cited by respondents for under-utilization of aircraft:

- High cost of business and you are dealing with less than 1% of the population.
 When the market is bearish they prepare for a rainy day in all aspects.
- Operating costs and public image of using jets in a down-market.
- Still coming out of negative image of using aircraft here in US, activist board members use the aircraft as a leverage point for poor management, which is actually in most cases the opposite.

Exhibit 7: Why Has the Business Jet Market not Improved Over the Past Few Years



Source: Jefferies Business Jet Survey.

We also asked respondents what was driving weakness in the turboprop market:

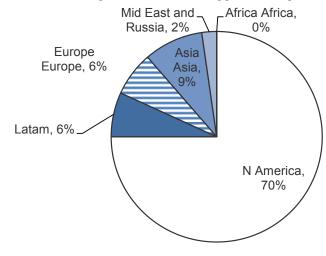
- Over-supply of new and existing turboprop models as well as competition from VLJs.
- The low cost of jet acquisition. A good mid-range King Air 350 is \$6-8MM, you can buy multiple jet models in that budget range.
- New TP's are very expensive vs Light Jets or larger pre-owned Jets. Customers prefer smoother and quieter cruising altitudes in Jets vs TP's.

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The region with the most improved market dynamics was North America according to 70% of respondents.

Exhibit 8: What Region Has Seen the Biggest Pick-up in the Past Six Months

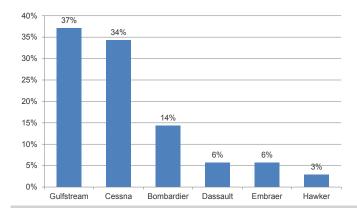


Source: Jefferies Business Jet Survey.

OEM Demand

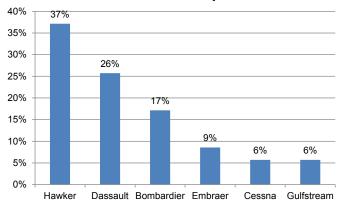
Respondents selected Gulfstream 37% of the time as the product line with the most customer interest. Cessna placed second with 34% of respondents. The OEM with the weakest market interest was Hawker, in the used market with Dassault in second from last place at 26%.

Exhibit 9: What OEM has Experienced the Highest Market Interest - from Demand Perspective



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

Exhibit 10: What OEM has Experienced the Weakest Market Interest - from Demand Perspective



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

What Models are Hot, What's Is Not

We show in Exhibits 11 and 12 what aircraft types were chosen as having the highest relative demand. The **Citation XLS** stood out with six respondents stating it is their 'easiest' aircraft to sell across our last three surveys. The XLS accounts for about 10-15% of

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Textron Aviation's annual deliveries. The **Challenger 350** and **G550** were each also cited as favorites again. Despite some turnover in the survey respondents, the responses on the most popular aircraft were fairly consistent. The **CJ2** and **G650** fell off as having high demand. The former's production line has come to an end. The latter should have lower production rates in the out years.

Exhibit 11: Which Aircraft have the *Highest* Demand Relative to Availability - Higher Number of Respondents is Good



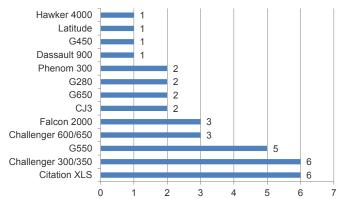
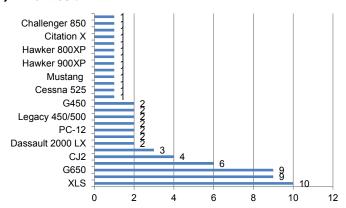


Exhibit 12: Which Aircraft have the *Highest* Demand Relative to Availability - Higher Number of Respondents is Good





Source: Jefferies Business Jet Survey.

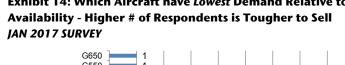
Source: Jefferies Business Jet Survey.

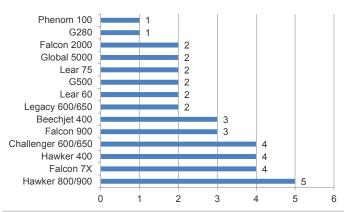
As shown in Exhibit 13, the **Hawker** models were unsurprisingly the most difficult to sell. The **Falcon 7X** was the second hardest to sell followed by the Falcon 900. The Falcon 7X may be dealing with the last off the line phenomenon with not enough separation versus the Falcon 8X. Additionally, asking prices may be too high. The Bombardier Global platforms including the Global Express and **Global 5000** which were on prior lists were removed. One can infer that the lower used inventories have helped demand for this aircraft as Bombardier has cut production.

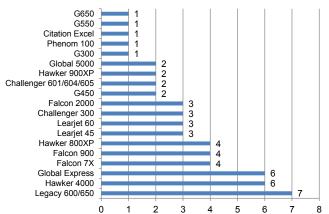
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Exhibit 13: Which Aircraft have Lowest Demand Relative to Exhibit 14: Which Aircraft have Lowest Demand Relative to Availability - Higher # of Respondents is Tougher to Sell **JULY 2017 SURVEY**





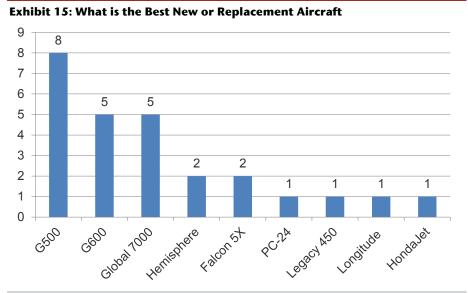


Source: Jefferies Business Jet Survey.

Source: Jefferies Business Jet Survey.

As shown in Exhibit 15, a sizeable portion of respondents noted the G500 was the new aircraft with greatest customer interest, with about 30% calling it out. The G500 was cited as the potential replacement for the G450 / Falcon 900 segment. This was followed by G600, with another 20% expressing strong interest. The Global 7000 accounted for 20% of responses with the Hemisphere representing 7%. Other new models were more fragmented. We believe the Cessna Longitude will fare well in the 100 unit mid-sized

market segment.



Source: Jefferies Business Jet Survey.

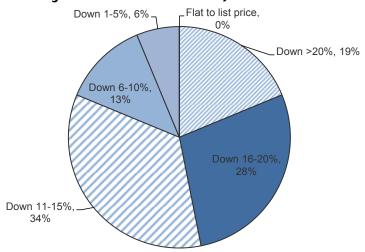
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Pricing Conditions: Some Conflict, but Somewhat Better Environment

In this next section, we explore broker responses as it relates to price. A significant portion of respondents, 63%, stated that the average discount between a new and large jet is 10-20%. This figure is far less than we have seen in recent surveys and may help spur new demand of jets as the decline in residual values is often cited as one area that has hurt new jet purchases. Another 19% stated the difference in new vs. used jet prices are over 20%.

Exhibit 16: Average Discount vs. List for a New Jet



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

In Exhibit 17, we compare key used prices versus list prices for in-production aircraft. The G650, Phenom 300, and CJ4 have relatively resilient pricing. A 5-year old aircraft in the example below may be considered the Phenom 100 or 300 which have retained residual value better than most. The G650 seems to be showing similar traits. However, older aircraft have experienced a significant gap between the new list price and the residual price. The gap can average 30-60% and can prevent buyers from replacing their aircraft because the capital is not there. Larger discounts between new and used aircraft may imply end of life (i.e. Gulfstream 450 and Citation X).

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Exhibit 17: List Price vs. Used Aircraft Price for Select Platforms

	List Price	Avg. Used Avg Asking	
Model	(\$M)	Price (\$M) -Q2 2017	% Delta
Challenger 300	24.8	\$8.9	-64%
Challenger 605	27.0	9.7	-64%
Global 5000	50.4	19.7	-61%
Bom bardier		<u> </u>	-63%
Mustang	\$3.4	\$1.9	-43%
M2	4.5	3.7	-18%
Citation CJ2+	6.4	3.0	-53%
Citation CJ3	8.0	4.3	-46%
Citation CJ4	9.0	6.9	-23%
Citation XLS+	12.8	6.1	-52%
Latitude	16.4		
Sovereign	17.9	6.8	-62%
Citation X	23.4	4.4	-81%
Cessna			-47%
Falcon 2000LX	32.1	\$11.6	-64%
Falcon 900LX	41.0	25.0	-39%
Falcon 7X	50.0	26.6	-47%
Dassault			-50%
Phenom 100	\$4.5	\$2.1	-52%
Phenom 300	9.0	6.8	-24%
Legacy 500	20.0	16.1	-20%
Legacy 650	25.9	13.9	-46%
Embraer			-36%
Gulfstream G150	15.1	\$5.7	-62%
Gulfstream G280	24.0	15.0	-38%
Gulfstream G450	39.0	16.0	-59%
Gulfstream G550	53.5	23.7	-56%
Gulfstream G650	64.5	53.4	-17%
Gulfstream			-46%

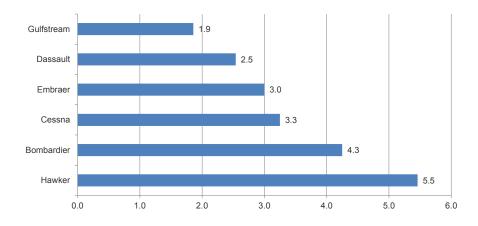
Source: Jefferies estimates, company data, Amstat.

Brokers thought that Gulfstream and Dassault make a greater effort to hold price.

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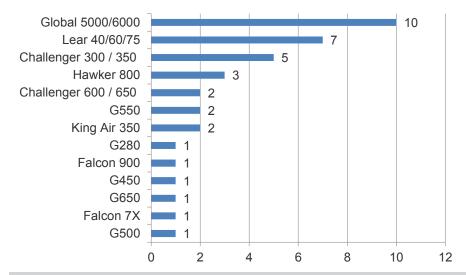
Exhibit 18: What OEM Seeks to Maintain Residual Aircraft Prices —
Rank by OEM 1 = Maintains most Residual Value, 5 = Maintains Least Value



Source: Jefferies Business Jet Survey.

The biggest discounts on new and used jets appeared to include the Global 5000/6000 models. This is somewhat surprising given these models then to maintain their residual value well in the used jet market. The Learjet series was cited as another significant discounter.

Exhibit 19: Which Aircraft Platform and Type are Seeing the Biggest Discounting in Residual Aircraft Pricing



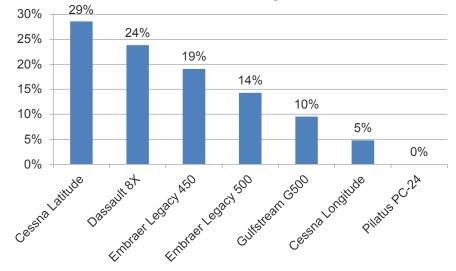
Source: Jefferies Business Jet Survey.

In terms of new models experiencing the most price weakness the Latitude was the model cited most often according to about one-third of respondents. On a combined basis, the Legacy 500 and Legacy 450 were cited by one- third of respondents. The Dassault 8X, which recently entered service, was another example as shown in Exhibit 20.

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Source: Jefferies Business Jet Survey.

Purchasing Process and Behavior

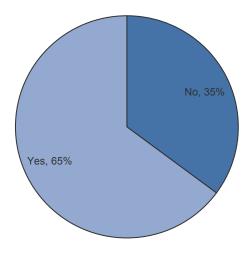
In this next section, we explore some of the factors and features which may influence an aircraft purchase decision. In Exhibit 21, we indicate that brokers were more decisive, with 65% stating they have seen a change in buying and selling behavior since the 2016 election, while 35% stated no change. It appeared most responses indicated a positive attitude change. Some of the respondents noted:

- More first-time buyers than we have seen in a long time.
- President Trump is obviously business aircraft friendly and many people were just waiting to see the outcome of the election, regardless of which candidate won.
- Initial positivist sentiment has waned since Q1/2017 and continues to decline
- Use of biz/private jets is seen in a more positive light in turn encouraging those sitting on the sidelines to explore the possibility of whole ownership.

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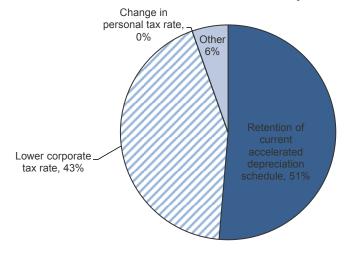
Exhibit 21: Has the U.S. Election Changed Buying or Selling Behavior



Source: Jefferies Business Jet Survey.

In terms of some potential benefits to stimulating new business jet demand, we noted 51% of respondents suggested retention of the current accelerated depreciation rules would be positive. Two respondents stated that bonus depreciation in Canada would be helpful. Another 43% stated that lower corporate taxes would help the purchase of new business jets as shown in Exhibit 22.

Exhibit 22: What Tax Preference Items Would Help Stimulate Demand



Source: Jefferies Business Jet Survey.

Fractional Sales

Fractional ownership interest appears high. We estimate fractional sales as a proportion of new jet deliveries account for 10-15% of the market today. These figures are in-line with the prior peak in 2007. According to the survey, 60% of respondents stated that fractional sales have impacted new purchases as shown in Exhibit 23. About 42% stated that buyers find fractional ownership a viable option vs. a direct purchase. This was similar to results in our January 2017 survey. It appears high net worth individuals prefer

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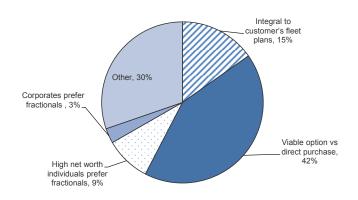
fractional ownership over a direct purchase whereas corporates prefer direct purchases. The benchmark for direct purchases appears to be 100 hours of use per year. Overall, brokers viewed membership programs as an option in increasing interest in business jets. Other comments included the following:

- No different from the past.... Fractional ownership is in the main favored by those who would still actually prefer their own jet, but cannot justify the argument (net wealth and/or Corporate policy constraints)
- It is a viable option versus direct purchase or charter depending upon annual utilization...less than 100 hours a year.
- Great point of entry and way to cultivate interest in whole ownership.

Exhibit 23: Has Fractional Ownership or Charter Service Availability has Impacted Jet Sales in Recent Periods

No , 40%

Exhibit 24: Gauge Interest in Fractional Ownership



Source: Jefferies Business Jet Survey. Note: Based on 68 respondents.

Source: Jefferies Business Jet Survey.

End Market Demand

From an industry perspective, we surveyed brokers on what industries they would expect to be strong in 2017. About 45% stated Industrial focused customers are leading the enthusiasm. Another 26% and 17%, respectively, stated Consumer and Financial customers. These industries mirrored results in our January 2017 survey. In Exhibit 25, we show what customer end markets brokers expected to improve the most. Industrials, Consumer and Entertainment were the most popular responses. Enthusiasm for Energy / Oil & Gas customers has diminished since our last survey.

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Exhibit 25: What Customer End Market Will be the Strongest in 2017 — in terms of Potential Buyers

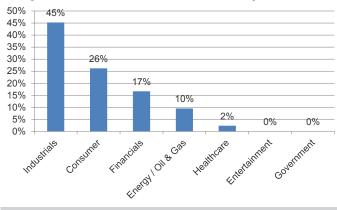
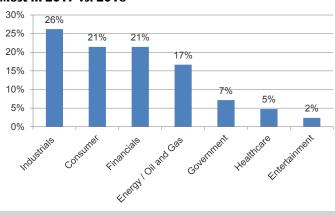


Exhibit 26: What Customer End market Will *Improve* the Most in 2017 vs. 2016

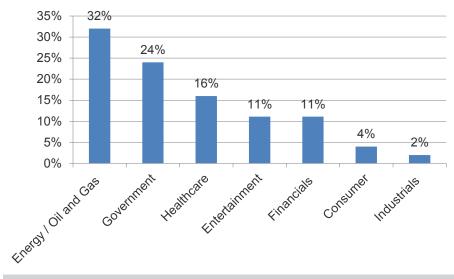


Source: Jefferies Business Jet Survey.

Source: Jefferies Business Jet Survey.

The weakest industries were cited as Energy / Oil & Gas, Government, and Healthcare according to 32%, 24%, and 16%, respectively, of the respondents.

Exhibit 27: What Customer End Market Will be the Weakest in 2017 vs. 2016



Source: Jefferies Business Jet Survey.

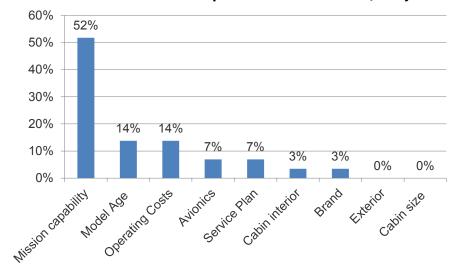
Important Business Jet Features

We show what features are most important for a buyer when choosing a new or used aircraft. According to the survey, 52% of respondents stated that mission capability was the most important feature in purchasing an aircraft. This compares to 46% in our January 2017 survey. The statement underscores the sophistication of the buyer, as he is seeking transportation equipment to fit his needs. We still cannot disprove that given a specified budget that the buyer won't buy a larger nearly-new plane vs. smaller new aircraft. Model age was the second most important feature garnering 14% of responses, followed by Operating Costs which were also a factor. Cabin Interior, Exterior, or the Brand had minimal influence on purchasing decisions. A few respondents stated that Next Gen upgrades such as ADS-B were starting to become factors in purchasing decisions.

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Exhibit 28: What Feature is Most Important for a New OR Used Jet Buyer

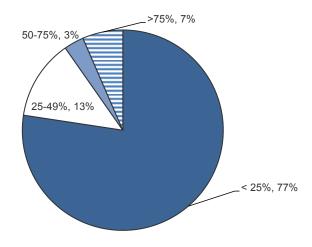


Source: Jefferies Business Jet Survey.

Losing Users

In terms of purchasers of new jets, 77% of respondents stated that less than 25% of used jet sellers are planning to purchase a new jet. Some sellers may be turned off by high maintenance costs and declining residual values and decide to exit the market or go to charter.

Exhibit 29: Percentage of Respondents who Indicate Used Jet Sellers will Buy A New Jet



Source: Jefferies Business Jet Survey.

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Survey Respondents

We show in the following charts a profile of our 68 respondents. Our respondents primarily consisted of used business jet brokers, of which 9% were affiliated with an OEM. We note these folks have one of the best jobs in the business as they have the ability to take a used jet off a seller's hands who is likely buying a new jet from the OEM. In terms of type of aircraft marketed most frequently, answers were fairly broad-based spread across Bombardier, Cessna, Gulfstream, in addition to Dassault and Hawker.

Exhibit 30: Position in the Industry

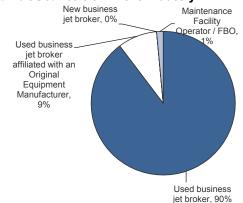
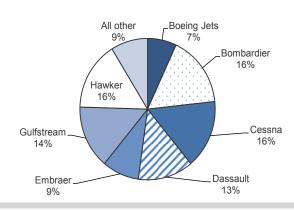


Exhibit 31: Type of Aircraft Marketed Most Frequently



Source: Jefferies Business Jet Survey.

Source: Jefferies Business Jet Survey.

The geographic exposure was skewed a bit more than the market, with 81% of the respondents coming from North America. About 65% of the fleet is based in North America. Another 14% represented Europe. A majority of brokers were high volume sellers with ~55% of respondents selling 10 to 50 aircraft per year. Assuming a jet price of \$10MM per aircraft this can equate to \$5BB in annual transactions for our sample, a meaningful element of the market.

Exhibit 32: Geographic Exposure

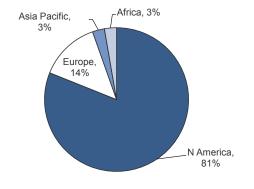
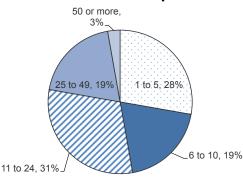


Exhibit 33: Number of Aircraft Sold per Year



Source: Jefferies Business Jet Survey.

Source: Jefferies Business Jet Survey.

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Jefferies – State of the Market **Business Jet Fleet and Delivery Outlook**

We believe part of the market weakness has been attributable to minimal S&P EPS Growth. Other factors include no major advances in technology to stimulate replacement demand, surplus supply in emerging markets, and a corporate focus on cutting costs as opposed to revenue growth. Financial regulations have also constrained demand. The reduction in airline service quality in the back of the cabin through higher density does not seem to have spilled into the upper markets, which could help demand. There has been flat spots in demand which have lasted for a number of years. We may be in the middle stages of this situation, with demand unlikely to pick up until the latter part of 2018 as shown in Exhibit 34, when old models phase-out and surplus inventory declines.

Annual Biz Jet Deliveries vs. S&P 500 Earnings - 1985-2018E 1200 2017E: 593 jets \$140 2008: 1,154 jets \$130 **S** \$120 **S** \$110 **S** Annual Biz Jet Deliveries 1000 800 S&P 500 \$80 \$70 600 1985: 184 jets S&P 500 Earnings \$60 2014 117.81 \$50 \$40 400 2015 118.25 Annual 2016 115.07 \$30 200 2017E 129.50 \$20 1985 Earnings: \$14.61 2018E 140.65 \$10 2000 2005 2015 1985 1990 1995 2010

Exhibit 34: Business Jet Deliveries vs S&P Index

----- Biz Jet Deliveries (2017E: 593)

Source: Jefferies estimates.

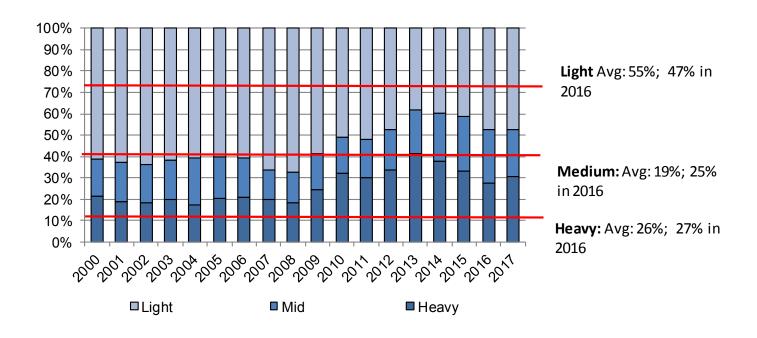
For market segmentation, if one extracts large and mid-sized jets from the mix, light jet deliveries are far more depressed than the annual delivery data may suggest. In 2016, there were 319 light jet deliveries to customers, or 47% of the total. In 2016, there were 169 Medium Jet deliveries which accounted for 25% of the total from 19% historically Finally, in terms of heavy jets, we count 239 Heavy Jet delivered in 2016 vs. 270 in 2015.

LTM Trailing S&P Earnings (2017E: \$129.50)

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Exhibit 35: Annual Deliveries by Aircraft Segmentation — Heavy Jet Slowing, While Mid-Size Jets Most Stable Fueled by New Models.



Source: Ascend, Jefferies estimates.

Jefferies Forecast

Our forecast continues to assume minimal market recovery with 2017 unit expectations now 49% below the market peak of 1,154 planes in 2008. According to GAMA, deliveries declined 12% in 2016 to 627 units. We note our analysis excludes deliveries from Honda Aircraft and Pilatus. The market share winner was Cessna with 28% of the market on a unit basis, expanding 5-points from 2015.

We forecast deliveries of 596 and 625 in 2017 and 2018, respectively. We figure model transitions should mark the bottom in 2017, with volumes up somewhat 2018. We forecast 652 unit deliveries in 2019. We would suspect at some point Embraer launches a new model. Exhibit 36 tallies our outlook by major producer.

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Exhibit 36: Annual Business Jet Delivery Forecast

Annual Business Jet S	Annual Business Jet Shipments														
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017E	2018E	2019E	2020E
Airbus	10	12	9	11	13	9	9	6	5	4	1	5	4	4	4
Boeing	13	7	6	4	10	8	12	7	10	11	4	8	6	6	6
Bombardier	213	226	247	173	150	182	181	179	204	199	163	135	145	155	165
Cessna	306	388	466	289	178	183	182	139	159	166	178	175	185	186	193
Dassault	61	70	72	77	95	63	66	77	66	55	49	46	50	53	45
Embraer	27	36	38	122	145	99	99	119	116	120	117	104	111	116	121
Gulfstream	113	138	156	94	99	99	94	144	150	154	115	123	124	132	149
Hawker Beechcraft	140	162	160	98	73	52	32	0	0	0	0	0	0	0	0
Total	883	1039	1154	868	763	695	675	677	710	709	627	596	625	652	683
Total Deliveries YoY	18%	18%	11%	-25%	-12%	-9%	-3%	0%	5%	0%	-12%	-5%	5%	4%	5%
Revenues (\$ bln)	\$16.3	\$19.1	\$20.4	\$12.9	\$15.9	\$17.5	\$18.0	\$20.9	\$22.3	\$23.7	\$21.2	\$20.0	\$21.0	\$21.5	\$21.5

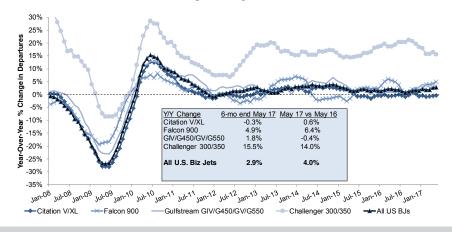
% share	% share														
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017E	2018E	2019E	2020E
Airbus	1%	1%	1%	1%	2%	1%	1%	1%	1%	1%	0%	1%	1%	1%	1%
Boeing	1%	1%	1%	0%	1%	1%	2%	1%	1%	2%	1%	1%	1%	1%	1%
Bombardier	24%	22%	21%	20%	20%	26%	27%	26%	29%	28%	26%	23%	23%	24%	24%
Cessna	35%	37%	40%	33%	23%	26%	27%	21%	22%	23%	28%	29%	30%	29%	28%
Dassault	7%	7%	6%	9%	12%	9%	10%	11%	9%	8%	8%	8%	8%	8%	7%
Embraer	3%	3%	3%	14%	19%	14%	15%	18%	16%	17%	19%	17%	18%	18%	18%
Gulfstream	13%	13%	14%	11%	13%	14%	14%	21%	21%	22%	18%	21%	20%	20%	22%
Hawker Beechcraft	16%	16%	14%	11%	10%	7%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	100%

Source: Jefferies estimates, company data.

Utilization Trends

Departures were up 4% in May, the most recent month reported by the FAA. This compares to 2.9% growth based on 6-month trailing activity. According to TraqPak, business jet activity was up 5.3% in April in North America. The increase was led by fractional utilization which grew 8.5% y-o-y with Part 91 activity up only 0.5%. Fractional sales were up most for the turboprop category (22%) and Large Cabin (14%). In terms of aircraft categories, Large jet utilization grew 8.8% followed by Medium jets which were up 7.7%. Light jet hours were up modestly.

Exhibit 37: U.S. Business Jet Change in Departures YoY



Source: FAA, Ascend and Jefferies estimates.

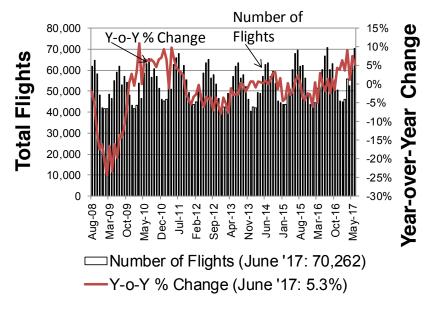
Exhibit 38 shows the more volatile European market. But June has been a busy month. European traffic increased 5.3% in June 2017. According to WingX Advance's Business

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Aviation Monitor, Southern Europe is seeing the strongest regional growth, reflecting the increase in activity at the most popular resorts, such as Ibiza and Mallorca.

Exhibit 38: Europe Business Jets Total Flights vs. Year-over-Year Change % (RHS)



Source: EBAA, Jefferies estimates.

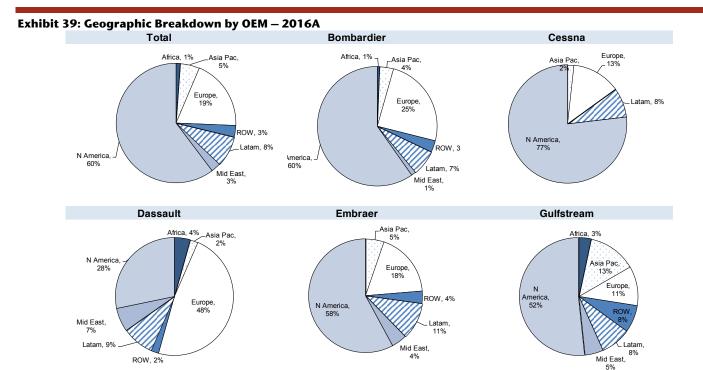
Geographic Segmentation

The North American market remains the driver of replacement demand. At the end of the year, the business jet fleet stood at roughly 20,500 business jets, with roughly 13,205 aircraft operated in North America, roughly 64% of the fleet. By contrast, the European business jet fleet totaled about 2,672 aircraft or about 13% of the fleet.

In Exhibit 39, we show geographic breakdown of deliveries by OEM. The current active fleet today is over 21,000 aircraft of which about 65% are based in North America. In 2016, deliveries declined across all regions. Asia Pacific contracted most significantly, down 27% accounting for 5% of total deliveries. North American accounted for the largest portion of deliveries at 60%. The market was still down 15% y-o-y. Deliveries to Europe accounted for 19% of total deliveries down 10% from 2015 levels. On an OEM basis, Cessna had the largest portion of deliveries to North America with 77% (from 79% in 2015) of total deliveries; Europe was the second largest region at 13%. North America accounted for 58% of deliveries for Embraer (down from 64% in 2015). Gulfstream has the most broad-based geographic exposure.

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Source: Jefferies estimates, company data.

New Products, the Competitive Landscape, and the Supplier Base

Just as important as replacement is the need for technology. New technology can alter the demand for the used fleet and accelerate replacement. Exhibit 40 arrays the target date of delivery of the announced new models expected to be brought to the market over the next half decade. We count eight new planes through 2019. We believe there are at least two unannounced platforms, which seems rather low; typically there is about a half dozen unannounced platforms. We highlight the Pilatus PC-24 which is expected to enter service early in 2017. This may be a competitor for the Phenom 300 and CJ3/4 models. In terms of upcoming models, most are in the heavy market, the suppliers are split across HON and COL. We believe there is only one unannounced avionics platform which is the Cessna Hemisphere.

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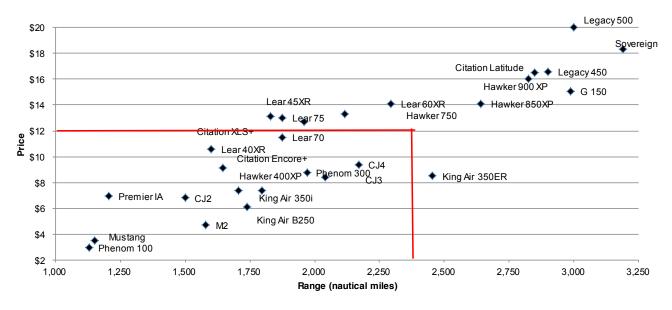
Exhibit 40: Recent and Future New Model Introductions

			# of Seats (Typical			
OEM	Model	Range (nm)	Passenger Configuration	Initial Annoucement	EIS	Avionics Manufacturer
Bombardier		3,200	8		June 2014	COL Pro Line Fusion
	Challenger 350	,	-	May 2013		
Cessna	Citation X	3,242	9	September 2011	June 2014	Garmin G5000
Embraer	Legacy 500	3,000	12	October 2007	October 2014	COL Pro Line Fusion
Gulstream	G650ER	7,500	16	May 2014	Q1:2015	HON Primus 1000
Bombardier	Challenger 650	4,000	12	October 2014	July 2015	COL Pro Line Fusion
Cessna	Citation Latitude	2,700	8	October 2011	Q3:2015	Garmin G5000
Embraer	Legacy 450	2,300	7 to 9	May 2008	Q4:2015	COL Pro Line Fusion
Dassault	8X	6,450	19	May 2014	October 2016	HON EASy III
Pilatus	PC-24	1,950	6 to 10	May 2013	Early 2017	HON Pilatus ACE
Cessna	Citation Longitude	3,500	12	Nov. 2015	H2:2017 - First Fligt Oct. 2016	Garmin G5000
Gulfstream	500	5,000	18	October 2014	H1:2018	HON Symmetry Flight Deck
Bombardier	Global 7000	7,400	19	October 2010	H2:2018	COL Pro Line Fusion
Gulfstream	600	6,200	18	October 2014	Early 2019	HON Symmetry Flight Deck
Bombardier	Global 8000	7,900	19	October 2010	TBD	COL Pro Line Fusion
Dassualt	5X	5,200	13 to 16	October 2013	H1:2020	HON Primus Epic
Cessna	Hemipshere	4,500	19	Nov. 2015	2020	HON Primus Epic

Source: Jefferies estimates, company data.

Light jets on average have a range up to 1,500 nautical miles; for reference New York to Los Angeles is about 2,100 miles. The Citation Mustang offers 1,000 nautical mile range with a \$3.3MM list price. The Embraer Phenom 100 and the Hawker Beechcraft Premier I/A are its primary competitors. The latter is no longer in production. Embraer entered the market with the Phenom 100. Cessna's M2, Citation CJ3, CJ4, and XLS are the other aircraft this segment.

Exhibit 41: Range vs. Price - Key Light Jets

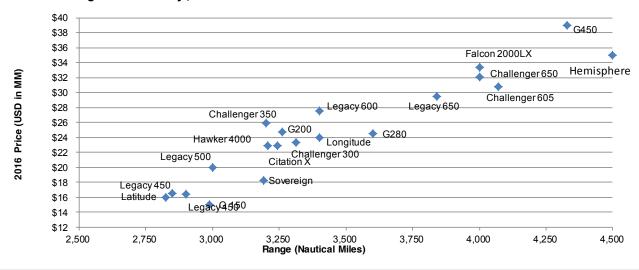


Source: Business & Commercial Aviation, Jefferies LLC estimates.

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We show in Exhibit 42 key jets in the \$15MM to \$45MM category.

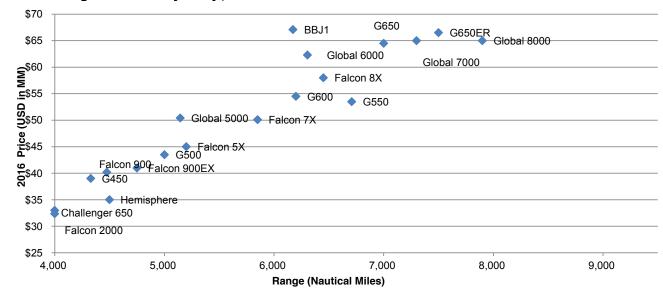
Exhibit 42: Range vs. Price - Key Jets \$15MM-\$45MM



Source: Business & Commercial Aviation, Jefferies LLC estimates.

We show in Exhibit 43 key jets valued over \$30MM.

Exhibit 43: Range vs. Price - Key Heavy Jets >\$30MM



Source: Business & Commercial Aviation, Jefferies LLC estimates.

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				Price F	Performance			PS Estim	ates		P/E Multipl	е	Fre	ee Cash Flo	W		
	Rating	<u>FYE</u>	7/7/17	Price one week ago	Price at YE 2016	Performance Since YE 2016	2016	2017E	2018E	2016	2017E	2018E	2016	2017E	2018	Dividend	Dividend Yield
sten	s Integra	tors															
BA	Buy	12/31	\$202.37	\$197.75	\$155.68	30.0%	\$7.24	\$9.25	\$10.00	28.0x	21.9x	20.2x	\$7,383	\$8,341	\$8,970	\$5.68	2.8%
GD	Buy	12/31	201.26	198.10	172.66	16.6%	8.64	9.75	10.45	23.3x	20.6x	19.3x	1,806	3,230	3,400	3.36	1.7%
MT	Hold	12/31	285.20	277.61	249.94	14.1%	12.38	12.65	14.25	23.0x	22.6x	20.0x	4,126	4,952	4,030	7.28	2.6%
100	Hold	12/31	261.99	256.71	232.58	12.6%	12.19	12.50	13.45	21.5x	21.0x	19.5x	1,893	1,784	2,102	4.00	1.5%
RTN	Buy	12/31	165.87	161.48	142.00	16.8%	7.55	7.45	8.20	22.0x	22.3x	20.2x	2,227	2,350	2,289	3.19	1.9%
	,						7.00	7.10	0.20	LL.OX	LL.OX	ZU.ZX	_,,	2,000	2,200	0.10	1.070
ajor	Subsysten	ns Supp	liers & Di	versified	Companies	5											
JRD	Buy	12/31	21.79	20.80	17.95	21.4%	0.27	0.65	0.80	80.9x	33.3x	27.3x	111	82	96	-	-
OBC	Hold	4/30	21.49	22.16	21.08	1.9%	2.58	1.55	1.98	8.3x	13.8x	10.9x	89	119	105		
COL	Hold	9/30	106.36	105.08	92.76	14.7%	5.50	4.60	6.25	19.3x	23.1x	17.0x	530	708	1,201	1.32	1.2%
HON	Buy	12/31	134.12	133.29	115.85	15.8%	6.60	7.10	7.60	20.3x	18.9x	17.6x	4,403	4,679	5,349	2.66	2.0%
HRS	Buy	6/30	112.81	109.08	102.47	10.1%	5.55	6.05	6.90	20.3x	18.6x	16.4x	407	893	931	2.12	1.9%
LLL	Hold	12/31	171.51	167.08	152.11	12.8%	8.21	8.70	9.45	20.9x	19.7x	18.2x	881	902	952	3.00	1.7%
OA	Buy	12/31	102.33	98.36	87.73	16.6%	5.55	6.00	6.75	18.4x	17.0x	15.2x	332	290	346	1.28	1.3%
SIS	Buy	6/30	76.63	75.15	76.12	0.7%	2.11	2.85	3.25	36.3x	26.9x	23.6x	42	86	95		
DΥ	Hold	12/31	133.25	127.65	123.00	8.3%	5.37	5.25	6.10	24.8x	25.4x	21.9x	229	245	271	-	-
XT	Buy	12/31	48.06	47.10	48.56	-1.0%	2.62	2.45	2.85	18.3x	19.6x	16.9x	655	690	727	0.08	0.2%
JTX	Buy	12/31	122.61	122.11	109.62	11.9%	6.61	6.60	7.30	18.5x	18.6x	16.8x	2,602	5,375	6,347	2.80	2.3%
STO	Buy	3/31	22.32	47.10	36.90	-39.5%	1.90	1.25	2.00	11.7x	17.8x	11.2x	483	192	154	-	-
gnifi	cant Com	ponent	Suppliers														
VAV	Hold	4/30	38.67	38.20	26.83	44.1%	0.54	0.60	0.72	71.8x	64.6x	53.8x	(20)	10	13	-	-
DGI	Buy	12/31	33.40	33.30	28.65	16.6%	0.34	(0.12)	0.38	99.0x	-280.5x	88.9x	110	179	103	-	-
ESL	Hold	9/30	97.45	94.80	89.20	9.2%	4.86	4.90	5.65	20.0x	19.9x	17.3x	135	187	184	-	-
HEI	Hold	10/31	75.84	71.84	61.72	22.9%	1.83	2.05	2.20	41.4x	36.9x	34.4x	114	244	258	0.16	0.2%
HXL	Hold	12/31	53.83	52.79	51.44	4.6%	2.58	2.70	3.20	20.9x	20.0x	16.8x	73	123	265	0.44	0.8%
(LXI	Hold	1/31	51.45	50.00	45.11	14.1%	0.92	1.89	2.91	56.2x	27.2x	17.7x	69	162	278	0.00	-
RCY	Hold	6/30	43.55	42.09	30.22	44.1%	0.96	1.09	1.45	45.5x	40.0x	30.1x	30	26	56	-	-
PR	Buy	12/31	58.94	57.94	58.35	1.0%	4.56	4.90	5.35	12.9x	12.0x	11.0x	463	467	501	0.40	0.7%
GI	Buy	3/31	32.20	31.60	26.50	21.5%	(0.87)	3.30	3.50	-37.1x	9.7x	9.2x	315	(309)	47	0.16	0.5%
DG	Buy	9/30	266.66	268.87	248.96	7.1%	11.49	12.15	13.85	23.2x	21.9x	19.3x	624	751	856	-	-
/AIR	Hold	9/30	10.85	10.85	14.95	-27.4%	1.13	0.85	0.90	9.6x	12.7x	12.1x	104	46	100	_	_
WD	Hold	9/30	67.32	67.58	69.05	-2.5%	2.85	3.05	3.55	23.7x	22.1x	19.0x	97	195	243	0.50	0.7%

¹⁾ Free cash flow is in millions of dollars.

12/31

115.07 129.50 140.65

21.1x 18.7x

17.2x

Source: Company data; Factset and Jefferies estimates.

2,425

2423 2,239 8.3%

SPX

1.2%

29.11

²⁾ Annual estimates for VSTO, AOBC, TGI, AVAV, and HRS are the next fiscal year. For example, HRS's 2016E EPS listed is actually the FY17E ending in June.

³⁾ SPARO is the S&P Aerospace and Defense Index and is comprised of ARNC, BA, COL, GD, LLL, LMT, NOC, RTN, TDG, TXT and UTX; SPX is the S&P 500 Index.

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Exhib	it 45: \$	Selecte	d Valuat		tistics (a		y 7th, 20	017) Revenues			EV/ Sales		FCF Yield		Capitaliza	tion
			22125			•		nevenues			EW Sales	•		DII 0/0	Capitanza	
	2016 EBITDA	2017E EBITDA	2018E EBITDA	EV/2016 EBITDA	EV/2017E EBITDA	EV/2018 EBITDA	2016	2017E	2018E	2016	2017E	2018E	2017E FCF Yield	Dil. S/O (mm)	Equity Value	Enterprise Value
Systen	ns Integra	tors							_							
BA	\$7,934	\$11,681	\$12,235	15.6x	10.6x	10.1x	\$94,571	\$91,800	\$94,200	1.31x	1.35x	1.31x	6.6%	620	\$125,550	\$123,80
GD	4,188	4,695	4,920	14.9x	13.3x	12.7x	30,561	31,405	33,365	2.04x	1.99x	1.87x	5.2%	307	61,844	62,43
LMT	6,764	6,811	7,490	14.0x	13.9x	12.6x	47,248	50,315	51,625	2.00x	1.88x	1.83x	5.9%	293	83,507	94,71
NOC	3,680	3,831	4,122	14.0x	13.4x	12.5x	24,508	25,210	26,600	2.10x	2.04x	1.93x	3.9%	176	46,136	51,39
RTN	3,810	3,879	4,190	13.5x	13.2x	12.3x	24,124	25,310	25,865	2.13x	2.03x	1.99x	4.8%	293	48,567	51,38
Major	Subsyster	ns Suppli	ers & Dive	rsified Co	mpanies											
AJRD	\$126	\$169	\$182	14.6x	10.9x	10.1x	\$1,761	\$1,860	\$1,900	1.05x	0.99x	0.97x	5.2%	72	1,575	1,84
AOBC	250	177	220	5.3x	7.4x	6.0x	903	775	850	1.46x	1.70x	1.55x	9.9%	56	1,200	1,31
COL	1,277	1,602	2,301	16.9x	13.5x	9.4x	5,259	6,801	8,870	4.10x	3.17x	2.43x	5.0%	132	14,082	21,58
HON	8,088	8,990	9,570	13.4x	12.1x	11.4x	39,302	39,600	41,775	2.77x	2.74x	2.60x	4.5%	774	103,795	108,67
HRS	1,418	1,498	1,633	12.5x	11.8x	10.8x	5,860	6,100	6,500	3.01x	2.90x	2.72x	6.4%	125	14,045	17,66
LLL	1,214	1,344	1,413	13.6x	12.3x	11.7x	10,511	11,000	11,175	1.57x	1.50x	1.48x	6.6%	79	13,601	16,53
OA	675	714	765	10.7x	10.2x	9.5x	4,455	4,625	4,875	1.63x	1.57x	1.49x	4.9%	58	5,904	7,25
OSIS	139	164	171	11.6x	9.8x	9.4x	830	962	976	1.94x	1.67x	1.65x	5.8%	20	1,495	1,60
TDY	341	411	451	17.4x	14.5x	13.2x	2,150	2,510	2,675	2.77x	2.37x	2.22x	5.1%	36	4,810	5,94
TXT	1,597	1,509	1,664	10.0x	10.6x	9.6x	13,788	14,395	14,858	1.16x	1.11x	1.08x	5.3%	273	13,112	15,98
UTX	10,689	11,105	11,857	11.0x	10.6x	9.9x	57,244	58,740	62,850	2.06x	2.00x	1.87x	5.5%	802	98,370	117,65
VSTO	306	258	320	7.2x	8.5x	6.9x	2,547	2,375	2,475	0.86x	0.92x	0.89x	15.1%	57	1,273	2,19
Signifi	cant Com	ponent S	uppliers													
AVAV	20	26	30	36.6x	27.7x	24.1x	265	290	305	2.71x	2.48x	2.36x	1.1%	23	904	71
DGI	369	390	436	8.8x	8.3x	7.5x	725	870	905	4.48x	3.74x	3.59x	8.7%	62	2,061	3,25
ESL	269	324	325	12.8x	10.6x	10.6x	1,993	2,030	2,045	1.72x	1.69x	1.68x	6.4%	30	2,920	3,43
HEI	326	362	381	21.6x	19.4x	18.5x	1,376	1,491	1,583	5.11x	4.72x	4.44x	3.8%	87	6,395	7,03
HXL	457	484	567	12.4x	11.7x	10.0x	2,004	2,050	2,375	2.82x	2.76x	2.38x	2.5%	93	5,001	5,65
KLXI	223	316	392	16.0x	11.3x	9.1x	1,494	1,737	1,825	2.39x	2.06x	1.96x	6.1%	52	2,665	3,57
MRCY	57	93	101	35.0x	21.6x	20.0x	270	407	450	7.43x	4.93x	4.46x	1.3%	45	1,952	2,00
SPR	934	1,095	1,143	8.1x	6.9x	6.6x	6,793	6,920	7,270	1.11x	1.09x	1.03x	6.6%	121	7,114	7,52
TGI	398	315	417	6.8x	8.7x	6.5x	3,533	3,173	3,159	0.77x	0.86x	0.86x	-19.4%	50	1,596	2,72
TDG	1,495	1,663	1,819	16.0x	14.4x	13.2x	3,171	3,536	3,732	7.56x	6.78x	6.43x	5.0%	56	14,905	23,99
WAIR	197	164	176	9.6x	11.5x	10.7x	1,477	1,504	1,506	1.28x	1.26x	1.25x	4.3%	99	1,074	1,88
WWD	320	356	405	14.8x	13.3x	11.7x	2,023	2,070	2,257	2.34x	2.29x	2.10x	4.6%	63	4,275	4,74
Total	\$57,607	\$64,478	\$69,694	13.4x	11.9x	11.0x	\$391,416	\$400,566	\$418,847	1.97x	1.92x	1.84x	5.4%		\$687,895	\$769,86

¹⁾ EBITDA, revenues, equity value, and enterprise value are in millions of dollars. Totals for FCF, Revenues, and EBITDA are for all companies under coverage

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²⁾ Annual estimates for VSTO, AOBC, TGI, AVAV & HRS are the next fiscal year. For example, HRS's 2016E EBITDA listed is actually the FY17E ending in June. Source: Company data; Factset and Jefferies estimates.

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(Article 3(1)e and Article 7 of MAR)

Recommendation Published , 16:56 ET. July 10, 2017 Recommendation Distributed , 05:00 ET. July 11, 2017

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