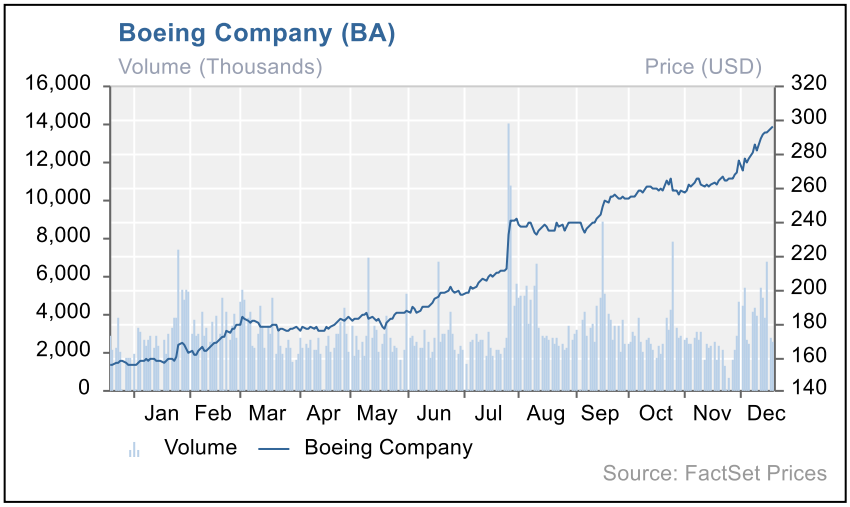
Recommendation	**Hold**
Target (today's value)	$330
Current Price	$352.20
52 week range	$167.22 - $361.45

Aerospace & Defense

Boeing Company



Share Data	
Ticker:	BA
Market Cap. (Billion):	$207.3
Inside Ownership	0.4%
Inst. Ownership	65.4%
Beta	1.36
Dividend Yield	1.9%
Payout Ratio	42.2%
Cons. Long-Term Growth Rate	19.2%

Summary: I recommend a neutral rating with a target of $330. Although BA has shown significant price appreciation, operational efficiency, and market dominance, I believe these attributes are priced into the stock. The stock is overvalued based on relative and DCF analysis.

	'15	**'16**	**'17**	**'18E**	**'19E**
Sales (billions)					
Year	$961	$94.6	$90.4	$92.0	$95.3
Gr %		-1.6%	-4.4%	1.7%	3.7%
Cons				$96.5	$102.1
EPS					
Year	$7.76	$8.51	$11.48	$12.94	$14.79
Gr %		9.7%	34.8%	12.8%	14.3%
Cons	-	-	$13.86	$16.54	$19.28

Ratio	**'15**	**'16**	**'17**	**'18E**	**'19E**
ROE (%)	137%	139%	721%	721%	594%
Industry	73.1%	632%	384%	327%	196%
NPM (%)	5.2%	8.8%	8.8%	8.8%	9.4%
Industry	3.3%	4.2%	3.5%	4.5%	6.1%
A. T/O	1.03	1.02	1.02	1.01	1.05
ROA (%)	5.3%	9.0%	9.0%	8.9%	9.9%
Industry	3.2%	6.4%	4.3%	3.7%	5.3%
D/A	10.6%	11.1%	11.8%	12%	12%

Valuation	**'16**	**'17**	**'18E**	**'19E**
P/E	23.7	27.1	30.5	25.7
Industry	25.6	29.8	37.1	29.5
P/S	1.04	1.96	2.27	2.20
P/B	46.1	162	424	
P/CF	9.1	13.5	16.9	15.4
EV/EBIT	18.1	18.0	20.9	18.7

Performance	**Stock**	**Industry**
1 Month	6.0%	-1.1%
3 Month	35.6%	32.3%
YTD	20.9%	12.7%
52-week	110.5%	2.7%
3-year	138.1%	-24.5%

Key Drivers:

- Improving margins: Vertical supply chain integration, pension expense reduction, and implementation of BA's new services business segment will increase future earnings power.
- 787-10 Dreamliner: With ~20% less fuel burn than previous models and about 17-20 tons less weight than Airbus's A350-1000, BA's new 787-10 is highly competitive in the wide-body market.
- Competition: Boeing's 787-10 competes closely with Airbus's A350-1000 in the wide body market. Boeing's ability to ramp up production and produce efficiently will determine its ability to compete with Airbus globally.

Valuation: Using a relative valuation approach, BA appears to be undervalued in comparison to the aerospace & defense industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that BA is overvalued, as the stock's value is about $322 and the shares trade at $352.20.

Risks: Threats to the business include intense competition, dependence on US and non-US defense contracts, program cost overruns, downturns in commercial aviation, and barriers associated with a more globalized business reach.

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Company Overview

The Boeing Company (NYSE:BA) is a producer of commercial and defense aircraft, space systems, security products and services. As a multinational corporation, BA has 147,683 employees and 101 years of history. BA is the leading producer of commercial aircraft and the fourth largest military contractor. It conducts business through the three following segments:

Commercial Airplanes - BCA (69% of revenue)
BCA principally consists of the following segments and products:

- Narrow-body: 737
- Wide-body: 747, 767, 777, and 787
- In development: 737 MAX derivatives and 777X
- Additional offerings: aviation services support, aircraft modifications, spare parts, training, maintenance documents, and technical advice

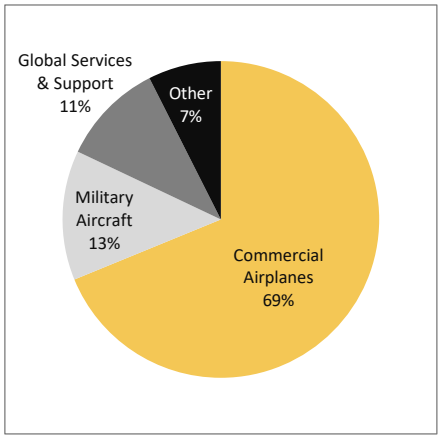
The 737 MAX family began deliveries in 2Q17 while the 777X will deliver in 2020. The revolutionary 787-10 Dreamliner is the newest addition to the 787 family (17% of sales), boasting industry-leading fuel efficiency, improved passenger experience, and additional flight capacity. As the leading segment, Commercial Airplanes has a 12.5% 5-yr compounded annual growth rate (CAGR).

Defense, Space, & Security - BDS (30%)
BDS designs, develops, and supports military aircraft. The United States Department of Defense (DoD) and the National Aeronautics and Space Administration (NASA) are the two primary customers of the BDS segment. BDS has been a cost center with a -1.6% 5-yr CAGR. The segment includes the following units:

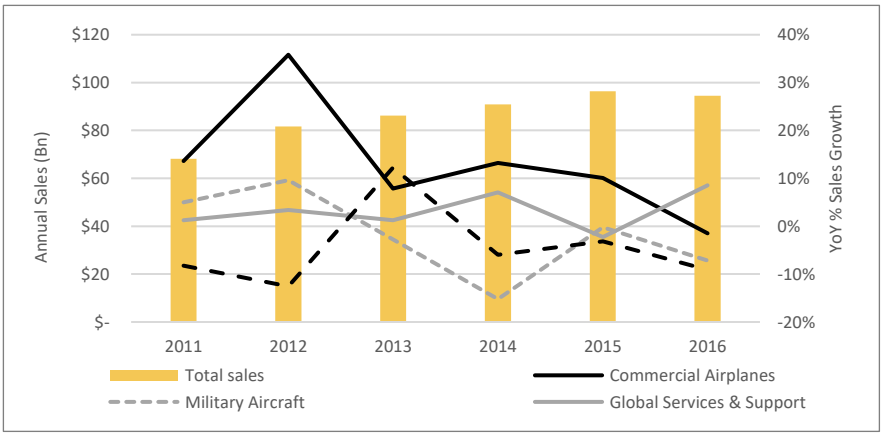
- Boeing Military Aircraft - BMA
- Network & Space Systems - N&SS
- Global Services & Support - GS&S

Boeing Capital - BCC (1%)
BCC handles various financing options for its customers. Its portfolio consists of equipment under operating leases, finance leases, notes and other receivables, assets held for sale or re-lease, and investments. BCC has experienced considerable decline (-10.9% 5-yr CAGR).

Figures 1 & 2: Revenue Sources for BA, year-end 2016 (left) and historical revenue growth by business segment (right)



Source: Company reports



Source: Company reports

Business/Industry Drivers

While many factors my contribute to the firm's success, I have outlined the following most important business drivers:

1) Improving margins
2) 787-10 Dreamliner
3) Competition
4) Macroeconomic trends

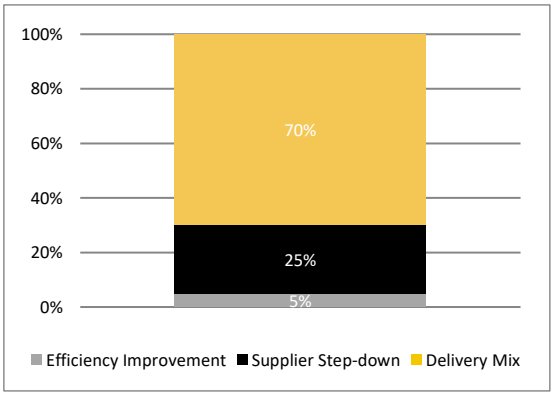
Improving Margins

Four upcoming operational factors will materially affecting Boeing's earnings power, viz: 1) Boeing Global Services 2) Boeing Avionics, 3) reducing pension expenses, and 4) an intense focus on cutting costs.

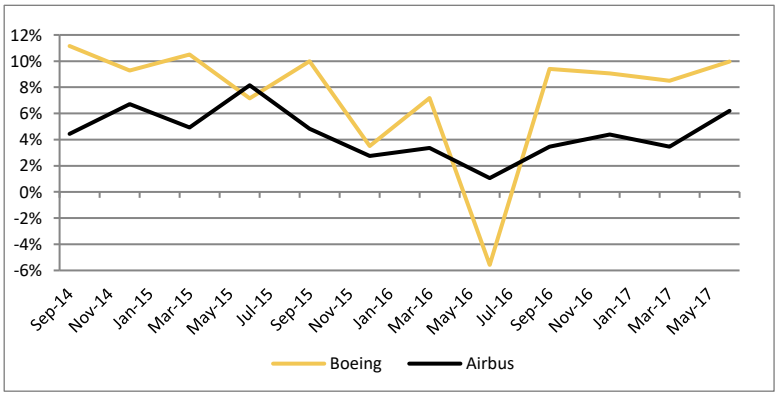
5-yr Sales CAGR: 6.6%

Boeing Global Services (BGS) is a restructuring initiative that will allow Boeing to capitalize on its high-margin aftermarket business. This new business segment will focus on: MRO work, spares for BA's proprietary parts, a range of service plans, and parts distribution for both military and commercial aircrafts. Reporting for this segment began in 3Q17, allowing for an isolated view on its profit margins. I believe this strategic move will further increase BA's already-existing economic moat. Next to Airbus, BA is essentially the only other commercial airline manufacturer that benefits from high switching costs. Expanding services in the aftermarket will further drive the cost of choosing a new manufacturer. BA's audacious goal for this new business unit is $50 bn in a decade. Taking 20% of this to make it more conservative, dividing it over the 10 years, would add $1 bn to top line revenue each year.

Figures 3 & 4: Contributions to 787 profitability (left) and unadjusted commercial margins (right)



Source: AeroAnalysis



Source: Bloomberg

Management has emphasized *organic* growth of BA's supply chain, specifically through vertical integration. BA created Boeing Avionics, its new in-house producer of core electronics parts for its aircrafts. The vertical capability should reduce cyclicality by improving customer lifetime value. United Technologies' acquisition of Rockwell Collins comes at a coincidental time in alignment with the BA Avionics initiative. The supplier consolidation will likely have negative repercussions on BA, but backwards vertical integration capabilities like BA Avionics position the firm well.

Delivery mix is main driver for 787-10 profitability

On August 1, 2017, BA contributed $3.5 bn (44% of free cash flow) in common shares (14.4 m) to its pension. The stated objective was to: "eliminate all future mandatory pension funding through 2021." This comes a year after its 2016 pension freeze on ~68,000 non-union employees, moving

them from a DB to DC plan. Similarly, it will moved its entire workforce to DC by 2020 to further reduce costs. Since the share contribution to the pension plan is 6.9% of plan assets, a plunge in share price is now a potential threat to its pension account.

With the 787-10 in production and the 777X Composite Wing Center (14% of free cash flow) complete, most of BA's big investments are already made. This leaves room for cost reduction in various areas such as 3D printing of titanium for the 787 (15% of material used) and pricing pressures on suppliers through Partnering for Success 1.0 (PFS). ~65% of BA's airplane costs come through the supply chain; hence, leveraging its supplier volume could boost before tax earnings significantly. For example, $70 bn cost of products X 65% = $45.5 bn X 10% = $4.6 bn. If BA could decrease costs through the supply chain by 10% through vertical integration and PFS initiatives, it could add ~50% to EPS. PFS 1.0 focuses on price negotiations, while PFS 2.0 focuses on terms and conditions (i.e. stretching accounts payables). I believe these initiatives put BA in an appreciable position for future earnings.

PFS 1.0: Pricing negotiations

PFS 2.0: Terms and conditions

Over long term, PFS could reduce supplier costs 15%

787-10 Dreamliner

BA's new, revolutionary 787-10 Dreamliner should be a principal cash flow driver over the next decade. This wide-body, twin-engine plane has been in design and testing for over a decade; experiencing various delays and cost deferrals. With industry-leading fuel economy (~20% fuel burn reduction) and a dramatically improved passenger experience, BA and its customers have eagerly awaited the plane. Though production on the new jetliner is underway, Boeing still has challenges to face in regards to producing efficiently and meeting demand.

Management's production rate for the 787-10 had previously been 12 planes per month. During September 2017, BA announced a production rate increase to 14 per month starting 2019. This production rate increase will add ~72 planes in three years to the delivery base. This would increase the 787-10 revenue to by 17% annually, adding $1.1 bn to overall revenue (~1% annually).

Figure 5: Airbus A350-1000 and Boeing 787-10 comparison

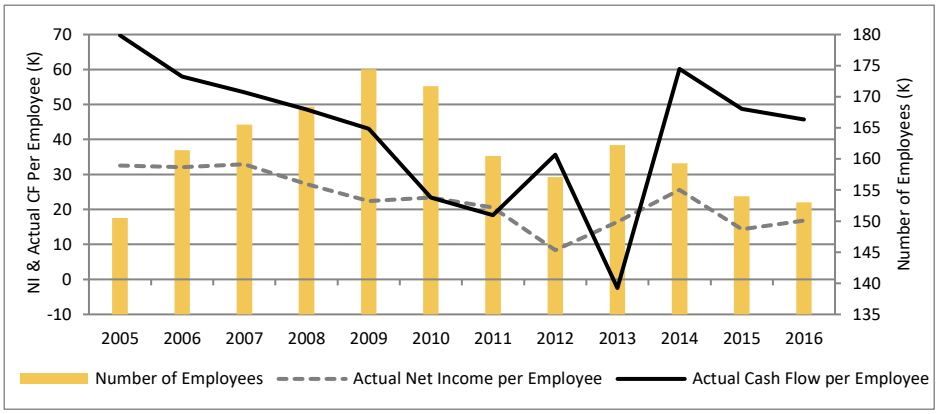
Airbus A350-1000		Boeing 787-10
242 ft	Length	224 ft
212 ft	Wingspan	197 ft
4,768 ft2	Wingarea	3,735 ft2
56 ft	Height	55 ft 9 in
2	Engines	2
97,100 lbf	Thrust per engine	76,000 lbf
194,200 lbf	Total thrust	152,000 lbf
679,000 lbs	MTOW	557,000 lbs
7,992 nm	Range	7,021 nm
M0.85	Cruise speed	M0.85
369	Seats	330
16920	US Gallons	14850
45.85	Gallons/Seat	45.0

Source: AirInsight

The 787-10 is the largest of the 787 family, adding 40 more seats to overall plane capacity. One of Boeing's selling points is the lower operating costs of the new plane. The 787-10 is 17-20 tons lighter than the A350. In regards to costs, it provides fuel efficiency, low fees, low maintenance costs, and mixed-fleet flying abilities (pilots fly aircraft of slightly different configurations within the same working roster). BA may be able to differentiate on lower maintenance costs considering its new BGS unit. BA previously held ~9% market share of global aerospace services business. BGS will allow BA earn more services market share and drive solutions for its customers.

Figure 6: Boeing employee analysis

Customer loyalty: 787-10 achieved 95% part commonality with 787-9

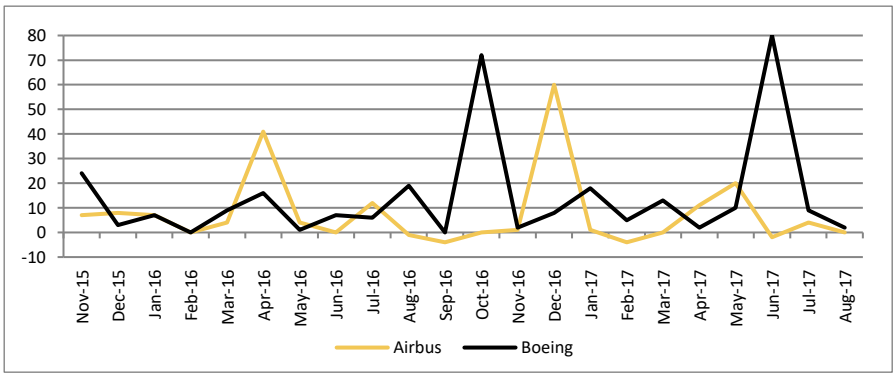


Source: Bloomberg

Investors could also overlook the 787-10's qualitative, passenger-facing characteristics. Until the plane operates for 5-10 years, it will be difficult to tell this is a competitive advantage. The 787-10 features a psychological cabin width design, which is aimed to make the cabin feel more spacious. The cabin air is more humidified, the windows are ~65% bigger, and the mood lighting changes according to the flight parameters (i.e. time zones) to help mitigate jet lag.

As 177 orders for the 787-10 have accumulated, investors will begin making inferences on the plane's future profitability/success outlook. The tariff dispute between U.S. Government and Bombardier's CSeries is another factor weighing into the 787-10's ability to gain traction in the wide-body market. On the other hand, the 787-9 and -10 have 95% part commonality, which could drive customer loyalty.

Figure 7: Boeing and Airbus widebody orders



Source: FactSet

Competition

Figure 10 illustrates BA's comparable research & development spending, allowing them to continue "surfing the [technology] wave" required to compete in the aerospace & defense industry. BA underinvested compared to Airbus between 2011 and 2015, but R&D is rising now and is above Airbus. BA is investing in disruptive technologies with its recently announced plan to acquire Aurora Flight Sciences. This move gives BA an edge in robotic co-pilot capabilities and long-endurance aircraft technology. Aurora has shown promising signs through its projects with Uber and The Pentagon. Boeing's new venture capital arm, HorizonX is another way BA can continue "surfing the wave" in the coming years.

Figure 8: Competitor comparison

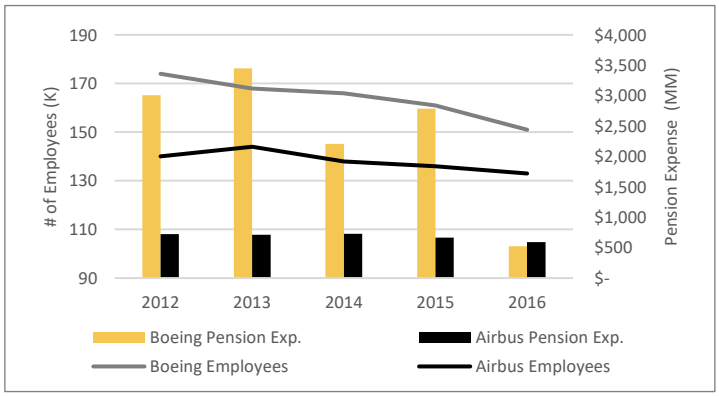
Competitor Comparison	Boeing	Airbus	Embraer	Lockheed Martin	Northrop Gumman
5Yr Sales CAGR	6.6%	6.3%	16.8%	30.0%	-1.5%
5Yr Net Op CF CAGR	21.1%	1.0%	-4.8%	4.1%	5.9%
5Yr Avg Sales/Emp	55.0%	44.0%	87.0%	41.0%	37.0%

Source: FactSet

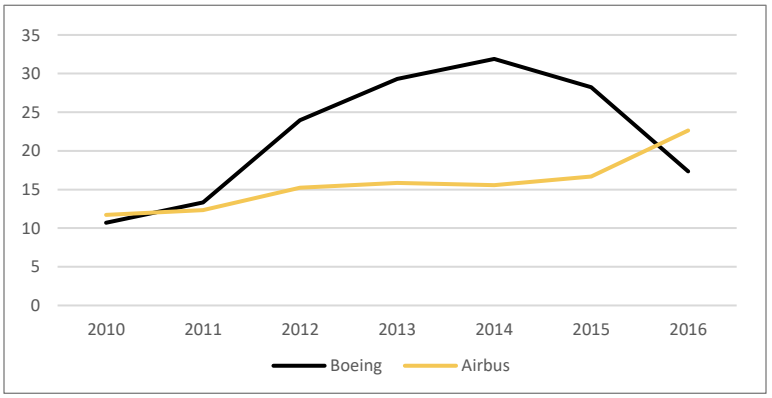
Airbus and BA have similar 5-year sales growth, but have growth slower than Embraer (small aircraft) and Lockheed Martin (defense). However, BA's operating cash flow growth outpaces all of the peers and its sales/employees is better than all but Embraer.

While BA has promising improvements in operations, new product development, and various other areas, it still faces tough competition. Airbus's A350-1000, as illustrated in Figure 5, matches or outperforms BA's -10 on performance specifics, making the two go hand-in-hand on pricing negotiations.

Figure 9 & 10: Pension/employee comparative BA and Airbus (left) & BA/Airbus commercial sales relative to commercial R&D (right)



Source: Bloomberg



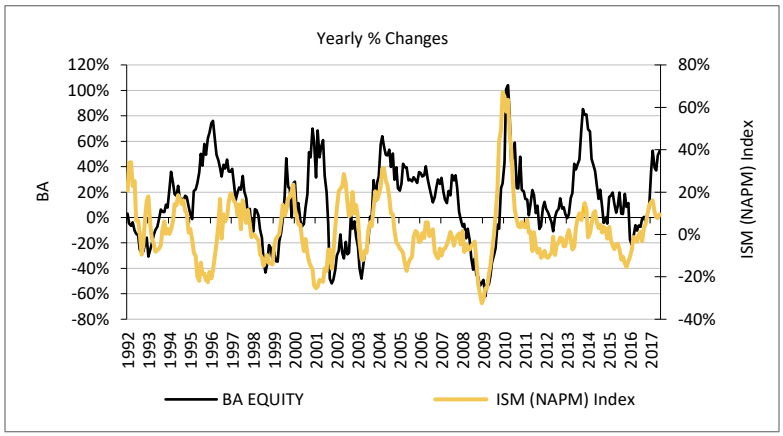
Source: Bloomberg

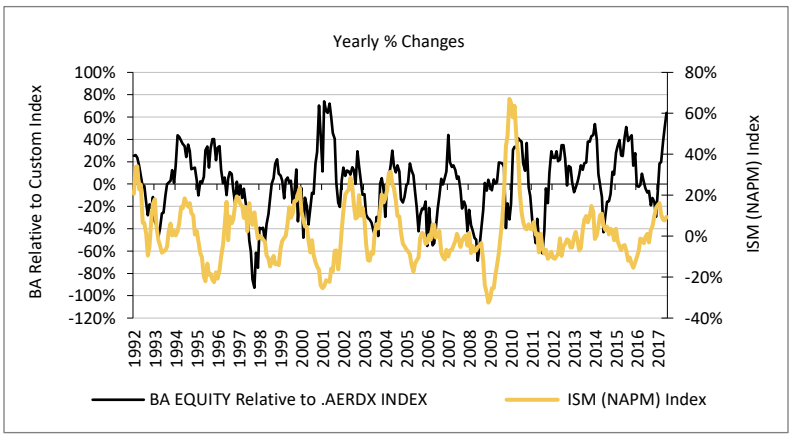
Macroeconomic Trends

BA operates in a global market, exposing it to various risks and opportunities. Recent tourism growth, emerging market travel growth, and geopolitical tensions paint an optimistic picture for the future of aerospace & defense.

Figures 11 and 12 show BA and BA relative to a custom composite correlate with the ISM survey of manufacturers. On an absolute basis, the stock does well as growth rises. Although, it appears to hold up well relative to the market during poor environments and underperforms when the economy improves. I expect this is because of the global nature of BA's business as well as the long-term, above average potential for travel growth.

Figures 11 & 12: ISM compared to BA on an absolute basis (left) and ISM compared to BA relative to custom composite (right)

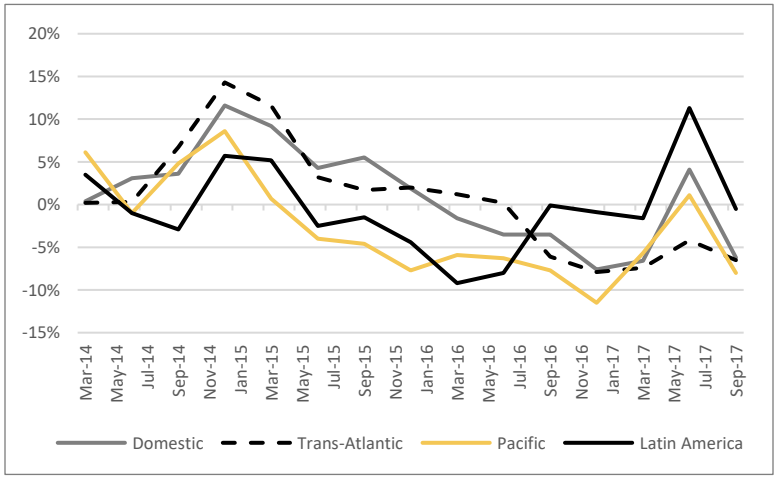




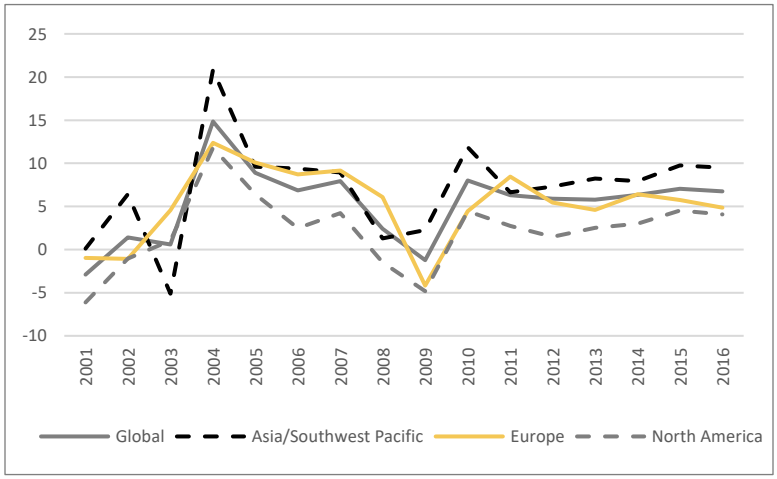
Source: Bloomberg, IMCP

Figure 13 shows US, Trans-Atlantic, pacific, and Latin America airline pricing power. Over the past three years, pricing power among airlines has decreased around ~5%. These trends should increase demand for ever-more efficient planes, services, and business practices among airline firms. Figure 14, though not as sharp of a decline, does suggest a similar trend.

Figures 13 & 14: Airline pricing power by regions



Source: International Air Transport Association - IATA

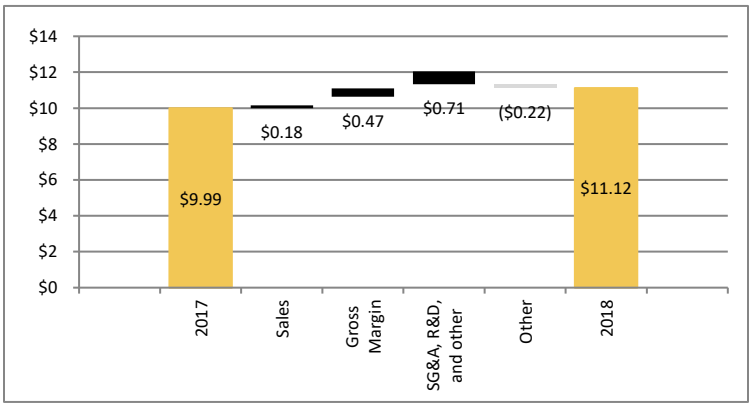


Source: Bloomberg

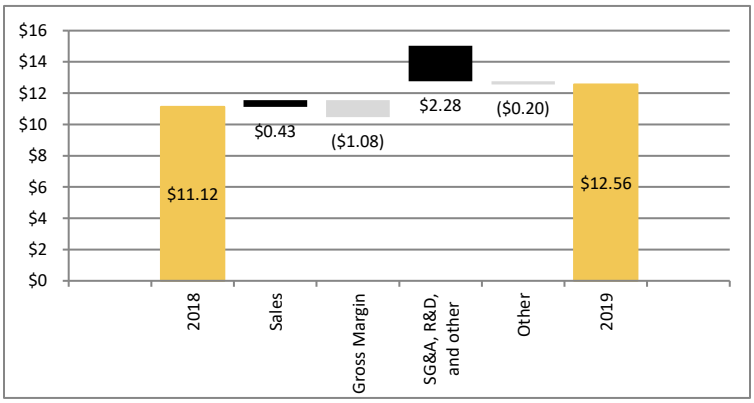
Financial Analysis

I expect EPS to grow to $11.12 in 2018. I project a 1.7% increase in sales driven primarily by BA's Commercial Airplanes business segment. I anticipate sales will add $0.18 to earnings on a per share basis. I believe BA's gross margin will increase to 17.4% based on new productivity with the 787-10 program, that is, increasing monthly production from 12 planes to 14. Gross margin expansion should also come from pricing negotiations in BA's PFS 1.0 initiative. The steady decrease in interest expense from the Boeing Capital business segment should also serve as a tailwind for BA's gross margin. These improvements should add $0.47 to BA's 2018 EPS. Additionally, now that the lengthy 787-10 program is finished, I expect R&D to decline significantly, adding $0.71 to EPS.

Figure 15 & 16 : Quantification of 2018 drivers (left) and quantification of 2019 drivers (right)



Source: IMCP



Source: IMCP

I modeled a 3.7% increase in 2019 overall sales, primarily derived from a 4% uptick in Commercial Airplanes sales. Expansion of Boeing Global Services should negatively affect BA's 2019 gross margin by -$1.08 in the short term as the segment will likely add 600 untrained employees. I expect BA's significant increase in R&D from 2014-2016 to lead to further reduction in the future R&D expenses, adding $2.28 to EPS.

Figure 17 highlights my 2018 and 2019 estimates compared to consensus. I am more bullish on 2018 EPS growth since I believe BA will develop favorable relationships with suppliers through its PFS initiatives. I believe the employee reduction efforts and the move towards plant automation will reduce SG&A more than what is expected by consensus.

Figure 17: Model vs. consensus

My estimates	2016	2017E	2018E	2019E	Consensus	2017E	2018E	2019E
EPS	$ 8.51	$ 9.99	$ 11.12	$ 12.56	EPS	$ 10.13	$ 11.03	$ 12.90
Growth	9.7%	17.4%	11.3%	12.9%	*Growth*	40.0%	8.9%	17.0%
Sales	$ 94,571	$ 90,420	$ 91,948	$ 95,334	Sales	$ 92,164	$ 93,323	$ 98,638
Growth	-1.6%	-4.4%	1.7%	3.7%	*Growth*	-2.5%	1.3%	5.7%

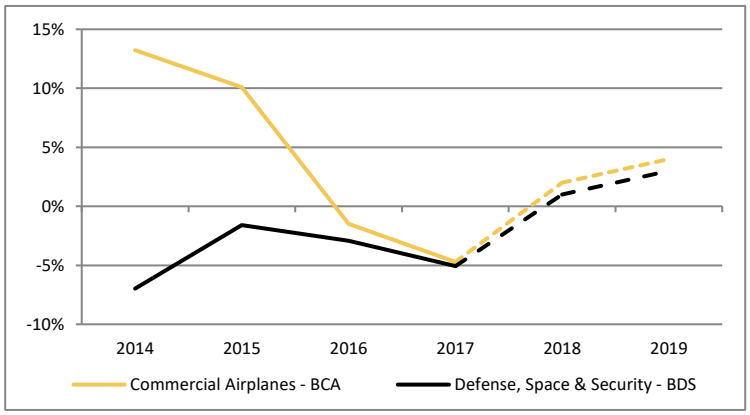
Source: Company reports, IMCP

For 2019 estimates, I do not see sales increasing as drastically as consensus. I am more pessimistic in regards to growth expectations for BA's new services segment. Though the services business will drive more steady sales, I do not believe it will be able to scale has quickly as expected, which is about 80% expected sales growth from 2017 to 2021. Defense sales growth estimates also seem aggressive in my opinion, further pushing my sales estimates from consensus.

Revenues

Boeing's sales in the recent past have been primarily driven by the commercial segment. As commercial is coming out of a high growth period of about 13% in 2014, I expect the cyclical effects of plane manufacturing to have a negative effect on 2017-2019 sales. Through 2019, I do not expect sales growth to exceed 4%. Consensus believes 2019 sales growth for the commercial could reach 5.7%. I believe the defense segment will be moving towards positive growth after the previous three-year period of consistent negative growth. Consensus puts 2019 estimates for defense at 4% while I only expect 3%.

Figure 18: Commercial and defense segment sales YoY % with estimates

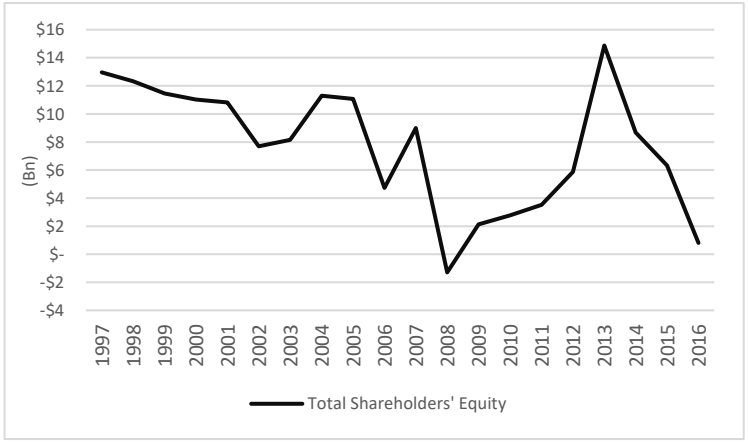


Source: Company reports, IMCP

Return Analysis

Figure 19 shows BA's change in total shareholders' equity since 1997. 2008 shows a -$1.3 bn balance in shareholders' equity, which can cause significant distortions in the ROE equation.

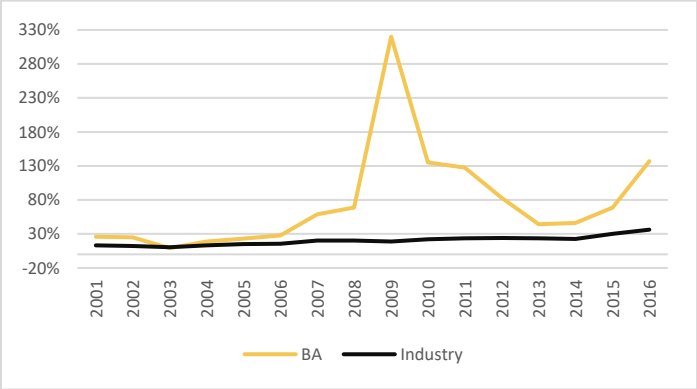
Figure 19: Boeing's total shareholders' equity 1997-2016

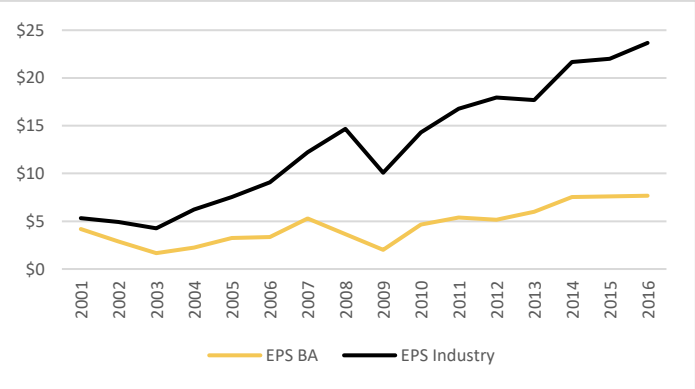


Source: Company reports

The magnitude of distortion can be seen when placing BA's ROE vs industry average side-by-side with BA's growth in EPS vs industry average. Figures 20 and 21 illustrate these comparison metrics.

Figure 20 & 21: Boeing's ROE vs. Industry average (left) and Boeing's EPS vs. industry average (right)

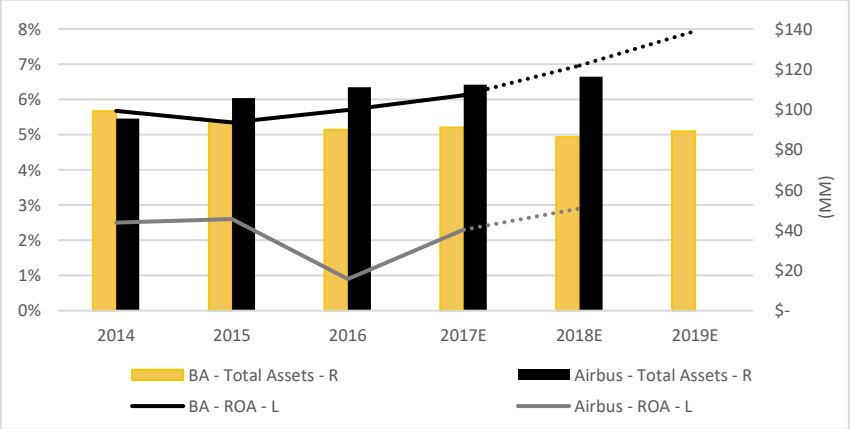




Source: Company reports, FactSet

Therefore, an analysis on BA's return on capital over time can be better conducted by analyzing BA's return on assets. Figure 22 displays BA's ROA and total assets vs. Airbus's from 2014-2019E. As illustrated, BA's ability to shrink its asset base, while increasing its return on assets, has proven it the superior performer in regards to asset efficiency. I believe this is a testament to BA's competitive advantage in airplane manufacturing. Figure 23 shows my modeled estimates for 2017 and 2018 compared to that of consensus. Despite my expectations being more bearish, the ROA outlook for BA in comparison to competitor Airbus is still favorable.

Figure 22 & 23: BA's total assets and ROA vs. Airbus (left) and modeled ROA estimates vs. consensus (right)



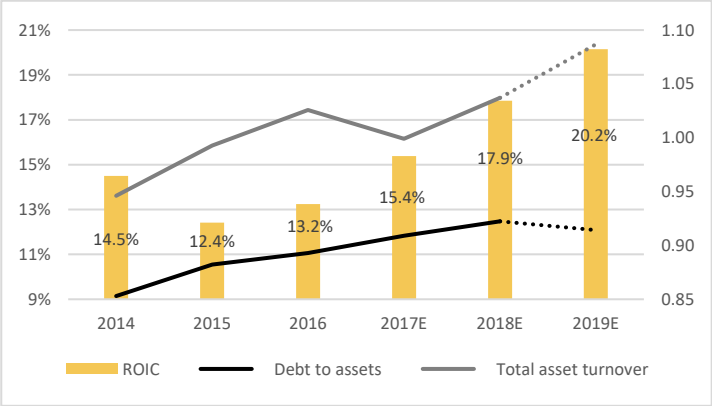
ROA	2017E	2018E
My estimates	6.1%	7.0%
Consensus	7.9%	8.2%

Source: IMCP, FactSet

Source: Company reports, FactSet, IMCP

Figure 24 shows BA's asset turns, D/A, and return on invested capital. BA's ability to increase its asset efficiency, allowing it to decrease its D/A, creates a positive solvency picture. I believe much of this asset efficiency is coming from BA's step toward automation. In BA's Frenrickson plant, robots drill 80% of the holes in the 787 and 777 tails fabricated. BA's partnering of automation and manual work, called Fuselage Automation Upright Build (FAUB), gives it the flexibility/mobility to up production rates on 777s.

Figure 24 & 25 Boeing's Return on invested capital, D/A, and asset turns (left) and sales/employees (right)



Source: Company reports, IMCP

Source: FactSet

Free Cash Flow

Figure 26: Boeing's Free Cash Flow Breakdown, 2013-2019E

Free Cash Flow	2013	2014	2015	2016	2017E	2018E	2019E
NOPAT	$4,870	$5,700	$5,375	$5,526	$6,640	$7,503	$8,557
Growth		*17.0%*	*-5.7%*	*2.8%*	*20.2%*	*13.0%*	*14.1%*
NOWC	8,981	10,638	18,306	11,510	9,258	11,977	13,462
Net fixed assets	27,589	31,413	26,174	27,509	26,865	25,901	25,766
Total net operating capital	$36,570	$42,051	$44,480	$39,019	$36,123	$37,878	$39,228
Growth		*15.0%*	*5.8%*	*-12.3%*	*-7.4%*	*4.9%*	*3.6%*
- Change in NOWC		1,657	7,668	(6,796)	(2,252)	2,719	1,485
- Change in NFA		3,824	(5,239)	1,335	(644)	(964)	(135)
FCFF		$219	$2,946	$10,987	$9,536	$5,748	$7,207
Growth			*1244.6%*	*273.0%*	*-13.2%*	*-39.7%*	*25.4%*
- After-tax interest expense		254	199	271	271	320	350
+ Net new short-term and long-term debt		(565)	894	(12)	816	900	500
FCFE		-$600	$3,641	$10,704	$10,082	$6,328	$7,357
Growth			*-706.8%*	*194.0%*	*-5.8%*	*-37.2%*	*16.3%*

Source: Company reports, IMCP

NOPAT has been increasing since 2013, with the exception of 2015. The 2015 NOPAT decrease of -5.7% was from setbacks and cost overruns with the 787-10 program. After 2015, NOPAT increased 2.8%. I expect this is due to the change from unit cost based accounting to program accounting, which allowed it to build a deferred program balance on the 787-10 program and consider the costs over a longer period of time.

I expect NOPAT to trend upwards considerably as the costs for the 787-10 program are over, just leaving the deferred balance to be paid off. I expect the ramp-up in production (from 12 to 14 planes per month) to allow BA to decrease the deferred balance quickly, while still seeing operating profits. As a result, I expect the FCFF and FCFE per share to increase in 2019. My forecast is based on my

belief that BA will see a significant increase in overall operational efficiency. My FCFF and FCFE estimates shown in Figure 26 include cash and debt. Change in NOWC for 2016 decreased by -$6,796 due to a decrease in cash and an increase in operating liabilities.

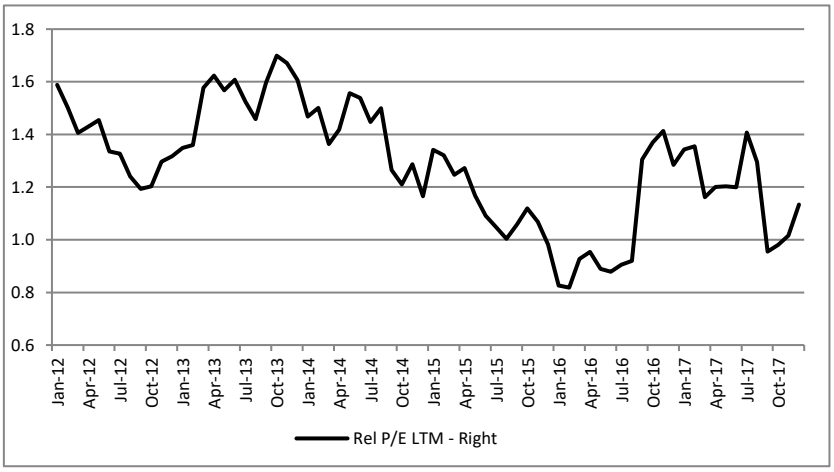
Valuation

BA was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is expensive relative to other firms and is worth $358; however, due to the growth BA has shown in 2017 and the beginning of 2018, this number may be overly optimistic as the trend may not continue. Relative valuation shows BA to be undervalued based on its fundamentals versus those of its peers in the aerospace & defense industry. P/S valuation yielded a price target of $380. A detailed DCF analysis values BA slightly higher, at $322; I give this value a bit more weight because it incorporates assumptions of margin changes and less robust growth seen in mature companies. Based on these valuations, I believe the firm is worth $330.

Trading History

During 2017, BA's LTM P/E picked up from a five year low relative to peers. I believe BA's strong dividend growth, focus on FCF growth, and leadership in aerospace drove its P/E up in 2017. BA's current NTM P/E is at 28.5 compared to its five-year average of 21.1. Though I expect BA's P/E to continue its growth, I do not believe it will grow at the same rate to the end of 2016/beginning of 2017. In the near term, I expect P/E relative to peers to fall from 1.13 to 1.11.

Figure 27: BA LTM P/E relative to composite



Source: Factset

Assuming the firm maintains a 28.5 NTM P/E at the end of 2018, it should trade at $404 by the end of the year.

- Price = P/E x EPS = 28.5 x $14.18 = $404

Discounting $404 back to today at a 12.8% cost of equity (explained in Discounted Cash Flow section) yields a price of $358. This seems like a high valuation when considering consensus expectations for growth versus my more skeptical estimates.

Relative Valuation

BA has strong dividend and FCF growth

BA is currently trading at a TTM P/E of 31.3 when the average is 31.8. BA's P/S is the second highest among peers, with a 2017 P/S of 2.19 compared to an average of 1.45. BA's NPM is just slightly above average, which I believe is another reason investors are willing to pay a premium on BA's earnings. Price to cash flow paints a similar picture in regards to the premium investors are willing to pay – placing BA at a current P/CF of 22.6 compared to the median of 16.1. Looking at past five year sales growth, BA and Airbus are competing closely with 6.6% and 6.3%, respectively.

Figure 28: BA comparable companies

		Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
BA	BOEING CO	$340.82	$202,985	(0.7)	15.6	32.9	41.3	103.2	15.6	18.9	9.3%	-6.2%	40.2%	17.3%	19.1%	7.4%	1.28	900.6%	A	1.93%	49.2%
AIR-FR	AIRBUS SE	$111.73	$86,519	1.0	8.9	4.5	24.9	39.8	8.9	23.7		-62.2%	161.2%	62.3%	27.8%	0.3%	1.56	82.7%		1.63%	
LMT	LOCKHEED MARTIN CORP	$351.42	$100,764	1.9	9.5	14.1	21.0	38.6	9.5	10.6	124.5%	8.0%	7.7%	11.7%	18.9%	-3.9%	0.62		A+	2.32%	109.2%
BBD.B-CA	BOMBARDIER INC -CL B	$2.92	$6,559	1.7	18.8	29.5	42.9	41.7	18.8		-105.8%	-205.3%	-105.0%	400.0%	220.0%		1.73		B-	0.00%	
NOC	NORTHROP GRUMMAN CORP	$338.34	$58,900	0.8	10.2	13.7	28.1	47.2	10.2	9.1	34.0%	17.3%	8.9%	13.0%	16.3%		0.71	204.3%	A+	1.27%	34.0%
ERJ	EMBRAER SA	$25.44	$4,661	(0.2)	6.3	32.3	27.1	9.8	6.3	8.6	-47.0%	6.8%	10.8%	-39.4%	44.3%	12.4%	0.12	99.6%		1.44%	11.2%
Average			$76,731	0.7	11.6	21.2	30.9	46.7	11.6	14.2	3.0%	-40.3%	20.6%	77.5%	57.7%	4.0%	1.00	321.8%		1.43%	50.9%
Median			$72,709	0.9	9.9	21.8	27.6	40.8	9.9	10.6	9.3%	0.3%	9.9%	15.1%	23.4%	3.9%	1.00	152.0%		1.53%	41.6%
SPX	S&P 500 INDEX	$2,854		(0.7)	6.7	10.6	15.4	24.4	6.7			0.5%	10.9%	16.7%	10.4%						

		2017		P/E						2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2015	2016	2017	TTM	NTM	2018	2019	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
BA	http://www.boeing.com	558.3%	187.47	16.8	20.0	15.3	31.3	28.7	28.6	24.0	6.5%	2.19	10.0%	38.4%	18.1	22.6	12.5	2.5%	4.4%	6.6%	$1.82
AIR-FR	http://www.airbusgroup.com	18.9%	6.27	14.7	52.2	19.7	76.1		20.4	16.0	3.2%	1.05	0.8%	8.0%	423.9	16.5	9.5			6.3%	$17.83
LMT	http://www.lockheedmartin.com	-554.3%	-146.12	16.8	17.5	18.8	51.5	22.9	23.6	19.8	7.5%	1.97	10.9%	13.5%	18.9	15.7		-0.1%	6.2%	1.6%	-$2.40
BBD.B-CA	http://www.bombardier.com	-0.4%	-1.08	18.9	-4.8	161.1	-9.2	157.1	58.4	18.2	0.1%	0.40	2.0%	-23.7%	37.7	-28.2	15.1	8.2%	18.8%	3.7%	-$2.71
NOC	http://www.northropgrumman.co	41.7%	10.63	14.2	15.5	17.5	29.5	22.0	22.6	19.4	8.9%	2.27		11.9%	17.6	18.5		5.2%	3.5%		$31.82
ERJ	http://www.embraer.com	7.9%	1.15	24.9	18.7	11.0	11.3	21.4	24.0	16.6	5.4%	0.79	6.6%	2.4%	14.2	8.0	7.3	-10.3%	8.4%	1.1%	$22.05
Average		12.0%	9.72	17.7	19.8	40.6	31.8	50.4	29.6	19.0	5.3%	1.45	6.1%	8.4%	88.4	8.9	11.1	1.1%	8.3%	3.8%	
Median		13.4%	3.71	16.8	18.1	18.1	30.4	22.9	23.8	18.8	6.0%	1.51	6.6%	10.0%	18.5	16.1	11.0	2.5%	6.2%	3.7%	
spx	S&P 500 INDEX			17.4	17.2	16.9			18.5	16.8											

Source: Factset

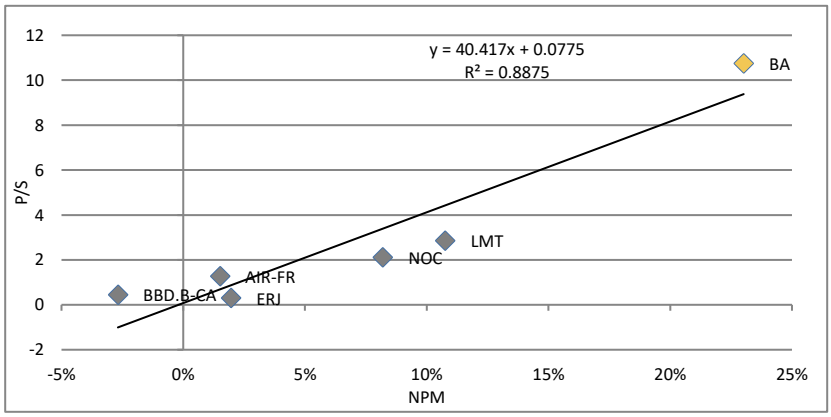
A more thorough analysis of P/S and NPM is shown in Figure 29. The calculated R-squared of the regression says 89% of a sampled firm's P/S is explained by its NPM. BA has the highest P/S and NPM of this grouping, and according to this measure, is overvalued.

BA and Airbus's past 5-year sales growth are 6.6% and 6.3%, respectively

- Appropriate P/S = estimated 2018 NPM (6.7%) x 40.417 + 0.0775 = 2.8
- Target Price = Estimated P/S (2.8) x 2018 SPS ($153.91) = $429

Discounting back to the present value at a 12.8% cost of equity leads to a target price of $380 using this metric.

Figure 29: P/S vs NPM



Source: Factset

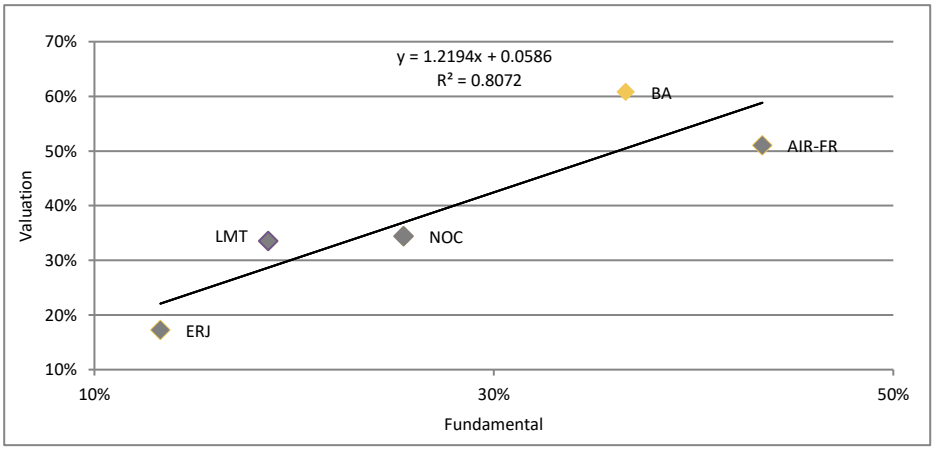
I created a composite ranking of several valuation and fundamental metrics to further compare BA to competing firms. Since the variables have different scales, each was converted to a percentile before calculating the composite score. For valuation metrics, I chose an equal weight of P/S and P/CF and the remaining weight to NTM P/E. For fundamental metrics, I chose equal weightings for 2017 and 2018 earnings growth, 2016 NPM, and STM sales growth. I removed Bombardier for this analysis because many of the firm's data points were extreme outliers. After eliminating Bombardier, the regression shows an R-squared of 0.81. Based on this analysis, one can see that BA is overvalued based on fundamentals.

Figure 30: Composite valuation, % of range

		Fundamentals				Valuation				
		25%	25%	25%	25%	50%	25%	25%		
		Earnings Growth		NPM	Sales Growth					
Ticker	Names	2017	2018	2016	STM	NTM P/E	P/S	P/CF	Fund	Value
BA	BOEING CO	21%	2%	100%	24%	22%	100%	100%	37%	61%
AIR-FR	AIRBUS SE	100%	5%	7%	62%	58%	12%	77%	43%	51%
LMT	LOCKHEED MARTIN CORP	3%	0%	47%	25%	18%	27%	72%	19%	34%
NOC	NORTHROP GRUMMAN CORP	4%	0%	36%	62%	18%	20%	82%	25%	34%
ERJ	EMBRAER SA	6%	-6%	9%	45%	16%	3%	35%	13%	17%

Source: IMCP

Figure 31: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

A three stage discounted cash flow model was also used to value BA.

For the purpose of this analysis, the company's cost of equity was calculated to be 12.8% using the Capital Asset Pricing Model. The underlying assumptions used in calculating this rate are as follows:

- The risk free rate, as represented by the ten year Treasury bond yield, is 2.36%.
- A ten-year beta of 1.36 was utilized since the company has higher risk than the market.
- A long-term market rate of return of 10% was assumed, since historically, the market has generated an annual return of about 10%.

Given the above assumptions, the cost of equity is 12.8% (2.36 + 1.36 (10.0 – 2.36)).

Stage One - The model's first stage simply discounts fiscal years 2018 and 2019 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $11.40 and $13.26, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $20.53 per share. Thus, stage one of this discounted cash flow analysis contributes $20.53 to value.

Stage Two - Stage two of the model focuses on fiscal years 2020 to 2024. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are then discounted using the company's 12.8% cost of equity. I assume 3.7% sales growth in 2019, rising to a constant rate of 4% through 2024. BA's average sales growth rate has been 9% since 1997. I believe 4% is a fair assumption for BA's mature growth stage. The ratio of sales to NOWC will remain around its current level of 7, but eventually decrease to 6.8 as new programs begin. NFA turnover will remain around 2018 levels. My average of NOPAT expectations in the second stage is 7.5%, which is comparable to BA's past 5 year average of 8.6%.

Figure 32: FCFE and discounted FCFE, 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$11.40	$13.26	$12.94	$11.67	$12.69	$14.28	$20.07
Discounted FCFE	$10.11	$10.42	$9.01	$7.21	$6.95	$6.93	$8.64

Added together, these discounted cash flows total $59.27.

Stage Three – Net income for the years 2020 – 2024 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $12.94 in 2018 to $21.18 in 2024.

Figure 33: EPS estimate for 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$12.94	$14.79	$15.42	$16.04	$16.68	$17.35	$21.18

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. Therefore, a P/E ratio of 28.7 is assumed at the end of BA's terminal year. While this may be a high multiple at the end of 2024 for BA in particular, it is important to keep in mind the average industry P/E for aerospace & defense of 25.2. By 2024, The S&P 500 P/E may revert towards its long-term average of 14-17. I believe BA deserves a premium because of its financial strength, strong competitive potion, and growth.

Given the assumed terminal earnings per share of $21.18 and a price to earnings ratio of 28.5, a terminal value of $608 per share is calculated. Using the 12.8% cost of equity, this number is discounted back to a present value of $262.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $322 is calculated (20.54 + 38.83 + 262.36). Given BA's current price of $343.11, this model indicates that the stock is slightly overvalued.

Scenario Analysis

The cyclicality of aircraft manufacturing and the aerospace & defense sector can cause significant changes to my valuation assumptions. To try to understand how these fluctuations could change my valuation, I made adjustments to my DCF model assumptions to create a scenario analysis. In each of my scenarios, I made adjustments to the beta, second stage growth rate, and the terminal P/E.

Figure 34 & 35: Bull case (top) and bear case (bottom)

Bull			Changes	
First Stage	$20.88	Present Value of first 2 year cash flow	Decrease beta by 0.15	1.2
Second Stage	$40.62	Present Value of year 3-7 cash flow	1% higher second stage g	5%
Third Stage	$307.40	Present Value of terminal value P/E	Increase terminal P/E by 1	29.7
Value (P/E)	**$368.90**	= Value at beginning of fiscal year 2018		

Bear			Changes	
First Stage	$20.21	Present Value of first 2 year cash flow	Increase beta by 0.16	1.52
Second Stage	$37.14	Present Value of year 3-7 cash flow	1% lower second stage g	3%
Third Stage	$223.74	Present Value of terminal value P/E	Decrease terminal P/E by 1	27.7
Value (P/E)	**$281.09**	= Value at beginning of fiscal year 2018		

Business Risks

Although I have many reasons to be optimistic about BA, there are several valid reasons of risk that may be causes of concern.

Program cost overruns

As seen with the 787-10 program (~$32 bn deferred balance), BA is not exempt from cost overruns on new projects in development. Therefore, there is an inherent risk to developing new products for future growth. Additionally, BA enters into fixed-price sales contracts, which could worsen losses on cost overruns.

Reliance on US and non-US subcontractors:

BA relies on US and non-US subcontractors for raw materials, pre-assembled aircraft parts, production commodities, as well as the non-tangible services which BA provides to customers. A negative change in any one of these relationships could affect BA's ability to serve its customer in a timely, quality manner. This could affect BA's customer satisfaction negatively, driving customers to BA's competitors for better service. Though BA is attempting to further integrate its supply chain, this risk is likely one that will be inherent in BA's business model for years to come.

Globalization of business:

Though BA's new globalized business model creates many advantages, there are also risks with the new, ever-expanding reach. These risks include: trade policies, changes in regulation, fluctuations in international currency exchanges, geopolitical tensions, and numerous more. Changes towards a strong dollar could improve Airbus' competitive edge.

Downturn in commercial aviation:

As I have outlined, much of BA's future growth and earnings power is heavily reliant on its commercial segment. BA's commercial segment relies heavily on market dynamics of commercial aviation. The rate of change in transportation technology is risky for the commercial aviation industry and therefore, to BA.

Defense spending fluctuations

BA's defense segment is typically a source of steady income that cushions the firm through its inherent cyclicality. BA's defense segment is heavily reliant on the US government Department of Defense. The DoD has the right to terminate or modify existing contracts it holds with BA. In 2016, 23% of BA's revenues were sourced from US contracts.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Relatively Low

I do not see a risk of new entrants to BA's defense unit, primarily due to difficulty in acquiring new US government defense contracts. Entry into this business would require significant capital, intellectual property, and human capital. Further, new entrants would have to overcome long-existing relationships established with leading contractors (Lockheed Martin, BA, Raytheon, Northrop Grumman, etc.

I believe the moat around commercial flight is not as wide as it previously had been. The rate of change in transportation has changed considerably, which can be seen in advancements like the Hyperloop and autonomous vehicles. Rapid advancement in rocket technology by SpaceX is a testament to how quickly changes could take place. BA's creation of a venture capital arm, healthy R&D spending, and top-level human capital still keeps this threat relatively low, though.

Threat of Substitutes - High

Airbus's A350-1000 wide-body plane is very comparable to BA's 787-10, which was boasted as one of the most advanced, efficient planes BA has released. BA and Airbus compete closely on orders in various commercial plane models which can be seen in their respective 6.6% and 6.3% 5-year sales CAGRs.

Supplier Power - Medium

BA's ability to vertically integrate its supply chain, as seen with Boeing Avionics, gives the firm room to negotiate with suppliers. BA's demands for 15-25% cost reductions from its suppliers shows BA has the capacity to make steep demands, while still maintaining relationships.

Buyer Power – Medium

Though customer loyalty can be maintained due to high switching costs, airline firms have very competitive products at their discretion. BA has taken measures, through its Boeing Global Services unit, though, to further drive its customer loyalty by adding tremendous value (servicing, analytics, and expertise) well after aircraft deliveries.

Intensity of Competition – Very High

Lockheed Martin is the leader in terms of defense contracts with the US DoD. The US DoD has the ease of awarding contracts to whichever contractor it pleases.

Commercial aviation is also a highly competitive, which can be seen in the aforementioned sales CAGRs. Due to the decline in airline pricing power, airliners have significant incentive to choose efficiency over loyalty.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Financial strength	Dependence on US DoD spending
Wide moat	Labor relations
Government relationships	Defense segment
Opportunities	**Threats**
New BGS busines unit	Airbus
Globalization of sales	Fixed price contracts
Technology acquisition/development	Foreign regulation

Appendix 3: Income Statement

Income Statements (MM)							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Sales	$86,623	$90,762	$96,114	$94,571	$90,420	$91,948	$95,334
Direct costs	73,268	76,752	82,088	80,790	75,049	75,949	79,604
Gross Margin	13,355	14,010	14,026	13,781	15,371	15,999	15,730
SG&A, R&D, and other	6,737	6,540	6,596	7,547	7,234	6,804	5,243
EBIT	6,618	7,470	7,430	6,234	8,138	9,195	10,487
Interest	386	333	275	306	332	393	429
EBT	6,232	7,137	7,155	5,928	7,806	8,802	10,058
Taxes	1,646	1,691	1,979	673	1,436	1,620	1,851
Income	4,586	5,446	5,176	5,255	6,370	7,183	8,207
Net income	4,586	5,446	5,176	5,255	6,370	7,183	8,207
Basic Shares	747.0	707.0	666.6	617.2	555.0	555.0	555.0
EPS	$6.14	$7.70	$7.76	$8.51	$11.48	$12.94	$14.79
DPS	$0.40	$0.43	$0.48	$0.57	$0.63	$0.63	$0.63

Appendix 4: Balance Sheet

Balance Sheet (MM)							
Items	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Assets							
Cash	9,088	11,733	11,302	8,801	8,569	17,494	32,529
Operating assets ex cash	49,816	54,693	56,182	52,459	54,110	49,652	38,134
Operating assets	58,904	66,426	67,484	61,260	62,679	67,146	70,663
Operating liabilities	49,923	55,788	49,178	49,750	53,421	55,169	57,200
NOWC	8,981	10,638	18,306	11,510	9,258	11,977	13,462
NFA	27,589	31,413	26,174	27,509	26,865	25,901	25,766
Invested capital	*$36,570*	*$42,051*	*$44,480*	*$39,019*	*$36,123*	*$37,878*	*$39,228*
Marketable securities	6,170	1,359	750	1,228	1,463	1,613	1,813
Total assets	*$92,663*	*$99,198*	*$94,408*	*$89,997*	*$91,007*	*$94,660*	*$98,241*
Liabilities and Shareholder Equity							
Short-term and long-term debt	$9,635	$9,070	$9,964	$9,952	$10,768	$11,668	$12,168
Other liabilities	18,108	25,550	28,869	29,408	25,673	26,673	27,673
Equity	14,997	8,790	6,397	887	1,145	1,150	1,200
Total supplied capital	*$42,740*	*$43,410*	*$45,230*	*$40,247*	*$37,586*	*$39,491*	*$41,041*
Total liabilities and equity	*$92,663*	*$99,198*	*$94,408*	*$89,997*	*$91,007*	*$94,660*	*$98,241*

Appendix 5: Sales Forecast

Sales (MM)							
Items	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Sales	86,623	90,762	96,114	94,571	90,420	91,948	95,334
Growth		*4.8%*	*5.9%*	*-1.6%*	*-4.4%*	*1.7%*	*3.7%*
Commercial Airplanes - B	52,981	59,990	66,048	65,069	62,000	63,240	65,770
Growth		*13.2%*	*10.1%*	*-1.5%*	*-4.7%*	*2.0%*	*4.0%*
% of sales	*61.2%*	*66.1%*	*68.7%*	*68.8%*	*68.6%*	*68.8%*	*69.0%*
Defense, Space & Security	33,197	30,881	30,388	29,498	28,000	28,280	29,128
Growth		*-7.0%*	*-1.6%*	*-2.9%*	*-5.1%*	*1.0%*	*3.0%*
% of sales	*38.3%*	*34.0%*	*31.6%*	*31.2%*	*31.0%*	*2.0%*	*30.6%*
Capital	408	416	413	298	400	408	416
Growth		*2.0%*	*-0.7%*	*-27.8%*	*34.2%*	*2.0%*	*2.0%*
% of sales	*0.5%*	*0.5%*	*0.4%*	*0.3%*	*0.4%*	*0.4%*	*6.0%*

Appendix 6: Ratios

Ratios	2013	2014	2015	2016	2017	2018	2019
Profitability							
Gross margin	15.4%	15.4%	14.6%	14.6%	17.0%	17.4%	16.5%
Operating (EBIT) margin	7.6%	8.2%	7.7%	6.6%	9.0%	10.0%	11.0%
Net profit margin	5.3%	6.0%	5.4%	5.6%	7.0%	7.8%	8.6%
Activity							
NFA (gross) turnover		3.08	3.34	3.52	3.33	3.49	3.69
Total asset turnover		0.95	0.99	1.03	1.00	0.99	0.99
Liquidity							
Op asset / op liab	1.18	1.19	1.37	1.23	1.17	1.22	1.24
NOWC Percent of sales		10.8%	15.1%	15.8%	11.5%	11.5%	13.3%
Solvency							
Debt to assets	10.4%	9.1%	10.6%	11.1%	11.8%	12.3%	12.4%
Debt to equity	64.2%	103.2%	155.8%	1122.0%	940.4%	1014.6%	1014.0%
Other liab to assets	19.5%	25.8%	30.6%	32.7%	28.2%	28.2%	28.2%
Total debt to assets	29.9%	34.9%	41.1%	43.7%	40.0%	40.5%	40.6%
Total liabilities to assets	83.8%	91.1%	93.2%	99.0%	98.7%	98.8%	98.8%
Debt to EBIT	1.46	1.21	1.34	1.60	1.32	1.27	1.16
EBIT/interest	17.15	22.43	27.02	20.37	24.55	23.42	24.44
Debt to total net op capital	26.3%	21.6%	22.4%	25.5%	29.8%	30.8%	31.0%
ROIC							
NOPAT to sales	5.6%	6.3%	5.6%	5.8%	7.3%	8.2%	9.0%
Sales to NWC		(151.02)	32.53	19.47	53.22	(38.09)	(7.76)
Sales to NFA		3.08	3.34	3.52	3.33	3.49	3.69
Sales to IC ex cash		3.14	3.03	2.98	3.13	3.84	7.04
Total ROIC ex cash		19.7%	16.9%	17.4%	23.0%	31.3%	63.2%
NOPAT to sales	5.6%	6.3%	5.6%	5.8%	7.3%	8.2%	9.0%
Sales to NOWC		9.25	6.64	6.34	8.71	8.66	7.50
Sales to NFA		3.08	3.34	3.52	3.33	3.49	3.69
Sales to IC		2.31	2.22	2.27	2.41	2.49	2.47
Total ROIC		14.5%	12.4%	13.2%	17.7%	20.3%	22.2%
NOPAT to sales	5.6%	6.3%	5.6%	5.8%	7.3%	8.2%	9.0%
Sales to EOY NWC	(809.56)	(82.89)	13.72	34.91	131.23	(16.67)	(5.00)
Sales to EOY NFA	3.14	2.89	3.67	3.44	3.37	3.55	3.70
Sales to EOY IC ex cash	3.15	2.99	2.90	3.13	3.28	4.51	14.23
Total ROIC using EOY IC ex cash	17.7%	18.8%	16.2%	18.3%	24.1%	36.8%	127.7%
NOPAT to sales	5.6%	6.3%	5.6%	5.8%	7.3%	8.2%	9.0%
Sales to EOY NOWC	9.65	8.53	5.25	8.22	9.77	7.68	7.08
Sales to EOY NFA	3.14	2.89	3.67	3.44	3.37	3.55	3.70
Sales to EOY IC	2.37	2.16	2.16	2.42	2.50	2.43	2.43
Total ROIC using EOY IC	13.3%	13.6%	12.1%	14.2%	18.4%	19.8%	21.8%
ROE							
5-stage							
EBIT / sales		8.2%	7.7%	6.6%	9.0%	10.0%	11.0%
Sales / avg assets		0.95	0.99	1.03	1.00	0.99	0.99
EBT / EBIT		95.5%	96.3%	95.1%	95.9%	95.7%	95.9%
Net income /EBT		76.3%	72.3%	88.6%	81.6%	81.6%	81.6%
ROA		5.7%	5.3%	5.7%	7.0%	7.7%	8.5%
Avg assets / avg equity		8.07	12.75	25.32	89.08	80.90	82.09
ROE		45.8%	68.2%	144.3%	627.0%	625.9%	698.5%
3-stage							
Net income / sales		6.0%	5.4%	5.6%	7.0%	7.8%	8.6%
Sales / avg assets		0.95	0.99	1.03	1.00	0.99	0.99
ROA		5.7%	5.3%	5.7%	7.0%	7.7%	8.5%
Avg assets / avg equity		8.07	12.75	25.32	89.08	80.90	82.09
ROE		45.8%	68.2%	144.3%	627.0%	625.9%	698.5%
Payout Ratio		5.5%	6.1%	6.6%	5.5%	4.9%	4.3%
Retention Ratio		94.5%	93.9%	93.4%	94.5%	95.1%	95.7%
Sustainable Growth Rate		43.3%	64.0%	134.7%	592.6%	595.5%	668.8%

Appendix 7: 3-stage DCF Mode

Cost of equity	
Market return	10.0%
- Risk free rate	2.36%
= Market risk premium	7.6%
* Beta	1.36
= Stock risk premium	10.4%
r = r_f + stock RP	**12.8%**

Terminal year P/E	
2017	28.70

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*1.7%*	*3.7%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
NOPAT / S	*8.2%*	*9.0%*	*9.0%*	*9.0%*	*9.0%*	*9.0%*	*10.5%*
S / NOWC	*7.68*	*7.08*	*7.08*	*7.08*	*6.80*	*6.80*	*6.80*
S / NFA (EOY)	*3.55*	*3.70*	*3.66*	*3.50*	*3.46*	*3.42*	*3.50*
S / IC (EOY)	*2.43*	*2.43*	*2.41*	*2.34*	*2.29*	*2.28*	*2.31*
ROIC (EOY)	*19.8%*	*21.8%*	*21.7%*	*21.1%*	*20.6%*	*20.5%*	*24.3%*
ROIC (BOY)		*22.6%*	*22.7%*	*22.6%*	*21.9%*	*21.5%*	*24.8%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$91,948	$95,334	$99,148	$103,113	$107,238	$111,527	$115,989
NOPAT	$7,503	$8,557	$8,923	$9,280	$9,651	$10,037	$12,179
Growth		*14.1%*	*4.3%*	*4.0%*	*4.0%*	*4.0%*	*21.3%*
- Change in NOWC	2719	1485	542	560	1206	631	656
NOWC EOY	*11977*	*13462*	*14004*	*14564*	*15770*	*16401*	*17057*
Growth NOWC		*12.4%*	*4.0%*	*4.0%*	*8.3%*	*4.0%*	*4.0%*
- Chg NFA	-964	-135	1323	2371	1533	1617	529
NFA EOY	*25,901*	*25,766*	*27,089*	*29,461*	*30,994*	*32,610*	*33,140*
Growth NFA		*-0.5%*	*5.1%*	*8.8%*	*5.2%*	*5.2%*	*1.6%*
Total inv in op cap	1755	1350	1865	2932	2739	2248	1185
Total net op cap	37878	39228	41093	44025	46764	49011	50197
FCFF	$5,748	$7,207	$7,058	$6,349	$6,913	$7,790	$10,994
% of sales	*6.3%*	*7.6%*	*7.1%*	*6.2%*	*6.4%*	*7.0%*	*9.5%*
Growth		*25.4%*	*-2.1%*	*-10.1%*	*8.9%*	*12.7%*	*41.1%*
- Interest (1-tax rate)	320	350	364	379	394	410	426
Growth		*9.3%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
+ Net new debt	900	500	487	506	526	547	569
Debt	11668	12168	12655	13161	13687	14235	14804
Debt / tot net op capital	*30.8%*	*31.0%*	*30.8%*	*29.9%*	*29.3%*	*29.0%*	*29.5%*
FCFE w debt	$6,328	$7,357	$7,181	$6,476	$7,045	$7,928	$11,137
% of sales	*6.9%*	*7.7%*	*7.2%*	*6.3%*	*6.6%*	*7.1%*	*9.6%*
Growth		*16.3%*	*-2.4%*	*-9.8%*	*8.8%*	*12.5%*	*40.5%*
/ No Shares	555.0	555.0	555.0	555.0	555.0	555.0	555.0
FCFE	$11.40	$13.26	$12.94	$11.67	$12.69	$14.28	$20.07
Growth		*16.3%*	*-2.4%*	*-9.8%*	*8.8%*	*12.5%*	*40.5%*
* Discount factor	0.89	0.79	0.70	0.62	0.55	0.49	0.43
Discounted FCFE	$10.11	$10.43	$9.03	$7.22	$6.97	$6.95	$8.66
Third Stage							
Terminal value P/E							
Net income	$7,183	$8,207	$8,559	$8,902	$9,258	$9,628	$11,753
% of sales	*7.8%*	*8.6%*	*8.6%*	*8.6%*	*8.6%*	*8.6%*	*10.1%*
EPS	$12.94	$14.79	$15.42	$16.04	$16.68	$17.35	$21.18
Growth		*14.3%*	*4.3%*	*4.0%*	*4.0%*	*4.0%*	*22.1%*
Terminal P/E							28.70
* Terminal EPS							$21.18
Terminal value							$607.76
* Discount factor							0.43
Discounted terminal value							$262.36

Summary		
First stage	$20.54	Present value of first 2 year cash flow
Second stage	$38.83	Present value of year 3-7 cash flow
Third stage	$262.36	Present value of terminal value P/E
Value (P/E)	**$321.73**	= value at beg of fiscal yr 2018