Investment Management Certificate Program (IMCP)

University of Wisconsin-Milwaukee

Lubar School of Business

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Class of 2019 Report Packet

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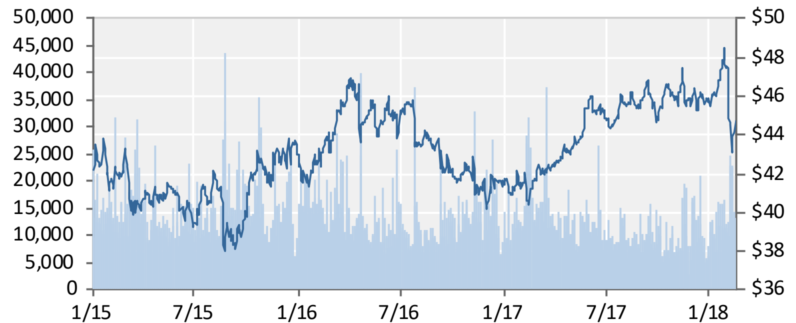
Recommendation	BUY
Target (today's value)	$48.00
Current Price	$43.82
52-week range	$41.74 - $48.62

Nonalcoholic beverages

The Coca-Cola Company

Share Data	
Ticker:	KO
Market Cap. (Billion):	$186.9
Inside Ownership	0.7%
Inst. Ownership	67.6%
Beta	0.75
Dividend Yield	3.6%
Payout Ratio	140.4%
Cons. Long-Term Growth Rate	7.5%



Source: FactSet Prices

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$44.3	$41.9	$36.0	$32.2	$33.3
Gr %	-3.7%	-5.5%	-14.0%	-10.7%	3.5%
Cons	-	-	$35.2	$30.8	$32.0
EPS					
Year	$1.69	$1.51	$1.87	$1.58	$1.67
Gr %	4.3%	-10.5%	23.8%	-15.5%	5.7%
Cons	-	-	$1.91	$1.98	$2.13

Summary: I recommend a neutral rating with a target of $48. Despite declining sales in previous years, the completion of divestures should lead to higher margins and asset turns. The firm is looking to satisfy consumer preferences by expanding its product portfolio into noncarbonated beverages in an attempt to increase sales and brand recognition.

Ratio	'13	'14	'15	'16	'17E
ROE (%)	26.3%	26.9%	26.9%	40.6%	43.0%
Industry	23.5%	29.3%	29.3%	34.4%	33.8%
NPM (%)	16.8%	15.8%	15.8%	27.4%	28.3%
Industry	11.5%	14.1%	14.1%	17.4%	17.9%
A. T/O	0.48	0.47	0.47	0.37	0.38
ROA (%)	8.1%	7.4%	7.4%	10.1%	10.7%
Industry	9.9%	11.6%	11.6%	10.1%	10.4%
A/E	2.87	3.26	3.65	3.34	3.29

Valuation	'15	'16	'17E	'18E
P/E	20.7	21.5	21.7	21.2
Industry	31.6	31.6	33.2	24.8
P/S	4.0	4.2	4.3	4.55
P/B	6.1	7.3	7.9	8.66
P/CF	18.0	18.0	20.6	26.4
EV/EBIT	19.8	21.8	21.7	19.8

Performance	Stock	Industry
1 Month	-1.3%	3.2%
3 Month	0.0%	2.5%
YTD	11.4%	25.0%
52-week	11.2%	25.5%
3-year	13.9%	66.3%

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Key Drivers:

- Bottler refranchising: Coca-Cola plans to complete the refranchising of two-thirds of its North American and China bottlers. The largest North American bottler acquisition in 2010 drove operating costs up and essentially hurt profit margins. This divesture should now increase margins and decrease leverage.

- Consumer trends: Consumers have recently shown a preference for noncarbonated beverages, such as: RTD tea, juice drinks, and bottled water. Consumers have also shown a desire for a variety of package sizes, as some prefer smaller novelty sizes. KO is starting to provide a variety of sizes and new products.

- Cost of raw materials: Recent hurricanes have disrupted Coca-Cola's supply chain and have driven up the costs of fruit juices, especially orange juice.

- Competition: PepsiCo. is Coca-Cola's largest competitor in terms of nonalcoholic beverage sales and the two companies hold over 75% of the market share. Coca-Cola plans to diversify its product portfolio and packaging to stand apart from its competition.

Valuation: According to relative valuation, Coca-Cola appears to be fairly valued among its peers. A combination of the approaches suggests that Coca-Cola is fairly valued, as my analysis produces a stock value of $47.53 and the shares are currently trading at $47.61.

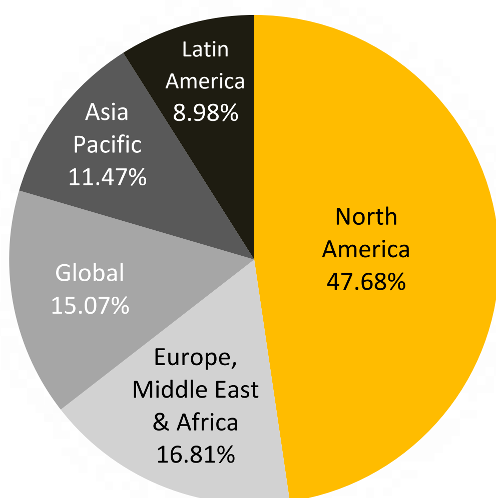
Risks: Threats to the business include health-related concerns, sustainability and water scarcity, shifting consumer preferences, and competition.

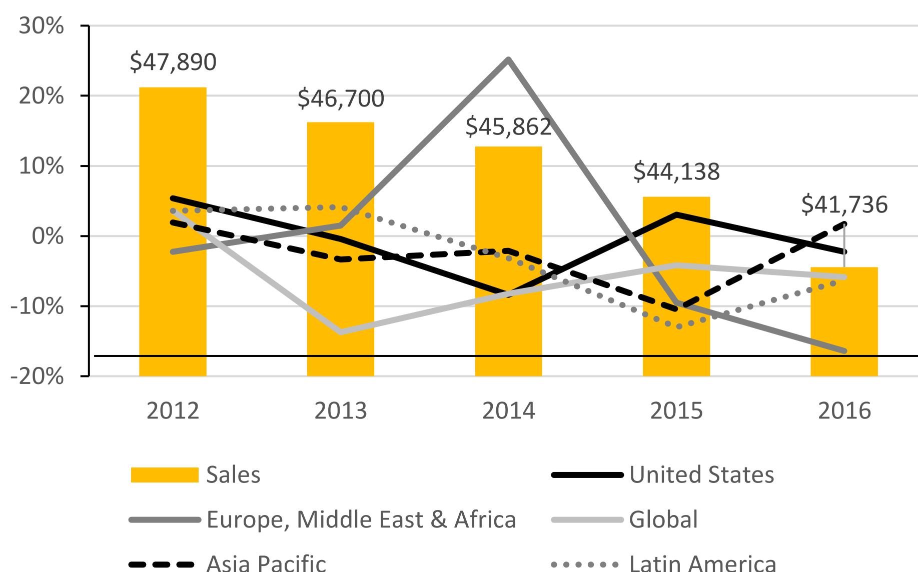
Company Overview

The Coca-Cola Company (KO) is a beverage company that manufactures, markets, and sells non-alcoholic beverages. The firm's nonalcoholic beverages include both sparkling and still products, such as: soda, bottled water, fruit/vegetable juice, and sports and energy drinks. These beverages are referred to as "finished product business." KO also produces beverage concentrates and syrups and refers to them as the "concentrate business." The firm makes these products available to consumers by means of company-owned or controlled bottling and distribution operators, independent bottling partners, distributors, wholesalers, and retailers. Coca-Cola is mostly known for its fizzy soft drinks like Fanta, Diet Coke, and Sprite. However, KO has several products that are healthy and noncarbonated, including: Minute Maid, FUZE TEA, Powerade, and Glacéau Vitaminwater. The Coca-Cola Co. generates 48% of its total net operating revenue within the United States and 52% outside of the United States. Its "operating groups" are as follows:

- Europe, Middle East and Africa: Coca-Cola Europe, Middle East and Africa is the second largest segment and continuously experiences unfavorable currency fluctuations. Growth continues to decline at a -0.8% CAGR.
- Latin America: Coca-Cola Latin America is the smallest segment and has been deteriorating at a -3.9% CAGR due to foreign currency fluctuations, the Venezuela Fair Price Law, and high inflation.
- North America: Coca-Cola North America is the firm's largest revenue earning segment at 48% of sales. Growth has been slowing at a -1.7% CAGR.
- Asia Pacific: Coca-Cola Asia Pacific experienced the most growth last year. Growth is attributed to an increase in concentrate sales and still beverage sales. However, from 2012-2016 revenues declined -13.9% and growth has been falling at a -2.9% CAGR.
- Bottling Investments: This operating group consists primarily of KO's company-owned or -controlled bottling, sales, and distribution operations. This segment has proven unprofitable and Coca-Cola has begun refranchising bottling operations.

Figures 1 and 2: 2016 revenue by geographical segment (Left) and growth rate history by geographical segment since 2012





Source: Company reports

Business/Industry Drivers

Though several factors may contribute to the performance of Coca-Cola, the following are the most important business drivers:

1) Bottler refranchising
2) Consumer trends
3) Cost of raw materials
4) Competition
5) Macroeconomic factors

Bottler Refranchising

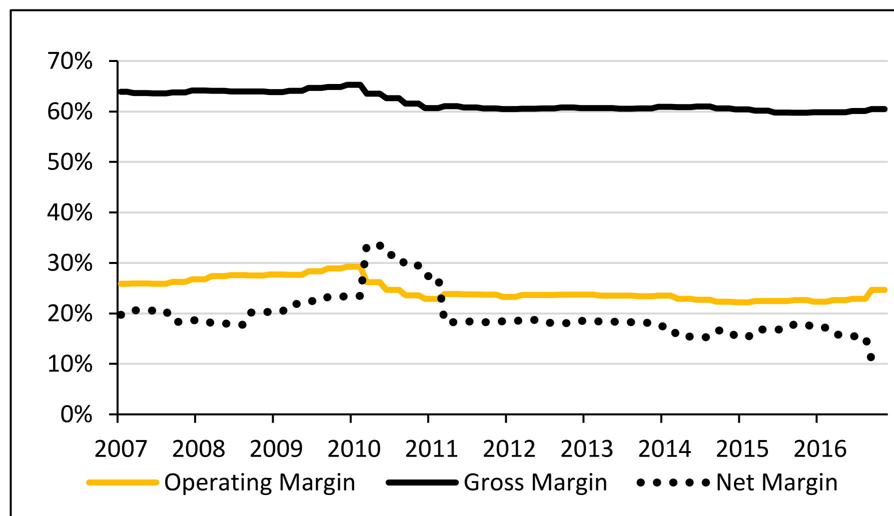
The Coca-Cola Company has recently undergone a great deal of change. Its CEO of eight years, Muhtar Kent, announced that he would be stepping down May 1, 2017. Taking his place is current President and COO of the Company, James Quincey. New leadership can bring a new business strategy. KO appears to be undoing the 2010 accquisition of its largest franchisee bottler. This accquisition gave Coca-Cola more control over its North American supply chain. Now the Company is looking to add to its beverage porfolio and focus on stregthening the brand.

KO is refranchising two-thirds of its bottling operations in North America and China

The bottler acquisition cost $12.3 billion and negatively impacted margins and sales have seen a steady decline since. The bottling operations are also capital-intensive. In order to refocus, the Company has set out to refranchise two-thirds of its bottling operations in North America and China. This could potentially threaten the relationship between KO and bottlers. The process of refranchising will not quickly undo the outcome of the 2010 acquisition, but it will be a step in the right direction. This change in direction will allow Coca-Cola to focus attention on the conentrate sales, which have steadily been rising in comparison to nonalcoholic beverages.

Upon the completion of refranchising at the end of 2017, I expect to see an upturn in profit margins and a reduction in capital. However, costs associated with the refranchising have the potential to further reduce net income. You can see how both gross and operating margin fell after the 2010 acquistion as sales and COGS increased by 33% and 42% respectively. In 2010, KO recognized $4 billion in extraordinary gains from the acquistion of Coca-Cola Enterprises North America, thus increasing the net margin. Net profit decreased by 27% from 2010-2011. Since KO decided to refranchise in 2016, extraordinary losses increased 44% from 2015-2016, thus explaining the dip in net margin at the end of 2016.

Figures 3: Margin history %



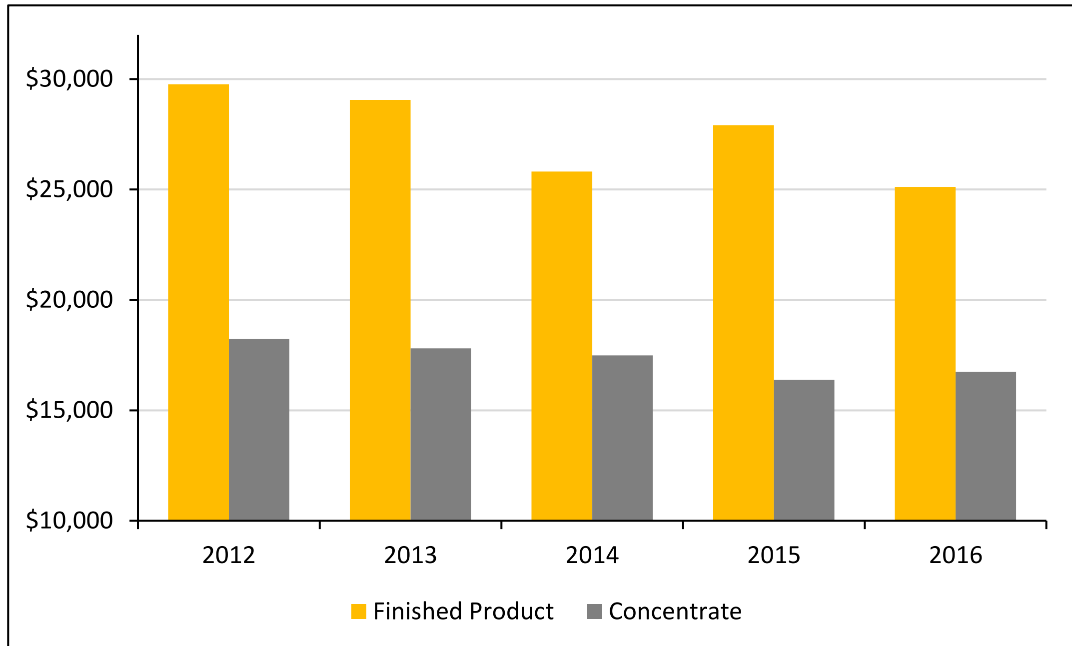
Source: Company reports

Consumer Trends

Consumers are concerned with healthy-living and sustainability

Recent consumer trends have been toward healthy-living and sustainability and KO has been quick to recognize this change in demand. Coca-Cola is working to add more low-sugar options to its beverage portfolio. A lot of these options are referred to as "still beverages," which are noncarbonated drinks, such as: bottled water, flavored water, juices, teas, and sports drinks. As a result of the new trends, the nonalcoholic carbonated beverage industry has experienced a steady decline in sales. I believe that with the addition of more healthy beverage alternatives, Coca-Cola could develop a competitive advantage.

Figures 4: KO sales by business segment since 2012 (Millions)



Source: FactSet

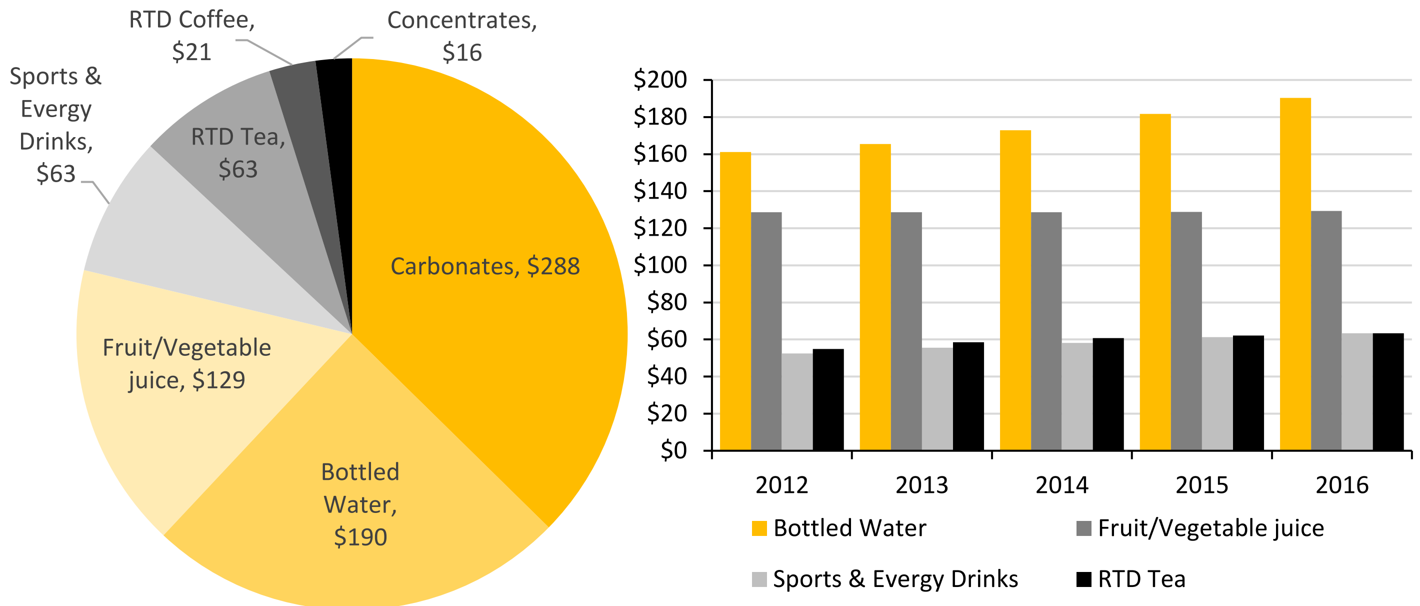
In terms of sustainability, Coca-Cola has received a great deal of backlash in the past over its consumption of water. Water is the main ingredient in the majority of KO's products and even in its manufacturing process. Water quantity and quality is of great importance to Coca-Cola not only because products rely on it, but operations do as well. Long-term, as clean water becomes scarce, Coca-Cola stands to incur higher costs to obtain it. Government regulations also constrict the Company's use of raw materials. However, Coca-Cola remains very mindful about being a green company.

Still beverages prove popular with a 5-yr CAGR of 2.4%

Nonalcoholic carbonated beverage sales have remained stagnant with a 0.1% 5-yr CAGR, whereas still beverage sales have been slowly increasing with a 2.4% 5yr CAGR. Coca-Cola plans to utilize this trend strategically and introduces new still beverage products. As a result of this, I expect to see an upturn in sales.

In addition to the growing popularity of still beverages, a smaller package size has proven to be increasingly desired. The consumer desire for a smaller volume, such as the 8oz can, is most likely connected to the health-conscious trend. This is because a smaller volume has less sugar. Other consumers, unconcerned with the current health trend, may be more inclined to purchase smaller packages of Coca-Cola products because they perceive the product to be a novelty. Coca-Cola stands to make a profit from this trend because it allows the firm to charge more for the smaller specialty size, which happens to require less packaging materials.

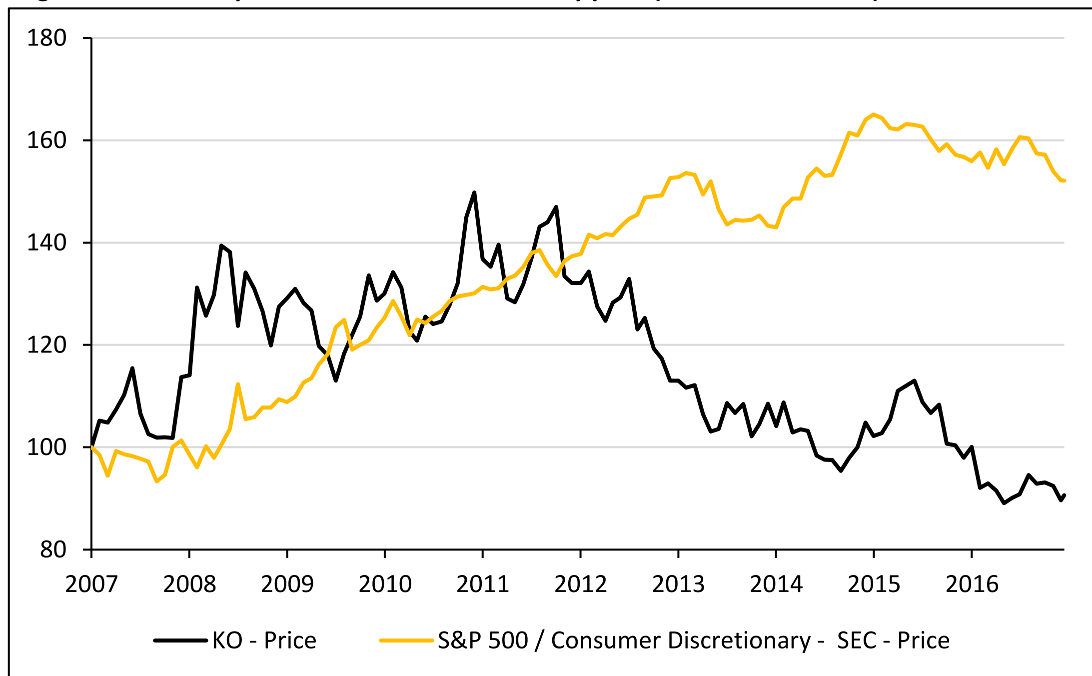
Figures 5 and 6: 2016 global soft drink comparison, in billions (Left) and global revenue history since 2012 (Right)



Source: Bloomberg, IMCP, dollars in billions

While KO is struggling to grow because of a mature nonalcoholic carbonated beverage industry and consumer preference changes, it is still a staple. It does well when the economy deteriorates. Whether the economy is doing good or bad, consumers continue to buy Coca-Cola products. During the financial crisis of 2008, KO outperformed the S&P500.

Figure 7: Coca-Cola price vs consumer discretionary price (relative to S&P 500)



Source: FactSet

Cost of Raw Materials

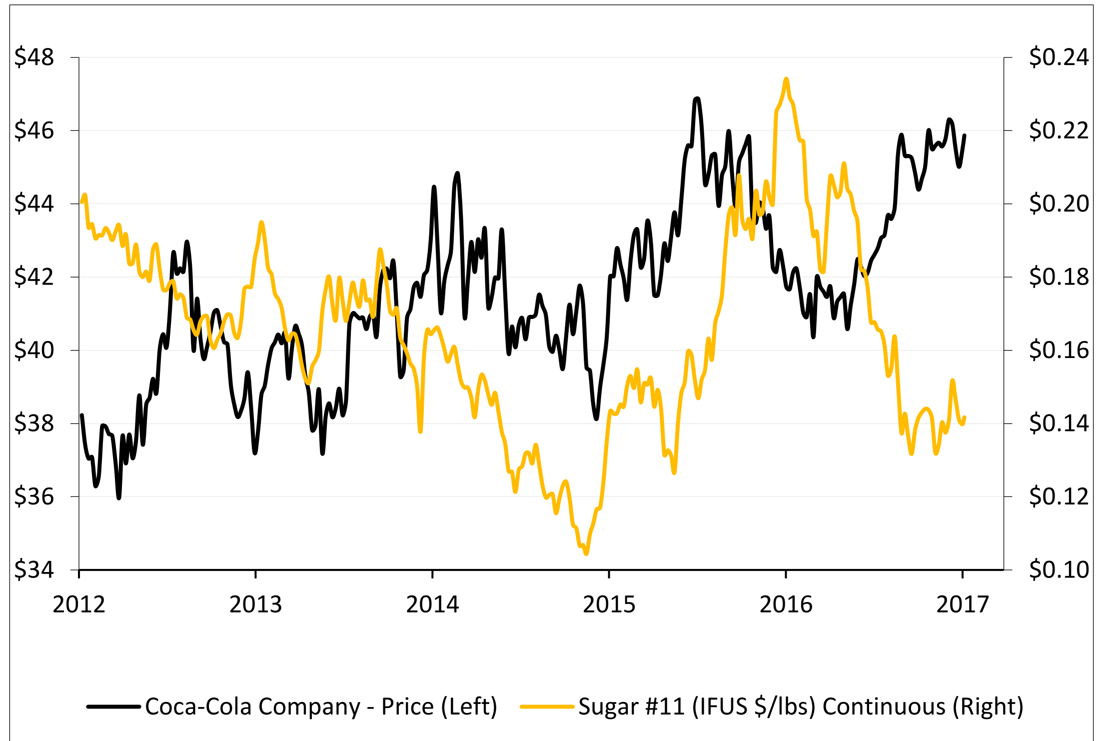
Coca-Cola uses a variety of raw materials. While water is the main ingredient in beverages, nutritive sweeteners are also of great importance. In Figure 8, one can see that Coca-Cola's price varies inversely with the cost of sugar.

Over the past five years, sugar has proven to be a rather volatile raw material. Sugar reached a high of $0.23/lb., whereas today sugar is selling at $0.14/lb., or a 39% decrease in price. The consumer health trend may help keep the cost of this volatile raw material low.

Reduced agricultural productivity may increase KO's cost of raw materials

Lower agricultural productivity may increase the cost of several raw materials. Hurricane Irma left Florida devastated and most of its citrus farms have been flooded. Florida is a huge producer of citrus to places all over the U.S. and inventory has been slashed. Orange juice is an important ingredient in KO's production of Minute Maid and Simply. Alico, Inc., one Coca-Cola's main suppliers of citrus and cane sugar, was impacted by Hurricane Irma. Alico, Inc. derives 34.2% of its revenue from Coca-Cola and 32.5% from Pepsi.

Figure 8: Coca-Cola price compared to cost of sugar since 2012



Source: FactSet

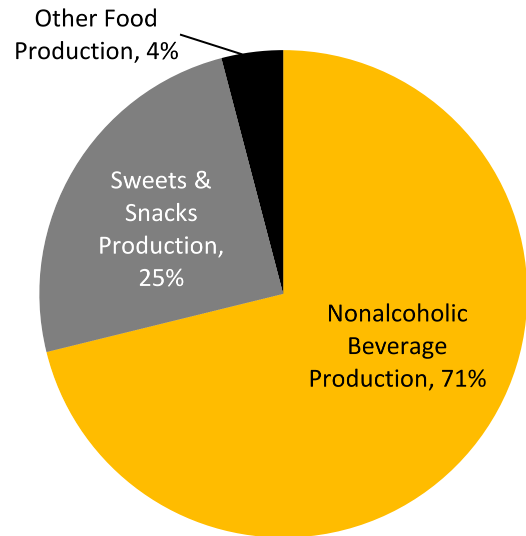
Coca-Cola's raw materials don't only consist of the substances that go inside the bottle. Materials for packaging are also important; however, due to the refranchising of North American bottlers, Coca-Cola will be less impacted by the costs of these components. Packaging materials are included in KO inventory totals. After the 2010 bottler acquisition, inventories grew 17% and they have recently been declining due to the bottler refranchising (8% decline from 2015-2016).

KO possibly limited its growth by not diversifying past nonalcoholic beverage production.

Competition

Coca-Cola has 46%, Pepsi 37%, and other companies 13% market weight of the nonalcoholic beverage industry. Coca-Cola and Pepsi are fierce competitors. KO is 100% focus on beverages, whereas 25% of Pepsi's sales are from food. Numerous companies only focus on nonalcoholic beverage production, but KO is by far the largest. This could sound like a competitive advantage, but because of Coca-Cola's size, the advantage isn't propelling the firm. Other large competitors like Unilever, Pepsi, and Nestle benefit from diversity in food. Lack of exposure to food limits growth and concentrates its business on a maturing carbonated beverage industry. Consumers frequently pair their beverages with snacks and since KO is not producing snacks, its beverages are being paired with competitor snacks. PepsiCo Frito-Lay North America business segment has a 5-yr CAGR at 3.1% which has offset the negative growth in beverage sales.

Figure 9: PepsiCo (PEP) revenue exposure by sector

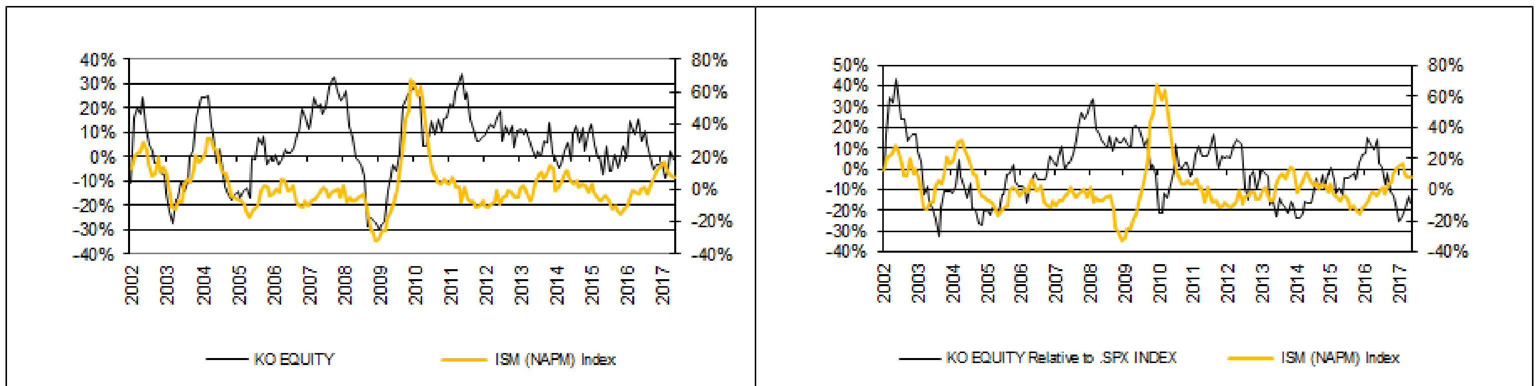


Source: FactSet

Macroeconomic Factors

Consumer staples are non-cyclical and have an 8.2% share of the S&P 500. Coca-Cola has about a 9.9% weight of the consumer staples sector. Data shows that when the economy is performing poorly, Coca-Cola tends to perform better. However, KO lags when the economy is expanding.

Figure 10 and 11: ISM index vs. KO since 2002 (Left) ISM index vs. KO relative to SPX index (Right)



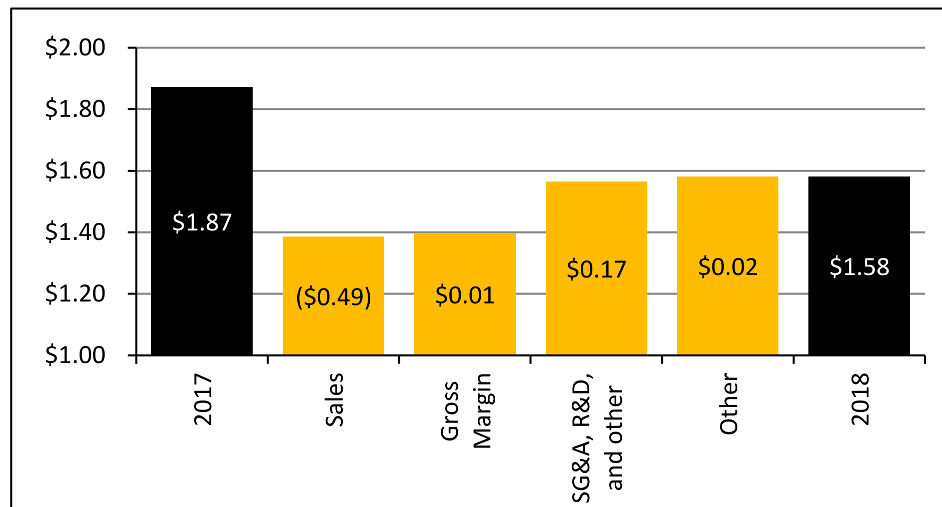
Source: Bloomberg, IMCP

Financial Analysis

Quantification of Drivers

Figure 12 and 13 quantify what I believe are the major 2018 and 2019 financial drivers of The Coca-Cola Company. I expect EPS to decrease from $1.87 to $1.58 or 16% in 2018. Due to the concentrated market and relatively slim product line, believe sales will decline and account for $0.49 reduction in EPS. I have forecasted gross margin to remain relatively stable and it only impacts EPS by $0.01. Due to the decline in sales and ongoing divestures, I expect KO to spend less on SG&A and R&D as a percent of sales. I believe this will add $0.17 to EPS.

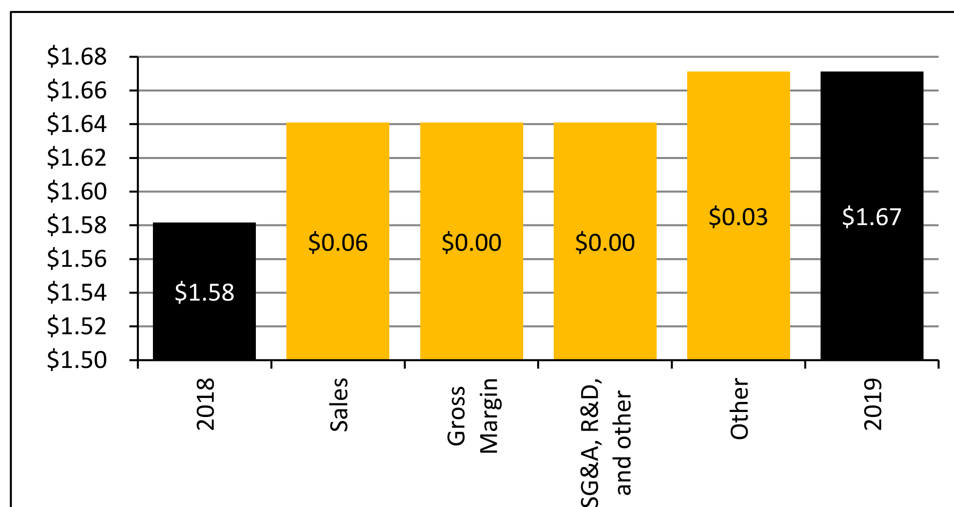
Figure 12: 2018 Quantification of drivers



Source: Company reports

In 2019, I expect Coca-Cola to be diversifying its product portfolio and creating value for the consumers. I predict this to be the beginning of the company's growth, post bottle refranchising. I believe that margins will remain relatively the same over 2019. However, if sales do not increase despite the wider product line, margins will tighten.

Figure 13: 2019 Quantification of drivers

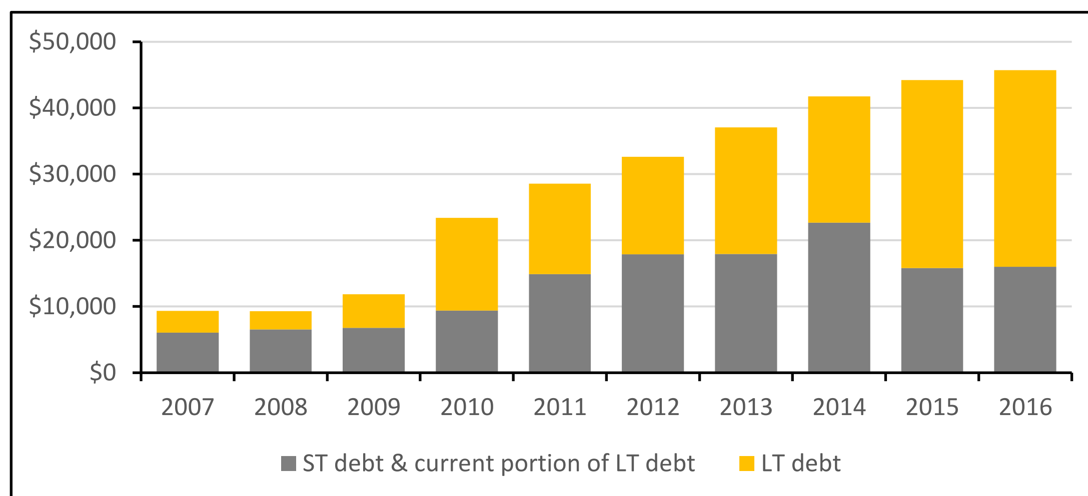


Source: Company reports

Free Cash Flow

Since the 2010 bottler acquisition, KO has accumulated substantial debt and it has the free cash flow to do this. As the firm undoes its acquisition, I expect the firm to begin paying down debt. In FY2010, short-term debt increased 38% and long-term debt increased substantially by 178%. Figure 15 shows that operating capital is expected to decline $13 billion in 2017 as KO divests its bottling business (top panel). This is expected to temporarily grow cash (operating capital ex cash is in top panel and with cash is in bottom).

Figure 14: Long-term & short-term debt from 2007-2016 (Millions)



Source: FactSet

After 2017, this cash will be used to pay down debt (bottom panel), and the firms still has about $8 billion each year in FCFE for share buybacks (estimated at $1.5 billion and dividends at $6.5 billion).

Figure 15: Free cash flow

Free Cash Flow	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
With out cash and debt						
NOPAT	$7,417	$6,693	$6,944	$7,243	$7,246	$7,500
-Change in net operating capital ex cas	545	(1,511)	(3,988)	(12,993)	1,963	2,060
FCFF	6,872	8,204	10,932	20,237	5,283	5,440
- After-tax interest expense	293	(673)	394	461	430	337
FCFE	$6,579	$8,877	$10,538	$19,775	$4,853	$5,103
With cash and debt						
NOPAT	$7,417	$6,693	$6,944	$7,243	$7,246	$7,500
- Change in net operating capital	(393)	(2,556)	(2,960)	(821)	(3,991)	(4,359)
FCFF	7,810	9,249	9,904	8,064	11,237	11,859
- After-tax interest expense	293	(673)	394	461	430	337
+ Change in short-term and long-term c	2,138	3,247	742	(2,500)	(3,000)	(3,500)
FCFE	$9,655	$13,169	$10,252	$5,103	$7,807	$8,022

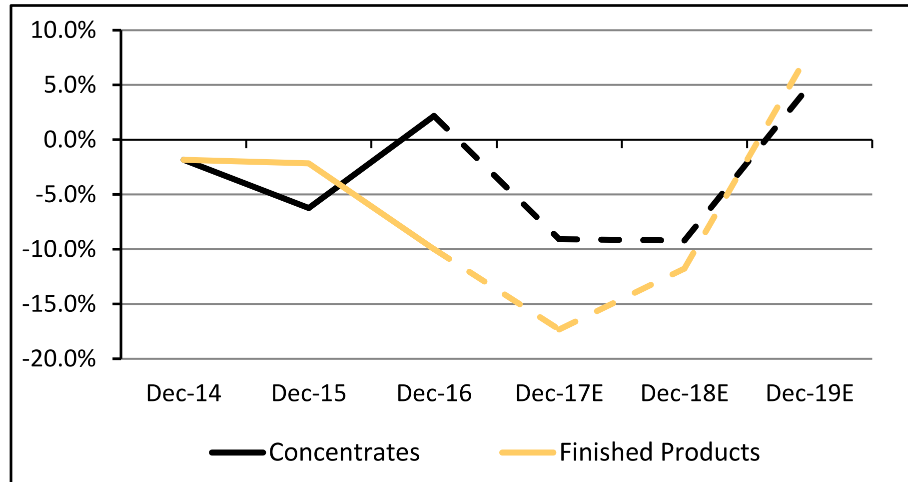
Source: Company reports

Sales Forecast

Sales for finished products have been declining steadily over the last three years and I attribute a portion of the bottling business. However, after the completion of the divesture, I expect sales to tick upward in FY2019. Overall, I have estimated FY2018 sales to decrease by 11% and FY2019 to increase by 3.5%. I attribute this increase to Coca-Cola's strategy to diversify its product portfolio line and packaging.

In FY2018, I expect finished product sales to decline 12% and only account for $18 billion, whereas concentrates should decline at a slower pace of 9% and account for $14 billion. This estimate puts finished products at 57% of sales and concentrates at 43%.

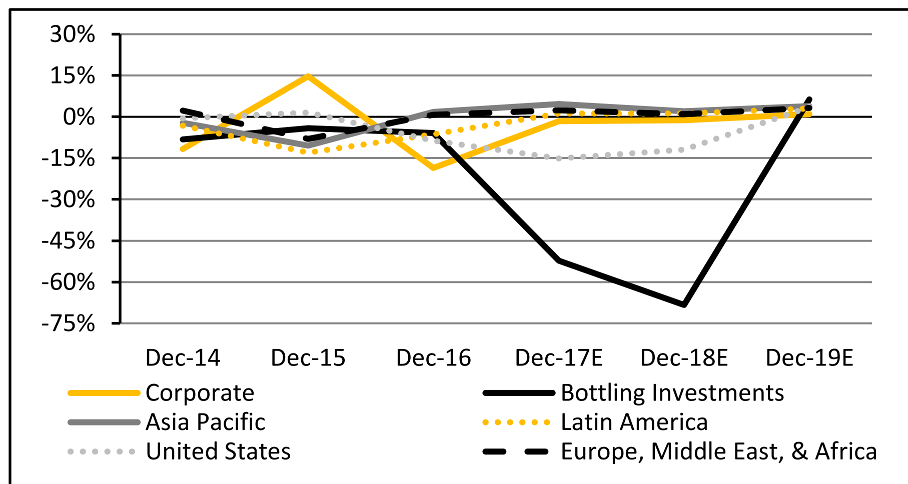
Figure 16: Business segment sales forecasting



Source: Factset, IMCP

In terms of operating segments, I expect bottling investments to drastically decline about 52% in FY2017 and 70% in FY2018. I also expect a decline in United States sales, due to the majority of bottlers being in North America. I project a modest increase in the remaining operating segments due to growth in preference for noncarbonated beverages in these areas.

Figure 17: Geographic segment sales forecasting



Source: Factset, IMCP

Estimate vs. Consensus Analysis

My sales estimates are more bullish than consensus because I believe that Coca-Cola's North American sales will not be as negatively affected as others predict. I also have higher assumptions for EBIT margins because of my projected increase in sales.

Figure 18: EPS estimates vs consensus

	Dec-18E	Dec-19E
Consensus	$1.98	$2.13
Estimates	$1.58	$1.67

Source: Factset, IMCP

Figure 19: Sales estimates vs consensus

	Dec-18E	Dec-19E
Consensus	$30.8B	$32.5B
Estimates	$32.1B	$33.3B

Source: Factset, IMCP

5-Step DuPont Analysis

Recently, Coca-Cola's ROE has been well above the industry average (5yr industry ROE is 21.5%). Figure 18 shows how Coca-Cola's EBIT margin post the divesture will grow ROE. Other factors affecting this margin includes price increases, productivity improvements, and more favorable commodity costs. One can see that KO's increase in leverage also boosted ROE in the past, but A/E in forecasted to come down in the next few years.

Figure 20: 5-stage DuPont Analysis

ROE	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
5-stage						
EBIT / sales	21.1%	19.7%	20.6%	25.0%	28.0%	28.0%
Sales / avg assets	0.51	0.49	0.47	0.42	0.39	0.43
EBT / EBIT	96.1%	110.0%	94.3%	93.6%	94.1%	95.5%
Net income /EBT	76.1%	76.5%	80.2%	95.9%	80.2%	80.3%
ROA	7.8%	8.1%	7.4%	9.3%	8.2%	9.2%
Avg assets / avg equity	2.84	3.23	3.62	3.59	3.39	3.32
ROE	22.2%	26.1%	26.6%	33.6%	27.8%	30.4%

Source: Company reports

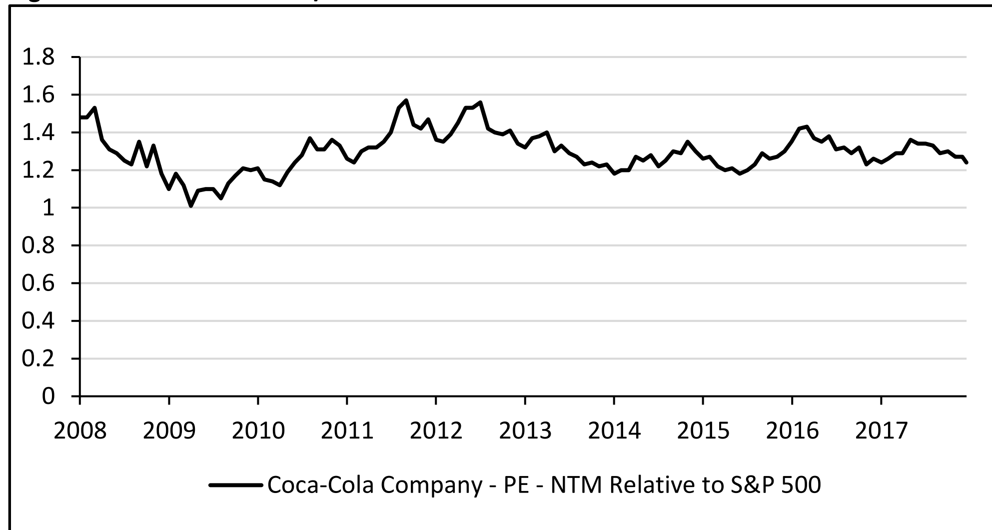
Valuation

I have valued Coca-Cola using multiples and a 3-stage discounted cash flow analysis. Based on earnings multiples, KO has been historically slightly more expensive that the industry (Figure 21). However, recent events such as the bottler divestments, have warranted a much higher P/E multiple. I place more weight on the discounted cash flow method, as this offers a better analysis of the firm's future growth opportunities.

Trading History

Coca-Cola's current P/E (relative to the S&P 500) is again approaching what it was around the time the firm acquired its largest North American bottler. KO's current NTM P/E is 23.4 compared to its five-year average of 20.5. I believe that the NTM P/E is rather low for the growth I expect to see post bottler divestitures.

Figure 21: Coca-Cola NTM P/E Relative to S&P 500



Source: FactSet

Assuming the firm maintains a 23.4 NTM P/E at the end of 2018, it should trade at $39.1 by the end of the year.

- P = P/E × EPS = 22.4 * $1.67 = $37.41

Discounting $37.41 back to today at an 8.2% cost of equity (explained in Discounted Cash Flow section) yields a price of $34.57.

<u>Relative Valuation</u>

Coca-Cola is trading at a TTM P/E of 42.5, which is much higher than the majority of my selected comparables except for Monster. This is most likely due to the high growth expected after selling off its largest bottlers. Despite the current elevated P/E, the NTM P/E is about average in comparison to its peers. However, Coca-Cola's current P/B ratio is quite close to the comparables' average, as the firm has a ROE at the median.

Figure 22: Coca-Cola comparable sheet

		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
KO	COCA-COLA CO	$44.19	$188,279	0.5	(4.2)	(5.4)	(3.1)	8.8	(3.7)	5.6	89.6%	-2.0%	-4.5%	-0.5%	4.2%	-4.1%	0.57	146.8%	A-	3.11%	140.4%
PEP	PEPSICO INC	$112.14	$159,479	0.2	(4.5)	(1.7)	(3.8)	5.3	(6.5)	7.1	68.6%	-1.3%	6.1%	6.4%	7.8%		0.61	306.0%	A	2.63%	93.7%
DPS	DR PEPPER SNAPPLE GROUP INC	$115.95	$20,841	(0.7)	21.7	33.2	28.3	24.0	19.5	10.9	25.8%	10.1%	9.2%	4.8%	8.3%	10.5%	0.86	206.6%	A	1.94%	56.9%
MNST	MONSTER BEVERAGE CORP	$63.39	$35,750	(1.1)	(0.6)	1.9	17.8	46.0	0.2	19.4	27.8%	8.7%	31.0%	12.2%	16.3%	21.4%	1.01	0.0%	B+	0.00%	0.0%
FIZZ	NATIONAL BEVERAGE CORP	$96.73	$4,508	1.5	(4.5)	0.4	(10.4)	69.2	(0.7)	20.0	31.3%	24.8%	74.8%	18.3%	18.8%	22.0%	0.44	0.0%	B+	0.00%	0.0%
NESN-CH	NESTLE SA	$81.60	$252,788	(1.0)	(7.6)	(9.7)	(5.8)	3.4	(9.1)	8.5		-4.3%	1.2%	7.8%	8.9%	-1.5%	0.76			2.86%	
KHC	KRAFT HEINZ CO	$71.71	$87,376	(0.1)	(7.3)	(10.2)	(17.1)	(20.8)	(7.8)	8.6	20.5%	-30.5%	52.1%	9.0%	8.0%		0.06	48.2%		3.13%	75.6%
Average			$107,003	(0.1)	(1.0)	1.2	0.9	19.4	(1.2)	11.4	44.0%	0.8%	24.3%	8.3%	10.3%	9.7%	0.61	117.9%		1.95%	61.1%
Median			$87,376	(0.1)	(4.5)	(1.7)	(3.8)	8.8	(3.7)	8.6	29.6%	-1.3%	9.2%	7.8%	8.3%	10.5%	0.61	97.5%		2.63%	66.3%
SPX	S&P 500 INDEX	$2,663		0.3	(4.4)	3.0	9.1	14.4	(0.4)			0.0%	0.5%	9.9%	11.0%						

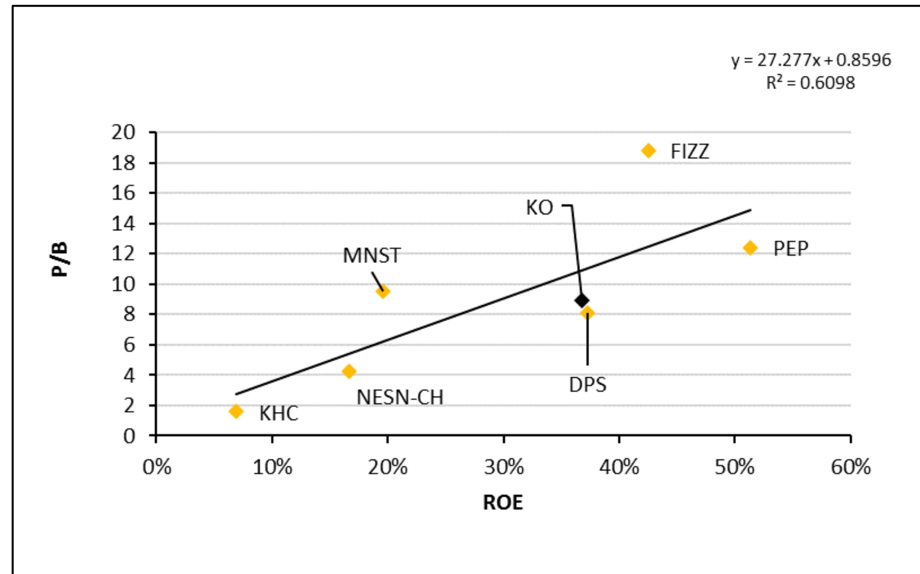
		2017		P/E							2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2015	2016	2017	TTM	NTM	2018	2019	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
KO	http://www.coca-colacompany.com	36.8%	8.51	20.7	21.5	21.7	42.5	22.4	23.3	22.3	19.4%	4.50	24.8%	12.2%	21.9	21.5	16.9	-15.5%	-0.1%	-2.5%	$5.19
PEP	http://www.pepsico.com	51.3%	11.86	20.4	21.9	21.6	33.2	19.7	21.7	20.2	11.0%	2.54		11.3%	18.2	16.2		3.1%	3.3%		$9.45
DPS	http://www.drpeppersnapplegroup.c	37.2%	9.84	19.6	23.2	20.7	29.1	23.1	25.2	23.3	12.3%	3.24	20.1%	14.5%	14.5	19.4	14.0	3.9%	2.5%	1.8%	$11.79
MNST	http://www.monsterbevcorp.com	19.6%	9.49	39.3	49.7	33.8	46.3	36.2	43.1	37.1	24.2%	11.73	38.4%	17.5%	22.3	41.6	50.8	11.4%	9.1%	12.3%	$6.68
FIZZ	http://www.nationalbeverage.com	42.5%	17.97	21.5	34.7	22.3	36.1	27.5	35.7	30.0	12.9%	5.45	20.9%	47.4%	24.3	31.6	26.5	15.8%		5.6%	$5.38
NESN-CH	http://www.nestle.com	15.9%	3.87	21.3	22.6	21.5			22.7	20.8	11.8%	2.87		11.4%	17.0	17.8	15.4			1.4%	$21.06
KHC	http://www.kraftheinzcompany.com	6.9%	1.49	19.9	33.2	26.2	22.4	18.6	19.8	18.3	15.3%	3.30	26.6%	4.1%	19.1	17.6	15.9	2.0%	1.6%	7.3%	$48.24
Average		30.0%	9.01	23.2	29.5	24.0	34.9	24.6	27.3	24.6	15.3%	4.80	26.2%	16.9%	19.6	23.7	23.2	3.5%	3.3%	4.3%	
Median		36.8%	9.49	20.7	23.2	21.7	34.6	22.8	23.3	22.3	12.9%	3.30	24.8%	12.2%	19.1	19.4	16.4	3.5%	2.5%	3.7%	
spx	S&P 500 INDEX			17.3	17.2	18.7			20.3	18.3											

Figure 23 shows the correlation between P/B and ROE (R^2=0.6098). Therefore 61% of Coca-Cola's P/B is owed to its NTM ROE. Based on this graph Coca-Cola is close to fairly valued among its peer group.

- Estimated P/B = Estimated 2018 ROE (40%) × 27.277 + 0.8596 = 11.77
- Target Price = Estimated P/B (11.77) × 2018E BVPS (5.57) = $65.56

Discounting back to the present at an 8.2% cost of equity produces a target of $60.65.

Figure 23: P/B vs 2017 ROE



Source: FactSet

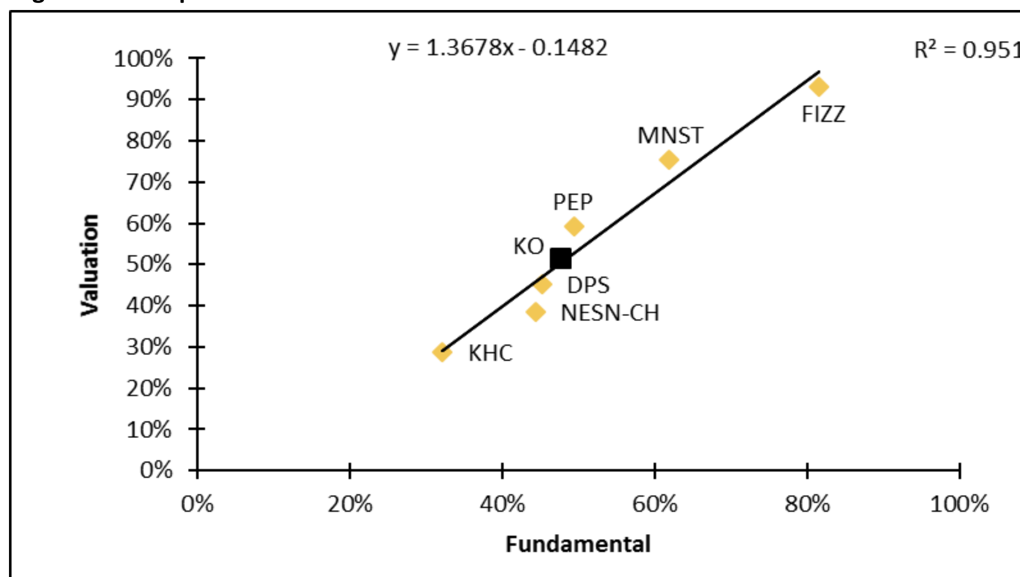
Finally, I created a composite ranking of two valuation and five fundamental metrics (Figure 24). Considering that each variable has a different scale, they were first converted to a percentile of the whole. For my fundaments, I chose to include LTG, NTM, 2017, and 2018 earnings growth as well as 2017 ROE. As for my valuation, I split it equally between P/E and P/B.

Based on this weighting, the regression produced an R-squared of 0.951. KO lives on the line, so it is fairly valued.

Figure 24: Composite valuation, % of range

		Fundamentals					Valuation	
		20.0%	20.0%	15.0%	20.0%	25.0%	50.0%	50.0%
		Earnings Growth				2017	P/E	
Ticker	Name	LTG	NTM	2017	2018	ROE	2017	P/B
KO	COCA-COLA CO	28%	100%	-3%	22%	72%	56%	47%
PEP	PEPSICO INC	39%	15%	35%	41%	100%	52%	66%
DPS	DR PEPPER SNAPPLE GROUP INC	47%	26%	26%	44%	73%	48%	43%
MNST	MONSTER BEVERAGE CORP	100%	25%	67%	87%	38%	100%	51%
FIZZ	NATIONAL BEVERAGE CORP	100%	29%	100%	100%	83%	86%	100%
NESN-CH	NESTLE SA	45%	58%	42%	47%	33%	54%	23%
KHC	KRAFT HEINZ CO	43%	22%	49%	42%	13%	49%	9%

Figure 25: Composite relative valuation



Source: FactSet

Discounted Cash Flow Analysis

A three stage discounted cash flow model was also used to value KO (Figure 28).

For the purpose of this analysis, the company's cost of equity was calculated to be 8.2% 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 2.75%.
- A ten-year beta of 0.75 was utilized since the company has lower 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 8.2% (2.75 + 0.75 (10.0 – 2.75)).

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 $1.82 and $1.88, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $3.28 per share. Thus, stage one of this discounted cash flow analysis contributes $3.28 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 8.2% cost of equity. I assume a constant 5% sales growth from 2020-2024. The ratio of NWC to sales will slowly increase over time and NFA turnover will decrease by 0.03 in 2017 and continue to decrease by 0.01 in 2018, but turn around in 2019 to rise by 0.02 once divestments have been finalized. Also, the NOPAT margin is expected to rise to 26% in 2024 from 22.5% in 2018. This is also due to leaving the low margin bottle manufacturing business.

Figure 26: FCFE and discounted FCFE, 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$1.82	$1.88	$2.07	$1.82	$1.78	$2.15	$2.34
Discounted FCFE	$1.68	$1.60	$1.63	$1.33	$1.20	$1.34	$1.35

Added together, these discounted cash flows total $6.85.

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 $1.58 in 2018 to $2.48 in 2024.

Figure 27: EPS estimates for 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$1.58	$1.67	$1.78	$1.89	$2.07	$2.27	$2.48

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. For the purpose of this analysis, I assumed a terminal year P/E ratio of 24.

Given the assumed terminal earnings per share of $2.48 and a price to earnings ratio of 24, a terminal value of $59.60 per share is calculated. Using the 8.2% cost of equity, this number is discounted back to a present value of $34.36.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $44.45 is calculated (3.28 + 6.81 + 34.36). Given KO's current price of $43.82, this model indicates that the stock is slightly undervalued.

Scenario Analysis – Bull Case

Figure 29 demonstrates a best-case scenario or bull case.

In this scenario, I assumed a constant sales growth of 6% over the next 5 years and a terminal year P/E of 27. I already expect sales to increase in every scenario; however, I believe the bull-case sales growth to not be as high due to the already concentrated market. The majority of growth that KO will experience will be through increases in sales and it is difficult to predict consumer preferences over time. That's why it is very important for the firm to keep up with trends. Subsequently, I expect NOPAT margin to increase to 24.6% in 2024 from 22.5% in 2018.

Total Present Value (Bull Case) – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $48.81 is calculated (3.29 + 7.17 + 38.35). Given KO's current price of $43.82, this scenario analysis indicates that the stock is undervalued.

Scenario Analysis – Bear Case

Figure 30 demonstrates a worst-case scenario or bear case.

For this case, I assumed a sales growth of only 4% over the next 5 years and a terminal year P/E of 22. After the finalization of bottler refranchising, I expect to see positive sales growth to some degree since they are returning to a higher margin business.

Total Present Value (Bull Case) – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $40.16 is calculated (3.28 + 6.85 + 30.02). Given KO's current price of $43.82, this scenario analysis indicates that the stock is overvalued.

Figure 28: 3-Stage DCF Model (Base case)

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*-10.7%*	*3.5%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S	*22.5%*	*22.5%*	*22.8%*	*23.0%*	*24.0%*	*25.0%*	*26.0%*
S / NOWC	*1.94*	*2.76*	*3.19*	*3.25*	*3.30*	*3.36*	*3.42*
S / NFA (EOY)	*0.62*	*0.64*	*0.65*	*0.66*	*0.66*	*0.67*	*0.68*
S / IC (EOY)	*0.47*	*0.52*	*0.54*	*0.55*	*0.55*	*0.56*	*0.57*
ROIC (EOY)	*10.6%*	*11.7%*	*12.3%*	*12.6%*	*13.2%*	*14.0%*	*14.7%*
ROIC (BOY)		*11.0%*	*12.4%*	*13.0%*	*13.8%*	*14.4%*	*15.3%*
Share Growth		*-0.5%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$32,147	$33,275	$34,939	$36,686	$38,520	$40,446	$42,469
NOPAT	$7,246	$7,500	$7,966	$8,438	$9,245	$10,112	$11,042
Growth		*3.5%*	*6.2%*	*5.9%*	*9.6%*	*9.4%*	*9.2%*
- Change in NOWC	-4425	-4502	-1120	335	385	365	380
NOWC EOY	*16574*	*12072*	*10953*	*11288*	*11673*	*12038*	*12418*
Growth NOWC		*-27.2%*	*-9.3%*	*3.1%*	*3.4%*	*3.1%*	*3.2%*
- Chg NFA	434	143	1760	1832	2779	2004	2086
NFA EOY	*51,850*	*51,993*	*53,753*	*55,585*	*58,364*	*60,368*	*62,454*
Growth NFA		*0.3%*	*3.4%*	*3.4%*	*5.0%*	*3.4%*	*3.5%*
Total inv in op cap	-3991	-4359	640	2168	3164	2368	2466
Total net op cap	68424	64065	64705	66873	70037	72405	74872
FCFF	$11,237	$11,859	$7,326	$6,270	$6,081	$7,743	$8,575
% of sales	*35.0%*	*35.6%*	*21.0%*	*17.1%*	*15.8%*	*19.1%*	*20.2%*
Growth		*5.5%*	*-38.2%*	*-14.4%*	*-3.0%*	*27.3%*	*10.7%*
- Interest (1-tax rate)	430	337	354	372	391	410	431
Growth		*-21.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
+ Net new debt	-3000	-3500	1659	1742	1829	1921	2017
Debt	36682	33182	34841	36583	38412	40333	42350
Debt / tot net op capital	*53.6%*	*51.8%*	*53.8%*	*54.7%*	*54.8%*	*55.7%*	*56.6%*
FCFE w debt	$7,807	$8,022	$8,631	$7,640	$7,519	$9,254	$10,161
% of sales	*24.3%*	*24.1%*	*24.7%*	*20.8%*	*19.5%*	*22.9%*	*23.9%*
Growth		*2.8%*	*7.6%*	*-11.5%*	*-1.6%*	*23.1%*	*9.8%*
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.02	$1.79	$1.76	$2.17	$2.38
Growth		*3.3%*	*7.6%*	*-11.5%*	*-1.6%*	*23.1%*	*9.8%*
* Discount factor	0.92	0.85	0.79	0.73	0.67	0.62	0.58
Discounted FCFE	$1.68	$1.60	$1.60	$1.31	$1.19	$1.35	$1.37
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,612	$8,066	$8,854	$9,701	$10,611
% of sales	*21.1%*	*21.5%*	*21.8%*	*22.0%*	*23.0%*	*24.0%*	*25.0%*
EPS	$1.58	$1.67	$1.78	$1.89	$2.07	$2.27	$2.48
Growth		*5.7%*	*6.6%*	*6.0%*	*9.8%*	*9.6%*	*9.4%*
Terminal P/E							24.00
* Terminal EPS							$2.48
Terminal value							$59.60
* Discount factor							0.58
Discounted terminal value							$34.36

Summary

First stage	$3.28	Present value of first 2 year cash flow
Second stage	$6.81	Present value of year 3-7 cash flow
Third stage	$34.36	Present value of terminal value P/E
Value (P/E)	**$44.45**	= value at beg of fiscal yr 2018

Figure 29: 3-Stage DCF Model (Bull case)

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*-10.7%*	*3.5%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
NOPAT / S	*22.5%*	*22.5%*	*23.3%*	*23.6%*	*24.0%*	*24.3%*	*24.6%*
S / NOWC	*1.94*	*2.76*	*3.24*	*3.26*	*3.30*	*3.32*	*3.35*
S / NFA (EOY)	*0.62*	*0.64*	*0.67*	*0.68*	*0.70*	*0.70*	*0.71*
S / IC (EOY)	*0.47*	*0.52*	*0.56*	*0.56*	*0.58*	*0.58*	*0.59*
ROIC (EOY)	*10.6%*	*11.7%*	*12.9%*	*13.3%*	*13.9%*	*14.0%*	*14.4%*
ROIC (BOY)		*11.0%*	*12.8%*	*13.9%*	*14.3%*	*14.9%*	*15.1%*
Share Growth		*-0.5%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$32,147	$33,275	$35,272	$37,388	$39,631	$42,009	$44,530
NOPAT	$7,246	$7,500	$8,218	$8,824	$9,512	$10,208	$10,954
Growth		*3.5%*	*9.6%*	*7.4%*	*7.8%*	*7.3%*	*7.3%*
- Change in NOWC	-4425	-4502	-1186	582	541	644	639
NOWC EOY	*16574*	*12072*	*10886*	*11469*	*12010*	*12653*	*13293*
Growth NOWC		*-27.2%*	*-9.8%*	*5.3%*	*4.7%*	*5.4%*	*5.1%*
- Chg NFA	434	143	652	2338	1634	3397	2705
NFA EOY	*51,850*	*51,993*	*52,645*	*54,983*	*56,616*	*60,013*	*62,718*
Growth NFA		*0.3%*	*1.3%*	*4.4%*	*3.0%*	*6.0%*	*4.5%*
Total inv in op cap	-3991	-4359	-534	2920	2175	4041	3344
Total net op cap	68424	64065	63531	66451	68626	72667	76011
FCFF	$11,237	$11,859	$8,753	$5,903	$7,337	$6,167	$7,610
% of sales	*35.0%*	*35.6%*	*24.8%*	*15.8%*	*18.5%*	*14.7%*	*17.1%*
Growth		*5.5%*	*-26.2%*	*-32.6%*	*24.3%*	*-15.9%*	*23.4%*
- Interest (1-tax rate)	430	337	358	379	402	426	452
Growth		*-21.6%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
+ Net new debt	-3000	-3500	1991	2110	2237	2371	2513
Debt	36682	33182	35173	37283	39520	41892	44405
Debt / tot net op capital	*53.6%*	*51.8%*	*55.4%*	*56.1%*	*57.6%*	*57.6%*	*58.4%*
FCFE w debt	$7,807	$8,022	$10,386	$7,634	$9,172	$8,113	$9,672
% of sales	*24.3%*	*24.1%*	*29.4%*	*20.4%*	*23.1%*	*19.3%*	*21.7%*
Growth		*2.8%*	*29.5%*	*-26.5%*	*20.1%*	*-11.6%*	*19.2%*
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.43	$1.79	$2.15	$1.90	$2.26
Growth		*3.3%*	*29.5%*	*-26.5%*	*20.1%*	*-11.6%*	*19.2%*
* Discount factor	0.92	0.85	0.79	0.73	0.68	0.62	0.58
Discounted FCFE	$1.68	$1.61	$1.92	$1.31	$1.45	$1.19	$1.31
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,861	$8,444	$9,110	$9,782	$10,503
% of sales	*21.1%*	*21.5%*	*22.3%*	*22.6%*	*23.0%*	*23.3%*	*23.6%*
EPS	$1.58	$1.67	$1.84	$1.98	$2.13	$2.29	$2.46
Growth		*5.7%*	*10.1%*	*7.4%*	*7.9%*	*7.4%*	*7.4%*
Terminal P/E							27.00
* Terminal EPS							$2.46
Terminal value							$66.37
* Discount factor							0.58
Discounted terminal value							$38.35

Summary

First stage	$3.29	Present value of first 2 year cash flow
Second stage	$7.17	Present value of year 3-7 cash flow
Third stage	$38.35	Present value of terminal value P/E
Value (P/E)	**$48.81**	= value at beg of fiscal yr 2018

Figure 30: 3-Stage DCF Model (Bear case)

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	-10.7%	3.5%	4.0%	4.0%	4.0%	4.0%	4.0%
NOPAT / S	22.5%	22.5%	22.8%	23.0%	24.0%	25.0%	26.0%
S / NOWC	1.94	2.76	3.19	3.25	3.30	3.36	3.42
S / NFA (EOY)	0.62	0.64	0.65	0.66	0.66	0.67	0.68
S / IC (EOY)	0.47	0.52	0.54	0.55	0.55	0.56	0.57
ROIC (EOY)	10.6%	11.7%	12.3%	12.6%	13.2%	14.0%	14.7%
ROIC (BOY)		11.0%	12.3%	12.9%	13.7%	14.3%	15.1%
Share Growth		-0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Sales	$32,147	$33,275	$34,606	$35,991	$37,430	$38,927	$40,485
NOPAT	$7,246	$7,500	$7,890	$8,278	$8,983	$9,732	$10,526
Growth		3.5%	5.2%	4.9%	8.5%	8.3%	8.2%
- Change in NOWC	-4425	-4502	-1224	226	268	243	252
NOWC EOY	16574	12072	10848	11074	11343	11586	11838
Growth NOWC		-27.2%	-10.1%	2.1%	2.4%	2.1%	2.2%
- Chg NFA	434	143	1248	1291	2181	1388	1435
NFA EOY	51,850	51,993	53,241	54,531	56,713	58,101	59,536
Growth NFA		0.3%	2.4%	2.4%	4.0%	2.4%	2.5%
Total inv in op cap	-3991	-4359	24	1516	2450	1631	1687
Total net op cap	68424	64065	64089	65605	68055	69686	71374
FCFF	$11,237	$11,859	$7,867	$6,762	$6,534	$8,101	$8,839
% of sales	35.0%	35.6%	22.7%	18.8%	17.5%	20.8%	21.8%
Growth		5.5%	-33.7%	-14.0%	-3.4%	24.0%	9.1%
- Interest (1-tax rate)	430	337	351	365	380	395	411
Growth		-21.6%	4.0%	4.0%	4.0%	4.0%	4.0%
+ Net new debt	-3000	-3500	1327	1380	1436	1493	1553
Debt	36682	33182	34509	35890	37325	38818	40371
Debt / tot net op capital	53.6%	51.8%	53.8%	54.7%	54.8%	55.7%	56.6%
FCFE w debt	$7,807	$8,022	$8,843	$7,777	$7,590	$9,199	$9,981
% of sales	24.3%	24.1%	25.6%	21.6%	20.3%	23.6%	24.7%
Growth		2.8%	10.2%	-12.1%	-2.4%	21.2%	8.5%
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.07	$1.82	$1.78	$2.15	$2.34
Growth		3.3%	10.2%	-12.1%	-2.4%	21.2%	8.5%
* Discount factor	0.92	0.85	0.79	0.73	0.67	0.62	0.58
Discounted FCFE	$1.68	$1.60	$1.63	$1.33	$1.20	$1.34	$1.35
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,539	$7,913	$8,604	$9,337	$10,115
% of sales	21.1%	21.5%	21.8%	22.0%	23.0%	24.0%	25.0%
EPS	$1.58	$1.67	$1.76	$1.85	$2.01	$2.19	$2.37
Growth		5.7%	5.6%	5.0%	8.7%	8.5%	8.3%
Terminal P/E							22.00
* Terminal EPS							$2.37
Terminal value							$52.08
* Discount factor							0.58
Discounted terminal value							$30.02

Summary

First stage	$3.28	Present value of first 2 year cash flow
Second stage	$6.85	Present value of year 3-7 cash flow
Third stage	$30.02	Present value of terminal value P/E
Value (P/E)	**$40.16**	= value at beg of fiscal yr 2018

Business Risks

In comparison to other analysts, I have a more optimistic outlook on Coca-Cola. Ultimately, I believe that the firm will start to see a kick start in growth now that a large portion of its bottlers are gone. However, it is quite possible that sales do not meet my expectations and KO's growth will remain sluggish. According to the 10-K and my own analysis, several risk factors stand to impede the company's growth, such as:

Obesity and other health-related concerns may reduce demand for some of its products:

Obesity has tripled since 1975 and it is recognized as world-wide problem. With that being said, sugar is the main culprit manufacturers are trying to minimize. Most discrepancy has fallen on labeling and the disclosure of product contents. The main concern for the firm is that labeling or sale of the sugar-sweetened beverages may reduce demand for or increase the cost of its sugar-sweetened beverages.

Water scarcity and poor quality could negatively impact the Coca-Cola system's costs and capacity:

Being "green" has become very popular over the last few years as sustainability has come to light. Individuals, as well as companies, have taken it upon themselves to reduce their carbon footprints. KO uses water as its main product ingredient and major manufacturing component. As water becomes scare, it would increase raw materials costs and decrease operating revenues.

If KO does not address changing consumer preferences, its business could suffer:

Consumer preferences are very hard to predict as they are constantly changing. If KO can't keep up with consumer preferences, the firm's sales will decline, and brand loyalty stands to suffer as well. Consumers will look elsewhere for products that satisfy their necessities.

Increased competition and capabilities in the marketplace could hurt KO's business:

Ever since consumer preferences have started to shift towards noncarbonated beverages, competition has become more aggressive. Coca-Cola and Pepsi are the two front-runners of the nonalcoholic beverage industry and both are looking into expanding their product portfolios to include more noncarbonated options. Energy drinks have also become more popular and rumor has it that Coca-Cola is looking to do more business with Monster. If this were to happen, it would put the firm ahead in that specific product line, thus serving as a possible competitive advantage.

Appendix 1: Income Statement

Income Statement	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
Sales	$45,998	$44,294	$41,863	$35,991	$32,147	$33,275
Direct costs	17,889	17,482	16,465	13,857	12,312	12,744
Gross Margin	28,109	26,812	25,398	22,134	19,835	20,531
SG&A, R&D, and other	18,401	18,084	16,772	13,137	10,834	11,214
EBIT	9,708	8,728	8,626	8,998	9,001	9,317
Interest	383	(877)	490	573	535	419
EBT	9,325	9,605	8,136	8,425	8,467	8,898
Taxes	2,201	2,239	1,586	319	1,651	1,735
Income	7,124	7,366	6,550	8,106	6,816	7,163
Net income attributed to noncontrolling interests	26	15	23	27	23	22
Net income	7,098	7,351	6,527	8,079	6,793	7,141
Basic Shares	4,387	4,352	4,317	4,317	4,295	4,273
EPS	$1.62	$1.69	$1.51	$1.87	$1.58	$1.67
DPS	$1.22	$1.32	$1.40	$1.48	$1.58	$1.64

Appendix 2: Balance Sheet

Balance Sheet	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
Cash	12,623	11,578	12,606	24,779	18,824	12,405
Operating assets ex cash	11,311	13,495	11,809	9,358	9,323	11,646
Operating assets	23,934	25,073	24,415	34,136	28,147	24,052
Operating liabilities	13,271	13,800	14,034	13,137	11,573	11,979
NOWC	10,663	11,273	10,381	20,999	16,574	12,072
NOWC ex cash (NWC)	(1,960)	(305)	(2,225)	(3,779)	(2,250)	(333)
NFA	68,089	64,923	62,855	51,416	51,850	51,993
Invested capital	*$78,752*	*$76,196*	*$73,236*	*$72,415*	*$68,424*	*$64,065*
Total assets	*$92,023*	*$89,996*	*$87,270*	*$85,552*	*$79,997*	*$76,044*
Short-term and long-term debt	$38,193	$41,440	$42,182	$39,682	$36,682	$33,182
Other liabilities	9,998	8,992	7,834	7,834	7,834	7,834
Debt/equity-like securities	-	-	-	-	-	-
Equity	30,561	25,764	23,220	24,899	23,908	23,049
Total supplied capital	*$78,752*	*$76,196*	*$73,236*	*$72,415*	*$68,424*	*$64,065*
Total liabilities and equity	*$92,023*	*$89,996*	*$87,270*	*$85,552*	*$79,997*	*$76,044*

Appendix 3: Sales Forecasting

Sales Forecast	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
Sales	46,854	45,998	44,294	41,863	35,991	32,147	33,275
Growth		*-1.8%*	*-3.7%*	*-5.5%*	*-14.0%*	*-10.7%*	*3.5%*
United States	21,574	21,462	21,784	19,899	16,890	14,880	15,401
Growth		*-0.5%*	*1.5%*	*-8.7%*	*-15.1%*	*-11.9%*	*3.5%*
% of sales	*46.0%*	*46.7%*	*49.2%*	*47.5%*	*46.9%*	*46.3%*	*46.3%*
Bottling Investments	7,598	6,972	6,682	6,289	3,000	950	1,010
Growth		*-8.2%*	*-4.2%*	*-5.9%*	*-52.3%*	*-68.3%*	*6.3%*
% of sales	*16.2%*	*15.2%*	*15.1%*	*15.0%*	*8.3%*	*3.0%*	*3.0%*
Corporate	154	136	156	127	125	124	125
Growth		*-11.7%*	*14.7%*	*-18.6%*	*-1.6%*	*-1.2%*	*1.0%*
% of sales	*0.3%*	*0.3%*	*0.4%*	*0.3%*	*0.3%*	*0.4%*	*0.4%*
Europe, Middle East, & Af	7,408	7,574	6,966	7,014	7,177	7,249	7,481
Growth		*2.2%*	*-8.0%*	*0.7%*	*2.3%*	*1.0%*	*3.2%*
% of sales	*15.8%*	*16.5%*	*15.7%*	*16.8%*	*19.9%*	*22.5%*	*22.5%*
Asia Pacific	5,372	5,257	4,707	4,788	5,010	5,110	5,309
Growth		*-2.1%*	*-10.5%*	*1.7%*	*4.6%*	*2.0%*	*3.9%*
% of sales	*11.5%*	*11.4%*	*10.6%*	*11.4%*	*13.9%*	*15.9%*	*16.0%*
Latin America	4,748	4,597	3,999	3,746	3,789	3,834	3,950
Growth		*-3.2%*	*-13.0%*	*-6.3%*	*1.1%*	*1.2%*	*3.0%*
% of sales	*10.1%*	*10.0%*	*9.0%*	*8.9%*	*10.5%*	*11.9%*	*11.9%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Finished Products	29,049	28,519	27,905	25,118	20,767	18,324	19,800
Growth		*-1.8%*	*-2.2%*	*-10.0%*	*-17.3%*	*-11.8%*	*8.1%*
% of sales	*62.0%*	*62.0%*	*63.0%*	*60.0%*	*57.7%*	*57.0%*	*56.4%*
Concentrates	17,805	17,479	16,389	16,745	15,224	13,823	14,508
Growth		*-1.8%*	*-6.2%*	*2.2%*	*-9.1%*	*-9.2%*	*5.0%*
% of sales	*38.0%*	*38.0%*	*37.0%*	*40.0%*	*42.3%*	*43.0%*	*43.6%*

Appendix 4: Ratio Analysis

Ratio Analysis	Dec-14	Dec-15	Dec-16	Dec-17E	Dec-18E	Dec-19E
Profitability						
Gross margin	61.1%	60.5%	60.7%	61.5%	61.7%	61.7%
Operating (EBIT) margin	21.1%	19.7%	20.6%	25.0%	28.0%	28.0%
Net profit margin	15.4%	16.6%	15.6%	22.4%	21.1%	21.5%
Activity						
NFA (gross) turnover	0.69	0.67	0.66	0.63	0.62	0.64
Total asset turnover	0.51	0.49	0.47	0.42	0.39	0.43
Liquidity						
Op asset / op liab	1.80	1.82	1.74	2.60	2.43	2.01
NOWC Percent of sales	26.5%	24.8%	25.9%	43.6%	58.4%	43.0%
Solvency						
Debt to assets	41.5%	46.0%	48.3%	46.4%	45.9%	43.6%
Debt to equity	125.0%	160.8%	181.7%	159.4%	153.4%	144.0%
Other liab to assets	10.9%	10.0%	9.0%	9.2%	9.8%	10.3%
Total debt to assets	52.4%	56.0%	57.3%	55.5%	55.6%	53.9%
Total liabilities to assets	66.8%	71.4%	73.4%	70.9%	70.1%	69.7%
Debt to EBIT	3.93	4.75	4.89	4.41	4.08	3.56
EBIT/interest	25.35	(9.95)	17.60	15.70	16.84	22.23
Debt to total net op capital	48.5%	54.4%	57.6%	54.8%	53.6%	51.8%
ROIC						
NOPAT to sales	16.1%	15.1%	16.6%	20.1%	22.5%	22.5%
Sales to NWC	(50.16)	(39.11)	(33.09)	(11.99)	(10.66)	(25.76)
Sales to NFA	0.69	0.67	0.66	0.63	0.62	0.64
Sales to IC ex cash	0.70	0.68	0.67	0.66	0.66	0.66
Total ROIC ex cash	11.3%	10.2%	11.1%	13.4%	14.9%	14.8%

Appendix 5: Coca-Cola Comps Sheet

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
KO	COCA-COLA CO	$44.19	$188,279	0.5	(4.2)	(5.4)	(3.1)	8.8	(3.7)	5.6	89.6%	-2.0%	-4.5%	-0.5%	4.2%	-4.1%	0.57	146.8%	A-	3.11%	140.4%
PEP	PEPSICO INC	$112.14	$159,479	0.2	(4.5)	(1.7)	(3.8)	5.3	(6.5)	7.1	68.6%	-1.3%	6.1%	6.4%	7.8%		0.61	306.0%	A	2.63%	93.7%
DPS	DR PEPPER SNAPPLE GROUP INC	$115.95	$20,841	(0.7)	21.7	33.2	28.3	24.0	19.5	10.9	25.8%	10.1%	9.2%	4.8%	8.3%	10.5%	0.86	206.6%	A	1.94%	56.9%
MNST	MONSTER BEVERAGE CORP	$63.39	$35,750	(1.1)	(0.6)	1.9	17.8	46.0	0.2	19.4	27.8%	8.7%	31.0%	12.2%	16.3%	21.4%	1.01	0.0%	B+	0.00%	0.0%
FIZZ	NATIONAL BEVERAGE CORP	$96.73	$4,508	1.5	(4.5)	0.4	(10.4)	69.2	(0.7)	20.0	31.3%	24.8%	74.8%	18.3%	18.8%	22.0%	0.44	0.0%	B+	0.00%	0.0%
NESN-CH	NESTLE SA	$81.60	$252,788	(1.0)	(7.6)	(9.7)	(5.8)	3.4	(9.1)	8.5		-4.3%	1.2%	7.8%	8.9%	-1.5%	0.76			2.86%	
KHC	KRAFT HEINZ CO	$71.71	$87,376	(0.1)	(7.3)	(10.2)	(17.1)	(20.8)	(7.8)	8.6	20.5%	-30.5%	52.1%	9.0%	8.0%		0.06	48.2%		3.13%	75.6%
Average			$107,003	(0.1)	(1.0)	1.2	0.9	19.4	(1.2)	11.4	44.0%	0.8%	24.3%	8.3%	10.3%	9.7%	0.61	117.9%		1.95%	61.1%
Median			$87,376	(0.1)	(4.5)	(1.7)	(3.8)	8.8	(3.7)	8.6	29.6%	-1.3%	9.2%	7.8%	8.3%	10.5%	0.61	97.5%		2.63%	66.3%
SPX	S&P 500 INDEX	$2,663		0.3	(4.4)	3.0	9.1	14.4	(0.4)			0.0%	0.5%	9.9%	11.0%						

Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
KO	http://www.coca-colacompany.com	36.8%	8.51	20.7	21.5	21.7	42.5	22.4	23.3	22.3	19.4%	4.50	24.8%	12.2%	21.9	21.5	16.9	-15.5%	-0.1%	-2.5%	$5.19
PEP	http://www.pepsico.com	51.3%	11.86	20.4	21.9	21.6	33.2	19.7	21.7	20.2	11.0%	2.54		11.3%	18.2	16.2		3.1%	3.3%		$9.45
DPS	http://www.drpeppersnapplegroup.c	37.2%	9.84	19.6	23.2	20.7	29.1	23.1	25.2	23.3	12.3%	3.24	20.1%	14.5%	14.5	19.4	14.0	3.9%	2.5%	1.8%	$11.79
MNST	http://www.monsterbevcorp.com	19.6%	9.49	39.3	49.7	33.8	46.3	36.2	43.1	37.1	24.2%	11.73	38.4%	17.5%	22.3	41.6	50.8	11.4%	9.1%	12.3%	$6.68
FIZZ	http://www.nationalbeverage.com	42.5%	17.97	21.5	34.7	22.3	36.1	27.5	35.7	30.0	12.9%	5.45	20.9%	47.4%	24.3	31.6	26.5	15.8%		5.6%	$5.38
NESN-CH	http://www.nestle.com	15.9%	3.87	21.3	22.6	21.5			22.7	20.8	11.8%	2.87		11.4%	17.0	17.8	15.4			1.4%	$21.06
KHC	http://www.kraftheinzcompany.com	6.9%	1.49	19.9	33.2	26.2	22.4	18.6	19.8	18.3	15.3%	3.30	26.6%	4.1%	19.1	17.6	15.9	2.0%	1.6%	7.3%	$48.24
Average		30.0%	9.01	23.2	29.5	24.0	34.9	24.6	27.3	24.6	15.3%	4.80	26.2%	16.9%	19.6	23.7	23.2	3.5%	3.3%	4.3%	
Median		36.8%	9.49	20.7	23.2	21.7	34.6	22.8	23.3	22.3	12.9%	3.30	24.8%	12.2%	19.1	19.4	16.4	3.5%	2.5%	3.7%	
spx	S&P 500 INDEX			17.3	17.2	18.7			20.3	18.3											

Appendix 6: 3-Stage DCF Analysis (Base case)

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*-10.7%*	*3.5%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S	*22.5%*	*22.5%*	*22.8%*	*23.0%*	*24.0%*	*25.0%*	*26.0%*
S / NOWC	*1.94*	*2.76*	*3.19*	*3.25*	*3.30*	*3.36*	*3.42*
S / NFA (EOY)	*0.62*	*0.64*	*0.65*	*0.66*	*0.66*	*0.67*	*0.68*
S / IC (EOY)	*0.47*	*0.52*	*0.54*	*0.55*	*0.55*	*0.56*	*0.57*
ROIC (EOY)	*10.6%*	*11.7%*	*12.3%*	*12.6%*	*13.2%*	*14.0%*	*14.7%*
ROIC (BOY)		*11.0%*	*12.4%*	*13.0%*	*13.8%*	*14.4%*	*15.3%*
Share Growth		*-0.5%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$32,147	$33,275	$34,939	$36,686	$38,520	$40,446	$42,469
NOPAT	$7,246	$7,500	$7,966	$8,438	$9,245	$10,112	$11,042
Growth		*3.5%*	*6.2%*	*5.9%*	*9.6%*	*9.4%*	*9.2%*
- Change in NOWC	-4425	-4502	-1120	335	385	365	380
NOWC EOY	*16574*	*12072*	*10953*	*11288*	*11673*	*12038*	*12418*
Growth NOWC		*-27.2%*	*-9.3%*	*3.1%*	*3.4%*	*3.1%*	*3.2%*
- Chg NFA	434	143	1760	1832	2779	2004	2086
NFA EOY	*51,850*	*51,993*	*53,753*	*55,585*	*58,364*	*60,368*	*62,454*
Growth NFA		*0.3%*	*3.4%*	*3.4%*	*5.0%*	*3.4%*	*3.5%*
Total inv in op cap	-3991	-4359	640	2168	3164	2368	2466
Total net op cap	68424	64065	64705	66873	70037	72405	74872
FCFF	$11,237	$11,859	$7,326	$6,270	$6,081	$7,743	$8,575
% of sales	*35.0%*	*35.6%*	*21.0%*	*17.1%*	*15.8%*	*19.1%*	*20.2%*
Growth		*5.5%*	*-38.2%*	*-14.4%*	*-3.0%*	*27.3%*	*10.7%*
- Interest (1-tax rate)	430	337	354	372	391	410	431
Growth		*-21.6%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
+ Net new debt	-3000	-3500	1659	1742	1829	1921	2017
Debt	36682	33182	34841	36583	38412	40333	42350
Debt / tot net op capital	*53.6%*	*51.8%*	*53.8%*	*54.7%*	*54.8%*	*55.7%*	*56.6%*
FCFE w debt	$7,807	$8,022	$8,631	$7,640	$7,519	$9,254	$10,161
% of sales	*24.3%*	*24.1%*	*24.7%*	*20.8%*	*19.5%*	*22.9%*	*23.9%*
Growth		*2.8%*	*7.6%*	*-11.5%*	*-1.6%*	*23.1%*	*9.8%*
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.02	$1.79	$1.76	$2.17	$2.38
Growth		*3.3%*	*7.6%*	*-11.5%*	*-1.6%*	*23.1%*	*9.8%*
* Discount factor	0.92	0.85	0.79	0.73	0.67	0.62	0.58
Discounted FCFE	$1.68	$1.60	$1.60	$1.31	$1.19	$1.35	$1.37
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,612	$8,066	$8,854	$9,701	$10,611
% of sales	*21.1%*	*21.5%*	*21.8%*	*22.0%*	*23.0%*	*24.0%*	*25.0%*
EPS	$1.58	$1.67	$1.78	$1.89	$2.07	$2.27	$2.48
Growth		*5.7%*	*6.6%*	*6.0%*	*9.8%*	*9.6%*	*9.4%*
Terminal P/E							24.00
* Terminal EPS							$2.48
Terminal value							$59.60
* Discount factor							0.58
Discounted terminal value							$34.36

Summary

First stage	$3.28	Present value of first 2 year cash flow
Second stage	$6.81	Present value of year 3-7 cash flow
Third stage	$34.36	Present value of terminal value P/E
Value (P/E)	**$44.45**	= value at beg of fiscal yr 2018

Appendix 7: 3-Stage DCF Analysis (Bull case)

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*-10.7%*	*3.5%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
NOPAT / S	*22.5%*	*22.5%*	*23.3%*	*23.6%*	*24.0%*	*24.3%*	*24.6%*
S / NOWC	*1.94*	*2.76*	*3.24*	*3.26*	*3.30*	*3.32*	*3.35*
S / NFA (EOY)	*0.62*	*0.64*	*0.67*	*0.68*	*0.70*	*0.70*	*0.71*
S / IC (EOY)	*0.47*	*0.52*	*0.56*	*0.56*	*0.58*	*0.58*	*0.59*
ROIC (EOY)	*10.6%*	*11.7%*	*12.9%*	*13.3%*	*13.9%*	*14.0%*	*14.4%*
ROIC (BOY)		*11.0%*	*12.8%*	*13.9%*	*14.3%*	*14.9%*	*15.1%*
Share Growth		*-0.5%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$32,147	$33,275	$35,272	$37,388	$39,631	$42,009	$44,530
NOPAT	$7,246	$7,500	$8,218	$8,824	$9,512	$10,208	$10,954
Growth		*3.5%*	*9.6%*	*7.4%*	*7.8%*	*7.3%*	*7.3%*
- Change in NOWC	-4425	-4502	-1186	582	541	644	639
NOWC EOY	*16574*	*12072*	*10886*	*11469*	*12010*	*12653*	*13293*
Growth NOWC		*-27.2%*	*-9.8%*	*5.3%*	*4.7%*	*5.4%*	*5.1%*
- Chg NFA	434	143	652	2338	1634	3397	2705
NFA EOY	*51,850*	*51,993*	*52,645*	*54,983*	*56,616*	*60,013*	*62,718*
Growth NFA		*0.3%*	*1.3%*	*4.4%*	*3.0%*	*6.0%*	*4.5%*
Total inv in op cap	-3991	-4359	-534	2920	2175	4041	3344
Total net op cap	68424	64065	63531	66451	68626	72667	76011
FCFF	$11,237	$11,859	$8,753	$5,903	$7,337	$6,167	$7,610
% of sales	*35.0%*	*35.6%*	*24.8%*	*15.8%*	*18.5%*	*14.7%*	*17.1%*
Growth		*5.5%*	*-26.2%*	*-32.6%*	*24.3%*	*-15.9%*	*23.4%*
- Interest (1-tax rate)	430	337	358	379	402	426	452
Growth		*-21.6%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
+ Net new debt	-3000	-3500	1991	2110	2237	2371	2513
Debt	36682	33182	35173	37283	39520	41892	44405
Debt / tot net op capital	*53.6%*	*51.8%*	*55.4%*	*56.1%*	*57.6%*	*57.6%*	*58.4%*
FCFE w debt	$7,807	$8,022	$10,386	$7,634	$9,172	$8,113	$9,672
% of sales	*24.3%*	*24.1%*	*29.4%*	*20.4%*	*23.1%*	*19.3%*	*21.7%*
Growth		*2.8%*	*29.5%*	*-26.5%*	*20.1%*	*-11.6%*	*19.2%*
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.43	$1.79	$2.15	$1.90	$2.26
Growth		*3.3%*	*29.5%*	*-26.5%*	*20.1%*	*-11.6%*	*19.2%*
* Discount factor	0.92	0.85	0.79	0.73	0.68	0.62	0.58
Discounted FCFE	$1.68	$1.61	$1.92	$1.31	$1.45	$1.19	$1.31
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,861	$8,444	$9,110	$9,782	$10,503
% of sales	*21.1%*	*21.5%*	*22.3%*	*22.6%*	*23.0%*	*23.3%*	*23.6%*
EPS	$1.58	$1.67	$1.84	$1.98	$2.13	$2.29	$2.46
Growth		*5.7%*	*10.1%*	*7.4%*	*7.9%*	*7.4%*	*7.4%*
Terminal P/E							27.00
* Terminal EPS							$2.46
Terminal value							$66.37
* Discount factor							0.58
Discounted terminal value							$38.35

Summary

First stage	$3.29	Present value of first 2 year cash flow
Second stage	$7.17	Present value of year 3-7 cash flow
Third stage	$38.35	Present value of terminal value P/E
Value (P/E)	**$48.81**	= value at beg of fiscal yr 2018

Appendix 8: 3-Stage DCF Analysis (Bear case)

	Year						
	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*-10.7%*	*3.5%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
NOPAT / S	*22.5%*	*22.5%*	*22.8%*	*23.0%*	*24.0%*	*25.0%*	*26.0%*
S / NOWC	*1.94*	*2.76*	*3.19*	*3.25*	*3.30*	*3.36*	*3.42*
S / NFA (EOY)	*0.62*	*0.64*	*0.65*	*0.66*	*0.66*	*0.67*	*0.68*
S / IC (EOY)	*0.47*	*0.52*	*0.54*	*0.55*	*0.55*	*0.56*	*0.57*
ROIC (EOY)	*10.6%*	*11.7%*	*12.3%*	*12.6%*	*13.2%*	*14.0%*	*14.7%*
ROIC (BOY)		*11.0%*	*12.3%*	*12.9%*	*13.7%*	*14.3%*	*15.1%*
Share Growth		*-0.5%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$32,147	$33,275	$34,606	$35,991	$37,430	$38,927	$40,485
NOPAT	$7,246	$7,500	$7,890	$8,278	$8,983	$9,732	$10,526
Growth		*3.5%*	*5.2%*	*4.9%*	*8.5%*	*8.3%*	*8.2%*
- Change in NOWC	-4425	-4502	-1224	226	268	243	252
NOWC EOY	*16574*	*12072*	*10848*	*11074*	*11343*	*11586*	*11838*
Growth NOWC		*-27.2%*	*-10.1%*	*2.1%*	*2.4%*	*2.1%*	*2.2%*
- Chg NFA	434	143	1248	1291	2181	1388	1435
NFA EOY	*51,850*	*51,993*	*53,241*	*54,531*	*56,713*	*58,101*	*59,536*
Growth NFA		*0.3%*	*2.4%*	*2.4%*	*4.0%*	*2.4%*	*2.5%*
Total inv in op cap	-3991	-4359	24	1516	2450	1631	1687
Total net op cap	68424	64065	64089	65605	68055	69686	71374
FCFF	$11,237	$11,859	$7,867	$6,762	$6,534	$8,101	$8,839
% of sales	*35.0%*	*35.6%*	*22.7%*	*18.8%*	*17.5%*	*20.8%*	*21.8%*
Growth		*5.5%*	*-33.7%*	*-14.0%*	*-3.4%*	*24.0%*	*9.1%*
- Interest (1-tax rate)	430	337	351	365	380	395	411
Growth		*-21.6%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
+ Net new debt	-3000	-3500	1327	1380	1436	1493	1553
Debt	36682	33182	34509	35890	37325	38818	40371
Debt / tot net op capital	*53.6%*	*51.8%*	*53.8%*	*54.7%*	*54.8%*	*55.7%*	*56.6%*
FCFE w debt	$7,807	$8,022	$8,843	$7,777	$7,590	$9,199	$9,981
% of sales	*24.3%*	*24.1%*	*25.6%*	*21.6%*	*20.3%*	*23.6%*	*24.7%*
Growth		*2.8%*	*10.2%*	*-12.1%*	*-2.4%*	*21.2%*	*8.5%*
/ No Shares	4294.9	4272.9	4,272.9	4,272.9	4,272.9	4,272.9	4,272.9
FCFE	$1.82	$1.88	$2.07	$1.82	$1.78	$2.15	$2.34
Growth		*3.3%*	*10.2%*	*-12.1%*	*-2.4%*	*21.2%*	*8.5%*
* Discount factor	0.92	0.85	0.79	0.73	0.67	0.62	0.58
Discounted FCFE	$1.68	$1.60	$1.63	$1.33	$1.20	$1.34	$1.35
Third Stage							
Terminal value P/E							
Net income	$6,793	$7,141	$7,539	$7,913	$8,604	$9,337	$10,115
% of sales	*21.1%*	*21.5%*	*21.8%*	*22.0%*	*23.0%*	*24.0%*	*25.0%*
EPS	$1.58	$1.67	$1.76	$1.85	$2.01	$2.19	$2.37
Growth		*5.7%*	*5.6%*	*5.0%*	*8.7%*	*8.5%*	*8.3%*
Terminal P/E							22.00
* Terminal EPS							$2.37
Terminal value							$52.08
* Discount factor							0.58
Discounted terminal value							$30.02

Summary

First stage	$3.28	Present value of first 2 year cash flow
Second stage	$6.85	Present value of year 3-7 cash flow
Third stage	$30.02	Present value of terminal value P/E
Value (P/E)	**$40.16**	= value at beg of fiscal yr 2018

Appendix 9: Porter's 5 Forces

Threat of New Entrants – Moderate

The threat of new players in the nonalcoholic beverage business is always possible, however I do not expect any entering business to be able to compete with Coca-Cola considering its market share and consumer brand loyalty.

Threat of Substitutes – High

Despite Coca-Cola's high market share, its largest competitor PepsiCo. poses a great threat. PepsiCo. has a wide product portfolio in both beverage and snack foods. Coca-Cola does not have any snack food products.

Supplier Power – Low

Coca-Cola's main ingredients for soft drinks include carbonated water, sweetener, and caffeine. Suppliers most likely value KO being a customer because the company brings them a lot of business.

Buyer Power – Low

Individuals pose no pressure on KO, because it does not sell directly to its end users. However, larger retailers have power to bargain due to their larger orders.

Intensity of Competition – High

Intensity within the market is very high to produce an appealing variety of products and packaging for customers. The popularity of noncarbonated beverages has grown over the past few years and each company is strategizing to implement new flavors and healthier options.

Appendix 10: SWOT Analysis

Strengths	Weaknesses
Brand loyalty Streamlined supply chain Large market share	Sustainability Foreign currency headwind
Opportunities	**Threats**
Expanding product portfolio Snack foods Variety in packaging	Consumer health trend Competition (Pepsi Co.) Unfavorable commodity prices

Major American Airline

Delta Airlines, Inc.

Recommendation	BUY
Target (today's value)	$82
Current Price	$52.95
52-week range	$43.81 - $56.77

Share Data	
Ticker:	DAL
Market Cap. (Billion):	$39.75
Inside Ownership	0.2%
Inst. Ownership	86.9%
Beta	1.39
Dividend Yield	2.19%
Payout Ratio	18.3%
Cons. Long-Term Growth Rate	4.1%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$40.70	$39.60	$40.44	$42.47	$44.33
Gr %		-2.7%	2.1%	5.0%	4.3%
Cons	-	-	-	$410.6	$431.2
EPS					
Year	$6.28	$6.02	$4.35	$7.02	$8.14
Gr %	-	-4.1%	-27.7%	61.3%	15.8%
Cons	-	-	$4.94	$5.54	$5.91

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	46.0%	37.8%	37.8%	25.9%	24.2%
Industry	101.2%	37.2%	37.2%	30.2%	27.7%
NPM (%)	11.2%	11.0%	11.0%	8.7%	8.9%
Industry	15.0%	8.7%	8.7%	7.4%	7.6%
A. T/O	0.71	0.66	0.66	0.77	0.77
ROA (%)	7.3%	7.3%	7.3%	6.7%	6.8%
Industry	13.0%	6.7%	6.7%	6.0%	6.2%
A/E	14.8%	17.0%	17.0%	-	-

Valuation	'16	'17	'18E	'19E
P/E	7.8	10.5	11.3	10.1
Industry	7.1	12.5	12.8	11.3
P/S	0.91	0.93	0.97	0.92
P/B	3.0	2.7	2.7	2.2
P/CF	4.7	8.6	6.8	5.5
EV/EBITDA	5.2	5.6	7.4	6.9

Performance	Stock	Industry
1 Month	11.9%	-3.6%
3 Month	16.4%	-0.1%
YTD	13.3%	16.6%
52-week	10.6%	16.5%
3-year	17.7%	54.1%

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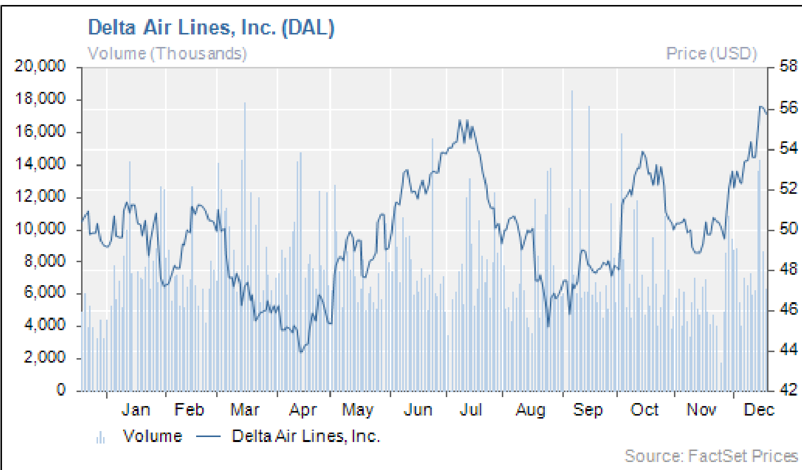


Summary: I recommend a buy rating with a target price of $82. DAL has the opportunity to further increase revenues from current and future joint venture agreements. Revenue momentum from regional sales are expected to contribute $4-5 billion in free cash flow in 2018. As the price of fuel stabilizes and DAL replaces its existing fleet with new aircraft, operational efficiencies will improve and result in significantly lower operating expenses.

Key Drivers:

- Fleet Retirement: Upgraded fleet initiatives will help to mitigate operational costs and reduce fleet age. Replacing 30% of its mainline fleet by 2020 will result in a fleet age of 14.1 and $300 million savings in maintenance costs.

- Jet Fuel Prices: The utilization of a hedging program allows for proactive measures against volatile fuel prices. DAL has less risk versus its competitors who do not hedge and expose themselves to sudden increases in fuel prices.

- International Expansion: Increased globalization through joint venture agreements with foreign carriers allow for greater revenue potential. An expanding presence in global markets through agreements with Aeroméxico, GOL, Korean Air, and China Eastern help to offset pressures from low-cost carriers and offer a larger network of routes to improve overall travel experience.

- Competition: DAL competes with low-cost carriers and is working towards improving offered routes and travel experience. DAL's success relies on maintaining high passenger revenue per available seat mile, low cost per available seat mile, and high passenger load factor.

Valuation: Using a relative valuation approach, Delta appears to be fairly valued in comparison to the airline industry. A combination of the approaches suggests that DAL is undervalued, as the stock's value is about $87 and the shares trade at $52.95.

Risks: Threats to the business include competition from low-cost carriers, economic downturns, labor issues, and volatile jet fuel price

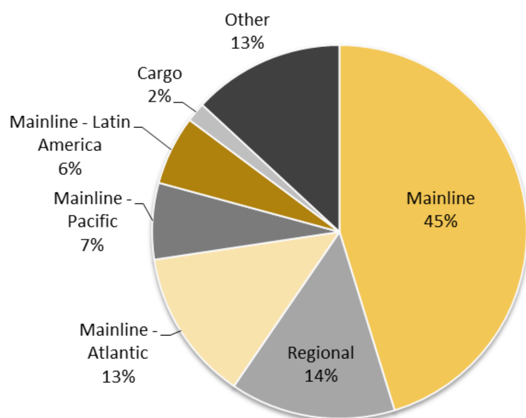
Company Overview

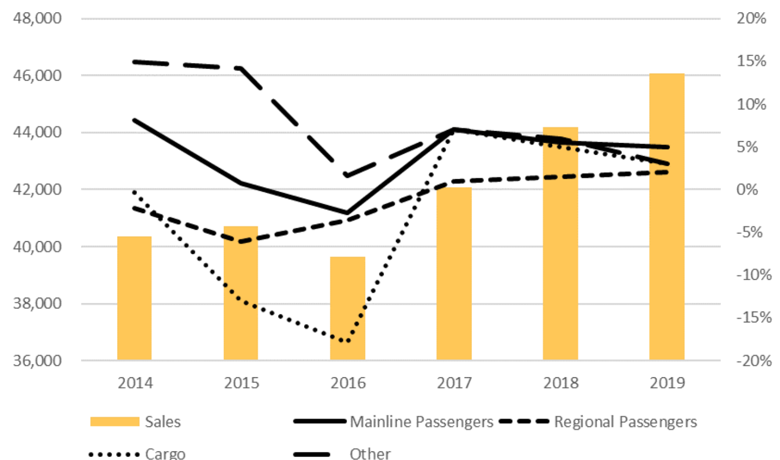
Delta Airlines, Inc. (DAL) is a major American airline that provides scheduled air transportation for passengers and cargo in the United States and internationally. Delta's global network allows for a presence in every major domestic and international market. Its network of international gateways and airports operate in Amsterdam, Atlanta, Boston, Detroit, London-Heathrow, Los Angeles, Minneapolis-St. Paul, New York-La Guardia, New York-JFK, Paris-Charles e Gaulle, Salt Lake City, Seattle, and Tokyo-Narita. This global network is supported by a fleet of aircrafts that vary in size and capabilities. Another key factor within its route network includes international joint ventures, alliances with other foreign airlines, its membership in Sky Team, and other agreements with a multitude of domestic regional carriers that operate as Delta Connection. Delta operates in two distinct segments: airline and refinery. The firm operates under the laws of the State of Delaware and headquartered in Atlanta, GA.

DAL generates its revenue from three different segments. This includes passenger revenues, cargo, and other sources of revenue as described below.

- Passenger Revenues: This segment is comprised of two parts that include both mainline and regional carrier's passenger revenues. The mainline revenue includes domestic revenues and the regional carrier's revenue accounts for the Atlantic, Pacific, and Latin America regions. Passenger revenues account for 85% of Delta's total revenue; 14% of which is from regional passenger revenues. International revenues declined 7.2% year over year due to imbalances in supply and demand; primarily in the Atlantic region and China. Currency fluctuations have also had a significant impact on this sector. Mainline passenger growth rates are projected to be 7% in 2017 and 5.5% in 2018. Regional passenger growth rates are forecasted to be 1% in 2017 and 1.5% in 2018.
- Cargo: Cargo accounts for a total of 2% of operating revenues. This segment operates in both domestic and international markets that gains revenue through the use of cargo space on scheduled passenger aircrafts. Cargo revenue decreased 17.8% from 2015 to 2016. Projected cargo growth rates are 7% in 2017 and 5% in 2018.
- Other: Other revenues account for 13% of operating revenues. Airlines revenue is no longer generated solely from ticket sales and freight. They have diversified into ancillary businesses, refinery operations, administrative fees, club and on-board fees, baggage fees, and loyalty programs. Projected growth rates are 7% in 2017 and 6% in 2018.

Figures 1 and 2: DAL Revenue Sources at Year-End 2016 (left) and Revenue History Since 2012 (right)





Sources: Company Reports, Factset

Business/Industry Drivers

Though several factors may contribute to Delta's future success, the following are the most important business drivers:

1) Fleet Retirement
2) Jet Fuel Prices
3) International Expansion
4) Competition
5) Macroeconomic Effects

Average Fleet Age
DAL: 17.0
AAL: 10.8
UAL: 14.3
LUV: 11.8

Fleet Retirement

DAL is addressing upcoming fleet retirements and investing more in high net value opportunities. This includes an increase in aircraft technology and initiatives towards improving customer experience. It is replacing 30% of its mainline fleet from 2017-2020, including the retirement of the MD-88 fleet, which should improve operational reliability and fuel efficiency.

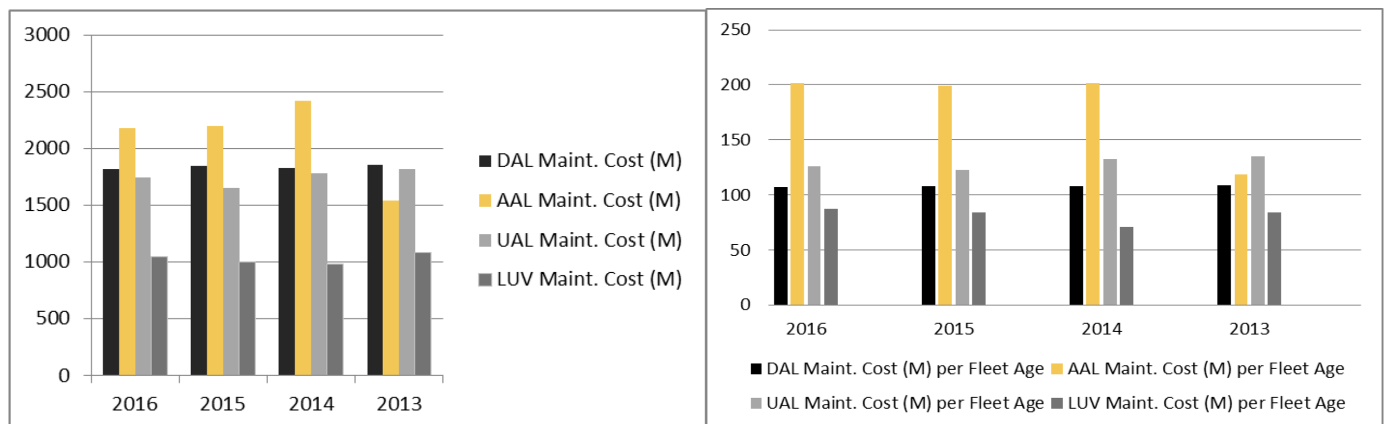
EPS: 200mil*(1-.35)/667.1mil = 0.19

The newer fleet will help to mitigate costs and have lower the average non-fuel costs. Maintenance savings and material savings will drive Delta's maintenance costs to 15% below the industry average during next year. Total aircraft purchase commitments at the end of December 31, 2016 are $12.5 billion. A contract with Airbus for the delivery of 37 A321-200 will start in November of 2017 and continue into 2019. The replacement of 747s, MD-88s, MD-90s, and other 50-seater aircrafts with more fuel efficient A350s, A321s, and 737-900s in 2018 is expected to deliver a 2% fuel efficiency gain that is equivalent to $200 million or $200mil

DAL plans to replace 30% of its mainline fleet by 2020

By lowering the average fleet age from 17.0 to an expected 15.7 in 2018, and 14.1 by 2020, maintenance costs are expected to decrease significantly. As depicted in Figures 3 and 4, Delta had the second lowest maintenance cost per year of fleet age in 2016 and with an expected decrease in 2018 that will result in a cost savings of approximately $108 million per year of fleet age reduced. If Delta is successful in reducing its fleet age to 14.1 by 2020, the firm will realize a total savings of over $300 million in maintenance costs.

Figures 3 and 4: Total DAL v. Comps Maintenance Costs in Millions (left) and Maintenance Costs Per Year of Fleet Age (right)

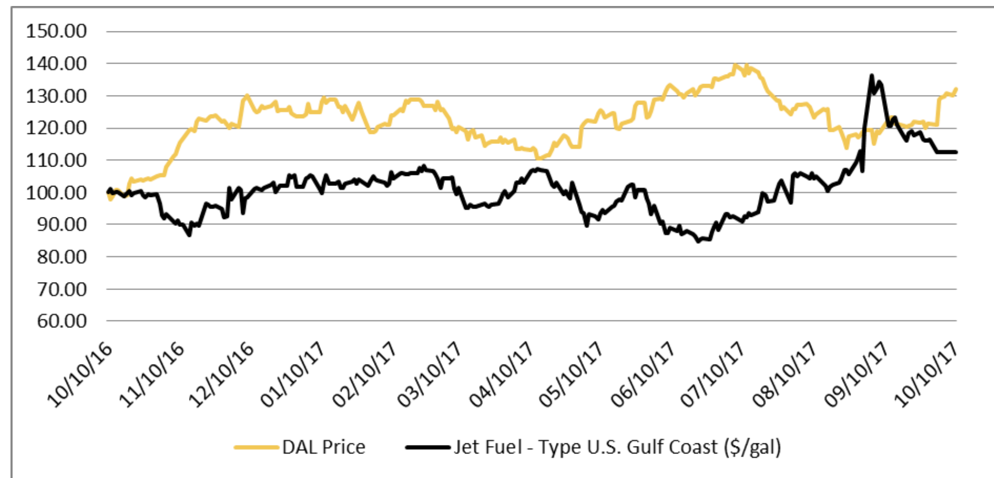


Sources: Factset, Company Reports

Jet Fuel Prices

The volatility in jet fuel prices directly affects airlines' profitability and accounts for a large proportion of their total operating expenses. At the year-end of December 31, 2016, aircraft fuel and related taxes accounted for 18.3% of DAL's total operating expense. Through the utilization of a hedging program, DAL effectively combats volatile fuel prices and costs are more stable than competing airlines when fuel prices rise.

Figure 5: DAL Price v. Jet Fuel Price per Gallon

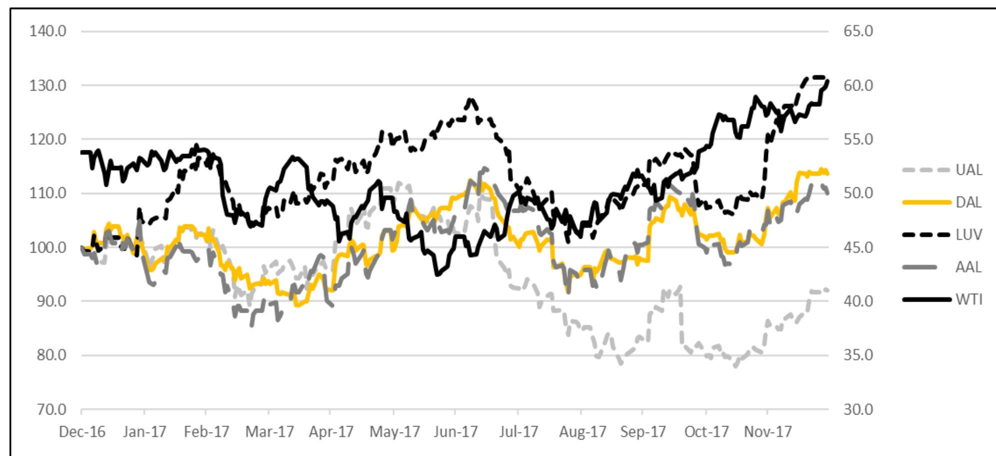


Sources: Company Reports, Factset

Over the last year, fuel prices declined drastically and resulted in an $89 million hedging loss ($455 million cost with hedging versus $366 million without).

The average price per gallon was $2.23 in 2015 compared to $1.60 in 2016. DAL estimates fuel prices to rise to $1.70-$2.00 price per gallon in 2018-2020, so hedging will be beneficial if the time is right. Both United Airlines (UAL) and Southwest Airlines (LUV) also enter into derivatives contracts, but competitors like American Airlines (AAL) which do not hedge expose themselves to the risk of sudden increases in fuel prices. As depicted in Figure 6, AAL experienced a more significant loss than its competitors as WTI rose due to their lack of hedging program.

Figure 6: DAL and Comps (left) vs WTI (right)



Source: Factset

In addition to changes in aircraft fuel prices, interest rates and foreign currency exchange rates have a direct impact on revenue. Derivative contracts are also used to offset fluctuations in interest rates and currencies. $300 million in cash payments is owed in 2017 for deferred hedging.

International Expansion

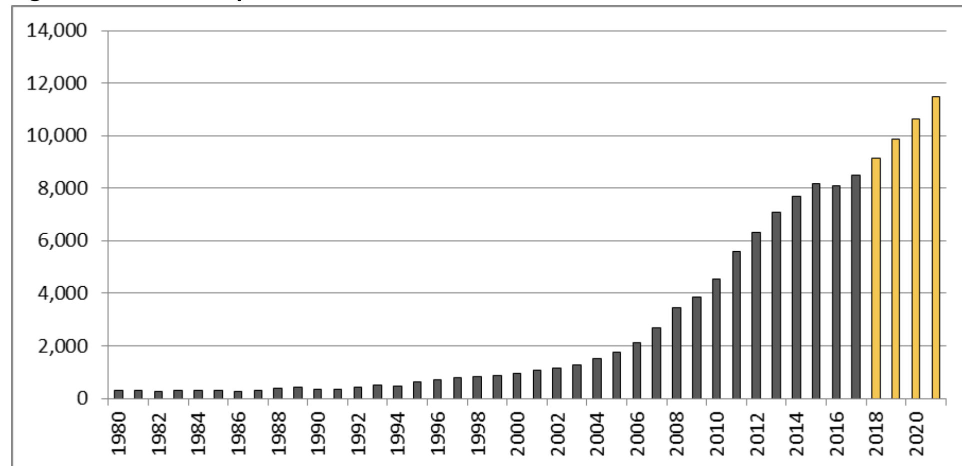
Stake Ownerships:
Grupo Aeroméxico: 49%
GOL: 9.5%
Virgin Atlantic: 49%
China Eastern: 3.2%

DAL currently operates under three international joint venture agreements with foreign carriers. The transatlantic joint venture with Air France, KLM, and Alitalia covers routes between North America and Europe. The transatlantic joint venture with Virgin Atlantic Airways offers non-stop routes between the United Kingdom and North America. Lastly, a transpacific joint venture with Virgin Australia Airlines and its affiliated carriers offer routes between North America and Australia/New Zealand.

These venture agreements allow for profit sharing, joint marketing and sales, scheduled network operations, coordinated revenue and pricing strategies. Ultimately, they allow DAL to provide more routes and services to customers.

Expansion into Latin America's two largest markets, Mexico and Brazil, has led to foreign carrier agreements with Aeroméxico and GOL. DAL's acquisition of a 49% stake in Aeroméxico in 2017, a 49% stake in Virgin Atlantic in 2012, a 3.2% stake in China Eastern in 2015, and a 9.5% stake in GOL's outstanding capital have helped to drive up profits.

Figure 7: GDP Per Capita In China



Source: Bloomberg

To expand its Asian / Pacific business, DAL established a partnership with China Eastern. China Eastern is one of the largest airlines in China with over 200 locations in more than 25 countries. Growth in Asia helps offset pressures from low-cost carriers in the U.S. Expanding into high revenue and high growth global markets also allows for customers to seamlessly connect to a larger network of offered routes and improves the travel experience. A growing middle class in China will lead to sustained growth in Asia.

DAL combats the competitive pressure from low cost carriers through its global network and an increase in the number of routes offered

In 2017, DAL signed a joint venture agreement with Korean Air. This partnership allows for greater coverage in Asia with less aircraft commitments. In 2018, DAL will have eighty destinations beyond Seoul compared to ten in 2012. This agreement benefits customers by improving travel experience through a greater number of connecting hubs.

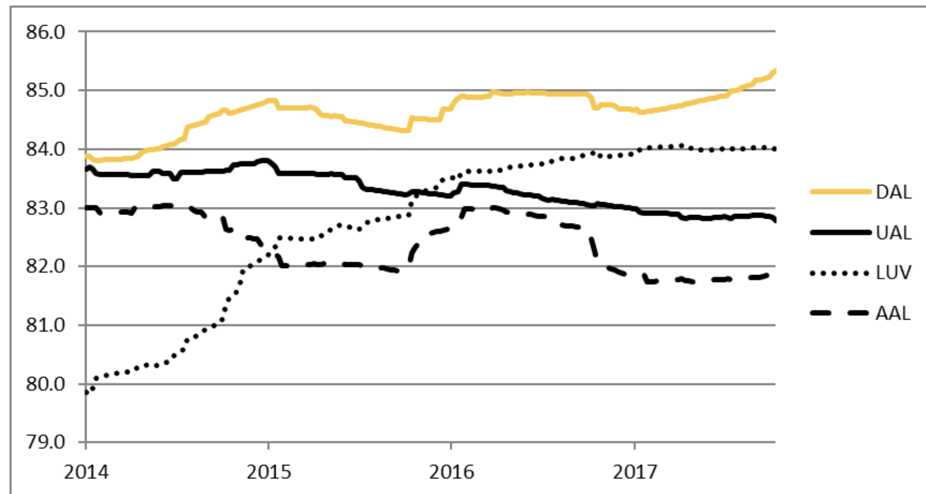
To better compete with low-cost carriers, DAL announced plans to pursue a joint venture agreement with WestJet in 2017. This low-cost Canadian airline will help DAL minimize its exposure to low-cost carriers while increasing its global footprint.

Competition

PLF= Revenue Per Mile / Available Seat Mile

Passenger load factor (PLF) is a key indicator of an airline's ability to fill its aircrafts with passengers. Airlines have high fixed costs associated with each flight; therefore, if an airline is unable to maximize its revenue by increasing occupancy, it's likely that it may prove to be unprofitable. DAL had the highest PLF of its competitors in 2017; however, it still is threatened by low-cost carriers, such as Southwest Airlines (LUV). In that sense, it comes as no surprise that LUV is expected to outperform DAL in the next 5 years in terms of its passenger load factor. However, DAL remains the top domestic and international airline and is expected to have the highest continued PLF growth rate.

Figure 8: DAL vs Competitors – Passenger Load Factor (PLF%)



Source: Company Reports

Calculated Data:
5-Year CAGR DAL v. Comps

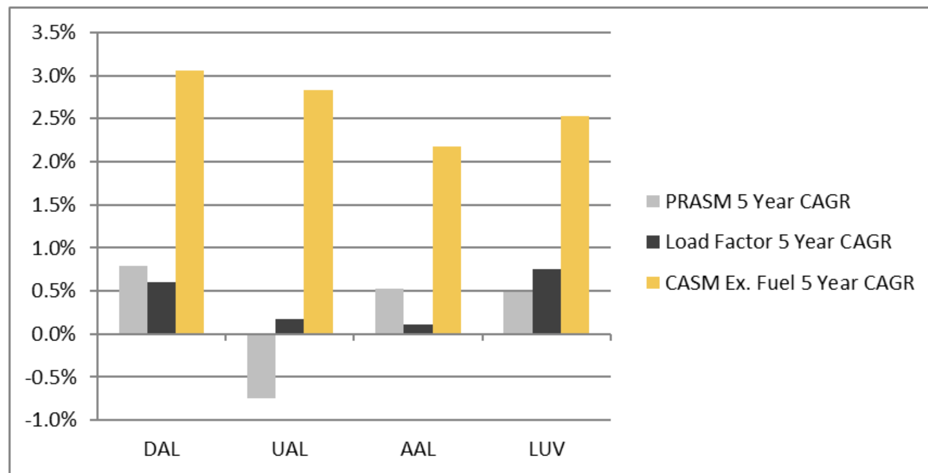
PRASM
DAL: 0.79%
UAL: -0.74%
AAL: 0.53%
LUV: 0.49%

CASM Ex. Fuel
DAL: 3.05%
UAL: 2.83%
AAL: 2.17%

Passenger revenue per available seat mile (PRASM) and cost per available seat mile (CASM) is a measure of an airline's profitability. Through this measure, it's possible to analyze how much weight an airline must dedicate towards alternative forms of revenue based on how high its PRASM to CASM ratios are. Due to the highly competitive nature of the industry, this ratio is generally a negative number. Airlines are no longer able to operate solely on ticket sales, therefore they must generate revenue from other sources to be profitable. As depicted in Figure 8, Delta has the second highest growth of passenger revenue per available seat mile and lowest growth of cost per available seat mile versus its competitors.

Based on a 5-year compounded growth rate, growth in DAL performed significantly better than it's competitors. While DAL has a higher growth in cost per available seat mile, it also has a 0.79% 5-year compounded PRASM growth rate compared to UAL with -0.74% and LUV with 0.49%.

Figure 9: 5-Year CAGR for PRASM, CASM, & Load Factor %

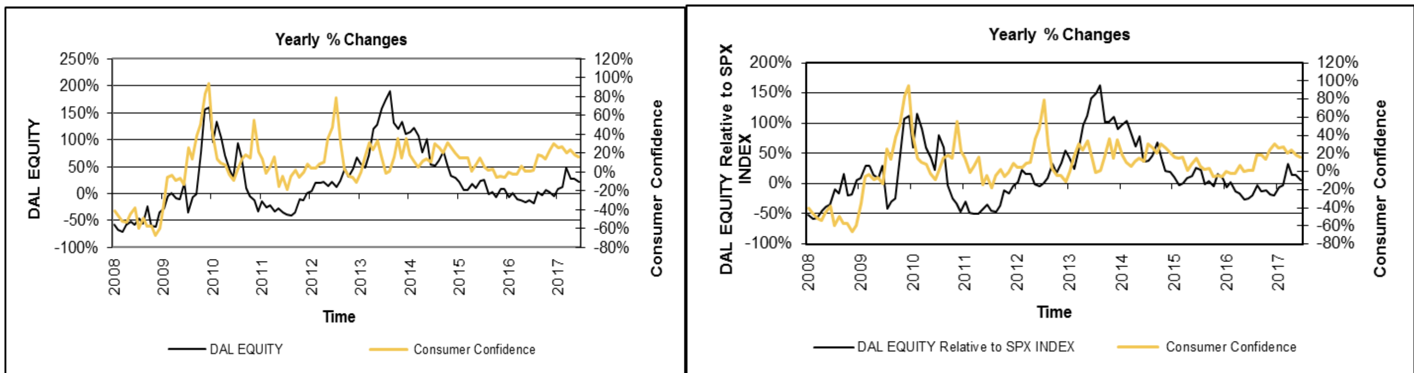


Source: Factset

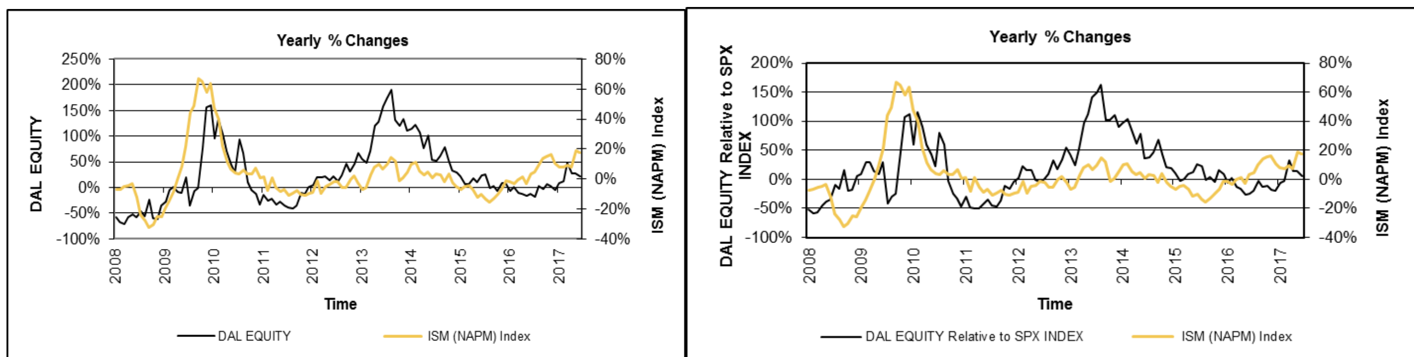
Macroeconomic effects

Since it is highly leveraged, capital intensitve, and sales are impacted by consumer and business trends, the airline industry is a naturally cyclical industry that fluctuates significantly with changes in the economy. These impacts are reflected in the consumer confidence index, as well as the ISM. Consumer confidence has a positive correlation of 0.364 with DAL's outperformance relative to the S&P500. In addition, the correlation between ISM and DAL's outperformance versus the SPX is 0.327.

Figures 10 and 11: Consumer Confidence v. DAL (left) and Consumer Confidence v. DAL relative to SPX



Figures 12 and 13: ISM (NAPM) v. DAL (left) v. DAL Relative to S&P500 Index



Source: Bloomberg, IMCP

Financial Analysis

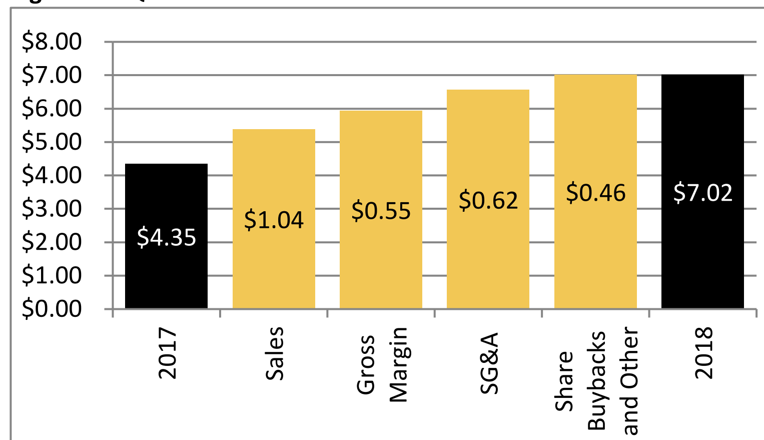
Reported Total Unfunded Pension:

2016: $10.6B

2017E: $6.8B

I anticipate EPS to grow from $4.35 in FY 2017 to $7.02 in FY 2018. Increases in mainline and regional passenger sales should boost earnings by $1.04. I anticipate a $0.55 increase from a rise in gross margin due to joint venture profit sharing programs with Aeroméxico and GOL in the Latin America segment and stabilization of fuel prices. Additionally, I project a $0.62 increase due to lower SG&A as a percent of sales from the investment in technology for further operational efficiencies. Finally, I forecast a $0.46 increase in share buybacks and pension funding. This cash utilization assumption is in line with historical cash reserves and the decreasing of liabilities for future refinancing rates and maintaining an investment grade balance sheet.

Figure 14: Quantification of 2018 EPS drivers

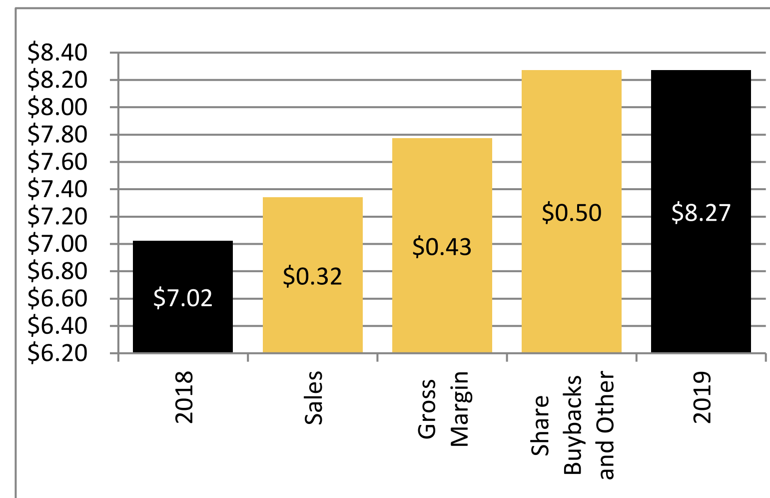


Sources: Company Reports, IMCP

DAL plans to replace 30% of its fleet by 2020. This will improve operational efficiencies by reduction of overall fleet age

I anticipate EPS to grow from $7.02 in FY 2018 to $8.14 in 2019. I predict a $0.32 increase in EPS from sales due to further realized growth in the Latin America and Pacific segments. This gain is offset by an expected decrease of 0.5% in the growth rate of mainline passenger sales from the threat of domestic low-cost carriers. I anticipate an increase of $0.43 in EPS from gross margin gains from the delivery of 60 new aircrafts in 2018 and further fleet efficiency. I expect SG&A to remain unchanged. Finally, I forecast share buyback programs, the reduction of debt, and pension funding to increase the EPS by $0.50. Management intends for 80% of the pension to be funded by 2020 and 70% of free cash flow to be returned to shareholders by the end of 2018.

Figure 15: Quantification of 2019 EPS drivers



Sources: Company Reports, IMCP

I am slightly more optimistic than consensus estimates for 2018 due to expectations of excelling joint venture agreements and an aggressive reduction of debt. I anticipate stronger growth in 2019 driven primarily through fleet replacement, further pension reduction, and an increased number of global partners which creates a sustainable competitive advantage.

Figure 16: EPS and YoY growth estimates

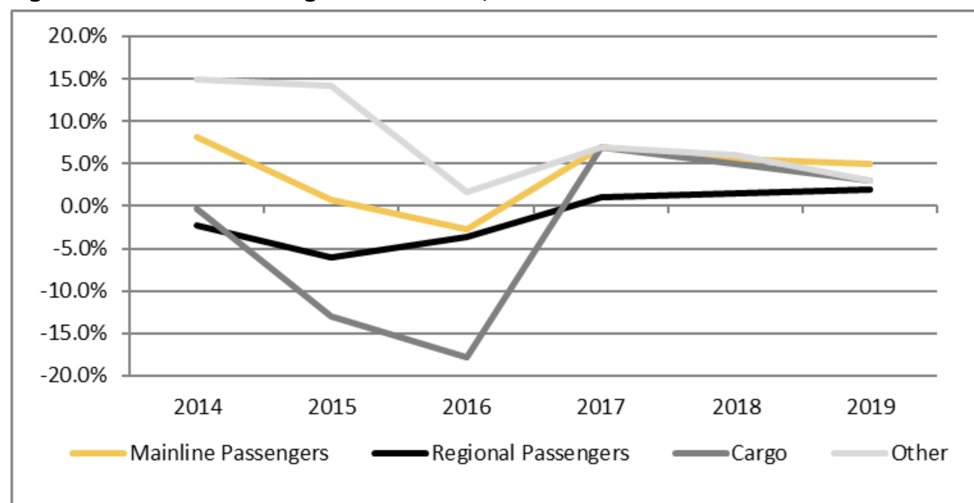
	2018E	2019E
Revenue - Estimate	$42,470	$44,299
YoY Growth	5.0%	4.3%
Revenue - Consensus	$43,121	$44,074
YoY Growth	5.0%	2.2%
EPS - Estimate	$7.02	$8.14
YoY Growth	61.3%	15.8%
EPS - Consensus	$6.24	$7.16
YoY Growth	26.6%	14.7%

Sources: Factset, IMCP

Revenues

Delta's revenue declined in 2016 due to numerous technological malfunctions and system outages. Revenues from 2016 to 2017 were primarily driven by an increased operational reliability and joint venture agreements. I expect mainline passenger revenue to decrease slightly in 2018 and 2019 due to increased pressures from low-cost carriers and regional passenger sales to slightly increase due to a stronger global presence through joint venture agreements.

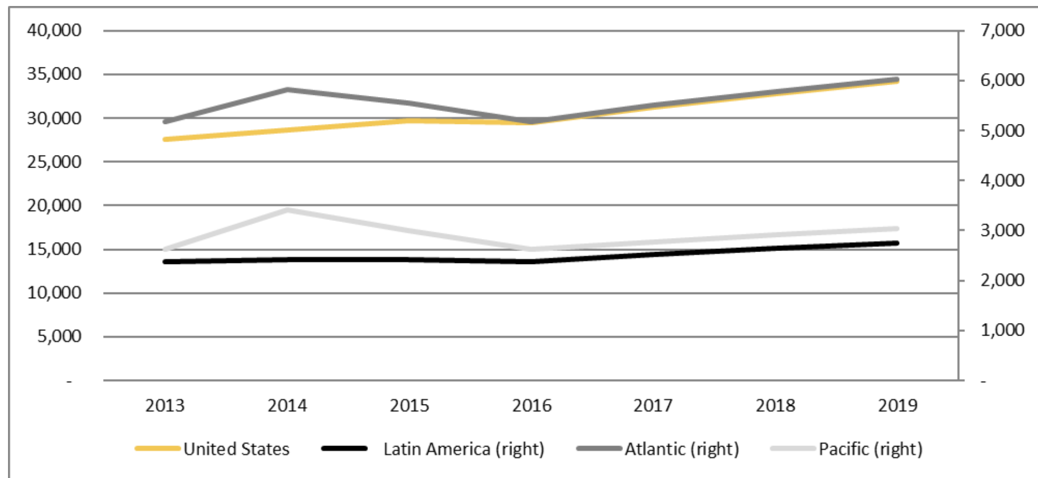
Figure 17: Delta Airlines segment revenues, 2014 – 2019E



Sources: Company Reports, IMCP

Passenger revenue should continue to improve as regional carriers experience growth in Q4 2017 for the first timbe in five years. International travel in the Pacific segment will significantly increase due to continued growth in China and the joint venture partnership with Korean Air. Additionally, the Latin America segment will continue to increase revenues due to DAL's ownership of 49% outstanding shares in Aeroméxico and GOL. Joint ventures and global alliances will be the primary driver for revenue growth as demand for international travels grows.

Figure 18: Revenue Growth, 2013 – 2019E



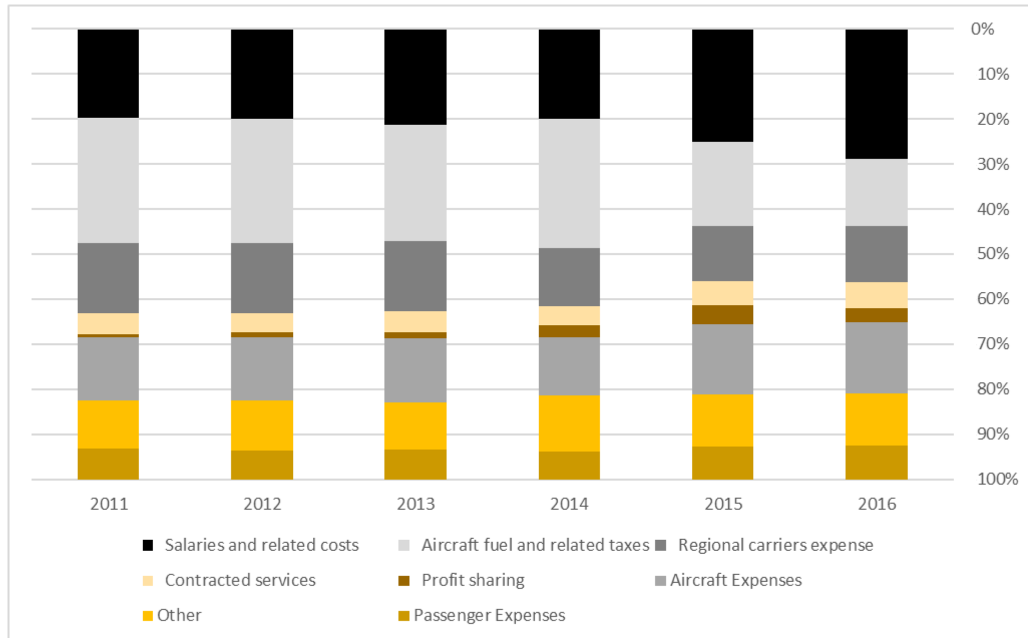
Source: Company Reports

<u>Operating Income and Margins</u>

Operating expenses are composed primarily of labor and fuel costs. Other expenses include profit sharing programs, contracted services, and passenger related costs. Total fuel costs have declined in recent years due to efficient hedging and the declining price of jet fuel and I forecast this to continue. I forecast the price of fuel to remain stable and for labor costs to continue accounting for a majority of operating expenses. I predict aircraft expenses to decline in 2018 and 2019 due to increased operational efficiencies from a lowered fleet age due to fleet retirement. Investment in aircraft technology and fleet retirement will also continue to drive fuel costs down. The delivery of 60 new aircrafts in 2018 will increase fuel efficiency, lower maintenance costs, and result in dramatic cost savings in overall aircraft and fuel expenses.

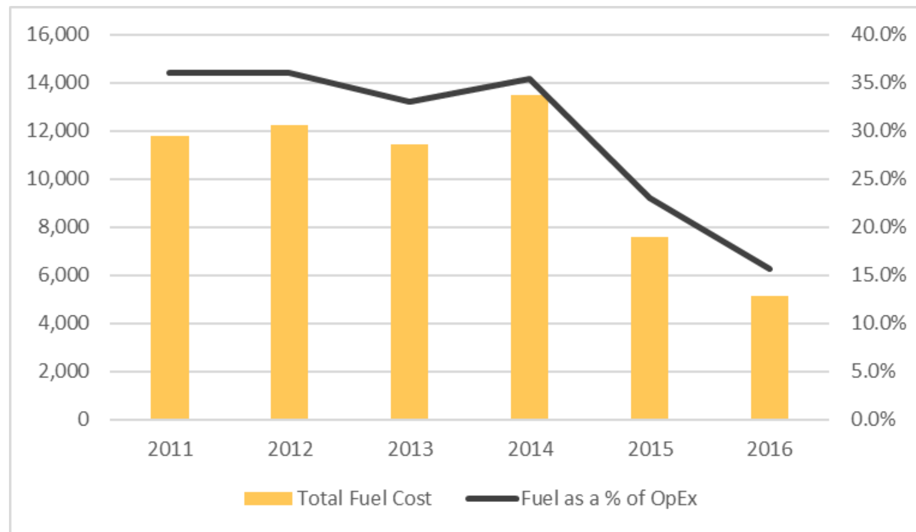
Fuel costs have historically accounted for a large portion operating expenses

Figure 19: Historical Composition of Operating Expenses



Source: Company Reports

Figure 20: Total Fuel Cost (left) vs Fuel as a % of Operating Expenses (right)



Source: Company Reports

<u>Return on Equity</u>

Delta Airline's ROE has been volatile over the past few years. Profit margins have decreased due to competitive pressures from low-cost carriers. Consistent reductions in debt has lowered the leverage ratio even as share buybacks limit equity growth. As sales growth outpaces asset growth, asset turnover should rise in 2017-2019. At the same time, profit margins are forecasted to rise. Thus, ROE will rise despite lower forecasted leverage.

Figure 21: ROE breakdown, 2014 – 2019E

Return on Equity						
	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
3-stage						
Net income / sales	9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
Sales / avg assets	0.76	0.76	0.76	0.77	0.78	0.79
ROA	7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity	5.20	5.45	4.51	3.85	3.49	3.30
ROE	36.5%	53.6%	37.8%	22.7%	30.0%	29.9%

Source: Company Reports

I expect ROE and ROA to increase in future terms. Sales to average assets are beginning to flatline, because of a significant increase in their asset base from fleet replacement that will erase any gains from sales growth. Average assets to equity is decreasing due to debt paydown initiatives. Share buyback programs will continue to lower equity.

Free Cash Flow

Figure 22: Free cash flows 2013 – 2019E

Free Cash Flow	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
NOPAT	$14,127	$4,289	$5,589	$4,798	$3,887	$4,914	$5,327
Growth		*-69.6%*	*30.3%*	*-14.1%*	*-19.0%*	*26.4%*	*8.4%*
NWC*	(5,798)	(5,286)	(8,879)	(9,419)	(10,043)	(10,547)	(11,001)
Net fixed assets	42,601	41,656	44,078	43,810	45,670	47,959	50,024
Total net operating capital*	$36,803	$36,370	$35,199	$34,391	$35,627	$37,412	$39,023
Growth		*-1.2%*	*-3.2%*	*-2.3%*	*3.6%*	*5.0%*	*4.3%*
- Change in NWC*		512	(3,593)	(540)	(624)	(503)	(454)
- Change in NFA		(945)	2,422	(268)	1,860	2,289	2,064
FCFF*		$4,722	$6,760	$5,606	2,651	$3,128	$3,716
Growth			*43.1%*	*-17.1%*	*-52.7%*	*18.0%*	*18.8%*
- After-tax interest expense	3,792	557	321	256	252	228	217
FCFE**		$4,165	$6,439	$5,350	$2,399	$2,900	$3,499
Growth			*54.6%*	*-16.9%*	*-55.2%*	*20.9%*	*20.7%*

Sources: Company Reports, IMCP

DAL's free cash flow has been fairly volatile over the last several years due to large changes in NOPAT. Increased investment in net fixed assets in 2017 and beyond will has cause a decline in FCF. As seen in Figure 22, an additional $4.3B in aircrafts and other fixed assets will be purchased in the next two years. Excluding change in debt, DAL has $2.5-$3.5B in FCFE for share buybacks, pension reduction, and other uses.

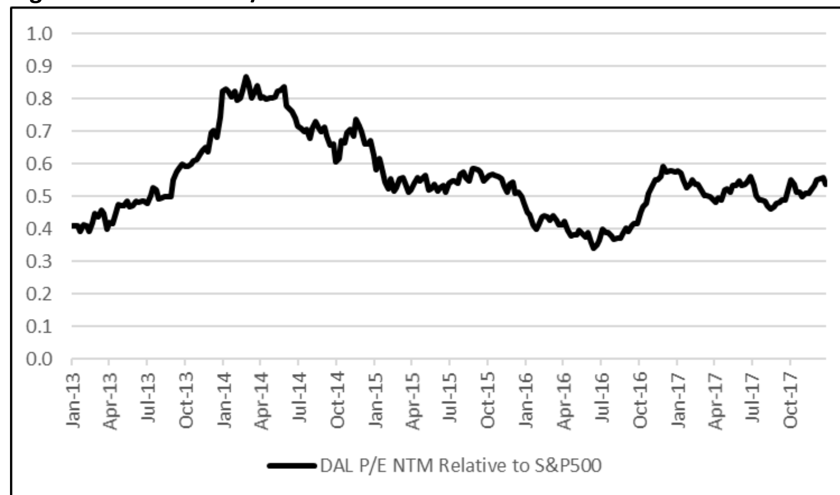
Valuation

DAL was valued using multiples and a 3-stage discounted cash flow model. A relative evaluation between DAL's NTM P/E and the S&P500 shows that with a sustainable P/E of 9.0 the price at the end of 2018 would be $73.26. A strong R-squared of 0.80 between DAL's P/B and ROE shows that the stock is worth $87.26.

Trading History

DAL is currently trading near its five-year average to the S&P 500. This is the result of DAL trading approximately 40% below the S&P 500. DAL's current NTM P/E is 9.0 compared to its five-year average of 8.7. I expect DAL's P/E to remain the same throughout 2018 which is why I used a ratio of 9.0 in the valuation below.

Figure 23: DAL NTM P/E Relative to S&P 500



Source: Factset

Assuming the firm maintains a 9.0 NTM P/E at the end of 2018, it should trade at $73 by the end of the year.

- Price = 2018E P/E x EPS = 9.0 x $8.14 = $73.26

Discounting $73.26 back to today at a 10.91% cost of equity (explained in Discounted Cash Flow section) yields a price of $65.27. Given DAL's potential profitability through joint ventures and global alliances, this valuation seems low. DAL's current price is $52.95, which means that it's trading at a 23% discount.

<u>Relative Valuation</u>

Delta Airlines is currently trading at a P/E much lower than AAL and LUV with a P/E TTM of 12.1. The only competitor that has a lower P/E TTM is UAL at 11.1. DAL has a lower P/E compared to most of its competitors because of its disadvantage to ultra-discount carriers, such as LUV. Investors are more willing to pay a premium for low cost carriers because of their greater potential to capture profits from increasing demand for discounted tickets. DAL has the second highest P/S of 1.04, leading me to believe that the market highly values its sales; the firm also has the second highest net profit margin.

Figure 24: DAL Comparable Companies

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
DAL	DELTA AIR LINES INC	$52.95	$37,752	1.4	(11.5)	7.3	6.1	3.5	(5.4)	12.2	25.4%	621.8%	2.8%	-37.3%	4.1%	32.9%	0.80	47.5%	B	1.79%	20.5%
AAL	AMERICAN AIRLINES GROUP INC	$51.67	$24,724	1.2	(11.6)	9.5	6.5	8.7	(0.7)	6.5	48.3%	181.7%	-56.5%	-12.7%	-1.4%		1.11	573.4%		0.74%	10.3%
UAL	UNITED CONTINENTAL HLDGS INC	$66.74	$19,772	1.6	(14.9)	16.1	(0.3)	(11.9)	(1.0)	5.4	5.8%	564.5%	-64.8%	-43.8%	8.6%		1.03		B-	0.00%	0.0%
LUV	SOUTHWEST AIRLINES	$58.18	$34,207	0.8	(11.0)	6.5	5.4	1.6	(11.1)	14.2	-13.8%	99.4%	8.6%	-87.9%	2.3%	59.7%	1.05	31.8%	A-	0.78%	8.2%
Average			$29,114	1.3	-12.2	9.9	4.4	0.5	-4.6	9.6	16.4%	366.8%	-27.5%	-45.4%	3.4%	46.3%	1.00	217.6%		0.8%	9.7%
Median			$29,466	1.3	-11.6	8.4	5.7	2.5	-3.2	9.4	15.6%	373.1%	-26.9%	-40.6%	3.2%	46.3%	1.04	47.5%		0.8%	9.2%
SPX	S&P 500 INDEX	$2,731		1.2	-2.0	6.5	10.8	16.3	2.2			-0.1%	0.5%	10.3%	11.7%						

Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
DAL	http://www.delta.com	29.5%	2.70	63.1	9.0	8.5	10.7	8.5	14.6	14.0	10.0%	0.92	14.8%	18.4%	7.6	5.7	6.0	5.8%	3.9%	2.4%	$19.64
AAL	http://www.aa.com	58.5%	6.28	13.6	3.8	9.7	13.2	8.9	12.3	12.5	5.7%	0.62	11.3%	7.3%	9.5	4.7	4.9	6.7%	4.0%	11.2%	$8.23
UAL	http://www.unitedcontinentalholdin	22.6%	2.20	22.8	2.9	10.6	9.5	9.0	17.3	16.0	5.6%	0.54	24.7%			3.2	4.5	6.2%	4.9%	0.3%	$30.28
LUV	http://www.southwest.com	20.0%	3.28	25.8	13.2	14.0	10.0	11.7	135.3	132.2	10.2%	1.67	19.2%	27.9%	9.8	9.5	9.6	6.5%	4.1%	4.4%	$17.72
Average		32.7%	3.62	31.3	7.2	10.7	10.9	9.5	44.9	43.7	7.9%	0.94	17.5%	17.8%	9.0	5.8	6.2	6.3%	4.2%	4.6%	$18.97
Median		26.1%	2.99	24.3	6.4	10.2	10.4	9.0	16.0	15.0	7.9%	0.77	17.0%	18.4%	9.5	5.2	5.4	6.3%	4.0%	3.4%	$18.68
SPX	S&P 500 INDEX			17.3	17.2	18.8			20.8	18.6											

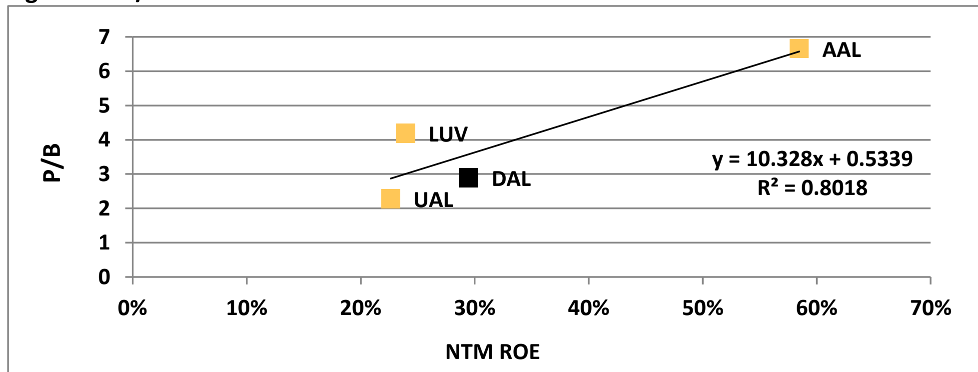
Sources: IMCP,Factset

A more thorough analysis of P/B and ROE is shown in Figure 24. The calculated R-squared of the regression indicates that over 80% of a sampled firm's P/B is explained by its 2017 ROE. DAL has the second lowest P/B and ROE compared to its peers. DAL is below the trend line, meaning that their price is undervalued as a function of ROE. Given the increasing profitability from foreign alliances and joint ventures, I believe that ROE will be more highly valued by investors in the coming months.

- Estimated P/B = Estimated 2018 ROE (30%) x 10.328+ 0.5339 = 3.63
- Target Price = Estimated P/B (3.63) x 2018E BVPS ($24.37) = $88.46

Discounting back to the present at a 10.91% cost of equity leads to a target price of $88.46 using this metric.

Figure 25: P/B vs 2017 ROE



Source: Factset

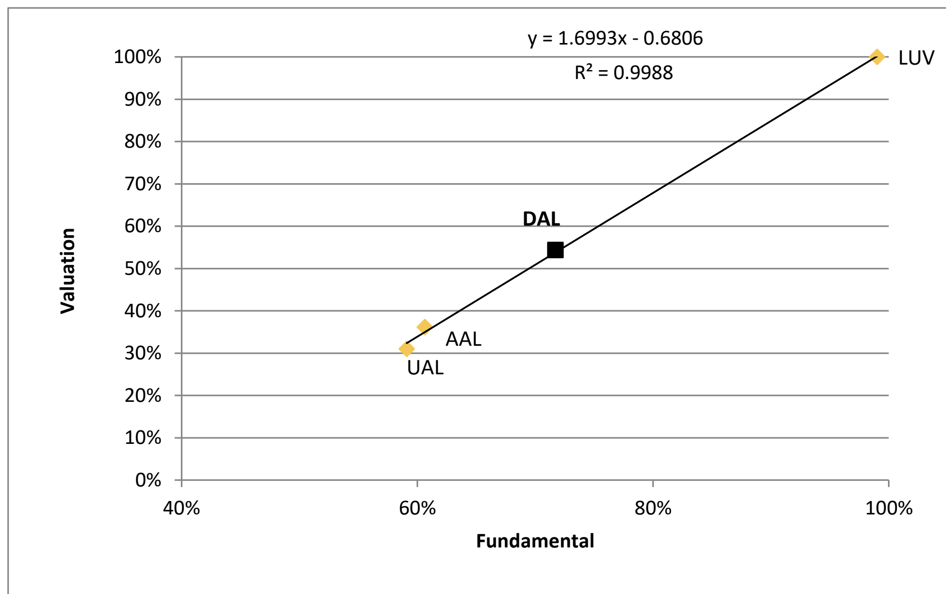
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. I applied the greatest fundamental value to the past five years of earnings growth and long-term growth rates because the airline industry is highly levered and cyclical and these measures consider the entire cycle. A 100% weight was placed into P/S because it is good for normalized valuation analysts (P/E is erratic). One can see that DAL is on the line (R-squared is nearly 100%), so it is fairly valued based on its fundamentals.

Figure 26: Composite Valuation, % of Range

				Fundamental		Valuation
		Weight		37.0%	63.0%	100.0%
				Earnings Growth		P/S
Ticker	Name	Fund	Value	LTG	Pst 5yr	
DAL	DELTA AIR LINES INC	67%	55%	87%	55%	55%
AAL	AMERICAN AIRLINES GROUP INC	66%	37%	46%	78%	37%
UAL	UNITED CONTINENTAL HLDGS INC	63%	32%	38%	78%	32%
LUV	SOUTHWEST AIRLINES	100%	100%	100%	100%	100%

Sources: IMCP, Factset

Figure 27: Composite Relative Valuation



Sources: IMCP, Factset

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 10.91% 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 2.63%.
- A five-year beta of 1.30 was utilized since the company has higher risk than the market.
- A long-term market rate of return of 9% was assumed, since historically, the market has generated an annual return of about 9%.

Given the above assumptions, the cost of equity is 10.91% = (2.63 + 1.30 (9.0 – 2.63)).

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 $3.60 and $5.41, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $7.49 per share. Thus, stage one of this discounted cash flow analysis contributes $7.49 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 10.91% cost of equity. I assume a 3.0% sales growth rate in 2020, remaining the same through 2024. I expect a 100-basis point increase in NOPAT/S due to a rising amount of global alliances and joint ventures in 2021 and 2022. An aggressive share buyback program in 2018 and 2019 will begin to flatline share growth by 2020, continuing through 2024. Debt reduction in 2018 and 2019 will continue but will be offset by costs associated with mainline fleet replacement and other fleet upgrades in 2020 to 2024.

Figure 28: FCFE and Discounted FCFE, 2018-2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$3.60	$5.41	$7.66	$7.87	$8.91	$9.18	$9.45
Discounted FCFE	$3.20	$4.29	$5.41	$4.95	$4.99	$4.58	$4.20

Added together, these discounted cash flows total $24.13

Stage Three – Net income for the years 2018 – 2024 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $7.02 in 2018 to $11.27 in 2024.

Figure 29: EPS Estimates for 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$7.02	$8.14	$9.27	$9.55	$10.62	$10.94	$11.27

The third stage of the model requires the company's terminal price-to-earnings ratio to find its terminal value. DAL's current NTM P/E is 9.0 and is expected to have a terminal P/E value of 13.50 by the end of 2024. As sales growth continues to rise from joint ventures and foreign partnerships, I expect the P/E to shift closer to the market P/E.

Assuming terminal earnings per share of $11.27 and a price to earnings ratio of 13.50, a terminal value of $152.16 per share is calculated. Using the 10.91% cost of equity, this number is discounted back to a present value of $67.61.

Total Present Value – Utilizing the three-stage method above, I reached a total present value of $99.24.

Scenario Analysis

Delta Airlines is difficult to value with certainty because of the numerous variables required to quantify what effect each new and strengthened joint venture and alliance will have on the firm's operations. Furthermore, changes in the economic cycle and future prices of oil are difficult to predict and contribute to significant volatility in the airline industry.

Sales Growth – Scenario one assumes an increase in sales growth from 5.0% to 6.3% in 2018 and an 4.3% to 6.5% in 2019. A steady increase in sales would lead to a 1.3% increase in EPS for 2018 and a 3.6% increase in 2019. The valuation of the stock would be $53.90. Scenario two assumes a decrease in sales growth in 2018 from 5.0% to 4.0% and 4.3% to 3.5% in 2019. These changes would result in a decrease to the EPS by 1.0% in 2018 and 1.7% in 2019. The valuation of the stock would be $52.76.

I expect sales growth to increase over the next two years from new joint ventures and strengthened foreign alliances. Expansion into new business segments allows for further growth opportunities and contributes to a rising percentage in sales growth. An increase in the number of offered routes from

these partnerships allows DAL to effectively manage competition from low-cost carriers and increase its sales.

EBIT Margin – Scenario one assumes an increase in EBIT margin from 17.8% to 18.0% in 2018 and 18.5% to 19.0% in 2019. An increase to the EBIT margin in both years would cause EPS to experience a 1.28% increase in 2018 and 2.8% in 2019. The valuation of the stock would be $55.67. This scenario is possible through significant contribution from international segments, increased domestic ticket sales, and the lowering of fleet age and maintenance costs. Scenario two assumes a decrease in EBIT margin from 17.8% to 15.0% in 2018 and 18.5% to 14.0% in 2019. This change would significantly impact the EPS by causing a decrease of 16.5% in 2018 and 25.3% in 2019. The valuation of the stock would $48.54.

Share Buybacks – DAL has a strong share buyback program and if increased from $2.5 billion to $3.0 billion in 2018, would cause the EPS to increase by 1.28%. Additionally, an increase from $2.5 billion to $3.5 billion in 2019 would cause a 3.06% increase. The valuation of the stock would be $56.01. If DAL lowered the number of shares it buys back to $2.0 billion, this cause a 1.28% decrease in EPS in 2018. If share buybacks decreased in 2019 from $2.0 billion to $1.5 billion, then EPS would fall 5.41%. The valuation of the stock would be $51.02.

I predict share buybacks to continue over the next couple of years and to steadily decrease before stabilizing in 2020. The current aggressive share buyback programs leads me to believe that the firm's excess capital will shift from share repurchases to investing in fleet upgrades and maintenance moving forward.

Business Risks

Although I have many reasons to be optimistic about Delta Airlines, there are still a few reasons to be cautious

Competition:

Domestic operations are threatened by discount and ultra-low-cost carriers. Costs must be kept at a competitive level to avoid financial duress.

Increased competition in domestic and foreign markets from government-owned and funded carriers, such as Emirates and Qatar Airways, have an adverse effect on operations. Expanding fleets and an increasing global presence in routes offered from the U.S. to the Middle East, China, India, and Southeast Asia may have a negative effect on the U.S. airline industry.

Labor Issues:

DAL is labor intensive with approximately 19% of its workforce (mainly pilots) unionized. If the collective bargaining process required by the Railway Labor Act between the airline and labor union fails or if additional segments of the airline become unionized, then it may be subject to strikes or other labor disputes.

Third-party regional carriers fall under the same terms and any current or future collective bargaining on their union's behalf would result in a negative impact on DAL's operations.

Currency Headwinds:

Periods of volatility in exchange rates between the U.S. dollar and other currencies have an adverse effect on liquidity, financial condition, and results of operations.

Economic Downturns:

An airlines profitability is greatly influenced by the economy. Unfavorable or volatile economic conditions in the U.S. or in partnering economies affects profitability by lowering passenger revenue and passenger load factor. Approximately 30% of DAL's revenue comes from international operations. Joint ventures and partnerships could prove unfavorable if their related economies slow or enter a recessionary period.

Fuel Prices:

Jet fuel accounts for a majority of Delta's operating expenses. The volatility in fuel prices affects profitability and performance in a highly competitive industry. Increases in fuel prices may result in the inability to increase fares to offset fuel prices to manage the threat from low-cost carriers. Hedging programs and derivative contracts are used to help manage the effects of volatile fuel prices. Unsuccessful hedging programs caused by changes in market conditions may result in losses from the rebalancing of hedging portfolios and mark-to-market adjustments (MTM adjustments).

Weather related events, political issues in oil producing countries, and any other unforeseen circumstances could significantly affect the supply of jet fuel. This pertains directly to DAL's main supplier of jet fuel and refinery, Monroe. Ownership of Monroe could have an adverse effect on operations and impact the ability to acquire fuel. The refinery's loss of production and repair costs would result in a worsened financial condition, one that is unrecoverable by insurance.

Appendix 1: Porter's 5 Forces

Threat of New Entrants - Low

The barriers to enter the airline industry are extensive. These include government regulation, low margins, and high start-up costs. Additionally, major airlines have larger economies of scale and established partnerships to increase the number of routes offered and create a more seamless travel experience.

Threat of Substitutes - Very High

Delta Airlines relies heavily on brand loyalty and recognition to convince consumers to pay for its services over lower-cost substitutes. Loyalty programs and the enhancement of onboard services help to differentiate major airlines from low-cost carriers.

Supplier Power - Very High

Airline manufacturers have extensive leverage over their customers. Limited quantities of suppliers allow for more pricing power and expensive delivery contracts.

Buyer Power - Very High

Consumers have a great degree of power over the airline industry. Low switching costs and increased technology allow for easier comparisons on flight times, ticket prices, and ancillary expenses.

Intensity of Competition - Very High

Passenger revenue accounts for the majority of airline profit, therefore, pricing must remain competitive to increase passenger load factors. Competition from discounted carriers caused major airlines to reduce ticket prices and increase cargo and ancillary revenues to offset losses.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Strong Brand Recognition	High Fleet Age
Hedging Program	Economic Downturns
Debt Reduction	Jet Fuel Price Volatility
Opportunities	**Threats**
Broader Coverage in Asia	Currency Headwinds
Fleet Cost Reductions	Low-cost Carriers
International Partnerships	Labor Strikes

Appendix 3: Income Statement

Income Statement	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Sales	**$37,773**	**$40,362**	**$40,704**	**$39,602**	**$40,443**	**$42,470**	**$44,299**
Direct costs	31,476	32,101	28,654	28,625	30,093	31,003	31,895
Gross Margin	6,297	8,261	12,050	10,977	10,350	11,467	12,404
SG&A and other	3,123	3,497	3,670	3,696	4,370	3,907	4,208
EBIT	3,174	4,764	8,380	7,281	5,980	7,560	8,195
Interest	852	619	481	388	388	351	334
EBT	2,322	4,145	7,899	6,636	5,592	7,209	7,861
Taxes	(8,013)	413	2,631	2,263	2,500	2,523	2,751
Net income	**10,335**	**3,732**	**5,268**	**4,373**	**3,092**	**4,686**	**5,110**
Basic Shares	851.0	836.0	797.0	755.0	710.0	667.1	628.1
EPS	**$12.21**	**$3.36**	**$6.28**	**$6.02**	**$4.35**	**$7.02**	**$8.14**
DPS	$0.12	$0.30	$0.45	$0.67	$1.08	$1.35	$1.51

Appendix 4: Balance Sheet

Balance Sheet	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Cash	2,844	2,088	1,972	2,762	2,971	1,971	1,921
Operating assets ex cash	6,807	10,377	7,084	4,689	5,045	5,297	5,525
Operating assets	9,651	12,465	9,056	7,451	8,016	7,269	7,446
Operating liabilities	12,605	15,663	15,963	14,108	15,088	15,844	16,526
NOWC	(2,954)	(3,198)	(6,907)	(6,657)	(7,072)	(8,575)	(9,080)
NOWC ex cash (NWC)	(5,798)	(5,286)	(8,879)	(9,419)	(10,043)	(10,547)	(11,001
NFA	42,601	41,656	44,078	43,810	45,670	47,959	50,024
Invested capital	*$39,647*	*$38,458*	*$37,171*	*$37,153*	*$38,598*	*$39,384*	*$40,944*
Marketable securities	-	-	-	-	-	-	-
Total assets	***$52,252***	***$54,121***	***$53,134***	***$51,261***	***$53,686***	***$55,228***	***$57,470***
Short-term and long-term debt	$11,342	$9,777	$8,329	$7,332	$6,500	$6,000	$5,900
Other liabilities	16,662	19,868	17,992	17,534	17,127	17,127	17,127
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	11,643	8,813	10,850	12,287	14,971	16,257	17,917
Total supplied capital	*$39,647*	*$38,458*	*$37,171*	*$37,153*	*$38,598*	*$39,384*	*$40,944*
Total liabilities and equity	***$52,252***	***$54,121***	***$53,134***	***$51,261***	***$53,686***	***$55,228***	***$57,470***

Appendix 5: Sales Forecast

Sales Forecast						Base Case		Bull Case		Bear Case	
	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-18	Dec-19	Dec-18	Dec-19
Sales	37,773	40,362	40,704	39,639	42,073	44,183	$46,084	44,277	$46,517	43,458	$44,534
Growth		6.9%	0.8%	-2.6%	6.1%	5.0%	4.3%	5.2%	5.1%	3.3%	2.5%
Mainline Passengers	26,534	28,688	28,898	28,105	30,072	31,726	33,313	32,027	33,949	31,426	32,526
Growth		8.1%	0.7%	-2.7%	7.0%	5.5%	5.0%	6.5%	6.0%	4.5%	3.5%
% of sales	70.2%	71.1%	71.0%	70.9%	71.5%	71.8%	72.3%	72.3%	73.0%	72.3%	73.0%
Regional Passengers	6,408	6,266	5,884	5,672	5,729	5,815	5,931	5,901	6,137	5,843	5,902
Growth		-2.2%	-6.1%	-3.6%	1.0%	1.5%	2.0%	3.0%	4.0%	2.0%	1.0%
% of sales	17.0%	15.5%	14.5%	14.3%	13.6%	2.0%	12.9%	13.3%	13.2%	13.4%	13.3%
Cargo	937	934	813	668	715	750	773	736	762	715	715
Growth		-0.3%	-13.0%	-17.8%	7.0%	5.0%	3.0%	3.0%	3.5%	0.0%	0.0%
% of sales	2.5%	2.3%	2.0%	1.7%	1.7%	1.7%	6.0%	1.7%	1.6%	1.6%	1.6%
Other	3,894	4,474	5,109	5,194	5,558	5,891	6,068	5,613	5,669	5,474	5,392
Growth		14.9%	14.2%	1.7%	7.0%	6.0%	3.0%	1.0%	1.0%	-1.5%	-1.5%
% of sales	10.3%	11.1%	12.6%	13.1%	13.2%	13.3%	13.2%	12.7%	12.2%	12.6%	12.1%

Appendix 6: Ratios

Ratios	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Profitability							
Gross margin	16.7%	20.5%	29.6%	27.7%	25.6%	27.0%	28.0%
Operating (EBIT) margin	8.4%	11.8%	20.6%	18.4%	14.8%	17.8%	18.5%
Net profit margin	27.4%	9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
Activity							
NFA (gross) turnover		0.96	0.95	0.90	0.90	0.91	0.90
Total asset turnover		0.76	0.76	0.76	0.77	0.78	0.79
Liquidity							
Op asset / op liab	0.77	0.80	0.57	0.53	0.53	0.46	0.45
NOWC Percent of sales		-7.6%	-12.4%	-17.1%	-17.0%	-18.4%	-19.9%
Solvency							
Debt to assets	21.7%	18.1%	15.7%	14.3%	12.1%	10.9%	10.3%
Debt to equity	97.4%	110.9%	76.8%	59.7%	43.4%	36.9%	32.9%
Other liab to assets	31.9%	36.7%	33.9%	34.2%	31.9%	31.0%	29.8%
Total debt to assets	53.6%	54.8%	49.5%	48.5%	44.0%	41.9%	40.1%
Total liabilities to assets	77.7%	83.7%	79.6%	76.0%	72.1%	70.6%	68.8%
Debt to EBIT	3.57	2.05	0.99	1.01	1.09	0.79	0.72
EBIT/interest	3.73	7.70	17.42	18.77	15.41	21.56	24.55
Debt to total net op capital	28.6%	25.4%	22.4%	19.7%	16.8%	15.2%	14.4%
ROIC							
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to NWC		(7.28)	(5.75)	(4.33)	(4.16)	(4.13)	(4.11)
Sales to NFA		0.96	0.95	0.90	0.90	0.91	0.90
Sales to IC ex cash		1.10	1.14	1.14	1.16	1.16	1.16
Total ROIC ex cash		11.7%	15.6%	13.8%	11.1%	13.5%	13.9%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to NOWC		(13.12)	(8.06)	(5.84)	(5.89)	(5.43)	(5.02)
Sales to NFA		0.96	0.95	0.90	0.90	0.91	0.90
Sales to IC		1.03	1.08	1.07	1.07	1.09	1.10
Total ROIC		11.0%	14.8%	12.9%	10.3%	12.6%	13.3%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to EOY NWC	(6.51)	(7.64)	(4.58)	(4.20)	(4.03)	(4.03)	(4.03)
Sales to EOY NFA	0.89	0.97	0.92	0.90	0.89	0.89	0.89
Sales to EOY IC ex cash	1.03	1.11	1.16	1.15	1.14	1.14	1.14
Total ROIC using EOY IC ex cash	38.4%	11.8%	15.9%	14.0%	10.9%	13.1%	13.7%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to EOY NOWC	(12.79)	(12.62)	(5.89)	(5.95)	(5.72)	(4.95)	(4.88)
Sales to EOY NFA	0.89	0.97	0.92	0.90	0.89	0.89	0.89
Sales to EOY IC	0.95	1.05	1.10	1.07	1.05	1.08	1.08
Total ROIC using EOY IC	35.6%	11.2%	15.0%	12.9%	10.1%	12.5%	13.0%
ROE							
5-stage							
EBIT / sales		11.8%	20.6%	18.4%	14.8%	17.8%	18.5%
Sales / avg assets		0.76	0.76	0.76	0.77	0.78	0.79
EBT / EBIT		87.0%	94.3%	91.1%	93.5%	95.4%	95.9%
Net income /EBT		90.0%	66.7%	65.9%	55.3%	65.0%	65.0%
ROA		7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity		5.20	5.45	4.51	3.85	3.49	3.30
ROE		36.5%	53.6%	37.8%	22.7%	30.0%	29.9%
3-stage							
Net income / sales		9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
Sales / avg assets		0.76	0.76	0.76	0.77	0.78	0.79
ROA		7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity		5.20	5.45	4.51	3.85	3.49	3.30
ROE		36.5%	53.6%	37.8%	22.7%	30.0%	29.9%
Payout Ratio		6.7%	6.8%	11.6%	24.7%	19.2%	18.6%
Retention Ratio		93.3%	93.2%	88.4%	75.3%	80.8%	81.4%
Sustainable Growth Rate		34.0%	49.9%	33.4%	17.1%	24.2%	24.3%

Appendix 7: 3-stage DCF Model

3-Stage Free Cash Flow

		Year						
		1	2	3	4	5	6	7
		First Stage		**Second Stage**				
Cash Flows		**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth		*5.0%*	*4.3%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
NOPAT / S		*11.6%*	*12.0%*	*13.0%*	*13.0%*	*14.0%*	*14.0%*	*14.0%*
S / NWC		*(4.03)*	*(4.03)*	*(4.03)*	*(4.03)*	*(4.03)*	*(4.03)*	*(4.03)*
S / NFA (EOY)		*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
S / IC (EOY)		*1.14*	*1.14*	*1.14*	*1.13*	*1.13*	*1.13*	*1.13*
ROIC (EOY)		*13.1%*	*13.7%*	*14.8%*	*14.8%*	*15.9%*	*15.9%*	*15.9%*
ROIC (BOY)			*14.2%*	*15.2%*	*15.2%*	*16.4%*	*16.4%*	*16.4%*
Share Growth			*-5.8%*	*-2.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales		$42,470	$44,299	$45,627	$46,996	$48,406	$49,858	$51,354
NOPAT		$4,914	$5,327	$5,932	$6,110	$6,777	$6,980	$7,190
Growth			*8.4%*	*11.4%*	*3.0%*	*10.9%*	*3.0%*	*3.0%*
- Change in NWC		-503	-454	-330	-331	-350	-360	-371
NWC EOY		*-10547*	*-11001*	*-11331*	*-11662*	*-12011*	*-12372*	*-12743*
Growth NWC			*4.3%*	*3.0%*	*2.9%*	*3.0%*	*3.0%*	*3.0%*
- Chg NFA		2289	2064	1501	1546	1592	1640	1689
NFA EOY		*47,959*	*50,024*	*51,525*	*53,070*	*54,662*	*56,302*	*57,991*
Growth NFA			*4.3%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Total inv in op cap		1786	1610	1171	1215	1242	1280	1318
Total net op cap		37412	39023	40194	41409	42651	43930	45248
FCFF		$3,128	$3,716	$4,761	$4,894	$5,535	$5,701	$5,872
% of sales		*7.4%*	*8.4%*	*10.4%*	*10.4%*	*11.4%*	*11.4%*	*11.4%*
Growth			*18.8%*	*28.1%*	*2.8%*	*13.1%*	*3.0%*	*3.0%*
- Interest (1-tax rate)		228	217	223	230	237	244	252
Growth			*-4.8%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
+ Net new debt		-500	-100	177	182	188	193	199
Debt		6000	5900	6077	6259	6447	6641	6840
Debt / tot net op capital		*16.0%*	*15.1%*	*15.1%*	*15.1%*	*15.1%*	*15.1%*	*15.1%*
FCFE w debt		$2,400	$3,399	$4,714	$4,847	$5,485	$5,650	$5,819
% of sales		*5.7%*	*7.7%*	*10.3%*	*10.3%*	*11.3%*	*11.3%*	*11.3%*
Growth			*41.6%*	*38.7%*	*2.8%*	*13.2%*	*3.0%*	*3.0%*
/ No Shares		667.1	628.1	615.6	615.6	615.6	615.6	615.6
FCFE		$3.60	$5.41	$7.66	$7.87	$8.91	$9.18	$9.45
Growth			*50.4%*	*41.5%*	*2.8%*	*13.2%*	*3.0%*	*3.0%*
* Discount factor		0.89	0.79	0.71	0.63	0.56	0.50	0.44
Discounted FCFE		$3.20	$4.29	$5.41	$4.95	$4.99	$4.58	$4.20
				Third Stage				
Terminal value P/E								
	Net income	$4,686	$5,110	$5,708	$5,879	$6,540	$6,736	$6,938
	% of sales	*11.0%*	*11.5%*	*12.5%*	*12.5%*	*13.5%*	*13.5%*	*13.5%*
	EPS	$7.02	$8.14	$9.27	$9.55	$10.62	$10.94	$11.27
	Growth		*15.8%*	*14.0%*	*3.0%*	*11.2%*	*3.0%*	*3.0%*
	Terminal P/E							13.50
	* Terminal EPS							11.27
	Terminal value							$152.16
	* Discount factor							0.44
	Discounted terminal value							$67.61

Summary

First stage	$7.50	Present value of first 2 year cash flow
Second stage	$24.13	Present value of year 3-7 cash flow
Third stage	$67.61	Present value of terminal value P/E
Value (P/E)	**$99.24**	= value at beg of fiscal yr 2018

Sporting Goods Retail

Dicks Sporting Goods

Recommendation	BUY
Target (today's value)	$45.00
Current Price	$32.47
52-week range	$23.88 - $52.31

Share Data	
Ticker:	DKS
Market Cap. (Billion):	$3.49
Inside Ownership	22.7%
Inst. Ownership	71.9%
Beta	0.95
Dividend Yield	2.77%
Payout Ratio	24.4%
Cons. Long-Term Growth Rate	6.6%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$7.3	$7.9	$8.6	$9.2	$9.9
Gr %	-	9.0%	8.6%	7.4%	6.9%
Cons	-	-	-	$86.5	$88.0
EPS					
Year	$2.87	$2.59	$3.25	$3.02	$3.36
Gr %	-	-9.8%	25.8%	-7.1%	11.1%
Cons	-	-	$3.00	$2.78	$2.99

Ratio	'15	'16	'17E	'18E	'19E
ROE (%)	18.2%	15.5%	15.5%	13.4%	13.0%
Industry	20.7%	38.9%	34.8%	18.4%	17.4%
NPM (%)	4.5%	3.6%	3.6%	3.3%	3.4%
Industry	7.5%	4.7%	4.2%	4.9%	5.2%
A. T/O	2.09	2.03	2.03	1.90	1.87
ROA (%)	9.5%	7.4%	7.4%	6.2%	6.3%
Industry	12.3%	8.7%	7.4%	8.0%	8.6%
D/A	6.1%	10.9%	10.9%		

Valuation	'16	'17E	'18E	'19E
P/E	18.6	12.0	11.7	10.9
Industry	23.2	17.4	17.6	21.0
P/S	0.79	0.38	0.37	0.36
P/B	3.2	1.7	1.6	1.3
P/CF	9.0	4.5	4.4	5.2
EV/EBITDA	8.2	11.2	11.2	8.3

Performance	Stock	Industry
1 Month	5.9%	0.2%
3 Month	7.8%	5.7%
YTD	13.0%	4.1%
52-week	-38.3%	7.9%
3-year	-42.5%	30.0%

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Phone: 262-751-4592

Summary: I recommend a buy rating with a target price of $45. Although DKS has an opportunity to improve customer experience and online sales, shrinking margins and Amazon's threat are significant headwinds. I am still optimistic for the future, but I realize the threat the retail market, as a whole, is facing.

Key Drivers:

- New store sales: Dicks Sporting Goods has an added average of $8.6M in revenue per new store location, and is one of the only sporting goods stores still opening new store locations. The firm had 767 store locations at the end of 2016 and is growing at an average rate of 7% since 2008.
- Same store sales: same store sales growth has been relatively steady around 2% per year and 3.5% for calendar year 2016. Same store sales growth of Dicks Sporting Goods is a percent lower than its top four competitors (using a simple 10-year average).
- Online and Omni-channel sales growth: DKS' online sales growth is growing at an average rate of 39%. Online sales contributed to 11.9% of sales in 2016. DKS is working to the online experience to add simplify and customer loyalty.
- Macroeconomic trends: as the macro-economy improves, so does retail sales growth. I believe sporting goods retail will outperform U.S. retail sales (excluding motor vehicle and parts).

Valuation: Using a relative valuation approach, Dicks Sporting Goods appears to be undervalued in comparison to its peers in the sporting goods retail industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that Dicks Sporting Goods is undervalued as the stock's value is about $45 and the shares trade at $33.

Risks: Threats to the business include exposure to interest rate risk, competitive retail environments, consumer confidence and other macroeconomic factors, inflation risk, and damage to its supply chain.

Company Overview

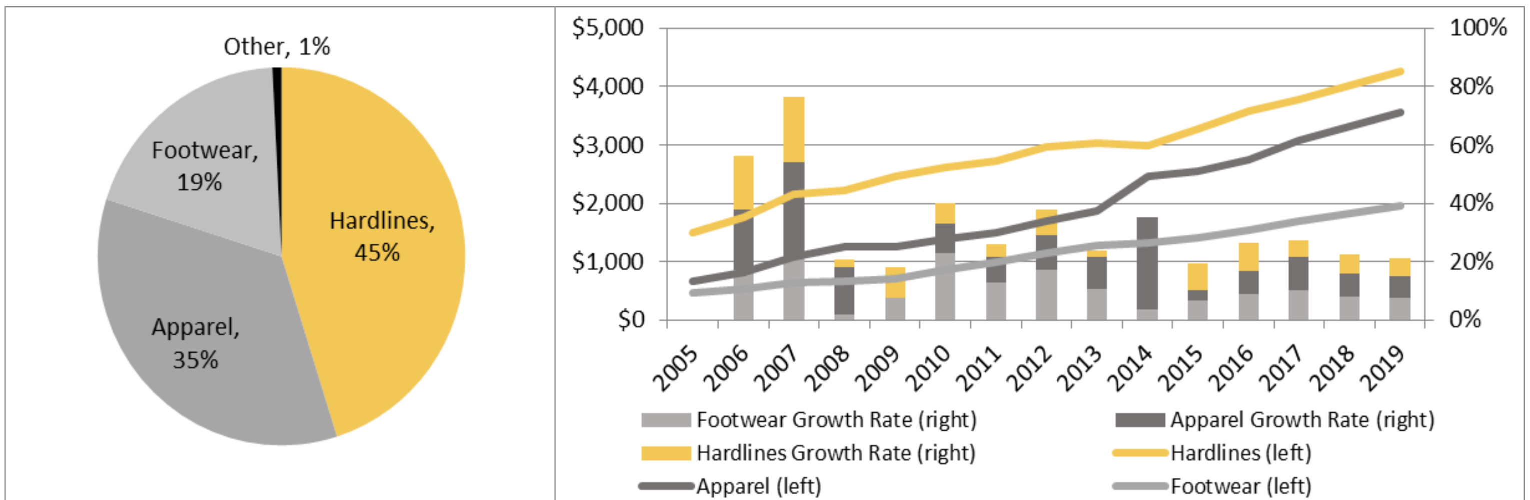
Dicks Sporting Goods (DKS) operates as a retail sporting goods company with stores located only in the United States. DKS engages in the retail of extensive assortments of sporting goods equipment, apparel, footwear, and accessories for men, women, and children. The company also owns and operates Golf Galaxy, Field & Stream, and other specialty concepts stores. Dicks Sporting Goods offers a robust eCommerce platform that is steadily growing revenues. The company was founded by Richard T. Stack in 1948 and is headquartered in Coraopolis, PA.

Dicks Sporting Goods generates revenue from three main segments of hardline, apparel, and footwear through a blend of store staff, in-store services, shop-in-shops, online, and retail stores. In 2016, the company purchased merchandise from approximately 1,500 different vendors in which Nike and Under Armour accounted for 20% and 12% of merchandise, respectively.

- Hardline (45% of sales): Dicks Sporting Goods has a vast variety of hardline products that extend from equipment in golf, hockey, baseball, basketball, football, soccer, running, cycling, swimming, weightlifting, cross-training, tennis, hunting, fishing, and winter sports, to name a few. Retail stores have in-store displays and customized centers for trying new equipment in familiar environments. For example, some locations have an indoor track for the Footwear Center, bait and tackle shop, Sportsman's Lodge, and a Golf Pro Shop.
- Apparel (35% of sales): The firm's apparel segment consists of custom-made athletic apparel, sportswear, and outerwear for a variety of activities. The color, design, and style of apparel are continuously updated to the latest fashions trends. The majority of basic sportswear apparel is T-shirts, shorts, sweats, and warm-ups.
- Footwear (19% of sales): The company's Footwear Center features hardwood floors and a track for testing athletic shoes in select locations. The company offers a large selection of athletic shoes for walking, running, tennis, fitness, cross training, basketball, baseball, football, soccer, and hiking.

Dicks Sporting Goods' sales in all three key segments have strong year-over-year growth of 9% in 2016 shown in Figure 2. Hardline sales represent 45% of revenues, apparel represents 35% of revenues, and footwear represents 19% of revenues in 2016.

Figures 1 and 2: Revenue Sources for DKS, year-end 2016 (left) and Revenue history since 2005 (right)



Source: Company Reports *Source: Company Reports*

Business/Industry Drivers

Though several factors may contribute to the growth of Dicks Sporting Goods, the following are the most important business drivers:

1) New Store Sales
2) Same Store Sales
3) eCommerce and Omni-channel Sales Growth
4) Macroeconomic Trends

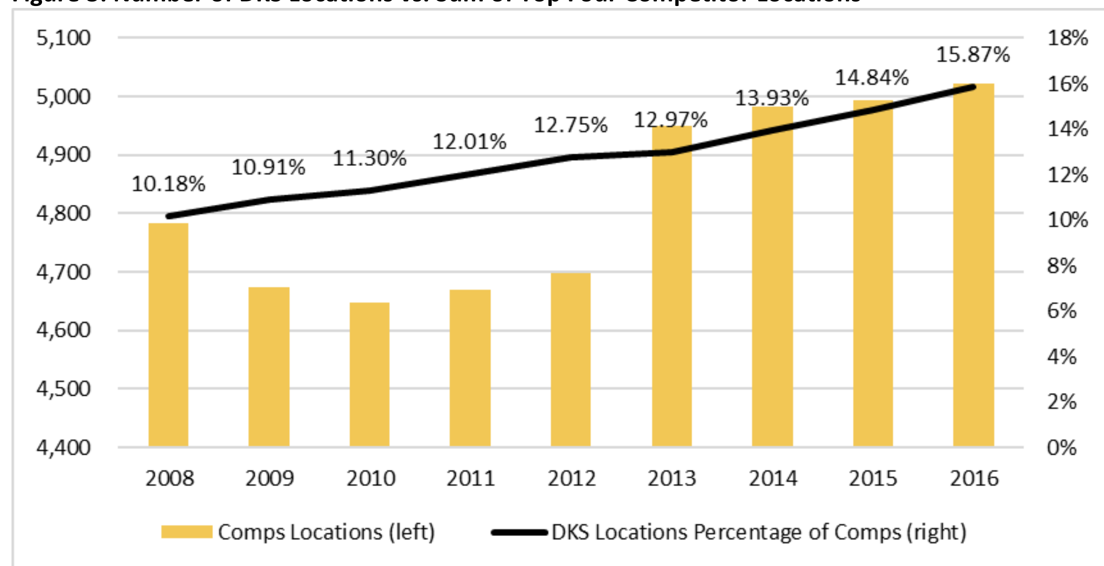
New Store Sales

The number of DKS locations continues to expand bringing an average of $8.6 Million per store.

542 new stores opened since 2006. An average of 49 new store locations opened per year since 2006. On average, each new store contributes an additional $8.6 million. This totals an average $421 million in new revenue per year. As the average number of new stores is consistent year-over-year, I project an additional 40 stores in 2017 and another 45 stores in 2018. I believe there will be more new stores locations in 2018 than 2017 because of DKS' growing lease negotiating power. As competing retail companies begin to consolidate stores, retail space is becoming more abundant. Dicks Sporting Goods' power to negotiate new and current lease prices is rising.

Figure 3 shows the growth of Dicks Sporting Goods' locations from 2006 to 2016 compared to its top four competitors: Foot Locker, Hibbett Sports, Big 5 Sporting Goods, and Sportsman's Warehouse Holdings, Inc. One can see that the industry's number of stores is cyclical while the number of DKS locations is growing each year. The top four competitors are not expanding to new store locations as quickly as DKS.

Figure 3: Number of DKS Locations vs. Sum of Top Four Competitor Locations



Source: Bloomberg & Company Reports

Same Store Sales

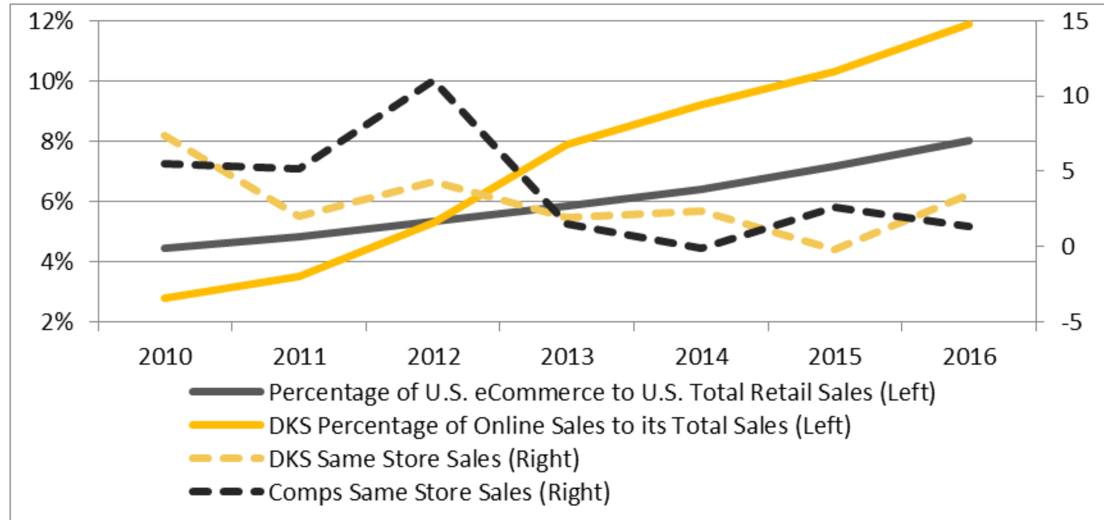
Dicks Sporting Goods' same store sales are growing; however, at a lower rate than the past and about three quarters of a percent less than the 7-year average same store sales of its top four competitors (Foot Locker, Hibbett Sports, Big 5 Sporting Goods, and Sportsman's Warehouse Holdings, Inc.). Dicks Sporting Goods' same store sales 7-year average growth are 3.04% while the same store sales 7-year average growth of its four competitors is 3.86%.

DKS was a large beneficiary of Sports Authority customers after Sports Authority went out of business in March of 2016. Dicks Sporting Goods' same store sales increased from -0.2% in 2015 to 3.50% in 2016. For 2017, I am expecting another 1% increase in same store sales attributable to gaining additional business from Sports Authority customers.

Same store sales are growing at decreasing rates mostly driven by online sales growth, except for DKS

The recent slowing in same store sales growth could be attributable to the eCommerce sales growth. As displayed in Figure 4 below, Dicks Sporting Goods' percentage of online sales to total DKS revenue is growing faster than the percentage of U.S. online retail to total U.S. retail revenue. As online retail sales gain overall revenue share, same store sales growth decreases overall.

Figures 4: Same Store Sales Growth vs. Online Sales



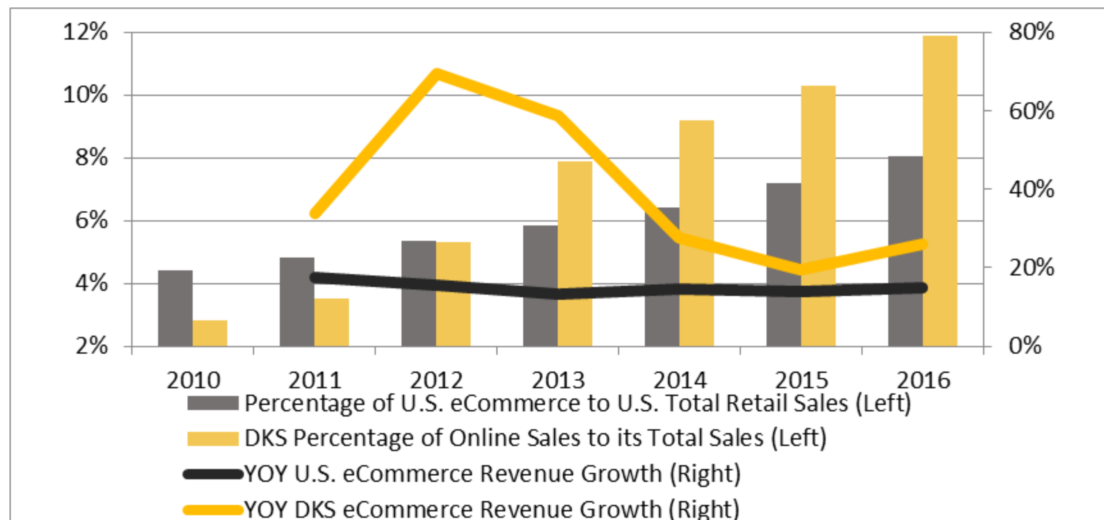
Source: Census Bureau

eCommerce and Omni-Channel Sales Growth

DKS online sales are growing faster than its competitors' online sales

Dicks Sporting Goods online sales are growing at a faster rate than total U.S. online sales. Figure 5 shows the percentage of DKS online sales growing nearly twice as fast as the percentage of U.S. online sales, and I believe DKS' growth will continue as the firm improves the online experience.

Figure 5: Online Sales Growth vs. Competitor



Source: Company Reports, Census Bureau

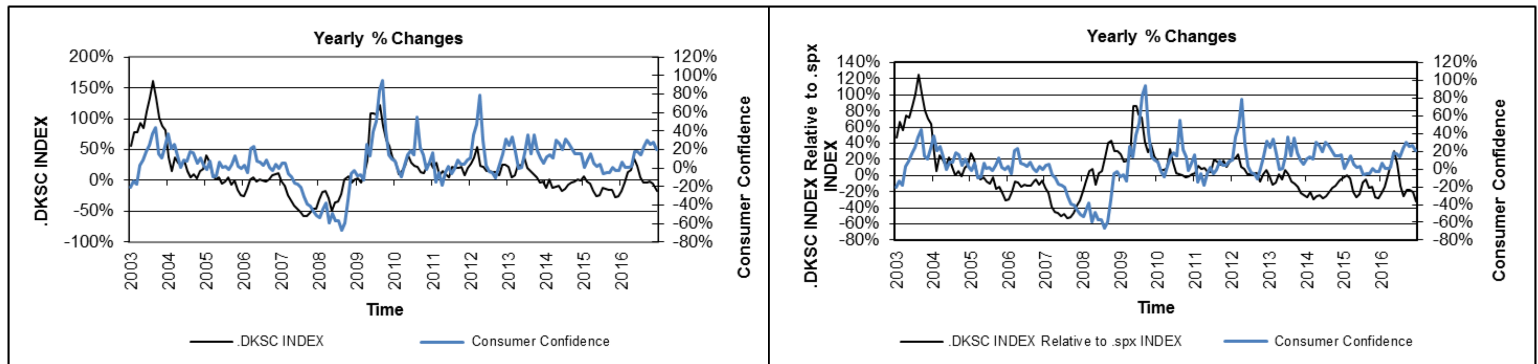
Online growth will help DKS gain market share. Online experience and shopping convenience are important to the consumer, and the CEO Edward Stack is committed to making immediate improvements. As the customer online experience improves, I believe the company will be able to keep larger online retailers, like Amazon, out of the sporting goods retail marketplace.

Macroeconomic Factors

As consumer confidence increases, so does DKS' comp index

The price index of Dicks Sporting Goods' comp group (Foot Locker, Hibbett Sports, Big 5 Sporting Goods, and Sportsman's Warehouse Holdings, Inc.) is positively correlated with the consumer confidence index (Figure 6). Some sporting goods items, such as clothing, may be a necessity; however, most items fulfill wants and hobbies. As consumers feel more confident about the economy and their economic status, they are more inclined to spend money on accessory goods and services that fulfill consumer hobbies and wants. Therefore, there is naturally a strong correlation between the price movement of the sporting goods retail comps and consumer confidence.

Figures 6 and 7: Consumer Confidence compared to DKS Comps (left) and consumer confidence compared to DKS comps relative to the S&P 500 index (right)



Source: Bloomberg Terminal

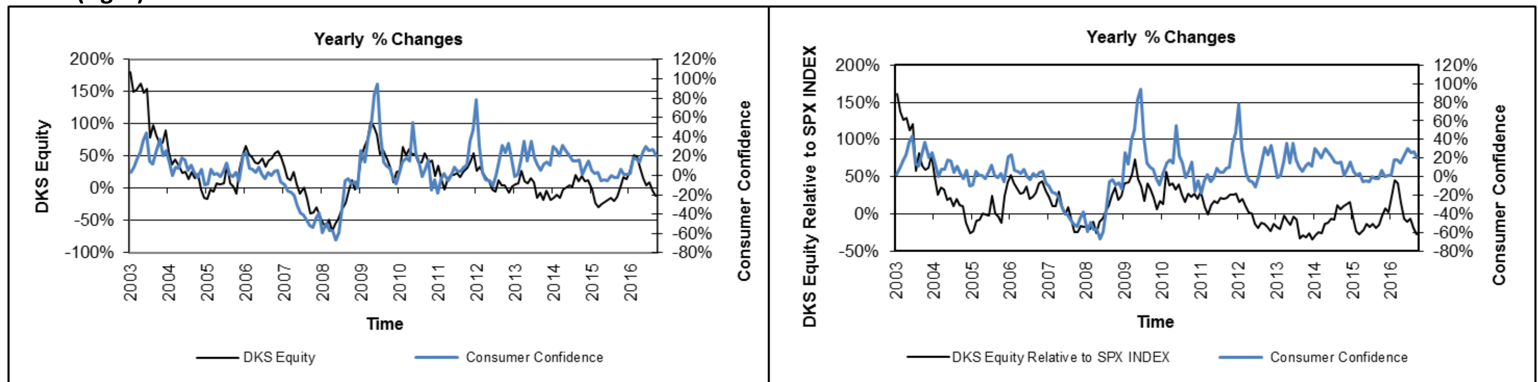
Source: Bloomberg Terminal

DKS outperforms its competitor index when displayed in relative terms to the S&P 500

The comps decline as the consumer confidence sunk during the recessionary period of 2007 and 2008. When the consumer confidence rose again in 2009 and 2010, so did the price of the comps and DKS.

Figure 8 shows the correlation (0.55) between DKS and consumer confidence. The correlation between the comps and the consumer confidence is 0.53. Figures 6 and 9 displays the comps and DKS in relation to the S&P 500 index, and both outperform as the consumer confidence rises.

Figures 8 and 9: Consumer Confidence compared to DKS (left) and consumer confidence compared to DKS relative to the S&P 500 index (right)



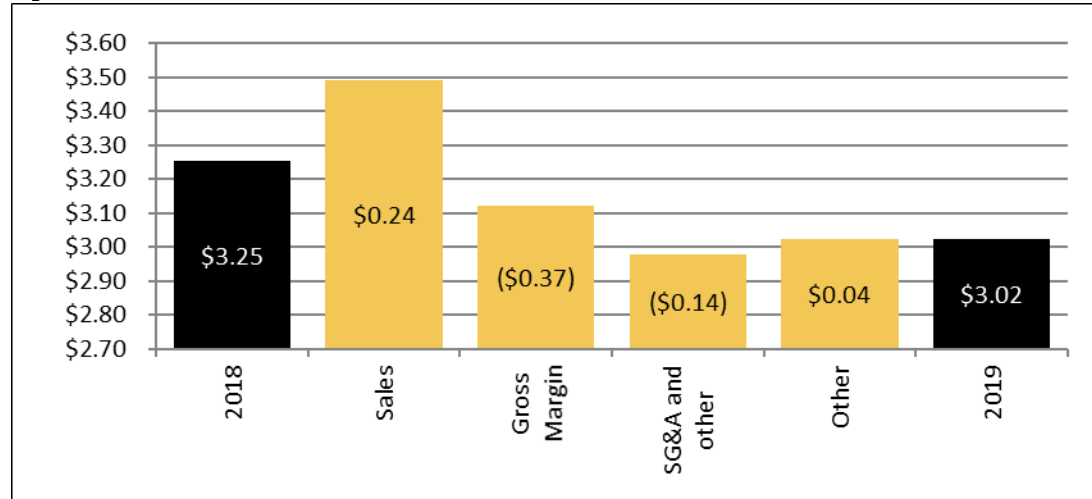
Source: Bloomberg Terminal

Source: Bloomberg Terminal

Financial Analysis

I anticipate EPS to decrease to $3.02 from $3.25 in FY 2018. Sales growth is expected to increase EPS of $0.24 from store location growth, online sales growth, and consolidation of the industry. However, I expect gross margin to lower EPS by $0.37. The decrease in gross margin will be driven by increased pressure on retail competition to lower prices. I anticipate SG&A/sales to rise and cause EPS to fall by $0.14 due to additional payroll, supply chain, and logistical expenses. Lastly, I forecast that share buybacks will increase EPS by $0.04 to bring total EPS to $3.02 for the fiscal year of 2018.

Figure 10: Quantification of FY 2018 EPS drivers



Source: Company Reports, IMCP

<u>Sales – Estimates vs. Consensus</u>

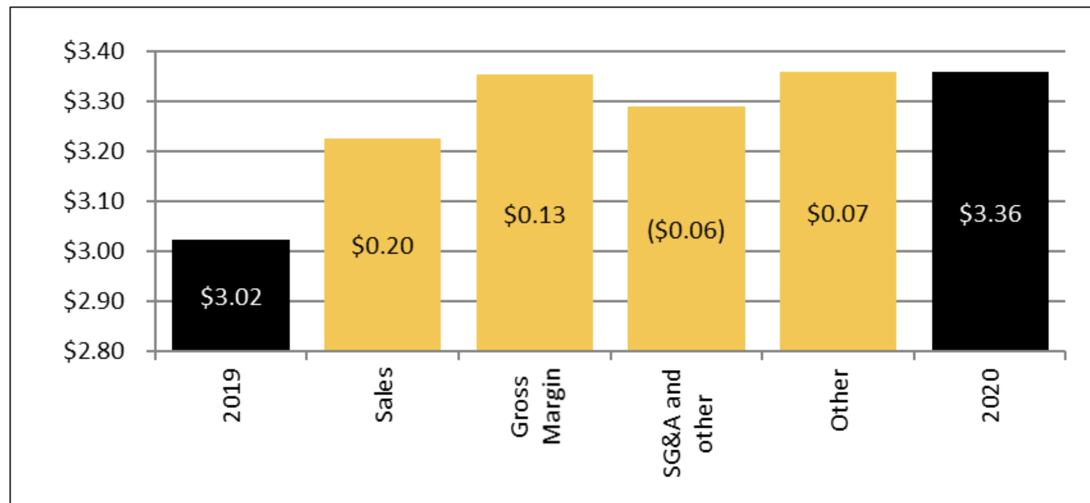
2018: $9,243 vs. $8,762

<u>EPS – Estimates vs. Consensus</u>

2018: $3.02 vs. $2.50

I anticipate 2019 EPS to increase to $3.36 from $3.02. Sales growth will drive an increase in EPS by $0.20 as I anticipate further location expansion and improvement in online sales. I expect gross margin to improve slightly as online sales improve, which raises EPS by $0.13. I believe SG&A/sales margins will bring EPS down $0.06 due to further expenses in supply chain and logistics. Lastly, I expect more share buybacks to increase EPS by $0.07 bringing the total EPS to $3.36 for FY 2019.

Figure 11: Quantification of FY 2019 EPS drivers



Source: Company Reports, IMCP

Sales – Estimates vs. Consensus
2019: $9,881 vs. $8,945

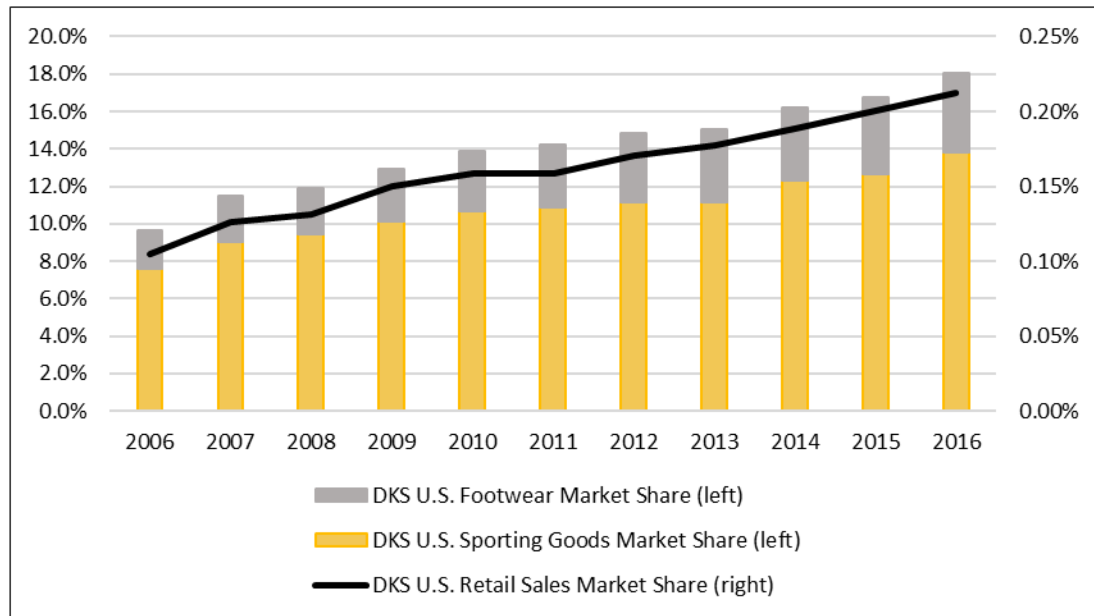
EPS – Estimates vs. Consensus
2019: $3.36 vs. $2.60

My estimates are more optimistic than the consensus as I believe that there will be greater pressure for consolidation in this retail industry and DKS will be the beneficiary of those customers. DKS is an established company that holds a strong brand. I believe that the company's continued location expansion and online sales growth will drive most of the success for sales, EPS, and market share growth.

Revenues

Dicks Sporting Good's revenue is growing at a slowing rate. The company is maturing; however, it has a lot of room for growth. DKS revenue at the end of 2016 was 17% of the United States retail sporting goods market. The company continues to take over market share of the consolidating industry. Furthermore, the market share of U.S. sporting goods retail sales to total U.S. retail sales are growing at an average rate of 0.5% since 2001 and 1.21% since 2006. The average sales growth from 2002 to 2017 is 15% and 10% from 2010 to 2017, and I predict an average sales growth of 7% in 2018 and 2019.

Figure 12: DKS' Market Share of U.S. Retail Sporting Goods

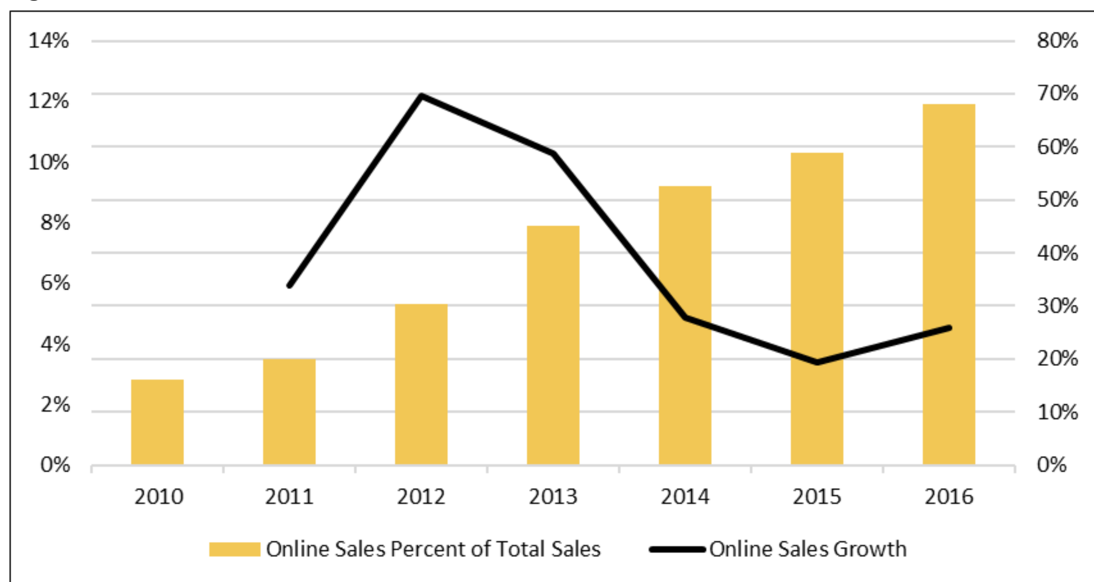


Source: Company Reports, U.S. Census Bureau

DKS is the giant in sporting goods retail and will continue to grow market share

Dicks Sporting Goods online sales have grown strongly but will likely face even stronger competition from Amazon's online sales and other direct-to-consumer brands like Nike and Under Armor, which represents 20% and 12% of DKS' merchandise, respectively. Figure 13 shows DKS online sales growth to total sales.

Figure 13: DKS Online Sales Growth

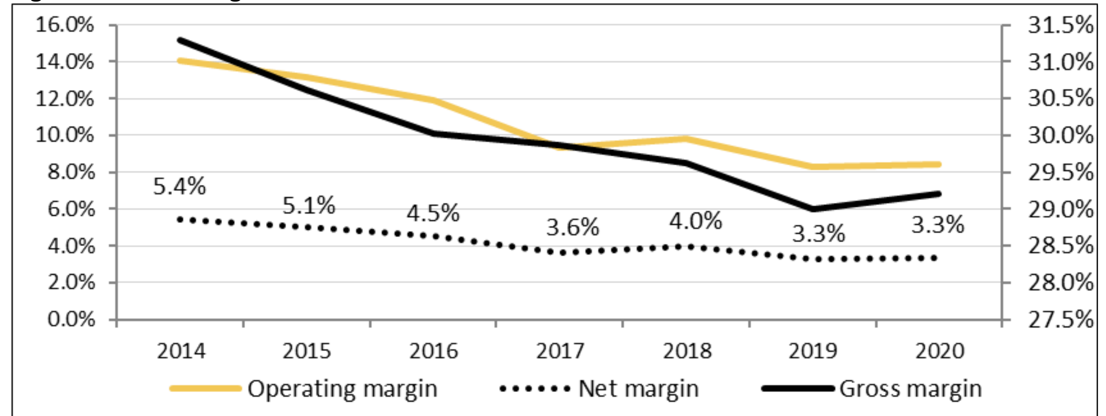


Source: Company Reports

Dicks Sporting Goods potential barrier to entrance from Amazon is its physical presence. Having physical presence in the retail sporting goods space is an advantage because customers still prefer to touch and feel equipment and merchandise before they purchase. However, customers could use DKS' stores to try out the equipment before ordering through Amazon at a lower cost. Still, Amazon

is a real threat, so DKS will remain pressured to keep prices low, which could hurt profit margins to stay competitive.

Figure 14: DKS' Margin Decline



Source: Company Reports, IMCP

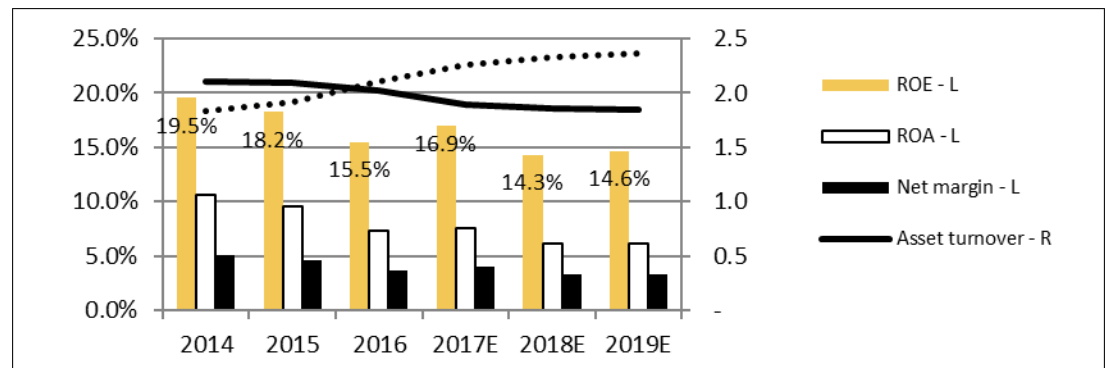
Return on Equity

Almost all long term debt is paid off and 99.1% debt is revolving credit

ROE has steadily declined even though leverage is rising. The company is relying heavily on revolving credit to fund operational expansions and location growth. Dicks Sporting Goods has been growing stores at a rate of about 38 stores per year since 2007, and I anticipate this growth rate will remain steady into 2018 and 2019. The company will continue to participate in acquisitions with strong potential to increase purchasing activity due to the industry's consolidation. The main negative driver for ROE is operating margins, which have been under pressure for a while. I expect them to stabilize in 2018, which will also stabilize ROE.

Figure 15 and Figure 16: ROE breakdown, 2014 – 2019E

5-stage ROE	2014	2015	2016	2017E	2018E	2019E
EBIT / sales	8.1%	7.4%	5.7%	5.9%	5.0%	5.1%
Sales / avg assets	2.11	2.09	2.03	1.90	1.86	1.85
EBT / EBIT	99.4%	99.3%	98.7%	98.7%	99.4%	99.4%
Net income /EBT	62.5%	62.2%	64.7%	68.3%	66.2%	65.9%
ROA	10.7%	9.5%	7.4%	7.5%	6.1%	6.2%
Avg assets / avg equity	1.83	1.92	2.10	2.26	2.33	2.37
ROE	19.5%	18.2%	15.5%	16.9%	14.3%	14.6%



Source: Company Reports, IMCP

Free Cash Flow

Figure 16: Free cash flows 2013 - 2019E

Free Cash Flow - Without Cash and Debt	2013	2014	2015	2016	2017E	2018E	2019E
NOPAT	$327	$341	$333	$277	$338	$298	$325
Growth		*4.2%*	*-2.3%*	*-17.0%*	*22.1%*	*-11.7%*	*9.0%*
NWC*	437	459	503	434	572	693	840
Net fixed assets	1,451	1,593	1,747	2,260	2,487	2,719	2,950
Total net operating capital*	$1,888	$2,052	$2,249	$2,694	$3,059	$3,412	$3,789
Growth		*8.7%*	*9.6%*	*19.8%*	*13.5%*	*11.5%*	*11.1%*
- Change in NWC*		22	44	(69)	138	121	147
- Change in NFA		141	154	514	227	231	231
FCFF*		$177	$136	($168)	(27)	($54)	($53)
Growth			*-23.5%*	*-224.2%*	*-83.9%*	*101.0%*	*-3.2%*
- After-tax interest expense	2	2	2	4	5	2	2
FCFE**		$175	$133	($172)	(32)	($56)	($55)
Growth			*-24.1%*	*-229.3%*	*-81.6%*	*77.8%*	*-2.6%*

Source: Company Reports, IMCP

FCF will remain low-to-negative as I predict continued expansion and acquisitions

DKS' free cash flow has been rapidly falling and is currently negative. I believe that the company's free cash flow will remain low-to-negative as the company will continue to make acquisitions. The large decrease in free cash flow to equity in 2016 was due to $118 million in acquisitions. DKS has repurchased over $1 billion in common stock over the past 5 years, and I anticipate they will continue to repurchase common stock as the stock price is at a 7-year all-time-low.

I anticipate that FCFF and FCFE will remain low-to-negative over the next couple of years. I believe that NOPAT, net fixed assets, and net working capital will continue to improve, which will hold the FCFE and FCFF steady. Net fixed assets is expected to increase by 13.5% in 2017, 11.5% in 2018, and 11.1% in 2019.

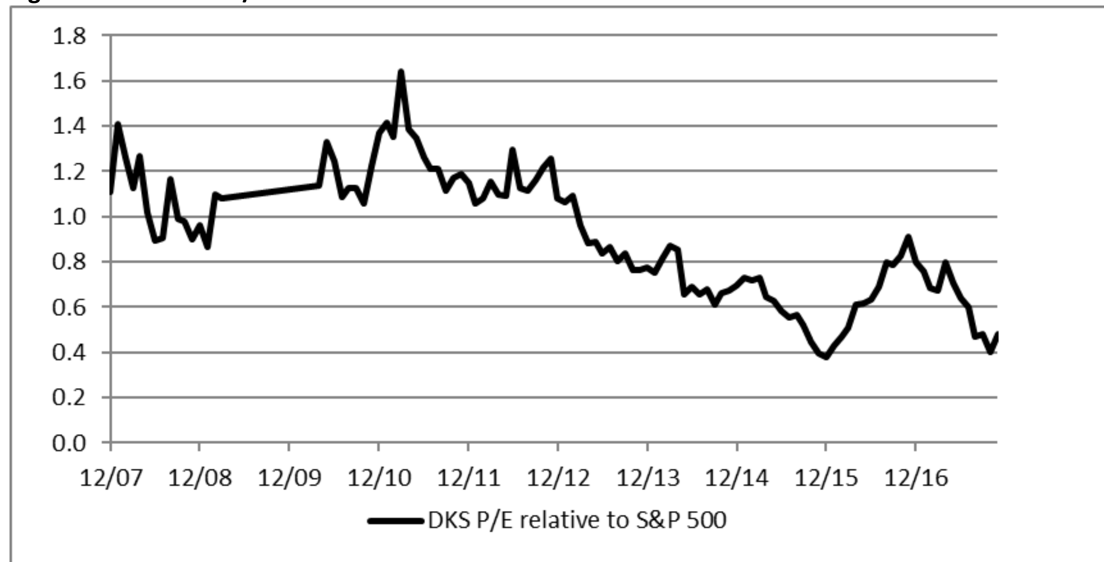
Valuation

Dicks Sporting Goods was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is undervalued relative to other firms and is currently trading at approximately $32. Relative valuation shows Dicks Sporting Goods to be undervalued compared to its peers. Price to book valuation yielded a target of $49.64 while a price to sales valuation yielded a price much lower at $44.44. A detailed DCF analysis values DKS slightly lower, at $42.79; I give this value a bit more weight because it incorporates assumptions that reflect DKS' ongoing business changes. Finally, a probability-weighted scenario analysis yields a price of $45.62. As a result of these valuations, I value the stock at $45.

Trading History

DKS is currently trading near its all-time low relative to the S&P 500. This is most likely the result of recent earnings growth depression and the current competitiveness of the retail industry. DKS' current NTM P/E is at 12.6, while the five-year average P/E is 18.4. The recent drop in P/E is mostly due to a decline in sales growth and the loss of sales to Amazon that has been hurting the entire retail industry.

Figure 17: DKS LTM P/E relative to S&P 500



Source: FactSet

Assuming the relative P/E improves as the company recovers, the NTM P/E could rise to 13.5.

- Price = P/E x EPS = 13.5 x $3.36 = $45.36

Using a 13.5 NTM P/E on 2019 EPS yields a price of $45.36. Given DKS potential for EPS to rise, this seems to be a fair valuation.

Relative Valuation

Dicks Sporting Goods is currently trading at a P/E lower than most of its peers with a P/E TTM of 12.3 compared to the peer average of 18.3. Investors are only willing to pay at a discount for DKS because the company's margins have been decreasing over the recent years, as has the overall retail industry. DKS's P/B and P/S ratios are also significantly lower than those of its peer's – both are roughly half the average for the group. This is a reflection of DKS' relatively poor ROE and net margin compared to its competitors.

Figure 18: DKS 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	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
DKS	DICKS SPORTING GOODS INC	$33.33	$3,580	2.3	10.9	33.5	(8.2)	(37.9)	16.0	6.6	-3.0%	-0.7%	-9.8%	12.0%	0.0%	4.1%	0.04	27.6%	B+	2.37%	24.3%
FL	FOOT LOCKER INC	$47.45	$5,751	2.5	6.5	51.0	(1.6)	(32.6)	1.2	-0.2	6.6%	7.8%	27.4%	-9.2%	0.0%	22.4%	0.34	4.7%	A-	2.57%	30.4%
NKE	NIKE INC	$64.67	$105,210	0.6	4.0	27.2	11.1	23.4	3.4	9.5	5.4%	16.3%	15.8%	75.8%	0.0%	15.8%	0.52	29.5%	A+	1.18%	32.0%
BGFV	BIG 5 SPORTING GOODS CORP	$6.08	$130	0.4	(17.9)	(15.6)	(47.2)	(62.4)	(20.1)		-67.5%	2.9%	11.4%	5.1%	3.7%	7.6%	-1.10	24.3%	B	7.89%	60.0%
UAA	UNDER ARMOUR INC	$15.12	$6,631	(1.2)	11.3	(8.6)	(24.2)	(50.2)	4.8	7.8	-50.0%	-44.9%	-15.9%	80.7%	3.7%	-0.9%	0.58	0.8%	B+	0.00%	
ADS-DE	ADIDAS AG	$204.73	$41,527	1.3	(3.2)	(13.1)	(5.6)	15.4	0.8	21.6	27.0%	40.4%	53.9%	-83.9%	3.7%	9.7%	-0.78	309.0%		0.00%	
HIBB	HIBBETT SPORTS INC	$24.40	$466	(1.4)	18.4	86.3	26.4	(27.7)	19.6	-8.7	-8.5%	1.7%	-6.8%	1.8%	-0.4%	4.7%	0.58	0.8%	B+	0.00%	
SPWH	SPORTSMANS WAREHOUSE HLDGS	$5.36	$228	(0.9)	(1.5)	24.7	8.1	(37.7)	(18.9)	10.0	14.5%	94.1%	6.1%	7.1%	20.0%		-0.78	309.0%		0.00%	
ELY	CALLAWAY GOLF CO	$14.29	$1,351	0.8	1.5	2.1	13.2	27.8	2.6	15.0	-69.1%	-14.3%	1022.2%	-5.9%	10.5%		1.14	0.0%	B-	0.29%	2.1%
Average			$18,319	0.5	3.3	20.8	(3.1)	(20.2)	1.0	7.7	-16.1%	11.5%	122.7%	9.3%	4.6%	9.1%	0.06	78.4%		1.59%	29.8%
Median			$3,580	0.6	4.0	24.7	(1.6)	(32.6)	2.6	8.7	-3.0%	2.9%	11.4%	5.1%	3.7%	7.6%	0.34	24.3%		0.29%	30.4%
SPX	S&P 500 INDEX	$2,786		0.7	4.6	9.2	14.0	22.7	4.2			-0.1%	0.5%	10.3%	11.7%						

		2016		P/E							2016	2016			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2018	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
DKS	http://www.dickssportinggoods.com	14.4%	1.86	17.2	12.3	20.5	12.3	12.6	11.5	11.5	3.5%	0.45	5.6%	15.4%	11.2			5.1%	0.7%	8.7%	$17.95
FL	http://www.footlocker-inc.com	22.9%	2.19	15.6	16.7	14.3	12.0	11.2	10.5	10.5	7.7%	0.74	10.9%	24.1%	8.2	9.3	11.6	1.5%	2.1%	6.7%	$21.67
NKE	http://www.nike.com	35.4%	8.93	25.3	28.3	19.9	28.0	26.6	14.4	14.4	12.2%	3.07	12.2%	28.1%	20.2	24.8		6.5%	7.7%	7.3%	$7.24
BGFV	http://www.big5sportinggoods.com	8.2%	0.64	21.5	14.3	22.2	6.1	18.7	7.4	7.1	1.6%	0.13	3.5%	7.1%	12.5	3.1	8.2	-2.5%	5.3%	2.5%	$9.48
UAA	http://www.underarmour.com	9.5%	3.18	35.8	77.2	64.0	47.2	94.5	18.4	17.8	4.1%	1.37	6.5%	7.7%	31.1	15.5	35.6	2.8%	-0.4%	26.8%	$4.76
ADS-DE	http://www.adidas-group.com	13.3%	5.35	29.7	29.6	31.2	27.9	21.9	249.7	240.9	5.3%	2.15	8.6%	13.9%	25.6	18.0	16.9	6.5%		7.6%	$38.30
HIBB	http://www.hibbett.com	16.9%	1.50	16.7	10.3	13.6	13.9	15.2	8.7	8.7	5.4%	0.48	6.3%	18.8%	7.2	7.8	13.1	2.8%	-0.4%	5.8%	$16.26
SPWH	http://www.sportsmanswarehouse.com	69.4%	5.32	21.5	19.5	13.4	10.1	8.8	7.1	6.0	3.8%	0.29	6.5%	19.2%	8.7	4.9		6.5%		15.7%	$1.01
ELY	http://www.callawaygolf.com	28.8%	2.04	36.7	52.3	5.4	7.5	24.4	7.5	6.8	21.9%	1.55	9.0%	37.5%	20.3	13.1	93.9	7.9%		-0.3%	$7.01
Average		24.3%	3.44	24.4	28.9	22.7	18.3	26.0	37.3	36.0	7.3%	1.14	7.7%	19.1%	16.1	12.0	29.9	4.1%	2.5%	9.0%	
Median		16.9%	2.19	21.5	19.5	19.9	12.3	18.7	10.5	10.5	5.3%	0.74	6.5%	18.8%	12.5	11.2	15.0	5.1%	1.4%	7.3%	
spx	S&P 500 INDEX			17.3	17.2	18.8			21.2	19.0											

Source: FactSet

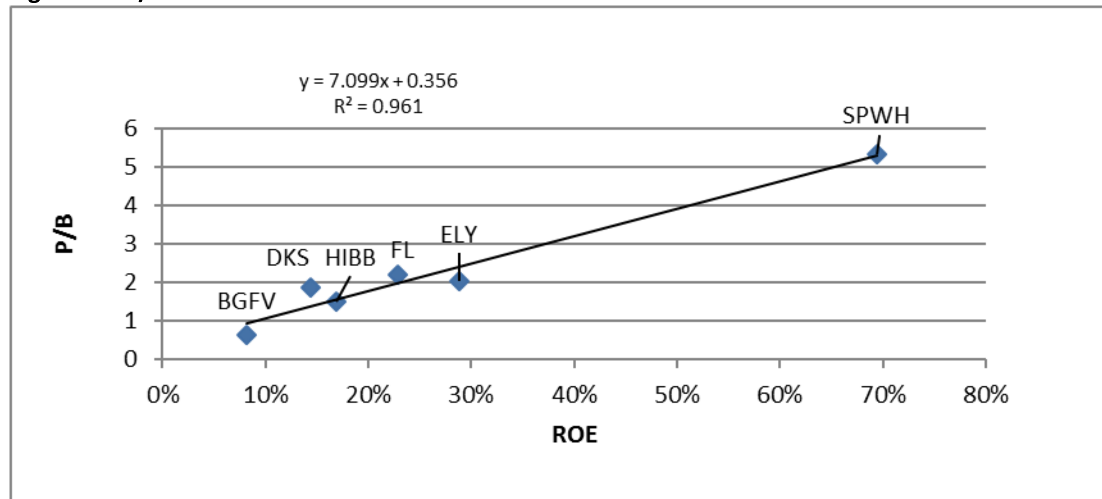
A more thorough analysis of P/B and ROE is shown in figure 19. The calculated R-squared of the regression indicates that over 96% of a sampled firm's P/B is explained by its sales growth. Note that Nike, Under Armour, and Adidas were excluded as they were outliers. DKS has the one of the lower P/Bs and ROEs of this grouping, and according to this measure, DKS is slightly undervalued.

- Estimated P/B = Estimated 2018 ROE (14.3%) * 7.099 + .356 = 1.37
- Target Price = Estimated P/B (1.37) x 2018E BVPS ($21.64) = $29.67

Discounting back to the present at a 9.62% cost of equity leads to a target price of $27.07 using this metric. Given DKS' potential for earnings growth and continued profitability, this seems to be an unusually low valuation.

DKS has one of the lowest ROEs of its competitors.

Figure 19: P/B vs NTM ROE



Source: FactSet & IMCP

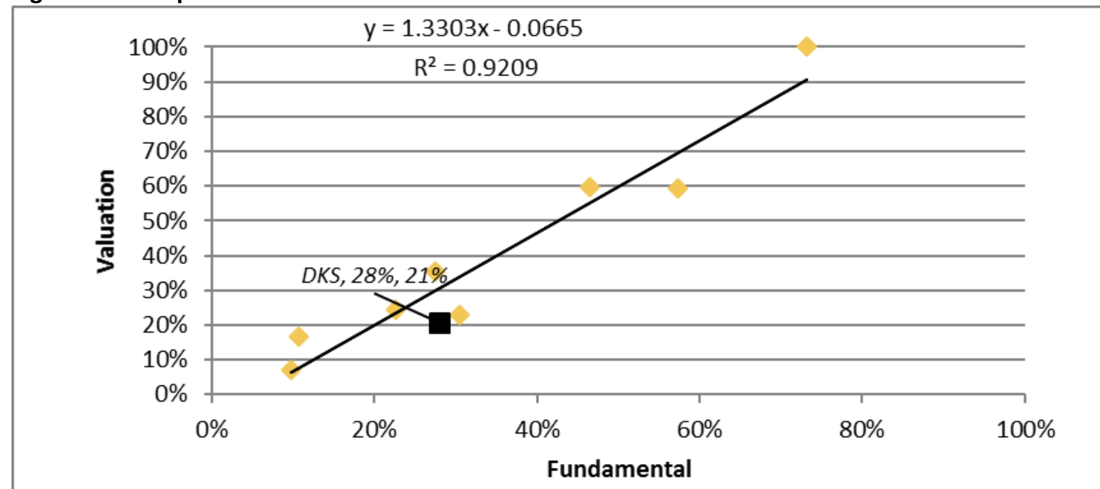
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each variable was converted to a percentile of the maximum before calculating the composite score. A weight of 5% for NTM earnings growth, 5% 2018 earnings growth, 25% next twelve months' sales growth, 40% second twelve months' sales growth, and 25% past five years' sales growth to 100% price to book. DKS is below the line, so it is inexpensive based on its fundamentals.

Figure 20: Composite valuation, % of range

		Fundamentals					Valuation			
	Weight	5.0%	5.0%	25.0%	40.0%	25.0%	100.0%			
		Earnings Growth		Sales Growth						
Ticker	Name	NTM	2018	NTM	STM	Pst 5yr	P/B	Yield	Fund	Value
DKS	DICKS SPORTING GOODS INC	-11%	15%	64%	9%	33%	21%	12%	28%	21%
FL	FOOT LOCKER INC	24%	-11%	19%	27%	25%	25%	11%	23%	25%
NKE	NIKE INC	20%	94%	83%	100%	27%	100%	24%	73%	100%
BGFV	BIG 5 SPORTING GOODS CORP	-250%	6%	-32%	69%	9%	7%	4%	10%	7%
UAA	UNDER ARMOUR INC	-185%	100%	35%	-5%	100%	36%	52%	27%	36%
ADS-DE	ADIDAS AG	100%	-104%	82%	47%	29%	60%	52%	46%	60%
HIBB	HIBBETT SPORTS INC	-32%	2%	35%	-5%	22%	17%	52%	11%	17%
SPWH	SPORTSMANS WAREHOUSE HLDGS	54%	9%	82%	47%	59%	60%	52%	57%	60%
ELY	CALLAWAY GOLF CO	-256%	-7%	100%	47%	-1%	23%	100%	31%	23%

Source: FactSet

Figure 21: Composite relative valuation



Source: FactSet & IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 9.62% 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 2.38% (12/26/17).
- A beta of 0.95 was utilized since the company is less risky than the market. While retail is cyclical, DKS is a large firm and has reasonable stable sales.
- 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 9.62% (2.38 + 0.95 (10.0-2.38)).

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 $0.10 and $0.11, respectively. Discounting these cash flows using the cost of equity calculated above, the results are a value of $0.18 per share. Thus, stage one of this discounted cash flow analysis contributes $0.18 to value.

Stage Two - Stage two of the model focuses on fiscal years 2020 to 2023. 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 9.62% cost of equity. I assume 3.0% sales growth in 2020 through 2023. The ratio of NOWC to sales and NFA turnover will remain at 2020 levels of 11.26% and 3.35%, respectively. The NOPAT margin is expected to rise to 5.0% in 2024 from 3.0% in 2020. I believe this will happen as online sales expand and supply chain becomes more efficient. Finally, after-tax interest is expected to stay the same at 3% per year as the result of modest increases in borrowing.

Figure 22: FCFE and discounted FCFE, 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$0.10	$0.11	$2.65	$3.20	$3.81	$4.49	$5.23
Discounted FCFE	$0.09	$0.09	$2.01	$2.22	$2.41	$2.59	$2.75

Source: FactSet & IMCP

Added together, the second stage discounted cash flows total $11.98.

Stage Three – Net income for the years 2020 – 2024 is calculated based on the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $3.02 in 2018 to $6.76 in 2024.

Figure 23: EPS estimates for 2018 - 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$3.02	$3.36	$3.86	$4.48	$5.17	$5.93	$6.76

Source: FactSet & IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. I believe that Dicks Sporting Goods is still growing and is in the early-to-mid stages of renovating its business operations to better suit for the future of retail. A P/E ratio of 13.5 is assumed at the end of Dicks Sporting Goods terminal year. This is below the group's historical average of 26.0; however, I would expect the stock to trade at a discount to the S&P 500, which has a normal P/E of 15-16.

Given the assumed terminal earnings per share of $6.76 and a P/E ratio of 13.5, a terminal value of $91.29 per share is calculated. Using the 9.62% cost of equity, this number is discounted back to a present value of $48.00.

Total Present Value – given the above assumptions and utilizing a three-stage discounted cash flow model, an intrinsic value of $60.17 is calculated (0.19 + 11.98 + 48.00). Given DKS' current price of $32.75, this model indicates that the stock is significantly undervalued.

Scenario Analysis

Dicks Sporting Goods is difficult to value with certainty because of the quickly changing retail landscapes, changing e-commerce platforms, and the difficulties in predicting consumers' preference in brand identity. Giving the uncertainty of what is to come, a bull and bear case provides a solid demonstration for quantifying all likely scenarios.

Figure 23 illustrates my assumptions for the bear and bull case scenario analysis. Dicks Sporting goods is a cyclical company, which has greater sales when the economy is prosperous. In the bull case, I assume a P/E of 16 as investors get excited about the sales growth and expansion of store locations during a strong economy. A beta of 0.90 is given because DKS is more stable than its peers in the sporting goods retail industry, and during an economic expansion, DKS would have strong ability to take over more retail sporting goods market share. NOPAT/S and S/NFA also increases as higher sales growth push up margins and asset turnover. The value increased to $56.89, which is 19% higher than the base case.

In the bear case scenario, I lowered sales growth about 2% from the base case. In this scenario, I am assuming a weaker economy along with the management not being able to adapt to the quickly changing retail environment. I chose a P/E multiple of 11 and a beta of 1.1 as growth slows and loss of traction occurs. NOPAT/S and S/NFA will also decrease with sales. The value decreases to $22.70, which is 53% lower than the base case.

Figure 23: DCF target price scenario analysis

Base Case Expecations	2018	2019	2020	2021	2022	2023	2024
Beta	0.95						
Sales Growth	7.4%	6.9%	3.0%	3.0%	3.0%	3.0%	3.0%
NOPAT/S	3.2%	3.3%	3.6%	4.0%	4.3%	4.7%	5.0%
S/NFA	3.40	3.35	3.35	3.35	3.35	3.35	3.35
Terminal Year P/E	13.50						
Bear Case Expectations	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Beta	1.1						
Sales Growth	5.5%	4.5%	2.0%	1.5%	1.0%	1.0%	1.0%
NOPAT/S	3.1%	2.9%	3.3%	3.4%	3.4%	3.4%	3.4%
S/NFA	3.00	2.90	2.90	2.90	2.90	2.85	2.85
Terminal Year P/E	11.00						
Bull Case Expectations	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Beta	0.9						
Sales Growth	9.5%	8.5%	7.0%	6.5%	6.0%	6.0%	5.5%
NOPAT/S	3.9%	3.9%	4.0%	4.0%	4.0%	4.0%	4.0%
S/NFA	5.00	4.70	4.50	4.35	4.25	4.10	4.00
Terminal Year P/E	16.00						

Source: FactSet & IMCP

Base Case Expecations	
Value (P/E of 13.5	**$48.00**
Bear Case Expectations	
Value (P/E of 11.0	**$22.70**
Bull Case Expectations	
Value (P/E of 16.0	**$56.89**

Business Risks

Although I have many reasons to be optimistic about Dicks Sporting Goods, there are several good reasons why I find the stock to be fairly priced only a few dollars higher than its 7-year low:

Exposure to interest rate risk:

The company's revolving credit facility supports liquidity and capital needs ($521 million as of Q3'17). Its interest rate under the credit agreement is benchmarked to the adjusted LIBOR rate plus an applicable margin percentage.

Competitive marketplace:

The sporting goods retail market is highly fragmented and intensely competitive. The firm's current and prospective competitors include many large retail companies that are not directly sporting goods retailers but have a much greater market presence and resources for financing, marketing, and branding. Additionally, consumers have the ability to compare prices via smartphones to seek the lowest prices from competing retailers.

Macroeconomic risk factors:

The company's business is highly dependent on consumer discretionary spending, which is dependent on the U.S. consumer confidence and overall health of the economy.

Inflation risk:

Dicks Sporting Goods has a risk of inflation such as increased cost of their products and overhead cost that may adversely affect its operating margin on gross profit & selling and general & administrative expenses as a percentage of sales. The selling prices of its products do not increase with inflation.

Weather:

The company depends heavily on its suppliers, distribution centers, manufacturers, and support centers to provide it with the sufficient quantities of quality product in a timely manner. If a natural disaster or other serious event happens to prevent the delivery of merchandise to the stores, this could adversely affect DKS' financial condition.

Source: Company reports, IMCP

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Relatively Low

The threat of new entrants remains relatively low in the sporting goods retail industry. The barriers to entry are not very high; however, entry to the sporting goods retail industry requires massive capital, marketing, and online presence. The greatest threat to sporting goods retail is a loss of sales to Amazon (who also partnered with Nike) or a major increase in direct-to-consumer sales from key brands like Nike and Under Armour.

Threat of Substitutes – Relatively High

Dicks Sporting Goods' greatest threats to substitutes are Amazon and direct-to-consumer retailers. DKS relies heavily on its branded merchandise to attract customers. If customers prefer to buy directly from direct-to-consumer brands like Nike and Under Armour, the company will suffer a major loss in revenues. However, Dicks Sporting Goods currently has many partnerships with major brands that will help prevent loss of sales, which is why I believe the threat of substitutes at relatively high instead of high.

Supplier Power – Medium

The two major suppliers of Dicks Sporting Goods are Nike at 20% and Under Armour at 12%. After that, every other supplier is under 10% of sales. Supplier power is medium because Under Armour and Nike could have a material impact if they curtailed supplies. However, this is very unlikely to happen as all brands rely on retailers like Dicks Sporting Goods to sell and distribute their merchandise.

Buyer Power – Very High

Buying power is very high as customers have many retail stores and online platforms to purchase sporting goods retail items. DKS has an advantage partnering with key brands to maintain exclusivity of certain products; however, this is does not take away much power from the consumer as similar items are available elsewhere.

Intensity of Competition – High

The retail sporting goods industry is very competitive; however, Dicks Sporting Goods remains a giant in the industry and continues to expand its locations and market share. Other sporting goods retailers are not expanding as fast as Dicks Sporting Goods and do not have as recognizable of a name.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
High brand recognition Brand partnerships Ideal Locations	Slowing Same-store-sales Decreasing margins Negative FCF
Opportunities	**Threats**
Online sales Growing customer experience Renewing partnerships	Amazon's online sales Direct to consumer brands Futher decline in margin

Appendix 3: Income Statement

Income Statement (in millions)	2013	2014	2015	2016	2017E	2018E	2019E
Sales	$6,213	$6,814	$7,271	$7,922	$8,607	$9,243	$9,881
Direct costs	4,269	4,727	5,088	5,556	6,057	6,562	6,996
Gross Margin	1,944	2,087	2,183	2,366	2,550	2,680	2,885
SG&A and other	1,407	1,533	1,648	1,916	2,045	2,218	2,381
EBIT	537	554	535	450	505	462	504
Interest	3	3	4	6	7	3	3
EBT	534	551	531	444	498	459	501
Taxes	209	212	200	171	165	163	178
Income	325	339	331	273	333	296	323
Other	(12)	(5)	0	(14)	(7)	(8)	(7)
Net income	338	344	330	287	340	304	330
Basic Shares	123	119	115	111	105	100.6	98.2
EPS	$2.75	$2.89	$2.87	$2.59	$3.25	$3.02	$3.36
DPS	$0.52	$0.51	$0.56	$0.61	$0.65	$0.68	$0.69
Growth Statistics							
Sales		*9.7%*	*6.7%*	*9.0%*	*8.6%*	*7.4%*	*6.9%*
Direct Costs		*10.7%*	*7.6%*	*9.2%*	*9.0%*	*8.4%*	*6.6%*
Gross Margin		*7.3%*	*4.6%*	*8.4%*	*7.8%*	*5.1%*	*7.6%*
SG&A and other		*8.9%*	*7.5%*	*16.3%*	*6.7%*	*8.5%*	*7.3%*
EBIT		*3.2%*	*-3.4%*	*-15.9%*	*12.3%*	*-8.5%*	*9.0%*
Interest		*9.8%*	*24.8%*	*46.0%*	*16.1%*	*-59.0%*	*16.7%*
EBT		*3.2%*	*-3.6%*	*-16.4%*	*12.2%*	*-7.8%*	*9.0%*
Taxes		*1.6%*	*-5.3%*	*-14.7%*	*-3.5%*	*-1.2%*	*9.0%*
Continuing income		*4.2%*	*-2.5%*	*-17.5%*	*22.1%*	*-11.1%*	*9.0%*
Other		*-57.7%*	*-105.9%*	*-4829%*	*-50.0%*	*7.4%*	*-11.6%*
Net income		*2.0%*	*-4.0%*	*-13.0%*	*18.4%*	*-10.7%*	*8.5%*
Basic Shares		*-3.0%*	*-3.4%*	*-3.6%*	*-5.8%*	*-3.9%*	*-2.4%*
EPS		*5.1%*	*-0.7%*	*-9.8%*	*25.8%*	*-7.1%*	*11.1%*
DPS		*-2.0%*	*9.3%*	*8.9%*	*6.2%*	*4.0%*	*2.4%*
Common Size							
Sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Direct Costs	*68.7%*	*69.4%*	*70.0%*	*70.1%*	*70.4%*	*71.0%*	*70.8%*
Gross Margin	*31.3%*	*30.6%*	*30.0%*	*29.9%*	*29.6%*	*29.0%*	*29.2%*
SG&A and other	*22.6%*	*22.5%*	*22.7%*	*24.2%*	*23.8%*	*24.0%*	*24.1%*
EBIT	*8.6%*	*8.1%*	*7.4%*	*5.7%*	*5.9%*	*5.0%*	*5.1%*
Interest	*0.0%*	*0.0%*	*0.1%*	*0.1%*	*0.1%*	*0.0%*	*0.0%*
EBT	*8.6%*	*8.1%*	*7.3%*	*5.6%*	*5.8%*	*5.0%*	*5.1%*
Taxes	*3.4%*	*3.1%*	*2.8%*	*2.2%*	*1.9%*	*1.8%*	*1.8%*
Continuing income	*5.2%*	*5.0%*	*4.5%*	*3.4%*	*3.9%*	*3.2%*	*3.3%*
Other	*-0.2%*	*-0.1%*	*0.0%*	*-0.2%*	*-0.1%*	*-0.1%*	*-0.1%*
Net income	*5.4%*	*5.1%*	*4.5%*	*3.6%*	*4.0%*	*3.3%*	*3.3%*

Appendix 4: Balance Sheet

Balance Sheet (in millions)	2013	2014	2015	2016	2017E	2018E	2019E
Cash	182	222	119	165	170	103	38
Operating assets ex cash	1,438	1,577	1,694	1,831	2,162	2,311	2,569
Operating assets	1,620	1,799	1,813	1,996	2,332	2,414	2,607
Operating liabilities	1,002	1,118	1,191	1,397	1,590	1,618	1,729
NOWC	618	681	622	599	742	797	877
NOWC ex cash (NWC)	437	459	503	434	572	693	840
NFA	1,451	1,593	1,747	2,260	2,487	2,719	2,950
Invested capital	*$2,070*	*$2,273*	*$2,368*	*$2,859*	*$3,229*	*$3,515*	*$3,827*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$3,071*	*$3,392*	*$3,559*	*$4,256*	*$4,820*	*$5,133*	*$5,556*
Short-term and long-term debt	$7	$6	$6	$5	$5	$5	$5
Other liabilities	370	435	573	924	1,124	1,324	1,474
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	1,692	1,832	1,789	1,929	2,090	2,176	2,338
Total supplied capital	*$2,070*	*$2,273*	*$2,368*	*$2,859*	*$3,219*	*$3,505*	*$3,817*
Total liabilities and equity	*$3,071*	*$3,392*	*$3,559*	*$4,256*	*$4,810*	*$5,123*	*$5,546*
Growth Statistics							
Cash		*22.0%*	*-46.3%*	*38.5%*	*3.2%*	*-39.1%*	*-63.7%*
Operating assets ex cash		*9.6%*	*7.4%*	*8.1%*	*18.1%*	*6.9%*	*11.2%*
Operating assets		*11.0%*	*0.8%*	*10.1%*	*16.9%*	*3.5%*	*8.0%*
Operating liabilities		*11.6%*	*6.5%*	*17.3%*	*13.9%*	*1.7%*	*6.9%*
NOWC		*10.0%*	*-8.7%*	*-3.7%*	*23.9%*	*7.4%*	*10.1%*
NOWC ex cash (NWC)		*5.1%*	*9.6%*	*-13.6%*	*31.7%*	*21.2%*	*21.2%*
NFA		*9.7%*	*9.7%*	*29.4%*	*10.1%*	*9.3%*	*8.5%*
Invested capital		*9.8%*	*4.2%*	*20.7%*	*12.9%*	*8.9%*	*8.9%*
Marketable securities							
Total assets		*10.4%*	*4.9%*	*19.6%*	*13.2%*	*6.5%*	*8.3%*
Short-term and long-term debt		*-12.5%*	*-8.3%*	*-9.9%*	*-12.8%*	*0.0%*	*0.0%*
Other liabilities		*17.4%*	*31.8%*	*61.3%*	*21.6%*	*17.8%*	*11.3%*
Debt/equity-like securities							
Equity		*8.3%*	*-2.3%*	*7.8%*	*8.3%*	*4.1%*	*7.4%*
Total supplied capital		*9.8%*	*4.2%*	*20.7%*	*12.6%*	*8.9%*	*8.9%*
Total liabilities and equity		*10.4%*	*4.9%*	*19.6%*	*13.0%*	*6.5%*	*8.3%*

Appendix 5: Sales Forecast by Segment

Sales (in millions)							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Sales	6,213	6,814	7,271	7,922	8,607	9,243	9,881
Growth		*9.7%*	*6.7%*	*9.0%*	*8.6%*	*7.4%*	*6.9%*
Hardline	3,030	2,992	3,264	3,574	3,782	4,028	4,269
Growth		*-1.3%*	*9.1%*	*9.5%*	*5.8%*	*6.5%*	*6.0%*
% of sales	*48.8%*	*43.9%*	*44.9%*	*45.1%*	*43.9%*	*2.0%*	*43.2%*
Apparel	1,867	2,461	2,553	2,756	3,068	3,313	3,562
Growth		*31.8%*	*3.7%*	*8.0%*	*11.3%*	*8.0%*	*7.5%*
% of sales	*30.0%*	*36.1%*	*35.1%*	*34.8%*	*35.6%*	*35.8%*	*6.0%*
Footwear	1,273	1,316	1,403	1,529	1,685	1,819	1,956
Growth		*3.4%*	*6.6%*	*9.0%*	*10.2%*	*8.0%*	*7.5%*
% of sales	*20.5%*	*19.3%*	*19.3%*	*19.3%*	*19.6%*	*19.7%*	*19.8%*
Other	43	45	51	63	72	82	94
Growth		*4.7%*	*13.3%*	*23.5%*	*14.4%*	*14.4%*	*14.0%*
% of sales	*0.7%*	*0.7%*	*0.7%*	*0.8%*	*0.8%*	*0.9%*	*1.0%*

Appendix 6: Cash Flow Statement

Cash Flow Statement (in millions)						
Items	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Cash from Operatings (understated - depr'n added to net assets)						
Net income	$344	$330	$287	$340	$304	$330
Change in Net Working Capital ex cash	(22)	(44)	69	(138)	(121)	(147)
Cash from operations	$322	$287	$356	$203	$183	$183
Cash from Investing (understated - depr'n added to net assets)						
Change in NFA	($141)	($154)	($514)	($227)	($231)	($231)
Change in Marketable Securities	$0	$0	$0	$0	$0	$0
Cash from investing	($141)	($154)	($514)	($227)	($231)	($231)
Cash from Financing						
Change in Short-Term and Long-Term Debt	($1)	($1)	($1)	($1)	$0	$0
Change in Other liabilities	64	138	351	200	200	150
Change in Debt/Equity-Like Securities	0	0	0	0	0	0
Dividends	(61)	(65)	(68)	(68)	(68)	(68)
Change in Equity ex NI and Dividends	(143)	(309)	(79)	(112)	(150)	(100)
Cash from financing	($141)	($236)	$203	$20	($18)	($18)
Change in Cash	40	(103)	46	(5)	(67)	(66)
Beginning Cash	182	222	119	165	170	103
Ending Cash	$222	$119	$165	$160	$103	$38

Appendix 7: Key Ratios

Key Ratios	2013	2014	2015	2016	2017E	2018E	2019E
Profitability							
Gross margin	31.3%	30.6%	30.0%	29.9%	29.6%	29.0%	29.2%
Operating (EBIT) margin	8.6%	8.1%	7.4%	5.7%	5.9%	5.0%	5.1%
Net profit margin	5.4%	5.1%	4.5%	3.6%	4.0%	3.3%	3.3%
Activity							
NFA (gross) turnover		4.48	4.35	3.95	3.63	3.55	3.49
Total asset turnover		2.11	2.09	2.03	1.90	1.86	1.85
Liquidity							
Op asset / op liab	1.62	1.61	1.52	1.43	1.47	1.49	1.51
NOWC Percent of sales		9.5%	9.0%	7.7%	7.8%	8.3%	8.5%
Solvency							
Debt to assets	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
Debt to equity	0.4%	0.4%	0.3%	0.3%	0.2%	0.2%	0.2%
Other liab to assets	12.1%	12.8%	16.1%	21.7%	23.3%	25.8%	26.5%
Total debt to assets	12.3%	13.0%	16.3%	21.8%	23.4%	25.9%	26.6%
Total liabilities to assets	44.9%	46.0%	49.7%	54.7%	56.4%	57.4%	57.7%
Debt to EBIT	0.01	0.01	0.01	0.01	0.01	0.01	0.01
EBIT/interest	183.27	172.34	133.40	76.82	74.26	165.94	155.10
Debt to total net op capital	0.4%	0.3%	0.2%	0.2%	0.1%	0.1%	0.1%
NOPAT to sales	5.3%	5.0%	4.6%	3.5%	3.9%	3.2%	3.3%
Sales to NOWC		10.49	11.17	12.98	12.84	12.02	11.80
Sales to NFA		4.48	4.35	3.95	3.63	3.55	3.49
Sales to IC		3.14	3.13	3.03	2.83	2.74	2.69
Total ROIC		15.7%	14.4%	10.6%	11.1%	8.8%	8.9%
NOPAT to sales	5.3%	5.0%	4.6%	3.5%	3.9%	3.2%	3.3%
Sales to EOY NOWC	10.05	10.01	11.70	13.23	11.60	11.60	11.26
Sales to EOY NFA	4.28	4.28	4.16	3.50	3.46	3.40	3.35
Sales to EOY IC	3.00	3.00	3.07	2.77	2.67	2.63	2.58
Total ROIC using EOY IC	15.8%	15.0%	14.1%	9.7%	10.5%	8.5%	8.5%
ROE							
5-stage							
EBIT / sales		8.1%	7.4%	5.7%	5.9%	5.0%	5.1%
Sales / avg assets		2.11	2.09	2.03	1.90	1.86	1.85
EBT / EBIT		99.4%	99.3%	98.7%	98.7%	99.4%	99.4%
Net income /EBT		62.5%	62.2%	64.7%	68.3%	66.2%	65.9%
ROA		10.7%	9.5%	7.4%	7.5%	6.1%	6.2%
Avg assets / avg equity		1.83	1.92	2.10	2.26	2.33	2.37
ROE		19.5%	18.2%	15.5%	16.9%	14.3%	14.6%
Payout Ratio		17.8%	19.6%	23.7%	20.0%	22.4%	20.6%
Retention Ratio		82.2%	80.4%	76.3%	80.0%	77.6%	79.4%
Sustainable Growth Rate		16.1%	14.7%	11.8%	13.6%	11.1%	11.6%

Appendix 8: 3-Stage DCF Model (Base case)

	First Stage		Second Stage				
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*7.4%*	*6.9%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
NOPAT / S	*3.2%*	*3.3%*	*3.6%*	*4.0%*	*4.3%*	*4.7%*	*5.0%*
S / NOWC	*11.60*	*11.26*	*11.26*	*11.26*	*11.26*	*11.26*	*11.26*
S / NFA (EOY)	*3.40*	*3.35*	*3.35*	*3.35*	*3.35*	*3.35*	*3.35*
S / IC (EOY)	*2.63*	*2.58*	*2.58*	*2.58*	*2.58*	*2.58*	*2.58*
ROIC (EOY)	*8.5%*	*8.5%*	*9.4%*	*10.3%*	*11.1%*	*12.0%*	*12.9%*
ROIC (BOY)		*9.2%*	*9.7%*	*10.6%*	*11.5%*	*12.4%*	*13.3%*
Share Growth		*-2.4%*	*-3.0%*	*-3.0%*	*-3.0%*	*-3.0%*	*-3.0%*
Sales	$9,243	$9,881	$10,178	$10,483	$10,797	$11,121	$11,455
NOPAT	$298	$325	$370	$417	$466	$518	$573
Growth		*9.0%*	*13.7%*	*12.7%*	*11.9%*	*11.2%*	*10.6%*
- Change in NOWC	55	81	26	27	28	29	30
NOWC EOY	*797*	*877*	*904*	*931*	*959*	*988*	*1,017*
Growth NOWC		*10.1%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
- Chg NFA	231	231	88	91	94	97	100
NFA EOY	*2,719*	*2,950*	*3,038*	*3,129*	*3,223*	*3,320*	*3,419*
Growth NFA		*8.5%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Total inv in op cap	286	312	115	118	122	125	129
Total net op cap	3515	3827	3942	4060	4182	4307	4437
FCFF	$12	$13	$255	$298	$344	$393	$444
% of sales	*0.1%*	*0.1%*	*2.5%*	*2.8%*	*3.2%*	*3.5%*	*3.9%*
Growth	*0.0%*	*9.9%*	*1823.6%*	*17.1%*	*15.4%*	*14.1%*	*13.0%*
- Interest (1-tax rate)	2	2	2	2	2	2	2
Growth	*0.0%*	*16.7%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
+ Net new debt	0	0	0	0	0	0	0
Debt	5	5	5	5	5	5	5
Debt / tot net op capital	*0.1%*	*0.1%*	*0.1%*	*0.1%*	*0.1%*	*0.1%*	*0.1%*
FCFE w/o debt	$10	$11	$253	$296	$342	$390	$441
% of sales	*0.1%*	*0.1%*	*2.5%*	*2.8%*	*3.2%*	*3.5%*	*3.9%*
Growth		*8.7%*	*2165.7%*	*17.2%*	*15.5%*	*14.1%*	*13.0%*
/ No Shares	100.6	98.2	95.3	92.4	89.6	86.9	84.3
FCFE	$0.10	$0.11	$2.65	$3.20	$3.81	$4.49	$5.23
Growth		*11.4%*	*2235.8%*	*20.8%*	*19.0%*	*17.7%*	*16.5%*
			$ -	$ -	$ -	$ -	$ -
* Discount factor	0.91	0.83	0.76	0.69	0.63	0.58	0.53
Discounted FCFE	$0.09	$0.09	$2.01	$2.22	$2.41	$2.59	$2.75
Third Stage							
Terminal value P/E							
Net income	$304	$330	$367	$414	$464	$516	$570
% of sales	*3.3%*	*3.3%*	*3.6%*	*4.0%*	*4.3%*	*4.6%*	*5.0%*
EPS	$3	$3	$4	$4	$5	$6	$7
Growth	*0.0%*	*11.1%*	*14.9%*	*16.2%*	*15.4%*	*14.6%*	*14.0%*
Terminal P/E							13.50
* Terminal EPS							$6.76
Terminal value							$91.29
* Discount factor							0.53
Discounted terminal value							$48.00

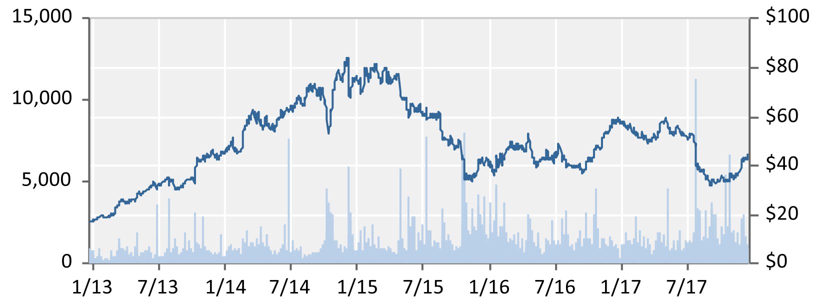
Summary

First stage	$0.19	Present value of first 2 year cash flow	
Second stage	$11.98	Present value of year 3-7 cash flow	
Third stage	$48.00	Present value of terminal value P/E	
Value (P/E)	**$60.17**	= value at beg of fiscal yr	2018

Industrials, Airlines

Spirit Airlines, Inc.

Recommendation	HOLD
Target (today's value)	$50.14
Current Price	$45.02
52 week range	$30.32- $60.28



Share Data	
Ticker:	SAVE
Market Cap. (Billion):	$3.1
Inside Ownership	0.8%
Inst. Ownership	87%
Beta	1.2
Dividend Yield	N/A
Payout Ratio	N/A
Cons. Long-Term Growth Rate	-2.0%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$2.1	$2.3	$2.7	$3.3	$3.8
Gr %	10.9%	8.4%	13.2%	21.5%	13.4%
Cons	-	-	$2.6	$3.2	$3.6
EPS					
Year	$4.39	$3.77	$3.79	$4.40	$4.70
Gr %	41.6%	-14.1%	0.5%	16.1%	6.8%
Cons	-	-	$3.08	$3.38	$4.09

Ratio	'15	'16	'17E	'18E	'19E
ROE (%)	28.5%	20.2%	13.4%	12.9%	12.1%
Industry	84.3%	47.5%	28.1%	26.5%	23.6%
NPM (%)	14.8%	11.4%	8.2%	7.0%	6.7%
Industry	15.5%	11.5%	7.1%	7.1%	6.9%
A. T/O	1.0	0.8	0.7	0.7	0.7
ROA (%)	15.3%	9.3%	5.4%	4.9%	5.1%
Industry	13.5%	9.5%	5.9%	8.0%	8.5%
A/E	2.1	2.3	2.5	2.7	2.8

Valuation	'15	'16	'17	'18E
P/E	9.7	14.1	14.5	15.5
Industry	7.3	8.7	12.3	11.2
P/S	1.4	1.7	1.2	1.0
P/B	2.3	2.9	2.0	1.8
P/CF	6.1	8.7	7.3	6.5
EV/EBITDA	4.7	9.9	7.8	7.5

Performance	SAVE	Industry
1 Month	15.4%	8.0%
3 Month	23.8%	6.7%
YTD	-26.5%	11.2%
52-week	-26.5%	11.3%
3-year	-41.6%	12.2%

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Summary: I recommend a hold rating with a target price of $50.14. SAVE has the lowest cost structure in the industry giving it high potential to increase margins as the environment improves, but under current conditions, revenue growth is being out paced by rising costs from aggressive expansion. SAVE's low pricing strategy is a market maker as lower fare prices increase demand. Most headwinds to SAVE remain internal as risks to its low-cost structure. Most prevalent are increases in oil prices and labor uncertainties in a unionized industry. Based off multiples and DCF analysis, the stock is currently fairly valued.

Key Drivers:

- *Oil*: Fuel accounted for 24% of SAVE's 2016 total expenses. Fuel is a high percent of costs for any airline. Management, advert to hedging jet fuel, has been reaping the benefit of recent lows in oil. Oil prices are expected to rise over the next two years.

- *Pricing and Cost Structure*: SAVE is the low fare leader and has the lowest cost structure in the industry. SAVE's PRASM averages 23% below the industry over the last six years. This gives SAVE a competitive advantage over fare pricing.

- *Growth:* SAVE is young, healthy, and growing. In 2016, SAVE increased capacity by 20% and has scheduled deliveries of another 76 planes, an 80% increase of capacity through 2019.

Valuation: Using a relative valuation approach, SAVE appears to be fairly valued within the airline industry. Due to greater ability to value long-term inputs, I used a DCF model to value the stock. A combination of approaches suggests that SAVE is fairly valued, as the stock's value is about $50 and the shares are trading close to $45.

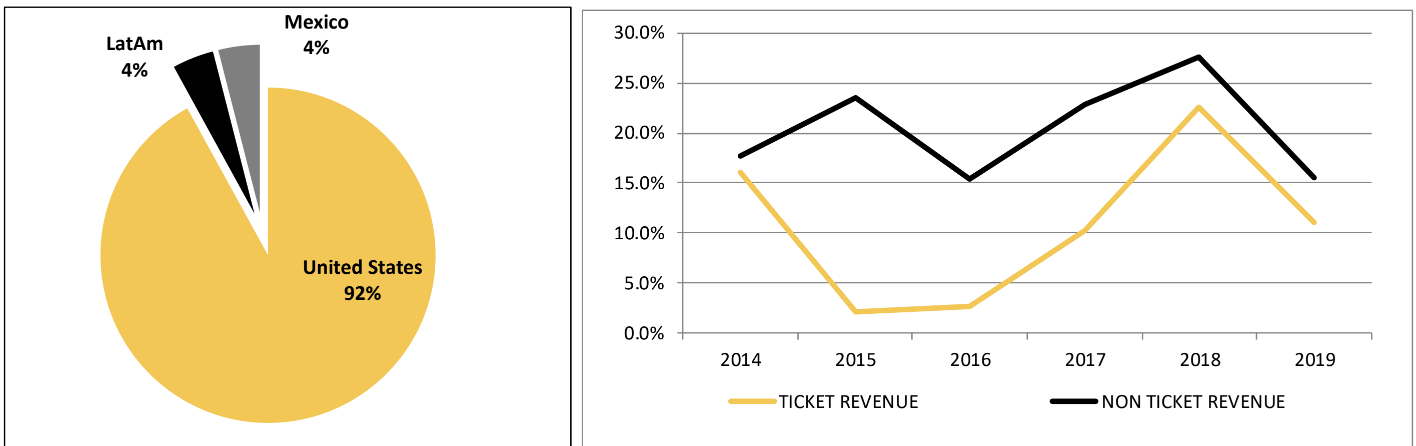
Risks: Threats to the business include rises in uncontrollable costs such as aircraft fuel and airport trafficking expenses. Furthermore, changes in consumer preference or demographics toward higher fare standards or amenities that might arise as the economy improves could hinder SAVE's positioning.

Company Overview

Spirit Airlines (SAVE) is an ultra-low cost, ultra-low fare carrier. The firm targets the "price-conscious customer" by offering low Bare Fares™ and an unbundled approach to flying. They call this approach Frill Control™. Because SAVE separates all amenities out of the fare price, it can offer a far lower fare to travel. SAVE's average ticket price for 2016 totaled $73 compared to the industry's average fare for a domestic flight of $355. SAVE was the first airline to offer this degree of autonomy in a cost selection. Bare Fare™ will get you a seat and one 14"x18"x8" personal item. Other airlines are beginning to offer similar deals to book seats in the final days before departure of scheduled flights. This is standard procedure for SAVE. From there, customers may individually select all additional amenities they may need such as: additional bags, advanced seating, and refreshments. These up charges account for typically 50% of SAVE's revenues.

92% of SAVE's revenue is rooted domestically, 4% comes from flights to Mexico, and the remaining (approximate) 4% comes from Latin America. Over the last five years, SAVE had a revenue CAGR of 15.7%. As a portion of total sales, domestic revenues grew 1.5% from last year while its international markets shrunk. Further detail on international segments at this time is immaterial. Five year CAGR for ticket revenue is 8.9%. Over the same period, non-ticket revenue has a CAGR of 15.9%. SAVE offers a subscription-based service known as the $9 fare club. This membership provides vacation packages and discounted fares in addition to increased baggage allowance. On its website, SAVE offers discounts on car rentals across multiple sources including Alamo, Enterprise, Hertz, and others. Figure two below shows revenue generation for SAVE. Ticket revenues slowed sharply in 2015 and 2016 due to heavy competition leading to ticket price discounting.

Figures 1 and 2: Revenue Sources for SAVE (left), Historic Sales growth (right)



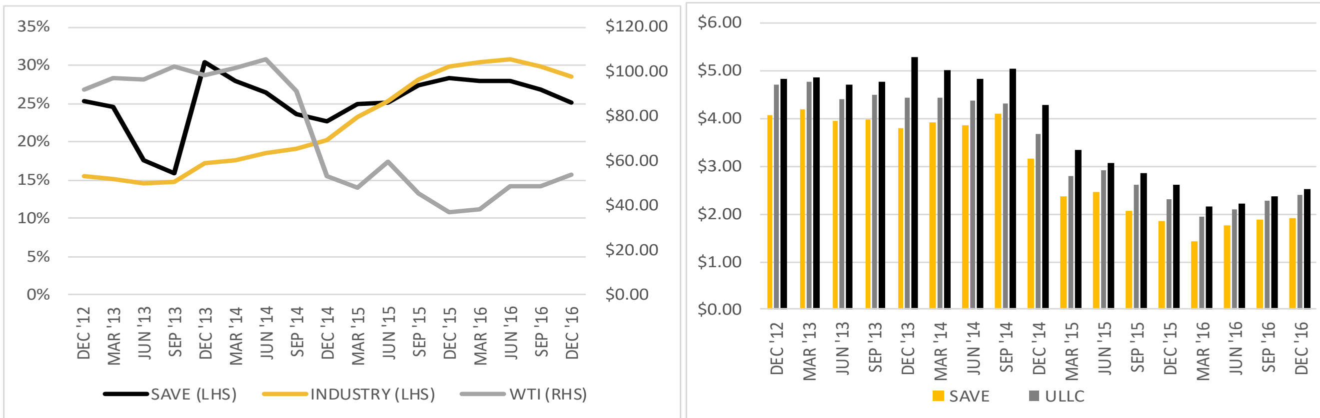
Source: Spirit Airlines, 2017 10-k

Business/Industry Drivers

Though several factors may contribute to Spirit Airlines' future success, the following are the most important business drivers:

1) Oil
2) Pricing and Cost Structure
3) Expansion

Figures 3 and 4: Quarterly Oil Price vs Gross Margin % (left) Fuel Expense in Dollar per ASM (right)



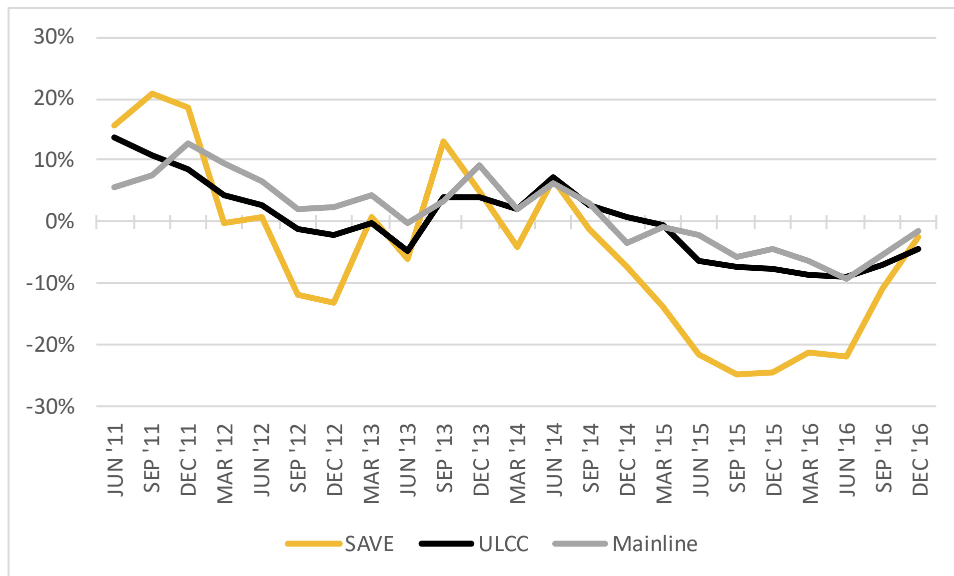
Source: Factset

Oil

COMPS:	PEERS:
ALGT	ALGT
JBLU	JBLU
LUV	LUV
AAL	
DAL	

Fuel costs in 2016 were $1.48 per gallon, down 19% from 2015 figures. Figure 3 shows that as fuel prices fell, gross margin rose more for the industry than for SAVE. In 2014 and 2015, SAVE employed United States Gulf Coast jet fuel swaps and options. After suffering a 1.5% increase in fuel cost due to ineffective hedging in 2015, paired with stringent liquidity requirements, management has become avert to hedging. SAVE has no outstanding fuel derivatives at this time. Gross margin for SAVE was down 3.2% in 2016 costing it $0.67 in EPS. As oil prices rose in 2017, both SAVE and the industry were hurt. Expectations for oil are set at $60 per barrel up from 2016 average price of $45.

Figure 5: Pricing trend (Y/Y % Growth in PRASM)



Source: Factset

Pricing and Cost Structure

Discounting is common in the airline industry. Once a flight is scheduled, the airline incurs nominal incremental costs to service additional passengers who fill otherwise empty seats. This makes pricing highly competitive. Figure 5 shows the growth rate in passenger revenue per available seat mile (PRASM) over the last six years. Versus total revenue per available seat mile (TRASM), PRASM

specifically depicts scheduled ticket revenue which is the best display of the pricing (or fare) environment for airlines. Prices seem to have hit a bottom in 2016. The downtrend was driven by airlines adding flights because of low oil prices. This market saturation exceeded demand. Moving forward, demand is beginning to catch up, supported by a strengthening economy, fares are beginning an uptrend going into 2017.

Price is also substantially driven by costs. SAVE, as its ticker might imply, has the best cost position in the industry. SAVE's CASM (cost per available seat per mile) is 26% below the average of its three biggest competitors in the ULCC (ultra-low-cost carriers) sub sector, $7.51 versus $10.18. SAVE offers ultra-low prices through its ultra-low-cost structure, Fit Fleet®, unbundled business model, and other strategic decisions.

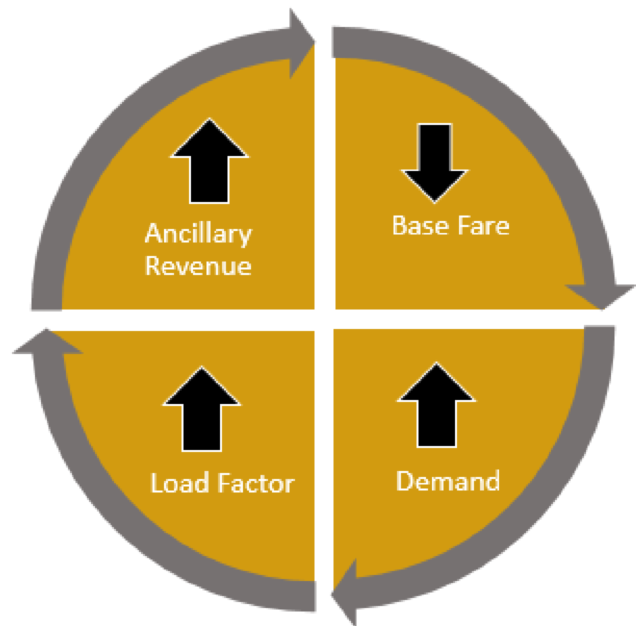
Figure 6: SAVE's Fleet

Aircraft Type	Seats	Avg. Age (years)	# of Aircraft	# Owned	Number Leased
A319	145	10.5	29	7	22
A320ceo	178-182	3.4	45	15	30
A320neo	182	0.1	5	-	5
A321	218-228	2.2	16	14	2

Source: Spirit Airlines

Avg. Fleet Age. (years)
ALGT : 19.8
DAL : 17
UAL : 14.3
LUV : 11.8
AAL : 10.8
JBLU : 9.2

Figure 7: SAVE's Business Model



SAVE uses only Airbus A320 family aircrafts in what it calls its Fit Fleet®. SAVE has the youngest fleet in the industry with an average age of 5.2 years. Newer planes are 16% and 28% more fuel-efficient than those used by SAVE's peers and mainline carriers, respectively. Figure 4 shows the cost benefit regarding fuel. Furthermore, these aircraft are configured for high-density seating and can accommodate more passengers than competitors using the same type. The benefit is a lower unit cost. Isolation to a single aircraft type also cuts costs across multiple facets. Incremental costs to train crewmembers across different airline types are eliminated. Maintenance costs are cut through simplified operational support and compatibility of the business's spare parts inventory. SAVE's maintenance costs per ASM (available seat mile) over the past 20 quarters average 44% below its top five industry, mainline and ULCC competitors; it is $0.42 versus $0.84. This benefit was partially offset by SAVE's higher rent expense on the new planes. SAVE owns 36 of its 95 aircraft. By comparison, SAVE's rental expenses per ASM (average over five years) is $1.10, 84% over the $0.25 average of the mentioned COMP group.

Maintaining this lower cost structure is the core of SAVE's strategic position. SAVE is the leading provider in low fares and a market maker. On average, SAVE reports growing the traffic base of markets it enters by 35-40%. Figure 6 shows the cycle of SAVE's business model. Lower fares drive

up demand, which increases the load factor, which then increases ancillary revenue, which results in the ability to lower fares further.

Expansion

Figure 8: Map of SAVE's routes as of 2016

Source: Spirit Airlines

SAVE is expanding. In fact, SAVE is expanding more than twice as fast as any of its peers. As of December 31, 2016, SAVE has outstanding orders for 76 new planes and 3 engines to be delivered through 2019 and 2023. These orders represent an 80% increase in capacity for SAVE. However, competition over pricing loosens the correlation between capacity growth and revenue generation. Over the last five years, SAVE's capacity grew at a compounded rate of 5.1% while PRASM CAGR for SAVE was down -2.01%. Comparably, in the same period, ULCC PRASM CAGR was down -0.54% and mainline PRASM CAGR was down -0.12%. This shows the anchoring effect SAVE produces. Fares in SAVE's markets fell more than markets SAVE is not active in. This is because it is SAVE's advantage to be the cheapest, so when it enters a market and demand rises for SAVE's offering, other airlines must react by discounting leading the average fare of the market curbed. Figure 5 shows this. SAVE currently serves 200 markets through 59 airports. In 2018, SAVE will launch 29 new markets, served from four new destinations: Seattle Washington, Akron-Canton Ohio, Newark New Jersey, and Havana Cuba. Management plans to add 125 routes, a 63% expansion, over the next five years.

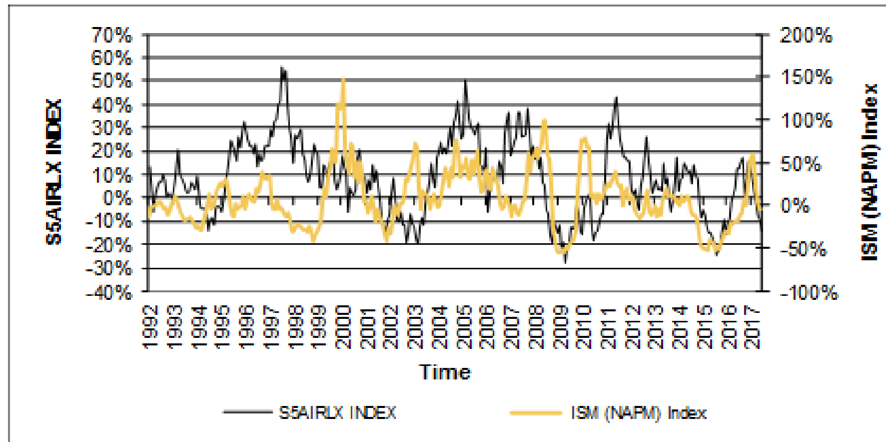
Figure 9: Fleet additions

Management Plan			
Plane	2017	2018	2019
A319	0	0	-1
A320ceo	4	5	1
A320neo	0	4	12
A321ceo	9	5	0
Total	13	14	13
Seats added	2,727	2,743	2,364
Seats lost	-	-	-145

Source: Spirit Airlines

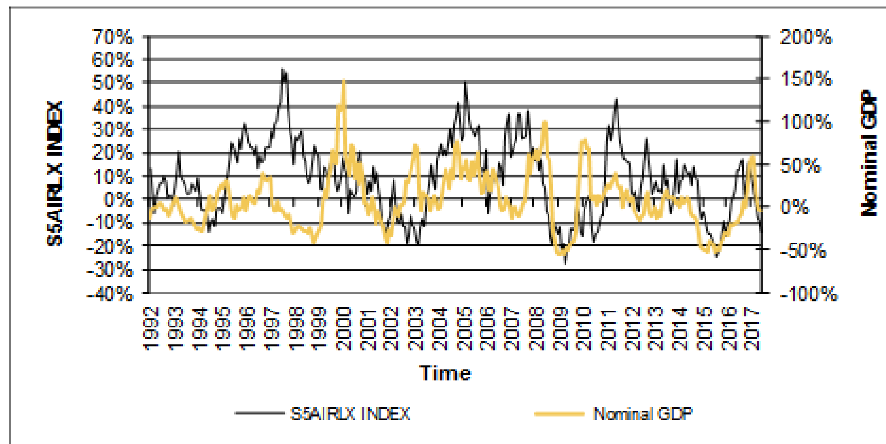
Figures 10 and 11 show that the industry is highly cyclical. It normally outperforms when the economy is strengthening.

Figure 10: Airline annual relative return vs S&P 500 vs ISM



Source: Bloomberg

Figure 11: Airline annual relative returns vs S&P 500 vs Nominal GDP

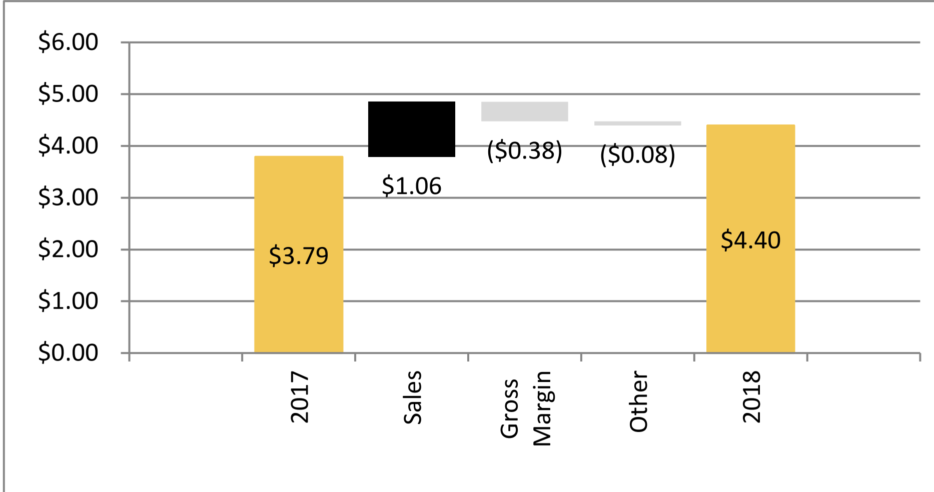


Source: Bloomberg

Financial Analysis

I anticipate EPS to grow to $4.40 in FY 2018. All else equal, the hike in revenues from increased capacity paired with rising fares will drive a $1.06 increase in EPS. However, decreasing margin due to expenses such as labor and fuel outpacing revenues will reduce EPS by $0.38. Furthermore, this will result in more debt issuance and greater interest expense, accounting for a $0.08 decrease in EPS.

Figure 12: Quantification of 2018 EPS drivers



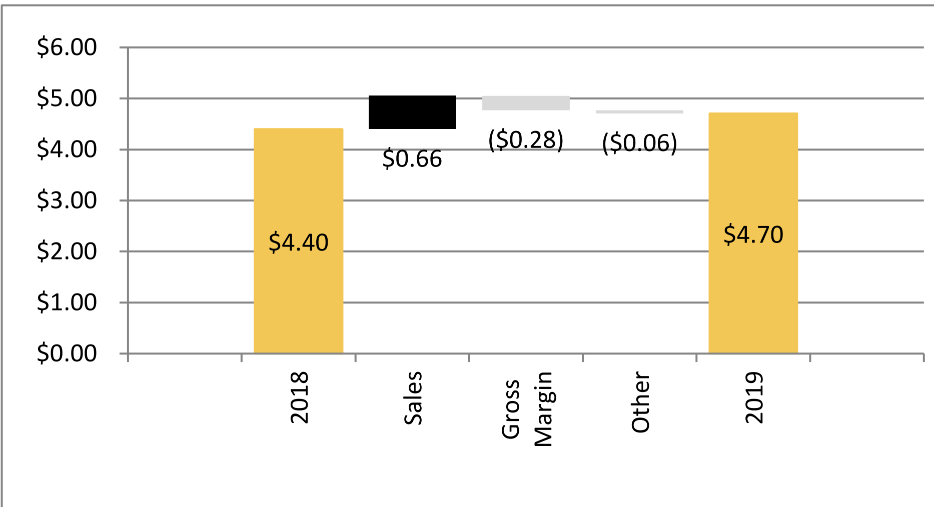
Sales- Estimates vs. Consensus
2018: $3,380 vs. $3,193

EPS- Estimates vs. Consensus
2018: $4.40 vs. $3.38

Source: Company Reports, IMCP

I expect EPS to increase $0.30 over my FY 2018 estimates to $4.70 in FY 2019. Since growth will be slowing, increases in sales will account for $0.66 increase in EPS. Expenses in 2019 are expected to still outpace revenues and further shrink margin accounting for a $0.28 decrease in EPS. Further issuance of debt, increasing interest, will reduce EPS by $0.06.

Figure 13: Quantification of 2019 EPS drivers



Sales- Estimates vs. Consensus
2019: $3,832 vs. $3,566

EPS- Estimates vs. Consensus
2019: $4.70 vs. $4.09

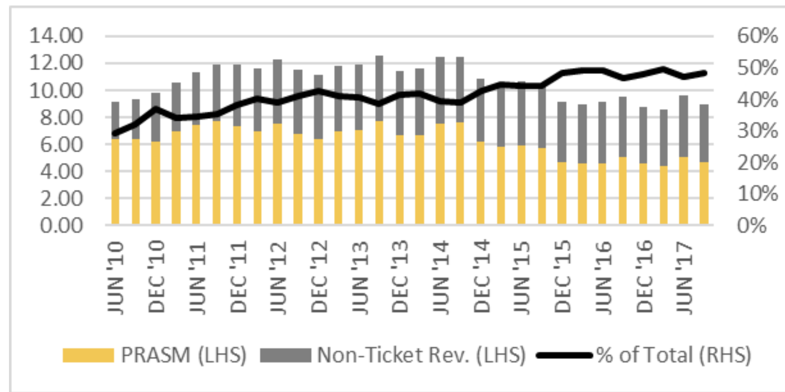
Source: Company Reports, IMCP

My estimates are bullish versus consensus over both forward-looking years. This is because I believe in the effectiveness of SAVE's model and expect higher growth of SAVE's ancillary revenues. As fares rise, SAVE's advantage is to remain the anchor of the industry. While it is advantageous for competitors to drive ticket prices higher, SAVE can benefit at levels 53% relative to even the current industry. Instead of a price focused model, SAVE revolves around pushing for load factor, and servicing markets that people are likely to bring a lot of luggage to. I believe both with be on the rise considering the strengthening economy and increasing demand for flights. Paired with the improving environment, SAVE is expanding both its depth and breadth.

Revenues

Demand for flights is increasing and airlines are beginning to charge more for fares. (See figure 5) Primary increases in revenue will come from capacity additions and an increase in ancillary revenues as traffic grows.

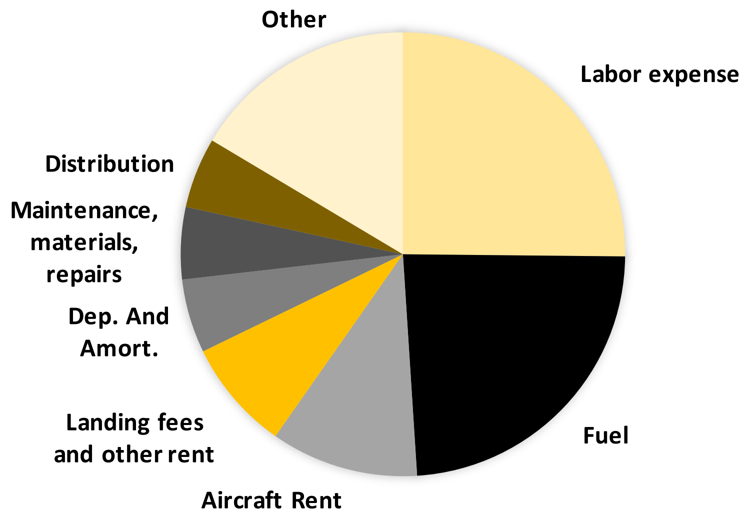
Figure 14: Growth in Non-Ticket Revenue per ASM



Source: Factset

Operating Income and Margins

Figure 15: SAVE Operating Expenses 2016



Source: Spirit Airlines

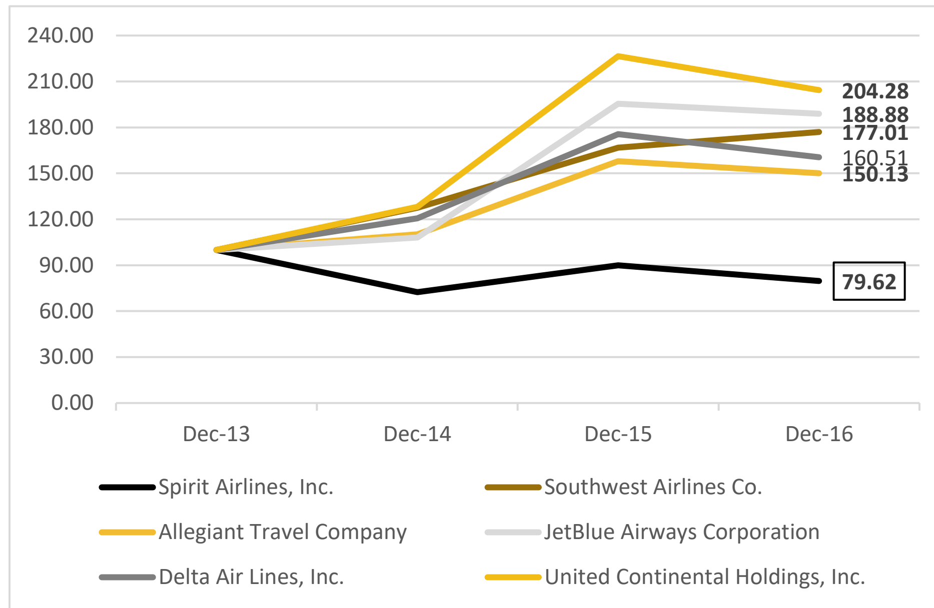
Almost 50% of operating expenses are payment for fuel and labor. Airlines also incur expenses to traffic to airports, for maintenance fees, for distribution costs, and for rent expenses. Fuel prices are expected to rise significantly and cut into margins. SAVE's work force is represented by four labor unions: ALPA, AFA, TWV, and IAMAW. Outside of ALPA, all contracts with unions are bound through 2020 at the earliest. As SAVE's fleet ages, maintenance costs are expected to rise. As SAVE continues to expand rent expense will increase.

Return on Equity

SAVE's declining ROE comes from its aggressive growth. However, its returns compared to its peers are much more stable. This is because SAVE does not rely on premium fare traffic and instead targets the more resilient, price sensitive traveler. As shown below, operating margin has fallen, primarily because of dropping fare prices. At the same time, asset turns declined as assets grew faster than sales. ROE would have declined more if leverage had not risen. Going forward I expect

margins to fall but be somewhat offset by higher asset turns. ROE will decline as leverage moderates a little.

Figure 16: Gross Margin of Airlines Relative to S&P



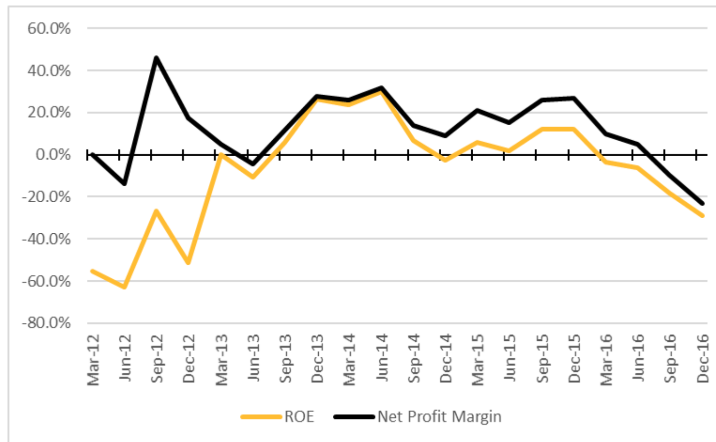
Source: Factset

Figure 17: ROE breakdown, 2014-2019E

Items	2014	2015	2016	2017E	2018E	2019E
ROE						
5-stage						
EBIT / sales	18.4%	23.8%	19.1%	16.8%	15.6%	14.8%
Sales / avg assets	1.39	1.04	0.82	0.81	0.89	0.89
EBT / EBIT	100.1%	98.7%	94.7%	90.0%	89.8%	89.4%
Net income /EBT	63.4%	63.1%	63.1%	63.1%	63.1%	63.1%
ROA	16.2%	15.3%	9.3%	7.7%	7.9%	7.4%
Avg assets / avg equity	1.57	1.85	2.17	2.26	2.23	2.15
ROE	25.4%	28.5%	20.2%	17.5%	17.6%	15.9%

Source: Spirit Airlines

Figure 18: SAVE ROE vs NPM



Source: Factset

SAVE's current load factor is approximately 80%, which is typical of the industry. Over its life, SAVE's PRASM averages 53% relative to the industry. As fares rise for the industry, SAVE would rather maintain low fares in efforts to attract more passengers. Done successfully, this will increase SAVE's NPM.

<u>Free Cash Flow</u>

SAVE's free cash flow is negative because it is growing. In 2015, SAVE elected to fund a 72% increase in NFA through debt. SAVE only recently began using debt to grow. Currently the lowest levered airline, SAVE is expected to take further advantage of leverage.

Figure 19: Free Cash Flows 2014 – 2019E

Free Cash Flow	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
NOPAT	$176,950	$227,854	$321,468	$280,367	$286,780	$333,251	$358,480
Growth		*28.8%*	*41.1%*	*-12.8%*	*2.3%*	*16.2%*	*7.6%*
NWC*	(72,287)	(103,915)	(11,166)	(46,795)	(10,804)	(3,380)	11,498
Net fixed asse	531,690	871,840	1,504,205	2,176,082	2,524,289	2,939,215	3,332,640
Total net ope	$459,403	$767,925	$1,493,039	$2,129,287	$2,513,485	$2,935,835	$3,344,138
Growth		*67.2%*	*94.4%*	*42.6%*	*18.0%*	*16.8%*	*13.9%*
- Change in NWC*		(31,628)	92,749	(35,629)	35,991	7,424	14,878
- Change in NFA		340,150	632,365	671,877	348,207	414,925	393,425
FCFF*		($80,668)	($403,646)	($355,881)	(97,418)	($89,099)	($49,823)
Growth			*400.4%*	*-11.8%*	*-72.6%*	*-8.5%*	*-44.1%*
- After-tax int	(251)	(215)	4,233	14,960	28,540	33,863	38,123
FCFE**		($80,453)	($407,879)	($370,841)	($125,959)	($122,961)	($87,946)
Growth			*407.0%*	*-9.1%*	*-66.0%*	*-2.4%*	*-28.5%*

Source: Company Reports, IMCP

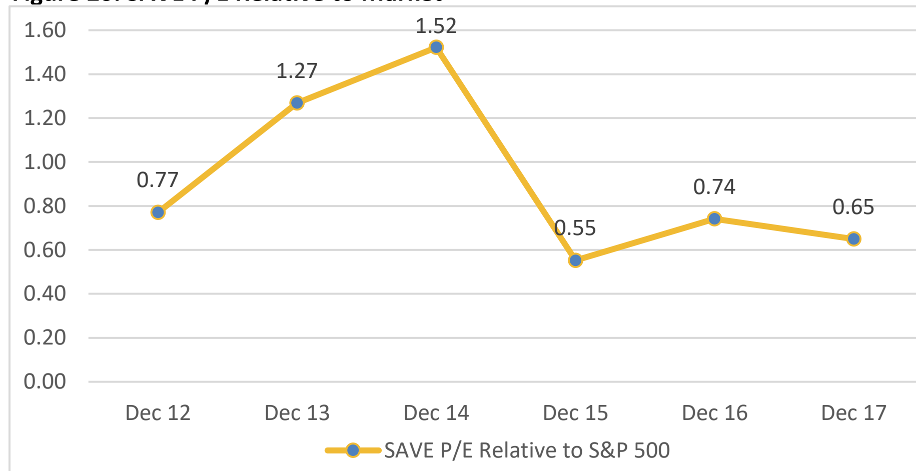
Valuation

SAVE was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is undervalued relative to other firms and is worth about $60. Due to volatility in earnings over the past few years resulting from fluctuating cost and pricing environments as well as inconsistent expansion, this metric may be unreliable. A detailed DCF analysis shows SAVE is fairly valued, at about $50. I give this valuation weight because it incorporates assumptions that reflect SAVE's ongoing changes. My conclusion of these analyses values SAVE at $50.

<u>Trading History</u>

SAVE ended 2017 trading at P/E of 0.65 relative to the market, respectively low compared to its six year history. This is due to difficult industry dynamics such as rising oil prices and falling ticket prices. However, I expect these conditions to turn around and P/E to rise to 15.5 from 14.3 today.

Figure 20: SAVE P/E Relative to Market



Source: Factset

Assuming SAVE has a 15.5 TTM P/E at the end of 2018, it should trade at $68.20 by the end of the year.

- Price = P/E x EPS = 15.5 x $4.40 = $68.20

Discounting $68.20 to today's price at an 11.5% cost of equity (explained in Discounted Cash Flow section) yields a price of $61.16. I find this valuation rather optimistic.

<u>Relative Valuation</u>

SAVE is currently trading at a P/E in line with its peers, with a P/E TTM of 14.35 compared to an average of 14.5. Despite SAVE's unique model and active growth plans, investors seem apprehensive of its direction, and in a reactive state.

Figure 21: SAVE 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
SAVE	SPIRIT AIRLINES INC	$44.89	$3,114	(2.9)	3.9	28.7	(15.9)	(18.7)	0.1	4.3	7.2%	-14.1%	9.5%	-25.4%	4.2%	21.3%	-0.21	77.3%		0.00%	
ALGT	ALLEGIANT TRAVEL CO	$166.60	$2,679	(1.4)	11.2	17.7	16.3	(5.3)	7.7	4.7	2.1%	2.0%	-0.2%	-35.2%	14.1%	38.8%	-0.08	178.5%	B+	1.81%	30.1%
LUV	SOUTHWEST AIRLINES	$66.07	$39,205	0.9	2.1	12.5	6.3	31.5	0.9	11.9	30.3%	8.5%	4.7%	-5.1%	26.1%	72.1%	1.14	32.5%	B+	0.73%	12.9%
JBLU	JETBLUE AIRWAYS CORP	$22.45	$7,199	0.7	5.4	11.2	(4.6)	5.2	0.5	3.5	-7.0%	7.9%	-4.3%	-21.2%	5.7%	51.0%	0.11	35.7%	B	0.00%	
DAL	DELTA AIR LINES INC	$59.72	$42,579	0.6	6.5	13.2	9.3	18.7	6.6	12.2	24.1%	-32.5%	525.9%*	-7.0%	11.9%	32.9%	0.87	47.5%	B	1.81%	20.6%
UAL	UNITED CONTINENTAL HLDGS INC	$76.58	$22,687	(1.2)	20.1	13.4	(4.0)	3.9	13.6	2.6	3.6%	-64.9%	26.1%	-26.8%	0.8%	28.1%	1.01	137.1%	B-	0.00%	0.0%
AAL	AMERICAN AIRLINES GROUP INC	$58.16	$27,830	0.3	13.9	11.7	8.0	24.4	11.8	3.9	29.3%	-57.4%	17.7%	-18.9%	8.0%		1.20	562.7%*		0.77%	10.2%
Average			$20,756	(0.4)	9.0	15.5	2.2	8.5	5.9	6.2	12.8%	-21.5%	8.9%	-19.9%	10.1%	40.7%	0.58	84.8%		0.73%	14.8%
Median			$22,687	0.3	6.5	13.2	6.3	5.2	6.6	4.3	7.2%	-14.1%	7.1%	-21.2%	8.0%	35.9%	0.87	62.4%		0.73%	12.9%
SPX	S&P 500 INDEX	$2,803		0.9	4.7	9.5	14.0	23.6	4.8			-0.1%	0.5%	10.3%	11.7%						

		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
SAVE	http://www.spirit.com	18.2%	1.98	17.2	10.6	14.0	14.3	13.3	14.6	14.0	12.3%	1.34	15.9%	12.9%	8.8			20.6%	16.6%	16.7%	$22.64
ALGT	http://www.allegiantair.com	44.8%	5.65	11.6	12.7	12.6	17.9	17.5	19.5	17.1	15.6%	1.97	18.4%	20.6%	8.7	6.8	9.1	12.8%	12.1%	11.8%	$29.47
LUV	http://www.southwest.com	25.3%	4.46	12.8	12.0	13.3	19.0	14.6	18.6	14.7	10.9%	1.92	18.5%	21.2%	6.7	11.1	8.7	5.1%	5.1%	5.5%	$14.83
JBLU	http://www.jetblue.com	17.2%	1.74	7.4	9.8	10.1	11.6	12.4	12.8	12.1	10.7%	1.09	15.9%	14.1%	6.6	5.5	5.6	8.4%	7.2%	8.0%	$12.91
DAL	http://www.delta.com	27.1%	3.04	39.0	59.6	9.2	12.1	9.8	12.1	10.8	9.6%	1.07	14.8%	18.4%	7.6	6.8	6.0	5.6%	3.8%	2.4%	$19.64
UAL	http://www.unitedcontinentalholdings.com	28.6%	2.53	3.4	8.4	8.4	12.1	11.6	12.1	12.0	7.0%	0.62	10.2%	11.7%	6.1	4.2	4.9	5.2%	4.4%	-0.2%	$30.28
AAL	http://www.aa.com	69.4%	7.07	4.7	8.7	8.2	14.8	11.4	12.6	11.6	6.8%	0.69	11.7%	10.6%	7.2	5.6		6.4%	4.0%	10.9%	$8.23
Average		32.9%	3.78	13.7	17.4	10.8	14.5	13.0	14.6	13.2	10.4%	1.24	15.0%	15.6%	7.4	6.7	6.9	9.2%	7.6%	7.9%	
Median		27.1%	3.04	11.6	10.6	10.1	14.3	12.4	12.8	12.1	10.7%	1.09	15.9%	14.1%	7.2	6.2	6.0	6.4%	5.1%	8.0%	
spx	S&P 500 INDEX			17.3	17.2	18.8			21.3	19.1											

Source: Factset

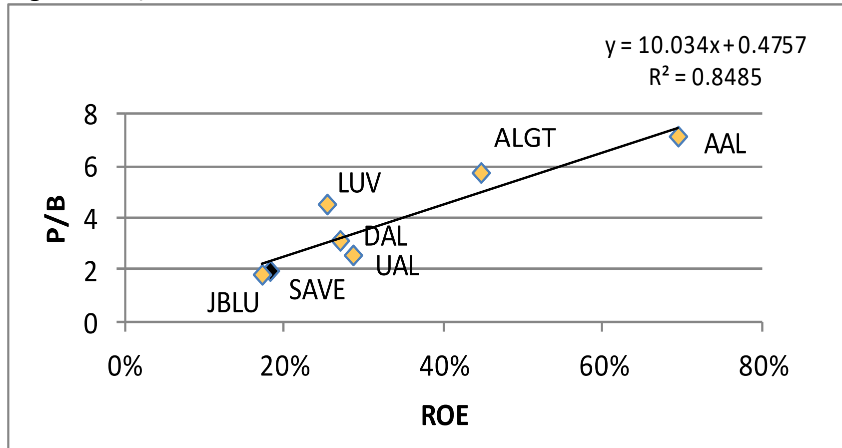
* Outlier removed

Figure 22 shows a more thorough analysis of P/B and ROE. The calculated R-squared of the regression indicates that over 94% of a sampled firm's P/B is explained by its 2017 ROE. SAVE has among the lowest P/B and ROE of this grouping, and accordingly is undervalued.

- Estimated P/B = Estimated 2018 ROE (16.2%) x 10.034 + 0.4757 = 2.101
- Target Price = Estimated P/B (2.101) x 2018E BVPS (27.22) = $57.18

Discounting back to the present at a 11.5% cost of equity leads to a target price of $51.28 using this metric.

Figure 22: P/B vs NTM ROE



Source: Factset

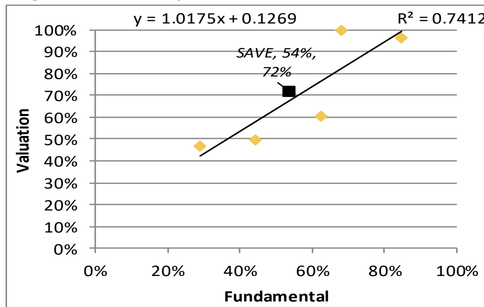
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile of the maximum before calculating the composite score. Based off the R-squared, the market values P/E metrics. Focus was given to earnings growth and NPM compared to P/E and P/S. The final regression shows an R-squared value of 0.74. One can note SAVE's placement on the line in figure 24, suggesting it is fairly priced based on its fundamentals relative to the industry.

Figure 23: Composite valuation, % of range

				Fundemental % of max			Valuation % of Max	
		Weighted		25%	25%	50%	50%	50%
Ticker	Name	Fund	Value	2019 Earnings Growth	1/(LTD/ Equity)	NPM	P/E	P/S
SAVE	SPIRIT AIRLINES INC	54%	72%	0.16	42%	79%	75%	68%
ALGT	ALLEGIANT TRAVEL CO	68%	100%	0.54	18%	100%	100%	100%
LUV	SOUTHWEST AIRLINES	85%	97%	1.00	100%	70%	95%	98%
JBLU	JETBLUE AIRWAYS CORP	63%	61%	0.22	91%	69%	66%	55%
UAL	UNITED CONTINENTAL HLDGS INC	29%	47%	0.03	24%	45%	62%	32%
AAL	AMERICAN AIRLINES GROUP INC	44%	50%	0.31	59%	44%	65%	35%

Source: IMCP

Figure 24: Composite relative valuation



Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.5% 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 2.33%.
- An average beta of the comp group was taken and then adjusted slightly upward. SAVE, is young and small, making it considerably riskier than the common airline. Under this consideration a beta of 1.2 is assumed.
- 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 11.5% (2.33 + 1.2 (10.0 – 2.33)).

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 ($1.62) and ($1.04), respectively. Discounting these cash flows, using the cost of equity calculated above, retracts ($2.39) per share in 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 11.5% cost of equity. I am doubtful the current levels of sales growth will be maintained as SAVE ages so, I have them trickling to a more reasonable rate of 2% (conservatively paced with GDP). I assume NOPAT as a percent of Sales will remain relatively constant, and thus, is subject to trickle parallel to sales. By 2024,I am expecting SAVE to continue utilizing debt to fund a portion of its growth. Decreasing capital expenditures and slowing of NWC growth along with additional leverage will turn FCFE positive.

Figure 25: FCFE and discounted FCFE, 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	($1.81)	($1.29)	$0.30	$1.34	$2.52	$4.35	$5.05
Discounted FCFE	($1.62)	($1.04)	$0.22	$0.87	$1.46	$2.26	$2.35

Added together, these discounted cash flows total $4.50.

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 $4.40 in 2018 to $6.32 in 2024.

Figure 26: NI and EPS estimates for 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
Net Income	$299,388	$320,357	$355,062	$385,430	$409,769	$422,062	$430,074
EPS	$4.40	$4.71	$5.22	$5.67	$6.02	$6.20	$6.32

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. The stock currently trades at about a 35% discount to the S&P 500; however, this is during a troubling industry environment. In 2024, growth will mature which should drive down the P/E; furthermore, by that time, the industry should stabilize. These two may offset so I believe a 15.5 P/E is reasonable.

Given the assumed terminal earnings per share of $6.32 and a price to earnings ratio of 15.5, a terminal value of $97.96 per share is calculated. Using the 11.5% cost of equity, this number is discounted back to a present value of $45.72.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $47.83 is calculated ((2.39) + 4.50 + 45.72). Given SAVE's current price of $45.02, this model indicates that the stock is fairly valued.

Scenario Analysis

Under its current expansion plans, Spirit Airlines is difficult to value with certainty. It is nearly impossible to accurately predict how consumer will react to the disruptive offering SAVE provides across markets it enters. Success of SAVE is rooted in efficiency over pricing. Under this premise, I value SAVE under a bull and bear case, based off scenarios that are affected by the successfulness of its business model.

Sales Growth – Strong growth assumes that SAVE gains market share. I assume prices have risen for the industry, (and 2% for SAVE) driving consumers to the cheaper offerings. Not only does this increase ticket revenue for SAVE but, assuming these converters are not cutting the amount of luggage they would normally bring, it should increase non-ticket revenue as a portion of total revenue. On the flip side, the economy has been improving. People tend to become more lax in spending habits when conditions are good (which is why fare prices are being driven up in the first place). A shift to more comfortable names with better service reputations could steal sales from SAVE.

The sales adjustments alone accounted for a $0.20 and ($0.10) in EPS respectively. Under the same DCF analysis outlined, such adjustments lead to valuation variations of $51.07 bull case, $50.14 expected, and $49.73 bear case.

Figure 27: 2018 Bull Case Sales Effect

	2017 [e] sales	2,700,989,683					
	Ticket rev		Non ticket rev				
2017%	0.53		0.53				
REVENUE	1,423,619,021		1,431,524,532				
Growth (%)	0.02						
adj. revenue	1,452,091,401						
[e] % of total	0.47						
	3,089,556,173		[E] Rasm	0.1042		2018 ASM	2018 Revenue
	29637164032					33803988273	3,523,930,985

Figure 28: 2018 Bear Case Sales Effect

	2017 [e] sales	2,700,989,683					
	Ticket rev		Non ticket rev				
2017%	0.53		0.5				
REVENUE	1,423,619,021		1,350,494,842				
Growth (%)	0.02						
adj. revenue	1,452,091,401						
[e] % of total	0.5						
	2,904,182,802		[E] Rasm	0.0980		2018 ASM	2018 Revenue
	29637164032					33803988273	3,312,495,125

Gross Margin – Margin is a measure of efficiency. My bull premise suggests success of SAVE's model across its markets. Thus, as consumers flock to the cheap flights three things will occur. One, (because SAVE is successful at ticket prices 53% of the current industry) as long as consumers are saving money on tickets they are intent on purchasing anyway, they may be apt to spend it on luxuries like prime seating or that extra luggage bag. Two, will enter new markets. Last, the increase in demand for SAVE flights will lead to higher utilization as current flights have 15% room to grow.

While additional passengers have the power to increase margin, losing passengers is not as harmful. Non-ticket revenues have been growing but are relatively consistent around 50% of total revenue for SAVE. (See figure 13) As conditions improve, it can grow to, say, 1:2 (ticket revenue): (non ticket revenue), but as conditions decline, it is SAVE's objective to maintain close to the 1:1. However, a less than 1:1 ratio is still to SAVE's advantage. This would occur if SAVE falls back onto normal airline tactics, or reliance on ticket prices, a move that while not favorable, could precede margin decreases.

I recommend attention to SAVE's actions namely toward its fare pricing. This metric is a key driver to the rest of SAVE's potential performance.

Business Risks

Although I have many reasons to be neutral about SAVE, there are areas where I could have missed something.

Fuel Prices:

Jet fuel is a primary cost associated with SAVE's daily operations. The price of fuel has been volatile over past years and may continue to be in the near future. Multiple factors influence the price at which SAVE is able to purchase fuel including: the strength of the dollar and foreign currencies, political disruptions and conflicts in oil producing countries, oil supply infrastructure, and environmental concerns. Furthermore, SAVE does not enter into hedging contracts and is fully exposed to the fluctuation of jet fuel prices.

Labor Issues:

Labor expenses are another primary cost of airlines' daily operations. High labor costs from labor agreements have in the past, and may in the future, affect profitability. All of SAVE's labor union represented workers are under agreement through 2020. Unionized employees reserve the right to strike, halting operations.

Negative Reputation:

In recent years, headlines have come to light about poor service provided by Spirit. With so many alternatives, negative experiences hold greater weight, and even more so during periods when the economy is strong.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Low

The airline industry is capital intense. A single 150 passenger plane costs between $70 and $130 million. Competition is high, leaving little room for increased traffic in the sky and at airports.

Threat of Substitutes - Moderate

The main advantage of airlines is the time benefit of air travel. This is being challenged by advancements in tunnel and subway development. A further decrease in users may come from electric/autonomous cars becoming mainstream, producing a cost and comfort benefit potential that could outweigh the time benefit of air travel.

Supplier Power – High

Airline suppliers are few in numbers. Primary competition resides between two sources: Boeing and Airbus. SAVE is especially weak in this facet as it confines itself to a single supplier.

Buyer Power – High

Because of the cost structure of airlines, consumers have a great degree of power. Flights are scheduled without even a guarantee of meeting the hurdle rate of paying for fuel. Consumer demand for air travel is primarily driven by price. Competition is stringent.

Intensity of Competition – Very High

The airline industry is fragmented. There are nine major (domestic) carriers competing against numerous regional, charter, and commuter airlines over the much of the same space. Primary traffic is leisurely, and price is the main driver of the industry. SAVE is the floor of the industry. Currently, fare prices revolve around SAVE's offerings. This is undermined by SAVE's size. SAVE only serves select markets.

Appendix 2: SWOT Analysis

Strengths	**Weakness**
Lowest cost structure	Time sensitive advantage
Market maker	Overly ambitious management
Low leverage	Lacking customer service
Opportunites	**Threats**
500+ unserved target markets	Rising costs
Increased 3rd party distribution	Substitutes
	Change in consumer preferance

Appendix 3: Income Statement

Income Statement							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Sales	1,654,385	1,931,580	2,141,463	2,321,956	2,700,990	3,380,097	3,832,536
Direct costs	1,372,093	1,576,317	1,632,341	1,878,295	2,247,223	2,852,802	3,265,321
Gross Margin	282,292	355,263	509,122	443,661	453,766	527,295	567,215
SG&A, R&D, and other	-	-	-	-	-	-	-
EBIT	282,292	355,263	509,122	443,661	453,766	527,295	567,215
Interest	(401)	(336)	6,704	23,673	45,159	53,580	60,321
EBT	282,693	355,599	502,418	419,988	408,607	473,715	506,894
Taxes	105,492	127,530	185,183	154,581	150,367	174,327	186,537
Income	177,201	228,069	317,235	265,407	258,240	299,388	320,357
Other	283	2,605	15	528	345	357	363
Net income	176,918	225,464	317,220	264,879	257,895	299,031	319,994
Basic Shares	72,592	72,738	72,207	70,343	68,027	68,027	68,027
EPS	2.44	3.10	4.39	3.77	3.79	4.40	4.70

Appendix 4: Balance Sheets

Balance Sheet							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Cash	530,631	632,784	803,632	700,900	761,751	852,433	871,124
Operating assets ex cash	118,444	98,357	222,708	174,790	224,182	290,688	344,928
Operating assets	649,075	731,141	1,026,340	875,690	985,934	1,143,121	1,216,052
Operating liabilities	190,731	202,272	233,874	221,585	234,986	294,068	333,431
NOWC	458,344	528,869	792,466	654,105	750,947	849,053	882,622
NOWC ex cash (NWC)	(72,287)	(103,915)	(11,166)	(46,795)	(10,804)	(3,380)	11,498
NFA	531,690	871,840	1,504,205	2,176,082	2,524,289	2,939,215	3,332,640
Invested capital	990,034	1,400,709	2,296,671	2,830,187	3,275,237	3,788,268	4,215,262
Marketable securities	-	-	-	100,155	-	-	-
Total assets	1,180,765	1,602,981	2,530,545	3,151,927	3,510,223	4,082,336	4,548,693
Short-term and long-term debt	-	146,248	646,330	981,713	1,168,713	1,382,713	1,489,713
Other liabilities	220,917	251,386	425,031	554,022	554,022	554,022	554,022
Equity	769,117	1,003,075	1,225,310	1,394,607	1,552,502	1,851,533	2,171,527
Total supplied capital	990,034	1,400,709	2,296,671	2,930,342	3,275,237	3,788,268	4,215,262
Total liabilities and equity	1,180,765	1,602,981	2,530,545	3,151,927	3,510,223	4,082,336	4,548,693

Appendix 5: Sales Forecast

Sales Forecast	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Sales (in thousands)	$ 1,654,385	$ 1,931,580	$ 2,141,463	$ 2,321,956	$ 2,700,990	$ 3,380,097	$ 3,832,536
Growth		16.8%	10.9%	8.4%	16.3%	25.1%	13.4%
TICKET REVENUE	$ 986,018	$ 1,144,972	$ 1,169,338	$ 1,200,621	$ 1,323,485	$ 1,622,447	$ 1,801,292
Growth		16.1%	2.1%	2.7%	10.2%	22.6%	11.0%
% of sales	59.6%	59.3%	54.6%	51.7%	49.0%	48.0%	47.0%
NON TICKET REVENUE	$ 668,367	$ 786,608	$ 972,125	$ 1,121,335	$ 1,377,505	$ 1,757,650	$ 2,031,244
Growth		17.7%	23.6%	15.3%	22.8%	27.6%	15.6%
% of sales	40.4%	40.7%	45.4%	48.3%	51.0%	52.0%	53.0%

Appendix 6: Ratios

Ratios							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Profitability							
Gross margin	17.1%	18.4%	23.8%	19.1%	16.8%	15.6%	14.8%
Operating (EBIT) margin	17.1%	18.4%	23.8%	19.1%	16.8%	15.6%	14.8%
Net profit margin	10.7%	11.7%	14.8%	11.4%	9.5%	8.8%	8.3%
Activity							
NFA (gross) turnover		2.75	1.80	1.26	1.15	1.24	1.22
Total asset turnover		1.39	1.04	0.82	0.81	0.89	0.89
Liquidity							
Op asset / op liab	3.40	3.61	4.39	3.95	4.20	3.89	3.65
NOWC Percent of sales		25.6%	30.9%	31.1%	26.0%	23.7%	22.6%
Solvency							
Debt to assets	0.0%	9.1%	25.5%	31.1%	33.3%	33.9%	32.8%
Debt to equity	0.0%	14.6%	52.7%	70.4%	75.3%	74.7%	68.6%
Other liab to assets	18.7%	15.7%	16.8%	17.6%	15.8%	13.6%	12.2%
Total debt to assets	18.7%	24.8%	42.3%	48.7%	49.1%	47.4%	44.9%
Total liabilities to assets	34.9%	37.4%	51.6%	55.8%	55.8%	54.6%	52.3%
Debt to EBIT	-	0.41	1.27	2.21	2.58	2.62	2.63
EBIT/interest	(703.97)	(1,057.33)	75.94	18.74	10.05	9.84	9.40
Debt to total net op capital	0.0%	10.4%	28.1%	34.7%	35.7%	36.5%	35.3%
ROIC							
NOPAT to sales	10.7%	11.8%	15.0%	12.1%	10.6%	9.9%	9.4%
Sales to NWC		(21.92)	(37.22)	(80.12)	(93.79)	(476.61)	944.26
Sales to NFA		2.75	1.80	1.26	1.15	1.24	1.22
Sales to IC ex cash		3.15	1.89	1.28	1.16	1.24	1.22
Total ROIC ex cash		37.1%	28.4%	15.5%	12.4%	12.2%	11.4%
NOPAT to sales	10.7%	11.8%	15.0%	12.1%	10.6%	9.9%	9.4%
Sales to NOWC		3.91	3.24	3.21	3.84	4.23	4.43
Sales to NFA		2.75	1.80	1.26	1.15	1.24	1.22
Sales to IC		1.62	1.16	0.91	0.88	0.96	0.96
Total ROIC		19.1%	17.4%	10.9%	9.4%	9.4%	9.0%
NOPAT to sales	10.7%	11.8%	15.0%	12.1%	10.6%	9.9%	9.4%
Sales to EOY NWC	(22.89)	(18.59)	(191.78)	(49.62)	(250.00)	(1,000.00)	333.33
Sales to EOY NFA	3.11	2.22	1.42	1.07	1.07	1.15	1.15
Sales to EOY IC ex cash	3.60	2.52	1.43	1.09	1.07	1.15	1.15
Total ROIC using EOY IC ex cash	38.5%	29.7%	21.5%	13.2%	11.4%	11.4%	10.7%
NOPAT to sales	10.7%	11.8%	15.0%	12.1%	10.6%	9.9%	9.4%
Sales to EOY NOWC	3.61	3.65	2.70	3.55	3.60	3.98	4.34
Sales to EOY NFA	3.11	2.22	1.42	1.07	1.07	1.15	1.15
Sales to EOY IC	1.67	1.38	0.93	0.82	0.82	0.89	0.91
Total ROIC using EOY IC	17.9%	16.3%	14.0%	9.9%	8.8%	8.8%	8.5%
ROE							
5-stage							
EBIT / sales		18.4%	23.8%	19.1%	16.8%	15.6%	14.8%
Sales / avg assets		1.39	1.04	0.82	0.81	0.89	0.89
EBT / EBIT		100.1%	98.7%	94.7%	90.0%	89.8%	89.4%
Net income /EBT		63.4%	63.1%	63.1%	63.1%	63.1%	63.1%
ROA		16.2%	15.3%	9.3%	7.7%	7.9%	7.4%
Avg assets / avg equity		1.57	1.85	2.17	2.26	2.23	2.15
ROE		25.4%	28.5%	20.2%	17.5%	17.6%	15.9%
3-stage							
Net income / sales		11.7%	14.8%	11.4%	9.5%	8.8%	8.3%
Sales / avg assets		1.39	1.04	0.82	0.81	0.89	0.89
ROA		16.2%	15.3%	9.3%	7.7%	7.9%	7.4%
Avg assets / avg equity		1.57	1.85	2.17	2.26	2.23	2.15
ROE		25.4%	28.5%	20.2%	17.5%	17.6%	15.9%
Payout Ratio		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retention Ratio		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sustainable Growth Rate		25.4%	28.5%	20.2%	17.5%	17.6%	15.9%

Appendix 7: Comps Sheet

		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
SAVE	SPIRIT AIRLINES INC	$44.89	$3,114	(2.9)	3.9	28.7	(15.9)	(18.7)	0.1	4.3	7.2%	-14.1%	9.5%	-25.4%	4.2%	21.3%	-0.21	77.3%		0.00%	
ALGT	ALLEGIANT TRAVEL CO	$166.60	$2,679	(1.4)	11.2	17.7	16.3	(5.3)	7.7	4.7	2.1%	2.0%	-0.2%	-35.2%	14.1%	38.8%	-0.08	178.5%	B+	1.81%	30.1%
LUV	SOUTHWEST AIRLINES	$66.07	$39,205	0.9	2.1	12.5	6.3	31.5	0.9	11.9	30.3%	8.5%	4.7%	-5.1%	26.1%	72.1%	1.14	32.5%	B+	0.73%	12.9%
JBLU	JETBLUE AIRWAYS CORP	$22.45	$7,199	0.7	5.4	11.2	(4.6)	5.2	0.5	3.5	-7.0%	7.9%	-4.3%	-21.2%	5.7%	51.0%	0.11	35.7%	B	0.00%	
DAL	DELTA AIR LINES INC	$59.72	$42,579	0.6	6.5	13.2	9.3	18.7	6.6	12.2	24.1%	-32.5%	525.9%*	-7.0%	11.9%	32.9%	0.87	47.5%	B	1.81%	20.6%
UAL	UNITED CONTINENTAL HLDGS INC	$76.58	$22,687	(1.2)	20.1	13.4	(4.0)	3.9	13.6	2.6	3.6%	-64.9%	26.1%	-26.8%	0.8%	28.1%	1.01	137.1%	B-	0.00%	0.0%
AAL	AMERICAN AIRLINES GROUP INC	$58.16	$27,830	0.3	13.9	11.7	8.0	24.4	11.8	3.9	29.3%	-57.4%	17.7%	-18.9%	8.0%		1.20	562.7%*		0.77%	10.2%
Average			$20,756	(0.4)	9.0	15.5	2.2	8.5	5.9	6.2	12.8%	-21.5%	8.9%	-19.9%	10.1%	40.7%	0.58	84.8%		0.73%	14.8%
Median			$22,687	0.3	6.5	13.2	6.3	5.2	6.6	4.3	7.2%	-14.1%	7.1%	-21.2%	8.0%	35.9%	0.87	62.4%		0.73%	12.9%
SPX	S&P 500 INDEX	$2,803		0.9	4.7	9.5	14.0	23.6	4.8			-0.1%	0.5%	10.3%	11.7%						

		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
SAVE	http://www.spirit.com	18.2%	1.98	17.2	10.6	14.0	14.3	13.3	14.6	14.0	12.3%	1.34	15.9%	12.9%	8.8			20.6%	16.6%	16.7%	$22.64
ALGT	http://www.allegiantair.com	44.8%	5.65	11.6	12.7	12.6	17.9	17.5	19.5	17.1	15.6%	1.97	18.4%	20.6%	8.7	6.8	9.1	12.8%	12.1%	11.8%	$29.47
LUV	http://www.southwest.com	25.3%	4.46	12.8	12.0	13.3	19.0	14.6	18.6	14.7	10.9%	1.92	18.5%	21.2%	6.7	11.1	8.7	5.1%	5.1%	5.5%	$14.83
JBLU	http://www.jetblue.com	17.2%	1.74	7.4	9.8	10.1	11.6	12.4	12.8	12.1	10.7%	1.09	15.9%	14.1%	6.6	5.5	5.6	8.4%	7.2%	8.0%	$12.91
DAL	http://www.delta.com	27.1%	3.04	39.0	59.6	9.2	12.1	9.8	12.1	10.8	9.6%	1.07	14.8%	18.4%	7.6	6.8	6.0	5.6%	3.8%	2.4%	$19.64
UAL	http://www.unitedcontinentalholdings.com	28.6%	2.53	3.4	8.4	8.4	12.1	11.6	12.1	12.0	7.0%	0.62	10.2%	11.7%	6.1	4.2	4.9	5.2%	4.4%	-0.2%	$30.28
AAL	http://www.aa.com	69.4%	7.07	4.7	8.7	8.2	14.8	11.4	12.6	11.6	6.8%	0.69	11.7%	10.6%	7.2	5.6		6.4%	4.0%	10.9%	$8.23
Average		32.9%	3.78	13.7	17.4	10.8	14.5	13.0	14.6	13.2	10.4%	1.24	15.0%	15.6%	7.4	6.7	6.9	9.2%	7.6%	7.9%	
Median		27.1%	3.04	11.6	10.6	10.1	14.3	12.4	12.8	12.1	10.7%	1.09	15.9%	14.1%	7.2	6.2	6.0	6.4%	5.1%	8.0%	
spx	S&P 500 INDEX			17.3	17.2	18.8			21.3	19.1											

Appendix 8: DCF Model

	First Stage		Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*25.1%*	*13.4%*	*10.0%*	*8.0%*	*6.0%*	*3.0%*	*2.0%*
NOPAT / S	*9.9%*	*9.4%*	*9.4%*	*9.4%*	*9.4%*	*9.4%*	*9.4%*
S / NWC	*(1,000.00)*	*333.33*	*333.33*	*333.33*	*333.33*	*333.33*	*333.33*
S / NFA (EOY)	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*
S / IC (EOY)	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*	*1.15*
ROIC (EOY)	*11.4%*	*10.7%*	*10.7%*	*10.7%*	*10.7%*	*10.7%*	*10.7%*
ROIC (BOY)		*12.2%*	*11.8%*	*11.6%*	*11.4%*	*11.0%*	*10.9%*
Share Growth		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$3,380,097	$3,832,536	$4,215,790	$4,553,053	$4,826,236	$4,971,023	$5,070,444
NOPAT	$333,251	$358,480	$394,328	$425,874	$451,427	$464,970	$474,269
Growth		*7.6%*	*10.0%*	*8.0%*	*6.0%*	*3.0%*	*2.0%*
- Change in NWC	7424	14878	1150	1012	820	434	298
NWC EOY	*-3380*	*11498*	*12647*	*13659*	*14479*	*14913*	*15211*
Growth NWC		*-440.2%*	*10.0%*	*8.0%*	*6.0%*	*3.0%*	*2.0%*
- Chg NFA	414925	393425	333264	293272	237551	125902	86453
NFA EOY	*2,939,215*	*3,332,640*	*3,665,904*	*3,959,177*	*4,196,727*	*4,322,629*	*4,409,082*
Growth NFA		*13.4%*	*10.0%*	*8.0%*	*6.0%*	*3.0%*	*2.0%*
Total inv in op cap	422349	408303	334414	294284	238370	126336	86751
Total net op cap	2935835	3344138	3678552	3972836	4211206	4337542	4424293
FCFF	($89,099)	($49,823)	$59,914	$131,590	$213,057	$338,633	$387,518
% of sales	*-2.6%*	*-1.3%*	*1.4%*	*2.9%*	*4.4%*	*6.8%*	*7.6%*
Growth		*-44.1%*	*-220.3%*	*119.6%*	*61.9%*	*58.9%*	*14.4%*
- Interest (1-tax rate)	33863	38123	39267	40445	41658	42908	44195
Growth		*12.6%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
+ Net new debt	214000	107000	44691	46032	47413	48835	50301
Debt	1382713	1489713	1534404	1580437	1627850	1676685	1726986
Debt / tot net op capital	*47.1%*	*44.5%*	*41.7%*	*39.8%*	*38.7%*	*38.7%*	*39.0%*
FCFE w/o debt	($122,961)	($87,946)	$20,648	$91,146	$171,399	$295,726	$343,323
% of sales	*-3.6%*	*-2.3%*	*0.5%*	*2.0%*	*3.6%*	*5.9%*	*6.8%*
Growth		*-28.5%*	*-123.5%*	*341.4%*	*88.0%*	*72.5%*	*16.1%*
/ No Shares	68027.0	68027.0	68,027.0	68,027.0	68,027.0	68,027.0	68,027.0
FCFE	($1.81)	($1.29)	$0.30	$1.34	$2.52	$4.35	$5.05
Growth		*-28.5%*	*123.5%*	*341.4%*	*88.0%*	*72.5%*	*16.1%*
* Discount factor	0.90	0.80	0.72	0.65	0.58	0.52	0.47
Discounted FCFE	($1.62)	($1.04)	$0.22	$0.87	$1.46	$2.26	$2.35

Third Stage							
Terminal value P/E							
Net income	$299,031	$319,994	$355,062	$385,430	$409,769	$422,062	$430,074
% of sales	*8.8%*	*8.3%*	*8.4%*	*8.5%*	*8.5%*	*8.5%*	*8.5%*
EPS	$4.40	$4.70	$5.22	$5.67	$6.02	$6.20	$6.32
Growth		*7.0%*	*11.0%*	*8.6%*	*6.3%*	*3.0%*	*1.9%*
Terminal P/E							15.50
* Terminal EPS							$6.32
Terminal value							$97.99
* Discount factor							0.47
Discounted terminal value							$45.64

Summary			
First stage	($2.66)	Present value of first 2 year cash flow	
Second stage	$7.15	Present value of year 3-7 cash flow	
Third stage	$45.64	Present value of terminal value P/E	
Value (P/E)	**$50.14**	= value at beg of fiscal yr	2018

Home Improvement Retail

The Home Depot, Inc

Recommendation	NEUTRAL
Target (today's value)	$187
Current Price	$185.27
52-week range	$140.90 - $207.60

Share Data	
Ticker:	HD
Market Cap. (Billion):	$216.35
Inside Ownership	0.4%
Inst. Ownership	72.4%
Beta	0.93
Dividend Yield	1.92%
Payout Ratio	46.6%
Cons. Long-Term Growth Rate	14.8%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$885	$946	$101	$107	$113
Gr %	6.4%	6.9%	6.4%	6.8%	5.5%
Cons	-	-	$6.3	$106	$107
EPS					
Year	$5.49	$6.47	$7.39	$8.24	$8.93
Gr %	18.1%	19.4%	14.2%	11.5%	8.4%
Cons	$5.36	$6.33	$7.38	$9.32	$10.12

Ratio	'15	'16	'17E	'18E	'19E
ROE (%)	89.6%	149%	213%	302%	564%
Industry	36.4	50.6%	51.2%	87.1%	219%
NPM (%)	7.9%	8.4%	8.7%	8.8%	8.8%
Industry	4.4%	4.4%	4.4%	4.5%	5%
A. T/O	2.23	2.29	2.23	2.33	2.34
ROA (%)	17.1%	18.7	18.7%	20.3%	21%
Industry	9.5%	9.8%	9.9%	10.3%	12%
D/A	50.1%	54.9%	56.8%	63.6%	66.2

Valuation	'16	'17E	'18E	'19E
P/E	23.5	22.2	19.9	18.3
Industry	22	21	19.9	18.4
P/S	1.84	2.19	2.02	1.93
P/B	20.8	86	255.3	116.9
P/CF	17	18.9	16.2	15.1
EV/EBIT	14.2	13.5	15	14.6

Performance	Stock	Industry
1 Month	-5.7%	-1.1%
3 Month	12%	32.3%
YTD	-2.2%	12.7%
52-week	59.3%	2.4%
3-year	65.6	-24.5%

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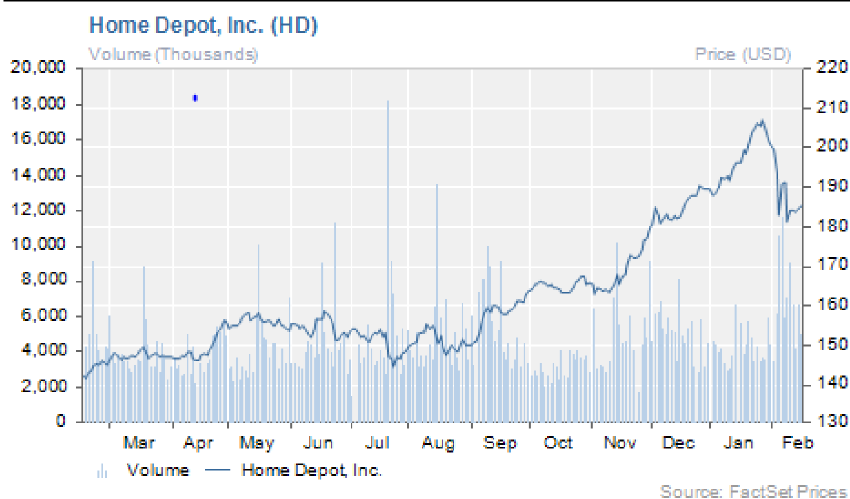


Summary: I recommend a neutral rating with a target of $187. Although HD has had outstanding growth and operating efficiency, we are close to the end of the housing cycle. Because of this, I expect sales and earnings growth to mature. The stock is fairly valued based on relative and DCF analysis.

Key Drivers:

- Housing Market: The housing market has recovered tremendously since the downturn in 2006. Main housing indicators such as private residential Investments, housing starts, and new home Sales have proven demand in the home improvement retail space.

- Competitors: Home Depot is the strongest retailer within the home improvement environment. Home Depot has higher sales growth, margins, and ROE relative to Lowes. Future investment initiatives should help Home Depot continue to outgrow Lowes.

- Hurricanes: Hurricanes Harvey and Irma is an important short-term positive driver for company sales. After hurricane Sandy, Home Depot's growth jumped ~1.2% over three quarters. I expect hurricanes Harvey and Sandy to cause more damage, creating even more sales growth for Home Depot

Valuation: DCF analysis indicates Home Depot is overvalued. Relative multiple valuation suggests the stock is fairly valued. A combination of the approaches implies that Home Depot is fairly valued, as the stock's value is about $187 and the shares trade at $185

Risks: Threats to the business include information technology failure, commodity prices, relationships with suppliers, uncertainty in the housing market and economic conditions, and currency fluctuations.

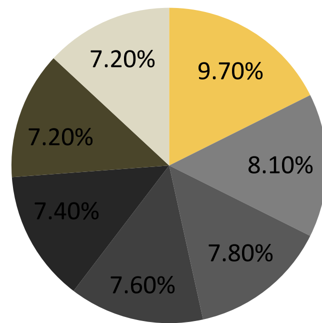
Company Overview

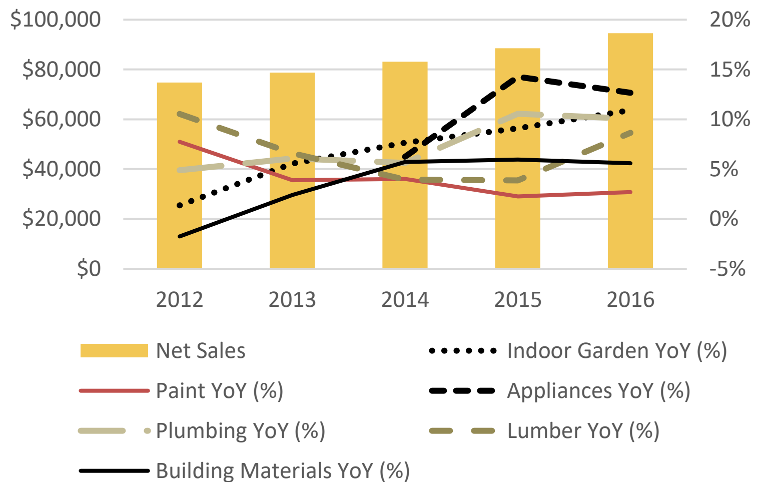
Home Depot, Inc (HD) is the leading home improvement retailer in the world with $94 billion net sales during fiscal year of 2016. Home Depot sells a variety of building materials, home improvement products, lawn and garden products, and a wide selection of installation services such as roofing, kitchen cabinets, vinyl siding, and more. Home Depot operates 2,278 stores in all 50 states and overseas including Guam, US Virgin Islands, Canada, and Mexico. Stores average 104,000 square feet, with an additional space of 24,000 feet occupied by the garden department. HD also has a variety of other departments ranging from lumber, flooring, paint, plumbing, and more.

Home Depot has three customer groups: “Do-It-Yourself (DIY),” “Do-It-For-Me (DIFM),” and Pro Customers. “Do-It-Yourself” typically serves homeowners who perform their own installations and renovations whereas “Do-It-For-Me (DIFM)” serves home owners that purchase building materials and hire third party individuals to perform their remodeling and installations. Lastly, the Pro customer base consists of professional remodelers, contractors, tradesmen, and institutional customers. Home Depot’s pro customers have added outstanding growth to sales, proven by growth in transactions and ticket growth. Currently, pro customers make up 40% of sales, while the DIY and DIFM customers make up 60%.

Figures 1 and 2: Revenue Sources for HD, year-end 2016 (left) and Sales (in millions & Segment Growth YoY%

Indoor Garden
Paint
Appliances
Kitchen and Bath
Plumbing
Lumber
Building Materials





Source: Company reports

Business/Industry Drivers

There are many factors that affect the success of Home Depot, but the most important drivers include:

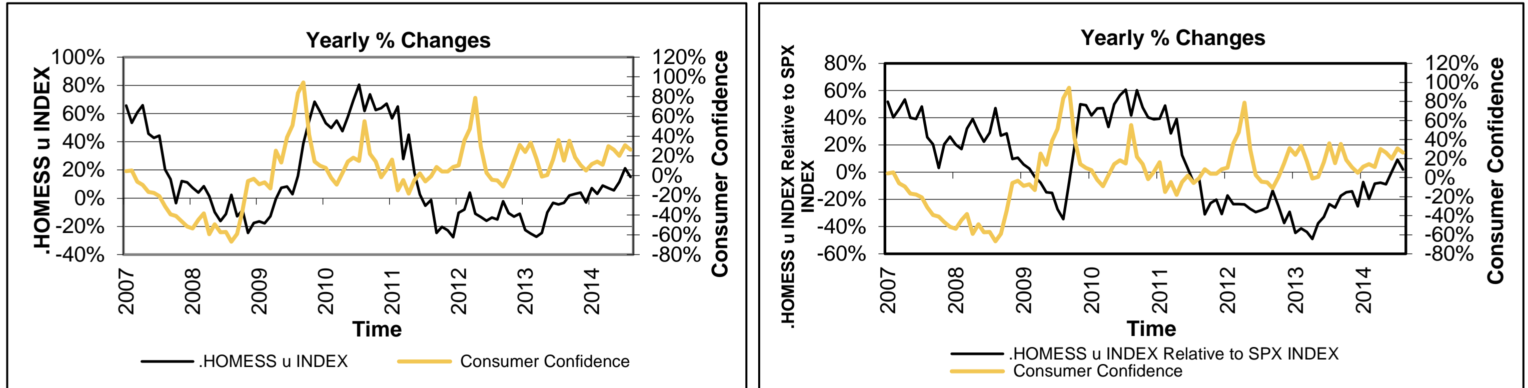
1) Housing Market Recovery
2) Competitor Analysis
3) Hurricanes Harvey & Irma

Housing Market Recovery

The US home improvement industry is primarily driven by two big retailers, Home Depot and Lowes. Home Depot has the largest market share, with FY 2016 record sales of $94B and $62B for Lowes. The industry is very cyclical; it is driven primarily by consumer confidence and consumer spending which has benefited the housing market. Since the market downturn in 2008, we have seen

tremendous growth in the home improvement industry led by employment, wage growth, and a low interest rate economy. A low unemployment rate of 4.1%, has led more consumers to remodel and buy new homes.

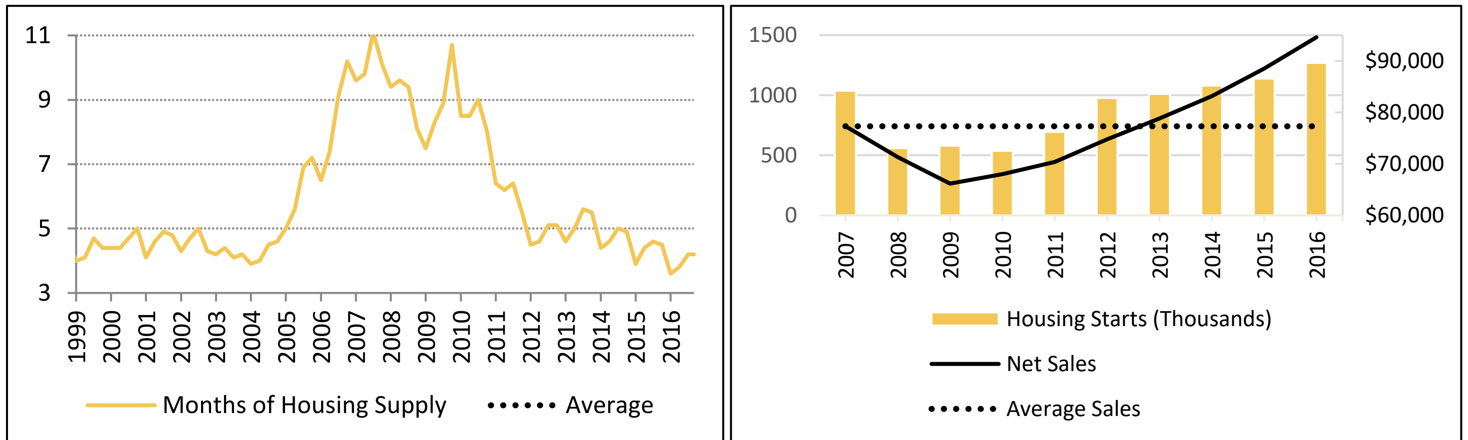
Figures 3 and 4: Home Builders Composite Vs Consumer Confidence (left), Relative to S&P 500



Source: Bloomberg, Company Reports

Demand for homes has remained strong throughout the recovery, as we have recently seen 4.3 months of supply in the market, still down from all time averages of 6 months. Months in supply has clearly driven home price appreciation, boosting the S&P Case-Shiller US National Home Price index to, slightly higher than 2006 which was 194. Modest growth in housing starts has been the biggest driver for sales in demand for HD; however, housing starts has still grown at an average rate of 4.0% since the low levels of 2008. We will experience temporary slowdown due to hurricane Harvey and Irma, which have pushed back new construction.

Figures 5 and 6: Months of Housing Supply (left), Housing Starts Vs Net Sales



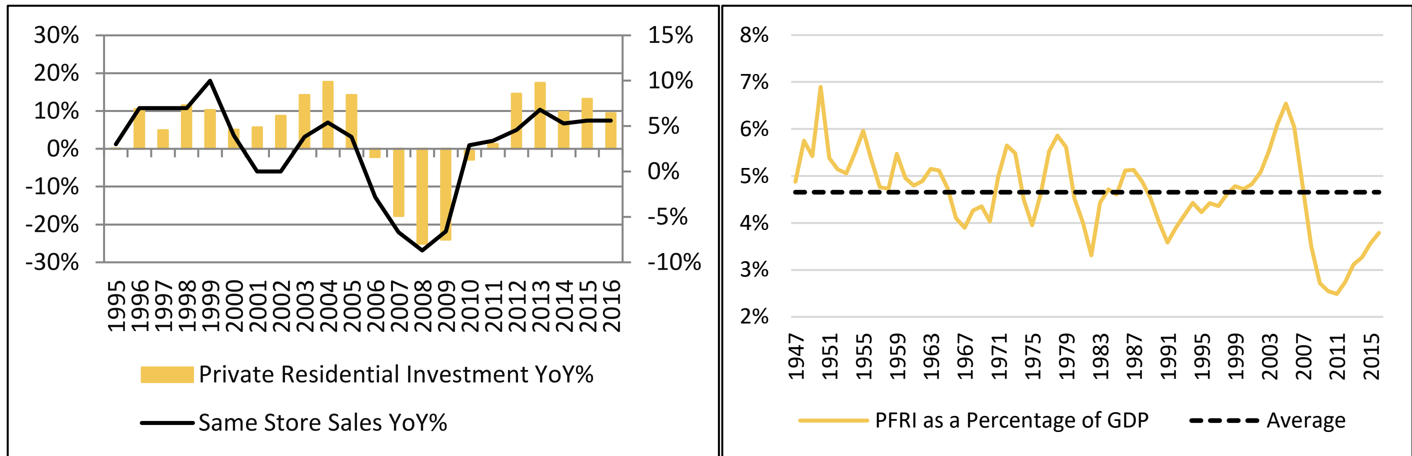
Source: Bloomberg, Company Reports

The private residential investment index (PRI) has yet to fully recover to historical norms.

The private residential investment (PRI) index is also positively correlated with Home Depot's same store sales. Recently, PRI has decelerated as it reported disappointing growth in the 2Q17. Even though PRI has grown slowly, we have yet to recover to historical averages of 4.65% of GDP. Therefore, we have much growth ahead. Housing affordability is still high and consumer confidence is not expected to fall.

The affordability index is based on a mix of median home prices, median income and mortgage rates. Affordability has yet become problematic, as we are still living in a low interest and inflation economy and home prices are only just back to the price peak. It is currently standing at 151% (6/30/2017), down 27% from higher levels in 2013.

Figures 7 and 8: PRI % Growth Vs Same Store Sales % Growth, PRI as % of GDP

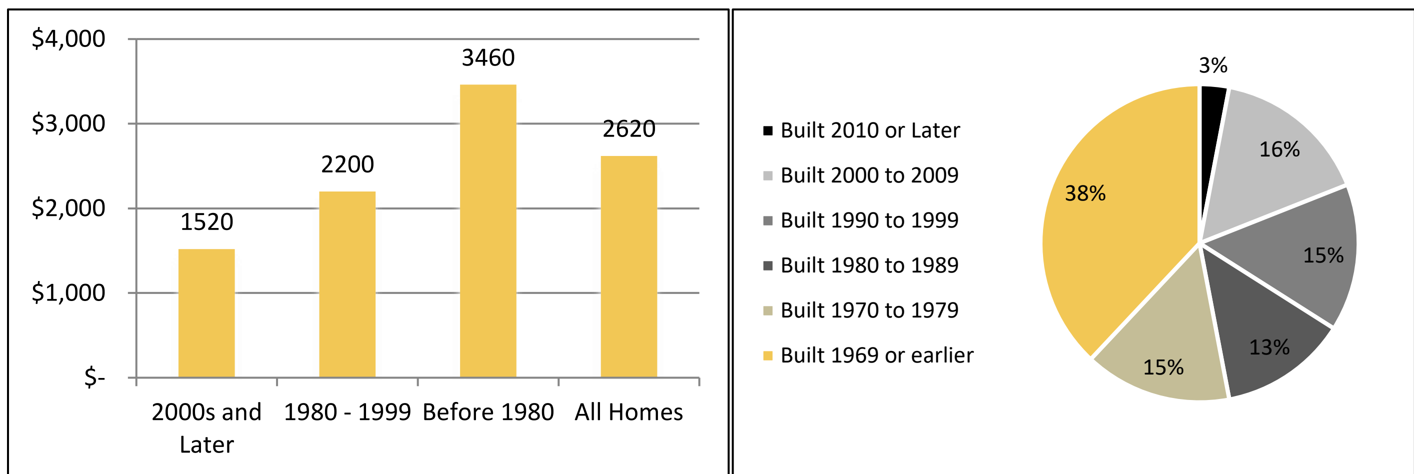


Source: Bloomberg, Company Reports

66% of the housing stock in the U.S is older than 30 years compared to only 60% in 2006.

The aging housing stock is another main driver of the housing market and home improvement retailers. Low levels of construction in the past has increased the average age of homes over time. Housing stock aging trends have led to spending on remodeling, as older homes require additional renovations. Currently, 66% of the housing stock in the U.S is older than 30 years, up from 60% in 2006.

Figures 9 and 10: Average Expenditure per year built, (left) and Housing Stock %



Source: NAHB, JCHS Harvard

Home Depot has ~30% of the U.S home improvement market share.

Competitor Analysis

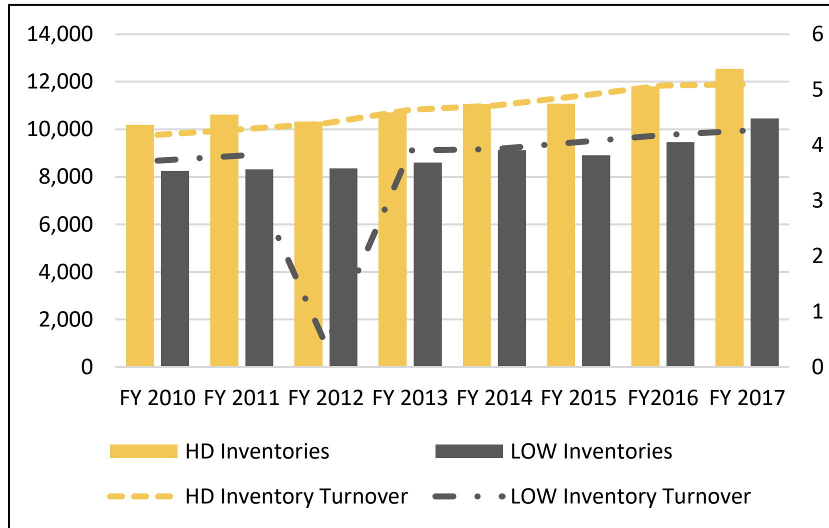
The home improvement retail industry is highly competitive, especially between Home Depot and Lowes. Currently, Home Depot has ~30% of the U.S home-improvement market ($336B) vs ~20% for Lowes. With a healthier housing market recovery, more foot traffic has set the tone in both stores. Home Depot, obsessed with customer satisfaction, has prioritized its "three-legged stool" of customer experience, product authority, and productivity over the years. The firm's investments in its supply chain have helped maximize the retail experience, especially with Pro-customers.

Project Sync is one of HD's most recent initiatives that went live to 90% of its U.S stores during the fiscal year 2016. Through Project Sync, Home Depot has been able to centralize distribution through

Rapid Deployment Centers (RDCs), which deliver products to the consumer quicker and more efficiently. With this initiative, Home Depot is able to satisfy deliveries in two days, while also improving customer satisfaction. In contrast, Lowes has been struggling in the past year to increase inventory turnover. Despite Lowe's robust customer satisfaction, the firm is still struggling to keep up with Home Depot's supply chain success.

Home Depot's implementation of Project Sync, has improved its inventory turnover.

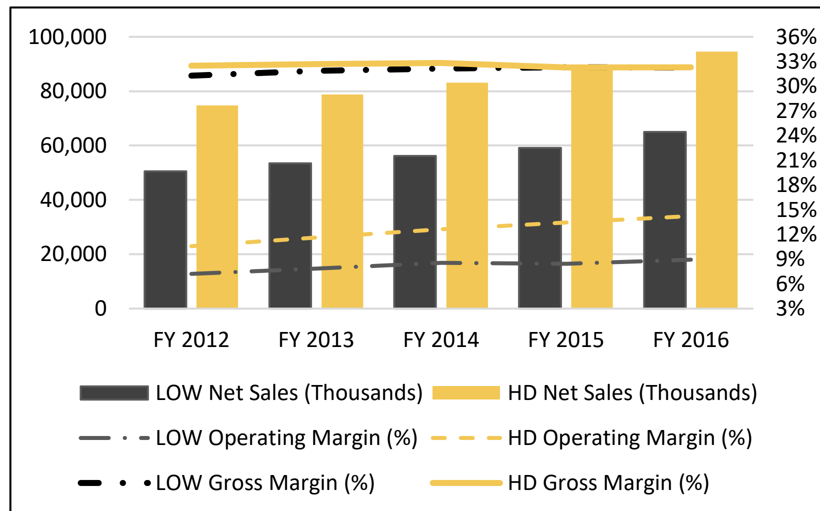
Figures 11 and 12: Inventory (left) Vs Inventory Turnover Days (right)



Source: Company Reports

In addition, improvement of margins is another key metric that differentiates both competitors. Home Depot and Lowes have similar 2017 gross margins of 32.3% for HD and 32.3% for Lowes; on the other hand, Home Depot's gross margins are still down 0.5% from all time high gross margins of 32.8% in 2015. Even though HD has struggled to increase gross margins, it should experience more improvement in the future with the implementation of Pro Sync, margins could also rise as the firm has been able to increase same store sales by improving the "interconnected retail experience" and focusing on its omnichannel strategies.

Figures 13 and 14: Gross Margin (left), Vs Net Sales



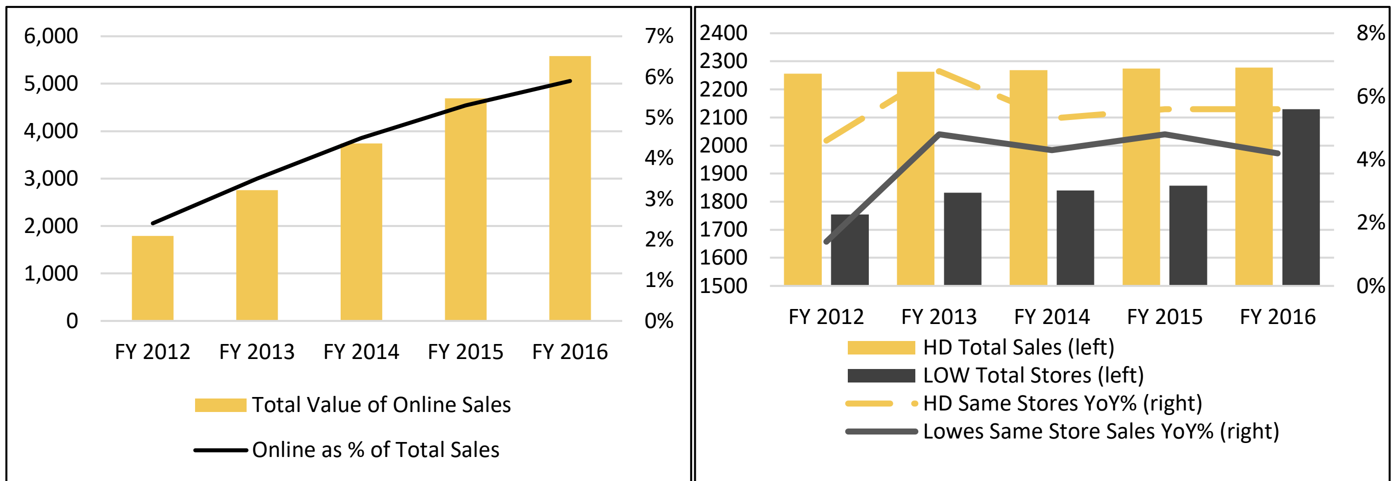
Source: Company Reports

Currently, Home Depot offers FIRST phones to employees to help customers navigate through different products online, check out in the isles during peak traffic hours, and check for inventory status. During fiscal year 2017, Home Depot also added new features to its online website to

improve search capabilities and speed the checkout experience. Furthermore, HD has recognized that customers are looking for fast delivery services. Home Depot launched its Customer Order Management (COM) platform in all of U.S stores in 2016, which has provided footing for other services such as “Buy Online,” “Deliver from Stores,” “Buy online Ship to Store (BOSS),” and “Buy online, Return in Store (BORIS).” 40% of online sales are actually picked up in the store.

In addition, COM includes a dynamic ETA feature for customer online orders, which provides a more accurate delivery date and time for customers. As previously mentioned, Home Depot’s investment in supply chain on Project Sync improves delivery time to two days for online and in store orders. As a result, Home Depot has experienced tremendous growth in online sales, which has boosted same store sales relative to Lowes.

Figures 15 and 16: HD Online Sales (left) HD & LOW Stores and Same Store Sales



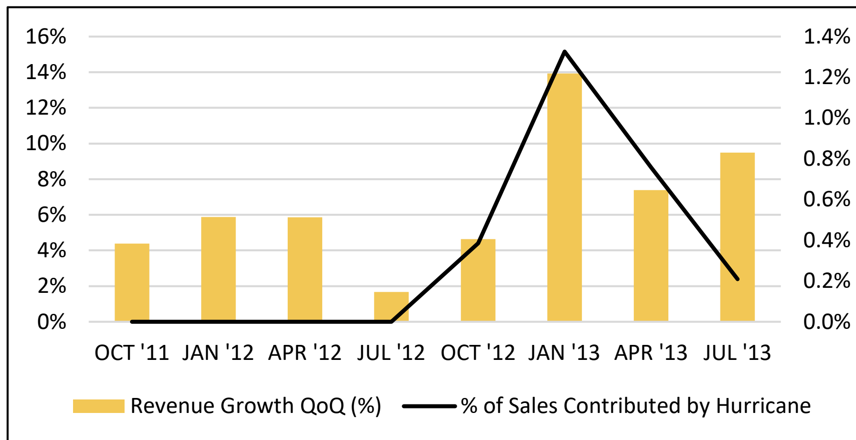
Source: Company Reports

Home Depot has not opened any new stores in the U.S since 2014. On the contrary, Lowes boosted sales in Canada when it acquired Rona during 2016. Lowes’ store count rose to 299 stores in Canada, up from 44 stores in 2016. This acquisition occurred during a year when same stores sales growth deteriorated.

<u>Hurricane Harvey & Irma</u>

Hurricanes Harvey and Irma are an important short-term driver. Both hurricanes devastated many homes which will require repair. Home Depot and Lowes should see a boost in demand for home improvement products and materials over the next three quarters. The major states impacted by the hurricanes are Florida, Texas, Puerto Rico, Louisiana, Georgia, and Alabama. Currently, Home Depot has 178 stores in Texas, 152 in Florida, 9 in Puerto Rico, 27 in Louisiana, 90 in Georgia, and 28 in Alabama, accounting for 25% of total U.S Stores.

Figure 17: HD Quarterly Sales & Impact of Hurricane



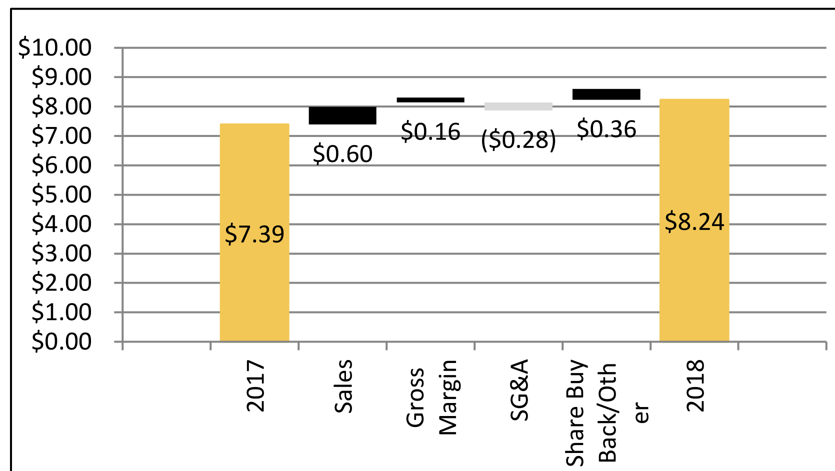
Source: Company Reports

New York and New Jersey suffered $62B in damage from hurricane Sandy. Home Depot had $434m in sales over 3 quarters following the hurricane, or ~70 basis points of the total damage. Hurricane Harvey and Irma are estimated to have $175B in damage, which will influence 3Q18-1Q19. Therefore, Home Depot should expect hurricanes Harvey and Irma to add ~$875m over the next three quarters, or about 1% of sales.

Financial Analysis

HD has done exceptionally well capitalizing on the housing market recovery. I anticipate the housing recovery will continue throughout FY 2018, which will add $0.60 to earnings through growth in sales. In 3Q17, HD announced its focus on driving increased store productivity by investing in store associates and improving their omnichannel strategies. I anticipate HD will continue improving efficiency by investing in supply chain capabilities, therefore, adding $0.16 EPS through gross margin gains. However, I expect SG&A to rise as a percent of sales and cost $0.28 in EPS as the firm spends more to improve customer service. In addition, HD has had history of delivering shareholder value by raising dividends and buying back shares. I expect HD to continue this trend in FY 2018, adding $0.36 to EPS.

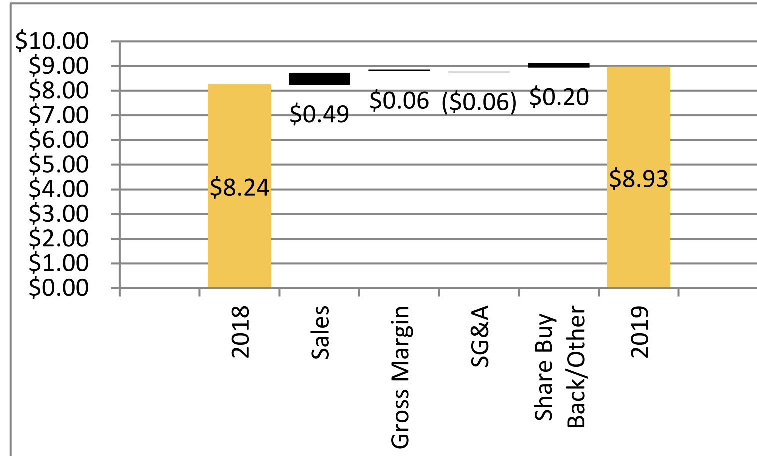
Figure 18: Quantification of 2018 EPS drivers



Source: IMCP

In FY 2019, I anticipate the housing market recovery to begin to mature but sales growth will still add $0.49 to EPS. As HD continues to adapt to the evolving retail environment and deliver capabilities through supply chain enhancement, I anticipate higher gross margins to add $0.06; however, this change will be an offset to investments in associates and stores that will rise SG&A as a percentage of sales and cost $0.06 to EPS. Finally, I expect HD to continue to buy back shares at a lower rate, adding $0.18 to EPS.

Figure 19: Quantification of 2019 EPS drivers



Source: Company Reports, IMCP

I am slightly more optimistic than consensus estimates for FY 2018 and FY 2019. I anticipate seeing continued growth in 2019 and 2020 as the housing market continues to recover.

Figure 20: EPS Consensus vs Estimates

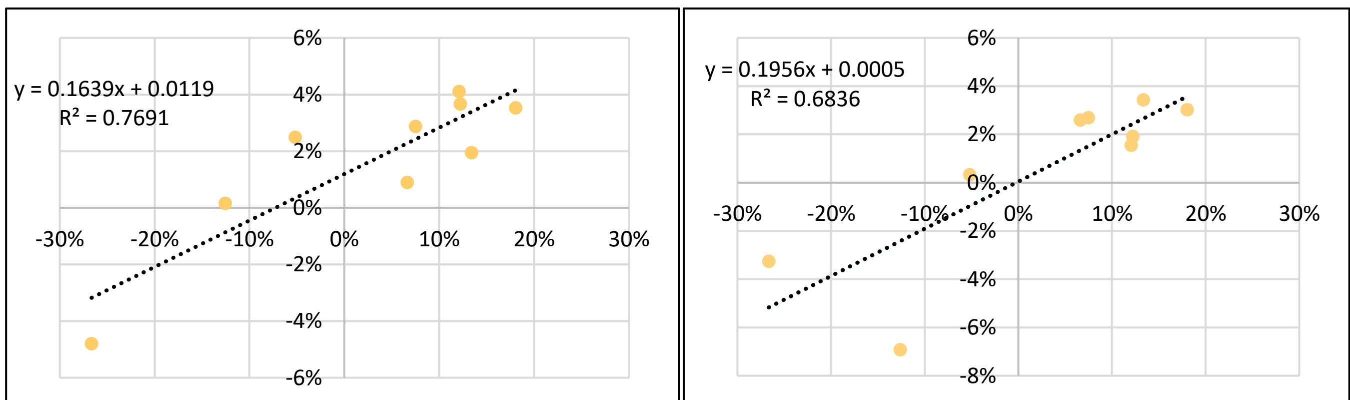
	2013	2014	2015	2016	2017E	2018E	2019E
Revenues	$78,812	$83,176	$88,519	$94,595	$100,661	$107,478	$113,386
Revenues - Consensus					$100,664	$106,940	$111,664
YoY Growth		5.54%	6.42%	6.86%	6.41%	6.77%	5.50%
EPS	$3.78	$4.74	$5.49	$6.47	$7.39	$8.25	$8.93
EPS - Consensus					$7.38	$8.24	$8.81
YoY Growth		25.49%	15.74%	17.96%	14.14%	11.64%	8.24%

Source: Company Reports, IMCP

Revenues

Home Depot's sales have grown each year since the downturn in 2008. PRI expenditure has had a high correlation with transaction growth, average ticket price, and sales growth. In 2019, I expect customer transactions per store to grow 3.3% from 2018, due to improvements in product availability and a continued improvement in the overall housing market.

Figure 21: PRI x-axis, Transaction Growth y-axis (left), PRI x-axis, Average Ticket Growth y-axis



Source: Bloomberg, Company Reports, IMCP

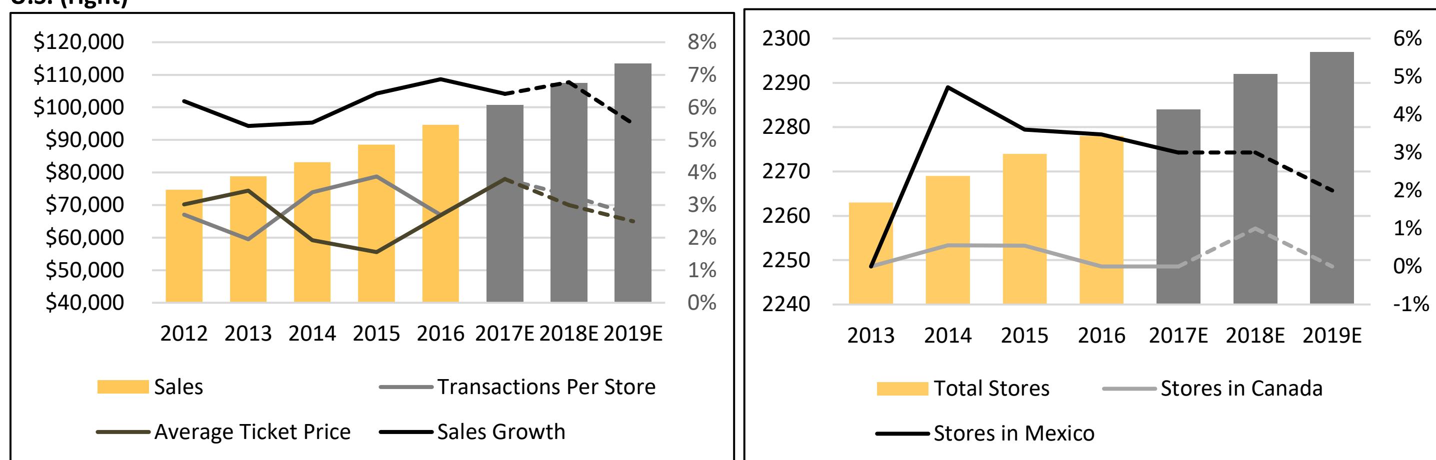
Figure 22: EPS Consensus vs Estimates

Data	Correlation
PRI Vs Transactions	0.88
PRI Vs Averge Ticket Price	0.83
PRI Vs Sales	0.93

Source: IMCP

In addition, I anticipate the average ticket price to grow to 3% in FY 2019, and 2% FY 2020, boosted by housing starts and new home sales. I expect the reconstruction of homes due to hurricanes to continue through FY 2019, adding to the 3% growth in the average ticket price. Lastly, I do not expect store growth in the U.S, a continuation of past trends. However, management expects to capture additional market share in Mexico as GDP improves, therefore, I forecasted store growth of 3% in FY 2019 and 2% in FY 2020 for a total of 2297 stores. Consequently, I expect sales to grow 6.77% from FY 2019 and 5.50% FY 2020.

Figures 23 & 24: Sales Vs Transaction per store, Average ticket price, & Sales growth (left), Total stores Vs. Stores outside the U.S. (right)



Source: Company Reports, IMCP

Figure 25: Sales Assumptions

	2012	2013	2014	2015	2016	2017E	2018E	2019E
U.S Stores	1977	1977	1977	1977	1977	1979	1981	1983
Growth	0.15%	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	0.10%
Canada	180	180	181	182	182	182	184	184
Growth	0.00%	0.00%	0.56%	0.55%	0.00%	0.00%	1.00%	0.00%
Mexico	106	106	111	115	119	123	127	130
Growth	16.48%	0.00%	4.72%	3.60%	3.48%	3.00%	3.00%	2.00%
Total Stores	2263	2263	2269	2274	2278	2284	2292	2297
Transactions/Store	0.60	0.61	0.64	0.66	0.68	0.70	0.73	0.75
Growth	2.71%	1.95%	3.39%	3.88%	2.70%	3.80%	3.30%	2.70%
Average Ticket	54.89	56.78	57.87	58.77	60.35	62.64	64.52	66.14
Growth	3.02%	3.44%	1.92%	1.56%	2.69%	3.80%	3.00%	2.50%
Sales	$74,754.00	$78,812.00	$83,176.00	$88,519.00	$94,595.00	$100,661.10	$107,477.54	$113,385.73
Growth YoY%	6.19%	5.43%	5.54%	6.42%	6.86%	6.41%	6.77%	5.50%

Source: Company Reports, IMCP

<u>Operating Margins</u>

Most recently, management's plan for the future has become focused on three strategic priorities: enhancing the customer experience, positioning for the future, and creating value. Management expects to focus on positioning itself as a "One Home Depot," with aggressive investments in stores, associates, interconnected customer experience, and supply chain capabilities. With this plan, I

project stronger top line growth throughout the next couple years at a cost of less flow-through. Management expects to add pressure in their competitive space while adding value and tapping in further into the Pro-business market share. Management expects EBIT margins to stay relatively flat ranging from 14.5%-15%, however, management has had a history of conservative projections. Therefore, I project EBIT margins to grow to the high part of the range, to 14.8% in FY 2019 and 2020.

Figure 26: Sales Growth and Margins Assumptions

Income Statement	2013	2014	2015	2016	2017E	2018E	2019E
Sales Growth		5.54%	6.42%	6.86%	6.41%	6.77%	5.50%
Gross margin	34.75%	34.81%	34.19%	34.16%	34.40%	34.40%	34.50%
SG&A and other % of sales	23.12%	22.22%	20.89%	19.97%	19.12%	19.60%	19.70%
EBIT margin	11.63%	12.59%	13.30%	14.19%	14.60%	14.80%	14.80%
Tax rate	36.40%	36.40%	36.40%	36.30%	36.40%	35.00%	35.00%

Source: Company Reports, IMCP

One of HD's core values is the enhancement of customer service. HD also has the reputation of rewarding their associates with competitive wages and benefits for customer service excellence. I project HD to continue this trend, which will bring down SG&A margin to 19.60% in FY 2019 and 19.70% in 2020. In addition, HD projects to add more value in their Pro-business by expanding their portfolio of brands. Brands like Ryobi, Milwaukee Tool, and Husky have remained some of the favorite brands for contractors. I expect the expansion of brands to add selling expenses, thus affecting SG&A margins in the first year, and then improving again the following years. Lastly, I expect the tax rate to decrease to 35% FY 2019 & 2020.

Return on Equity

Home Depot has had a high ROE relative to peers in the last few years, and I anticipate ROE to continue to grow in the next two years. DuPont analysis reveals that ROE is driven primarily by average assets/ average equity, as the firm is becoming highly levered. However, even excluding leverage, it has had high returns. HD has done exceptionally well on their investment in assets, proven by a remarkable return on investment capital (ROIC). The firm appears to operate well with leverage, and I expect EBT/EBIT to decrease over time, as the company increases debt to buy back shares. Therefore, I project ROE to continue to grow in the next couple of years to 302% in FY 2019 and 564.4% by FY 2020.

Figure 27 & 28: ROIC & ROE

ROIC	2014	2015	2016	2017E	2018E	2019E
NOPAT to sales	8.0%	8.5%	9.0%	9.5%	9.6%	9.6%
Sales to IC ex cash	3.00	3.21	3.43	3.60	3.69	3.69
Total ROIC ex cash	24.0%	27.1%	31.0%	34.4%	35.5%	35.5%

ROE	2014	2015	2016	2017E	2018E	2019E
EBIT / sales	12.59%	13.30%	14.19%	15.00%	14.80%	14.80%
Sales / avg assets	2.07	2.16	2.23	2.29	2.33	2.34
EBT / EBIT	95.29%	93.60%	93.03%	91.72%	91.67%	91.51%
Net income /EBT	63.60%	63.60%	63.70%	63.18%	65.00%	65.00%
ROA	15.8%	17.1%	18.7%	19.9%	20.6%	20.6%
Avg assets / avg ec	3.68	5.24	7.98	10.67	14.69	27.43
ROE	58.09%	89.64%	149.44%	212.56%	301.95%	564.39%

Source: Company Reports, IMCP

Free Cash Flow

HD's free cash flow has remained steady over the last several years. In fiscal year 2016, the firm took out $20B in debt to finance share buy backs as management wanted to take advantage of the low interest rate environment. In addition, I expect HD to use the rest of the proceeds to increase dividends and invest in the business. In fiscal year 2019 and 2020, I project management to take on $2B of debt each year to finance its $15B share buyback and increase dividends. As mentioned previously, management expects to make significant investments in logistics, omnichannel, employees, and physical stores. Thus, I projected net fixed assets to increase in 2019 and 2020, however, operating capital is growing slower than NOPAT. In fiscal year 2019, I project free cash flow to equity to increase to $10.3B, up from $8.9b in FY 2018. 2020 FCFE is expected to be about the same as 2019.

Figure 29: Free cash flows 2013-2019E

	2013	2014	2015	2016	2017E	2018E	2019E
NOPAT	5,830	6,659	7,488	8,553	9,604	10,339	10,908
Growth		14.22%	12.45%	14.23%	12.28%	7.66%	5.50%
NOWC	4,563	4,361	4,387	4,843	5,036	5,268	5,354
Net fixed assets	25,239	24,644	25,489	25,242	26,264	27,210	28,705
Total net operating capital	$29,802.00	$29,005.00	$29,876.00	$30,085.00	$31,300.00	$ 32,477.59	$ 34,059.72
Growth		-2.67%	3.00%	0.70%	4.04%	3.76%	4.87%
- Change in NOWC		(202)	26	456	193	232	86
- Change in NFA		(595)	845	(247)	1,022	946	1,496
FCFF		7,456	6,617	8,344	8,389	9,162	9,326
Growth			-11.25%	26.11%	0.53%	9.22%	1.79%
- After-tax interest expense		314	479	596	795	862	926
+ Net new short-term and long-term debt		295	22,776	1,810	1,086	2,000	2,000
FCFE		7,437	28,914	9,558	8,680	10,300	10,400
Growth			288.79%	-66.94%	-9.19%	18.67%	0.97%

Source: Company Reports, IMCP

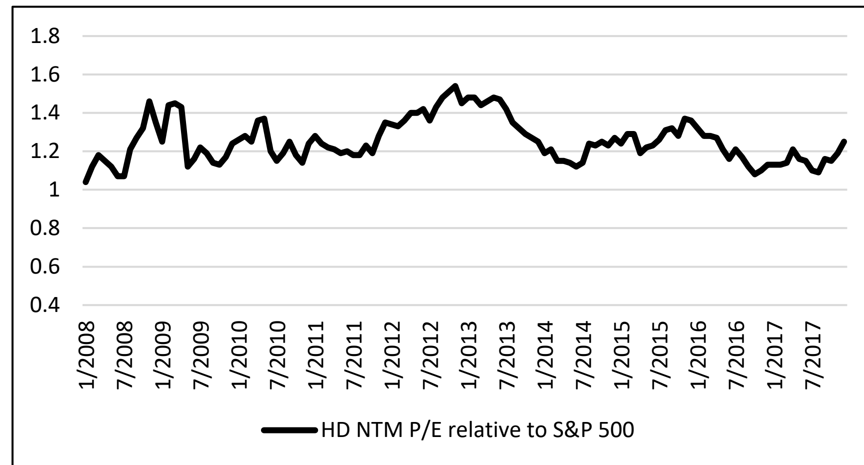
Valuation

HD was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is expensive relative to the market and is worth $174. Relative valuation shows HD to be slightly overvalued based on its fundamentals versus those of its peers in the industry. Price to sales valuation yielded a target of $193, but the valuation does not incorporate the tax benefits. A detailed DCF analysis values HD at $174. Finally, I modeled a bull-bear case scenario yielding prices of $186 and $114.

Historical P/E

HD is currently trading below its five-year historical mean of 1.27 relative to the S&P 500. This could be due to Home Depot's growth slowing later in the cycle. HD's current NTM P/E is at 23.60 compared to its five-year average of 19.27. While I expect NTM P/E to return to historical averages, I do not think is likely to be the case in the short-term.

Figure 30: HD NTM P/E Relative to S&P 500



Source: FactSet, IMCP

Assuming Home Depot maintains a NTM P/E of 23.60 at the end of FY 2018, it should trade at $178 by the end of year.

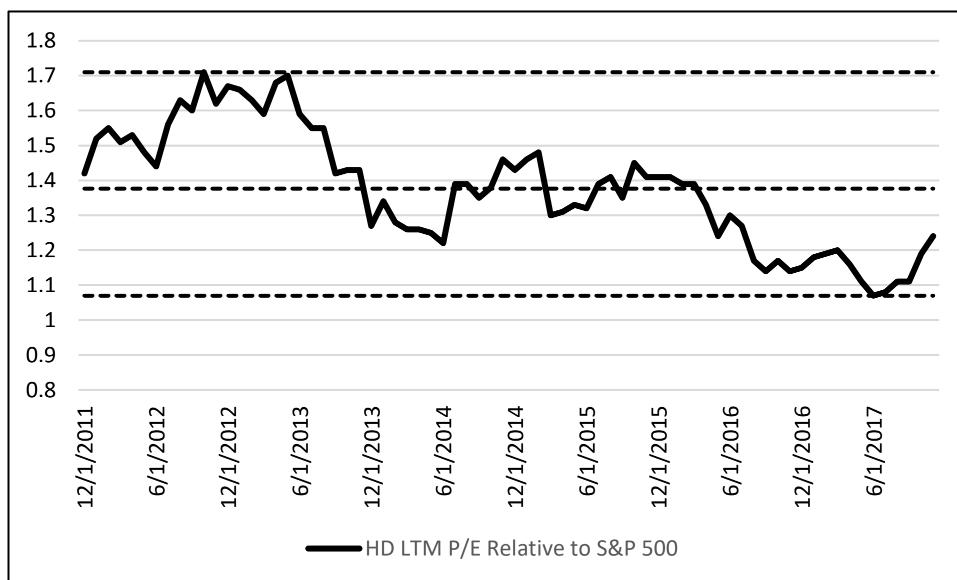
- Price = P/E x EPS = 23.60 x $8.93 = $210.75

Discounting $210.75 back to today at a 11.47% cost of equity (explained in Discounted Cash Flow section) yields a price of $183.74. Given HD's potential for continued sales growth and profitability, this seems to be an unusual low valuation.

HD's relative LTM P/E has had a historical average of 1.37. The S&P 500 has performed very well the last few years, especially in 2017. Because of this, Home Depot's relative P/E has fallen. The housing cycle is far from maturing so I expect the relative P/E to rise back to 1.40.

- Price = (S&P's P/E x LTM HD's Relative P/E) x LTM EPS = (22.5 x 1.40) x $6.47 = $203.81

Figure 31: HD LTM P/E Relative to S&P 500 – Max, Min, & Mean



Source: FactSet, IMCP

Relative Valuation

Home Depot is currently trading at a P/E higher than most of its peers, with a P/E NTM of 23.6 compared to an average of 21.7. Investors are willing to temporarily pay a premium for HD, since it has robust growth prospects and the firm has lower threats from e-commerce giants like Amazon. Similarly, HD's P/B and P/S are significantly higher than those of its peers – HD's P/B is trading at 92.47 compared to an average of 24.63, and P/S is trading at 2.34 compared to an average of 1.08. HD deserves higher P/B and P/S valuations, as ROE has been very strong and its net margins have been expanding. ROE is propped up by very low equity due to share buy backs and dividend payouts.

Figure 32: HD Comparable Companies

Comp Sheet (1/22/2018)

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
HD	HOME DEPOT INC	$201.33	$235,103	1.5	8.3	23.3	31.3	48.7	6.2	13.4	18.4%	18.0%	14.1%	11.5%	8.5%	21.2%	1.02	954.2%	A+	1.88%	46.6%
LOW	LOWE'S COMPANIES INC	$104.95	$87,104	3.5	18.1	29.1	36.6	46.6	12.9	15.8	27.6%	21.3%	13.3%	24.6%	12.6%	19.7%	1.08	271.2%	A	1.64%	36.5%
WMT	WAL-MART STORES INC	$104.59	$309,835	0.3	5.9	21.1	37.9	54.7	5.9	5.9	27.1%	-5.9%	2.8%	10.4%	7.8%	-0.6%	0.12	53.7%	A	2.07%	54.0%
TGT	TARGET CORP	$78.10	$42,453	0.3	21.9	29.2	44.4	19.4	19.7	2.8	6.1%	7.4%	-7.1%	6.8%	3.8%	1.9%	0.31	101.3%	B+	3.74%	51.3%
COST	COSTCO WHOLESALE CORP	$192.29	$84,436	0.4	2.1	21.3	27.1	17.5	3.3	9.9	10.5%	10.5%	14.1%	10.9%	7.7%	8.8%	0.98	58.5%	A	1.05%	31.0%
Average			$151,786	1.2	11.2	24.8	35.5	37.4	9.6	9.6	17.9%	10.2%	7.4%	12.8%	8.0%	10.2%	0.70	287.8%		2.07%	43.9%
Median			$87,104	0.4	8.3	23.3	36.6	46.6	6.2	9.9	18.4%	10.5%	13.3%	10.9%	7.8%	8.8%	0.98	101.3%		1.88%	46.6%
SPX	S&P 500 INDEX	$2,810		0.4	4.8	9.7	13.6	24.1	5.1			0.5%	7.5%	18.2%	10.5%						

Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
HD	http://www.homedepot.com	339.4%	92.47	24.1	20.7	25.6	27.9	23.6	24.4	22.5	8.6%	2.34	14.5%	29.5%	14.2	22.2	16.8	5.6%	6.6%	6.1%	$2.18
LOW	http://www.lowes.com	65.4%	15.19	23.1	17.8	20.6	25.2	19.7	18.6	16.6	5.5%	1.27	9.8%	15.3%	13.7	15.9	13.5	2.5%	3.7%	5.3%	$6.91
WMT	http://corporate.walmart.com	17.3%	4.08	13.4	16.0	22.2	27.8	21.9	21.3	19.8	2.6%	0.61	4.5%	11.2%	11.3	12.5	9.1	2.7%	2.5%	1.7%	$25.66
TGT	http://www.target.com	23.1%	3.81	15.3	14.2	13.8	16.4	15.5	15.4	14.9	3.6%	0.59	5.7%	11.4%	10.8	7.9	8.7	4.4%	1.2%	-0.1%	$20.48
COST	http://www.costco.com	26.6%	7.62	30.3	27.2	27.7	30.6	27.7	25.8	24.0	2.0%	0.57	3.2%	15.7%	17.4	17.9	17.4	5.9%	6.9%	5.4%	$25.22
Average		94.4%	24.63	21.2	19.2	22.0	25.6	21.7	21.1	19.6	4.4%	1.08	7.5%	16.6%	13.5	15.3	13.1	4.2%	4.2%	3.7%	
Median		26.6%	7.62	23.1	17.8	22.2	27.8	21.9	21.3	19.8	3.6%	0.61	5.7%	15.3%	13.7	15.9	13.5	4.4%	3.7%	5.3%	
spx	S&P 500 INDEX			17.2	18.7	20.8			18.5	16.8											

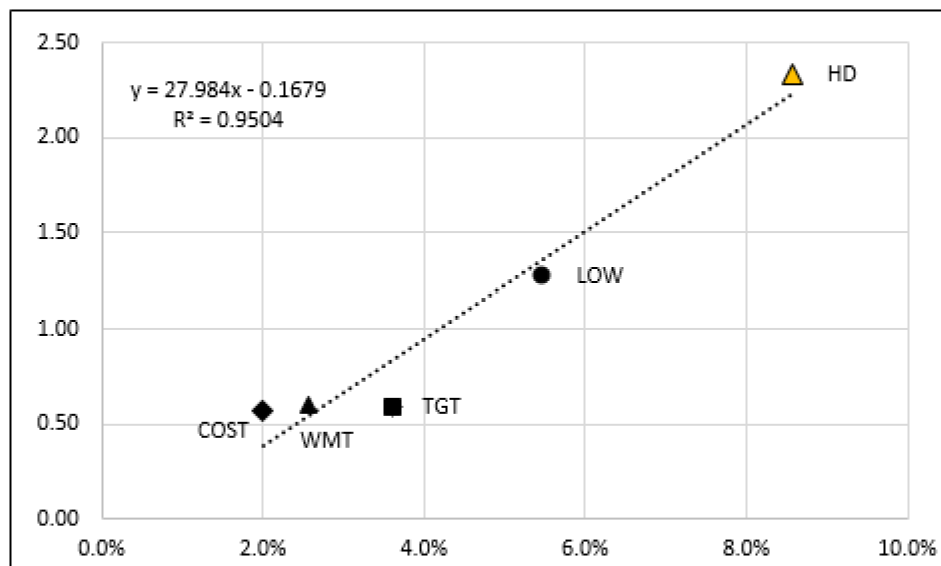
Source: FactSet, IMCP

A more thorough analysis of P/S and NPM is illustrated in figure 32. R-squared of the regression concludes that 95% of the firm's P/S is explained by its NPM. I project the NPM to improve in FY 2018, resulting in the following valuation:

- Appropriate P/S = Estimated 2018 NPM (8.82%)*27.984 - .1679 = 2.30
- Target Price = Estimated P/S (2.30) x 2018 SPS ($93.40) = $214.81

Discounting back to the present at an 11.47% cost of equity leads to a target price of $193.

Figure 33: HD Comparable Companies



Source: FactSet, IMCP

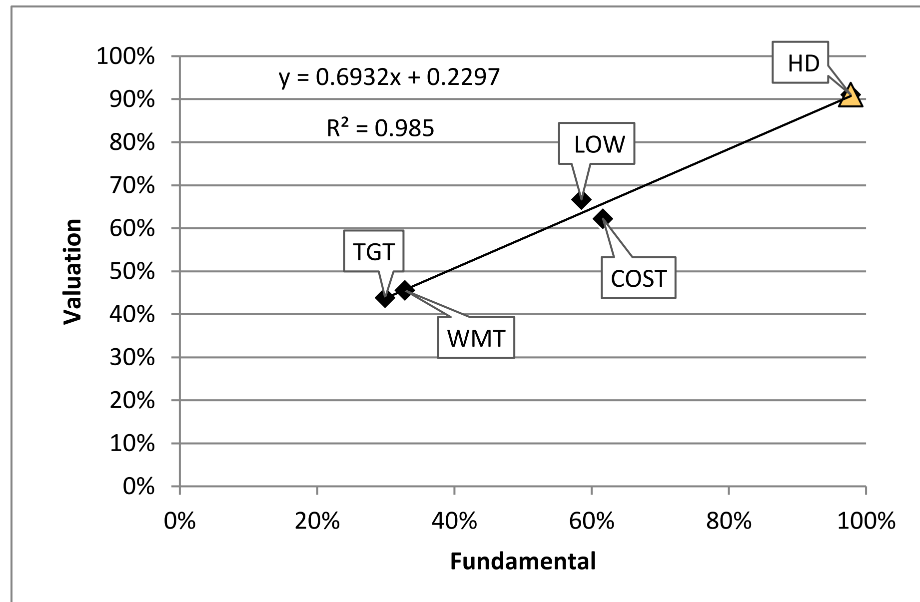
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. An equal weighting of 2017 NPM and STM sales growth was compared to an equal weight composite of P/S, EV/EBIT. The regression line had an R-squared of 0.98. Based on the results, one can see that HD is on the line, so it is fairly valued based on its fundamentals.

Figure 34: HD Comparable Companies

							Fundamentals		Valuation	
							50.0%	50.0%	50.0%	50.0%
		Rank		Target	Weighted		2017			EV/
Ticker	Name	Diff	Diff	Value	Fund	Value	NPM	STM	P/S	EBIT
HD	HOME DEPOT INC	2	0%	91%	98%	91%	100%	96%	100%	82%
LOW	LOWE'S COMPANIES INC	1	-3%	64%	59%	67%	64%	53%	54%	79%
WMT	WAL-MART STORES INC	4	0%	46%	33%	46%	30%	36%	26%	65%
TGT	TARGET CORP	3	0%	44%	30%	44%	42%	18%	25%	62%
COST	COSTCO WHOLESALE CORP	5	3%	66%	62%	62%	23%	100%	24%	100%
Target (for single y-value factor and single or multiple x-factors)										
						Value	8.6%	6.6%	2.34	14.2
						Max	9%	7%	2.34	17.4

Source: IMCP

Figure 35: HD Comparable Companies



Source: IMCP

<u>Discounted Cash Flow Analysis</u>

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.47% 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 2.65%.

- A beta of 1.2 was utilized since the company has higher risk than the market. HD is a very cyclical company, risk is primarily weighted on the health of the housing market. Because of this, HD deserves a higher beta 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 11.47% (2.65 + 1.2 (10.0 – 2.65)).

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 $8.59 and $9.25, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $15.15 per share. Thus, stage one of this discounted cash flow analysis contributes $15.15 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 11.47% cost of equity. I assume 5% sales growth in 2020 to remain flat through 2024. The ratio of sales to NWC will moderate from 39.40 to 37.00 in 2024, but NFA turnover will remain flat from 2020 through 2024 as a result of investments in technology and supply chain. Also, the NOPAT margin is expected to drop in 2025 from 9.6% to 9.3% in 2020. Finally, after-tax interest is expected to remain at a constant rate of 5% per year as the result of modest increases in borrowing to fund share buy backs and dividends.

Figure 36 & 37: FCFE Estimates, EPS Estimates

	2018	2019	2020	2021	2022	2023	2024
FCFE	$8.59	$9.25	$9.44	$10.09	$10.78	$11.51	$12.30
*Discount factor	0.90	0.80	0.72	0.65	0.58	0.52	0.47
Discounted FCFE	$7.70	$7.45	$6.81	$6.53	$6.26	$6.00	$5.75

Stage Three – Net income for the years 2018 – 2024 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $8.59 in 2019 to $12.47 in 2021.

	2018	2019	2020	2021	2022	2023	2024
EPS Estimates	$8.24	$8.93	$9.55	$10.21	$10.91	$11.67	$12.47

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. By 2024, the firm will be mature. It has historically traded at a premium P/E because of its high growth, so I would expect the P/E to decline. However, it is dominant and a well-run firm. Thus, a market P/E is reasonable. By 2025, the S&P 500 may trade at a normal 15-17 P/E, but the market will be slow to price this in so I assume a 21 P/E. As a result, I derive to a price of $174.

Scenario Analysis

Home Depot is difficult to value with accuracy because it is nearly impossible to predict the end of the housing cycle. However, Home Depot has been one of the most impressive retailers in the last five years. HD's robust margin growth and operating efficiency has challenged other competitors in the retail space, especially Lowes. Home Depot has relied primarily on increasing footprint in the stores, which has awarded them with impressive same store sales trends. In addition, HD has worked vigorously to capture the market share in the professional space. The firm has prioritized its "product authority" with the goal to attract professional customers to its stores, thus HD's acquisition of Interline Brands was a huge success. As mentioned previously, Home Depot has been

able to operate more efficiently, improving gross and EBIT margins. As a result, Home Depot is on track to higher expansions in investment capital, beating down its competition. Assuming Home Depot continues to improve its efficiency, I valued Home Depot in two different scenarios:

Bull Case: Assuming HD continues to acquire additional market share in the professional and remodeling space while generating higher same store sales, I projected sales to grow at 6.3% perpetually. In addition, I project NOPAT margin to stabilize at 9.3% by 2025 from 9.6% in 2020. Lastly, I project share growth to drop 3% every year from 2020 through 2025. As a result, a new price target of $186 was set for HD.

Bear Case: Assuming the housing market deteriorates dramatically and the firm fails to capture additional market share, I projected sales to plummet to 3% continuously through 2025. As sales drop, I project operating expenses to remain relatively flat, diminishing NOPAT down to 7% by 2025. As a result, there would be lower free cash flow and lower potential for share buy backs, forecasting no activity for share buy backs. As a result, I derive to a price target of $114.

Business Risk

Information technology

Failure of technology and security could negatively affect Home Depot. Technology failure could prevent the business to track sales, merchandise ordering, inventory replenishment, and order fulfillment. Lack of security could result in security breaches, cyber-attacks, and computer viruses, which can negatively affect customers' identity as, discovered in FY 2014.

Commodity prices

Volatile changes in commodity prices such as lumber and other raw materials can negatively impact sales and profit margins.

Relationship with suppliers

Home Depot relies heavily on its suppliers on implementing product authority and differentiation. HD works to maintain great alliances with its suppliers, as good relationships lead to sales and higher profit margins. If Home Depot fails to maintain such relationship, the firm will fail to execute product differentiation while generating sales and profits.

Uncertainty in the housing market and economic conditions

The stability of the housing market, including residential construction and home improvement markets, could adversely affect demand for Home Depot products. Negative changes in GDP could affect consumers' confidence and financial condition, causing them to not purchase home improvement products. Other economic conditions that can negatively affect the business are accessibility to mortgages, healthcare costs, interest rate fluctuations, and consumer credit.

Currency fluctuations

Currency fluctuations can negatively impact international sales and gross margins. Nearly 10% of Home Depot's sales are derived from Canada and Mexico. Volatile changes in the U.S Dollar could potentially affect Mexican Peso and Canadian Dollar, resulting on less demand for Home Depot products.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Low

Barriers to entry in the home improvement industry are very extensive due to the everyday pricing that Home Depot offers. Building a mass portfolio of brands that are offered at Home Depot and Lowes would be very difficult to replicate, not to mention the brand recognition and exceptional customer service that both Lowes and Home Depot have had over the years.

Threats of Substitutes – Medium to Low

Home Depot and Lowes both offer competitive low pricing which eliminates other small merchant competitors. In addition, consumer-shopping behavior such ordering online and delivering in store have been very popular which can eliminate other small competitors from the equation.

Supplier Power – Low

Suppliers are not a threat in the home improvement industry, as most consumers prefer a one stop shop experience rather than purchasing product independently from suppliers. Suppliers may prefer strong relationship with retail stores than to sell merchandise on their own.

Buyer Power – High

Home Depot and Lowes have high buyer power over their suppliers, as there are many companies that sell building materials and tools. Usually, retailers set deals that benefit their margins but negatively affect suppliers' margins.

Intensity of Competition – Very Low

There are few stores that offer a full-service shopping experience like Home Depot and Lowes. These two giants have driven the competitive space; however, Home Depot has managed to surpass Lowes in almost every metric since the economic downturn

Appendix 2: SWOT Analysis

Strengths	Weaknesses
High Operating Margins High brand recognition High ROIC	Dependence on U.S Market Imitable Business Format Increasing Debt Levels
Opportunities	**Threats**
Business expansion in Mexico Supply chain Improvements Online Presence	Currency Headwinds Deteriorating Housing Market New Competitor - Amazon

Appendix 3: Income Statement

Income Statement (in millions)							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Sales	$78,812	$83,176	$88,519	$94,595	$100,661	$107,478	$113,386
Direct costs	51,422	54,222	58,254	62,282	66,311	70,505	74,268
Gross Margin	27,390	28,954	30,265	32,313	34,350	36,972	39,118
SG&A, R&D, and other	18,224	18,485	18,491	18,886	19,250	21,066	22,337
EBIT	9,166	10,469	11,774	13,427	15,100	15,907	16,781
Interest	699	493	753	936	1,250	1,326	1,424
EBT	8,467	9,976	11,021	12,491	13,850	14,581	15,357
Taxes	3,082	3,631	4,012	4,534	5,100	5,103	5,375
Net income	5,385	6,345	7,009	7,957	8,750	9,478	9,982
Basic Shares	1,425.0	1,338.0	1,277.0	1,229.0	1,184.0	1,150.7	1,117.3
Earnings Per Share	$3.78	$4.74	$5.49	$6.47	$7.39	$8.24	$8.93
Dividends Per Share	$1.57	$1.89	$2.37	$2.77	$3.29	$3.91	$4.21

Appendix 4: Balance Sheet

Balance Sheet (in millions)							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Cash	1,929	1,433	2,216	2,538	3,000	2,581	2,520
Operating assets ex cash	13,350	13,869	14,268	15,186	15,636	17,519	18,482
Operating assets	15,279	15,302	16,484	17,724	18,636	20,100	21,002
Operating liabilities	10,716	10,941	12,097	12,881	13,600	14,832	15,647
NOWC	4,563	4,361	4,387	4,843	5,036	5,268	5,354
NOWC ex cash (NWC)	2,634	2,928	2,171	2,305	2,036	2,687	2,835
NFA	25,239	24,644	25,489	25,242	26,264	27,210	28,705
Invested capital	*$29,802*	*$29,005*	*$29,876*	*$30,085*	*$31,300*	*$32,478*	*$34,060*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$40,518*	*$39,946*	*$41,973*	*$42,966*	*$44,900*	*$47,309*	*$49,707*
Short-term and long-term deb	$33	$328	$23,104	$24,914	$26,000	$28,000	$30,000
Other liabilities	17,247	19,355	456	838	1,400	2,100	2,900
Equity	12,522	9,322	6,316	4,333	3,900	2,378	1,160
Total supplied capital	*$29,802*	*$29,005*	*$29,876*	*$30,085*	*$31,300*	*$32,478*	*$34,060*
Total liabilities and equity	*$40,518*	*$39,946*	*$41,973*	*$42,966*	*$44,900*	*$47,309*	*$49,707*

Appendix 5: Sales Forecast

	2012	2013	2014	2015	2016	2017E	2018E	2019E
U.S Stores	1977	1977	1977	1977	1977	1979	1981	1983
Growth	0.15%	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	0.10%
Canada	180	180	181	182	182	182	184	184
Growth	0.00%	0.00%	0.56%	0.55%	0.00%	0.00%	1.00%	0.00%
Mexico	106	106	111	115	119	123	127	130
Growth	16.48%	0.00%	4.72%	3.60%	3.48%	3.00%	3.00%	2.00%
Total Stores	2263	2263	2269	2274	2278	2284	2292	2297
Transactions/Store	0.60	0.61	0.64	0.66	0.68	0.70	0.73	0.75
Growth	2.71%	1.95%	3.39%	3.88%	2.70%	3.80%	3.30%	2.70%
Average Ticket	54.89	56.78	57.87	58.77	60.35	62.64	64.52	66.14
Growth	3.02%	3.44%	1.92%	1.56%	2.69%	3.80%	3.00%	2.50%
Sales	$ 74,754.00	$ 78,812.00	$ 83,176.00	$ 88,519.00	$ 94,595.00	$ 100,661.10	$ 107,477.54	$113,385.73
Growth YoY%	6.19%	5.43%	5.54%	6.42%	6.86%	6.41%	6.77%	5.50%

Appendix 6: Ratios

Ratios							
Items	**2013**	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**
Profitability							
Gross margin	34.8%	34.8%	34.2%	34.2%	34.1%	34.4%	34.5%
Operating (EBIT) margin	11.6%	12.6%	13.3%	14.2%	15.0%	14.8%	14.8%
Net profit margin	6.8%	7.6%	7.9%	8.4%	8.7%	8.8%	8.8%
Activity							
NFA (gross) turnover		3.33	3.53	3.73	3.91	4.02	4.06
Total asset turnover		2.07	2.16	2.23	2.29	2.33	2.34
Liquidity							
Op asset / op liab	1.43	1.40	1.36	1.38	1.37	1.36	1.34
NOWC Percent of sales		5.4%	4.9%	4.9%	4.9%	4.8%	4.7%
Solvency							
Debt to assets	0.1%	0.8%	55.0%	58.0%	57.9%	59.2%	60.4%
Debt to equity	0.3%	3.5%	365.8%	575.0%	666.7%	1177.7%	2586.8%
Other liab to assets	42.6%	48.5%	1.1%	2.0%	3.1%	4.4%	5.8%
Total debt to assets	42.6%	49.3%	56.1%	59.9%	61.0%	63.6%	66.2%
Total liabilities to assets	69.1%	76.7%	85.0%	89.9%	91.3%	95.0%	97.7%
Debt to EBIT	0.00	0.03	1.96	1.86	1.72	1.76	1.79
EBIT/interest	13.11	21.24	15.64	14.35	12.08	12.00	11.78
Debt to total net op capital	0.1%	1.1%	77.3%	82.8%	83.1%	86.2%	88.1%
ROIC							
NOPAT to sales	7.4%	8.0%	8.5%	9.0%	9.5%	9.6%	9.6%
Sales to NWC		29.91	34.72	42.27	46.38	45.51	41.07
Sales to NFA		3.33	3.53	3.73	3.91	4.02	4.06
Sales to IC ex cash		3.00	3.21	3.43	3.60	3.69	3.69
Total ROIC ex cash		24.0%	27.1%	31.0%	34.4%	35.5%	35.5%
NOPAT to sales	7.4%	8.0%	8.5%	9.0%	9.5%	9.6%	9.6%
Sales to EOY NWC	29.92	28.41	40.77	41.04	49.44	40.00	40.00
Sales to EOY NFA	3.12	3.38	3.47	3.75	3.83	3.95	3.95
Sales to EOY IC ex cash	2.83	3.02	3.20	3.43	3.56	3.59	3.59
Total ROIC using EOY IC ex cash	20.9%	24.1%	27.1%	31.0%	33.9%	34.6%	34.6%
NOPAT to sales	7.4%	8.0%	8.5%	9.0%	9.5%	9.6%	9.6%
Sales to EOY NOWC	17.27	19.07	20.18	19.53	19.99	20.40	21.18
Sales to EOY NFA	3.12	3.38	3.47	3.75	3.83	3.95	3.95
Sales to EOY IC	2.64	2.87	2.96	3.14	3.22	3.31	3.33
Total ROIC using EOY IC	19.6%	23.0%	25.1%	28.4%	30.7%	31.8%	32.0%
ROE							
5-stage							
EBIT / sales		12.6%	13.3%	14.2%	15.0%	14.8%	14.8%
Sales / avg assets		2.07	2.16	2.23	2.29	2.33	2.34
EBT / EBIT		95.3%	93.6%	93.0%	91.7%	91.7%	91.5%
Net income /EBT		63.6%	63.6%	63.7%	63.2%	65.0%	65.0%
ROA		15.8%	17.1%	18.7%	19.9%	20.6%	20.6%
Avg assets / avg equity		3.68	5.24	7.98	10.67	14.69	27.43
ROE		58.1%	89.6%	149.4%	212.6%	301.9%	564.4%
3-stage							
Net income / sales		7.6%	7.9%	8.4%	8.7%	8.8%	8.8%
Sales / avg assets		2.07	2.16	2.23	2.29	2.33	2.34
ROA		15.8%	17.1%	18.7%	19.9%	20.6%	20.6%
Avg assets / avg equity		3.68	5.24	7.98	10.67	14.69	27.43
ROE		58.1%	89.6%	149.4%	212.6%	301.9%	564.4%
Payout Ratio		39.9%	43.2%	42.8%	44.6%	47.5%	47.1%
Retention Ratio		60.1%	56.8%	57.2%	55.4%	52.5%	52.9%
Sustainable Growth Rate		34.9%	50.9%	85.5%	117.8%	158.6%	298.7%

Appendix 7: 3-Stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.65%
= Market risk premium	7.4%
* Beta	1.20
= Stock risk premium	8.8%
r = rf+ stock RP	**11.5%**
Terminal year P/E	**22.00**

	Year						
	1	2	3	4	5	6	7
First Stage			Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*6.8%*	*5.5%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S	*9.6%*	*9.6%*	*9.56%*	*9.5%*	*9.4%*	*9.4%*	*9.3%*
S / NWC	*40.00*	*40.00*	*39.40*	*38.80*	*38.20*	*37.60*	*37.00*
S / NFA (EOY)	*3.95*	*3.95*	*3.95*	*3.95*	*3.95*	*3.95*	*3.95*
S / IC (EOY)	*3.59*	*3.59*	*3.59*	*3.59*	*3.58*	*3.57*	*3.57*
ROIC (EOY)	*34.6%*	*34.6%*	*34.3%*	*34.0%*	*33.8%*	*33.5%*	*33.2%*
ROIC (BOY)		*36.5%*	*36.1%*	*35.8%*	*35.5%*	*35.2%*	*34.9%*
Share Growth		*-2.9%*	*-2.5%*	*-2.5%*	*-2.5%*	*-2.5%*	*-2.5%*
Sales	$107,478	$113,386	$119,055	$125,008	$131,258	$137,821	$144,712
NOPAT	$10,339	$10,908	$11,377	$11,866	$12,375	$12,906	$13,458
Growth		*5.5%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*	*4.3%*
- Change in NWC	651	148	187	200	214	229	246
NWC EOY	*2687*	*2835*	*3022*	*3222*	*3436*	*3665*	*3911*
Growth NWC		*5.5%*	*6.6%*	*6.6%*	*6.6%*	*6.7%*	*6.7%*
- Chg NFA	946	1496	1435	1507	1582	1661	1745
NFA EOY	*27,210*	*28,705*	*30,141*	*31,648*	*33,230*	*34,891*	*36,636*
Growth NFA		*5.5%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Total inv in op cap	1596	1643	1622	1707	1797	1891	1990
Total net op cap	29896	31540	33162	34869	36666	38557	40547
FCFF	$8,743	$9,264	$9,755	$10,159	$10,578	$11,015	$11,468
% of sales	*8.1%*	*8.2%*	*8.2%*	*8.1%*	*8.1%*	*8.0%*	*7.9%*
Growth		*6.0%*	*5.3%*	*4.1%*	*4.1%*	*4.1%*	*4.1%*
Growth		*7.4%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Debt	28000	30000	31500	33075	34729	36465	38288
FCFE w debt	$9,881	$10,339	$10,283	$10,713	$11,161	$11,626	$12,110
Growth		*4.6%*	*-0.5%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*
FCFE	$8.59	$9.25	$9.44	$10.09	$10.78	$11.51	$12.30
Terminal value P/E							
Net income	$9,478	$9,982	$10,405	$10,845	$11,304	$11,781	$12,277
EPS	$8.24	$8.93	$9.55	$10.21	$10.91	$11.67	$12.47
Growth		*8.5%*	*6.9%*	*6.9%*	*6.9%*	*6.9%*	*6.9%*
* Terminal EPS							$12.47
Terminal value							$274.35
* Discount factor							0.47
Discounted terminal value							$128.29

First stage	$15.15	Present value of first 2 year cash flow
Second stage	$31.36	Present value of year 3-7 cash flow
Third stage	$128.29	Present value of terminal value P/E
Third stage	$93.35	Present value of terminal value constant growth
Value (P/E)	**$174.81**	= value at beg of fiscal 2018

Consumer Staples

Goodyear Tire and Rubber Co.

Recommendation	NEUTRAL
Target (today's value)	$30
Current Price	$29.96
52 week range	$28.81-$37.29

Share Data	
Ticker:	GT
Market Cap. (Billion):	$7.8
Inside Ownership	0.4%
Inst. Ownership	99.3%
Beta	1.33
Dividend Yield	1.8%
Payout Ratio	10.3%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$16.4	$15.2	$15.1	$15.5	$15.9
Gr %		-7.8%	-0.6%	3.0%	2.5%
Cons	-	-	$15.2	$15.5	$15.7
EPS					
Year	$1.12	$4.47	$2.47	$2.84	$3.31
Gr %		261.8%	-51.6%	20.5%	22.6%
Cons	-	-	$2.90	$3.73	$4.33

Ratio	'13	'14	'15	'16	'17E
ROE (%)	39.3%	88.3%	9.4%	29.0%	12.3%
Industry	15.3%	15.6%	18.9%	15.2%	14.3%
NPM (%)	3.5%	13.9%	2.3%	8.5%	6.7%
Industry	6.1%	6.6%	8.1%	2.6%	7.9%
A. T/O	1.11	1.02	0.95	0.92	0.88
ROA (%)	3.4%	14.1%	2.2%	7.8%	3.5%
Industry	5.9%	6.7%	8.4%	7.0%	6.8%
A/E	7.17	6.24	4.32	3.71	3.49

Valuation	'14	'15	'16	'17E
P/E	3.3	29.2	6.9	13.4
Industry	10.3	15.0	10.1	12.4
P/S	0.4	0.5	0.5	0.5
P/B	1.9	2.3	1.7	1.7
P/CF	23.5	5.3	5.5	6.8
EV/EBITDA	5.3	5.2	4.8	5.9

Performance	Stock	Industry
1 Month	8.3%	3.5%
3 Month	-3.0%	0.1%
YTD	1.9%	6.7%
52-week	-4.6%	4.9%
3-year	5.7%	32.6%

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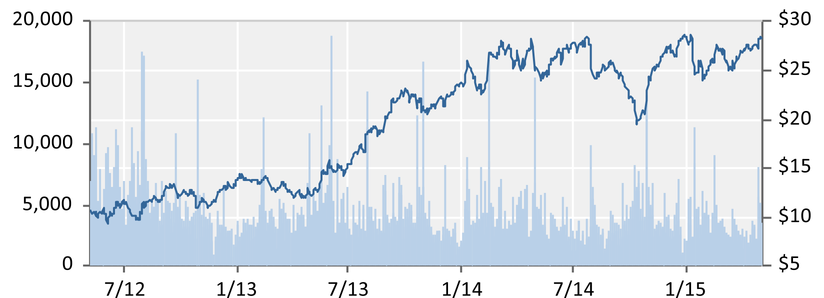


Source: FactSet Prices

Summary: I recommend a neutral rating with a target price of $30. Goodyear has the potential to expand margins through penetration into the over 17" tire and original equipment markets. This potential is limited by muted sales growth and raw material price headwinds. The stock is fairly valued based on both DCF and relative valuation analyses.

Key Drivers:

- Move Towards Autonomous Driving and Ride Share Programs: Autonomous driving is forecasted to cause global vehicle miles to double by 2030 and triple by 2040. A positive correlation between global vehicles and GT's stock price in the past indicates the potential upside.
- Growing Segment of Over 17" Tires: GT has had a 12% CAGR in EMEA in this segment over the past few years and growth may continue. This area is both high growth and high margin compared to smaller tires.
- Expansion of OE Sales: Driving the expansion of OE sales today leads to more RE sales in the future, which are higher margin. Currently, approximately 29% of GT's unit sales are OE. GT is looking to capitalize on its high brand share in United States with regards to OE.
- Raw Materials Prices: Raw materials account for 40% of GT's COGS. Some of GT's contracts are indexed to raw materials prices. In addition, GT adjusts retail prices to preserve its gross margin. These price increases have raised its prices above the industry average in recent years.

Valuation: Using a relative valuation approach, Goodyear appears to be fairly valued in comparison to other tire manufacturers. Due to greater precision of inputs, DCF analysis provides the best way to value the stock and suggests it is worth $33. A combination of approaches suggest that Goodyear is fairly valued, as the stock's value is about $32 and the shares trade at $29.96.

Risks: Threats to the business include volatility in raw material prices, foreign currency fluctuations, and a competitive market place.

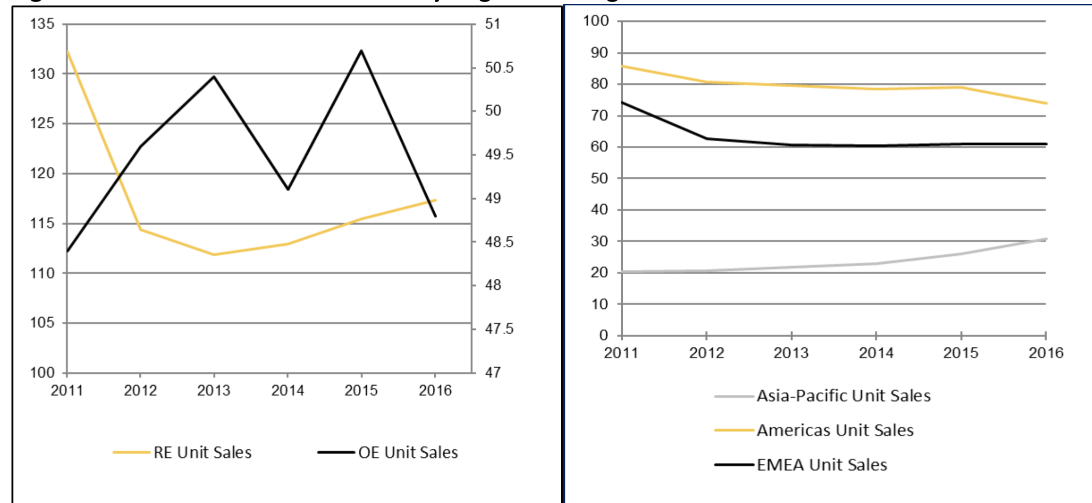
Company Overview

The Goodyear Tire & Rubber Company (GT) was organized in Ohio in 1898. Goodyear is one of the world's leading manufacturers of tires, engaging in operations in most regions of the world. In 2016, its net sales were $15.2 billion and Goodyear's net income was $1.3 billion. Together with its U.S. and international subsidiaries, the company develops, manufactures, markets, and distributes tires for most applications.

The company also manufactures and markets rubber-related chemicals for various applications. Goodyear is one of the world's largest operators of commercial truck service and tire retreading centers. In addition, it operates approximately 1,100 tire and auto service center outlets where products are sold and automotive repair and other services are provided. Goodyear manufactures products in 48 manufacturing facilities in 21 countries, including the United States, and has marketing operations in almost every country around the world. Goodyear employs approximately 66,000 full-time and temporary associates worldwide.
(Source: company 10-K)

The company breaks out its unit sales first by segment, and then by region. Goodyear's operating segments are original equipment and replacement equipment. Unit sales are then broken down based on regions, which include: Asia-Pacific, Americas, and Europe, Middle-East and Africa (EMEA). The America, EMEA, and Asia-Pacific regions have had CAGRs of -2.41%, -3.21%, and 7.08% respectively. Original equipment has been relatively flat over the past 6 years, whereas replacement equipment has had a CAGR of about 2%.

Figures 1 and 2: Historical Unit Sales by Region and Segment in Millions



Source: Company Reports

Business/Industry Drivers

Though several factors may contribute to Goodyear's future success, the following are the most important business drivers:

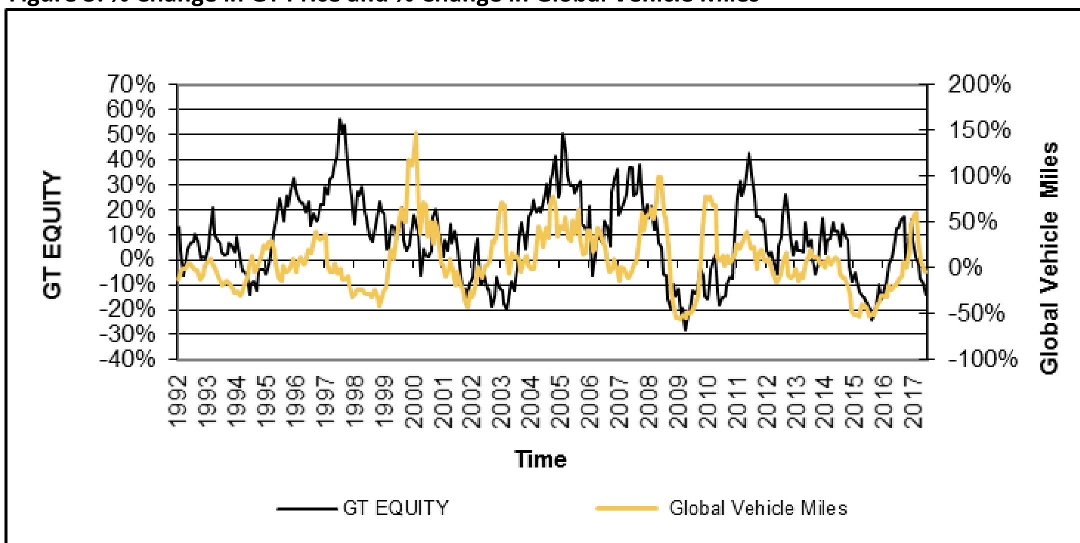
1) Move Towards Autonomous Driving and Ride Share Programs
2) Growing Segment of Over 17" tires
3) Expansion of OE Sales
4) Raw Material Prices

Move towards autonomous driving and ride share programs

By 2030, 25% of global miles traveled will be ride shared.

The move towards autonomous driving and the expansion of ride sharing programs such as Uber and Lyft are leading to an increase in global vehicle miles traveled. Consensus estimates predict that this statistic will double by 2030 to 10 trillion miles and triple by 2040 to 30 trillion miles. Ride sharing increases global miles traveled by offering people who normally use public transportation an alternative way to commute. As global vehicle miles increase, so will demand for tires. There is a positive correlation in the United States between travel on all roads and streets and Goodyear's stock price (over the last twenty years). In a company presentation, Goodyear estimates that autonomous driving will be a $7 trillion business by 2050 and that by 2030 25% of global miles traveled will be ride shared.

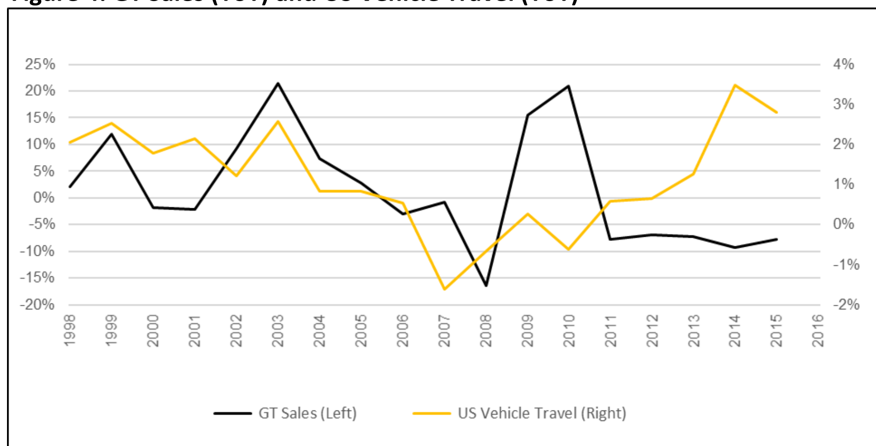
Figure 3: % Change in GT Price and % Change in Global Vehicle Miles



Source: Bloomberg

Goodyear's operating margin has been steadily improving over the past six years, rising from 5.17% to 11.83%. Likewise, travel on all US roads and streets in terms of vehicle miles has grown at an average rate of 1.36% over the same period. Despite this, Goodyear's operating income as a portion of travel on US roads has diminished at an average rate of -4.21% over the past six years, implying that the company's operating income is not growing as quickly as travel on US roads. Consensus expects vehicle miles statistics to double in the next thirteen years. This could be a big driver of GT's sales, because over the past twenty years, there is a positive correlation between vehicle miles traveled in the U.S. and GT sales. Despite diverging recently (see figure 4), if the trend comes back to what it was in previous business cycles and consensus is correct in predicting 100% miles driven growth in thirteen years, then GT sales should accelerate.

Figure 4: GT Sales (YoY) and US Vehicle Travel (YoY)



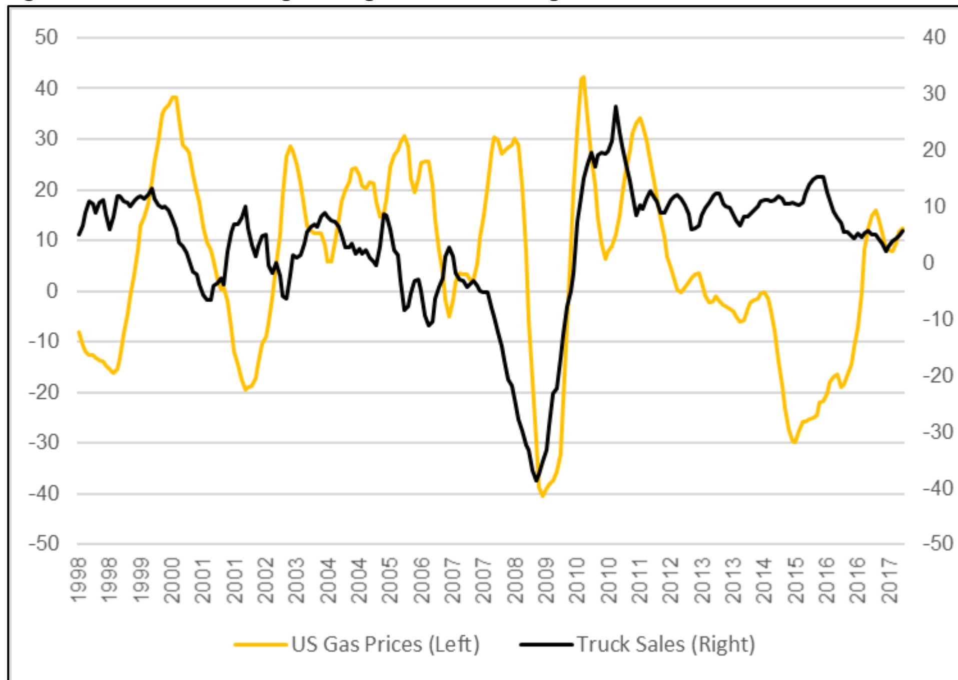
Source: FactSet

Growing segment of over 17" tires

Goodyear generated 12% CAGR in the over 17" tire segment since 2009.

A growing segment of Goodyear's business is selling tires that are over 17 inches in diameter. Retail prices for tires over 17" range from $100 for 17" to almost $300 for 22". Retail prices for tires under 17" range from about $60 for 16" to $30 for 13". This is a high growth and high margin area compared to smaller sized tires, especially in the Europe, Middle East and Africa (EMEA) segment. Goodyear has had 12% CAGR in this segment between 2009 and 2016 compared to -2% CAGR in tires smaller than 17 inches. Over the past three years, EMEA has accounted for about 37% of Goodyear's unit sales. In addition, over 17" tires account for 30% of EMEA unit sales. This means that if the 12% CAGR extends into the next year, Goodyear could see a jump of 1.69% or 2.8 million in worldwide unit sales. Also, as demonstrated in figure 5, as gas prices fall, sales of trucks rise which benefits GT.

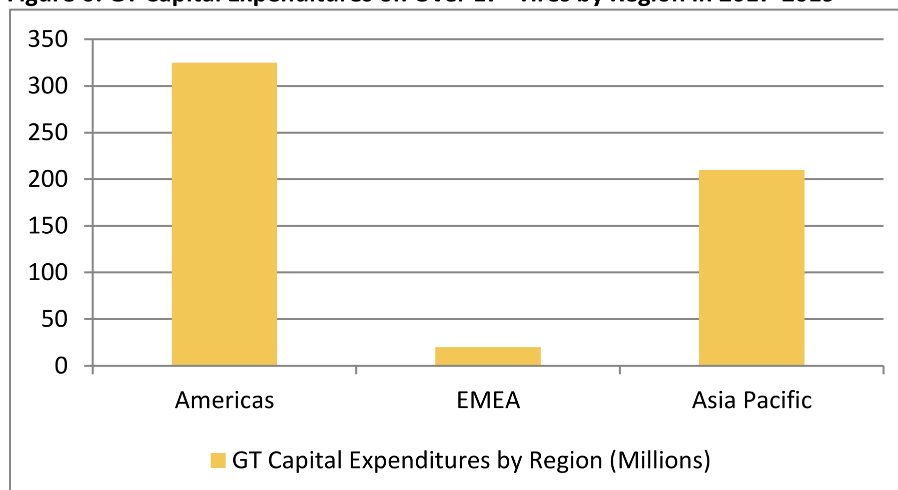
Figure 5: 6-Month Moving Average of Y-Y % Changes of US Gas Prices and US Truck Sales



Source: Factset

Goodyear has spent an average of 967 million on capital expenditures between 2014 and 2016, which is 13.83% of total average net fixed assets over the same period. In the next three years the company plans to allocate $555 million is to modernize four different facilities to increase capacity for over 17" tires.

Figure 6: GT Capital Expenditures on Over 17" Tires by Region in 2017-2019



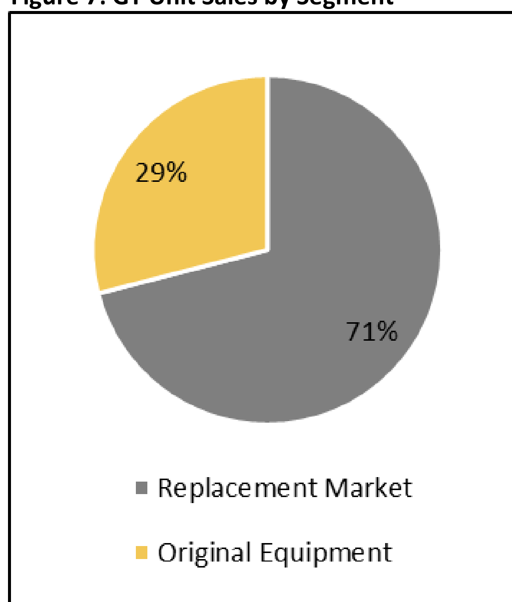
Source: Company Presentation

Expansion of OE Sales

29% of Goodyear's tire shipments are original equipment, whereas 71% are replacement tires.

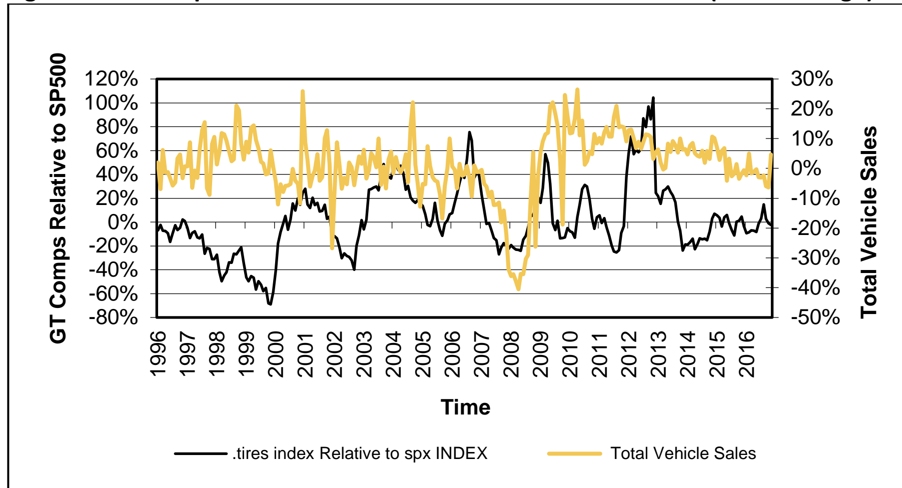
Goodyear operates in two majors segments: replacement tires (RE) and original equipment (OE) tires. Approximately one-quarter (29%) of Goodyear's tire shipments are original equipment, whereas three-quarter (71%) of its shipments are replacement tires. This ratio of RE to OE shipments has been constant over the past three years. Margins on replacement tires are higher than margins on original equipment. The firm does not provide margins on OE vs RE shipments. Although the Asia-Pacific region, has 40.13% of unit sales as OE equipment, has an operating margin of 17.1%; whereas, the Americas region, which has 25.78% OE shipments, has a 14.1% operating margin.

Figure 7: GT Unit Sales by Segment



Source: Company Presentation

Figure 8: GT Comps Relative to S&P 500 and Total Vehicle Sales (Y-Y % Change)

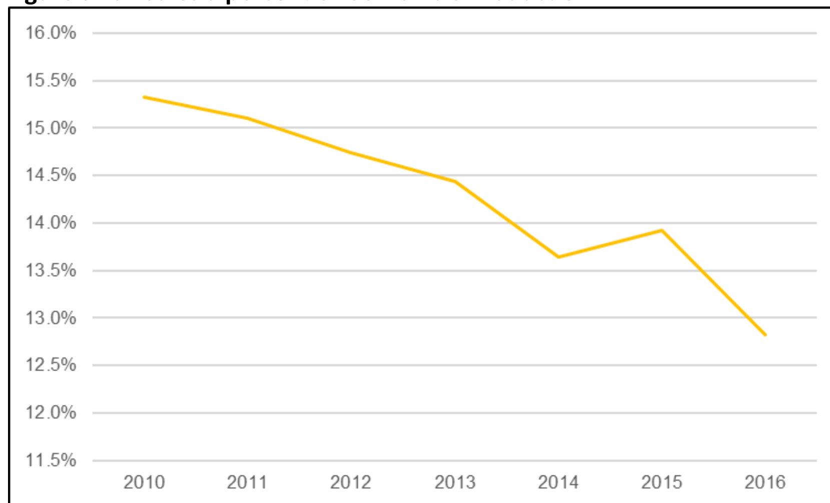


Source: Bloomberg

Goodyear is #1 in brand share on original equipment for Chrysler/Fiat and General Motors.

Goodyear is number one in brand share for OE in the United States and Canada; however, it has been declining which helps explain why sales have not risen during a time of high vehicle sales. As a supplier, it is number one in brand share on original equipment for Chrysler/Fiat and General Motors, and also rank in the top five for Honda, Mercedes-Benz, Ford, Nissan, Tesla, and Toyota (source: moderntiredealer.com). Goodyear has strong brand loyalty but it is declining so it must focus on growing its OE business. This will help drive the replacement segment, because customers who have Goodyear tires on their car originally are more likely to replace them with the higher margin Goodyear tire. Auto sales are at a high, which means future replacement tires will rise along with margins.

Figure 9: GT Sales a percent of US Vehicle Production



Source: Bloomberg

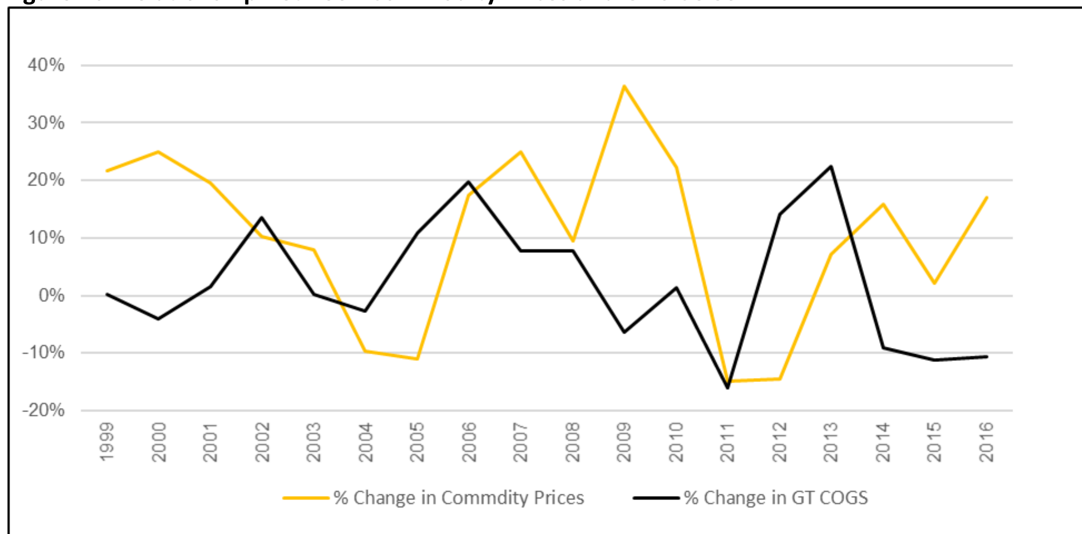
Raw Material Prices

Goodyear indexes some customer contracts to raw material prices to preserve margins.

Raw materials represent a large portion of Goodyear's inputs (40% of COGS). Goodyear in the past has increased and decreased prices in response to changing input costs, to preserve margins, Goodyear had to raise prices twice in 2016 in response to rising raw material prices. These price increases put GT tire prices above the industry average. In the first quarter of 2017, GT's prices have

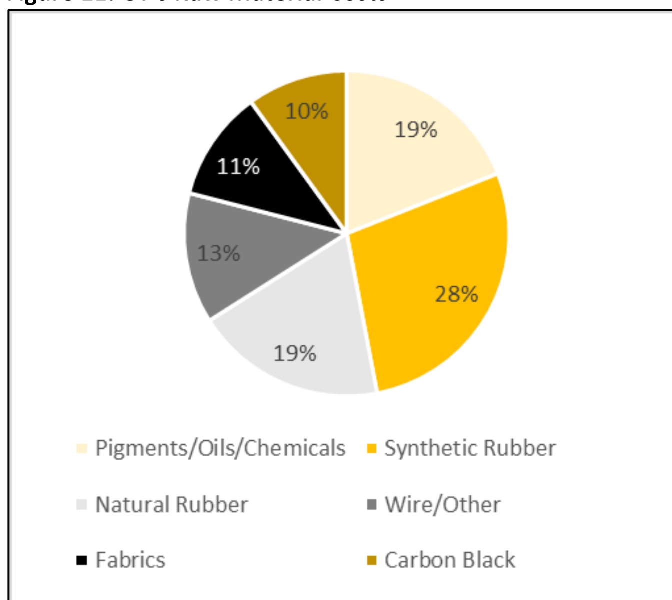
risen approximately 2% compared to their December 2016 prices, whereas the industry has not increased prices since December 2016.

Figure 10: Relationship Between Commodity Prices and GT's COGS



Source: Bloomberg

Figure 11: GT's Raw Material Costs



Source: Company Presentation

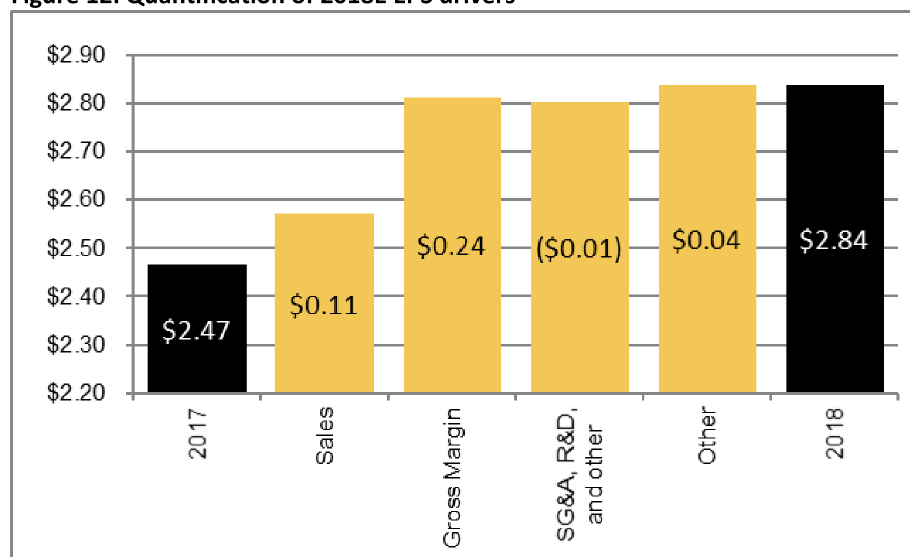
For contracts with customer that are not indexed to raw material prices, every 1% increase in oil prices results in a 0.65% increase in Goodyear's COGS.

Goodyear's raw material costs are in six different categories: synthetic rubber, natural rubber, carbon black, fabrics, pigments/oils/chemicals, and wire/other. Approximately 65% of Goodyear's raw material segments are influenced by oil prices (source: company presentation). This means that for contracts with customers that are not indexed to raw material prices, every 1% increase in oil prices could result in a 0.65% increase in Goodyear's COGS. Goodyear's management anticipates lower raw material costs in future years will allow Goodyear to lower prices and capture more market share while at the same time improving its product mix.

Financial Analysis

I anticipate EPS to grow to $2.84 in FY 2018. Holding all other factors constant, my projection of 3.0% sales growth contributes $0.11 to 2018 EPS. Now holding all other factors constant besides sales, growth in gross margin due to exposure in over 17" tires is projected to add $0.24 to EPS in 2018. Next, SG&A, R&D, and other costs are projected to stay the same as a percent of sales so its impact on EPS is negligible. Since sales are projected to grow 3%, these costs grow by 3% as well and subtract $0.01 from 2018 EPS. Lastly, I project GT to have excess cash in FY 2018. This cash is used to buy back $200 million in shares and pay down $200 million in debt. Reduced share count and reduced interest payment contributes $0.04 to FY 2018 EPS.

Figure 12: Quantification of 2018E EPS drivers

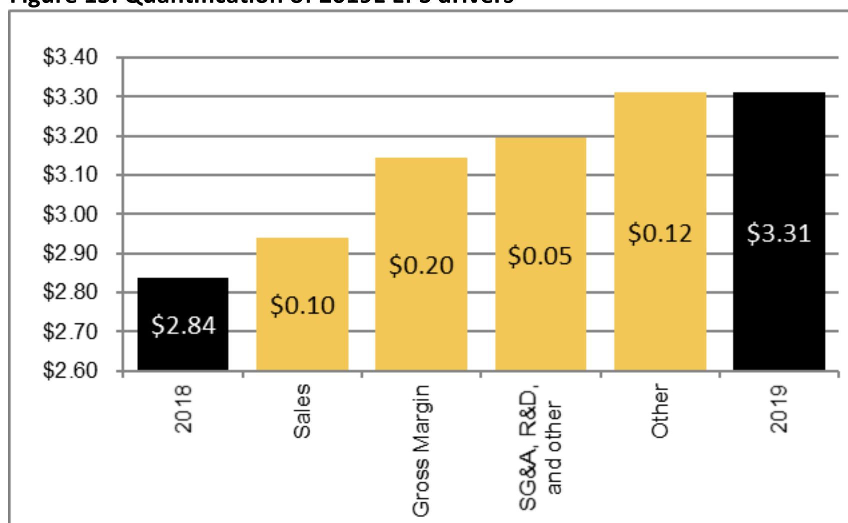


Source: IMCP

My 2018 EPS estimate of $2.84 is less than consensus estimates of $3.73. Since my sales growth is high than consensus, the discrepancies are below the top line. I am predicting growth in margins from 23.7% to 24.2%, FactSet consensus estimates are that gross margin will be 26.2% in 2018. A 26.2% gross margin would contribute $1.21 to 2018 EPS, making my 2018 EPS $3.84.

I anticipate earnings to grow from $2.84 in 2018 to $3.31 in FY 2019. Sales growth continues to be positive in 2019, but the rate slows to 2.5%. The increase in sales contributes $0.10 to 2019 EPS. Gross margins expand once again, from 24.2% to 24.6%; this contributes $0.20 to 2019 EPS. In 2019, I predict that SG&A, R&D, and other costs increase, but not as fast as sales. The slowing in these costs is due to operating efficiency of new facilities GT plans to put in place in 2017 and 2018 to capitalize on the growing over 17" tire segment. This contributes $0.05 to 2019 EPS. Lastly, I project that GT will have excess cash again in 2019, resulting in $175 million in share buy backs. This decreases the share count from 239.3 million shares to 233.5 million shares, implying a buyback price of $30. In addition to the buy back, I also anticipate that GT will use the excess cash to pay down debt by $175 million; the lower interest expense results in higher earnings. The lower share count and decreased interest adds $0.12 to EPS.

Figure 13: Quantification of 2019E EPS drivers



Source: IMCP

$3.31 is a pessimistic assessment compared to consensus. According to FactSet, consensus estimates for 2019 EPS is $4.33. To reach $4.33 EPS in 2019, gross margin would need to be 29.4% and share buybacks in 2019 would need to be $375 million each year, along with paying down debt by $375 million. Another factor that could be causing the discrepancy between consensus's estimate and mine is the estimated price that the shares are bought back. I assume a $30 per share buyback price, but if consensus estimates a lower price, that would lead to more shares being bought back, and reduce the denominator in the EPS calculation. In 2018 and 2019, I allocate $200 million and $175 million to pay down debt, which has a reduced effect on earnings because of taxes. If that excess cash was allocated only to share buybacks, my EPS estimates for 2018 and 2019 would be $2.90 and $3.38 respectively.

Figure 14: Sales and EPS Estimates Versus Consensus

Year	2017E	2018E	2019E
Sales - Estimate	$15,071	$15,522	$15,913
YoY Growth	-0.6%	3.0%	2.5%
Sales - Consensus	$15,231	$15,499	$15,736
YoY Growth	0.5%	1.8%	1.5%
EPS-Estimate	$2.47	$2.84	$3.31
YoY Growth	-51.6%	15.1%	16.7%
EPS- Consensus	$2.34	$3.73	$4.33
YoY Growth	-54.1%	59.4%	16.1%

Source: FactSet, IMCP

In order to meet consensus EPS estimates, GT gross margins would need to be 26.2% and 27.6% in 2018 and 2019 respectively.

Revenues

Goodyear's sales have been declining with a -6.15% CAGR over the past 4 years. I anticipate that rate to slow in 2017, and that sales growth will be positive in 2018 and 2019. Sales were forecasted in part by relating GT's sales to industrial production. Over the past twenty years (two business cycles), on average, GT sales increased by a factor of 1.2x to the yearly change in industrial production. The relationship yields a standard deviation of 4.53 and a coefficient of variation of 3.78 (4.53/1.2). Industrial production was chosen because its relationship with GT sales had the lowest coefficient of

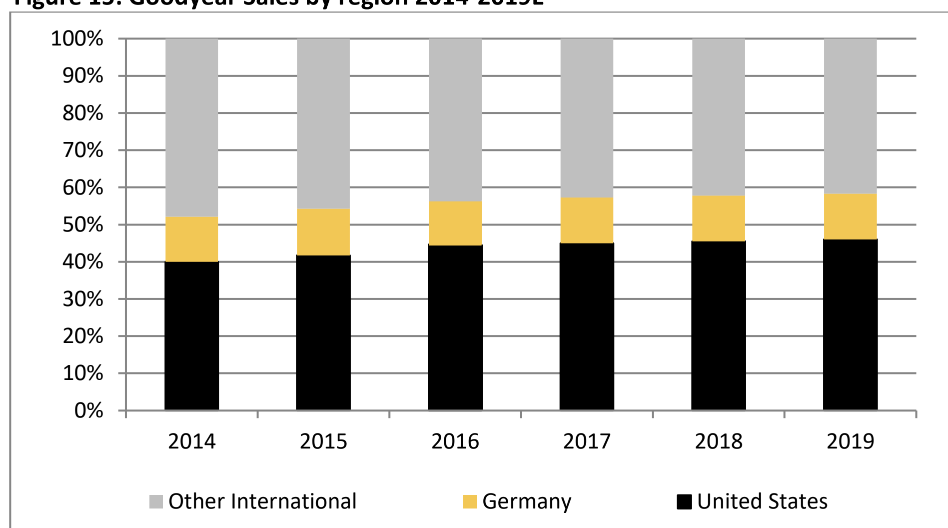
variation compared to other economic indicators. Other economic indicators considered were: peal GDP, nominal GDP, consumer confidence, and money supply.

I anticipate that total sales will be $15.07 billion in 2017, $15.52 billion in 2018, and $15.91 billion in 2019. These estimates are slightly more optimistic than consensus, which are $15.23 billion, $15.50 billion, and $15.74 billion in 2017, 2018, and 2019, respectively.

Goodyear generates its revenue from three predominant regions: United States, Germany and other international. Germany as a percent of sales has been holding steady at around 12%. The United States segment has been increasing since 2014, while other international revenue has been declining both on an absolute scale and as a percent of total sales.

Growth in United States' sales is making up for lack of growth in other international sales.

Figure 15: Goodyear Sales by region 2014-2019E



Source: Company Reports, IMCP

I anticipate that sales growth in the United States segment will continue as vehicle production in the United States remains at an above average level. The other international segment should continue its decline as competition in the Pacific region undercuts GT's pricing. As discussed earlier in the drivers section, new opportunities in the OE segment in the EMEA region should help to stabilize and slightly increase German sales as a portion of total revenue.

Return on Equity

Goodyear's ROE has varied greatly over the past three years. A negative tax rate in 2014 and 2016 generated an unusually high ROE. I expect ROE to stabilize and steadily climb over the next three years. The first factor contributing to ROE growth is EBIT margin. With gross margin increasing and other operating expenses holding at a constant percent of sales, the EBIT margin is expanding at about the same pace as the gross margin. GT's asset turnover has been decreasing over the past three years. I anticipate this decline to continue but level off in 2018 and 2019. GT has been trying to expand its presence in the OE market, which is more capital intensive, explaining the decrease in asset turnover. Decreased asset turnover is a detriment to ROE. However, the OE segment is a higher margin segment. GT might generate fewer sales per dollar of assets in the OE market, but the margin on those sales is higher. The effect of margins is greater than that of the sales, therefore this increases GT's bottom line and explains the increase in ROA for 2017-2019.

Figure 16: ROE Breakdown, 2014 – 2019E

5 - Stage DuPondt ROE	2014	2015	2016	2017E	2018E	2019E
EBIT / sales	6.24%	6.36%	10.42%	7.53%	8.00%	8.50%
Sales / avg assets	1.018	0.953	0.921	0.877	0.862	0.866
EBT / EBIT	60.74%	58.13%	76.44%	69.45%	71.04%	74.24%
Net income /EBT	366.96%	61.84%	106.38%	76.99%	76.99%	76.99%
ROA	14.15%	2.18%	7.80%	3.53%	3.77%	4.21%
Avg assets / avg equity	6.238	4.320	3.711	3.490	3.403	3.233
ROE	88.25%	9.42%	28.96%	12.32%	12.84%	13.60%

Source: Company Reports, IMCP

Expansion into the OE market will decrease GT's asset turnover but increase its return on assets.

Several factors affect the assets to equity ratio. The first is the growth of assets compared to equity. I expect equity, on average, to grow at a 7.8% pace over the next three years, whereas I anticipate assets growing at an average rate of 4.1%. So the A/E ratio will continue its historic trend lower. While equity is being reduced through share buybacks, I also expect the firm to pay down debt. The effect of the buybacks over rides the effect of the debt repayment, lowering overall equity, but I also anticipate GT to retain some of its earnings, which explains the overall increase in equity. Taking all of these factors into account, I expect ROE to be 12.32%, 12.84%, and 13.60% in 2017, 2018, and 2019, respectively.

Free Cash Flow

Figure 17: Free Cash Flows 2014 – 2019E

Free Cash Flow						
Year	2014	2015	2016	2017E	2018E	2019E
NOPAT	$4,150	$647	$1,680	$873	$956	$1,041
Growth		-84.4%	159.7%	-48.0%	9.5%	8.9%
Subtract: Change in NWC**	295	(676)	122	1,186	(7)	(39)
Subtract: Change in NFA	(167)	(376)	263	291	204	190
FCFF	$4,022	$1,699	$1,295	-$604	$759	$890
Subtract: After Tax Interest**	1,629.29	270.87	395.73	266.83	276.86	268.23
FCFE	**$2,393**	**$1,428**	**$899**	**-$870**	**$482**	**$622**
Growth		-40.3%	-37.0%	-196.8%	155.4%	28.9%
FCFE per share	**$8.93**	**$5.35**	**$3.57**	**-$3.54**	**$2.02**	**$2.66**
Growth		-40.1%	-33.3%	-199.2%	157.0%	32.1%

Source: Company Reports, IMCP

This model of FCF does not include cash into operating assets, nor does it include changes in debt. A build-up of cash is a sign of excess FCF, and if included, the build-up of cash would subtract from FCF. This model does not include debt because it is a use of FCF. For example, if a company were to use FCF to pay down debt, next year's debt would be lower, and therefore take away from calculated FCF.

GT's free cash flow has been declining steadily the past three years. The decrease in 2015 was due entirely to reduced NOPAT as the company shrunk both its NWC and NFA. Despite increased NOPAT in 2016, the company expanded its NFA and NWC even faster and contributing FCF declined from 2015 to 2016. I anticipate NOPAT to fall and NWC to expand significantly in 2017E, causing FCFF and FCFE to decline sharply in 2017. The increase in NWC is due almost entirely to an increase in accounts receivable. When comparing the company's balance sheet at February 8, 2017 and October 27, 2017, total operating assets excluding cash increased by $1.2 billion. About $900 million of $1.2 billion increase is explained by an increase in accounts receivable. In 2018, FCFE is expected to be positive. In 2018, NWC stabilizes after the increase in 2017 and NFA grows at the rate of sales. Expanding margins contributes to the growth in NOPAT, interest holds steady, and FCFE per share grows quicker than FCFE because of share buybacks. In 2019, NFA increases slightly and NWC contracts slightly from its elevated level as sales increase modestly. Debt repayment in 2018 leads to lower interest payments in 2019, increasing FCFE, which I estimate to grow by 32.1% in 2019.

Valuation

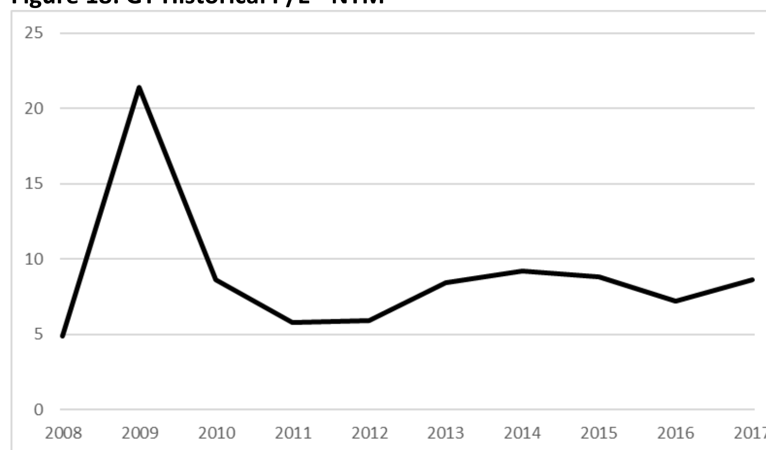
GT was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is expensive and is worth $25.67. Relative valuation shows GT to be slightly overvalued based on its fundamentals versus those of its peers in the tire industry. A Detailed DCF analysis values GT higher, at $32.64; I give this value a bit more weight because it incorporates details that reflect GT's future capital assumptions. As a result of these valuations, I value the stock at $30.00.

<u>Trading History</u>

GT is currently trading around its 10-year average of absolute NTM P/E. At the end of 2017, the company's NTM P/E was 8.67. This is slightly below the 10-year average of 8.90 but above the 10-year median of 8.56.

GT's average NTM P/E throughout the last business cycle was 8.9.

Figure 18: GT Historical P/E - NTM



Source: FactSet

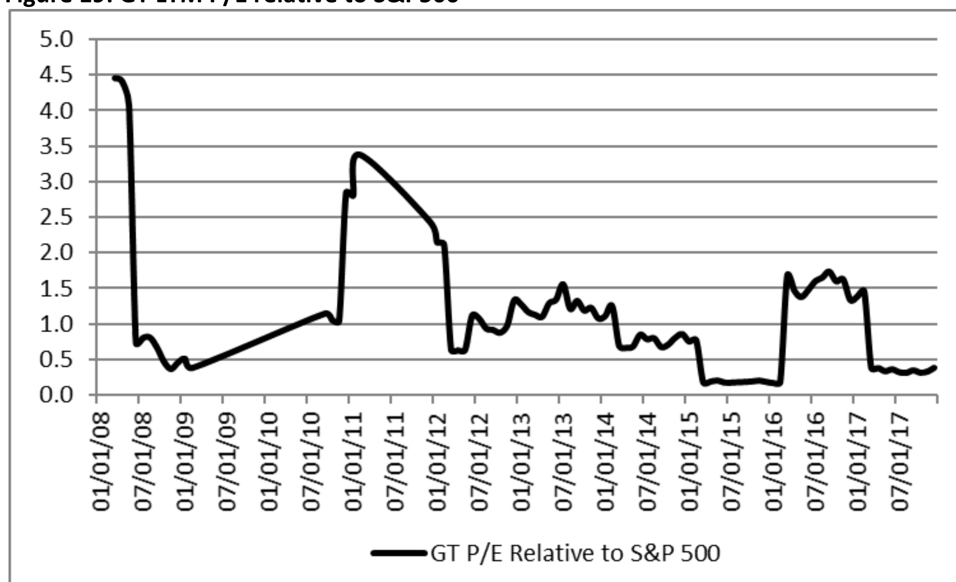
Assuming the firm maintains an 8.67 NTM P/E at the end of 2018, it should trade at $24.63.

- Price = P/E x Forecasted EPS = 8.67 x $3.31 = $28.70

Discounting $28.70 back to today at a 11.8% cost of equity (explained in Discounted Cash Flow section) yields a price of $25.67. Given GT's potential for margin expansion and share buybacks, this seems to be a low valuation. However, this makes sense because I am more bearish about near-term earnings than consensus.

Currently, GT's LTM P/E relative to the market is 0.38. Historically, it has traded at an average of 0.91 and a median 0.86. I expect the company to perform better in 2017 than it has the past few years, therefore, I expect Goodyear's relative P/E to increase to 0.6. Using a relative P/E of 0.6 and a LTM Market P/E of 21.9, I can imply that GT should be trading at a P/E of 13.1. With a 13.1 P/E, and my forecasted FY 17 EPS of $2.47, the target price for Goodyear at the end of 2017 is $32.36.

Figure 19: GT LTM P/E relative to S&P500



Source: Factset

Relative Valuation

Goodyear is currently trading at a discount compared to its peers, with a P/E TTM of 9.1 compared to an average of 12.8. GT's P/B and P/S are also below the industry average, especially in P/S where GT has the industry low of 0.57. The company's low P/S makes sense because of its low profit margin

Figure 20: GT Competitors

		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
GT	GOODYEAR TIRE & RUBBER C	$29.58	$7,109	0.8	(12.8)	0.7	(2.2)	(17.3)	(8.4)		176.5%	-87.2%	299.1%	-47.7%	60.3%		1.42	110.3%	B	1.38%	32.1%
CTB	COOPER TIRE & RUBBER CO	$35.85	$1,838	0.6	(10.0)	4.1	4.5	(5.5)	1.4	12.0	-13.8%	7.9%	22.2%	-28.8%	9.0%		0.25	25.2%	B+	1.07%	10.9%
5108-JP	BRIDGESTONE CORP	$44.92	$31,727	(0.7)	(9.7)	(2.9)	0.2	12.4	(8.4)	12.7	4.2%	-5.6%	-0.3%	11.0%	8.4%	20.8%	0.84	12.8%		2.64%	38.7%
CON-DE	CONTINENTAL AG	$283.12	$56,625	2.1	(6.5)	4.9	20.2	18.5	1.4	9.6	12.3%	3.1%	-0.5%	23.8%	11.2%	17.7%	1.09	13.2%		1.76%	
ML-FR	MICHELIN (CGDE)	$154.15	$27,673	1.3	(3.6)	4.7	6.1	17.5	3.9	9.9		4.3%	35.3%	14.7%	12.0%		0.81			2.52%	
161390-KR	HANKOOK TIRE CO	$50.50	$6,255	0.0	1.5	0.4	(12.5)	(9.8)	(0.4)	10.0	3.3%	-12.3%	36.1%	-14.8%	20.7%	19.7%	0.38	12.2%		0.75%	6.9%
Average			$21,871	0.7	(6.9)	2.0	2.7	2.6	(1.7)	10.8	36.5%	-15.0%	65.3%	-7.0%	20.3%	19.4%	0.80	34.7%		1.69%	22.1%
Median			$17,391	0.7	(8.1)	2.4	2.4	3.4	0.5	10.0	4.2%	-1.3%	28.8%	-1.9%	11.6%	19.7%	0.82	13.2%		1.57%	21.5%
SPX	S&P 500 INDEX	$2,699		1.3	(3.1)	4.6	9.4	15.4	0.9			0.0%	0.5%	10.2%	11.0%						

		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	Curren	5-yr	NTM	STM	Pst 5yr	Equity
GT	http://www.goodyear.com	22.6%	1.49	3.3	29.2	6.9	21.6	7.8	12.6	7.9	7.1%	0.47		3.6%	9.4	5.2		3.8%	4.0%		$19.82
CTB	http://www.coopertire.com	19.8%	1.57	10.1	10.3	8.6	9.3	10.7	11.2	10.2	7.9%	0.63	12.3%	18.8%	4.4	5.0		0.5%	1.2%		$22.78
5108-JP	http://www.bridgestone.co.jp	10.9%	1.62	10.9	11.5	12.0	13.7	13.2	13.4	12.4	7.2%	1.07	11.8%	10.7%	6.8	7.4	6.2			2.0%	$27.72
CON-DE	http://www.conti-online.com	15.5%	2.98	14.8	16.5	13.1	17.1	15.2	15.5	13.9	6.9%	1.33	10.9%	17.0%	9.6	8.4	7.8			5.9%	$95.00
ML-FR	http://www.michelin.com	12.9%	2.10	13.6	13.7	11.8		14.3	14.2	12.7	7.7%	1.25		13.0%	8.2	8.1					$73.33
161390-KR	http://kr.hankooktire.com	12.6%	1.03	9.3	8.9	7.8	10.0	9.6	9.7	8.0	13.2%	1.08	13.2%	13.0%	8.1	5.2	5.9	13.0%		0.4%	$48.85
Average		15.7%	1.80	10.3	15.0	10.1	14.3	11.8	12.8	10.9	8.3%	0.97	12.1%	12.7%	7.7	6.5	6.6	5.8%		2.8%	
Median		14.2%	1.60	10.5	12.6	10.2	13.7	12.0	13.0	11.3	7.4%	1.08	12.1%	13.0%	8.1	6.3	6.2	3.8%		2.0%	
spx	S&P 500 INDEX			17.3	17.2	18.7			20.5	18.5											

Source: Factset

compared to its peers. Goodyear trades at a discount despite having the best 5-yr earnings growth of its competitors, as well as the highest ROE in 2016.

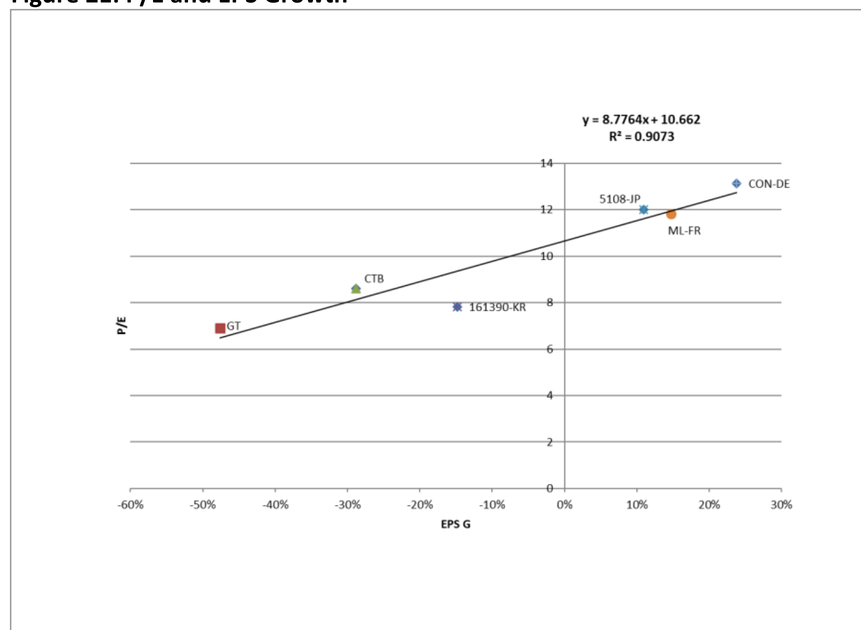
13

A more thorough analysis of P/E and EPS growth is shown in figure 21. The calculated R-squared of the regression indicates that over 90% of a sampled firm's P/E is explained by its EPS growth. GT has the lowest P/E and EPS of this grouping and according to this measure is slightly overvalued.

- Estimated P/E = Estimated 2017 EPS Growth (-48%) x 8.7764 + 10.662 = 6.5

Using this estimated P/E and GT's EPS, a target price of $33.03 is calculated.

Figure 21: P/E and EPS Growth



Source: Factset, IMCP

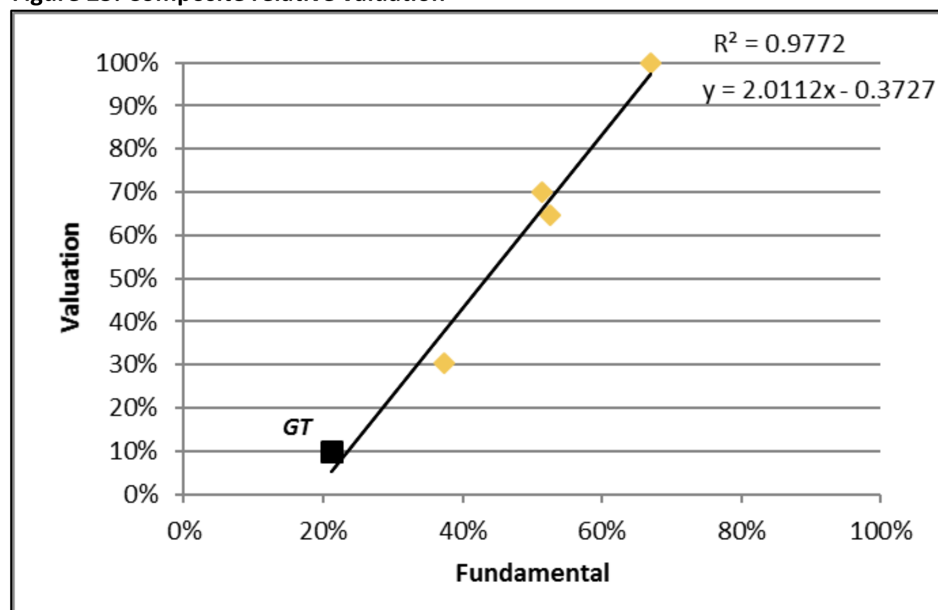
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. Fundamental weightings of 40% for 2017 EPS growth, and equal 20% weightings for financial leverage, NPM, and ROE was compared to valuation weightings of 50% NTM P/E and equal 25% weightings for P/B and P/S. After eliminating Hankook, an extreme outlier, the regression line had an R-squared of .9772. One can see that GT is above the line, so it is expensive based on its fundamentals.

Figure 22: Composite valuation, % of range

		Fundamental Metrics				Valuation Metrics		
	Weights	40.0%	20.0%	20.0%	20.0%	50.0%	25.0%	25.0%
Ticker	Name	EPS Growth	1/(LTD/ Equity)	ROE	NPM	NTM	P/B	P/S
GT	GOODYEAR TIRE & RUBBER CO	0%	0%	100%	3%	0%	24%	0%
CTB	COOPER TIRE & RUBBER CO	26%	42%	76%	16%	40%	28%	19%
5108-JP	BRIDGESTONE CORP	82%	95%	0%	4%	72%	30%	70%
CON-DE	CONTINENTAL AG	100%	91%	40%	0%	100%	100%	100%
ML-FR	MICHELIN (CGDE)	87%	50%	17%	12%	87%	55%	91%

Source: IMCP

Figure 23: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 11.8% 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 2.65%.
- A beta was of 1.25 was utilized since GT has a 5-yr beta of 1.33, and the industry average 5-yr beta is 0.98.
- 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 11.8% (2.65 + 1.25 (10.0 – 2.65)).

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 $2.02 and $2.66, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $3.93 per share. Thus, stage one of this discounted cash flow analysis contributes $3.93 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 11.8% cost of equity. I assume 2.0% sales growth in 2020, falling to 1% through 2024. The ratio of sales to NWC will elevate to 35 in 2020 and steadily decrease to 20 by 2024. NFA turnover will fall from 1.9 in 2020 to 1.8 in 2024 as a result of increased investment in production facilitates with limited sales growth. Also, the NOPAT margin is expected to hold constant at 6.5% from 2020 to 2024. Finally, after-tax interest is expected to rise at 2.0% per year as the result of modest increases in borrowing.

Figure 24: FCFE and discounted FCFE, 2018 – 2024

Year	2018	2019	2020	2021	2022	2023	2024
FCFE	$2.02	$2.66	$4.94	$1.59	$1.50	$2.40	$3.28
Discounted FCFE	$1.80	$2.13	$3.53	$1.02	$0.86	$1.23	$1.50

Added together, the discounted cash flows from 2020-2024 total $10.26.

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 $1.80 in 2018 to $3.75 in 2024.

Figure 25: EPS estimates for 2018 – 2024

Year	2018	2019	2020	2021	2022	2023	2024
EPS	$2.84	$3.31	$3.54	$3.66	$3.70	$3.73	$3.75

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. For the purpose of this analysis, it is generally assumed that Goodyear is a mature company and has a lot of risk due to its cyclicality. Its P/E ratio will trade below the historical average of the S&P 500 and its comparable companies. Therefore, a P/E ratio of 12 is assumed at the end of GT's terminal year. This P/E was derived from a combination historical average of the company's P/E since 2005, which is 17.42 and the average of GT's comparables over the last two business cycle, which is 15.66. Since the company is in the mature phase of the business cycle and is declining, it will trade at a discount compared to its historical average.

Given the assumed terminal earnings per share of $3.75 and a price to earnings ratio of 12, a terminal value of $45.03 per share is calculated. Using the 11.8% cost of equity, this number is discounted back to a present value of $20.58.

Total Present Value – Given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $32.64 is calculated (3.93 + 8.13 + 20.58). Given GT's current price of $29.96, this model indicates that the stock is slightly undervalued.

Scenario Analysis

Goodyear is difficult to value with certainty because it is nearly impossible to predict with all facets of the company's business. Furthermore, it is extremely difficult to predict economics factors six years out, many of which have a high correlation with Goodyear's stock.

Bull Case – In this scenario, I assume stronger sales growth and more aggressive gross margin expansion. Global economic growth could lead to GT's international segments to grow more than they have historically. In this bull case, I assume accelerating sales growth from 2% in 2020 to 5% in 2024. Holding everything else constant and using the same method above, GT's value becomes $33.59 per share. Next, instead of holding NOPAT margin constant, I assume that the company's penetration into higher segment margins happens more aggressively. This causes their NOPAT margin to increase from 6.5% to 7.5% by 2024. GT's value is sensitive to NOPAT margin, as its value per share with more aggressive sales growth and margin expansion becomes $39.45.

Bear Case – In this scenario, I assume a slight economic downturn and therefore, negative top line growth. In addition, Goodyear plans to add to NFA by investing in their production facilities. So, with negative sales growth and increased NFA, NFA turnover decreases in this scenario. If sales growth is flat in 2020 and falls to -3% by 2024 then GT's value per share becomes $32.27. In the base case, NFA goes from 1.9 in 2020 to 1.8 in 2024. In this bear case, I assume it falls from 1.9 in 2020 to 1.5 in 2024. This decreased NFA turnover, combined with the decreased sales, gives the company a value of $28.42.

The stock is currently trading around $30. This means that the market is pricing in expectations that are close to my assumptions. My assumptions for sales growth and margin expansion are modest at best, so the market could be more bearish on NFA turnover, as well as the P/E GT will trade at in 2024. Keeping all other factors constant, if NFA turnover decreases to 1.6 by 2024, the value per share today becomes $30. Again, holding all other factors constant, if the terminal P/E for GT happens to be between 10 and 11 instead of 12, the value per share today also becomes $30.

Business Risks

Exposure to currency fluctuations:

Goodyear does business in all parts of the world. After coming off a year where the dollar weakened, a stronger dollar could cause some of GT's overseas sales to be lost in conversion.

Competitive marketplace:

Bridgestone and Michelin are Goodyear's biggest competitors. They are located in Japan and France, respectively, and have large market shares in their home countries. Many other global competitors do business in low cost countries, and therefore undercut GT's ability to expand global market share.

Raw Material Price Volatility:

Goodyear's COGS and raw material prices are highly correlated and raw material prices are historically volatile. If raw material prices go up, some contractual obligations would keep GT from passing this cost along to consumers, hurting margins. If raw material prices go down, it allows competitors to reduce their selling prices, forcing Goodyear to reduce their prices and again, lower margins. (Source: company 10-k)

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Low

There are barriers to entry to be competitive in the global tire market. The industry is comprised of mature, reputable companies. Success in the industry also requires high capital expenditures.

Threat of Substitutes – High

Currently, Goodyear is able to extract a premium price for its products due to strong brand share. The threat of cheaper substitutes in the Asia-Pacific region is gaining traction.

Supplier Power – Low

Many companies can provide the necessary raw materials to produce tires with little costs associated with switching suppliers.

Buyer Power – Medium

At the consumer level, buying power is low. There are not any costs to switch brands in the RE market, but most consumers are inclined to purchase the same times that came with their cars originally. Buying power is high when trying to sell tires to car manufacturers, especially on the international scale when Goodyear has to compete with international manufacturers.

Intensity of Competition – High

Goodyear is toward the top of the global tire market in terms of market share. There are many other competitors with recognizable names in the industry including: Continental, Bridgestone, Michelin, Cooper, Hankook, and Yokohama.

Appendix 2: SWOT Analysis

Strengths	**Weaknesses**
Consumers are willing to pay a premium for their brand Strong brand share	Company is highly cyclical Exposed to fluctuations in raw material costs
Opportunities	**Threats**
Expansion in over 17" market Potential for growth in OE market	Entry of lower cost competitors Suspectible to economic downturns

Appendix 3: Sales Forecasts

Sales							
Items	**Dec-13**	**Dec-14**	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**
Sales	19,540	18,138	16,443	15,158	15,071	15,523	15,911
Growth		*-7.2%*	*-9.3%*	*-7.8%*	*-0.6%*	*3.0%*	*2.5%*
% of sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
United States	7,820	7,558	7,338	6,724	6,782	7,063	7,319
Growth		*-3.4%*	*-2.9%*	*-8.4%*	*0.9%*	*4.1%*	*3.6%*
% of sales	*40.0%*	*41.7%*	*44.6%*	*44.4%*	*45.0%*	*45.5%*	*46.0%*
Germany	2,372	2,288	1,905	1,853	1,854	1,909	1,957
Growth		*-3.5%*	*-16.7%*	*-2.7%*	*0.0%*	*3.0%*	*2.5%*
% of sales	*12.1%*	*12.6%*	*11.6%*	*12.2%*	*12.3%*	*12.3%*	*12.3%*
Other International	9,348	8,292	7,200	6,581	6,435	6,551	6,635
Growth		*-11.3%*	*-13.2%*	*-8.6%*	*-2.2%*	*1.8%*	*1.3%*
% of sales	*47.8%*	*45.7%*	*43.8%*	*43.4%*	*42.7%*	*42.2%*	*41.7%*

Appendix 4: Income Statement

Income Statement	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18
Sales	$19,540	$18,138	$16,443	$15,158	$15,071	$15,523
Direct costs	15,422	13,906	12,164	10,972	11,498	11,766
Gross Margin	4,118	4,232	4,279	4,186	3,572	3,756
SG&A, R&D, and other	2,913	3,101	3,233	2,607	2,438	2,515
EBIT	1,205	1,131	1,046	1,579	1,134	1,242
Interest	392	444	438	372	347	351
EBT	813	687	608	1,207	788	891
Taxes	138	(1,834)	232	(77)	181	205
Income	675	2,521	376	1,284	607	686
Net income	675	2,521	376	1,284	607	686
Basic Shares	246.0	268.0	267.0	252.0	246.0	229.3
EPS	$2.74	$9.41	$1.41	$5.10	$2.47	$2.99
DPS	$0.05	$0.22	$0.25	$0.33	$0.30	$0.60

Appendix 5: Balance Sheet

Balance Sheet	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	De
Capital							
Cash	2,996	2,161	1,476	1,132	822	761	
Operating assets ex cash	5,648	5,563	4,650	4,587	5,905	6,054	6
Operating assets	8,644	7,724	6,126	5,719	6,727	6,814	7
Operating liabilities	4,938	4,558	4,321	4,136	4,268	4,424	4
NOWC	3,706	3,166	1,805	1,583	2,459	2,391	2
NOWC ex cash (NWC)	710	1,005	329	451	1,637	1,630	1
NFA	7,320	7,153	6,777	7,040	7,331	7,535	7
Other Assets	1,563	3,232	3,488	3,752	3,794	3,794	3
Invested capital	*$11,026*	*$10,319*	*$8,582*	*$8,623*	*$9,790*	*$9,926*	*$10*
Total assets	*$17,527*	*$18,109*	*$16,391*	*$16,511*	*$17,852*	*$18,143*	*$18*
Short-term and long-term debt	$6,235	$6,364	$5,659	$5,479	$6,115	$5,915	$5
Other liabilities	3,909	2,760	2,269	2,171	2,348	2,348	2
Equity	1,868	3,845	4,142	4,725	5,121	5,457	5
Minority Equity	577	582					
Total supplied capital	*$12,589*	*$13,551*	*$12,070*	*$12,375*	*$13,584*	*$13,720*	*$14*
Total liabilities and equity	*$17,527*	*$18,109*	*$16,391*	*$16,511*	*$17,852*	*$18,143*	*$18*

Appendix 6: Ratios

Ratios	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Profitability							
Gross margin	21.1%	23.3%	26.0%	27.6%	23.7%	24.2%	24.6%
Operating (EBIT) margin	6.2%	6.2%	6.4%	10.4%	7.5%	8.0%	8.5%
Net profit margin	3.5%	13.9%	2.3%	8.5%	4.0%	4.4%	4.9%
Activity							
NFA (gross) turnover		2.51	2.36	2.19	2.10	2.09	2.09
Total asset turnover		1.02	0.95	0.92	0.88	0.86	0.87
Liquidity							
Op asset / op liab	1.75	1.69	1.42	1.38	1.58	1.54	1.54
NOWC Percent of sales		18.9%	15.1%	11.2%	13.4%	15.6%	15.3%
Solvency							
Debt to assets	35.6%	35.1%	34.5%	33.2%	34.3%	32.6%	30.8%
Debt to equity	333.8%	165.5%	136.6%	116.0%	119.4%	108.4%	97.0%
Other liab to assets	22.3%	15.2%	13.8%	13.1%	13.2%	12.9%	12.6%
Total debt to assets	57.9%	50.4%	48.4%	46.3%	47.4%	45.5%	43.4%
Total liabilities to assets	86.1%	75.6%	74.7%	71.4%	71.3%	69.9%	68.2%
Debt to EBIT	5.17	5.63	5.41	3.47	5.39	4.76	4.24
EBIT/interest	3.07	2.55	2.39	4.24	3.27	3.45	3.88
Debt to total net op capital	56.5%	61.7%	65.9%	63.5%	62.5%	59.6%	56.2%
ROIC							
NOPAT to sales	5.1%	22.9%	3.9%	11.1%	5.8%	6.2%	6.5%
Sales to NWC		21.15	24.65	38.87	14.44	9.50	9.88
Sales to NFA		2.51	2.36	2.19	2.10	2.09	2.09
Sales to IC ex cash		2.24	2.15	2.08	1.83	1.71	1.72
Total ROIC ex cash		51.3%	8.5%	23.0%	10.6%	10.5%	11.3%
NOPAT to sales	5.1%	22.9%	3.9%	11.1%	5.8%	6.2%	6.5%
Sales to NOWC		5.28	6.62	8.95	7.46	6.40	6.53
Sales to NFA		2.51	2.36	2.19	2.10	2.09	2.09
Sales to IC		1.70	1.74	1.76	1.64	1.57	1.58
Total ROIC		38.9%	6.8%	19.5%	9.5%	9.7%	10.3%
NOPAT to sales	5.1%	22.9%	3.9%	11.1%	5.8%	6.2%	6.5%
Sales to EOY NWC	27.52	18.05	49.98	33.61	9.21	9.52	10.00
Sales to EOY NFA	2.67	2.54	2.43	2.15	2.06	2.06	2.06
Sales to EOY IC ex cash	2.43	2.22	2.31	2.02	1.68	1.69	1.71
Total ROIC using EOY IC ex cash	12.5%	50.9%	9.1%	22.4%	9.7%	10.4%	11.2%
NOPAT to sales	5.1%	22.9%	3.9%	11.1%	5.8%	6.2%	6.5%
Sales to EOY NOWC	5.27	5.73	9.11	9.58	6.13	6.49	6.41
Sales to EOY NFA	2.67	2.54	2.43	2.15	2.06	2.06	2.06
Sales to EOY IC	1.77	1.76	1.92	1.76	1.54	1.56	1.56
Total ROIC using EOY IC	9.1%	40.2%	7.5%	19.5%	8.9%	9.6%	10.2%
ROE							
5-stage							
EBIT / sales		6.2%	6.4%	10.4%	7.5%	8.0%	8.5%
Sales / avg assets		1.02	0.95	0.92	0.88	0.86	0.87
EBT / EBIT		60.7%	58.1%	76.4%	69.4%	71.0%	74.2%
Net income / EBT		367.0%	61.8%	106.4%	77.0%	77.0%	77.0%
ROA		14.1%	2.2%	7.8%	3.5%	3.8%	4.2%
Avg assets / avg equity		6.24	4.32	3.71	3.49	3.40	3.23
ROE		88.3%	9.4%	29.0%	12.3%	12.8%	13.6%
3-stage							
Net income / sales		13.9%	2.3%	8.5%	4.0%	4.4%	4.9%
Sales / avg assets		1.02	0.95	0.92	0.88	0.86	0.87
ROA		14.1%	2.2%	7.8%	3.5%	3.8%	4.2%
Avg assets / avg equity		6.24	4.32	3.71	3.49	3.40	3.23
ROE		88.3%	9.4%	29.0%	12.3%	12.8%	13.6%
Payout Ratio		2.4%	18.1%	6.4%	12.4%	21.1%	18.1%
Retention Ratio		97.6%	81.9%	93.6%	87.6%	78.9%	81.9%
Sustainable Growth Rate		86.2%	7.7%	27.1%	10.8%	10.1%	11.1%

Appendix 7: Comp Sheet

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
GT	GOODYEAR TIRE & RUBBER C	$29.58	$7,109	0.8	(12.8)	0.7	(2.2)	(17.3)	(8.4)		176.5%	-87.2%	299.1%	-47.7%	60.3%		1.42	110.3%	B	1.38%	32.1%
CTB	COOPER TIRE & RUBBER CO	$35.85	$1,838	0.6	(10.0)	4.1	4.5	(5.5)	1.4	12.0	-13.8%	7.9%	22.2%	-28.8%	9.0%		0.25	25.2%	B+	1.07%	10.9%
5108-JP	BRIDGESTONE CORP	$44.92	$31,727	(0.7)	(9.7)	(2.9)	0.2	12.4	(8.4)	12.7	4.2%	-5.6%	-0.3%	11.0%	8.4%	20.8%	0.84	12.8%		2.64%	38.7%
CON-DE	CONTINENTAL AG	$283.12	$56,625	2.1	(6.5)	4.9	20.2	18.5	1.4	9.6	12.3%	3.1%	-0.5%	23.8%	11.2%	17.7%	1.09	13.2%		1.76%	
ML-FR	MICHELIN (CGDE)	$154.15	$27,673	1.3	(3.6)	4.7	6.1	17.5	3.9	9.9		4.3%	35.3%	14.7%	12.0%		0.81			2.52%	
161390-KR	HANKOOK TIRE CO	$50.50	$6,255	0.0	1.5	0.4	(12.5)	(9.8)	(0.4)	10.0	3.3%	-12.3%	36.1%	-14.8%	20.7%	19.7%	0.38	12.2%		0.75%	6.9%
Average			$21,871	0.7	(6.9)	2.0	2.7	2.6	(1.7)	10.8	36.5%	-15.0%	65.3%	-7.0%	20.3%	19.4%	0.80	34.7%		1.69%	22.1%
Median			$17,391	0.7	(8.1)	2.4	2.4	3.4	0.5	10.0	4.2%	-1.3%	28.8%	-1.9%	11.6%	19.7%	0.82	13.2%		1.57%	21.5%
SPX	S&P 500 INDEX	$2,699		1.3	(3.1)	4.6	9.4	15.4	0.9			0.0%	0.5%	10.2%	11.0%						

Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Curren	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
GT	http://www.goodyear.com	22.6%	1.49	3.3	29.2	6.9	21.6	7.8	12.6	7.9	7.1%	0.47		3.6%	9.4	5.2		3.8%	4.0%		$19.82
CTB	http://www.coopertire.com	19.8%	1.57	10.1	10.3	8.6	9.3	10.7	11.2	10.2	7.9%	0.63	12.3%	18.8%	4.4	5.0		0.5%	1.2%		$22.78
5108-JP	http://www.bridgestone.co.jp	10.9%	1.62	10.9	11.5	12.0	13.7	13.2	13.4	12.4	7.2%	1.07	11.8%	10.7%	6.8	7.4	6.2			2.0%	$27.72
CON-DE	http://www.conti-online.com	15.5%	2.98	14.8	16.5	13.1	17.1	15.2	15.5	13.9	6.9%	1.33	10.9%	17.0%	9.6	8.4	7.8			5.9%	$95.00
ML-FR	http://www.michelin.com	12.9%	2.10	13.6	13.7	11.8		14.3	14.2	12.7	7.7%	1.25		13.0%	8.2	8.1					$73.33
161390-KR	http://kr.hankooktire.com	12.6%	1.03	9.3	8.9	7.8	10.0	9.6	9.7	8.0	13.2%	1.08	13.2%	13.0%	8.1	5.2	5.9	13.0%		0.4%	$48.85
Average		15.7%	1.80	10.3	15.0	10.1	14.3	11.8	12.8	10.9	8.3%	0.97	12.1%	12.7%	7.7	6.5	6.6	5.8%		2.8%	
Median		14.2%	1.60	10.5	12.6	10.2	13.7	12.0	13.0	11.3	7.4%	1.08	12.1%	13.0%	8.1	6.3	6.2	3.8%		2.0%	
spx	S&P 500 INDEX			17.3	17.2	18.7			20.5	18.5											

Appendix 8: 3-stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.65%
= Market risk premium	7.4%
* Beta	1.25
= Stock risk premium	9.2%
r = rf+ stock RP	

Terminal year P/E	
2016	12.00

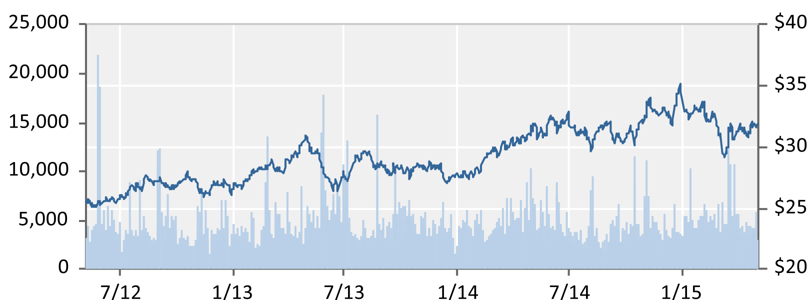
	Year						
	1	2	3	4	5	6	7
First Stage							
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*3.0%*	*2.5%*	*2.0%*	*1.5%*	*1.2%*	*1.2%*	*1.0%*
NOPAT / S	*6.2%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*	*6.5%*
S / NWC	*9.52*	*10.00*	*35.00*	*30.00*	*25.00*	*20.00*	*20.00*
S / NFA (EOY)	*2.06*	*2.06*	*1.90*	*1.85*	*1.80*	*1.80*	*1.80*
S / IC (EOY)	*1.69*	*1.71*	*1.80*	*1.74*	*1.68*	*1.65*	*1.65*
ROIC (EOY)	*10.4%*	*11.2%*	*11.7%*	*11.3%*	*10.9%*	*10.7%*	*10.7%*
ROIC (BOY)		*11.4%*	*11.3%*	*11.9%*	*11.5%*	*11.0%*	*10.8%*
Share Growth		*-2.4%*	*-5.5%*	*-2.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$15,522	$15,913	$16,231	$16,475	$16,672	$16,872	$17,041
NOPAT	$956	$1,041	$1,055	$1,071	$1,084	$1,097	$1,108
Growth		*8.9%*	*1.3%*	*1.5%*	*1.2%*	*1.2%*	*1.0%*
- Change in NWC	-7	-39	-1128	85	118	177	8
NWC EOY	*1630*	*1591*	*464*	*549*	*667*	*844*	*852*
Growth NWC		*-2.4%*	*-70.9%*	*18.4%*	*21.4%*	*26.5%*	*1.0%*
- Chg NFA	204	190	818	362	357	111	94
NFA EOY	*7,535*	*7,725*	*8,543*	*8,905*	*9,262*	*9,374*	*9,467*
Growth NFA		*2.5%*	*10.6%*	*4.2%*	*4.0%*	*1.2%*	*1.0%*
Total inv in op cap	197	151	-310	448	475	288	102
Total net op cap	9165	9316	9007	9454	9929	10217	10319
FCFF	$759	$890	$1,365	$623	$609	$809	$1,006
% of sales	*4.9%*	*5.6%*	*8.4%*	*3.8%*	*3.7%*	*4.8%*	*5.9%*
Growth		*17.2%*	*53.3%*	*-54.3%*	*-2.3%*	*32.9%*	*24.3%*
- Interest (1-tax rate)	277	268	274	279	285	290	296
Growth		*-3.1%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*
FCFE w/o debt	$482	$622	$1,091	$344	$324	$518	$709
% of sales	*3.1%*	*3.9%*	*6.7%*	*2.1%*	*1.9%*	*3.1%*	*4.2%*
Growth		*28.9%*	*75.4%*	*-68.5%*	*-5.7%*	*60.0%*	*36.8%*
/ No Shares	239.3	233.5	220.7	216.2	216.2	216.2	216.2
FCFE	$2.02	$2.66	$4.94	$1.59	$1.50	$2.40	$3.28
Growth		*32.1%*	*85.7%*	*-67.8%*	*-5.7%*	*60.0%*	*36.8%*
* Discount factor	0.89	0.80	0.71	0.64	0.57	0.51	0.46
Discounted FCFE	$1.80	$2.13	$3.53	$1.02	$0.86	$1.23	$1.50
Third Stage							
Terminal value P/E							
Net income	$679	$773	$781	$792	$799	$806	$812
% of sales	*4.4%*	*4.9%*	*4.8%*	*4.8%*	*4.8%*	*4.8%*	*4.8%*
EPS	$2.84	$3.31	$3.54	$3.66	$3.70	$3.73	$3.75
Growth		*16.7%*	*7.0%*	*3.4%*	*0.9%*	*0.9%*	*0.6%*
Terminal P/E							12.00
* Terminal EPS							$3.75
Terminal value							$45.03
* Discount factor							0.46
Discounted terminal value							$20.58

Summary		
First stage	$3.93	Present value of first 2 year cash flow
Second stage	$8.13	Present value of year 3-7 cash flow
Third stage	$20.58	Present value of terminal value P/E
Value (P/E)	**$32.64**	= value at beg of fiscal yr 2018

Utilities

PPL Corporation

Recommendation	BUY
Target (today's value)	$35
Current Price	$31.10
52 week range	$29.20 - $40.20



Share Data	
Ticker:	PPL
Market Cap. (Billion):	$20.68
Inside Ownership	.362%
Inst. Ownership	76.61%
Beta	0.60
Dividend Yield	5.22%
Payout Ratio	70.8%
Cons. Long-Term Growth Rate	-0.05%

Summary: I recommend a buy rating with a target of $35. Although PPL Corporation has underperformed in the past, the stabilization of the Pound and growth in the U.S. segments increases potential for stable growth. The stock is fairly valued based on a relative valuation but undervalued based on a DCF analysis.

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$7.67	$7.52	$7.37	$7.52	$7.66
Gr %		-2.0%	-1.9%	2.0%	1.9%
Cons	-	-	$7.51	$7.86	$8.06
EPS					
Year	$1.02	$2.81	$2.11	$2.47	$2.56
Gr %		175.7%	-25.0%	15.2%	0.4%
Cons	-	-	$2.18	$2.33	$2.43

Key Drivers:

- Domestic Regulated ROE: PPL has consistently over performed in ROE compared to comps since 2015. However, base rate cases throughout this year and the last have adversely affected sales and will continue to do so.
- U.K. Operations and Foreign Currency: PPL's foreign branch, U.K. Regulated, has had declining sales the past 3 years, but attributed almost 50% to earnings. A non-domestic business line is an uncommon strategy in the sector and lifts PPL's margins.
- Capital Expenditures: PPL intends to increase fixed assets by over 40% in the next 5 years. This expansion will be financed through long and short-term debt.
- Interest Rates: PPL underperforms the S&P 500 during periods of rising interest rates. The new Fed Chair intends to follow his predecessor's position on slowly increasing rates.

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	13.6%	19.1%	19.1%	15.5%	14.5%
Industry	11.4%	9.5%	11.3%	11.4%	11.2%
NPM (%)	20.9%	25.2%	25.2%	21.3%	21.5%
Industry	14.1%	12.1%	15.9%	15.2%	15.8%
A. T/O	0.17	0.19	0.19	0.18	0.18
ROA (%)	3.6%	4.9%	4.9%	3.8%	3.8%
Industry	3.2%	2.4%	3.0%	3.0%	3.1%
A/E	3.17	3.87	3.81	3.86	3.91

Valuation	'16	'17	Today	'18E
P/E	12.6	15.4	13.7	12.5
Industry	26.0	36.0	29.3	14.6
P/S	3.11	3.18	2.84	2.57
P/B	2.3	2.2	1.9	1.9
P/CF	8.3	9.7	8.6	7.3
EV/EBITDA	14.7	13.8	1.8	13.2

Valuation: Using a relative valuation approach, PPL Corporation appears to be fairly valued in comparison to the utility industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that PPL Corporation is undervalued, as the stock's value is about $35 and the shares trade at $30.10.

Risks: Threats to the business include increasing interest rates, weather, the U.K. segment, and any outcomes of future rate cases.

Performance	Stock	Industry
1 Month	-2.6%	-4.0%
3 Month	-18.3%	-12.8%
YTD	-2.2%	-5.6%
52-week	-15.3%	-0.1%
3-year	-6.0%	4.1%

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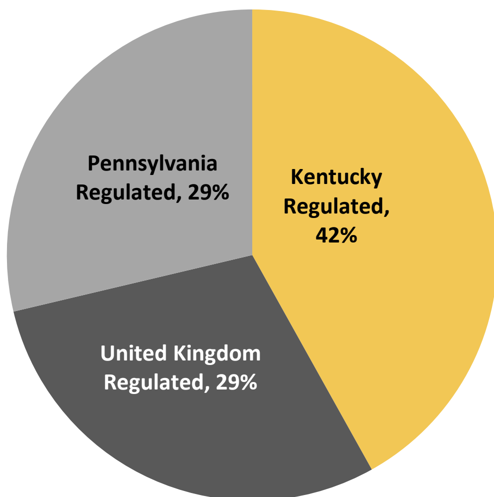
Company Overview

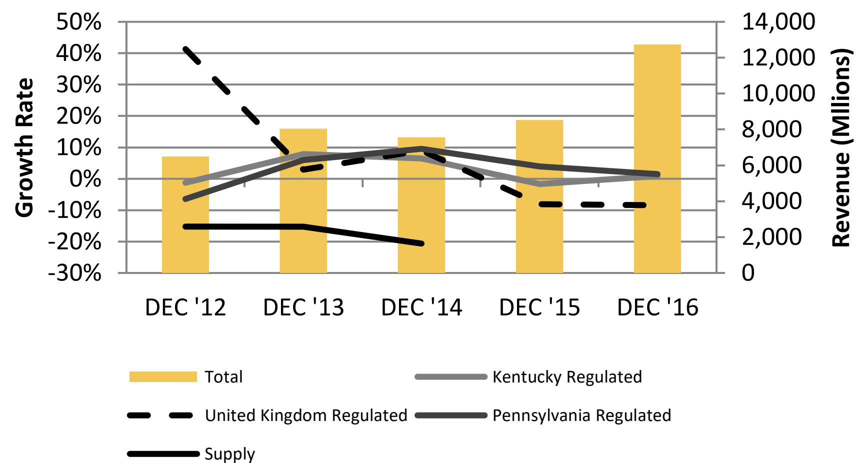
PPL Corporation, headquartered in Allentown, PA, is a regulated energy holding company specializing in the creation, transportation, and distribution of electricity and natural gas. They operate in three different segments called Kentucky Regulated, Pennsylvania Regulated, and U.K. Regulated. Through these three segments, they service over 10 million customers in the U.S. and abroad, covering 41,000 square miles. The U.K. segment covers areas in Wales and southwest and central England. The Pennsylvania and Kentucky segments cover their named states, respectively.

PPL Corporation provides their services with more than 144,379 gigawatt hours with its three segments:

- Kentucky Regulated: There are two parts to Kentucky Regulated, and both derive from the LKE unit. They include KU and LG&E, and are the largest segment of the company. They both provide generation, transmission, distribution, and sale of electricity, but LG&E also distributes and sells natural gas.
  - Year-over-year growth was 0.83% from 2015-2016.
- Pennsylvania Regulated: PPL Electric provides regulated transmission and distribution of electricity in Pennsylvania.
  - Year-over-year growth was 1.5% from 2015-2016.
- U.K Regulated: PPL Global exclusively provides distribution of electricity in the U.K., mainly using Western Power Distribution for operations.
  - Year-over-year growth was -8.4% from 2015-2016. Negative growth is due to inefficient currency hedging.

Figures 1 and 2: Revenue Sources for PPL, year-end 2016 (left) and Revenue History since 2012





Source: FactSet

Business/Industry Drivers

The success of PPL Corporation is considerably influenced by the following drivers:

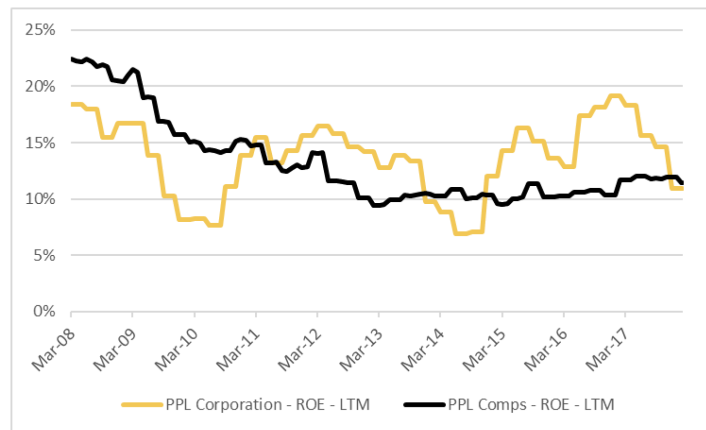
1) Domesticated Regulated ROE
2) U.K. Operations and Foreign Currency
3) Capital Expenditures
4) Government Regulation
5) Macroeconomic Trends

Domestic Regulated ROE

Last November, the LKE subsidiaries filed with KPSC for increases in annual base electricity and gas rates. This will result in a 6.4% base rate increase for KU, and LK&E's electric and gas rates will increase 8.5% and 4.2%, effective July 1st, 2017. After a hearing with the Kentucky Public Service Commission (KPSC) in May, a 9.7% ROE was authorized in accordance with a 6.4% increase in base rates for KU. Since KU attributed 41.8% to sales in 2016, the increase in sales will be up to 2.67%, increasing earnings. The commission also lowered ROE on environmental cost recovery from 10% to 9.7%. Authorized ROE for the Pennsylvania segment moved from 11.68% to 12.93%, and more hearings will continue throughout 2017.

Overall, PPL's ROE significantly outperformed its comps by nearly 5% on average since the beginning of 2015. The decrease after 2015 was a result of the Supply segments discontinued operations, reducing earnings more relative to the write off of equity.

Figure 3: PPL's LTM ROE relative to comps 2008-2017



Source: FactSet

U.K. Operations and Foreign Currency

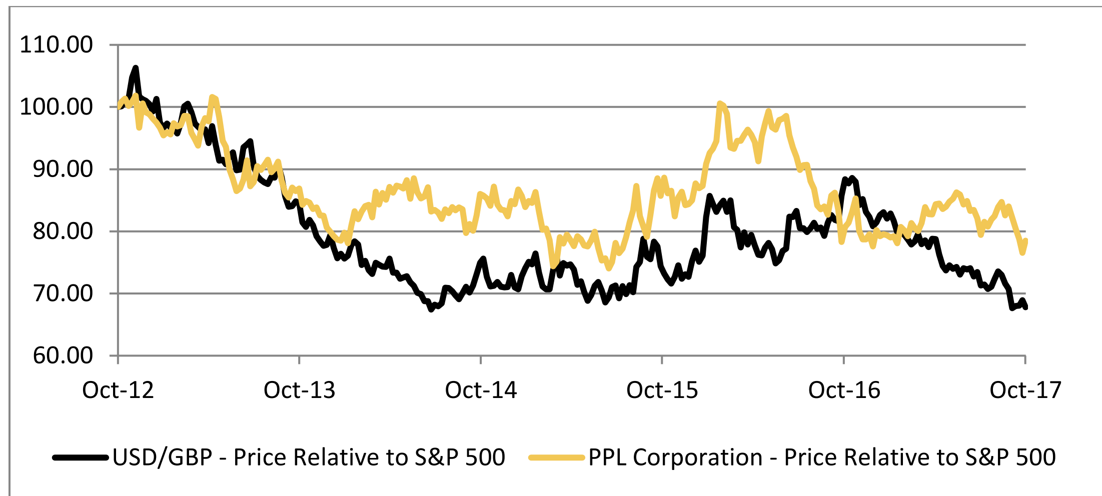
U.K. segment makes up 30% of revenue but contributes over 50% of EPS.

The Office of Gas and Electric Markets (Ofgem) is currently the most influential governing body over U.K. Regulated. The price control contract, RIIO ED1 for Distribution Network Operators (DNO) spans for eight years from 2013-2023. Part of the settlement involves a mid-point review that entails interviewing consumers about satisfaction. Poor reviews could result in increased spending on distribution networks that can't be included in Regulatory Asset Value (RAV), but management is confident in satisfactory results.

While PPL's U.K. segment only generates 29% of revenue, it contributed to over 50% of EPS in 2016. Due to effective hedging, earnings rose by $0.17 per share for the U.K. segment. These earnings are dependent on RAV, which is the equivalent of the regulatory asset base domestically. The depreciation of the pound will lower RAV, which is based on historical investment costs. These losses can be offset as RAV grows with capital expenditures. In 2016, under Ofgem's RIIO framework, the return on regulatory equity (RORE) allowed was 35% of RAV. Over the next 8 years, PPL plans to spend $8.8 billion on regulatory assets, which can boost the U.K.'s EPS by $1.17 over the 8 years.

Since over 50% of EPS is derived from the U.K. segment, this leaves a large exposure to foreign currency. When the pound moves, it tends to slightly lead the price of PPL, especially from mid-2014 through 2016. In earlier periods, the U.K segment was most of the business, but since the creation of Kentucky Regulated's gas unit, the firm is less dependent on the pound's performance.

Figure 4: PPL Corporation's price indexed to the USD/GBP relative to S&P



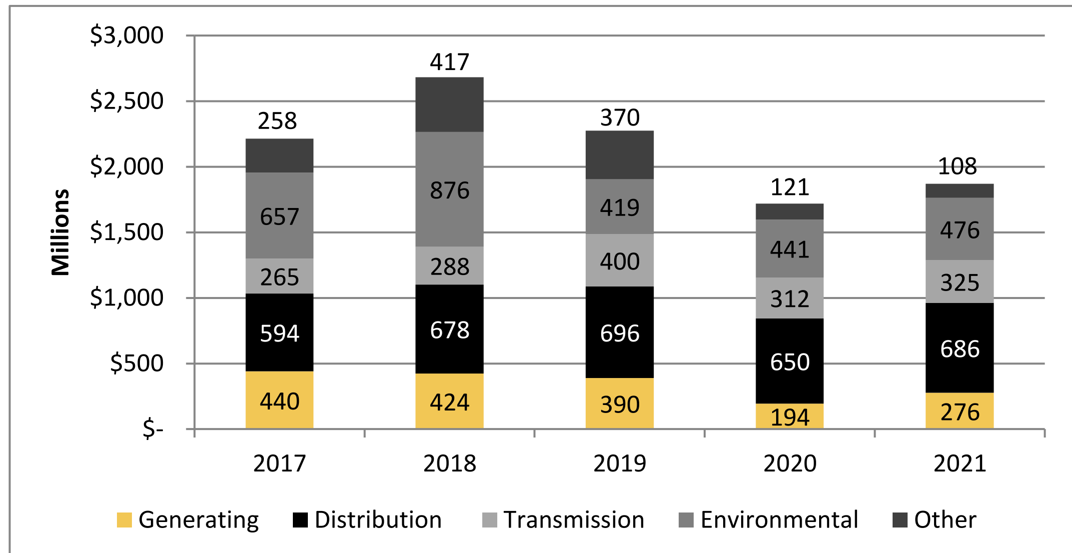
Source: FactSet

$16 billion X 40.2% Equity X 13.9% ROE in '17 = $894,048/ 679,700 current shares = 1.32/ 2.11 EPS = 62% possible EPS growth in 5 years

Capital Expenditures

Low interest rates have created the opportunity for domestic expansion, estimated to be around $16 billion, 41.75% of total assets, for 2017 through 2021. Most of the capital expenditures will be for the electricity distribution units. These distribution units are the main service provided in the U.K., the largest contributor to EPS. Also, a $471 million smart-grid project in the U.S. is currently underway, which improves efficiency and more easily tracks energy usage. These costs can be partially recovered through rates because they provide more efficient practices for the company.

Figure 5: PPL Corporation's predicted capital expenditures over the next 5 years by unit



Source: Company Reports

CapEx is supposed to exceed $16 billion over the next 5 years

To finance the mass expansion in the upcoming years, PPL will utilize long term and short term debt. Long-term debt makes up 64% of liabilities, and 70.4% of contractual cash obligations are due after 2021 as of year-end 2016. As rates rise due to Fed's policy, PPL's interest expense will begin to increase.

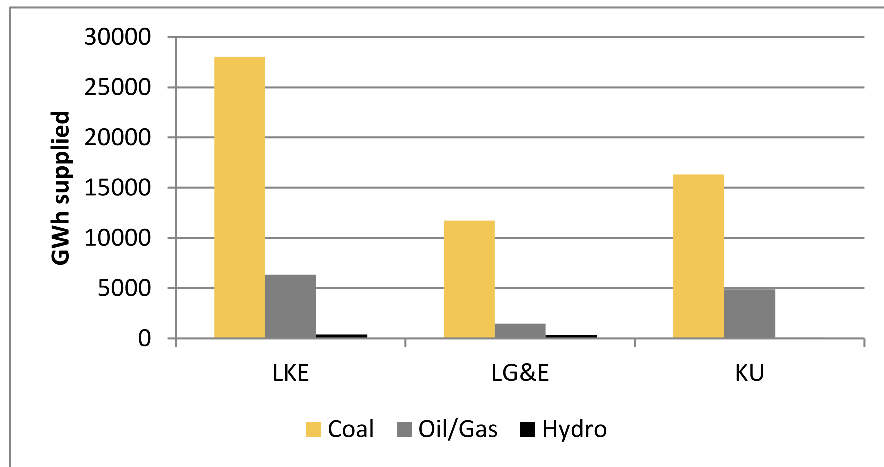
Government Regulation

LG&E and KU operate under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and the Kentucky Public Service Commision (KPSC), but KU also operates under the Virginia State Corporate Comission (VSCC). The U.K. segment is primarily affected by the Office of Gas and Electricity Markets (Ofgem).

In the United States legislation such as the Clean Air Act, the Mercury and Air Toxic Standards, and National Ambient Air Quality Standards influence PPL. Under the Trump administration, more environmental regulation is unlikely, but ambiguity surrounding the Paris agreement makes predictions difficult. Fuel and energy purchases make up about 33% of operating expenses so unexpected changes in coal regulation is a large threat to PPL as the resource is 81% of their domestic generation capabilities.

Despite the Trumps administration's push for coal, green energies threaten PPL's reliance on coal. PPL added to Kentucky's natural gas unit to begin a transition from coal.

Figure 6: PPL Corporation's use of natural resources (not pictured is solar)

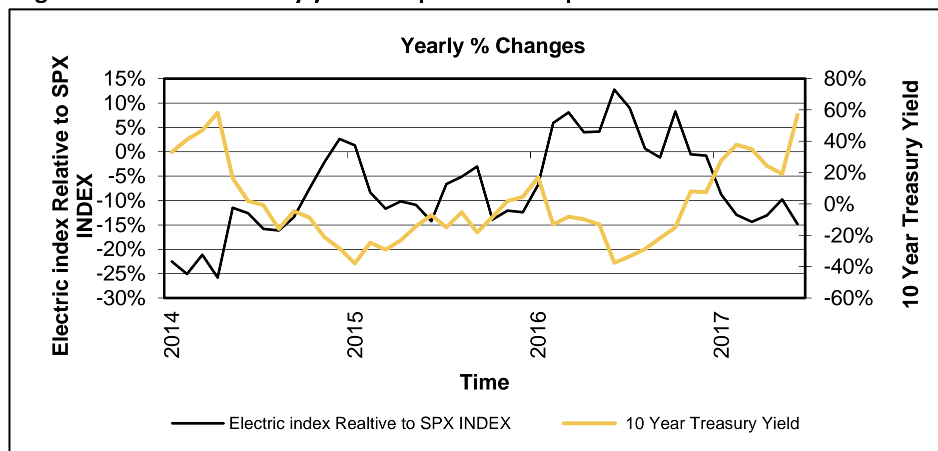


Source: Company Reports

Macroeconomic Trends

Utilities are negatively correlated to Treasury yields given the high dividend yield. PPL and its competitors tend to outperform the S&P in periods of decreasing rates, but the discontinuation of PPL's Supply segment led to a sharp decline in earnings during 2015. PPL's dividend growth over 5 years was 9.15% vs a median of 18.48%. PPL's current dividend yield is around 5.22% and its dividend payout ratio is 70.8 compared to medians of 4.15% and 89.5 for the industry.

Figure 7: 10-Year Treasury yield compared to competitor index relative to the S&P 500



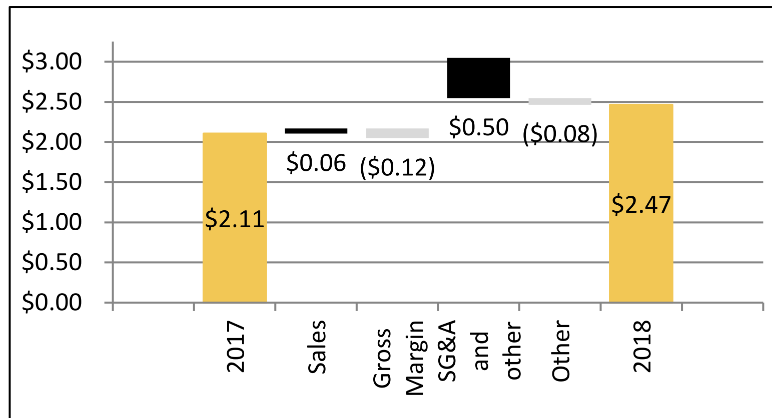
Source: Bloomberg, IMCP

Throughout 2017, the Fed has hiked rates three times and is expected to continue increasing under the new chair, Jerome Powell.

Financial Analysis

I anticipate EPS to grow to $2.47 in FY 2018. Increasing revenues in the US would attribute $0.12 to earnings in 2018, but declining revenues in the U.K. segment reduce the gain to a $0.06 increase. A decline in gross margins will lead to a $0.12 decrease in EPS from a new wave of capital expenditures beginning this year resulting in an increase in depreciation. Lower SG&A and other has a significant impact on 2018 earnings. This change is due to a large reported $235 million loss through nine months ended September 30, 2017. Since Brexit, PPL incurred extreme losses from derivative instruments because of a declining pound. As of October 2017, PPL is fully hedged to a rate of £1.22 per dollar, and because this occurred in the beginning of the 4th quarter, I estimate a $25 million loss in the final months vs. the $78.3 million per quarter average in 2017. I predict this expense will not incur during 2018, placing PPL on track for steady growth and the $0.50 adjustment. The other $0.08 reduction is due to increased interest expense as the Fed raises rates, because any new debt issued to finance capital expenditures will require a higher rate.

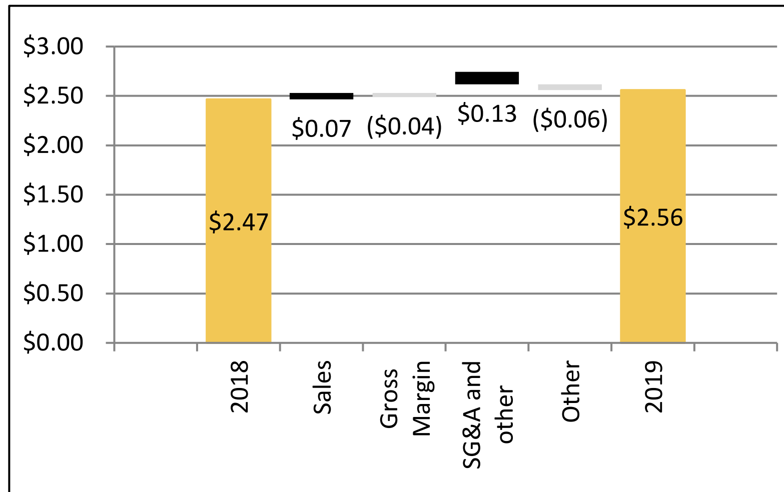
Figure 8: Quantification of 2018 EPS drivers



Source: IMCP Valuation Model

I anticipate 2019 EPS to increase $0.09 to $2.56. Higher operating revenues should add $0.07 this year, both from a 1% increase in the U.K. segment and 2.2% in the United States. A gross margin (including depreciation and amortization) decline will result in a $0.04 loss to earnings. This again is due to the increase in capital expenditures as part of PPL's 5-year capital expenditure plan. Lower SG&A's is due to currency issues. The correction in 2018 is much greater because of an unprepared decline in the pound, but historically, in times of a steady exchange rate, PPL recognizes a gain due to currency. I anticipate interest rates to continue rising through 2019, which brings final EPS down another $0.06 to $2.56.

Figure 9: Quantification of 2019 EPS drivers



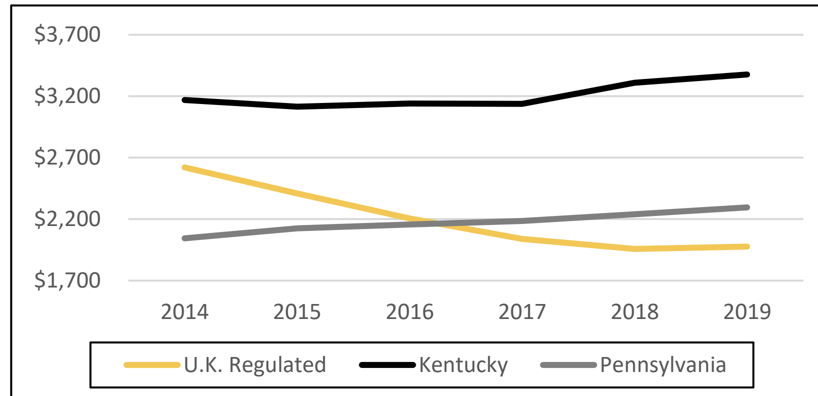
Source: IMCP Valuation Model

Revenues

Prior to fiscal year 2018, PPL experienced negative sales growth for a few years. The declining sales in the U.K. segment was the main driver as the United States sales have been increasing between 0.5% and 1% in the same period. The average growth rate for the United States from 2014 through 2016 is 0.7% while the United Kingdom had an average of -8.0%.

Overall revenue fell by 2.0% from $5,699 million in 2015 to $7,517 million in 2016. The driving factor for the decline was the U.K. segment's Ofgem regulatory matters. PPL was required to return £161 million to consumers in the U.K. because of a judicial decision related to electricity distribution losses, translating to a $209.3 million loss of revenue in 2015 at a rate of $1.30 per pound. I predict these losses are not recurring; however, 2017 revenues were adversely affected by exchange rates. As of Q3-2017, there was a negative $183 million change in revenues from 2016 due to foreign currency exchange rates; this is separate from the loss on derivative instruments. After 2017, I expect revenues will begin to stabilize at 1.0% growth, as management has time to predict and plan for a stable pound.

Figure 10: Segment revenues from 2014-2019



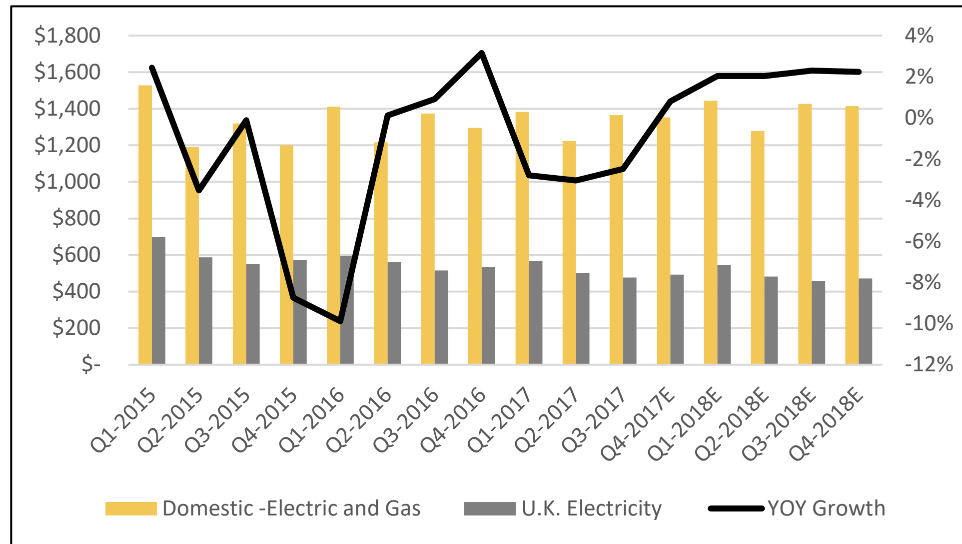
Source: IMCP Valuation Model

I anticipate 2017 full year revenue to be around $7,737 million, a 1.9% decline from 2016. Foreign currency loss was the largest contributor to negative growth. For nine months ending September 30, 2017, growth was -2.8%. In the final three quarters of 2017, operating revenues total $5,521 million

vs. a $5,685 in 2016. Historically, the first and third quarters tend to generate more revenue. These are the coldest and warmest times of year for the southern United States, boosting gas usage, a driver for Kentucky Regulated.

Future revenues are also dependent on rate cases. New base electricity rates for KU increase sales 3.2%, while LG&E's rates for electricity and gas increased 5.2% and 2.1% on July 1, 2017, which boosted Q3-2017 sales.

Figure 11: Segment revenues from 2014-2016



Source: Company Reports

I am less optimistic on revenue than consensus for the rest of 2017, but more confident in 2018 and 2019. My 2017 EPS is at the low range of consensus while I predict higher than consensus for 2018 and 2019. I believe this is because of with a more stable pound, giving management time to stabilize margins and hedge currency risk.

Figure 12: Segment revenues from 2014-2016

*millions	2017E	2018E	2019E
Revenue Estimate*	$7,373	$7,520	$7,662
YoY Growth	-1.92%	1.99%	1.89%
Revenue Consensus*	$7,518	$7,943	$8,195
YoY Growth	0.01%	5.65%	3.17%
EPS Estimate	$2.11	$2.47	$2.56
YoY Growth	-24.99%	17.07%	3.81%
EPS Consensus	$2.18	$2.32	$2.42
YoY Growth	-11.02%	6.42%	4.31%
EPS Guidance High	$2.10	-	-
EPS Guidance Low	$2.25	-	-

Return on Equity

PPL has historically achieved an average return on equity above it comps (refer to figure 3). In 2015, ROE was significantly impacted by the Supply spinoff, greatly reducing the bottom line but also reducing taxes by 32.0%. The increase from 2017 to 2018 is driven by a boost in EBIT/sales because of the 2.0% sales increase and lower currency losses. The return on assets dropped in 2017 as net income declined due to sales, then picks up in 2018 due to lower currency losses.

Figure 13: Segment revenues from 2014-2016

5-stage DuPont	2014	2015	2016	2017	2018	2019
EBIT / sales	38%	38%	46%	38%	43%	44%
Sales / avg assets	0.17	0.17	0.19	0.19	0.18	0.18
EBT / EBIT	71.6%	70.4%	74.2%	68.2%	69.8%	69.5%
Net income /EBT	81.6%	33.0%	74.6%	75.1%	75.1%	75.1%
ROA	3.7%	1.5%	4.9%	3.6%	4.0%	4.1%
Avg assets / avg equity	3.65	3.74	3.92	3.84	3.65	3.38
ROE	13.3%	5.8%	19.2%	13.9%	14.8%	13.7%

The historical trend of increasing equity will reduce Avg assets / avg equity, but will be offset with increasing ROA. Except for the Supply spinoff in 2015, DuPont analysis reveals ROE is most affected by avg assets / avg equity.

Free Cash Flow

PPL's ability to generate FCF is also very affected by the Pounds performance. The utility industry is very capital intensive and companies are highly leveraged. While PPL's FCFF in 2017 is negative, after interest expenses and new debts, the firm has a positive $602 FCFE, then increasing in 2018 due to higher margins, lower NFA increases, and more debt gains.

I expect the FCFF and the FCFE to rise significantly in 2018 and 2019 as management adjusts currency hedging and as debt increases, it will more than capital expenditures.

Please note the high cash flows in 2015was due to the sale of PPL's Supply segment.

Figure 14: Segment revenues from 2014-2016

Free Cash Flow With Cash and Debt							
	2013	2014	2015	2016	2017E	2018E	2019E
NOPAT	$1,984	$2,006	$2,278	$2,564	$2,100	$2,401	$2,504
Growth		1.1%	13.6%	12.6%	-18.1%	14.3%	4.3%
NOWC	$1,257	$1,717	$171	-$329	-$159	$1,157	$2,492
Net fixed assets	$40,199	$41,720	$36,655	$36,248	$38,427	$39,193	$39,932
Total net operating capital	$41,456	$43,437	$36,826	$35,919	$38,268	$40,349	$42,424
Growth		4.8%	-15.2%	-2.5%	6.5%	5.4%	5.1%
- Change in NOWC		$460	-$1,546	-$500	$170	$1,316	$1,335
- Change in NFA		$1,521	-$5,065	-$407	$2,179	$766	$739
FCFF		$25	$8,889	$3,471	-$249	$320	$430
Growth			35463.3%	-60.9%	-107.2%	-228.4%	34.4%
- After-tax interest expense		$569	$675	$662	$669	$752	$849
+ Net new short-term and long-term debt		$249	-$1,893	-$715	$1,520	$2,189	$2,042
FCFE		-$295	$6,321	$2,094	$602	$1,756	$1,624
Growth			-2242.7%	-66.9%	-71.2%	191.6%	-7.6%

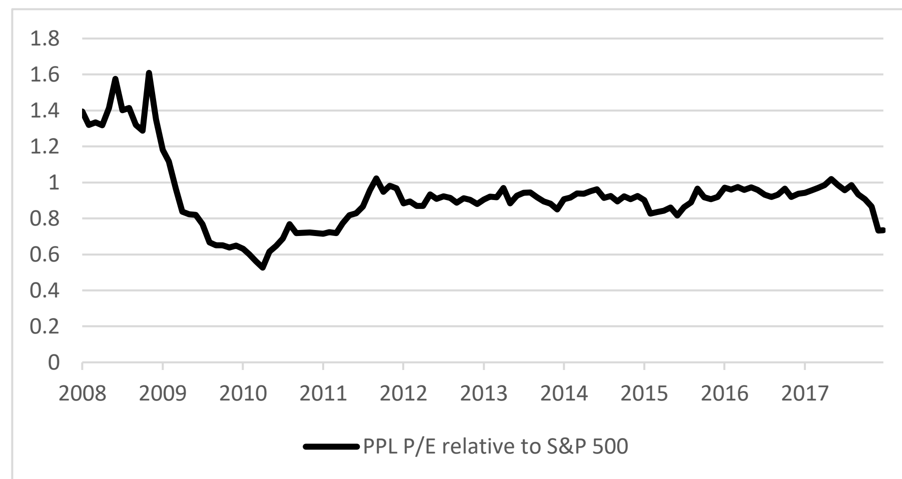
Valuation

PPL was valued using a 3-stage discounting cash flow model and a relative valuation approach. Based on forecasted NTM P/E and expected 2018 EPS of $2.43, the stock is overvalued with a target price of $28.82. A P/B relative valuation regression, based on ROE, shows PPL to be slightly undervalued compared to its peers. Price-to-book valuation yielded a price of $35.27. A detailed DCF analysis values PPL slightly lower, at $35.53. Based on these valuations, I believe PPL Corporation is worth about $35.00 a share.

Trading History

PPL is currently trading slightly below its ten-year average NTM P/E relative to the S&P 500. PPL's P/E typically has traded below the S&P 500 within a range of 0.8 to 1.6 time the market. PPL's current NTM P/E is at 14 compared to its ten-year average of 13.08. I expect a decline as interest rates rise.

Figure 15: PPL NTM P/E relative to S&P 500



Source: FactSet

If the NTM P/E lowers to 12.7 through the end of 2018, it should trade at $30.86 by the end of the year based on my 2018 EPS estimate.

- Price= P/E x EPS = 12.7 x $2.56 = $32.51

Discounting $32.51 back to today at 7.05% cost of equity yields a price of $30.24.

Relative Valuation

PPL Corporation is currently trading at a P/E lower than its comps; NTM P/E of 14.3 compared to an average of 16.0. PPL's P/B and P/S is higher than its peers, likely due to higher net profit margins and ROE.

Figure 16: PPL comparable companies

Ticker		Current Price	Market Value	Price Change 1 day	Price Change 1 Mo	Price Change 3 Mo	Price Change 6 Mo	Price Change 52 Wk	Price Change YTD	Earnings Growth LTG	Earnings Growth NTM	Earnings Growth 2016	Earnings Growth 2017	Earnings Growth 2018	Earnings Growth 2019	Earnings Growth Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	LTM Dividend Payout
PPL	PPL CORP	$32.27	$22,046	0.8	3.7	(14.4)	(15.0)	(6.5)	4.3	-0.1	2.3%	175.7%	-25.0%	15.2%	0.4%	0.6%	0.37	178.7%	B	5.11%	70.8%
AEP	AMERICAN ELECTRIC POWER	$69.70	$34,284	1.8	(5.4)	(5.3)	1.2	11.5	(5.3)	10.2		6.8%	-8.4%	7.8%	5.7%		0.01		B+	3.25%	
EXC	EXELON CORP	$38.68	$37,136	1.2	(0.8)	(3.5)	4.5	9.4	(1.9)	2.3	40.6%	7.6%	-0.7%	8.3%	-2.1%	-20.0%	0.25	114.2%	B	3.32%	58.3%
D	DOMINION ENERGY	$76.69	$49,432	1.5	(4.7)	(3.8)	(0.1)	1.2	(5.4)	5.8	16.3%	10.5%	-5.8%	12.3%	6.0%	7.1%	0.18	189.7%	B	3.74%	87.5%
SO	SOUTHERN CO	$44.62	$44,782	1.2	(8.0)	(14.5)	(4.6)	(8.0)	(7.2)	4.0	457.9%	0.0%	2.1%	3.1%	3.6%	-0.1%	0.25	114.2%	B	3.32%	58.3%
PEG	PUBLIC SERVICE ENTRP GRP	$51.12	$25,869	1.4	0.1	4.0	16.6	17.8	(0.7)	2.4	201.7%	-0.3%	0.7%	2.1%	1.3%	-10.6%	0.18	189.7%	B	3.74%	87.5%
DUK	DUKE ENERGY CORP	$78.90	$55,221	2.1	(6.3)	(10.1)	(5.9)	2.4	(6.2)	4.3	25.6%	3.3%	-2.8%	5.9%	5.2%	-4.0%	0.02	117.5%	B	4.15%	91.5%
Average			$38,396	1.4	(3.1)	(6.8)	(0.5)	4.0	(3.2)	4.1	124.1%	29.1%	-5.7%	7.8%	2.9%	-4.5%	0.18	150.7%		3.81%	75.6%
Median			$37,136	1.4	(4.7)	(5.3)	(0.1)	2.4	(5.3)	4.0	33.1%	6.8%	-2.8%	7.8%	3.6%	-2.1%	0.18	148.1%		3.74%	79.1%
SPX		$2,839		0.1	5.8	11.0	14.6	23.5	6.2			0.5%	10.2%	11.0%	10.1%						

Ticker		2017 ROE	P/B	P/E 2015	P/E 2016	P/E 2017	P/E TTM	P/E NTM	P/E 2018	P/E 2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	Sales Growth STM	Sales Growth Pst 5yr	Book Equity
PPL	**PPL CORP**	13.6%	2.08	33.5	12.1	14.7	14.6	14.3	13.3	13.2	19.5%	2.99	40.7%	6.7%	13.8	7.1	6.2	7.8%	0.8%	0.1%	$15.54
AEP	**AMERICAN ELECTRIC POWER**	9.8%	1.90	15.8	16.0	20.4		17.8	17.9	17.0	11.8%	2.27	20.2%			7.7			-0.9%	0.7%	$36.74
EXC	**EXELON CORP**	9.1%	1.32	11.2	13.2	14.8	17.3	12.3	13.4	13.7	7.6%	1.11	12.9%	2.1%	15.3	4.0	3.7	5.2%	-3.5%	11.2%	$29.24
D	**DOMINION ENERGY**	14.2%	3.03	19.7	20.2	22.6	22.6	19.4	19.1	18.0	17.8%	3.81	30.7%	5.2%	25.4	9.2	9.9	14.7%	4.1%	-4.3%	$25.28
SO	**SOUTHERN CO**	12.3%	1.86	16.2	17.0	16.3	81.8	14.7	14.7	14.2	13.1%	1.99	25.1%	4.4%	18.6	7.8	7.8	5.2%	-3.5%	2.4%	$23.99
PEG	**PUBLIC SERVICE ENTRP GRP**	11.2%	1.97	13.3	15.1	17.6	49.6	16.4	17.2	16.9	15.6%	2.73	8.1%	3.9%	24.7	7.1	5.9	14.7%	4.1%	-3.7%	$25.99
DUK	**DUKE ENERGY CORP**	7.7%	1.33	15.7	16.6	18.4	20.9	16.6	16.3	15.5	13.0%	2.25	24.8%	3.1%	18.3	7.5	7.7	18.3%	3.8%	9.3%	$59.47
Average		11.1%	1.93	17.9	15.7	17.8	34.5	16.0	16.0	15.5	14.1%	2.45	23.2%	4.2%	19.3	7.2	6.9	11.0%	0.7%	2.2%	
Median		11.2%	1.90	15.8	16.0	17.6	21.8	16.4	16.3	15.5	13.1%	2.27	24.8%	4.1%	18.5	7.5	7.0	11.2%	0.8%	0.7%	

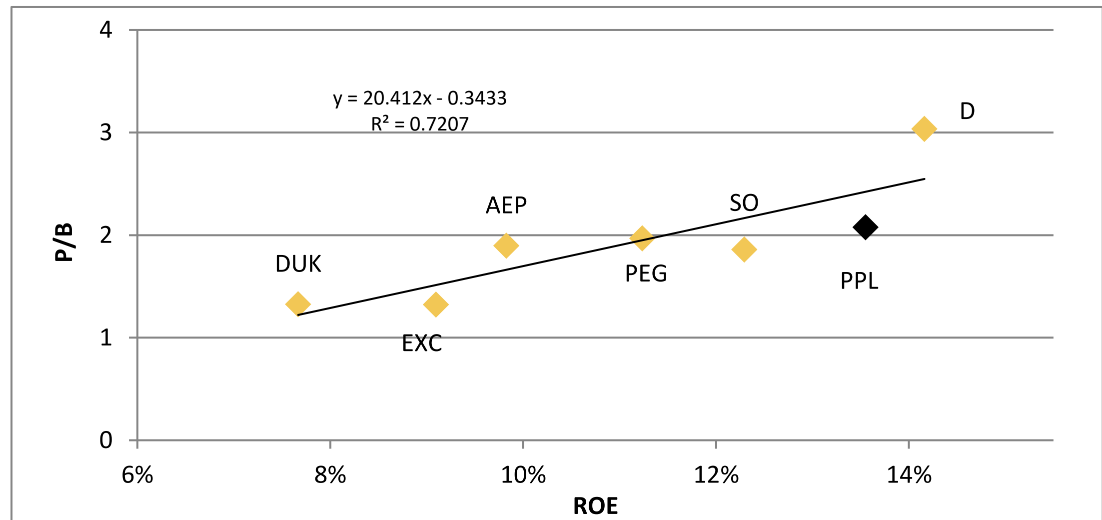
Source: FactSet

Figure looks at the relationship between P/B and ROE. The calculated R-squared of the regression shows ROE explains around 75% of P/B. PPL's ratio is below this regression line, appearing to be undervalued.

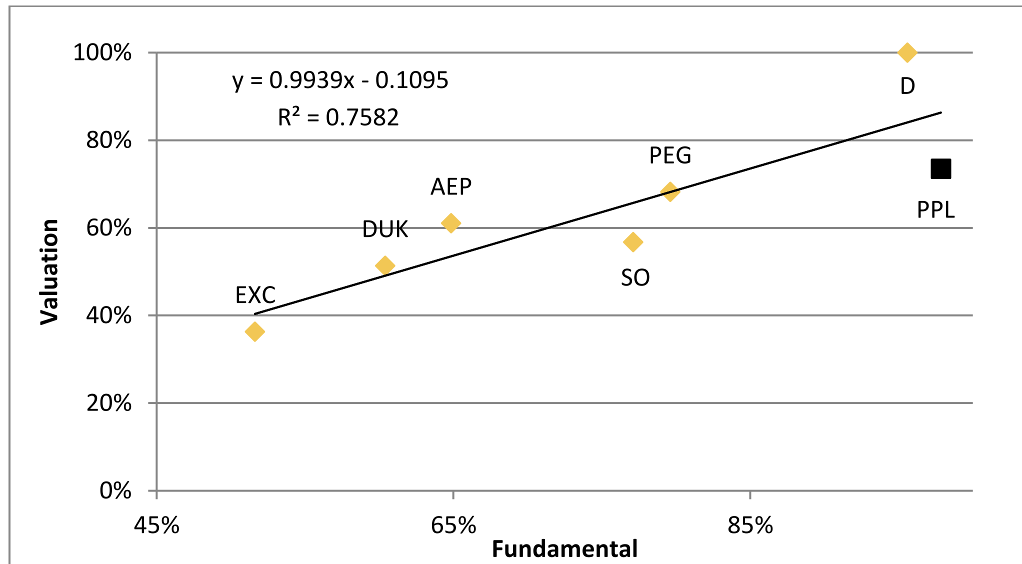
- Estimated P/B = Estimated 2018 ROE (15%) X 13.08 +.3175 = 2.28
- Target Price = Estimated P/B (2.28) X 2018E Book per share ($16.56) = $37.76

Discounting this price back to the present at 7.05% cost of equity gives a target price of $35.27. This is above the current price by over 10%.

Figure 17: P/B vs ROE



Source: IMCP



Source: IMCP, FactSet

Figure 18: Composite valuation, % of range

		Fundamental		Valuation			
	Weight	50.0%	50.0%	50.0%	50.0%		
Ticker	**Name**	**ROE**	**NPM**	**P/B**	**P/S**	**Fund**	**Value**
PPL	PPL CORP	96%	100%	68%	78%	98%	73%
AEP	AMERICAN ELECTRIC POWER CO	69%	60%	63%	60%	65%	61%
EXC	EXELON CORP	64%	39%	44%	29%	52%	36%
D	DOMINION ENERGY INC	100%	91%	100%	100%	96%	100%
SO	SOUTHERN CO	87%	67%	61%	52%	77%	57%
PEG	PUBLIC SERVICE ENTRP GRP INC	79%	80%	65%	72%	80%	68%
DUK	DUKE ENERGY CORP	54%	67%	44%	59%	60%	51%

Source: IMCP, FactSet

Discounted Cash Flow Analysis

Based on a three-stage discounted cash flow model, I estimate the company's stock to be worth

The cost of equity was calculated to be 6.93% using the CAPM with the following assumptions:

- Risk-free rate of 2.62%. This is currently the 10-year Treasury bond yield.
- A beta of 0.60 since the sector is less volatile than the market.
- Market return of 10%. Historically, this has been about the average return of the market.

The cost of equity = 2.62% + .6 x (10% - 2.62%) = 6.93%

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 $2.58 and $2.39, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $4.50 per share. Thus, stage one of this discounted cash flow analysis contributes $4.50 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 7.05% cost of equity. I assume 1.0% sales

growth in 2020, staying at 1.0% through 2024. The ratio of NOWC to sales will remain at 2019 levels, and NFA turnover will rise from 2.90 in 2016 to 3.47 in 2021 as revised rates reflect increases in NFA. Also, the NOPAT margin is expected to rise to 33.0% in 2024 from 32.7% in 2019.

Figure 19: FCFE and discounted FCFE, 2018-2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$2.58	$2.39	$2.18	$2.20	$2.22	$2.24	$2.26
Discounted FCFE	$2.41	$2.08	$1.78	$1.68	$1.58	$1.49	$1.40

Stage Three – Net income for the years 2018 – 2024 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $2.43 in 2018 to $2.53 in 2024.

Figure 20: EPS estimates for 2018-2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$2.43	$2.44	$2.45	$2.47	$2.49	$2.51	$2.53

Stage three of the model requires an assumption regarding the company's terminal price-toearnings ratio. For the purpose of this analysis, it is generally assumed that as a company grows larger and matures, its P/E ratio will converge near to the historical average of the S&P 500. Therefore, a P/E ratio of 14.7 is assumed at the end of PPL's terminal year. While this may be a low multiple at the end of 2024, one must consider what the market will price in today. A lower multiple may be better to calculate a fair value, but the stock will likely trade above this value because the market will be slow to price in PPL's slow growth.

Given the assumed terminal earnings per share of $2.53 and a price to earnings ratio of 14.7, a terminal value of $37.24 per share is calculated. Using the 7.05% cost of equity, this number is discounted back to a present value of $23.12.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $35.54 is calculated (4.50 + 7.92 + 23.12). Given PPL's current price of $32.27, this model indicates that the stock is slightly undervalued.

Figure 21: DCF Summary

Summary		
First stage	$4.50	Present value of first 2 year cash flow
Second stage	$7.92	Present value of year 3-7 cash flow
Third stage	$23.12	Present value of terminal value P/E
Value (P/E)	**$35.54**	= value at beg of fiscal yr 18

Scenario Analysis

By adjusting certain metrics within the DCF model, different bull and bear cases for PPL will affect its valuation. Figure 22 displays a more bullish scenario than my original model. Reducing beta from a .6 to a .5 decreases cost of equity to 6.31%, which raises the value to $37.00. If more rate cases become available to PPL through increased capital expenditures, sales growth can be revised up to 2%. This would bring the value to $37.44. A final adjustment of the P/E to bring it up by 1 to 15.7 would add another $1.73, ending up at $39.17.

Figure 22: Bull Summary

Summary		
First stage	$4.54	Present value of first 2 year cash flow
Second stage	$7.40	Present value of year 3-7 cash flow
Third stage	$27.22	Present value of terminal value P/E
Value (P/E)	**$39.17**	= value at beg of fiscal yr 18

A more pessimistic view on markets would result in a value of $32.50 . Unlike the bull case, increasing the beta to .7 moves the cost of equity up to 7.79%, decreasing the value to $34.14. Slowing sales growth to .5% during times of failed rate cases would further reduce the value to $33.96. Further decreasing the P/E by 1 would result in a value of $32.50.

Figure 22: Bear Summary

Summary		
First stage	$4.45	Present value of first 2 year cash flow
Second stage	$8.02	Present value of year 3-7 cash flow
Third stage	$20.03	Present value of terminal value P/E
Value (P/E)	**$32.50**	= value at beg of fiscal yr 18

Business Risks

Interest Rates

Rising interest rates reduce shareholder returns for utilities as they have high yields and are viewed safer than other sectors. Over the past month, markets have adjusted to this possibility but the stocks can still underperform if rates rise further.

Weather

Unexpected weather patterns can adversely affect revenues in given seasons. Kentucky's gas unit's demand peaks during cold season and electric utilities demand moves with differing weather patterns.

U.K. Segment

The U.K.'s regulator, Ofgem, has increased revenues by RPI since setting prices in 2012 through 2013. Changes in this, quick and drastic changes in currency and the U.K.'s overall economy leave PPL's highest earning sector open to risk.

Domestic Rate Cases

Domestic regulators for PPL include FERC, KPSC, VSCC, and PUC. These governing bodies are in charge of approving all rate cases affecting PPL's top line. Environmental regulation also poses a risk, but the current administration is pro coal, PPL's main natural resource.

Appendix 1: Income Statement

Income Statement (in millions)							
Items	2013	2014	2015	2016	2017E	2018E	2019E
Operating Revenue	$7,263	$7,852	$7,669	$7,517	$7,373	$7,520	$7,662
Direct costs (inc. Dep and Amort)	$4,702	$4,985	$4,838	$4,469	$4,318	$4,512	$4,635
Gross Profit	$2,561	$2,867	$2,831	$3,048	$3,055	$3,008	$3,026
Operating Expenses	$55	-$105	-$108	-$390	$260	-$188	-$306
Earnings before inerest and taxes	$2,506	$2,972	$2,939	$3,438	$2,795	$3,196	$3,333
Interest expense	$778	$843	$871	$888	$890	$1,001	$1,129
Earnings before tax	$1,728	$2,129	$2,068	$2,550	$1,905	$2,195	$2,203
Taxes	$360	$692	$465	$648	$474	$546	$548
Income after taxes	$1,368	$1,437	$1,603	$1,902	$1,431	$1,649	$1,655
Other	$238	$300	$921	$0	$0	$0	$0
Net income	$1,130	$1,737	$682	$1,902	$1,431	$1,649	$1,655
Basic Shares	609.0	653.5	669.8	677.6	679.7	679.7	679.7
EPS	$1.86	$2.66	$1.02	$2.81	$2.11	$2.47	$2.56
DPS	$1.47	$1.49	$1.50	$1.52	$1.58	$1.60	$1.62

Appendix 2: Balance Sheet

Balance Sheet (in millions)							
Items	2013	2014	2015	2016	2017E	2018E	2019E
Assets							
Cash	$1,102	$1,751	$836	$341	$676	$2,008	$3,360
Operating assets ex cash	$4,051	$4,408	$1,810	$1,726	$1,655	$1,688	$1,720
Operating assets	$5,153	$6,159	$2,646	$2,067	$2,331	$3,696	$5,079
Operating liabilities	$3,896	$4,442	$2,475	$2,396	$2,490	$2,540	$2,588
Net Operating Working Capital	$1,257	$1,717	$171	-$329	-$159	$1,157	$2,492
Net working Capital ex cash	$155	-$34	-$665	-$670	-$835	-$852	-$868
Net Fixed Assets	$40,199	$41,720	$36,655	$36,248	$38,427	$39,193	$39,932
Invested capital	$41,456	$43,437	$36,826	$35,919	$38,268	$40,349	$42,424
Marketable securities	$907	$985	$0	$0	$0	$0	$0
Total assets	46,259	48,864	39,301	38,315	40,758	42,889	45,011
Liabilities and Equity							
Short-term and long-term debt	$21,608	$21,857	$19,964	$19,249	$20,769	$22,289	$23,809
Other liabilities	$8,289	$8,937	$6,943	$6,771	$6,807	$6,807	$6,807
Debt/equity-like securities	$0	$0	$0	$0	$0	$0	$0
Equity	$12,466	$13,628	$9,919	$9,899	$10,692	$11,253	$11,808
Total supplied capital	$42,363	$44,422	$36,826	$35,919	$38,268	$40,349	$42,424
Total liabilities and equity	46,259	48,864	39,301	38,315	40,758	42,889	45,011

Appendix 3: Ratios

Ratios	2013	2014	2015	2016	2017E	2018E	2019E
Profitability							
Gross margin	35.3%	36.5%	36.9%	40.5%	41.4%	40.0%	39.5%
Operating (EBIT) margin	34.5%	37.9%	38.3%	45.7%	37.9%	42.5%	43.5%
Net profit margin	15.6%	22.1%	8.9%	25.3%	19.4%	21.9%	21.6%
Activity							
NFA (gross) turnover		0.19	0.20	0.21	0.20	0.19	0.19
Total asset turnover		0.17	0.17	0.19	0.19	0.18	0.17
Liquidity							
Op asset / op liab	1.32	1.39	1.07	0.86	0.94	1.46	1.96
NOWC Percent of sales		18.9%	12.3%	-1.1%	-3.3%	6.6%	23.8%
Solvency							
Debt to assets	46.7%	44.7%	50.8%	50.2%	51.0%	52.0%	52.9%
Debt to equity	173.3%	160.4%	201.3%	194.5%	194.2%	198.1%	#####
Other liab to assets	17.9%	18.3%	17.7%	17.7%	16.7%	15.9%	15.1%
Total debt to assets	64.6%	63.0%	68.5%	67.9%	67.7%	67.8%	68.0%
Total liabilities to assets	73.1%	72.1%	74.8%	74.2%	73.8%	73.8%	73.8%
Debt to EBIT	8.62	7.35	6.79	5.60	7.43	6.97	7.14
EBIT/interest	3.22	3.53	3.37	3.87	3.14	3.19	2.95
Debt to total net op capital	52.1%	50.3%	54.2%	53.6%	54.3%	55.2%	56.1%
ROIC							
NOPAT to sales	27.3%	25.5%	29.7%	34.1%	28.5%	31.9%	32.7%
Sales to NWC		129.79	(21.94)	(11.26)	(9.80)	(8.92)	(8.91)
Sales to NFA		0.19	0.20	0.21	0.20	0.19	0.19
Sales to IC ex cash		0.19	0.20	0.21	0.20	0.20	0.20
Total ROIC ex cash		4.9%	5.9%	7.2%	5.7%	6.3%	6.5%
ROE							
5-stage							
EBIT / sales		37.9%	38.3%	45.7%	37.9%	42.5%	43.5%
Sales / avg assets		0.17	0.17	0.19	0.19	0.18	0.17
EBT / EBIT		71.6%	70.4%	74.2%	68.2%	68.7%	66.1%
Net income /EBT		81.6%	33.0%	74.6%	75.1%	75.1%	75.1%
ROA		3.7%	1.5%	4.9%	3.6%	3.9%	3.8%
Avg assets / avg equity		3.65	3.74	3.92	3.84	3.81	3.81
ROE		13.3%	5.8%	19.2%	13.9%	15.0%	14.4%
3-stage							
Net income / sales		22.1%	8.9%	25.3%	19.4%	21.9%	21.6%
Sales / avg assets		0.17	0.17	0.19	0.19	0.18	0.17
ROA		3.7%	1.5%	4.9%	3.6%	3.9%	3.8%
Avg assets / avg equity		3.65	3.74	3.92	3.84	3.81	3.81
ROE		13.3%	5.8%	19.2%	13.9%	15.0%	14.4%
Payout Ratio		56.1%	147.4%	54.2%	75.0%	66.0%	66.5%
Retention Ratio		43.9%	-47.4%	45.8%	25.0%	34.0%	33.5%
Sustainable Growth Rate		5.8%	-2.7%	8.8%	3.5%	5.1%	4.8%

Appendix 4: 3-stage DCF Model

	Year						
	1	2	3	4	5	6	7
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*2.0%*	*1.9%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
NOPAT / S	*31.9%*	*32.7%*	*32.7%*	*32.8%*	*32.9%*	*32.9%*	*33.0%*
S / NOWC	*6.50*	*3.07*	*3.07*	*3.07*	*3.07*	*3.07*	*3.07*
S / NFA (EOY)	*0.19*	*0.19*	*0.19*	*0.19*	*0.19*	*0.19*	*0.19*
S / IC (EOY)	*0.19*	*0.18*	*0.18*	*0.18*	*0.18*	*0.18*	*0.18*
ROIC (EOY)	*6.0%*	*5.9%*	*5.9%*	*5.9%*	*5.9%*	*5.9%*	*6.0%*
ROIC (BOY)		*6.2%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
Share Growth		*0.0%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
Sales	$7,520	$7,662	$7,738	$7,816	$7,894	$7,973	$8,053
NOPAT	$2,401	$2,504	$2,534	$2,564	$2,595	$2,626	$2,657
Growth		*4.3%*	*1.2%*	*1.2%*	*1.2%*	*1.2%*	*1.2%*
- Change in NOWC	1316	1335	25	25	25	26	26
NOWC EOY	*1157*	*2492*	*2517*	*2542*	*2567*	*2593*	*2619*
Growth NOWC		*115.4%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
- Chg NFA	766	739	399	403	407	411	416
NFA EOY	*39,193*	*39,932*	*40,331*	*40,735*	*41,142*	*41,553*	*41,969*
Growth NFA		*1.9%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
Total inv in op cap	2081	2074	424	428	433	437	441
Total net op cap	40349	42424	42848	43277	43709	44146	44588
FCFF	$320	$430	$2,110	$2,136	$2,162	$2,189	$2,216
% of sales	*4.3%*	*5.6%*	*27.3%*	*27.3%*	*27.4%*	*27.5%*	*27.5%*
Growth		*34.4%*	*391.0%*	*1.2%*	*1.2%*	*1.2%*	*1.2%*
- Interest (1-tax rate)	752	849	857	866	874	883	892
Growth		*12.8%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
+ Net new debt	2189	2042	238	240	243	245	248
Debt	22289	23809	24047	24288	24530	24776	25023
Debt / tot net op capital	*55.2%*	*56.1%*	*56.1%*	*56.1%*	*56.1%*	*56.1%*	*56.1%*
FCFE w debt	$1,756	$1,624	$1,491	$1,511	$1,531	$1,551	$1,572
% of sales	*23.4%*	*21.2%*	*19.3%*	*19.3%*	*19.4%*	*19.5%*	*19.5%*
Growth		*-7.6%*	*-8.2%*	*1.3%*	*1.3%*	*1.3%*	*1.3%*
/ No Shares	679.7	679.7	683.1	686.5	690.0	693.4	696.9
FCFE	$2.58	$2.39	$2.18	$2.20	$2.22	$2.24	$2.26
Growth		*-7.6%*	*-8.6%*	*0.8%*	*0.8%*	*0.8%*	*0.8%*
* Discount factor	0.93	0.87	0.82	0.76	0.71	0.66	0.62
Discounted FCFE	$2.41	$2.08	$1.78	$1.68	$1.58	$1.49	$1.40
Terminal value P/E							
Net income	$1,649	$1,655	$1,677	$1,699	$1,721	$1,743	$1,766
% of sales	*21.9%*	*21.6%*	*21.7%*	*21.7%*	*21.8%*	*21.9%*	*21.9%*
EPS	$2.43	$2.44	$2.45	$2.47	$2.49	$2.51	$2.53
Growth		*0.4%*	*0.8%*	*0.8%*	*0.8%*	*0.8%*	*0.8%*
Terminal P/E							14.70
* Terminal EPS							$2.53
Terminal value							$37.24
* Discount factor							0.62
Discounted terminal value							$23.12

First stage	$4.50	Present value of first 2 year cash flow
Second stage	$7.92	Present value of year 3-7 cash flow
Third stage	$23.12	Present value of terminal value P/E
Value (P/E)	**$35.54**	= value at beg of fiscal yr 2018

Appendix 5: Porter's 5 Forces

Threat of New Entrants – Very Low

Significant barriers to entry continue to exist in the industry. As a natural monopoly, WEC benefits from the substantial capital and regulatory requirements necessary for aspiring competitors. Additionally, marginal costs of supplying power to one more customer are minimal. Geographic restraints vary by state but remain favorable for the majority of WEC operations.

Threat of Substitutes - Low

Technology shifts and government subsidies have decreased price points for solar panels and other renewable generation sources. Self-generation is a growing threat to reduce WEC's customer base. Other self-generation techniques, such as microturbines and fuel cells, provide a long-term threat to WEC's demand but remain nonviable options in short-term demand.

Supplier Power - Medium

Companies such as Siemens and General Electric dominate the power systems supply market. Little competition exists amongst these suppliers and the utility industry necessitates high building and development capital expenditures. Heightened needs for capacity and delivery shift power to suppliers of WEC. Natural gas and electric power inputs are highly commoditized and prices are determined by market forces. WEC faces relatively low switching costs with natural gas suppliers and acts to hedge natural gas market price movements.

Buyer Power – Medium to Low

Residential and small commercial and industrial customers have very limited ability to switch suppliers. Customers rarely shift demand for power unless external factors necessitate such actions. As prices rise customers may attempt to reduce energy usage with various conservation efforts. In exchange for low customer buying power, rates and allowed returns are heavily regulated. Retail choice and wholesale rate agreements have shifted power to electric and natural gas buyers, but this represents a small portion of WEC's revenue base.

Intensity of Competition – Low

Industry competition is low due to geographic and regulatory limitations. Independent power producers and retail choice have increased competition, but generally, these are a minimal threat to the industry.

Appendix 6: SWOT Analysis

Strength	**Weaknesses**
Gas Unit	Commodity pricing
United Kingdom operations	Limited ROE
Risk averse management	Weather
Opportunities	**Threats**
Revising rates	Rising interest rates
European markets	Regulation
Green energy	Foreign exchange rates

Semiconductors

INTEL CORPORATION

Recommendation	Neutral
Target (today's value)	$44.00
Current Price	$44.43
52 week range	$36.27 - $46.16

Share Data	
Ticker:	INTC
Market Cap. (Billion):	$207.93
Inside Ownership	0.0%
Inst. Ownership	70.4%
Beta	1.06
Dividend Yield	2.45%
Payout Ratio	37.2%
Cons. Long-Term Growth Rate	8.4%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$55.4	$59.4	$62.1	$64.8	$68.9
Gr %		12.2%	4.5%	4.4%	6.3%
Cons	-	-	-	$62.0	$63.8
EPS					
Year	$2.41	$2.18	$2.96	$2.95	$3.16
Gr %		-9.4%	35.7%	-0.8%	7.7%
Cons	-	-	$3.24	$3.25	$3.37

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	19.2%	16.0%	16.0%	22.5%	20.5%
Industry	36.4%	24.6%	28.4%	34.1%	31.6%
NPM (%)	20.6%	17.4%	17.4%	25.3%	24.4%
Industry	20.3%	14.1%	16.6%	25.1%	25.2%
A. T/O	0.57	0.53	0.55	0.49	0.48
ROA (%)	11.8%	9.6%	9.6%	12.4%	11.7%
Industry	10.3%	7.4%	9.5%	13.2%	12.8%
A/E	1.63	1.66	1.73	1.70	1.72

Valuation	'15	'16	'17	'18E
P/E	14.7	17.1	15.2	13.4
Industry	20.8	30.9	24.1	20.8
P/S	3.05	3.05	3.37	3.27
P/B	2.9	2.7	2.9	2.9
P/CF	8.7	9.3	9.1	9.5
EV/EBITDA	11.4	12.5	12.5	12.5

Performance	Stock	Industry
1 Month	-5.3%	-2.8%
3 Month	19.3%	5.5%
YTD	19.5%	20.8%
52-week	17.8%	20.0%
3-year	19.6%	37.9%

Contact: Matt Klaver
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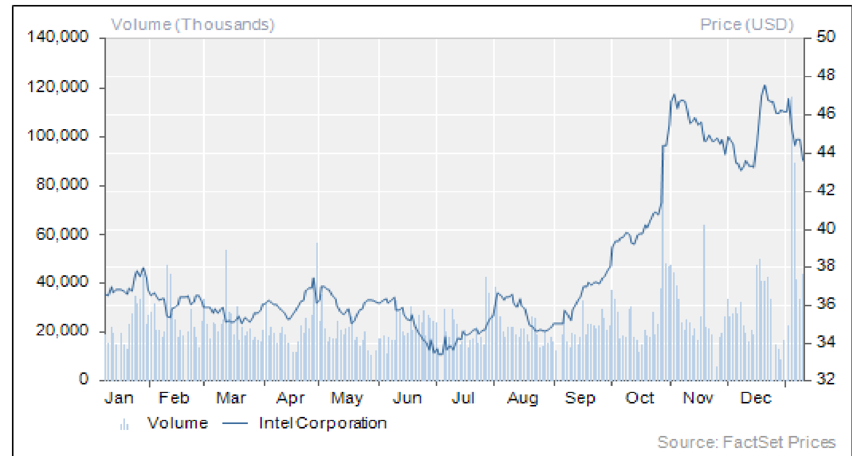


Summary: I recommend a neutral rating with a target of $44. Although INTC has an opportunity to dramatically improve efficiency and increase margins, there is a lot of uncertainty regarding the technology that they have invested in and how quickly it can be adapted. This uncertainty greatly affects the company in both the short run and long run. The stock is fairly valued based on relative and DCF

Key Drivers:

- Change in the PC market: Intel's largest operating segment has always been the Client Computing Group; however, it has been shrinking as a percentage of sales in recent years. Other segments have been growing much faster as PCs have matured.

- Connectivity and automobiles: In 2017, Intel acquired the Israeli based company Mobileye. INTC also began forming partnerships with ride-sharing companies and car manufacturers to help establish its presence in the future market of self-driving cars.

- Capital Investments: Intel's persistence as a leader of innovation has created years of strong success. In addition to owning its own fabs, Intel continually increases R&D expenditures to continue to increase efficiency as well as push technological advancements.

- Competition: Growth segments are high priority for semiconductors. Intel has consistently invested high numbers into R&D while maintaining high margins. By making successful acquisitions and investments, early on Intel is able to stay ahead of their competition.

Valuation: Using a relative valuation approach, Intel appears to be fairly valued in comparison to the semiconductor industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that Intel is fairly valued, as the stock's value is about $44 and the shares trade at $44.43.

Risks: Threats to the business include legal problems with AI, failure to meet innovation expectations, inability to maintain margins, and intense competition.

Company Overview

SSG's historical results are now located in All Other along with the New Technology Group.

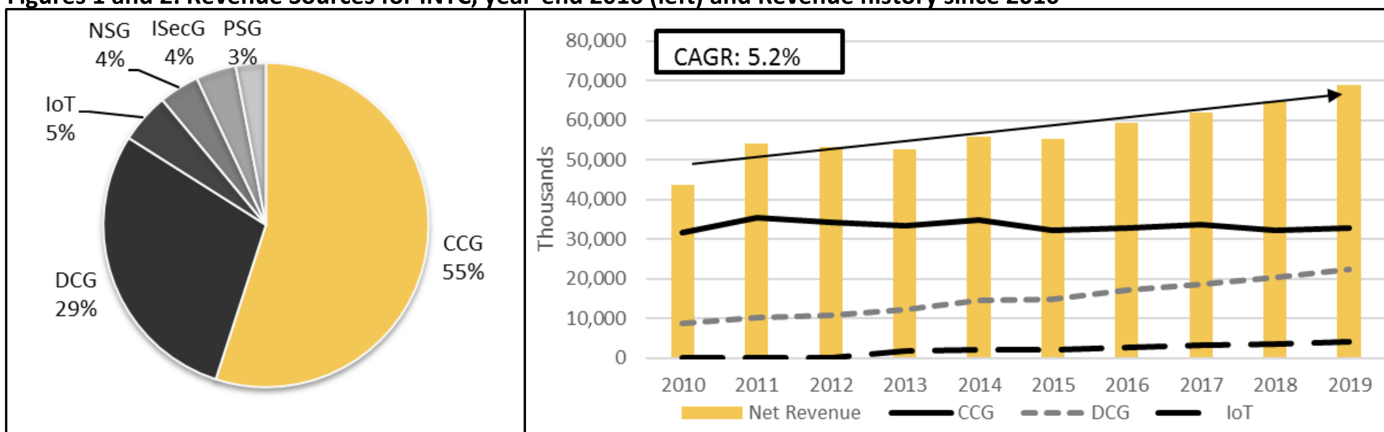
Intel Corporation (INTC) provides design and manufacturing of products that power the cloud and the connected world. Intel operates through the following segments: Client Computing Group (CCG), Data Center Group (DCG), Internet of Things Group (IoT), Non-Volatile Memory Solutions (NSG), Intel Security Group (ISecG), and Programmable Solutions (PSG). Most revenue is generated through platforms that incorporate various components and technologies, which can be enhanced through services provided by Intel.

Intel's revenue has historically come from the CCG; however, in recent years the company has seen shifts from the CCG segment into the rest of Intel's operating segments. With PC sales decreasing worldwide, Intel has been focusing on other segments with higher potential growth.

Intel made several partnerships and investments in 2017 to increase DCG revenue.

- The Client Computing Group: The CCG segment consists of platforms designed for computers, phones, mobile communication components, wireless and wired connectivity products, and tablets. This segment saw a 2% revenue increase from 2015-2016; however, it shrank from 58% of Intel's revenue to 55% led by decreasing demand for personal computers while demand for other products was strong.
- The Data Center Group: The DCG segment consists of workload based platforms and related products designed for cloud and enterprise components. This segment is comprised of high growth areas such as Artificial Intelligence (AI) and 5G networks. The segment experienced an 8% increase in revenue from 2015 to 2016.
- Internet of Things Group: The (IoT) group consists of platforms for market segments, including retail, transportation, industrial, video, buildings, and a broad range of other market segments. This segment reported a 15% increase from 2015 to 2016.
- Non-Volatile Memory Solutions: The NSG consists of NAND and flash memory used in solid-state drives. NSG observed a decrease in revenue of 1% from 2015 to 2016.
- Intel Security Group: The IsecG consists of security software products designed to create solutions to secure computers, mobile devices, and networks. IsecG grew 9% from 2015 to 2016.
- Programmable Solutions Group: The PSG consists of programmable semiconductors and related products for a range of markets including data center, automotive, and industrial. The PSG reported revenues of $1.7 billion in 2016 as its first year as a reportable segment.
- All Other: The remaining segments that are non-reportable are in the All Other category. Results are also for the New Technology Group, which consists of operations startup businesses.

Figures 1 and 2: Revenue Sources for INTC, year-end 2016 (left) and Revenue history since 2010



Source: Company reports

Business/Industry Drivers

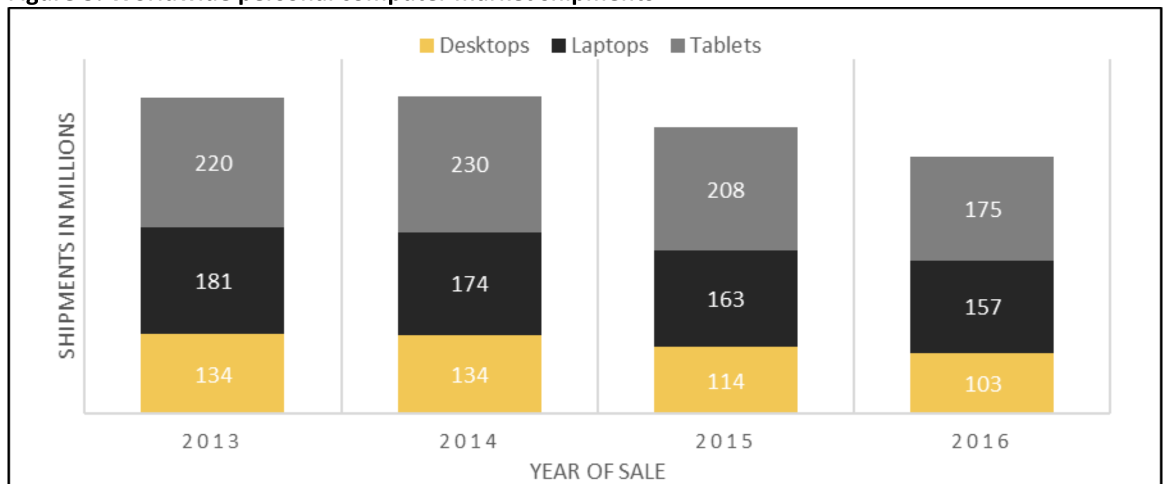
Though several factors may contribute to Intel's future success, the following are the most important business drivers:

1) Change in the PC
2) Connectivity and automobiles
3) Capital investments
4) Competition
5) Macroeconomic trends

<u>Change in the PC Market</u>

The personal computer market has been declining since 2014. The CCG makes up 55% of sales but is down from a peak level of nearly 80%. The CCG was referred to as the PCCG segment until 2015. In 2015, Intel combined its mobile segment with the PCCG segment since the mobile segment was not large enough to be reported on its own. The segment increased 2% in 2016 and underperformed in respect to the rest of its operating segments.

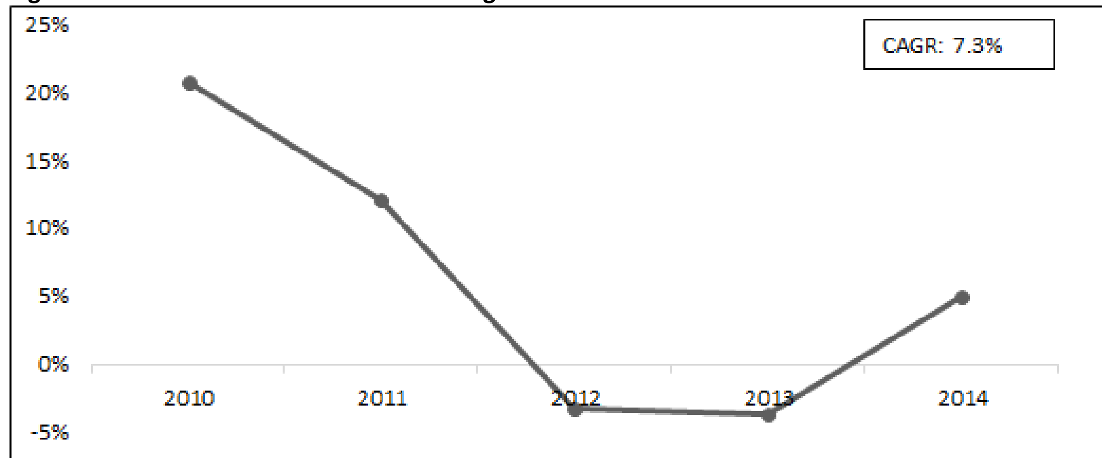
Figure 3: Worldwide personal computer market shipments



Source: Statista

In the early 2000s, the PC market began changing. Tablets have more than one-third of global personal computer shipments. Intel's CCG segment experienced declining sales in 2013 and 2014, but did manage to recover in 2015 and 2016; however, Intel's 2016 volume was down 8%, which was offset by a platform price increase of 8%. It is important for Intel to continue to fund other segments that have more growth potential, as the PC market has matured.

Figure 4: Historical PCCG and CCG revenue growth rates and CAGR



Source: Factset

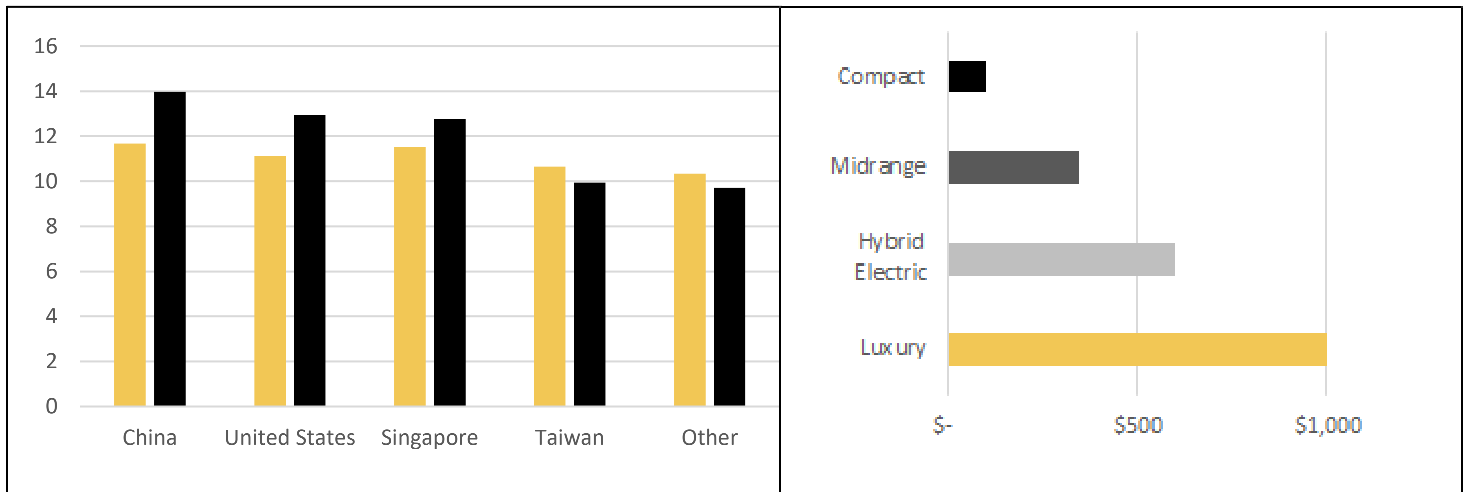
Automobiles and Connectivity

Mobileye's volume 48.7% grew from 2015 to 2016 and ASP from $43.9 to $45 ASP.

Automobiles are an increasingly important source of revenue for semiconductor companies. Intel made news recently for its partnerships with companies like Fiat Chrysler and BMW. In 2017, Intel acquired Mobileye. Mobileye had $358 million in sales in 2016. This was a 48.7% increase over the company's 2015 revenues of $241 million. The Israel based company manufactures sensors used in vehicles that enable assisted driving features. Features like these are becoming important to consumers. The more connected cars become the more semiconductors the car requires.

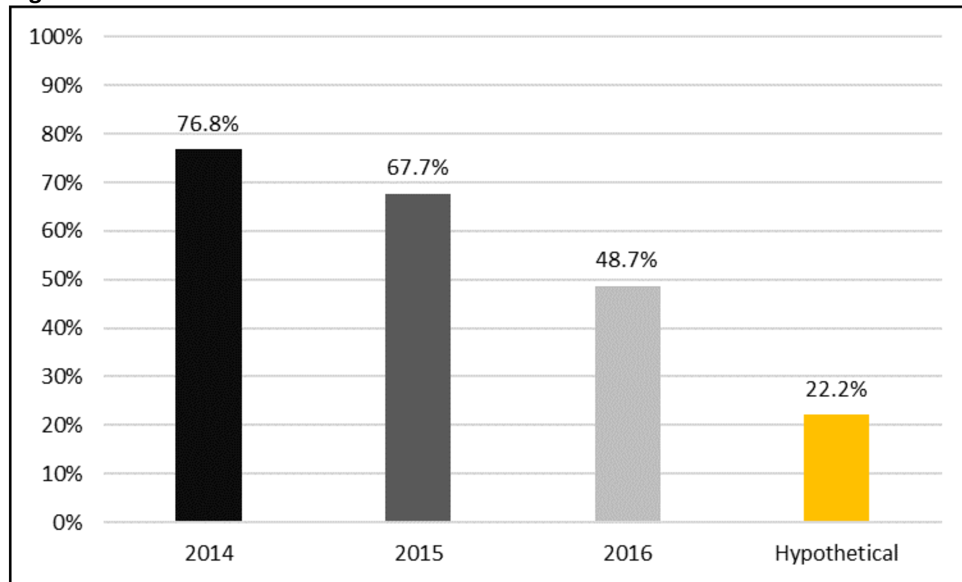
Last year, McKinsey produced a worldwide survey measuring consumers' interest in connected cars. Of the 3,000 survey participants, 41% responded that they would change vehicle brands to have more connectivity. Also, 62% of participants in China reported that they would be willing to switch brands for connectivity. By working to improve connectivity in cars, Intel is increasing the semiconductor need within the market and satisfying the consumers' growing demand. China's automotive market reported the highest willingness to change brands for connectivity in the survey. Intel's two highest growing segments, DCG and PSG, include revenues generated from AI and the automotive market.

Figures 5 and 6: Intel geographic revenue (billions) (left) and semiconductors in automobiles (right)



Source: Statista, McKinsey

Figure 7: Historic ADAS Market Growth



Source: Mobileye company reports

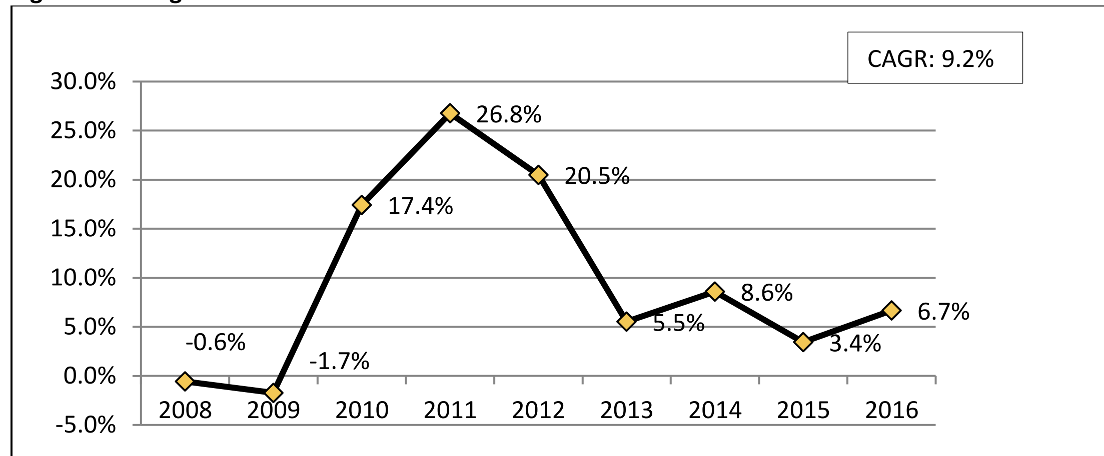
Since Mobileye accounts for over 70% of the current market it is a safe measure of growth for the market in very recent years. The market needs to have a 22.2% CAGR for the next 13 years in order to achieve a market valuation of $70 billion. The growth has declined over the past 3 years but still reamains incredibly high. It may conintue to fall while technology is progressing at a potentially slower rate. As long as the rates continue to average around 22.2% for the next decade then Intel's forecasts can be assumed accurate.

Investment in Capital

Moore's Law -the numbers of transistors per square inch on an IC double every 2 years.

Intel has been a worldwide leader in innovation ever since its inception with co-founder Gordon Moore. Innovation is incredibly important to all tech firms. A biannual goal for company is to keep up with Moore's Law. In the early 2000s, when the semiconductor industry was dominated by fabs using 200 mm wafers, Intel was amongst the first to create fabs that would manufacture 300 mm wafers. Intel's new fab 42 in Arizona is designed to be one of the first fabs to produce 450 mm wafers. The switch from 200 to 300 mm wafers greatly decreases the cost of producing chips; however, while creating 450 mm wafers it was discovered that lithography costs (that increase with area) would become too large to make the process more efficient than the existing 300 mm model. After this realization the factory was shut down in 2014; however, Intel decided to resume construction of the fab in 2017. This time the fab's purpose is to produce the next smallest chip, the 7nm chip. This fab will also include equipment to potentially produce 5nm chips. In order for Intel to lead the industry in innovation and efficiency it has steadily increased R&D expense steadily over the years. Investing in R&D, the firm would not be able as cost efficient as they are.

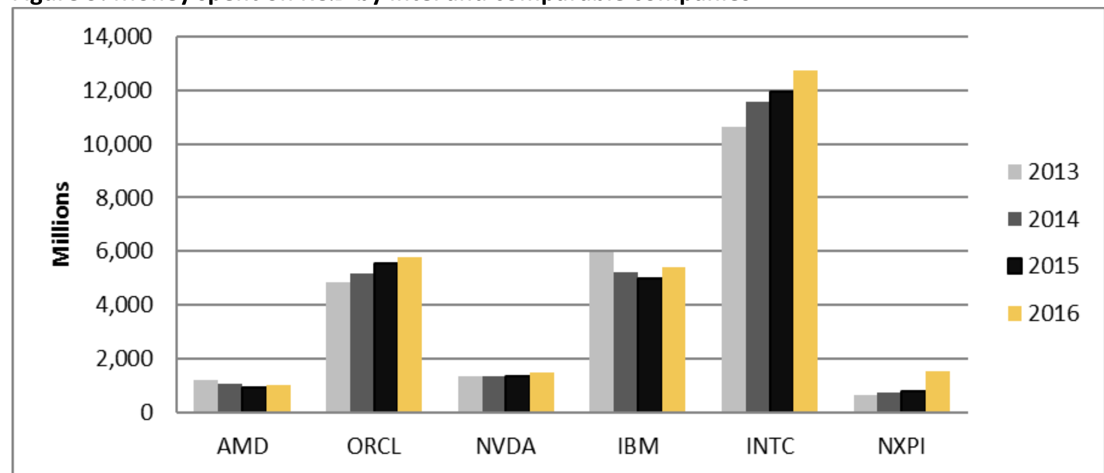
Figure 8: R&D growth rates since 2008



Source: Factset

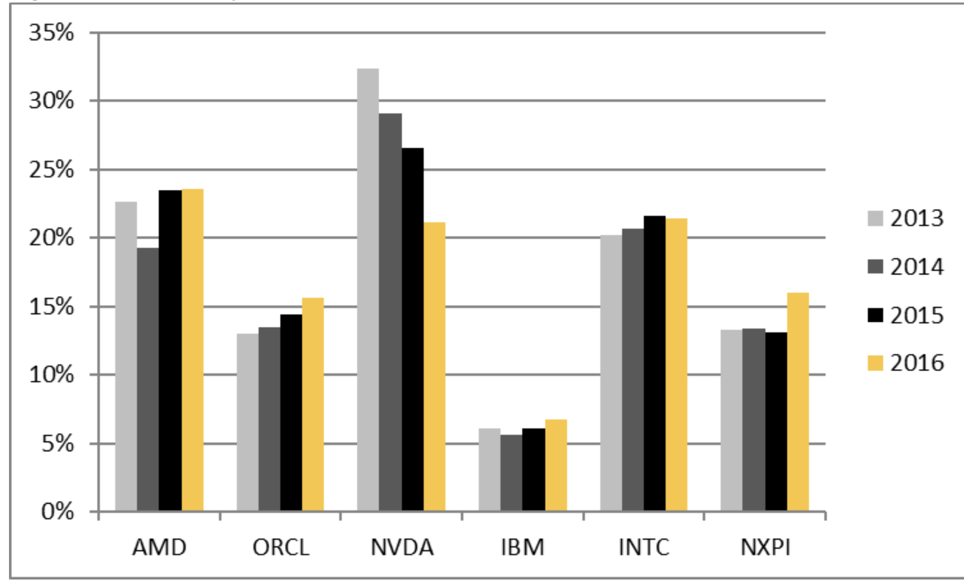
Intel has historically placed an emphasis on research, only decreasing their R&D expenses modestly during the recession and growing it strongly as the market recovered. Intel currently runs two out of a very small number of fabs that produce 10 nm chips; the only other owners are TSMC and Samsung which are the other leaders in semiconductor technology. Many fabless semiconductor companies will send their designs to TSMC rather than constructing their own fabs. In an industry where technology can become obsolete on an annual basis, particularly in the CCG segment, it is important to always be out in front leading innovation.

Figure 9: Money spent on R&D by Intel and comparable companies



Source: Factset

Figure 10: R&D as a percent of sales 2013-2016

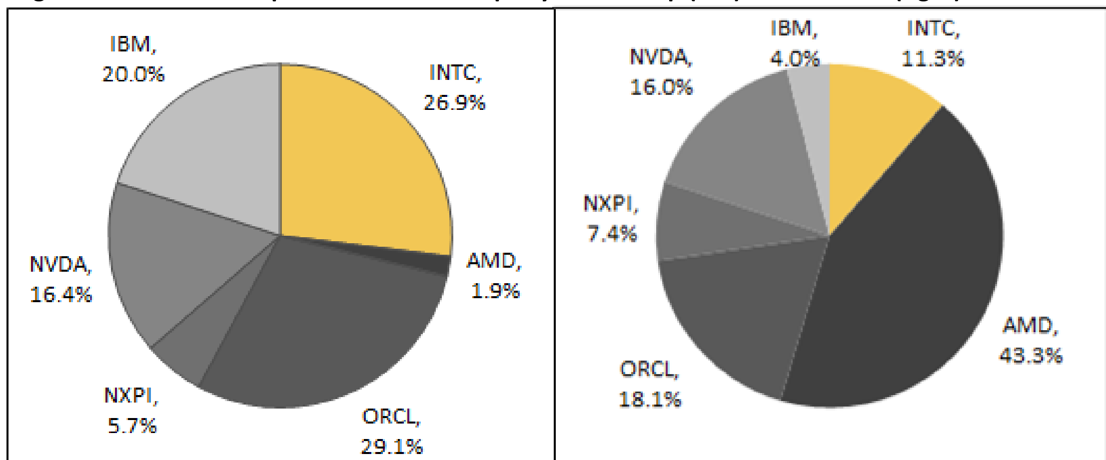


Source: Factset

<u>Competition</u>

The semiconductor industry is competitive. Technology can become outdated incredibly fast, and old technology is heavily discounted. Consumers are willing to upgrade their personal computers CPU on either an annual or a biannual basis. Consumers are not loyal and may switch to an alternative microprocessor manufacturers. Intel's 7th generation processor, nicknamed "Kaby Lake," resulted in lower platform revenue. Many consumers believed it was underwhelming and that the best part of the 7th generation release was that the price of 6th generation processors fell.

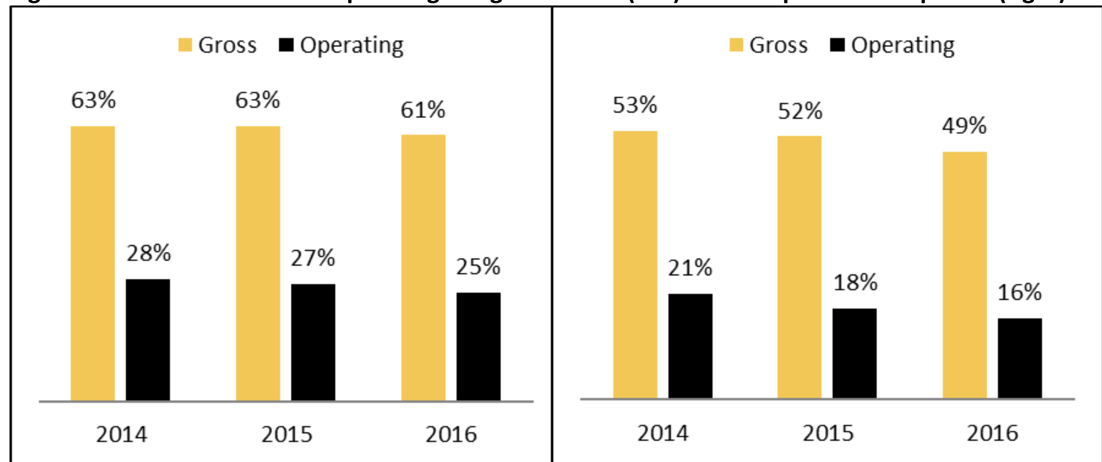
Figures 11 and 12: Comparison of INTC comps by market cap (left) and revenue (right).



Source: Company Reports

Intel has a higher than average gross and operating margins that allow it to more freely allocate funds to R&D. With the personal computer market declining, it is important to find another source of revenue that could potentially be as successful as the PC market. Semiconductor companies such as NX&P Semiconductors, Nvidia, IBM, and Oracle have announced partnerships and acquisitions in the field developing AI systems and ride sharing. Intel already announced that it plans to have a fleet of 400 AI cars produced this year.

Figures 13 and 14: Gross and operating margins of INTC (left) and comparable companies (right)



Source: Factset, Company Reports

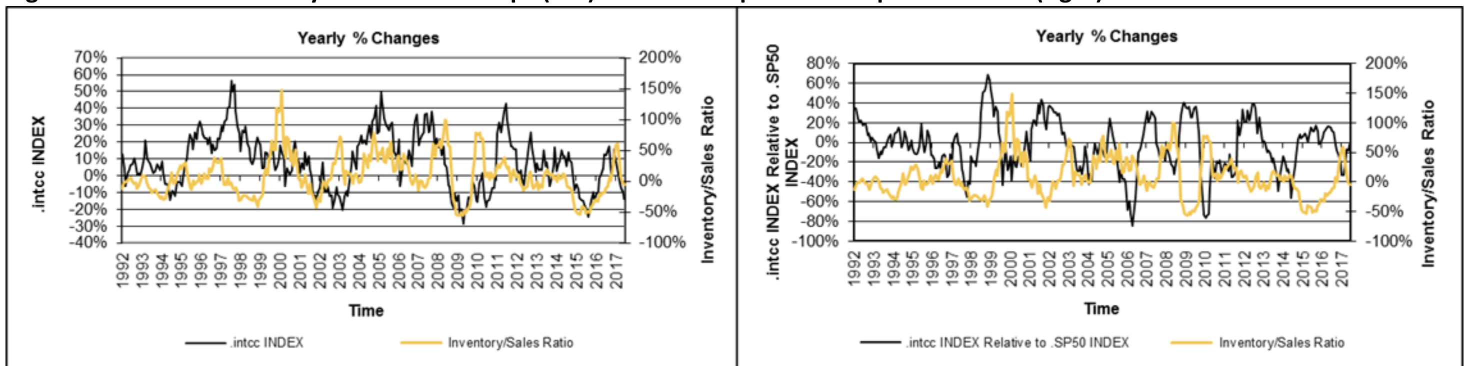
Note that "INTCC" is the name of the comparable company group.

Macroeconomic Trends

Intel's stock price is highly correlated with manufacturerss confidence (ISM PMI). When the internet bubble burst and the confidence was extremely low, Intel took a large hit compared to others; however, in the recent recession it did not falter nearly as much following the 2000s bubble. When confidence begins to decline Intel's stock tends to out preform.

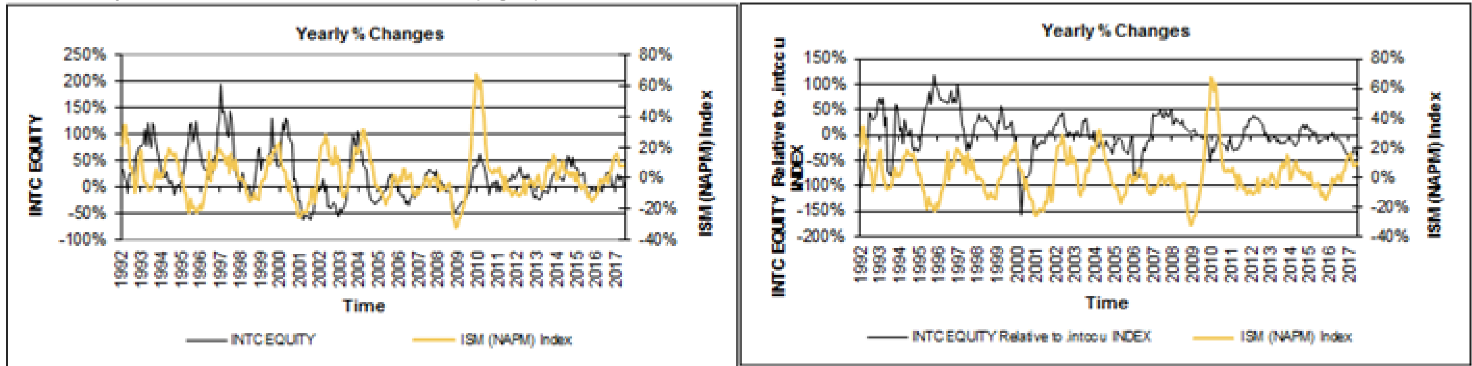
Managing inventory is also very important for semiconductor companies with their own fabs. In recent years, the stock price has moved much more closely in relation to inventory turnover. Inventory turnover typically led INTC until 2000. Price also moved in a exaggeratedly fashion with inventory turnover as well. In the past 10 years, inventory was less volatile until 2014 when inventory turnover fell 30% and stock fell 50%, followed by stock rising 50% leading a 10% increase in inventory turnover.

Figures 15 and 16: Inventory turnover to Comps (left) and relative price of comps to S&P 500 (right)



Source: Bloomberg, IMCP

Figures 17 and 18: Manufacturer confidence compared to INTC stock (left) and manufacture confidence compared to INTC comps relative to the S&P 500 index (right)



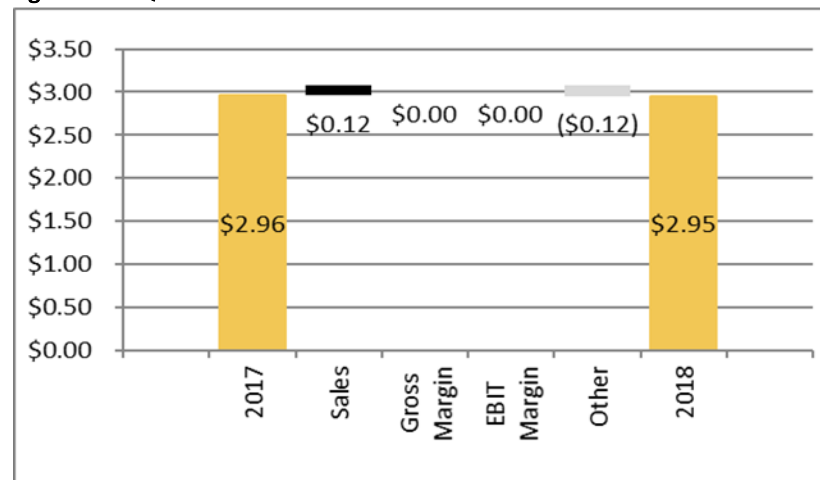
Source: Bloomberg, IMCP

Beginning in 1997, it is easy to see there correlation between INTC's stock price and manufacture confidence. In the periods of 2002-2003 and 2009-2010, INTC's equity did not increase nearly as much as ISM did. Following both the dotcom bubble and the 2008 recession confidence soared while the firm's equity only increased by a fraction of the percent. On the right, it is seen that INTC did far worse than its competitors in the dotcom bubble; however, it was able to perform better during the following recession. Other comparable semiconductor companies did not do as well during the recession, but rebounded better following high manufacture confidence.

Financial Analysis

I anticipate EPS to shrink to $2.95 in FY 2018. Increasing revenues driven by the Data Center Group and Programmable Solutions Group should increase earnings by $0.12. I do not anticipate an increasing gross margin or EBIT margin in 2018. The company had one of its most efficient years in 2017 and should continue operating at the same efficiency for the near future. Research and development expense will increase; however, SG&A should continue to decrease as a percent of sales. INTC experienced a higher tax rate in 2017 than during previous years. I expect changes in legal policy to lower the tax rate for the following years. In 2017, INTC also sold operating assets increased other income dramatically for 2017. I anticipate that other income will regress back towards usual values in the following years. This will move than offset the lower tax rate and the net impact is a drop of 0.12 in EPS.

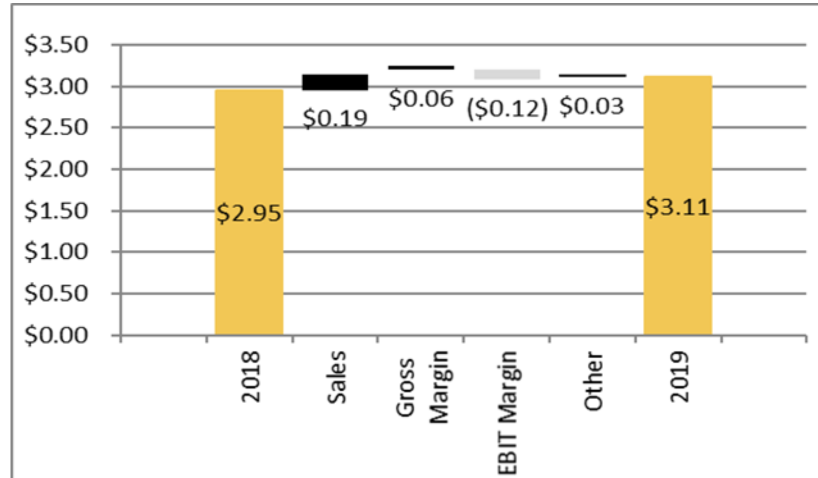
Figure 19: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I expect 2019 EPS to increase $0.16 to $3.11. Intel will gain $0.19 of earnings from increased sales. The primary driving forces include a slight recovery in the Client computing group, as well as strong performance from other operating segments including the Data center group. I anticipate that gross margin will remain strong and begin improving, adding $0.06 to earnings in 2019. Since the other income is assumed to return to normal in 2018 and 2019, INTC will benefit from a more favorable tax rate resulting in a $0.03 increase.

Figure 20: Quantification of 2019 EPS drivers



Source: Company Reports, IMCP

I am more pessimistic than consensus estimates for 2018 and 2019. The unusual increase in other income resulted in a very large, one-time increase in earnings. However, I anticipate stronger growth in 2019 driven primarily by the company's improving efficiency as well as growth in newer markets.

Figure 21: Estimates EPS VS Consensus

	2018	2019
Consensus	$ 3.12	$ 3.54
Estimates	$ 2.94	$ 3.10

Source: Factset

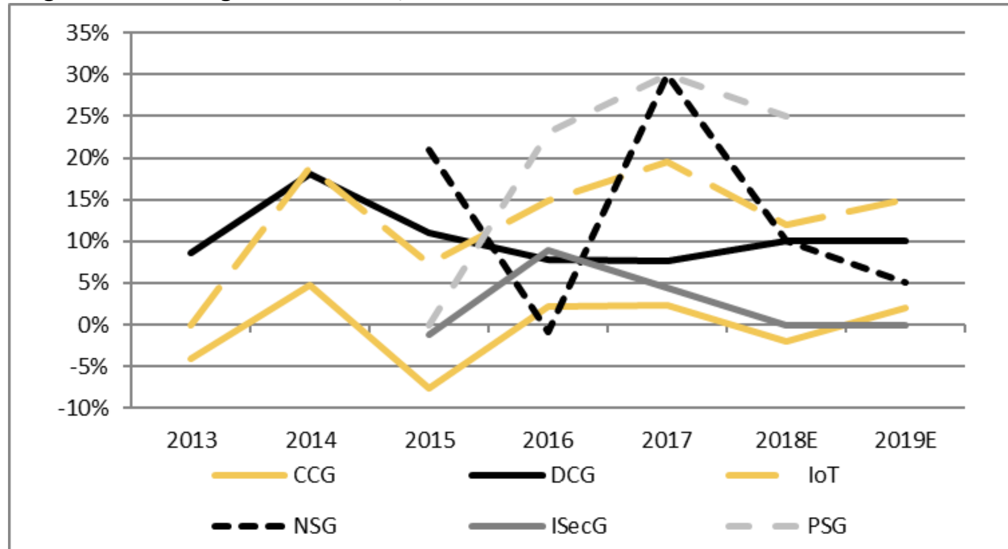
<u>Revenues</u>

Intel's revenue has over the past eight years, but the growth can be volatile going into or out of a downturn. In 2018-2019, I expect the rate of growth to increase, driven by the higher growth of the Data Center Group. The Client Computing Group segment will continue to struggle with declining sales as the PC market is a mature business; however, I anticipate that due to advances in technology farther out will create a large opportunity for growth in this segment. The internet of things group should see an increase in 2018 driven by a more successful computer chip launch, following the mild setback of the 7th generation processor in 2017.

The Client Computing Group revenue should begin growing again in 2020 as the advancements in technology create a demand for higher end and more innovative computer chips. As autonomous driving becomes more available, the Data Center Group will see a short-term increase caused by investments in ride-sharing programs as well as advanced driver assist systems. The technology is becoming more reliable so growth will rise in this segment.

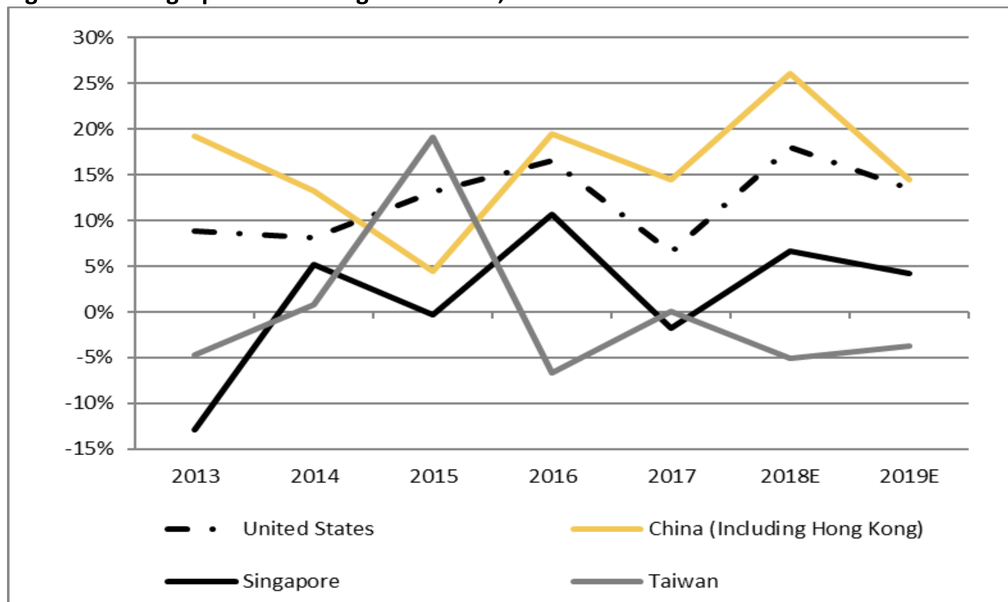
The Internet of Things Group will continue to experience growth for 2018 and 2019; however, the rate of increase will decline since the necessity of new computer chips will decline in the following high growth the last two years. The combined growth of the DCG and PSG will continue to offset the decline of the CCG in the next two and result in overall 4.5% sales growth for the company.

Figure 22: Intel segment revenues, 2013 – 2019E



Source: Company Reports, IMCP

Figure 23: Geographic Revenue growth rates, 2013 – 2019E



Source: Company reports, IMCP

Intel's highest growth geographic segments are the United States of America and China. With China's explosive automobile growth in the recent years and its videogame culture, it has become the company's largest growth segment in recent years. I anticipate that with the increase in innovativeness in automobiles, China will continue to grow at a higher rate than the other geographic segments.

Return on Equity

Intel has had an unusually low ROE in 2016, but ROE recovered by 3.9% in 2017. The main reason for changes in ROE in was EBIT margin. EBIT margin fell in 2015-2016 as sales decreased and rose in 2017 as sales rebounded. Intel's asset turnover has declined as it invested for growth at a quicker rate than sales.

Figure 24: ROE breakdown, 2013 – 2019E

5-Stage SuPont	2013	2014	2015	2016	2017	2018E	2019E
EBIT / sales	23.9%	28.3%	25.7%	21.8%	28.1%	28.5%	28.5%
Sales / avg assets	0.60	0.61	0.57	0.55	0.55	0.54	0.55
Net income /EBT	79.2%	76.0%	82.2%	83.0%	82.7%	78.4%	77.3%
ROA	11.1%	12.7%	11.9%	10.0%	12.4%	11.6%	11.9%
Avg assets / avg equity	1.61	1.60	1.63	1.66	1.69	1.66	1.60
ROE	17.9%	20.3%	19.4%	16.7%	20.9%	19.3%	19.0%

Source: Company Reports

I expect ROE to decrease in the next two years to be only modestly affected by asset turnover, as INTC is grows its assets in potential growth markets that are currently in the early stages of development. I anticipate that INTC will not see the increase in ROA and ROE in the following two years.

Free Cash Flow

Figure 25: Free cash flows 2012 – 2019E

	2012	2013	2014	2015	2016	2017	2018E	2019E
NOPAT	$10,980	$9,263	$11,372	$11,189	$10,261	$12,310	$13,300	$14,207
Growth		*-15.6%*	*22.8%*	*-1.6%*	*-8.3%*	*20.0%*	*29.6%*	*6.8%*
NWC*	6,295	7,151	8,324	7,228	11,055	7,530	12,066	14,890
Net fixed assets	52,993	60,274	64,226	63,229	77,819	93,940	96,735	102,808
Total net operating capital*	$59,288	$67,425	$72,550	$70,457	$88,874	$101,470	$108,802	$117,698
Growth		*13.7%*	*7.6%*	*-2.9%*	*26.1%*	*14.2%*	*7.2%*	*8.2%*
- Change in NWC*		856	1,173	(1,096)	3,827	(3,525)	1,011	2,824
- Change in NFA		7,281	3,952	(997)	14,590	16,121	2,795	6,072
FCFF*		$1,126	$6,247	$13,282	($8,156)	($286)	$9,493	$5,311
Growth			*454.9%*	*112.6%*	*-161.4%*	*96.5%*	*3423.4%*	*-44.1%*
- After-tax interest expense	69	114	(32)	84	354	460	51	127
FCFE**		$1,012	$6,279	$13,198	($8,510)	($746)	$9,442	$5,184
Growth			*520.5%*	*110.2%*	*-164.5%*	*-91.2%*	*-210.9%*	*-45.1%*
FCFF per share		$0.23	$1.27	$2.80	($1.72)	($0.06)	$2.04	$1.16
Growth			*462.7%*	*119.7%*	*-161.6%*	*-96.5%*	*3440.5%*	*-43.2%*
FCFE per share		$0.20	$1.28	$2.78	($1.80)	($0.16)	$2.03	$1.13
Growth			*529.2%*	*117.2%*	*-164.6%*	*-91.1%*	*1372.1%*	*-44.3%*

Source: Company Reports, IMCP

INTC's free cash flow has been volatile over the last several years. The firm sold nearly $1 billion in both NWC and NFA in 2015. The following year the firm increased NWC by almost $4 billion and NFA

by over $14.5 billion. The cause for the large change in NFA was a result of the Mobileye acquisition. NWC is forecasted to fall $4 billion in 2017 as NFA rises $16 billion. INTC's relatively large cash balance gives it the ability to meet any funding necessary over the next few years. The firm has a remaining stock repurchase limit of $6.8 million, or 1% of outstanding shares. I expect the firm to repurchase the remaining amount by the end of 2019. The firm has purchased $58.2 billion since 2005.

I expect both FCFF and FCFE to increase in 2018 despite a 14.2% increase in net operating capital. Share buybacks will continue in 2019, which helps to spread cash flow over fewer shares. While capital is growing, it is slower than the past while the firm has record NOPAT.

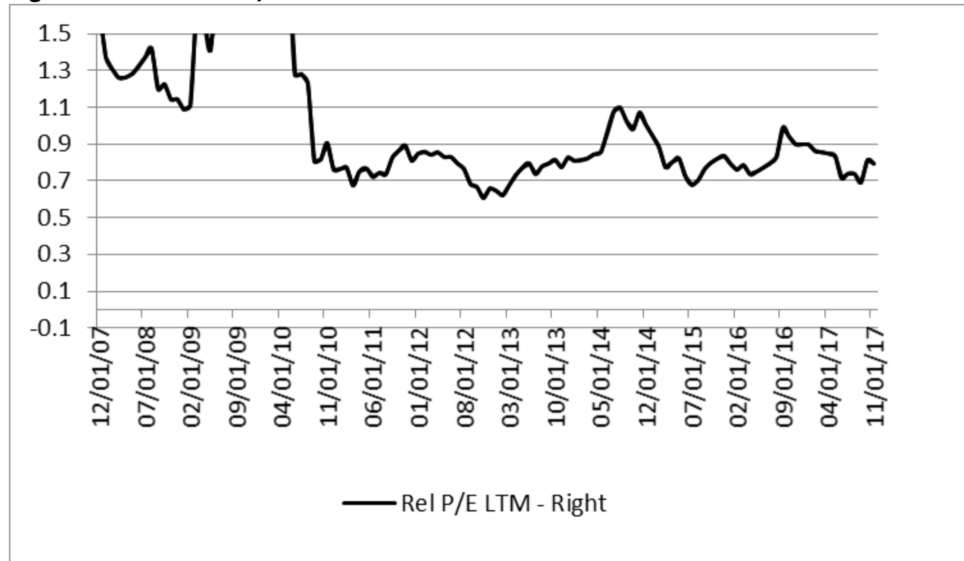
Valuation

INTC was valued using multiples and a three-stage discounting cash flow model. Based on earnings multiples, the stock is expensive relative to other firms and is worth $46.15; however, due to the volatility of ANF's earnings the past few years, as well as the effect of recent nonrecurring expenses, this metric may be unreliable. Relative valuation shows INTC to be slightly overvalued based on its fundamentals versus those of its peers in the semiconductor industry. Price to sales valuation yielded a price of $43.81. A detailed DCF analysis values INTC slightly lower, at $43.71; I give this value a bit more weight because it incorporates assumptions that reflect INTC's ongoing business changes. Because of these valuations, I value the stock at $44.00.

<u>Trading History</u>

INTC is currently trading relatively low compared to the previous 5 years in relation to the S&P 500. This is the result of recent earnings improvement and the fact that most analysts believe that earnings peak soon. INTC's current LTM P/E is at 15.7 compared to its five-year average of 14.6. While I expect some regression towards that number in the future, I do not believe that is likely to be the case in the near term.

Figure 26: INTC NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 15.7 NTM P/E at the end of 2018, it should trade at $18.23 by the end of the year.

- Price = P/E x EPS = 15.7 x $2.94 = $46.15

Discounting $46.15 back to today at a 10.80% cost of equity (explained in Discounted Cash Flow section) yields a price of $41.65. Given INTC's potential for earnings growth and continued profitability, this seems to be an slightly low valuation. However, this makes sense because I am less bullish about near-term earnings than consensus.

Relative Valuation

Intel is currently trading at a P/E much slightly lower than its peers, with a P/E TTM of 16.4 compared to an average of 24.7. Note that Nvidia's larger than normal P/E TTM of 49.5 drives the average up significantly. Investors are not as willing to pay a premium for INTC because they believe that there is not as much room for growth in INTC as potentially other companies such as Nvidia. INTC's P/B and P/S ratios are significantly lower than the average of the companies, but is very close to the median in both aspects. Mature semiconductor companies are already incredibly large and are not anticipated to grow very quickly, except for Nvidia.

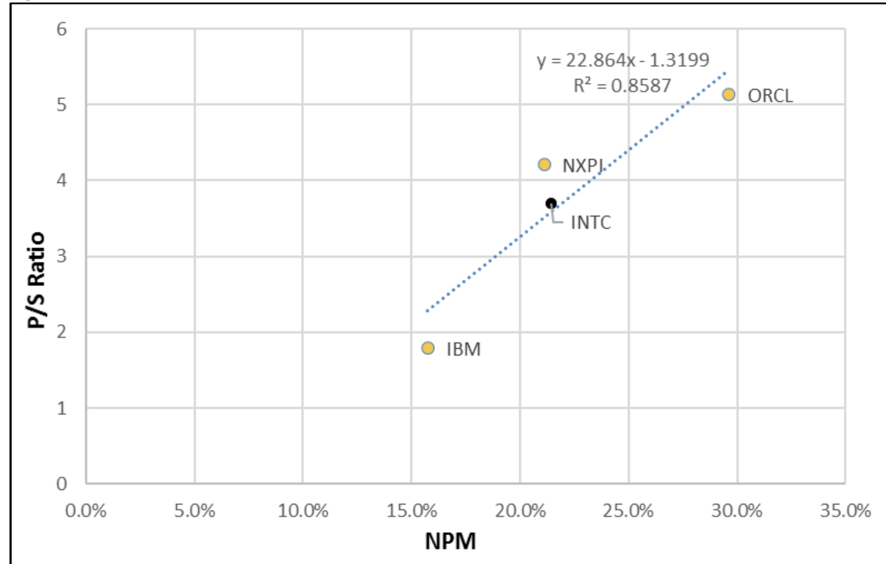
Figure 27: INTC comparable companies

		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
INTC	INTEL CORP	$45.38	$212,378	2.1	4.9	(1.0)	24.9	26.3	(1.7)	7.8	77.7%		16.7%	19.1%	0.3%	-1.4%	1.13	36.3%	B+	2.24%	54.1%
NXPI	NXP SEMICONDUCTORS NV	$114.88	$38,948	(1.1)	(3.9)	(0.5)	2.1	12.3	(1.9)	20.0	12.2%		5.7%	10.3%	11.3%		0.76	43.0%		0.00%	
ORCL	ORACLE CORP	$49.45	$204,703	2.0	(0.1)	0.5	1.2	20.3	4.6	8.2	31.2%		0.7%	5.9%	7.4%		1.04	104.1%	A-	1.47%	30.9%
IBM	INTL BUSINESS MACHINES CORP	$154.76	$143,275	2.7	(5.1)	3.9	8.7	(14.1)	0.9	2.6	125.5%		-8.9%	1.5%	0.9%	-15.8%	1.08	226.4%	A-	3.60%	96.1%
NVDA	NVIDIA CORP	$241.42	$146,301	3.8	8.3	12.7	43.4	121.9	24.8	10.1	30.0%		125.9%	65.2%	19.6%	39.9%	1.52	26.6%	B+	0.23%	11.8%
Average			$149,121	1.9	0.8	3.1	16.1	33.4	5.3	9.7	55.3%	#DIV/0!	28.0%	20.4%	7.9%	7.5%	1.11	87.3%		1.51%	48.2%
Median			$146,301	2.1	(0.1)	0.5	8.7	20.3	0.9	8.2	31.2%	#NUM!	5.7%	10.3%	7.4%	-1.4%	1.08	43.0%		1.47%	42.5%
SPX	S&P 500 INDEX	$2,699		1.3	(3.1)	4.6	9.4	15.4	0.9			0.0%	0.5%	10.2%	11.0%						

		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
INTC	http://www.intel.com	17.9%	2.99		15.6	17.0	22.8	12.8	14.0	14.0	21.4%	3.58	29.2%	10.5%	12.9	11.6	9.1	3.5%	3.7%	3.3%	$15.16
NXPI	http://www.nxp.com	13.2%	2.57		17.5	19.8	17.6	15.7	17.6	15.8	21.1%	4.10	5.7%	11.3%	82.9	15.2	16.3	6.0%	5.7%	19.9%	$44.69
ORCL	http://www.oracle.com	19.9%	3.67		14.4	17.6	21.2	16.2	17.4	16.2	29.6%	5.44	35.2%	9.9%	13.8	14.8		4.2%	4.6%		$13.48
IBM	http://www.ibm.com	64.1%	7.30		11.1	11.3	25.2	11.2	11.2	11.1	15.7%	1.79	13.1%	10.4%	17.2	12.9		1.6%	0.0%	-5.4%	$21.20
NVDA	http://www.nvidia.com	23.3%	23.02		98.8	79.3	50.1	38.5	59.9	50.1	21.9%	21.67	33.0%	35.4%	46.3	38.6	25.4	27.6%	11.8%	17.8%	$10.49
Average		27.7%	7.91		31.5	29.0	27.4	18.9	24.0	21.4	22.0%	7.32	23.2%	15.5%	34.6	18.6	16.9	8.6%	5.2%	8.9%	
Median		19.9%	3.67		15.6	17.6	22.8	15.7	17.4	15.8	21.4%	4.10	29.2%	10.5%	17.2	14.8	16.3	4.2%	4.6%	10.6%	
spx	S&P 500 INDEX			17.2	18.8	22.4			20.5	18.5											

Source: Factset

Figure 28: P/S vs NPM



Source: Factset

A more thorough analysis of P/B and ROE is shown in figure 29. The calculated R-squared of the regression indicates that over 85% of a sampled firm's P/S is explained by its NPM. Note that Nvidia is not included since its P/S is substantially higher than the groups, but with similar NPM. INTC has the second lowest P/S and second highest NPM of this grouping and according to this measure is slightly overvalued. I believe that NPM will continue to be an area of importance for investors and analysts as we begin to see investments paying off in the future.

- Estimated P/S = Estimated 2018 NPM (21.7%) x 22.864 – 1.3199= 3.6416
- Target Price = Estimated P/S (3.6416) x 2018E Sales per share($13.33) = $48.54

Discounting back to the present at a 10.80% cost of equity leads to a target price of $43.81 using this metric.

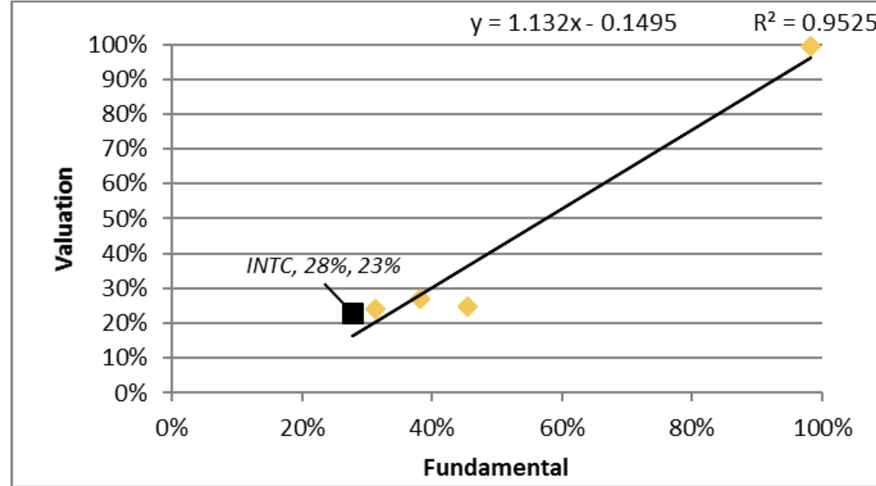
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. An equal weighting of long term growth rate was used for fundamentals, 2017 and 2018 earnings growth, ROE, and NTM sales growth for valuation. These are then compared with equal weighted NTM P/E, current P/B, and current P/S. This resulted in a regression line which had an R-squared of 0.95. One can see that INTC is slightly above the line, so it is expensive based on its fundamentals.

Figure 29: Composite valuation, percent of range

		Fundamentals					Valuation				
	Weight	20%	20%	20%	20%	20%	33%	33%	33%		
						P/E	P/E				
Ticker	**Name**	**LTG**	**2017**	**2018**	**ROE**	**NTM**	**NTM**	**P/B**	**P/S**	**Fund**	**Value**
INTC	INTEL CORP	50%	29%	2%	28%	12%	33%	16%	21%	24%	23%
NXPI	NXP SEMICONDUCTORS NV	100%	16%	75%	21%	-9%	37%	14%	24%	40%	25%
ORCL	ORACLE CORP	50%	9%	49%	31%	23%	34%	18%	29%	33%	27%
IBM	INTL BUSINESS MACHINES CORP	16%	2%	6%	100%	4%	25%	38%	10%	26%	24%
NVDA	NVIDIA CORP	71%	100%	100%	36%	100%	100%	100%	100%	81%	100%

Source: IMCP, Factset

Figure 30: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 10.80% 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 2.33%.
- A ten-year beta of 1.10 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 10.80% (2.33 + 1.10 (10.0 – 2.33)).

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 $1.79 and $1.89, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $3.16 per share. Thus, stage one of this discounted cash flow analysis contributes $3.16 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 10.80% cost of equity. I assume 6.0% sales growth in 2020 through 2024 due to the payoff of current growth investing. The ratio of NWC to sales will increase from 2019 levels, and NFA turnover will rise from .84 in 2020 to .90 in 2024 as a result of increased operational efficiency as early investments begin returning higher revenue. Also, the NOPAT margin is expected to rise to 20% in 2024 from 17.6% in 2019. The increased NOPAT margin will result from sales increasing faster than assets.

Figure 31: FCFE and discounted FCFE, 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$1.79	$1.89	$1.90	$1.96	$2.28	$2.52	$3.05
Discounted FCFE	$1.62	$1.54	$1.40	$1.31	$1.37	$1.36	$1.49

Added together, these discounted cash flows total $10.08.

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 $2.94 in 2018 to $4.49 in 2024.

Figure 32: EPS estimates for 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$2.94	$3.10	$3.11	$3.41	$3.83	$4.10	$4.49

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. INTC is large and mature, but it is trying to reinvigorate growth. I believe it will be successful so I believe a market P/E of 20 is appropriate.

Given the assumed terminal earnings per share of $4.49 and a price to earnings ratio of 20, a terminal value of $64.16 per share is calculated. Using the 10.80% cost of equity, this number is discounted back to a present value of $31.36.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $43.71 is calculated (4.10 + 8.24 + 31.36). Given INTC's current price of $44.43, this model indicates that the stock is slightly undervalued.

Scenario Analysis

When valuing a company it is important to take into account other factors that may cause a stock to perform either more bearish or bullish than expected. With the recent success in the stock market over the most recent recovery period, it would be safe to assume a correction in the near future. If the stock market begins to slow it would be realistic that GDP would also slow. INTC's major operating segments and potential growth segments both rely heavily on luxury products. If instead of maintaining a 6% growth rate, the company could potentially experience slowed growth with poor economic conditions, as low as the 2% growth seen from the CCG segment in 2016.

Figure 33: Bear Case Scenario

First stage	$4.10	Present value of first 2 year cash flow
Second stage	$9.79	Present value of year 3-7 cash flow
Third stage	$25.87	Present value of terminal value P/E
Value (P/E)	$39.77	= value at beg of fiscal yr

Source: IMCP

Another possibility is that the economic climate could continue to improve with no sign of slowing down. If confidence continues to rise as well, INTC could see an increase in the spending of luxury items such as high tech automobiles and laptops. There could also be even higher than expected adoption rate of AI driving vehicles. With INTC's current market share of advanced driver assisted systems (ADAS), the company could experience a surge in demand for its products while still having a large share of the market (70%). This could result in large growth for the second largest operating segment, DCG. Given these conditions, it would be safe to assume a 10% growth for the 3-stage model.

Figure 34: Bull Case Scenario

First stage	$4.10	Present value of first 2 year cash flow
Second stage	$6.41	Present value of year 3-7 cash flow
Third stage	$37.74	Present value of terminal value P/E
Value (P/E)	$48.26	= value at beg of fiscal yr

Source: IMCP

Business Risks

Although I have many reasons to be optimistic about Intel Corporation, there are several quality reasons why the stock could be over-valued.

Hindering of innovation:

For years, it had been standard to release new chip sets every year for notebooks, and every year there is significant change in performance from generation to generation. Due to the fast pace of technological improvements, the previous years' technology becomes quickly outdated and decreases in value alarmingly. If a new generation of computer chips is not viewed as a superior improvement to the preceding generation's it will deter people from purchasing this year's higher priced model. Intel's decreased sale volume in 2016 was made up for by an increase in price, an outcome that would be impossible to replicate year after year.

Meeting growth expectations:

Recently, Intel has made several large acquisitions. The largest of these acquisitions in recent years being the Mobileye acquisition this year. Intel has projected the market for autonomous driving semiconductors to be as large as $70 billion by 2030. The shift to this technology could potentially take much longer; since the industry is still new, it is hard to accurately predict when and how much the industry will grow.

Inability to maintain gross margin:

One of Intel's greatest advantages has been its ability to generate a high gross margin in comparison to its peers. Intel has a large collection of its own fabs, which helps it manage costs as it does not have peers who use a fabless business model. If INTC does not continue to produce better technology and smaller chips, then it will be hard to keep leading margins.

Global economic risk:

Downturns in the world economy could adversely affect INTC's revenues. Better computers are commonly seen as luxury, so during an economic downturn consumers could switch to lower profit margin platforms. The Mobileye acquisition, and many of the corporation's technologies are seen as an expensive luxury. The Programmable Solutions Group has large exposure to this risk, as well as the Client Computing Group.

Appendix 1: Porter's Five Forces

Threat of New Entrants –Low

Currently, the ability to enter the semiconductor market is very limited. The cost to create a foundry is anywhere from $1 billion to $4 billion. However, many established companies are using a fabless business model, where they can simply outsource the manufacturing. Currently, it would not be feasible for a startup to use this strategy since there are very limited number of foundries available for outsourcing. However, growth of fabless companies could potentially create a need for more foundries, and if they become available, it will lower the barrier of entry.

Threat of Substitutes - Moderate

Once a new product is completed and released, it becomes very easy for other companies to reproduce the product at a lower cost. The products are protected solely by patents; depending on what is produced, a firm could only have a short period of protection before competitors are allowed to use its intellectual product.

Supplier Power - Low

There is a moderate to large number of suppliers for semiconductors. Since a few companies dominate the semiconductor industry, suppliers need to compete with each other for business. The cost of switching suppliers is also very low. These two factors remove power from the suppliers and gives that power to companies such an Intel.

Buyer Power – Low

In the B2B market, buyers make purchases in large quantities from semiconductor companies. Since there are few suppliers of specific chips, buyer power is reduced. Intel also has few to no substitutes, further weakening buyer power.

Intensity of Competition – Very High

The current market consists of several very large players. The rapid pace of technology advancement is a constant threat to any single company in the semiconductor industry. Failure to be on the edge of innovativeness alone results in substantial loss of revenues. A company lacking in innovativeness at any time will quickly experience financial stress.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
High gross margins Innovative leader Efficient manufacturing	High stock based compensation dilluting shares High R&D expenses High cost of creating new fabs
Opportunities	**Threats**
Increasingly connected world AI driving market exposure Increasing need of cloud platforms	Fall behind the curve in advancements Increased outsourcing profitablity Legal problems associated with new technology

Appendix 3: Income Statement

Income Statement (in millions)								
Items	2012	2013	2014	2015	2016	2017	2018E	2019E
Sales	$53,341	$52,708	$55,870	$55,355	$59,387	$62,023	$62,054	$65,949
Direct costs	20,190	21,187	20,261	20,676	23,196	25,831	23,617	25,033
Gross Margin	33,151	31,521	35,609	34,679	36,191	36,192	38,437	40,915
SG&A, R&D, and other	18,278	18,910	19,808	20,467	23,255	23,256	24,164	25,417
EBIT	14,873	12,611	15,801	14,212	12,936	12,936	14,272	15,498
Interest	94	(151)	43	(105)	(444)	(443)	(5)	(169)
EBT	14,779	12,762	15,758	14,317	13,380	13,379	14,277	15,667
Taxes	3,868	2,991	4,097	2,792	2,620	2,620	3,426	3,917
Net income	10,911	9,771	11,661	11,525	10,760	10,759	10,851	11,750
Basic Shares	4,996.0	4,970.0	4,730.0	4,742.0	4,901.0	4,902.0	4,827.1	4,759.1
EPS	$2.18	$1.97	$2.47	$2.43	$2.20	$2.19	$2.25	$2.47
DPS	$0.87	$0.90	$0.93	$0.96	$1.00	$1.00	$1.06	$1.13

Appendix 4: Balance Sheet

Balance Sheet (in millions)								
Item	2012	2013	2014	2015	2016	2017	2018E	2019E
Cash	8,478	5,674	2,561	15,308	5,560	9,070	1,546	2,907
Operating assets ex cash	18,881	20,438	22,739	20,240	26,723	24,080	29,166	33,063
Operating assets	27,359	26,112	25,300	35,548	32,283	33,150	30,712	35,970
Operating liabilities	12,586	13,287	14,415	13,012	15,668	16,550	17,099	18,173
NOWC	14,773	12,825	10,885	22,536	16,615	16,600	13,612	17,797
NOWC ex cash (NWC)	6,295	7,151	8,324	7,228	11,055	7,530	12,066	14,890
NFA	52,993	60,274	64,226	63,229	77,819	93,940	96,735	102,808
Invested capital	*$67,766*	*$73,099*	*$75,111*	*$85,765*	*$94,434*	*$110,540*	*$110,348*	*$123,874*
Marketable securities	3,999	5,972	2,430	2,682	3,225	-	3,768	4,020
Total assets	*$84,351*	*$92,358*	*$91,956*	*$101,459*	*$113,327*	*$127,090*	*$131,215*	*$142,797*
Short-term and long-term debt	$13,448	$13,446	$13,711	$22,670	$25,283	$31,640	$28,242	$31,201
Other liabilities	7,114	7,369	7,053	3,795	5,268	7,090	8,912	10,734
Debt/equity-like securities	-	-					-	-
Equity	51,203	58,256	56,777	61,982	67,108	71,810	76,962	82,690
Total supplied capital	*$71,765*	*$79,071*	*$77,541*	*$88,447*	*$97,659*	*$110,540*	*$114,116*	*$124,625*
Total liabilities and equity	*$84,351*	*$92,358*	*$91,956*	*$101,459*	*$113,327*	*$127,090*	*$131,215*	*$142,797*

Appendix 5: Sales Forecast

Sales (in millions)								
Items	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**
Sales	53,341	52,708	55,870	55,355	59,387	62,023	64,808	68,876
Growth		*-1.2%*	*6.0%*	*-0.9%*	*7.3%*	*4.4%*	*4.5%*	*6.3%*
Operating Segments								
CCG	34,688	33,270	34,872	32,219	32,908	33,661	32,250	32,895
Growth		*-4.1%*	*4.8%*	*-7.6%*	*2.1%*	*2.3%*	*-2.0%*	*2.0%*
% of sales	*65.0%*	*63.1%*	*62.4%*	*58.2%*	*55.4%*	*54.3%*	*49.8%*	*47.8%*
DCG	11,219	12,187	14,396	15,981	17,236	18,562	20,418	22,460
Growth		*8.6%*	*18.1%*	*11.0%*	*7.9%*	*7.7%*	*10.0%*	*10.0%*
% of sales	*21.0%*	*23.1%*	*25.8%*	*28.9%*	*29.0%*	*29.9%*	*31.5%*	*32.6%*
IoT	1,600	1,801	2,142	2,298	2,638	3,152	3,530	4,060
Growth	*0*	*0.0%*	*18.9%*	*7.3%*	*14.8%*	*19.5%*	*12.0%*	*15.0%*
% of sales	*3.0%*	*3.4%*	*3.8%*	*4.2%*	*4.4%*	*5.1%*	*5.4%*	*6.0%*
NSG			2,146	2,597	2,576	3,349	3,684	3,868
Growth				*21.0%*	*-0.8%*	*30.0%*	*10.0%*	*5.0%*
% of sales			*3.8%*	*4.7%*	*4.3%*	*5.4%*	*5.7%*	*5.6%*
ISecG			2,010	1,985	2,161	2,257	2,257	2,257
Growth				*-1.2%*	*8.9%*	*4.4%*	*0.0%*	*0.0%*
% of sales			*3.6%*	*3.6%*	*3.6%*	*3.6%*	*3.5%*	*3.3%*
PSG					1,669	2,053	2,669	3,336
Gowth					-	*23%*	*30%*	*25.0%*
% of sale					*2.8%*	*3.3%*	*4.1%*	*4.8%*
Geographic Segments								
United States	8,348	9,091	9,828	11,121	12,957	13,800	15,295	17,357
Growth		*8.9%*	*8.1%*	*13.2%*	*16.5%*	*6.5%*	*18.0%*	*13.5%*
% of sales	*15.7%*	*17.2%*	*17.6%*	*20.1%*	*21.8%*	*22.3%*	*23.6%*	*25.2%*
China (Including Hong Kong)	8,299	9,890	11,197	11,697	13,977	16,003	17,628	20,181
Growth		*19.2%*	*13.2%*	*4.5%*	*19.5%*	*14.5%*	*26.1%*	*14.5%*
% of sales	*15.6%*	*18.8%*	*20.0%*	*21.1%*	*23.5%*	*25.8%*	*27.2%*	*29.3%*
Singapore	12,622	10,997	11,573	11,544	12,780	12,550	13,623	14,188
Growth		*-12.9%*	*5.2%*	*-0.3%*	*10.7%*	*-1.8%*	*6.6%*	*4.2%*
% of sales	*23.7%*	*20.9%*	*20.7%*	*20.9%*	*21.5%*	*20.2%*	*21.0%*	*20.6%*
Taiwan	9,327	8,888	8,955	10,661	9,953	9,954	9,445	9,096
Growth		*-4.7%*	*0.8%*	*19.1%*	*-6.6%*	*0.0%*	*-5.1%*	*-3.7%*
% of sales	*17.5%*	*16.9%*	*16.0%*	*19.3%*	*16.8%*	*16.0%*	*14.6%*	*13.2%*
Other	14,745	13,842	14,317	10,350	9,720	9,721	8,748	7,961
Growth		*-6.1%*	*3.4%*	*-27.7%*	*-6.1%*	*0.0%*	*-10.0%*	*-9.0%*
% of sales	*27.6%*	*26.3%*	*25.6%*	*18.7%*	*16.4%*	*15.7%*	*13.5%*	*11.6%*

Appendix 6: Ratios

Ratios	2012	2013	2014	2015	2016	2017	2018E	2019E
Profitability								
Gross margin	62.1%	59.8%	63.7%	62.6%	60.9%	61.7%	62.5%	63.0%
Operating (EBIT) margin	27.9%	23.3%	27.5%	25.3%	21.7%	28.0%	27.0%	27.5%
Net profit margin	20.5%	18.3%	20.9%	20.6%	17.4%	22.3%	21.1%	21.1%
Activity								
NFA (gross) turnover		0.93	0.90	0.87	0.84	0.72	0.74	0.69
Total asset turnover		0.60	0.61	0.57	0.55	0.52	0.53	0.50
Liquidity								
Op asset / op liab	2.17	1.97	1.76	2.73	2.06	2.00	1.80	1.98
NOWC Percent of sales		26.2%	21.2%	30.2%	33.0%	26.8%	23.3%	22.8%
Solvency								
Debt to assets	15.9%	14.6%	14.9%	22.3%	22.3%	24.9%	21.5%	21.8%
Debt to equity	26.3%	23.1%	24.1%	36.6%	37.7%	44.1%	36.7%	37.7%
Other liab to assets	8.4%	8.0%	7.7%	3.7%	4.6%	5.6%	6.8%	7.5%
Total debt to assets	24.4%	22.5%	22.6%	26.1%	27.0%	30.5%	28.3%	29.4%
Total liabilities to assets	39.3%	36.9%	38.3%	38.9%	40.8%	43.5%	41.3%	42.1%
Debt to EBIT	0.90	1.09	0.89	1.62	1.96	1.82	1.61	1.65
EBIT/interest	158.22	81.40	(356.91)	133.35	29.00	26.74	259.89	112.31
Debt to total net op capital	19.8%	18.4%	18.3%	26.4%	26.8%	28.6%	25.6%	25.2%
ROIC								
NOPAT to sales	20.6%	17.6%	20.4%	20.2%	17.3%	19.8%	20.5%	20.6%
Sales to NWC		7.84	7.22	7.12	6.50	6.68	5.61	5.11
Sales to NFA		0.93	0.90	0.87	0.84	0.72	0.74	0.69
Sales to IC ex cash		0.83	0.80	0.77	0.75	0.65	0.66	0.61
Total ROIC ex cash		14.6%	16.2%	15.6%	12.9%	12.9%	13.5%	12.5%
ROE								
5-stage								
EBIT / sales		23.3%	27.5%	25.3%	21.7%	28.0%	27.0%	27.5%
Sales / avg assets		0.60	0.61	0.57	0.55	0.52	0.53	0.50
EBT / EBIT		98.8%	100.3%	99.3%	96.6%	96.3%	99.6%	99.1%
Net income /EBT		79.2%	76.0%	82.2%	83.0%	82.7%	78.4%	77.3%
ROA		10.9%	12.7%	11.8%	9.6%	11.5%	11.2%	10.6%
Avg assets / avg equity		1.61	1.60	1.63	1.66	1.73	1.70	1.72
ROE		17.6%	20.3%	19.2%	16.0%	19.9%	19.0%	18.2%
3-stage								
Net income / sales		18.3%	20.9%	20.6%	17.4%	22.3%	21.1%	21.1%
Sales / avg assets		0.60	0.61	0.57	0.55	0.52	0.53	0.50
ROA		10.9%	12.7%	11.8%	9.6%	11.5%	11.2%	10.6%
Avg assets / avg equity		1.61	1.60	1.63	1.66	1.73	1.70	1.72
ROE		17.6%	20.3%	19.2%	16.0%	19.9%	19.0%	18.2%
Payout Ratio		46.6%	37.7%	39.9%	47.7%	35.6%	37.5%	37.1%
Retention Ratio		53.4%	62.3%	60.1%	52.3%	64.4%	62.5%	62.9%
Sustainable Growth Rate		9.4%	12.7%	11.6%	8.4%	12.8%	11.9%	11.4%

Appendix 7: 3-stage DCF Model

Year	1	2	3	4	5	6	7
	First Stage		Second Stage				
Cash flows	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*4.5%*	*6.3%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
NOPAT / S	*21.7%*	*21.4%*	*20.0%*	*20.5%*	*21.5%*	*21.5%*	*22.0%*
S / NWC	*5.37*	*4.63*	*4.70*	*4.71*	*4.73*	*4.74*	*4.70*
S / NFA (EOY)	*0.78*	*0.82*	*0.84*	*0.85*	*0.87*	*0.88*	*0.90*
S / IC (EOY)	*0.68*	*0.70*	*0.71*	*0.72*	*0.73*	*0.74*	*0.76*
ROIC (EOY)	*14.7%*	*14.9%*	*14.2%*	*14.8%*	*15.7%*	*16.0%*	*16.6%*
ROIC (BOY)		*15.4%*	*14.8%*	*15.5%*	*16.4%*	*16.7%*	*17.3%*
Share Growth		*-1.5%*	*-1.0%*	*-1.0%*	*-1.0%*	*-1.0%*	*-1.0%*
Sales	$62,054	$65,949	$69,906	$74,100	$78,546	$83,259	$88,254
NOPAT	$13,441	$14,097	$13,981	$15,190	$16,887	$17,901	$19,416
Growth		*4.9%*	*-0.8%*	*8.7%*	*11.2%*	*6.0%*	*8.5%*
- Change in NWC	498	2704	617	843	891	941	1229
NWC EOY	*11553*	*14256*	*14874*	*15716*	*16607*	*17549*	*18777*
Growth NWC		*23.4%*	*4.3%*	*5.7%*	*5.7%*	*5.7%*	*7.0%*
- Chg NFA	2000	384	3235	3739	3571	3865	3448
NFA EOY	*79,819*	*80,203*	*83,438*	*87,176*	*90,747*	*94,612*	*98,060*
Growth NFA		*0.5%*	*4.0%*	*4.5%*	*4.1%*	*4.3%*	*3.6%*
Total inv in op cap	2498	3088	3852	4581	4462	4806	4677
Total net op cap	91372	94459	98311	102893	107354	112161	116838
FCFF	$10,943	$11,009	$10,129	$10,609	$12,426	$13,094	$14,739
% of sales	*17.6%*	*16.7%*	*14.5%*	*14.3%*	*15.8%*	*15.7%*	*16.7%*
Growth		*0.6%*	*-8.0%*	*4.7%*	*17.1%*	*5.4%*	*12.6%*
- Interest (1-tax rate)	-4	-127	-134	-142	-151	-160	-169
Growth		*3466.7%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
+ Net new debt	2959	2959	1872	1984	2103	2230	2363
Debt	28242	31201	33073	35057	37160	39390	41753
Debt / tot net op capital	*30.9%*	*33.0%*	*33.6%*	*34.1%*	*34.6%*	*35.1%*	*35.7%*
FCFE w/o debt	$10,947	$11,135	$10,263	$10,751	$12,576	$13,254	$14,908
% of sales	*17.6%*	*16.9%*	*14.7%*	*14.5%*	*16.0%*	*15.9%*	*16.9%*
Growth		*1.7%*	*-7.8%*	*4.8%*	*17.0%*	*5.4%*	*12.5%*
/ No Shares	4656.1	4588.1	4,542.2	4,496.8	4,451.8	4,407.3	4,363.2
FCFE	$2.35	$2.43	$2.26	$2.39	$2.82	$3.01	$3.42
Growth		*3.2%*	*-6.9%*	*5.8%*	*18.2%*	*6.5%*	*13.6%*
* Discount factor	0.90	0.82	0.74	0.66	0.60	0.54	0.49
Discounted FCFE	$2.12	$1.98	$1.66	$1.59	$1.69	$1.63	$1.67
Third Stage							
Terminal value P/E							
Net income	$13,444	$14,223	$14,648	$16,512	$19,041	$20,945	$23,570
% of sales	*21.7%*	*21.6%*	*20.2%*	*20.7%*	*21.7%*	*21.7%*	*22.2%*
EPS	$2.89	$3.10	$3.22	$3.67	$4.28	$4.75	$5.40
Growth		*7.4%*	*4.0%*	*13.9%*	*16.5%*	*11.1%*	*13.7%*
Terminal P/E							14.29
* Terminal EPS							$5.40
Terminal value							$77.21
* Discount factor							0.49
Discounted terminal value							$37.74

Summary

First stage	$4.10	Present value of first 2 year cash flow	
Second stage	$6.41	Present value of year 3-7 cash flow	
Third stage	$37.74	Present value of terminal value P/E	
Value (P/E)	**$48.26**	= value at beg of fiscal yr	2018

Aerospace & Defense

Boeing Company

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

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%

	'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%

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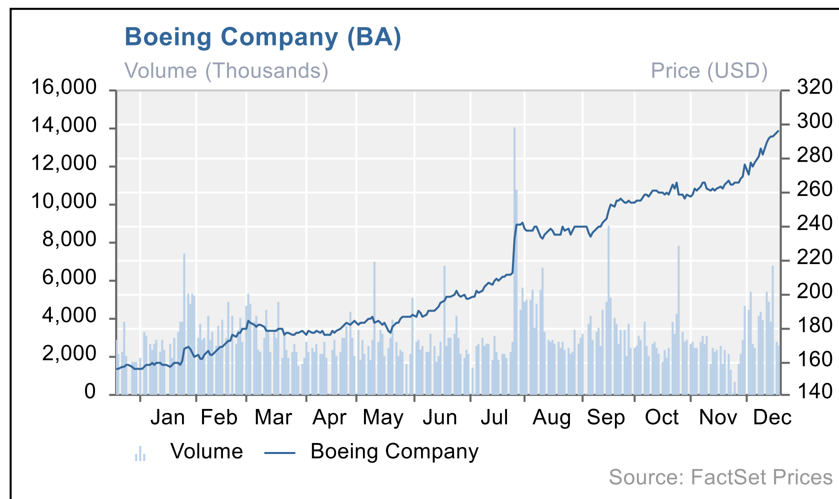


Summary: I recommend a neutral rating with a target of $330. Although BA has shown significant price appreciation, operational efficiency, and market dominance, I believe these attributes are priced into the stock. The stock is overvalued based on relative and DCF analysis.

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.

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:

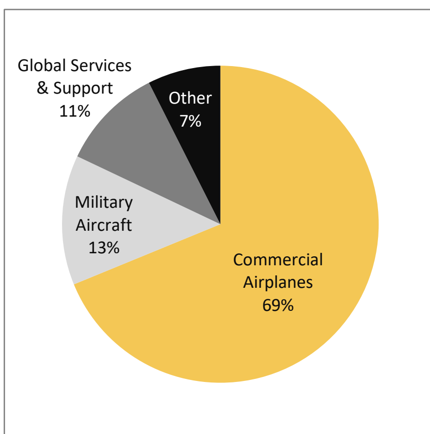
Commercial Airplanes - BCA (69% of revenue)
BCA principally consists of the following segments and products:
- Narrow-body: 737
- Wide-body: 747, 767, 777, and 787
- In development: 737 MAX derivatives and 777X
- Additional offerings: aviation services support, aircraft modifications, spare parts, training, 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).

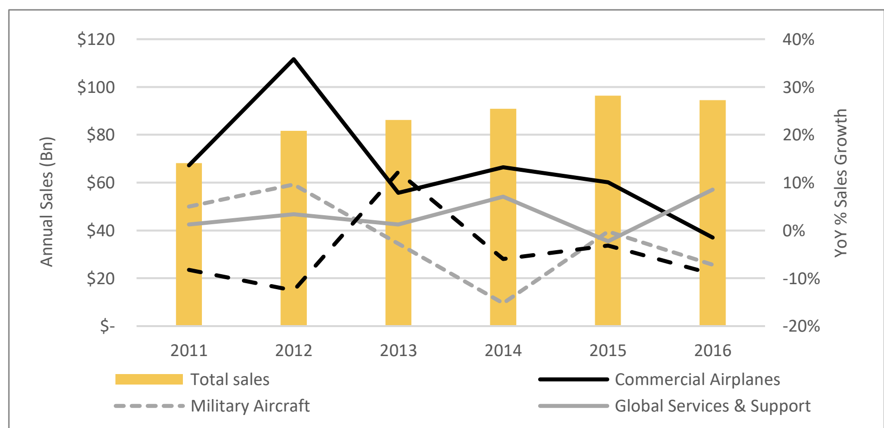
Defense, Space, & Security - BDS (30%)
BDS designs, develops, and supports military aircraft. The United States Department of Defense (DoD) and the National Aeronautics and Space Administration (NASA) are the two primary customers of the BDS segment. BDS has been a cost center with a -1.6% 5-yr CAGR.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

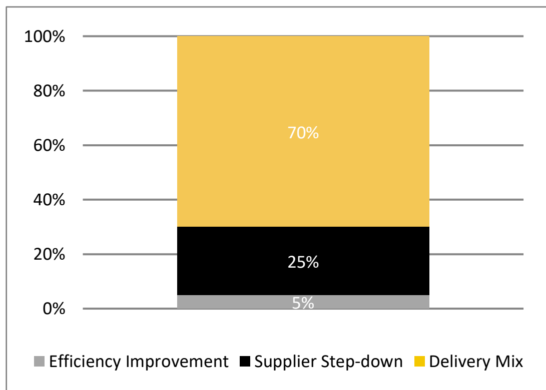
Improving Margins

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.

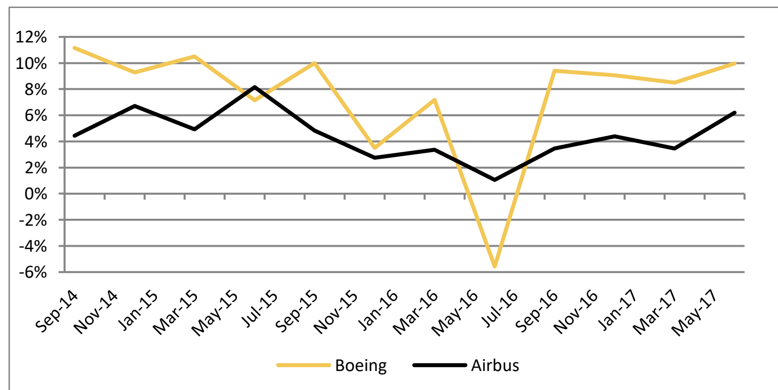
5-yr Sales CAGR: 6.6%

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

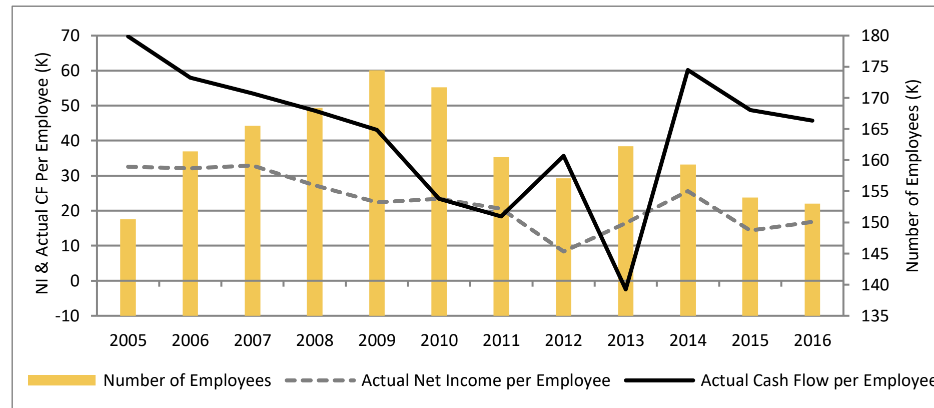
Airbus A350-1000		Boeing 787-10
242 ft	Length	224 ft
212 ft	Wingspan	197 ft
4,768 ft2	Wingarea	3,735 ft2
56 ft	Height	55 ft 9 in
2	Engines	2
97,100 lbf	Thrust per engine	76,000 lbf
194,200 lbf	Total thrust	152,000 lbf
679,000 lbs	MTOW	557,000 lbs
7,992 nm	Range	7,021 nm
M0.85	Cruise speed	M0.85
369	Seats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

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

Figure 6: Boeing employee analysis

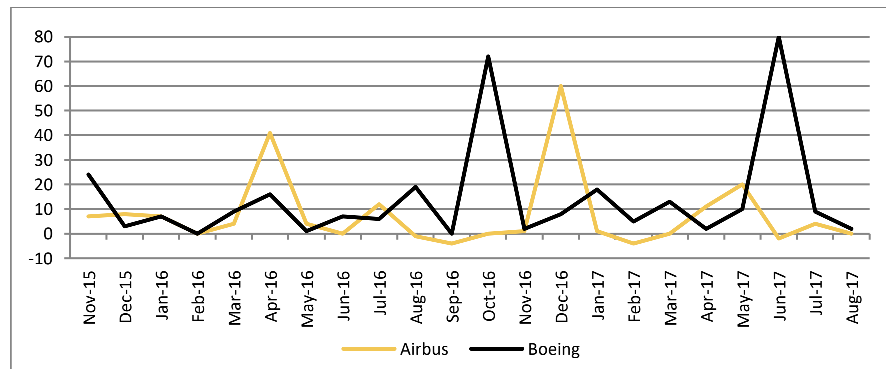


Source: Bloomberg

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

<u>Competition</u>

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

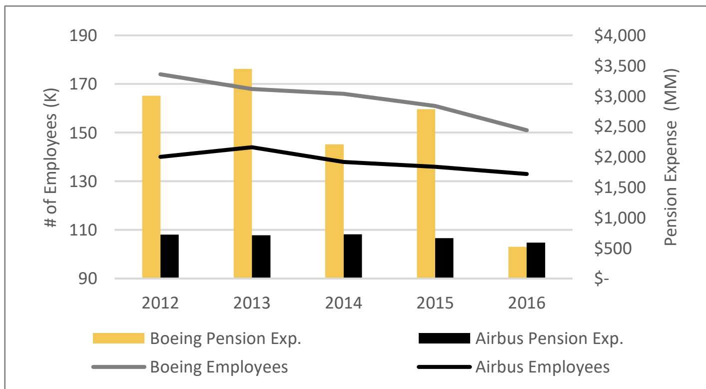
Competitor Comparison	Boeing	Airbus	Embraer	Lockheed Martin	Northrop Gumman
5Yr Sales CAGR	6.6%	6.3%	16.8%	30.0%	-1.5%
5Yr Net Op CF CAGR	21.1%	1.0%	-4.8%	4.1%	5.9%
5Yr Avg Sales/Emp	55.0%	44.0%	87.0%	41.0%	37.0%

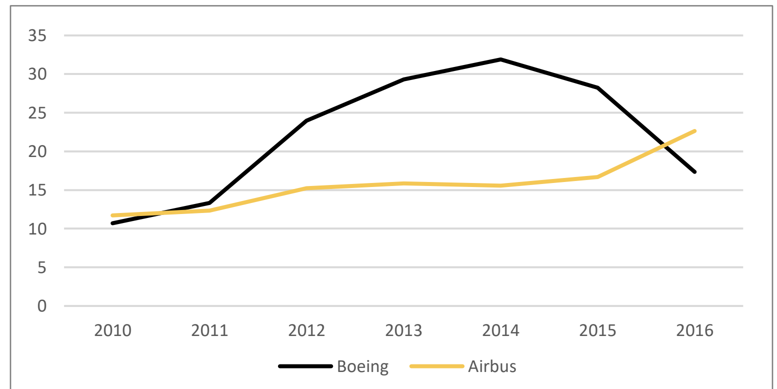
Source: FactSet

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)





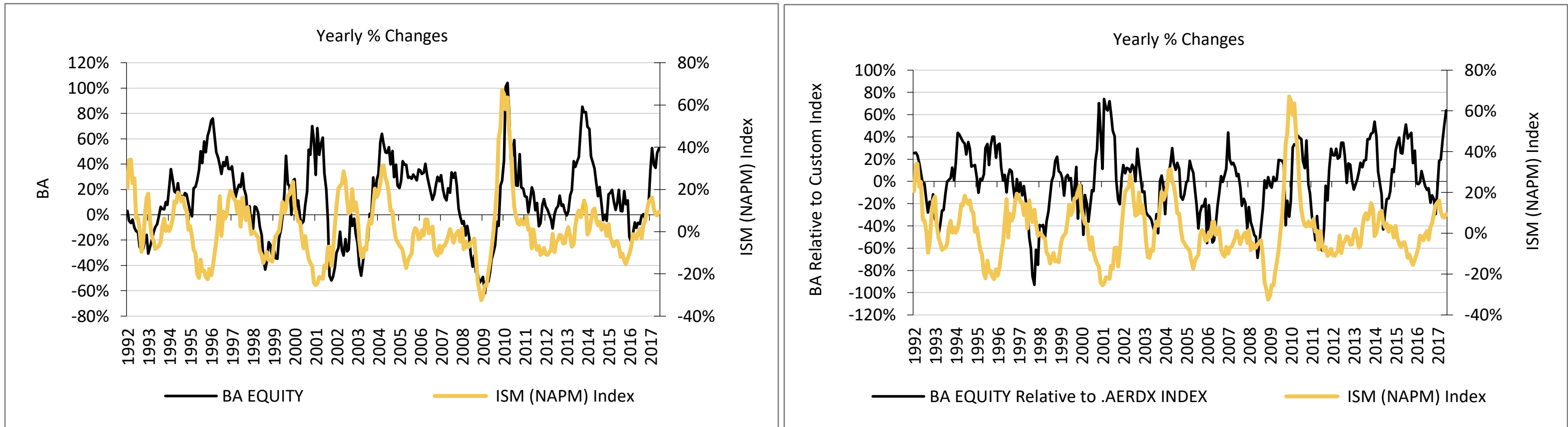
Source: Bloomberg *Source: Bloomberg*

<u>Macroeconomic Trends</u>

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.

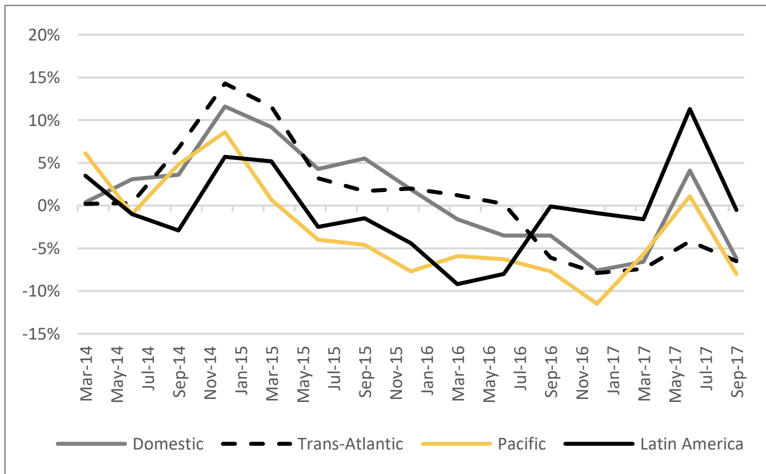
Figures 11 & 12: ISM compared to BA on an absolute basis (left) and ISM compared to BA relative to custom composite (right)



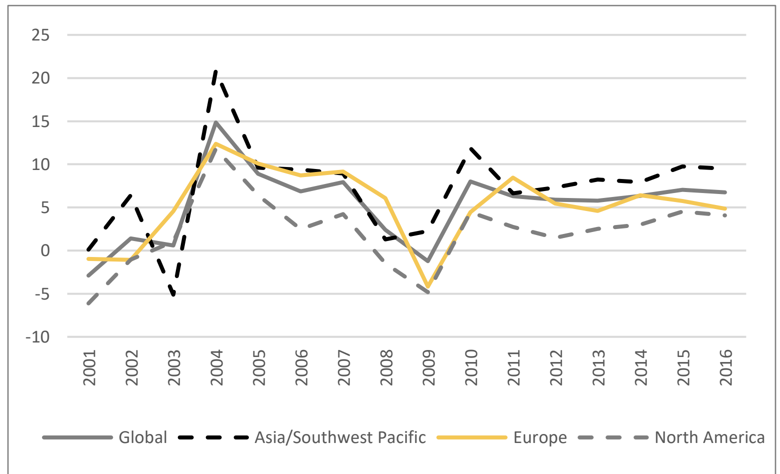
Source: Bloomberg, IMCP

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

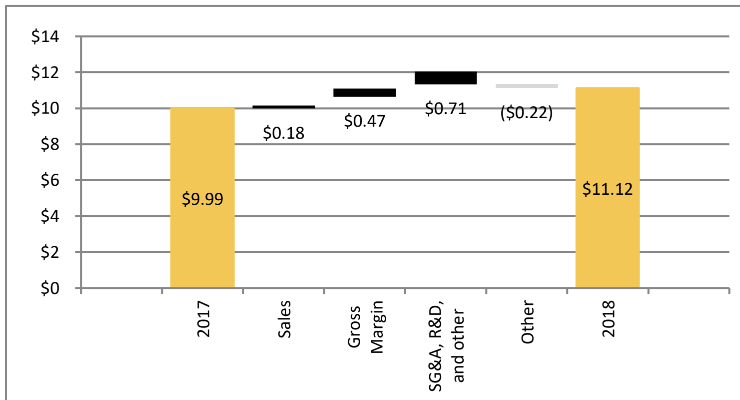


Source: Bloomberg

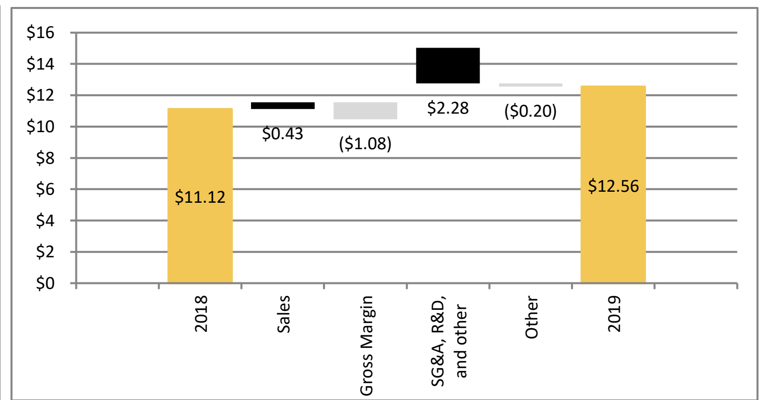
Financial Analysis

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%

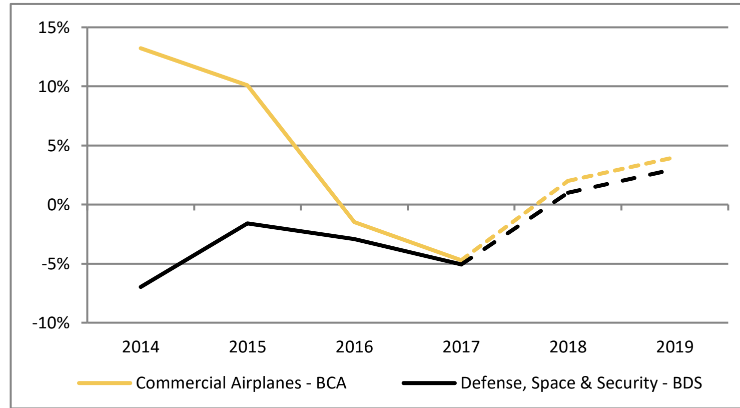
Source: Company reports, IMCP

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.

<u>Revenues</u>

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

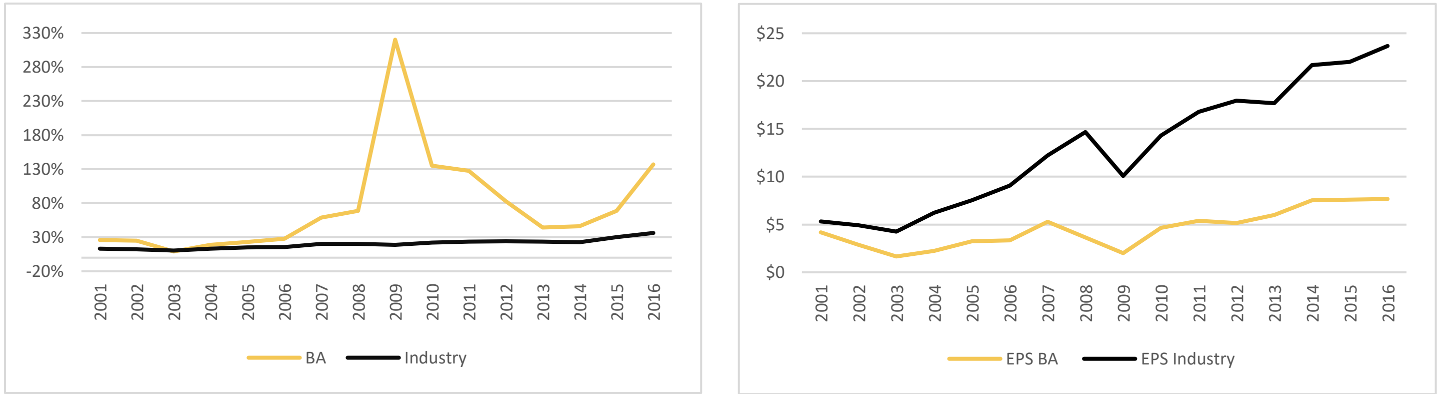
Figure 19 shows BA's change in total shareholders' equity since 1997. 2008 shows a -$1.3 bn balance in shareholders' equity, which can cause significant distortions in the ROE equation.

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.

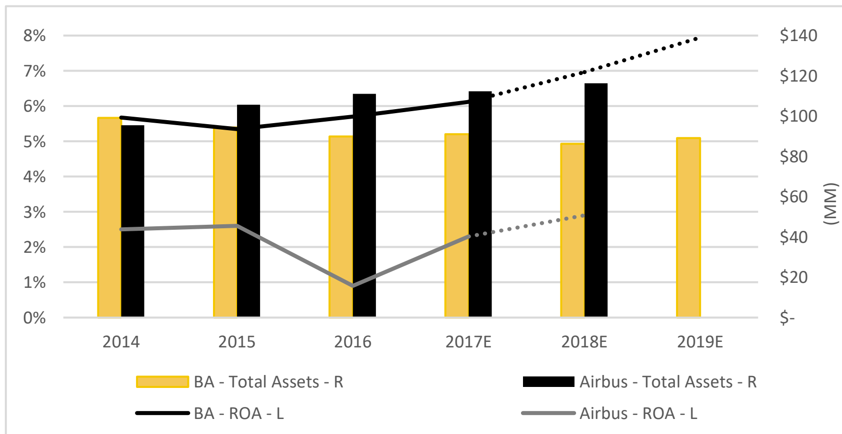
Figure 20 & 21: Boeing's ROE vs. Industry average (left) and Boeing's EPS vs. industry average (right)



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)



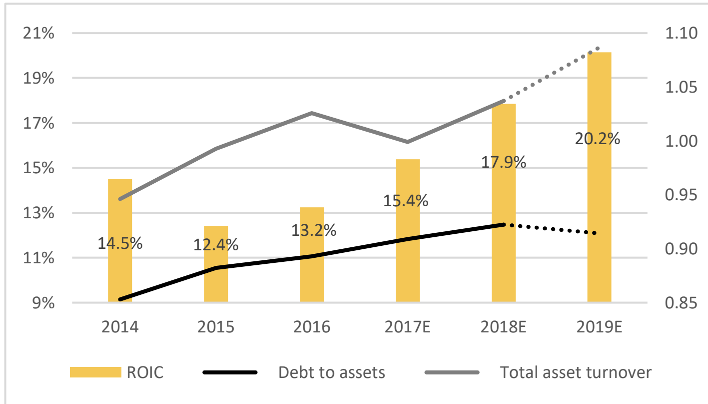
Source: Company reports, FactSet, IMCP

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

Source: IMCP, FactSet

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.

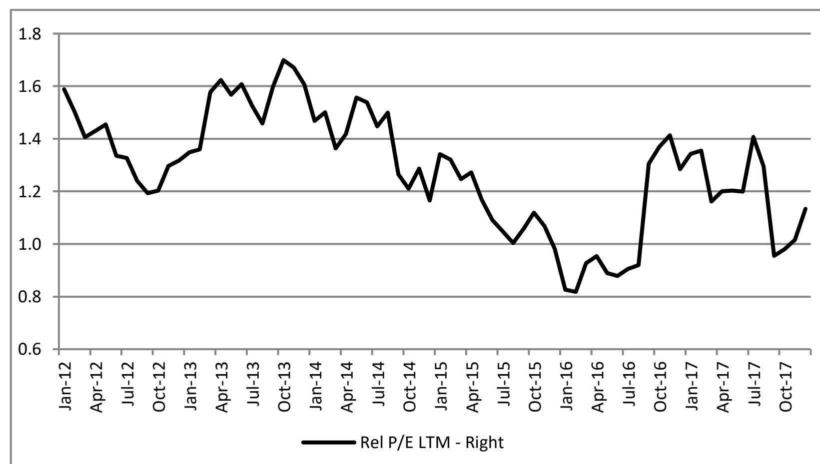
Valuation

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.cc	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

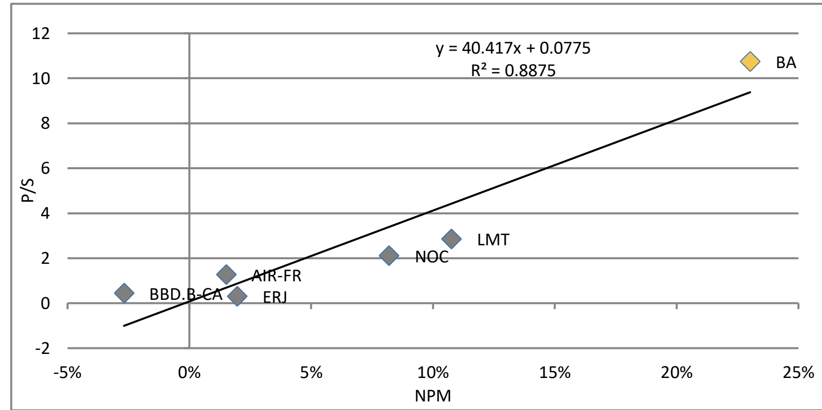
A more thorough analysis of P/S and NPM is shown in Figure 29. The calculated R-squared of the regression says 89% of a sampled firm's P/S is explained by its NPM. BA has the highest P/S and NPM of this grouping, and according to this measure, is overvalued.

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

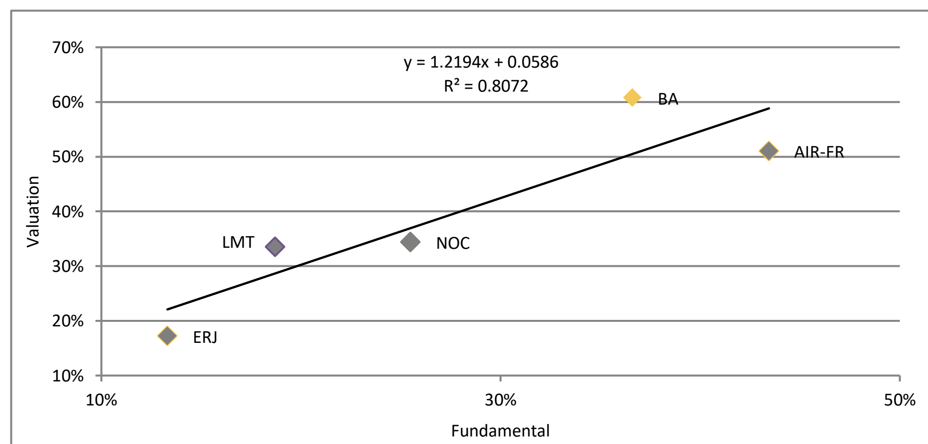
I created a composite ranking of several valuation and fundamental metrics to further compare BA to competing firms. Since the variables have different scales, each was converted to a percentile before calculating the composite score. For valuation metrics, I chose an equal weight of P/S and P/CF and 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 .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 .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

Analyst: Jacob Meehan

Recommendation	NEUTRAL
Target (today's value)	$54.00
Current Price	$49.74
52 week range	$42.80 - $54.83

Telecommunications

Verizon Communications Inc.

Share Data	
Ticker:	VZ
Market Cap. (Billion):	$213.52
Inside Ownership	0.0%
Inst. Ownership	65.4%
Beta	0.66
Dividend Yield	4.51%
Payout Ratio	59.6%
Cons. Long-Term Growth Rate	1.6%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$131	$126	$124	$126	$128
Gr %	3.6%	-4.3%	-1.1%	1.4%	1.9%
Cons	-	-	$124	$125	$127
EPS					
Year	$4.29	$3.35	$3.32	$3.56	$4.02
Gr %	104.6%	-4.3%	-1.1%	1.4%	1.9%
Cons	-	-	$3.76	$3.87	$3.93

Ratio	'15	'16	'17E	'18E	'19E
ROE (%)	124%	67.4%	67.4%	60.2%	50%
Industry	29.5%	19.3%	19.3%	20.5%	19%
NPM (%)	13.6%	10.4%	10.4%	12.3%	13%
Industry	5.9%	5.9%	5.9%	7.5%	7.8%
A. T/O	0.55	0.52	0.52	0.49	0.49
ROA (%)	7.5%	5.4%	5.4%	6.0%	6.1%
Industry	3.0%	2.9%	2.9%	3.5%	3.7%
D/A	44.5%	46.1%	46.1%	46.1%	47%

Valuation	'16	'17E	'18E	'19E
P/E	14.1	13.1	13.9	13.5
Industry	23.5	18.3	17.8	126.4
P/S	1.57	1.68	1.70	1.68
P/B	10.6	7.8	7.6	6.1
P/CF	6.2	9.4	7.7	6.5
EV/EBITDA	9.0	12.5	11.1	10.9

Performance	Stock	Industry
1 Month	18.4%	10.5%
3 Month	10.9%	-1.3%
YTD	-1.9%	-19.2%
52-week	1.4%	-27.0%
3-year	14.8%	-30.0%

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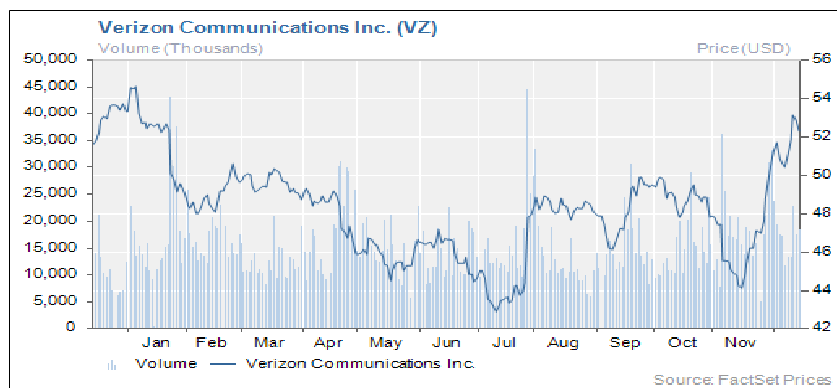


Summary: I recommend a neutral rating with a target price of $54. Although VZ has an opportunity to dramatically improve efficiency and increase revenues, declining subscribers and added pressure from competitors are strong roadblocks. This uncertainty seriously offsets my optimism that the core business can greatly improve. The stock is fairly valued based on relative and DCF analysis.

Key Drivers:

- Competition: VZ faces high pressure from competitors to keep prices low. In order to maintain subscription growth and a low churn rate, VZ needs to stand out amongst its peers.

- Mergers and Acquisitions: VZ's ability to expand its business segments relies heavily on acquisitions of media companies. Verizon has effectively completed numerous acquisitions contributing to future growth.

- Technological Advancements: Verizon's greatest opportunity for growth is through the development of new technology. VZ plans to release 5G technology by late 2018 or early 2019.

- Regulations: VZ will see benefits in 2018 through the repeal of Net Neutrality; however, the firm faces risk of potential mergers and acquisitions being blocked by the US government.

Valuation: Verizon was valued on a three-stage discounting cash flow model and also on a relative approach. The firm is fairly valued on an intrinsic basis (target is $54) and appears to be overvalued on a relative price to sales approach. Verizon also appears to be fairly valued using a relative P/E valuation approach.

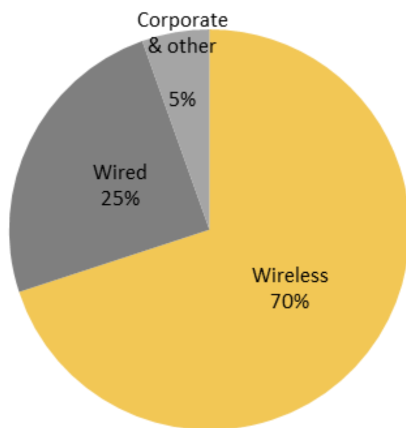
Risks: Threats to the business include high pressure from competition, increase in regulation and brand reputation. In addition, Verizon faces risk in maintaining subscription growth in a maturing sector.

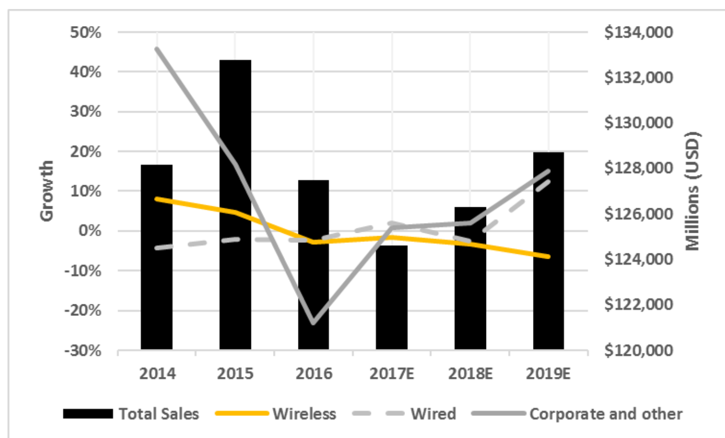
Company Overview

Verizon Communications, Inc. (VZ) is a holding company, which engages primarily in the provision of broadband and communication services. Verizon offers a variety of services and has built a reputation on coverage and reliability. VZ is America's largest telecommunications provider and covers approximately 98% of the United States. Through its subsidiary, Oath, Inc., the company oversees more than 50 media and technology brands. The Oath portfolio includes brands under Yahoo Sports, Yahoo Finance, Yahoo Mail, AOL, Huffington Post, MAKERS, Tumblr, BUILD Studios and more, with an overall goal to build consumer-friendly brands. VZ was founded on June 30th, 2000 and is headquartered in New York, NY. Verizon's revenue is generated primarily through the following three segments:

- Wired communications and entertainment (70%): Verizon offers a wired communications service. This includes Fios, which allows consumers to bundle Internet, TV, and landline services. Wired communication has been steadily declining by about 3% over the last four years.
- Wireless communications (25%). The Wireless segment provides consumers, businesses, and government customers with products on a postpaid and prepaid basis. This segment offers a variety of consumer services including: broadband video, local and long-distance voice services, security and managed network services, data center and cloud services, and corporate networking solutions. Up until recently, the growth rate for the wireless communications segment was very high (16% from 2011 to 2014). However, over the last two years sales have declined 3%, causing telecommunication companies to search for other revenue streams.
- Corporate and other (5%): This includes the Digital Advertising segment of Verizon and is a recent addition to compensate for the negative growth in the wireless and wired communication. Verizon is striving to build a top mobile global media company. This segment also includes telematics, investments in unconsolidated businesses, unallocated corporate expenses, pension, and other employee benefit related costs and lease financing.

Figures 1 and 2: Revenue Sources for VZ, year-end 2016 (left) and Revenue History since 2014 (right)





Source: Company reports, 10-K 2016

Business/Industry Drivers

There are many factors that may contribute to Verizon's future success, but the following four business drivers stand out from the rest:

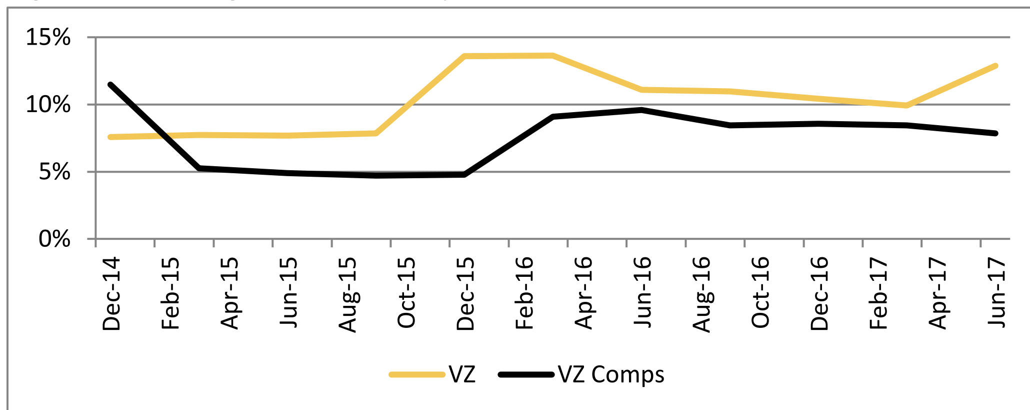
1. Competition
2. Mergers and Acquisitions
3. Technological Advancements
4. Regulations

Competition

The telecomm industry is maturing and companies compete strongly to attract customers. Most people have a landline and/or mobile phone, so growth from new adoption slowed (until 2014). Firms compete aggressively to attract its peer's customers. There are very high barriers to entry, but existing firms like Verizon, AT&T, Sprint and T-Mobile are well entrenched. Success comes from keeping prices low, Verizon has done better than others so far as it has a higher profit margin than its competitors; however, it has a lower growth rate.

VZ's spike in profit margin was attributed to the release of unlimited data plans

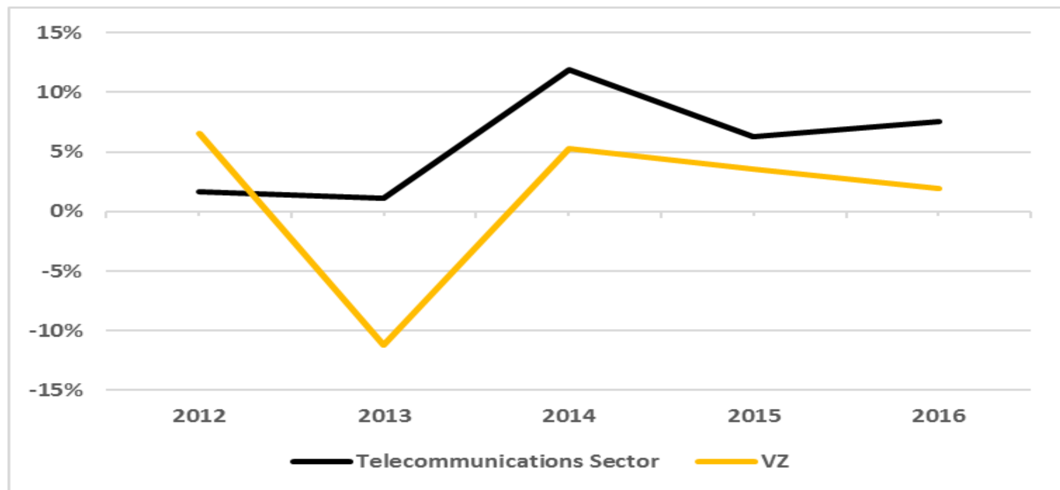
Figure 3: Profit Margin % of VZ vs. Comps



Source: FactSet

On December 31st, 2016, Verizon wireless had 114 million retail connections and revenues of approximately $89 billion for its wireless segment. This made up about 71% of Verizon's aggregate revenues and is a major contributor to its success. Wireless revenues for VZ correlate directly to net additions in subscribers the low churn rate.

Figure 4: Subscription Growth



Source: Bloomberg

The millennial generation is a huge contributor to new subscribers

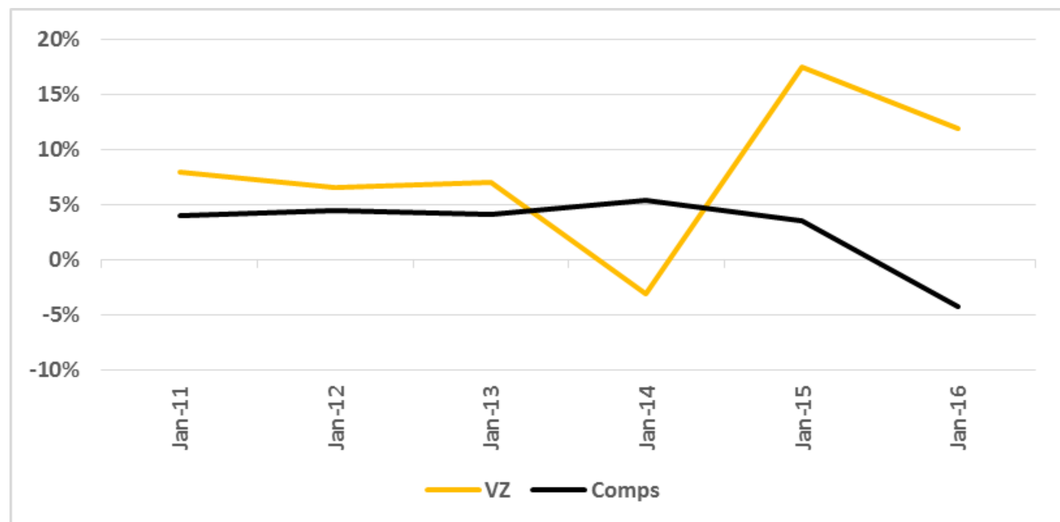
Up until 2014, the subscription growth rate for US telecommunication companies was decreasing. With the increasingly popularity trend of using smart phones for everyday tasks, VZ and the industry experienced a huge spike in subscriber growth in 2014. The implementation of a 4G network and affordable smart phones was a major contributor to this increase is subscriptions. However, growth slowed the next three years through 2Q 2017. Reaching market saturation, VZ experienced a slower growth in subscribers compared to its competitors. Verizon remains the number one wireless service provider, but has lost customers due to lower prices from competition. In order to gain back subscribers, VZ has lowered prices, which in turn has negatively affected revenues.

Mergers and Acquisitions

The telecomm industry is seeking new ways to grow its customer base and revenue streams. Mergers and acquisitions have not offset the decline in sales from the telecomm business; although, VZ has recently outperformed its comps.

VZ's decline in sales growth led it to make strategic acquisitions

Figure 5: Sales Growth of VZ vs Comps

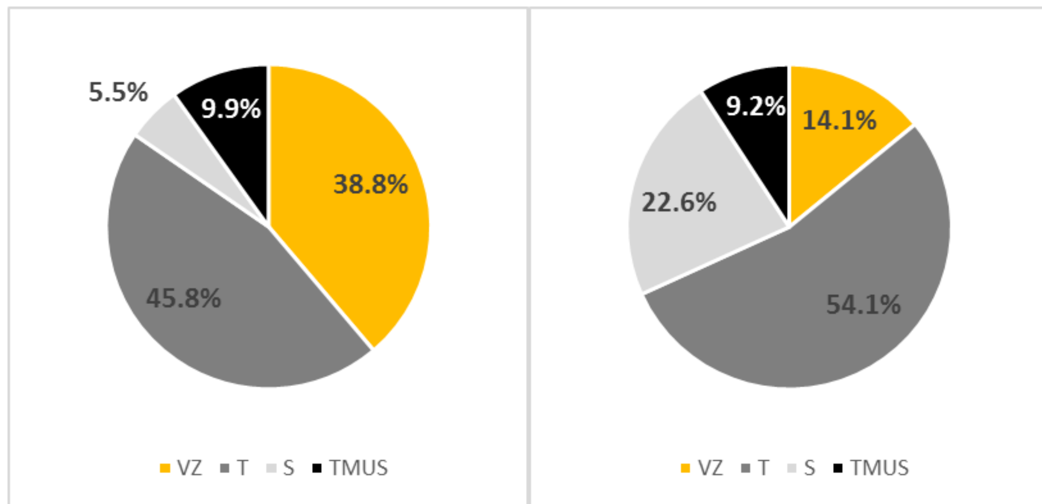


Source: FactSet

Telecommunications are merging with big name media companies in hopes of diversifying to achieve economies of scale. Most companies, such as AT&T, are targeting big name media companies such as Time Warner Cable in hopes of a mutually beneficial merger. On one hand, telecomm companies want to sell more video content and would be able to do so with a well-established media company, and on the other hand media companies are looking for new wireless distribution channels to accommodate the new generation's preference for media via smartphones.

Verizon is the second largest company by market cap in the sector, but is much smaller based on sales. This implies that the market is much more optimistic about VZ than its peers.

Figure 6 and 7: Comparison of VZ Comps by Market Cap (left) and Sales (right)



Source: FactSet, IMCP

VZ views digital advertising as a new source of revenue. Verizon completed a $4.5 billion acquisition of Yahoo in June of 2017 and a $4.4 billion acquisition of AOL in June of 2015. VZ plans to take the billion Yahoo internet users and combine them with AOL's businesses to become an online advertising powerhouse. The combination of these two businesses is known as Oath and is comprised of 50 media and tech brands. VZ faces direct competition from Facebook and Google in the digital advertising business where they control almost two thirds of the online market. Verizon is currently tied with Microsoft for third, contributing only five percent of the online ad market.

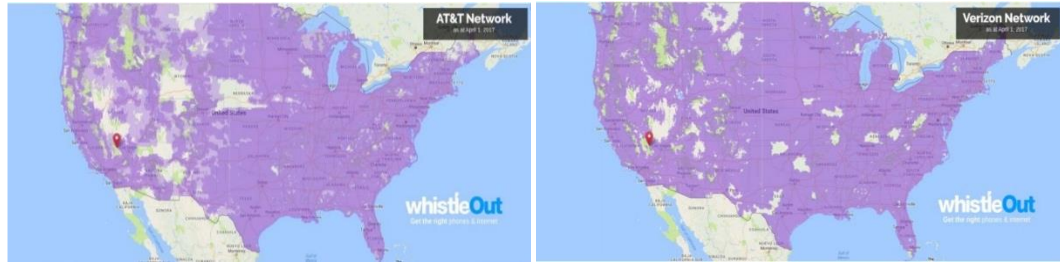
Competitors such as Google, Facebook, and Microsoft contribute 70 % of the digital advertising market

Oath currently conducts business in 40 countries and is looking to expand. Oath has 1.3 billion monthly users and hopes to increase this to 2 billion by 2020. With 2 billion monthly users, Oath could generate annual revenues between $10 and $20 billion. This would boost overall revenues by up to 15% and compensate for VZ's lack of sales growth in telecommunications.

Technological Advancements

Verizon is the largest service provider in the United States and distinguishes itself as being one of the most technologically advanced companies in this sector. VZ currently has 147.2 million subscribers and is closely followed by AT&T with 136.5 million subscribers. Verizon provides phone and high speed services coverage across the United States.

Figures 8 and 9: Coverage of Service Providers, AT&T (left) and Verizon (right)

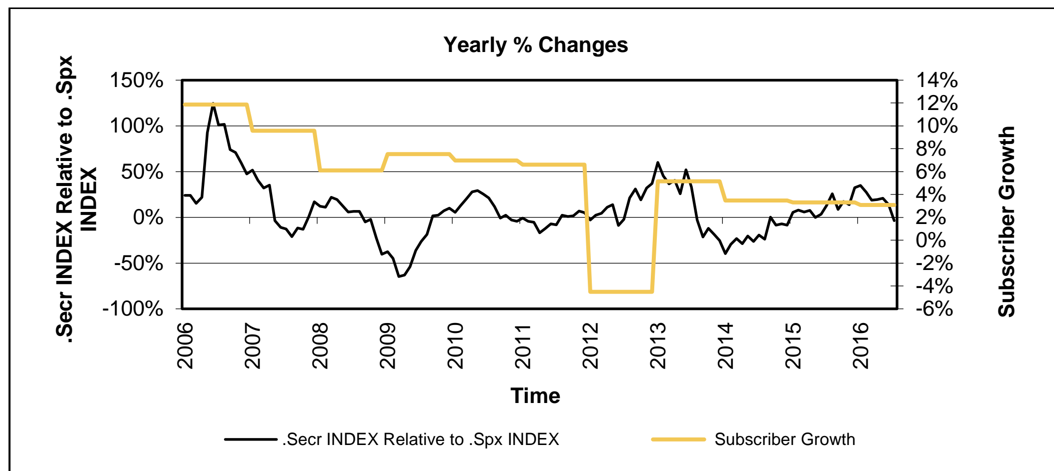


Source: Whistle Out

Although AT&T comes close, no other competitor can match VZ's coverage

VZ will have a competitive advantage of being the first telecomm provider to implement 5G technology. Sprint was the first to offer 4th generation (4G) broadband speeds for its consumers in 2009 and saw higher subscription growth at that time. Soon after Sprint's release of this technology, other telecomm companies offered 4G data services as well. This contributed to the sector outperforming the S&P 500 index in 2010.

Figure 10: VZ Comps Yearly Return Relative to the S&P 500 Index Compared to Subscriber Growth



Source: Bloomberg

4G technology enabled up to 10 times faster service than previous implemented 3G technology. In May of 2017, Verizon outbid AT&T by paying $3.1 billion for Straight Path Communications. This helped VZ in the race to release 5G services as Straight Path Communications possesses an array of wireless licenses usable in future high frequency technology. By implementing 5G mobile and fixed broadband services, VZ will be able to attract competitors' customers. Verizon plans to start implanting 5G optic internet but the end of 2018 or early 2019. The release of this technology will boost sales in a lacking wireline segment. Revenue from a 5G internet service will rely heavily on the successful expansion of fiber optic into states throughout the US. Currently, 10 states offer these types of internet services and VZ will need fast expansion in order to significantly increase revenue.

Regulations

Government regulations have had a significant impact on the telecomm industry. Most companies have trouble breaking into emerging markets because foreign governments have strict regulations keeping companies from entering. A way around this is by merging with other service providers already established in other countries. Long term success may come from expanding subscriber bases into the global market.

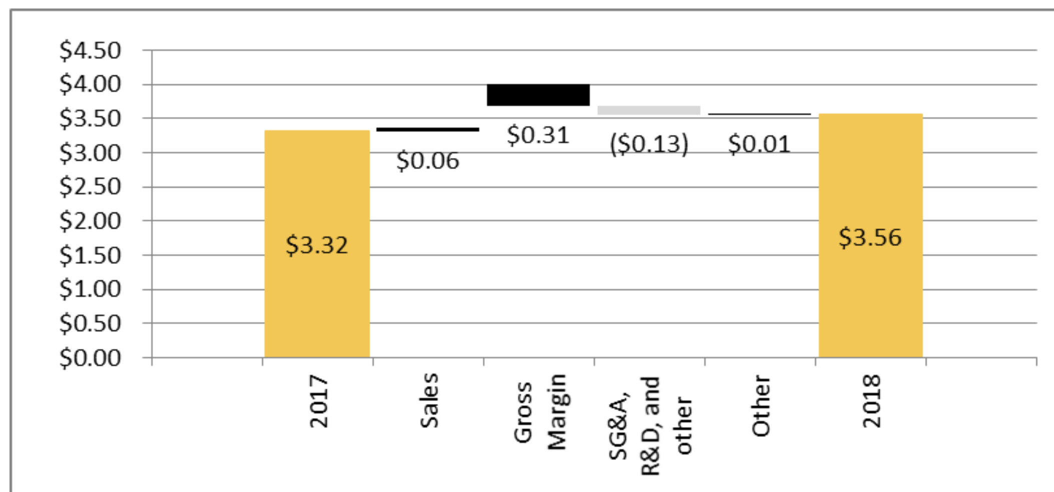
Under the Obama administration, telecomm companies suffered from net neutrality regulations that negatively impacted internet providers such as Verizon, AT&T, and Comcast. Net neutrality is the principle that internet service providers must treat all internet data the same and to not discriminate or charge differently by user, content, website, platform, application, or method of communication. Although Verizon publicly supports net neutrality, repeal could spur growth.

The Federal Communications Commission Chairman proposed a repeal of the 2015 net neutrality act and met support from top telecommunications companies. Deregulating net neutrality would mean more freedom for the internet providers and could spur investments in broadband services. For Verizon, this would be excellent news as it is investing heavily in its digital advertising segment. By having more freedom of what kind of rates a firm can charge customers, VZ could boost revenues and expand this segment significantly. This will not only benefit VZ's wireless segments, but will directly contribute to advertising profits. Verizon can direct customers to use Yahoo's search engine and in turn, create more activity for its advertising segment. Net Neutrality has already been voted to be repealed and VZ will see the benefits off this new policy by the end of 2018.

Financial Analysis

I anticipate EPS to increase from $3.32 in FY2017 to $3.56 in FY2018. An increase in sales should increase earnings by $0.06. A modestly high gross margin is the expected result of Verizon's four year plan to cut $10 billion in costs by FY2020. This $10 billion is nearly 20% of VZ's cost of goods sold. This decrease in expenses will increase the gross margin and should ultimately raise earnings by $0.31. I anticipate R&D expenses to increase in FY2017 as Verizon expedites its development of of a 5G fiber optic network. The increase in expenses should have a negative impact on earnings, decreasing EPS by $0.13.

Figure 11: Quantification of 2018 EPS Drivers

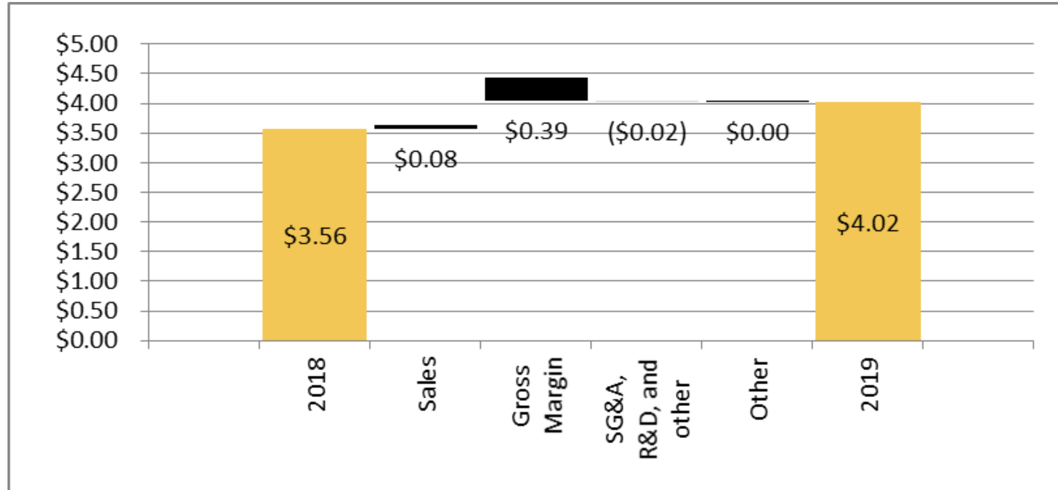


Source: Company Reports, IMCP

VZ announced a plan to cut costs by $10 billion dollars by 2020

In 2019, I expect earnings per share to increase from $3.56 to $4.02. An increase in sales will drive earnings up by $0.08. A continuation of VZ's cost cutting plan will show an even more optimistic gross margin. The new budgeting system is anticipated to increase earnings $0.39 through the gross margin and decrease EPS through higher SG&A by $0.02 (as a percent of sales).

Figure 12: Quantification of 2019 EPS Drivers



Source: Company Reports, IMCP

Revenues and EPS estimates

VZ announced a share buyback plan allowing the firm to buy back up to 100 million shares

I am more pessimistic in my estimates compared to the consensus for 2018. I am predicting a lower EPS based off a more conservative outlook on cutting costs. Although I am predicting higher revenues, I believe Verizon will incur more expenses during 2018 resulting in a lower gross margin and lower EPS. I also believe VZ will be less aggressive on its share buyback program than the consensus anticipates.

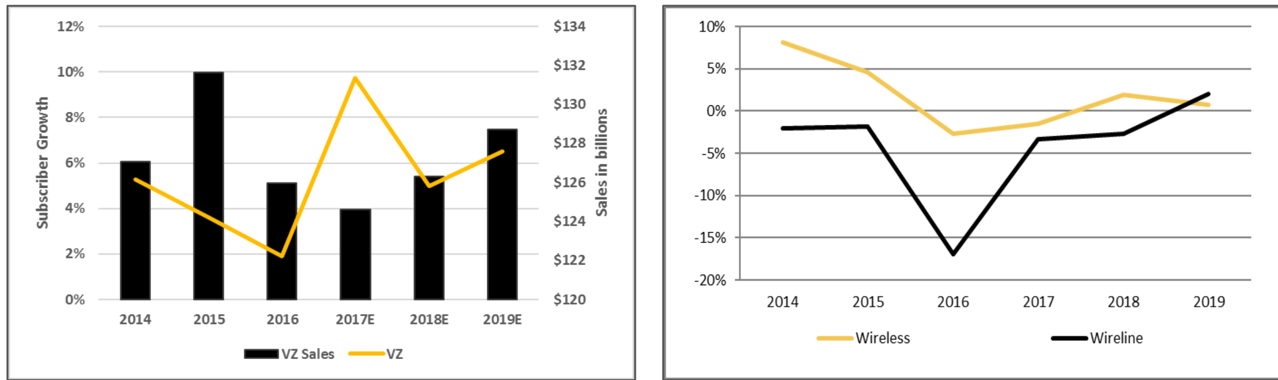
Figure 13: Estimated revenue and EPS vs. Consensus

	2018E	2019E
Revenue - Estimate	1,263	1,287
YoY Growth	1.00%	1.90%
Revenue - Consensus	1,253	1,272
EPS - Estimate	$3.56	$4.02
YoY Growth	7.30%	12.90%
EPS - Consensus	$3.76	$3.93

Revenues

Verizon's largest revenue source comes from its wireless business segment, making up 70% of total revenue. The biggest potential for sales growth in this segment is derived from the number of subscribers in a given year. For 11 straight quarters, VZ saw a decline in wireless revenue as well as a decline in subscriber growth from 2014 to 2016. Wireless revenue finally showed growth in Q2 of 2017 as Verizon released its unlimited data plan. Shortly after the release of this plan, VZ saw a huge spike in subscriber growth. Even though subscribers are growing in 2017, sales are down due to added pressure from peers. In order to attract customers, VZ kept prices low and this resulted in a decline in revenue.

Figure 14 and 15: Verizon sales vs. subscriber growth (left) and sales growth by segment (right)



Source: Factset

VZ's subscriber growth in 2017 was met with declining sales as the firm decreased prices to match competitors

Moving into 2018, Verizon will be able to raise its prices to match its peers. Although I anticipate subscriber growth to slow, wireless revenues should increase due to a rise in price of plans.

I anticipate wireline revenues to decrease in 2017 and 2018 due to an increase in popularity from streaming platforms like Netflix and Hulu. VZ's Fios internet service is only available in 10 states limiting its potential for growth. Basic internet companies are also increasing streaming speeds to compete with fiber optic internet services. I anticipate this to cause revenue to fall until 2019 when Verizon plans to release its 5G fiber optic network. Wireline revenues should increase with a successful implementation of a next generation network. Verizon could experience sales growth of up to 5% if the demand increases for fiber optic.

Figure 16: Verizon sales and projected sales by segment

Items	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Growth		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Wireless	81,023	87,646	91,680	89,186	87,800	89,500	90,200
Growth		*8.2%*	*4.6%*	*-2.7%*	*-1.6%*	*1.9%*	*0.8%*
Wireline	39,223	38,429	37,720	31,345	30,300	29,500	30,100
Growth		*-2.0%*	*-1.8%*	*-16.9%*	*-3.3%*	*-2.6%*	*2.0%*
Corporate and Other	254	1,005	2,220	5,449	6,500	7,300	8,400
Growth		*295.7%*	*120.9%*	*145.5%*	*19.3%*	*12.3%*	*15.1%*

VZ reported $2 billion in revenue from advertising in Q3 of 2017. I expect this trend to continue in 2018 but I am a little more conservative than the consensus. With a successful development in brand image, VZ could see revenues of up to $15 billion from advertising by 2020. Oath, Inc. faces a lot of risk as Yahoo has been hacked and lost reputation for credibility. Verizon also faces the challenge of competing with powerhouses like Google and Facebook. Although I anticipate revenues to increase significantly through advertising, I do not expect sales to be even near $15 billion by 2019.

Return on Equity

Verizon has maintained a relatively high ROE over recent years, primarily due to high leverage and management expects this trend to continue. I anticipate this trend to decrease through 2019 for a number of reasons. Although I anticipate Verizon to grow its margins and sales, I ultimately think this will be offset with a decrease in its assets/equity ratio as the firm uses FCF to pay down debt.

Figure 17: Verizon 5-stage DuPont ROE

5-stage DuPont ROE	2014	2015	2016	2017E	2018E	2019E
EBIT / sales	14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Sales / avg assets	0.50	0.55	0.52	0.51	0.51	0.52
EBT / EBIT	74.0%	85.0%	83.1%	82.4%	83.7%	85.5%
Net income /EBT	59.6%	62.8%	63.5%	67.0%	67.0%	67.1%
ROA	3.3%	7.3%	5.6%	5.5%	5.9%	6.6%
Avg assets / avg equity	4.64	15.14	11.67	9.44	8.22	7.11
ROE	15.3%	111.2%	65.3%	52.2%	48.5%	46.7%

Although Verizon has announced a 100 million share buyback program earlier this year, I do not anticipate this to be acted upon. In 2014, Verizon announced a similar deal allowing the repurchase of 100 million shares expiring in February of 2017. Of the 100 million, 97.5 million was still available for repurchase. Upon the expiration of this plan, Verizon announced an almost identical proposal expiring in 2020. To increase A/E, VZ should act more aggressively and use more of its cash to buy back shares.

Free Cash Flow

Verizon's FCFF was $16.6 billion in 2016 and I anticipate this to decrease slightly the next few years as higher NOPAT is offset by higher investments in operating capital. While I expect NOPAT to increase over the next few years, FCFE is lower than FCFF as I anticipate Verizon to focus on paying off debt. VZ is a highly levered company with the recent acquisitions of Yahoo and AOL. It still generates about $11 billion in FCFE even after my debt repayment assumption. This can be used to grow cash, buy shares and increase dividends year over year.

Figure 18: Verizon Free Cash Flow

Free Cash Flow	2013	2014	2015	2016	2017	2018	2019
With cash and debt							
NOPAT	$25,382	$14,414	$21,199	$17,029	$16,980	$17,945	$19,802
Growth		*-43.2%*	*47.1%*	*-19.7%*	*-0.3%*	*5.7%*	*10.4%*
NOWC	47,877	4,247	(6,283)	(1,300)	(1,584)	(2,171)	1,270
Net fixed assets	203,104	203,117	222,360	217,785	218,500	221,481	221,897
Total net operating capital	$250,981	$207,364	$216,077	$216,485	$216,916	$219,310	$223,167
Growth		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
- Change in NOWC		(43,630)	(10,530)	4,983	(284)	(587)	3,442
FCFF		$58,031	$12,486	$16,621	$16,549	$15,551	$15,945
Growth			*-78.5%*	*33.1%*	*-0.4%*	*-6.0%*	*2.5%*
+ Net new short-term and long-term debt		19,680	(3,077)	(2,116)	(2,078)	(1,900)	(2,200)
FCFE		$73,957	$6,230	$11,626	$11,491	$10,726	$10,877
Growth			*-91.6%*	*86.6%*	*-1.2%*	*-6.7%*	*1.4%*

I anticipate Verizon's NOPAT to increase over the new three years due to a higher operating margin and an increase in sales. This is offset with an increase in net fixed assets as Verizon uses cash to develop its segments. I also anticipate Verizon to continue to increase its dividend rate year over year. VZ will look to its advertising segment for additional sources of cash. A successful implementation of media and advertising revenues will allow Verizon to continue to pay off debt and focus on increasing dividends for shareholders. A proper implementation of VZ's new budgeting system will allow margins to increase and will cut costs, resulting in a higher net income to the firm.

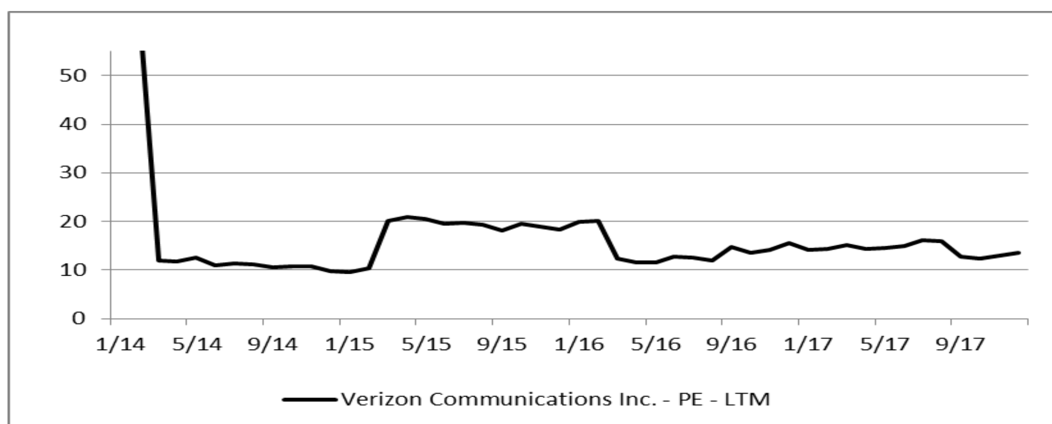
Valuation

Verizon was valued using multiples and a 3-stage discounted cash flow model. Based on forecasted NTM P/E and expected 2019 EPS of $4.02, the stock is overvalued with a target price of $52. A P/B relative valuation regression, based on ROE, shows VZ to be fairly valued compared to its peers. A detailed DCF analysis values VZ at $54. Based on these valuations, I believe VZ is worth about $54.00.

Trading History

VZ is currently trading significantly below its five-year average LTM P/E relative to the S&P 500. Verizon's high P/E from 2010-2013 is the result of expected growth due to the adoption of smartphones. Since 2014, the stock has traded around 0.4-1.2 times the market. VZ's current NTM P/E is 12.9 compared to its five-year average of 13.4. I expect some progression in the next year as Verizon's advertising business gains popularity.

Figure 19: VZ P/E relative to S&P 500



Source: FactSet

Assuming the firm's NTM P/E increases to 14.0 by the end of 2018, it should trade at $56.28 by the end of the year based on my 2019 EPS estimate.

- Price = P/E x EPS = 14.0 x $4.02 = $56.28

Discounting $56.28 back to today at a 8.8% cost of equity (explained in Discounted Cash Flow section), yields a price of $51.72. This seems to be a fair valuation given the lack of expected growth for Verizon; however, I am less bullish about near-term earnings than consensus.

Relative Valuation

Verizon is currently trading at a P/E slightly less than its peers with a TTM P/E of 13.6 compared to an average of 18.9. VZ's P/S ratio is relatively in line with its peers but seems to be on the higher end due to a large net profit margin.

Figure 20: VZ comparable companies

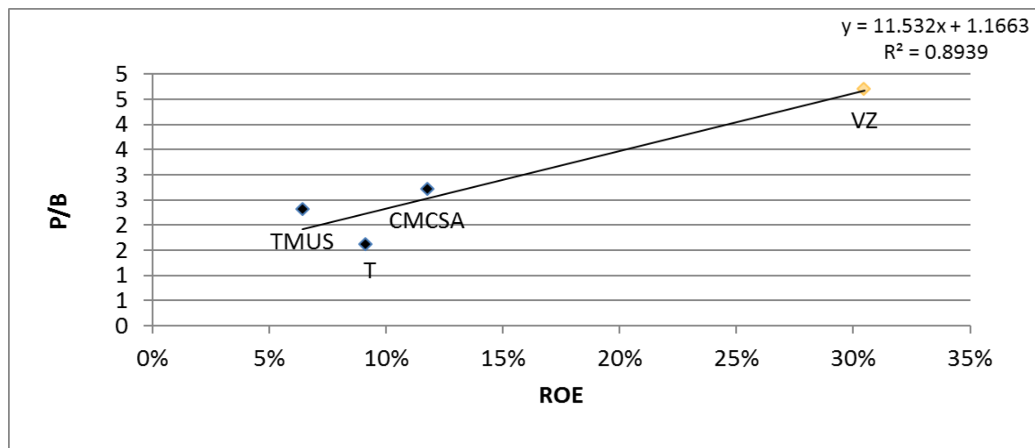
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
VZ	VERIZON	$49.74	$202,889	0.5	(4.1)	12.8	2.6	3.5	(6.0)	3.8	-37.9%	81.0%	-26.5%	10.6%	12.9%	88.4%	0.66	263.7%	B	4.32%	31.7%
T	AT&T INC	$37.00	$227,180	1.6	0.3	9.4	(3.0)	(10.0)	(4.8)	1.3	-27.0%	99.2%	-11.4%	100.0%	-1.4%	31.5%	0.39	89.4%	B	5.26%	41.4%
S	SPRINT CORP	$5.49	$21,929	3.4	(3.5)	(10.9)	(33.9)	(39.8)	(6.8)		-99.5%	6.3%	-41.2%	-756.0%	-14.9%		0.53	125.1%	B	0.00%	
TMUS	T-MOBILE US INC	$60.44	$51,642	3.1	(5.1)	6.6	(5.4)	(1.4)	(4.8)	14.6	-34.9%	173.3%	106.1%	76.9%	1.3%	19.3%	0.23	129.9%		0.00%	
CMCSA	COMCAST CORP	$40.08	$186,152	1.6	(5.6)	7.8	(3.4)	4.7	0.1	5.3	-47.0%	10.9%	6.7%	163.2%	-1.7%	33.0%	1.18	86.6%	A	1.48%	13.3%
Average			$137,958	2.0	(3.6)	5.1	(8.6)	(8.6)	(4.5)	6.2	-49.2%	74.1%	6.8%	-81.1%	-0.8%	43.1%	0.60	138.9%		2.21%	28.8%
Median			$186,152	1.6	(4.1)	7.8	(3.4)	(1.4)	(4.8)	4.6	-37.9%	81.0%	-11.4%	76.9%	-1.4%	32.3%	0.53	125.1%		1.48%	31.7%
SPX	S&P 500 INDEX	$2,731		1.2	(2.0)	6.5	10.8	16.3	2.2			-0.1%	0.5%	10.3%	11.7%						

		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
VZ	http://www.verizon.com	30.5%	4.71	19.3	10.6	16.6	6.8	10.9	14.0	12.4	10.4%	1.61	21.8%	21.1%	12.1	6.7	5.3	2.0%	1.1%	1.7%	$10.57
T	http://www.att.com	9.2%	1.61	28.2	14.5	20.3	7.8	10.6	8.8	8.9	7.9%	1.39	14.9%	11.7%	14.9	5.1	5.3	0.0%	6.9%	4.7%	$22.95
S	http://www.sprint.com	-10.5%	1.15	-5.2	-4.3	-16.8	3.2	621.3	1.7	2.0	-6.2%	0.68		-2.3%	29.6	2.2	3.5	-1.3%	2.3%	-1.2%	$4.76
TMUS	http://www.t-mobile.com	6.4%	2.30	89.8	47.7	34.0	11.6	17.8	20.2	19.9	3.9%	1.39	11.7%	9.1%	17.9	5.2	5.1	6.4%	6.1%	51.4%	$26.25
CMCSA	http://corporate.comcast.com	11.8%	2.71	19.7	17.3	19.8	8.4	15.9	8.8	8.9	10.1%	2.32	21.1%	19.1%	14.3	8.1	7.6	5.9%	2.8%	6.2%	$14.77
Average		9.5%	2.50	30.4	17.2	14.8	7.6	135.3	10.7	10.4	5.2%	1.48	17.3%	11.7%	17.8	5.5	5.4	2.6%	3.8%	12.6%	
Median		9.2%	2.30	19.7	14.5	19.8	7.8	15.9	8.8	8.9	7.9%	1.39	18.0%	11.7%	14.9	5.2	5.3	2.0%	2.8%	4.7%	
spx	S&P 500 INDEX			17.3	17.2	18.8			20.8	18.6											

Figure 21 analyses the relationship between P/B and ROE. The calculated R-squared of the regression indicates that ROE explains nearly 90% of a sampled firm's P/B. VZ currently has a P/B of 4.71 and appears to be fairly valued.

- Estimated P/B = Estimated 2018 ROE (30.5%) x 11.532 + 1.1663 = 4.68
- Target Price = Estimated P/B (4.68) x 2018E Book per share ($10.57) = $49.46

Figure 21: P/B vs ROE



Source: FactSet

I also created a composite ranking of several fundamental and evaluation metrics. The calculated R-squared of the regression indicates that the fundamental inputs explain over 87% of a sampled

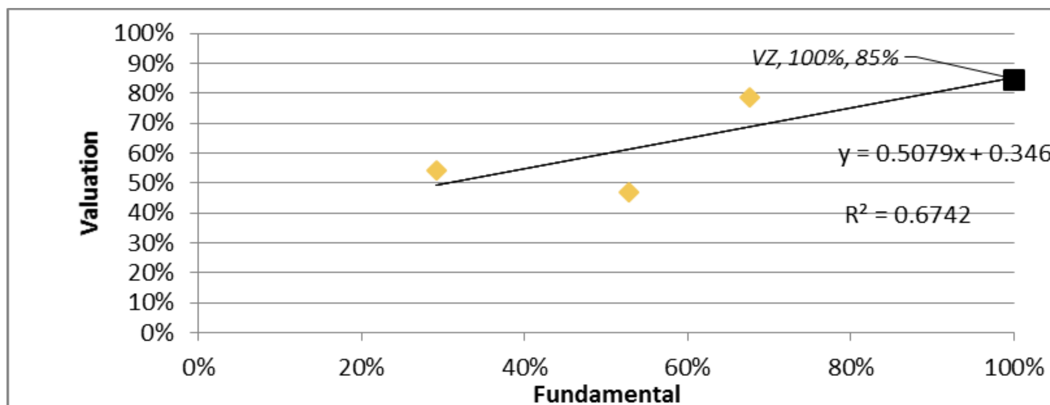
firm's valuation. Because the factors have different scales, each one was converted to a percentile before calculating the composite score. An equal weighing of 2017 ROE and 2017 NPM was compared to a composite utilizing 50% P/B and 50% P/S. The regression line had an R-squared of 0.67. From figure 21, one can see that Verizon is expensive based on its fundamentals.

Figure 22: Composite valuation, % of range

				Fundamental Percent of Max		Valuation Percent of Max	
		Weight		50.0%	50.0%	50.0%	50.0%
		Weighted		2017	2017		
Ticker	Name	Fund	Value	ROE	NPM	P/B	P/S
VZ	VERIZON COMMUNICATIONS INC	100%	85%	100%	100%	100%	70%
T	AT&T INC	53%	47%	30%	76%	34%	60%
TMUS	T-MOBILE US INC	29%	54%	21%	37%	49%	60%
CMCSA	COMCAST CORP	68%	79%	39%	96%	58%	100%
Target (for single y-value factor and single or multiple x-factors)							
			Value	30.5%	10.4%	4.71	1.61
			Max	30%	10%	4.71	2.32

Source: IMCP

Figure 23: Composite relative valuation



Discounted Cash Flow Analysis

Through the use of a three stage discounted cash flow model, I was able to value Verizon.

Using the Capital Asset Pricing Model, I calculated the firm's cost of equity to be 8.8%. The underlying assumptions used in calculating this rate are as follows:

- An expected return of the market of 10% (roughly average annual return of S&P 500).
- The risk-free rate, as represented by the ten-year Treasury bond yield, is roughly 2.2%.
- A beta of 0.85, as VZ has slightly less risk than the market.

I estimate the cost of equity to be 8.8% given the above expectations (2.2% + 0.85(10%-2.2%)).

Stage One - The model's first stage discounts fiscal years 2018 and 2019 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $2.04 and $2.95, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $5.00 per share.

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 8.8% cost of equity. I assume a constant 1.5% sales growth rate throughout the period. I expect Verizon to buy back shares in 2020 and 2021 in line with management's plan resulting in a 2% and 1.5% decrease in share growth, respectively. I keep all other ratios constant in stage two from 2019 values. This results in a discounted FCFE of $13.21.

Figure 24: FCFE and discounted FCFE

	2018	2019	2020	2021	2022	2023	2024
FCFE	$2.22	$3.50	$3.86	$3.71	$4.30	$4.08	$4.14
Growth		57.29%	10.49%	-4.05%	16.04%	-5.13%	1.50%
* Discount factor	0.92	0.84	0.78	0.71	0.66	0.60	0.55
Discounted FCFE	$2.04	$2.95	$3.00	$2.64	$2.82	$2.46	$2.29

Stage Three – Net income for the years 2020-2024 is calculated based upon the stage two margin and growth assumptions that I used to determine FCFE. I anticipate EPS to grow from $3.32 in 2017 to $4.61 in 2024.

Figure 25: EPS

	2018	2019	2020	2021	2022	2023	2024
EPS	$3.56	$4.02	$4.30	$4.43	$4.47	$4.54	$4.61

Stage three of the model also requires an assumption regarding the company's terminal price-to-earnings ratio. Historically, Verizon has had a relatively high P/E but I expect this to decrease as the telecomm sector reaches market saturation. Therefore, a P/E ratio of 14 is assumed at the end of VZ's terminal year.

Given the assumed terminal earnings per share of $3.32 and a price-to-earnings ratio of 14, a terminal value of $46.48 per share is calculated. Using 8.8% cost of equity, this number is discounted back to a present value of $35.70.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $53.91 is calculated. Given VZ's current price of $54.29, this model indicates the stock is slightly overvalued.

Figure 26: DCF Summary

Summary		
First stage	$5.00	Present value of first 2 year cash flow
Second stage	$13.21	Present value of year 3-7 cash flow
Third stage	$35.70	Present value of terminal value P/E
Third stage	$31.75	Present value of terminal value constant growth
Value (P/E)	**$53.91**	= value at beg of fiscal yr 2018

Scenario Analysis

Adjusting the assumptions in my DCF model shows how different scenarios can affect VZ's valuation. Figure 26 shows a more positive outlook than my original model. For my bull case, I reduced the beta to 0.65 in my CAPM equation reducing the cost of equity to 7.3%. Assuming a one percent higher second stage growth rate, increases second stage present value by $1.20. Increasing the terminal P/E to 17 would increase the terminal value to $48.68. Adding these assumptions together results in a present value of $68.23. This bullish scenario takes into account an optimistic sales growth rate. A higher P/E is used to anticipate continued growth through Verizon's advertising segment and subscription base.

Figure 27: Bull Case

	Summary		
First stage	$5.11	Present value of first 2 year cash flow	
Second stage	$14.44	Present value of year 3-7 cash flow	
Third stage	$48.68	Present value of terminal value P/E	
Value (P/E)	**$68.23**	= value at beg of fiscal yr	2018

Figure 28 shows a more pessimistic outlook than my original model. Increasing beta in my CAPM equation to 0.9 resulted in an increase of cost of equity to 9.2%. Assuming a one percent lower second stage growth rate decreases the second stage present value to $12.75. I lowered the terminal P/E to 13 because of my lowered growth assumptions for sales. Adding the present value of these assumptions results in a value of $47.12. This scenario would represent a situation in which VZ faces increased pressure from competition and a slow advertising growth.

Figure 28: Bear Case

	Summary		
First stage	$4.97	Present value of first 2 year cash flow	
Second stage	$12.75	Present value of year 3-7 cash flow	
Third stage	$29.40	Present value of terminal value P/E	
Value (P/E)	**$47.12**	= value at beg of fiscal yr	2018

Business Risks

Competition:

The telecomm industry faces significant pressure from competing companies. 70% of VZ's revenue comes from its wireless segment. Verizon faces significant risk if its subscription base decreases and this is directly related to competition. The rapid development of new technologies, services and products has eliminated many of the traditional distinctions among telephone companies and cable companies. While these changes have enabled companies to offer new types of products and services, they have also allowed other providers to develop these services as well.

Debt:

Verizon has a significant amount of debt outstanding ($108.1 billion) compared to its peers. Although VZ's debt levels have decreased in recent years, they still face risk of incurring too much interest expense. VZ's loan agreements requires the firm to maintain a certain leverage ratio in line with its credit ratings. This could limit Verizon's ability to obtain additional financing

in the future. Verizon also has to dedicate a large portion of its cash flows to pay off debt, restricting opportunities to pursue capital expenditures or acquisitions.

Regulation

Verizon faces risk from being subject to regulation by the FCC and other federal, state, and local agencies. These regulatory regimes frequently restrict and impose conditions to operate in designated areas. New laws or regulations to the existing regulatory framework at the federal, state and local level could restrict the ways in which we manages its wireline and wireless networks. Net neutrality imposes a risk of bad relationships with streaming services making VZ stay competitive with other internet service providers

Appendix 1: SWOT Analysis

Strengths	Weaknesses
Leading subscription base in the industry Strategic mergers and acquisitions	Highly Levered Decreasing Sales
Opportunities	**Threats**
Development of next generation technology Development of media and advertising segment	Brand reputation from 2015 hack of Yahoo Competitors merging to become "powerhouses"

Appendix 2: Porter's 5 forces

Rivalry among Competitors – High

Verizon faces tough competition from several large companies all competing for a limited subscriber base. Revenues are tied directly to net new subscribers and all companies in the telecomm industry are competing for the same customer base.

Bargaining Power of Buyers – Moderate

Buyers have a relatively moderate influence on the power to shift prices. The main companies in this industry offer relatively similar rates on data plans. When looking for a new carrier, customers look for reliability over minor price differences.

Threat of Substitute – Moderate

Verizon competes with a small number of firms, but these firms offer very similar services. VZ needs to stand out from its peers in order to maintain a substantial subscriber base.

Bargaining Power of Suppliers – Relatively Low

Suppliers have relatively low power on telecomm companies, as there are few substitutes for large sized customers.

Threat of New Entrants – Low

In the telecommunications sector, four main companies dominate the US market. The threat of a new company taking over as a top telecomm company is very low. The industry has reached market saturation and top companies compete with each other for subscribers. It is highly unlikely for Verizon to face a threat from new entrants.

Appendix 3: Income Statement (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Direct costs	61,490	66,460	68,570	67,350	66,100	65,171	64,093
Gross Margin	59,010	60,620	63,050	58,630	58,500	61,129	64,607
SG&A, R&D, and other	27,370	41,730	30,240	32,720	34,000	35,238	36,036
EBIT	31,640	18,890	32,810	25,910	24,500	25,892	28,571
Interest	2,670	4,920	4,920	4,380	4,300	4,220	4,138
EBT	28,970	13,970	27,890	21,530	20,200	21,671	24,434
Taxes	5,730	3,310	9,870	7,380	6,200	6,652	7,499
Income	23,240	10,660	18,020	14,150	14,000	15,020	16,934
Other	12,050	2,330	500	480	470	500	550
Net income	11,190	8,330	17,520	13,670	13,530	14,520	16,384
Basic Shares	2,866.0	3,974.0	4,085.0	4,080.0	4,080.0	4,079.5	4,079.0
EPS	$3.90	$2.10	$4.29	$3.35	$3.32	$3.56	$4.02
DPS	$2.07	$1.96	$2.09	$2.27	$2.39	$2.50	$2.53
Growth Statistics							
Sales		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Direct Costs		*8.1%*	*3.2%*	*-1.8%*	*-1.9%*	*-1.4%*	*-1.7%*
Gross Margin		*2.7%*	*4.0%*	*-7.0%*	*-0.2%*	*4.5%*	*5.7%*
SG&A, R&D, and other		*52.5%*	*-27.5%*	*8.2%*	*3.9%*	*3.6%*	*2.3%*
EBIT		*-40.3%*	*73.7%*	*-21.0%*	*-5.4%*	*5.7%*	*10.4%*
Interest		*84.3%*	*0.0%*	*-11.0%*	*-1.8%*	*-1.9%*	*-2.0%*
EBT		*-51.8%*	*99.6%*	*-22.8%*	*-6.2%*	*7.3%*	*12.7%*
Taxes		*-42.2%*	*198.2%*	*-25.2%*	*-16.0%*	*7.3%*	*12.7%*
Continuing income		*-54.1%*	*69.0%*	*-21.5%*	*-1.1%*	*7.3%*	*12.7%*
Other		*-80.7%*	*-78.5%*	*-4.0%*	*-2.1%*	*6.4%*	*10.0%*
Net income		*-25.6%*	*110.3%*	*-22.0%*	*-1.0%*	*7.3%*	*12.8%*
Basic Shares		*38.7%*	*2.8%*	*-0.1%*	*0.0%*	*0.0%*	*0.0%*
EPS		*-46.3%*	*104.6%*	*-21.9%*	*-1.0%*	*7.3%*	*12.9%*
DPS		*-5.2%*	*6.4%*	*8.6%*	*5.3%*	*4.6%*	*1.0%*
Common Size							
Sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
Direct Costs	*51.0%*	*52.3%*	*52.1%*	*53.5%*	*53.0%*	*51.6%*	*49.8%*
Gross Margin	*49.0%*	*47.7%*	*47.9%*	*46.5%*	*47.0%*	*48.4%*	*50.2%*
SG&A, R&D, and other	*22.7%*	*32.8%*	*23.0%*	*26.0%*	*27.3%*	*27.9%*	*28.0%*
EBIT	*26.3%*	*14.9%*	*24.9%*	*20.6%*	*19.7%*	*20.5%*	*22.2%*
Interest	*2.2%*	*3.9%*	*3.7%*	*3.5%*	*3.5%*	*3.3%*	*3.2%*
EBT	*24.0%*	*11.0%*	*21.2%*	*17.1%*	*16.2%*	*17.2%*	*19.0%*
Taxes	*4.8%*	*2.6%*	*7.5%*	*5.9%*	*5.0%*	*5.3%*	*5.8%*
Continuing income	*19.3%*	*8.4%*	*13.7%*	*11.2%*	*11.2%*	*11.9%*	*13.2%*
Other	*10.0%*	*1.8%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*
Net income	*9.3%*	*6.6%*	*13.3%*	*10.9%*	*10.9%*	*11.5%*	*12.7%*

Appendix 4: Balance Sheet (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Cash	53,528	10,598	4,470	2,880	3,400	1,744	5,131
Operating assets ex cash	17,466	18,901	17,810	23,515	22,926	23,997	25,097
Operating assets	70,994	29,499	22,280	26,395	26,326	25,741	30,228
Operating liabilities	23,117	25,252	28,563	27,695	27,910	27,912	28,958
NOWC	47,877	4,247	(6,283)	(1,300)	(1,584)	(2,171)	1,270
NOWC ex cash (NWC)	(5,651)	(6,351)	(10,753)	(4,180)	(4,984)	(3,915)	(3,861)
NFA	203,104	203,117	222,360	217,785	218,500	221,481	221,897
Invested capital	*$250,981*	*$207,364*	*$216,077*	*$216,485*	*$216,916*	*$219,310*	*$223,167*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$274,098*	*$232,616*	*$244,640*	*$244,180*	*$244,826*	*$247,222*	*$252,125*
Short-term and long-term debt	$93,591	$113,271	$110,194	$108,078	$106,000	$104,100	$101,900
Other liabilities	61,974	80,417	88,041	84,375	83,127	83,127	83,127
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	95,416	13,676	17,842	24,032	27,788	32,082	38,139
Total supplied capital	*$250,981*	*$207,364*	*$216,077*	*$216,485*	*$216,915*	*$219,309*	*$223,166*
Total liabilities and equity	*$274,098*	*$232,616*	*$244,640*	*$244,180*	*$244,826*	*$247,221*	*$252,124*
Growth Statistics							
Cash		*-80.2%*	*-57.8%*	*-35.6%*	*18.1%*	*-48.7%*	*194.2%*
Operating assets ex cash		*8.2%*	*-5.8%*	*32.0%*	*-2.5%*	*4.7%*	*4.6%*
Operating assets		*-58.4%*	*-24.5%*	*18.5%*	*-0.3%*	*-2.2%*	*17.4%*
Operating liabilities		*9.2%*	*13.1%*	*-3.0%*	*0.8%*	*0.0%*	*3.7%*
NOWC		*-91.1%*	*-247.9%*	*-79.3%*	*21.8%*	*37.1%*	*-158.5%*
NOWC ex cash (NWC)		*12.4%*	*69.3%*	*-61.1%*	*19.2%*	*-21.4%*	*-1.4%*
NFA		*0.0%*	*9.5%*	*-2.1%*	*0.3%*	*1.4%*	*0.2%*
Invested capital		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
Marketable securities							
Total assets		*-15.1%*	*5.2%*	*-0.2%*	*0.3%*	*1.0%*	*2.0%*
Short-term and long-term debt		*21.0%*	*-2.7%*	*-1.9%*	*-1.9%*	*-1.8%*	*-2.1%*
Other liabilities		*29.8%*	*9.5%*	*-4.2%*	*-1.5%*	*0.0%*	*0.0%*
Debt/equity-like securities							
Equity		*-85.7%*	*30.5%*	*34.7%*	*15.6%*	*15.5%*	*18.9%*
Total supplied capital		*-17.4%*	*4.2%*	*0.2%*	*0.2%*	*1.1%*	*1.8%*
Total liabilities and equity		*-15.1%*	*5.2%*	*-0.2%*	*0.3%*	*1.0%*	*2.0%*

Appendix 5: Sales Forecast By Segment (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Sales	$120,500	$127,080	$131,620	$125,980	$124,600	$126,300	$128,700
Growth		*5.5%*	*3.6%*	*-4.3%*	*-1.1%*	*1.4%*	*1.9%*
Wireless	81,023	87,646	91,680	89,186	87,800	89,500	90,200
Growth		*8.2%*	*4.6%*	*-2.7%*	*-1.6%*	*1.9%*	*0.8%*
% of sales	*67.2%*	*69.0%*	*69.7%*	*70.8%*	*70.5%*	*70.9%*	*70.1%*
Wireline	39,223	38,429	37,720	31,345	30,300	29,500	30,100
Growth		*-2.0%*	*-1.8%*	*-16.9%*	*-3.3%*	*-2.6%*	*2.0%*
% of sales	*32.6%*	*30.2%*	*28.7%*	*24.9%*	*24.3%*	*2.0%*	*23.4%*
Corporate and Other	254	1,005	2,220	5,449	6,500	7,300	8,400
Growth		*295.7%*	*120.9%*	*145.5%*	*19.3%*	*12.3%*	*15.1%*
% of sales	*0.2%*	*0.8%*	*1.7%*	*4.3%*	*5.2%*	*5.8%*	*6.0%*

Appendix 6: Cash Flow Statement (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Cash from Operatings (understated - depr'n added to net assets)							
Net income		$8,330	$17,520	$13,670	$13,530	$14,520	$16,384
Change in Net Working Capital ex cash		700	4402	(6573)	804	(1069)	(54)
Cash from operations		$9,030	$21,922	$7,097	$14,334	$13,451	$16,330
Cash from Investing (understated - depr'n added to net assets)							
Change in NFA		($13)	($19,243)	$4,575	($715)	($2,981)	($415)
Change in Marketable Securities		$0	$0	$0	$0	$0	$0
Cash from investing		($13)	($19,243)	$4,575	($715)	($2,981)	($415)
Cash from Financing							
Change in Short-Term and Long-Term Debt		$19,680	($3,077)	($2,116)	($2,078)	($1,900)	($2,200)
Change in Other liabilities		18443	7624	(3666)	(1248)	0	0
Change in Debt/Equity-Like Securities		0	0	0	0	0	0
Dividends		(7803)	(8538)	(9262)	(9750)	(10200)	(10300)
Change in Equity ex NI and Dividends		(82267)	(4816)	1782	(24)	(26)	(27)
Cash from financing		($51,947)	($8,807)	($13,262)	($13,100)	($12,126)	($12,527)
Change in Cash		(42930)	(6128)	(1590)	519	(1656)	3388
Beginning Cash		53528	10598	4470	2880	3400	1744
Ending Cash		$10,598	$4,470	$2,880	$3,399	$1,744	$5,131

Appendix 7: Key Ratios (in millions)

Items	2013	2014	2015	2016	2017E	2018E	2019E
Profitability							
Gross margin	49.0%	47.7%	47.9%	46.5%	47.0%	48.4%	50.2%
Operating (EBIT) margin	26.3%	14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Net profit margin	9.3%	6.6%	13.3%	10.9%	10.9%	11.5%	12.7%
Activity							
NFA (gross) turnover		0.63	0.62	0.57	0.57	0.57	0.58
Total asset turnover		0.50	0.55	0.52	0.51	0.51	0.52
Liquidity							
Op asset / op liab	3.07	1.17	0.78	0.95	0.94	0.92	1.04
NOWC Percent of sales		20.5%	-0.8%	-3.0%	-1.2%	-1.5%	-0.4%
Solvency							
Debt to assets	34.1%	48.7%	45.0%	44.3%	43.3%	42.1%	40.4%
Debt to equity	98.1%	828.2%	617.6%	449.7%	381.5%	324.5%	267.2%
Other liab to assets	22.6%	34.6%	36.0%	34.6%	34.0%	33.6%	33.0%
Total debt to assets	56.8%	83.3%	81.0%	78.8%	77.2%	75.7%	73.4%
Total liabilities to assets	65.2%	94.1%	92.7%	90.2%	88.6%	87.0%	84.9%
Debt to EBIT	2.96	6.00	3.36	4.17	4.33	4.02	3.57
EBIT/interest	11.85	3.84	6.67	5.92	5.70	6.14	6.91
Debt to total net op capital	37.3%	54.6%	51.0%	49.9%	48.9%	47.5%	45.7%
NOPAT to sales	21.1%	11.3%	16.1%	13.5%	13.6%	14.2%	15.4%
Sales to NOWC		4.88	(129.29)	(33.23)	(86.41)	(67.26)	(285.71)
Sales to NFA		0.63	0.62	0.57	0.57	0.57	0.58
Sales to IC		0.55	0.62	0.58	0.57	0.58	0.58
Total ROIC		6.3%	10.0%	7.9%	7.8%	8.2%	9.0%
NOPAT to sales	21.1%	11.3%	16.1%	13.5%	13.6%	14.2%	15.4%
Sales to EOY NOWC	2.52	29.92	(20.95)	(96.91)	(78.66)	(58.17)	101.30
Sales to EOY NFA	0.59	0.63	0.59	0.58	0.57	0.57	0.58
Sales to EOY IC	0.48	0.61	0.61	0.58	0.57	0.58	0.58
Total ROIC using EOY IC	10.1%	7.0%	9.8%	7.9%	7.8%	8.2%	8.9%
ROE							
5-stage							
EBIT / sales		14.9%	24.9%	20.6%	19.7%	20.5%	22.2%
Sales / avg assets		0.50	0.55	0.52	0.51	0.51	0.52
EBT / EBIT		74.0%	85.0%	83.1%	82.4%	83.7%	85.5%
Net income /EBT		59.6%	62.8%	63.5%	67.0%	67.0%	67.1%
ROA		3.3%	7.3%	5.6%	5.5%	5.9%	6.6%
Avg assets / avg equity		4.64	15.14	11.67	9.44	8.22	7.11
ROE		15.3%	111.2%	65.3%	52.2%	48.5%	46.7%
Payout Ratio		93.7%	48.7%	67.8%	72.1%	70.2%	62.9%
Retention Ratio		6.3%	51.3%	32.2%	27.9%	29.8%	37.1%
Sustainable Growth Rate		1.0%	57.0%	21.1%	14.6%	14.4%	17.3%

Appendix 8: DCF Model (Base Case)

	Year						
	1	2	3	4	5	6	7
First Stage			Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*1.4%*	*1.9%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
NOPAT / S	*14.2%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*	*15.4%*
S / NWC	*(32.26)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*	*(33.33)*
S / NFA (EOY)	*0.57*	*0.58*	*0.58*	*0.58*	*0.58*	*0.58*	*0.58*
S / IC (EOY)	*0.58*	*0.59*	*0.59*	*0.59*	*0.59*	*0.59*	*0.59*
ROIC (EOY)	*8.2%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*	*9.1%*
ROIC (BOY)		*9.1%*	*9.2%*	*9.3%*	*9.2%*	*9.2%*	*9.2%*
Share Growth		*0.0%*	*-2.0%*	*-1.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$126,300	$128,700	$130,631	$133,243	$134,576	$136,594	$138,643
NOPAT	$17,945	$19,802	$20,099	$20,501	$20,706	$21,017	$21,332
Growth		*10.4%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
- Change in NWC	1069	54	-58	-78	-40	-61	-61
NWC EOY	*-3915*	*-3861*	*-3919*	*-3997*	*-4037*	*-4098*	*-4159*
Growth NWC		*-1.4%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
- Chg NFA	2981	415	3328	4505	2297	3480	3533
NFA EOY	*221,481*	*221,897*	*225,225*	*229,730*	*232,027*	*235,507*	*239,040*
Growth NFA		*0.2%*	*1.5%*	*2.0%*	*1.0%*	*1.5%*	*1.5%*
Total inv in op cap	4050	470	3271	4426	2257	3420	3471
Total net op cap	217566	218036	221306	225732	227990	231409	234881
FCFF	$13,895	$19,332	$16,828	$16,075	$18,449	$17,597	$17,861
% of sales	*11.0%*	*15.0%*	*12.9%*	*12.1%*	*13.7%*	*12.9%*	*12.9%*
Growth		*39.1%*	*-13.0%*	*-4.5%*	*14.8%*	*-4.6%*	*1.5%*
- Interest (1-tax rate)	2925	2868	2911	2954	2999	3044	3089
Growth		*-2.0%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
+ Net new debt	-1900	-2200	1529	1551	1575	1598	1622
Debt	104100	101900	103429	104980	106555	108153	109775
Debt / tot net op capital	*47.8%*	*46.7%*	*46.7%*	*46.5%*	*46.7%*	*46.7%*	*46.7%*
FCFE w debt	$9,070	$14,265	$15,446	$14,672	$17,025	$16,151	$16,394
% of sales	*7.2%*	*11.1%*	*11.8%*	*11.0%*	*12.7%*	*11.8%*	*11.8%*
Growth		*57.3%*	*8.3%*	*-5.0%*	*16.0%*	*-5.1%*	*1.5%*
/ No Shares	4079.5	4079.0	3,997.4	3,957.4	3,957.4	3,957.4	3,957.4
FCFE	$2.22	$3.50	$3.86	$3.71	$4.30	$4.08	$4.14
Growth		*57.3%*	*10.5%*	*-4.1%*	*16.0%*	*-5.1%*	*1.5%*
* Discount factor	0.92	0.84	0.78	0.71	0.66	0.60	0.55
Discounted FCFE	$2.04	$2.95	$3.00	$2.64	$2.82	$2.46	$2.29
Third Stage							
Terminal value P/E							
Net income	$14,520	$16,384	$17,188	$17,547	$17,707	$17,973	$18,242
% of sales	*11.5%*	*12.7%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*
EPS	$3.56	$4.02	$4.30	$4.43	$4.47	$4.54	$4.61
Growth		*12.9%*	*7.0%*	*3.1%*	*0.9%*	*1.5%*	*1.5%*
Terminal P/E							14.00
* Terminal EPS							$4.61
Terminal value							$64.54
* Discount factor							0.55
Discounted terminal value							$35.70

Summary		
First stage	$5.00	Present value of first 2 year cash flow
Second stage	$13.21	Present value of year 3-7 cash flow
Third stage	$35.70	Present value of terminal value P/E
Value (P/E)	**$53.91**	= value at beg of fiscal yr 2018

Apparel Retail

Nike Inc.

Recommendation	Neutral
Target (today's value)	$68.00
Current Price	$68.50
52 week range	$50.35 - $68.83

Share Data	
Ticker:	NKE
Market Cap. (Billion):	$106.45
Inside Ownership	21.0%
Inst. Ownership	63.4%
Beta	0.95
Dividend Yield	1.23%
Payout Ratio	30.6%
Cons. Long-Term Growth Rate	8.6%

	'15	'16	'17	'18E	'19E
Sales (billions)					
Sales	$30.6	$32.4	$34.4	$36.1	$38.2
Gr %		5.8%	6.1%	5.1%	5.8%
Cons	-	-	-	$35.7	$38.2
EPS					
EPS	$1.90	$2.24	$2.58	$2.69	$2.95
Gr %		17.7%	15.4%	4.2%	9.8%
Cons	-	-	-	$2.32	$2.66

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	27.8%	30.1%	34.4%	34.0%	34.8%
Industry	15.0%	13.1%	13.8%	17.0%	17.3%
NPM (%)	10.7%	11.6%	12.4%	11.9%	12.0%
Industry	5.9%	5.0%	5.1%	6.7%	7.3%
A. T/O	1.50	1.50	1.53	1.51	1.53
ROA (%)	16.3%	17.5%	19.0%	18.0%	18.2%
Industry	16.0%	17.4%	19.0%	17.5%	18.5%
A/E	1.71	1.72	1.81	1.89	1.91

Valuation	'16	'17	'18E	'19E
P/E	26.4	21.6	24.3	20.7
Industry	34.5	39.8	29.6	23.0
P/S	3.10	2.58	2.79	2.60
P/B	7.8	6.7	8.5	5.4
P/CF	30.5	22.2	20.4	18.0
EV/EBITDA	21.1	23.2	20.2	19.1

Performance	Stock	Industry
1 Month	14.4%	13.3%
3 Month	20.3%	-0.2%
YTD	27.5%	-17.6%
52-week	26.3%	-24.7%
3-year	35.8%	-29.5%

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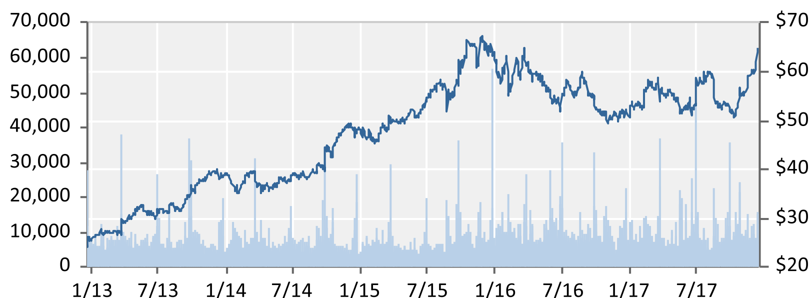


Summary: I recommend a neutral rating with a target of $68. Although NKE has a promising strategy to grow its e-commerce sales as well as develop its exposure in China and other emerging markets, I believe that slowing in sales growth in North America and Europe will lead to a lower price.

Key Drivers:

- International expansion: Approximately 54% of NKE's revenue comes from international sales. High growth potential in Asia, especially China, is key to the future sales growth.
- Same store sales and number of locations: Over the course of the past few years, Nike has been increasing its number of stores but failing to grow overall sales by the same rate. This is diluting its same-store-sales while also compressing margins.
- Direct-to-consumer sales: One of NKE's key growth drivers is its strategy to expand its e-commerce business. Online sales currently account for about $2 billion of overall sales and is expected by management to be $7 billion by 2020.
- Competition: NKE is under serious pressure from its competitors, especially Adidas. In the current fiscal year in North America, NKE lost about 4% of the athletic footwear market share.

Valuation: Using a relative valuation approach, Nike appears to be slightly overvalued in comparison to the retail apparel industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that Nike is overvalued, as the stock's value is about $68 and the shares trade at $68.50.

Risks: Threats to the business include lack of innovation, foreign currency fluctuations, global economic conditions, seasonality, loss of brand identity, and competition.

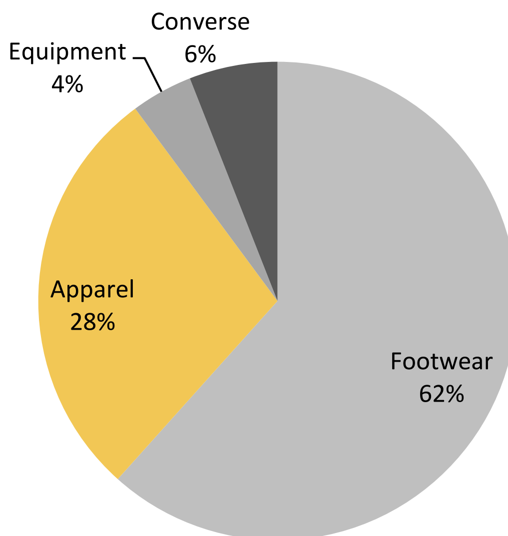
Company Overview

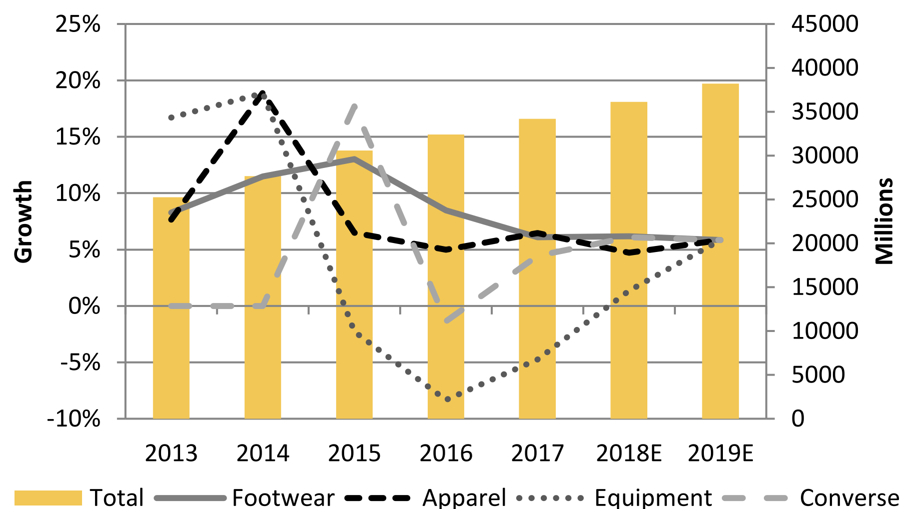
NKE, Inc. (NKE) engages in the design, development, marketing, and sale of sports and lifestyle footwear, apparel, equipment, accessories and services. Nike focuses on Nike Brand and Brand Jordan product offerings in categories such as running, basketball, football, men's training, women's training, Nike sportswear, and action sports. In addition to athletic equipment, its other segments include kids, casual footwear, and apparel. Nike was founded by William Jay Bowerman and Philip H. Knight in 1964 and is headquartered in Beaverton, OR.

Nike is a global company that is expected to generate double international digit revenue growth. It made $35.4 billion in revenue in FY17 by selling about 75% of its products into wholesale and about 25% into its direct-to-consumer operations. In addition, it owns and operates Jordan Brand, Hurley, and Converse. NKE operates in the following four segments:

- Footwear: The firm manufactures a broad range of athletic footwear for running, soccer, football, basketball, baseball, lacrosse, and a mix of other outdoor activities. In addition, Nike also makes a limited amount of casual athletic footwear. Nike's footwear segment accounts for 61% of its revenues. I anticipate this segment to grow about 6% in FY18 after growing from $14.5 billion in 2013 to $21 billion in 2017.
- Apparel: This segment manufactures and sells a broad range of athletic apparel from socks to t-shirts to golf polos. Nike's apparel segment accounts for 28% of its revenues. I forecast that this segment will grow about 5% in FY18 after growing from $6.8 billion in 2013 to $9.6 billion in 2017.
- Equipment: Nike sells bags, eyewear, bats, gloves, and other equipment used with sports activities for 6% of its revenues. I expect that this segment will grow about 1.3% in FY18 after growing from $1.40 billion in 2013 to $1.43 billion in 2017.
- Converse: Designs, distributes, and licenses casual sneakers, apparel, and accessories under the Converse, Chuck Taylor, All Star, One Star, Star Chevron and Jack Purcell trademarks. Converse accounts for roughly 4% of Nike's revenues. I foresee this segment to grow about 5% in FY18 after growing from $1.68 billion in 2014 to $2.03 billion in 2017.

Figures 1 and 2: Revenue sources for NKE, (2017) (left) and revenue history since 2013





Source: Company reports

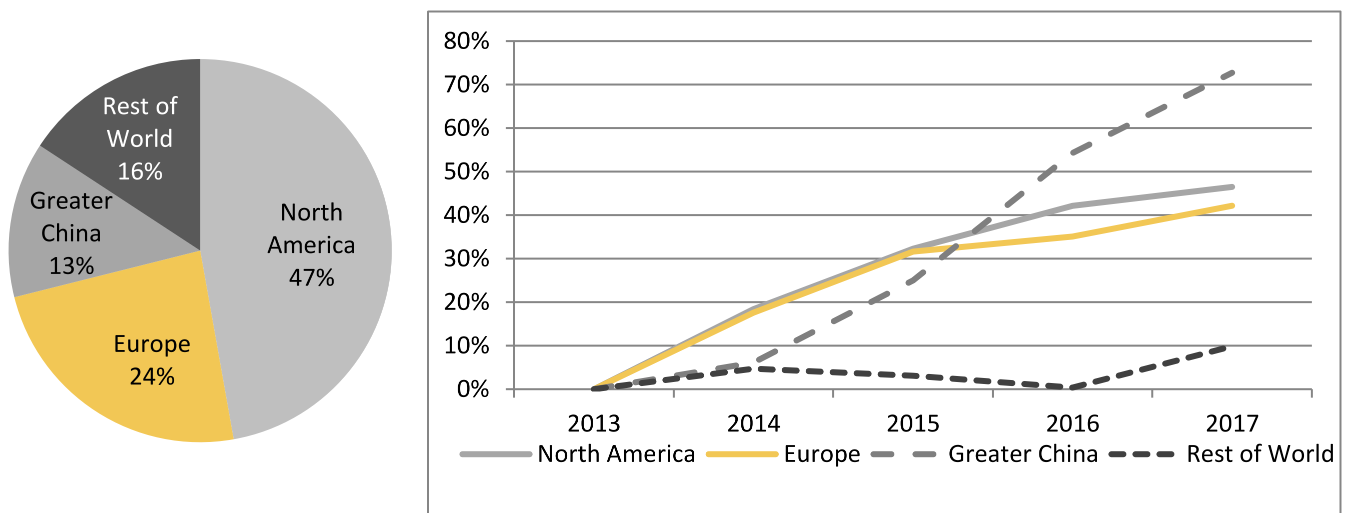
Business/Industry Drivers

Though several factors may contribute to Nike's future success, the following are the most important business drivers:

1) International expansion
2) Number of locations and same store sales
3) Direct-to-Consumer and online sales growth
4) Competitor analysis
5) Macroeconomic trends

<u>International Expansion</u>

Figures 3 and 4: 2017 revenue by region (left) and growth since 2013



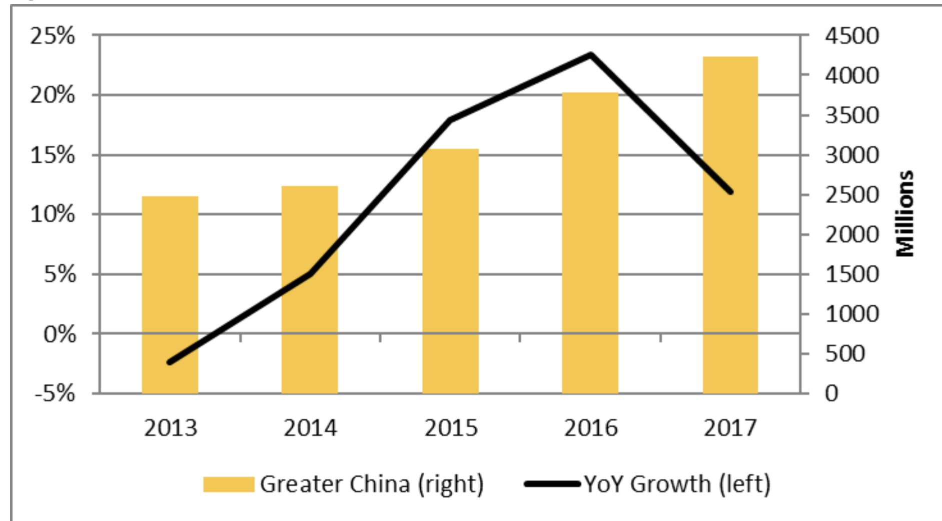
Source: Company reports

China is a key market for NKE. It makes up 13% of revenue and grew 12% last year

NKE has been growing across most regions since 2013, especially China. International sales as a whole accounted for about 54% of NKE's total revenue in fiscal year 2017, up 1% from 53% the previous year. This is largely due to a rise in Chinese sales. Furthermore, NKE has created future ordering programs for retailers in countries and regions such as Canada, Asia, and some of Latin American and European countries. This allows retailers to order five to six months in advance of delivery with the commitment that their orders will be delivered within a set time period at a fixed price. This program gives foreign distributors and retailers an incentive to work with Nike rather than its competitors. In regard to Nike's product segment growth, Figure 2 on page two shows that there was sporadic growth in 2013 and 2014. Additionally, Nike's equipment segment has seen negative growth since 2014, most likely due to its recent discontinuance of gold equipment. However, Nike's footwear, apparel, and converse achieved about 5% growth in 2017.

China is not only a key market for Nike, but is also a key market for many companies across many industries. In regard to sportswear companies, China offers the perfect mix of growth factors: government investment is sports, 415 million millennials, a growing middle class that is becoming more interested in health and fitness, and a fast-growing demand for sportswear—especially foreign brands. The 415 million millennials are an extremely important factor. This 415 million people is far larger than the entire work force of the United States, and is the prime target market demographic for Nike products. These people are not only interested in health and fitness, but are also part of the largest middle class in the world. In addition, China is said to be in a race to become a global soccer superpower. According to statista.com, China's sports industry market is currently valued at $113 billion USD, $43 billion larger that North America, and is expected to reach $231 billion by 2021.

Figure 5: NKE revenue in China



Source: Company reports

China's sportswear market is expected to grow 15% per year until 2021, with great opportunities for NKE

Figure 5 shows that Chinese sales have been steadily rising, with a five-year CAGR of about 11%. Footwear sales have a CAGR of 14%, apparel 5.80%, and equipment 0.6%. China's sportswear market is currently valued at about $28.5 billion, meaning that Nike currently has about 18% of the sportswear market share within China. According to Euromonitor International, China's sportswear market is expected to grow at a CAGR of 8%, resulting in a total market value of $41.7 billion by the end of 2021. However, based on the future growth projections of China's overall sports market that were previously discussed, I foresee a CAGR of about 15% until 2021. Being the leader in China, Nike plans to take full advantage of this opportunity by releasing product series that are directed to attract Chinese customers. If Nike grows market share, it is conceivable that its Chinese sales could grow at approximately a 12.5% CAGR until 2022 to reach revenue of $7.7 billion.

This number was calculated by taking Nike's current revenue from shoes and working backward to calculate how often a pair of Nike shoes at an average price of $80 is purchased (9.6 years). Additionally, I took an average of Nike's current market share in North America (44%) and Nike's current market share in China (23%) to calculate what Nike's potential market share in China could be in five years (34%). Furthermore, I assumed that in five years people would buy Nike shoes every 8 years instead of 9.6. With these assumptions as well as population growth, I was able to forecast Nike's revenue from shoes sales in China in five years to be about $4.7 billion with a five-year CAGR of about 12.5%. Using this CAGR, I took Nike's overall sales in China currently, $4.2 billion, and compounded it annually for five years to reach $7.7 billion by 2022.

Figure 6: Values to calculate sales growth in China over next 5 years

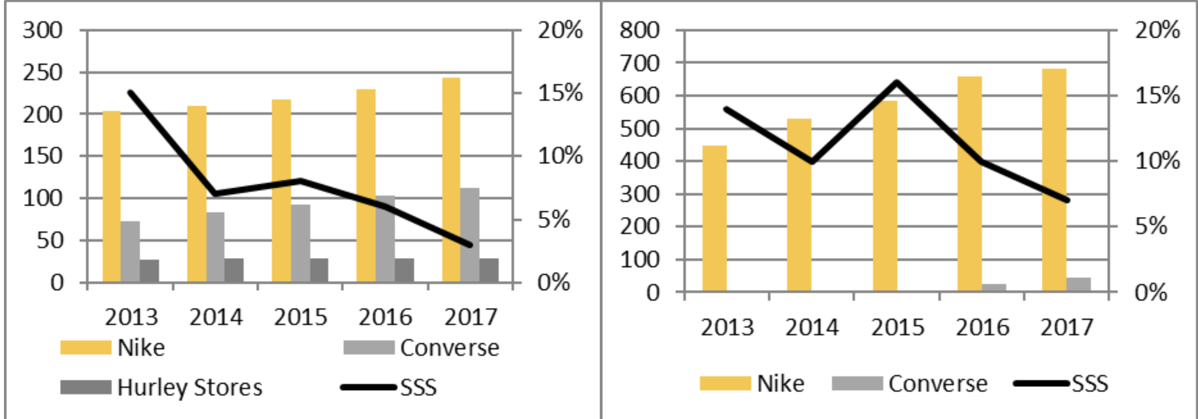
	Current Shoe Sales in N.A.	Current Shoe Sales in China	Potential Sales in China in 5 Years
Population	350,000,000	1,379,000,000	1,421,000,000
Years Avg. Person Buys Shoes	1.47	9.66	8.00
Market Size	238,230,303	142,768,478	177,625,000
Nike's Market Share	44%	23%	34%
Nike's Potential Sales	104,821,333	32,836,750	59,504,375
Avg. Shoes Price	$90	$80	$80
NKE Shoe Sales	**9,433,920,000**	**2,626,940,000**	**4,760,350,000**

Source: Company reports

Number of Locations and Same Store Sales

In the competitive market of sports footwear and apparel, it is important to stay competitive in every way possible. Nike currently makes 73% of its revenue from wholesale customers and 26% of revenue from its direct to consumer business, which has recently been gaining share. Nike has been adding stores at a steady rate of about 10% per year; although same store sales is slowing which could mean the market is becoming saturated. As evidence, international stores have been increasing at a much higher rate than domestic store additions. In FY 2017, NKE added 75 international stores and only 22 domestic stores.

Figures 7 and 8: Number of NKE locations by brand, USA (left) and international and SSS



Source: Company reports

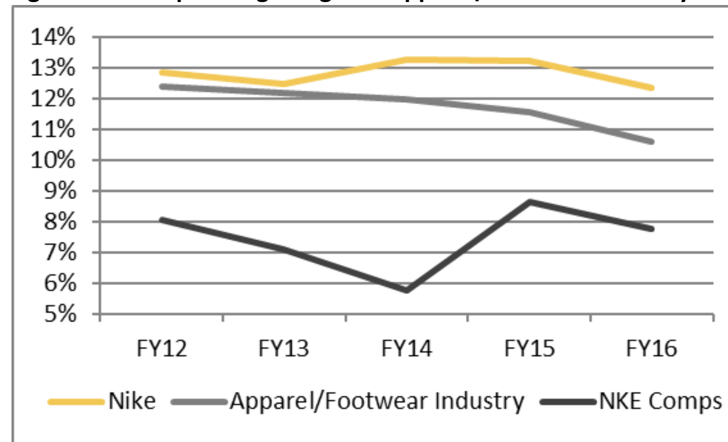
NKE's same store sales has been slowing due to the large increase in the number of Nike stores

Nike's growth rate for same store sales has been on a steady decline since it peaked in 2013 at a 14% growth rate. This 2013 peak may have occurred due to the 9% decrease in number of overall stores in 2013, meaning that Nike's in-store sales became more concentrated during that period in its best performing stores. However, since 2013 Nike has been adding brick-and-mortar stores at an average rate of about 7.5%. The addition of more marginal stores might be a reason as to why SSS is slowing. To counteract this decline in same store sales, I believe it is important for Nike to slow its new store additions and put more focus on driving sales up in its current stores, as well as putting additional effort into its ecommerce operations.

Even though SSS is slowing, Nike has maintained high net and operating margins, which is something that makes the firm stand out from its competitors. In regard to gross margin, Nike's 43.5% is slightly lower (2-3%) than its competitors. Despite Nike's relatively low gross margin, its overall net margin and operating margin are about double of any of its competitors coming in at roughly 12%. This higher net margin provides Nike with greater ability to repurchase shares as well as increase dividends.

Nike is an industry leader in regards to operating margin, higher than its closest competitor by 5%

Figure 9: NKE operating margin vs Apparel/Footwear industry vs NKE Comps



Source: FactSet

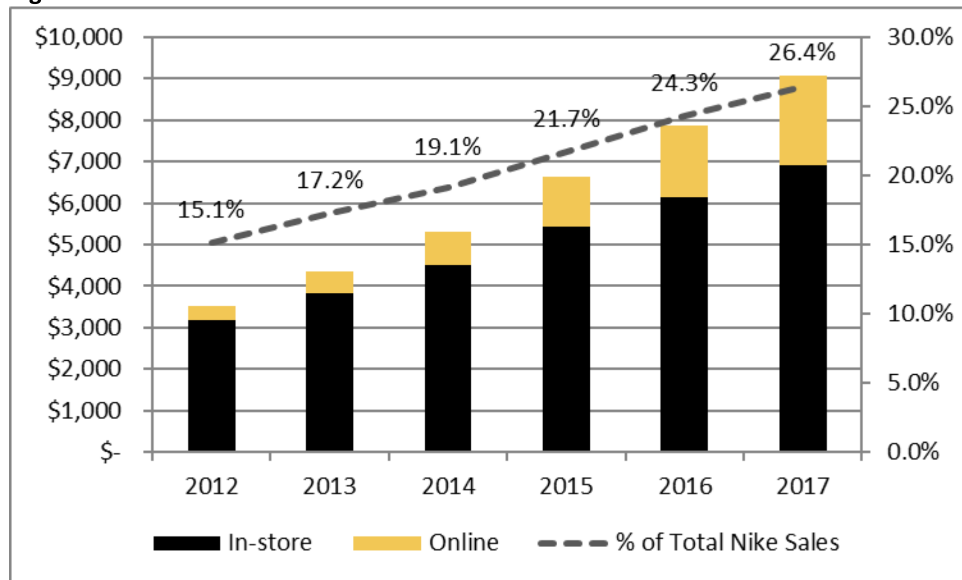
Direct-to-Consumer and Online Sales growth

Nike's direct-to-consumer business including retail stores, which includes Nike-owned in-line stores, factory stores, as well as Nike-owned websites, is a key driver for future success. Nike operates websites in over 45 countries through desktop and mobile applications. In fiscal year 2017, Nike's in-store and online sales (DTC) accounted for 26.4% of its total revenue, up 2% in total share of revenue since last fiscal year. As a revenue growth number, Nike's direct-to-consumer segment grew 15.6%, or $1.2 billion. Moving forward, I see Nike's direct-to-consumer segment growth to be driven by its online sales growth as retail store sales plateau. Nike has significantly more retail stores than its competitors which, in general, primarily sell their products to wholesalers.

As depicted in Figure 10, Nike's direct-to-consumer business has been growing consistently since 2012, especially its online segment. Similar to every company, Nike's ability to grow its online revenues as a percent of its total revenues is a key factor to driving up its margins. Selling products online has substantially lower overhead costs; therefore, Nike's ability to grow its online sales at a higher rate will allow it to maintain and grow its currently above average net margin.

Nike's online revenues have grown immensely over the last five years at a 43.93% CAGR

Figure 10: Direct-to-Consumer sales and total % of sales



Source: Company reports

Figure 10 demonstrates that Nike has been growing its online sales at an increasingly higher rate every year. In fiscal year 2017, Nike grew its online revenues by 21.1%, which appears sustainable. Nike's online sales CAGR from 2012 to 2017 is an astonishing 43.93%. Additionally, a key growth driver for Nike's online sales is its new agreement with Amazon.com. This agreement will allow Nike to sell directly on Amazon.com, as opposed to Nike's products being sold through third-party sellers on Amazon.com. This will give NKE the opportunity to portray its products however it sees will be beneficial to the selling of its products on Amazon. Additionally, selling its products on Amazon will likely drive up NKE's margins. This gives Nike a better opportunity to reach its online sales goal of $7 billion by 2020.

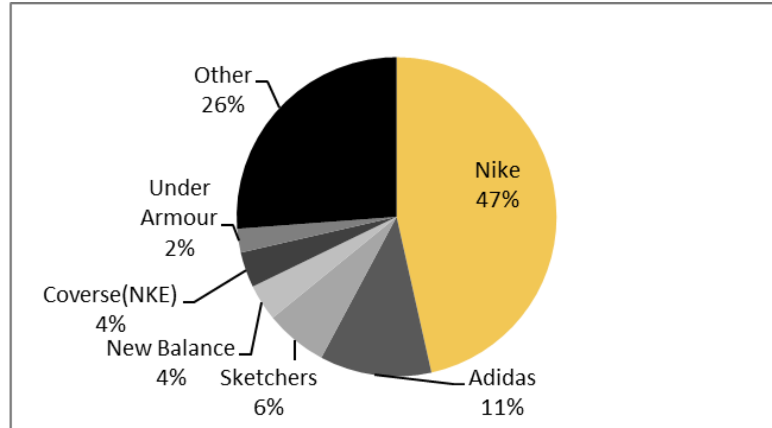
Competitor Analysis

Nike lost a collective 4.2% of athletic footwear market share in North America in FY2017

Consumer athletic apparel is a highly competitive industry. There are many competitors that sell similar products to Nike and many options for consumers to choose. Because consumers have so much control in this industry, Nike needs to innovate and differentiate from its competitors. To compete well, NKE needs to continue its strong relationship with its consumers, continue producing superior products, and expand into new or growing markets before its competitors. In the past,

having a strong brand identity was enough for most companies to keep a loyal customer base. According to numerous marketing studies, millennials are much less brand loyal than past generations. Because of this, it is important that Nike does not rely too heavily on its brand to earn new customers.

Figure 11: NKE athletic footwear market share vs competitors



Source: QUARTZ.com

Nike and its competitors operate in one of the largest segments of the apparel industry. Athletic footwear and apparel accounts for about 20% of the apparel industry and is one of the fastest growing industries within the apparel industry with a CAGR of 4.3% until 2020 according to Allied Market Research. However, in Nike's most recent quarters, Nike missed its earnings estimates largely due to the loss of market share in North America. For the current fiscal year, Nike lost 4.2% athletic footwear marketshare, primarily to Adidas. The largest reason for this loss in market share is because Adidas is the industry leader in the "athleisure" apparel category, and Nike's lacks a large presence in this category (not even top five). Adidas owns 23% of this market, followed by Sketchers, Converse, Sperry, and Keds. Moving forward, Nike plans to expand into this segment as well as in the women's athletic wear segment as it is also a high growth opportunity.

Nike had lower sales growth than competitors in its most recent fiscal year, but has the highest inventory turnover among comps (although the last two fiscal years are down)

In Nike's most recent fiscal year, the firm underperformed compared to its competitors, with sales growth of only 6%, which is 8% less than Adidas. NKE's slow sales is largely due to loss of market share in North America. That being said, Nike has the highest inventory turnover relative to its competitors, meaning that the firm manages its cash flow well.

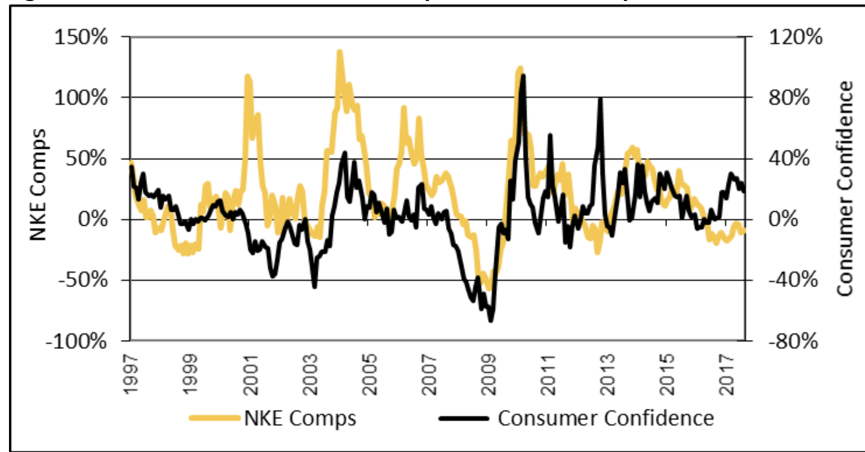
Figure 12: NKE Financial and Operating Data compared to competitors

Firm	Sales Growth From Previous FY	Gross Margin	Net Margin	Inventory Turnover (5yr Avg)
Nike	5.5%	43.4%	12.4%	4.06
Adidas	14.1%	46.7%	5.3%	3.10
Under Armour	21.8%	46.2%	4.1%	3.07
Sketchers	13.2%	43.7%	6.8%	3.15
Puma	7.1%	44.0%	1.7%	3.07
Deckers Outdoor	-5.0%	46.5%	0.3%	3.18

Source: FactSet

Macroeconomic Trends

Figures 13: Consumer confidence compared to NKE comps



Source: Bloomberg

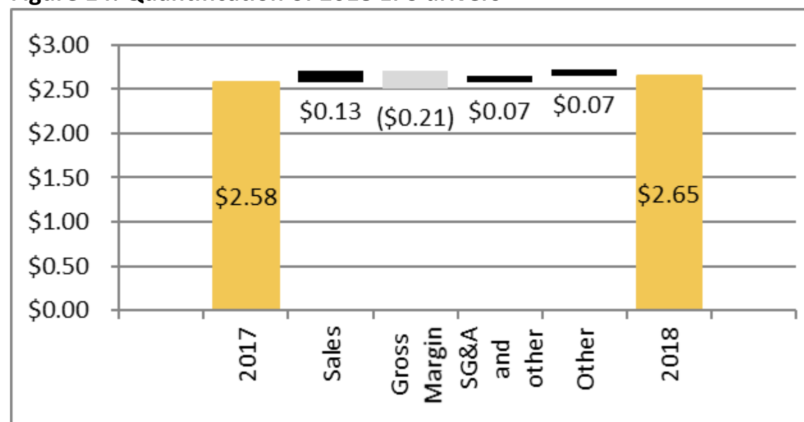
The athletic apparel business is a fairly cyclical business, and is positively correlated to consumer confidence. As seen in figure, Nike and its competitors have almost been perfectly correlated to consumer confidence since 2009. Additionaly, it is observed that in times a recession and slow economic development, Nike's stock price tends to fall with the economy. Due to this, Nike's stock price is somewhat reliant on the overall health of the economy, making consumer confidence an important driver of NKE in the future.

Financial Analysis

I anticipate EPS to grow to $2.65 in FY 2018. While holding all other things constant, my sales projections of 5.1% growth result in a $0.13 increase in EPS. A major contributor to this sales growth is Nike's international expansion, especially into China, with 12.6% sales growth in 2018. Furthermore, I expect gross margin decreases from 2017 to decrease EPS by $0.21. I expect that Nike will continue to see unfavorable changes in foreign currency rates, driving down its gross margin. Additionally, I anticipate that the 0.7% decrease of SG&A as a percentage of sales from last year to this year will have a $0.07 effect on EPS. Lastly, I predict that Nike is going to keep its cash balance in check by paying out a slightly higher dividend as well as buying back a portion of its outstanding shares. In November of 2015, Nike's Board of Directors passed a four-year, $12 billion share repurchase program. Since then, Nike spent about $6.2 billion on share repurchases and I expect this to continue. Overall, I expect share repurchasing to cause a $0.07 increase in EPS.

The expansion of sales in regions such as China are key to the overall growth outlook of NKE.

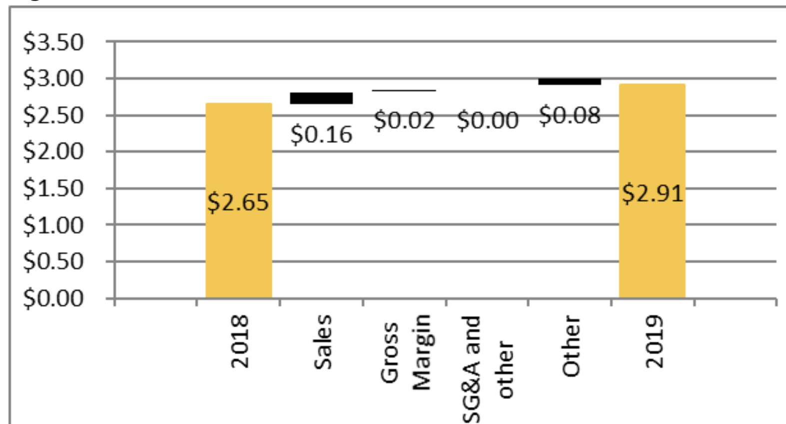
Figure 14: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I expect FY 2019 EPS to grow to $2.91. I anticipate EPS to rise $0.16 due to the overall 5.8% increase in sales from 2018 to 2019. Similarly to my FY18 assumptions, I believe that a large portion of the sales increase will be coming from China. Not only is China's population almost four times large than the U.S., but it also has a fast growing sports economy as well as the world's largest middle class as percent of population. Additionally, I gross margin to rise again leading to a $0.02 increase in EPS. Furthermore, Nike's SG&A expenses will have no impact as they are expected to rise with sales. Lastly, I foresee Nike continuing to buy back shares at an average price of $55.60, which will ultimately provide a $0.08 increase in EPS.

Figure 15: Quantification of 2019 EPS drivers



Source: Company Reports, IMCP

I am $0.33 more optimistic than consensus for EPS in 2018 and $0.25 more optimistic for 2019

I am slightly more optimistic than the analysts' consensus EPS forecasts. The FactSet consensus has projected EPS for FY18 and FY19 at $2.32 and $2.66. A portion of this variance comes from my overall sales growth estimates are about 1.0% higher than the consensus largely due to my higher than average outlook for sales growth in the North America. I believe that the Nike/Amazon deal will have a large impact on U.S. sales growth as NKE implements more online retail platforms. Additionally, the FactSet consensus projects that Nike will have a gross margin of 43.7% in 2018, a significant 1.0% less that my projections. This difference alone would ultimately decrease my estimated EPS of $2.65 in 2018 by $0.19. My above average estimates on gross margin reflect Nike's expansion of its online presence to drive gross margin, which is currently 44.6%.

Figure 16: Revenue, EPS, and YoY growth estimates

	2018E	2019E
Revenue - Estimate	$36,105	$38,215
YoY Growth	5.11%	5.84%
Revenue - Consensus	$35,772	$38,196
YoY Growth	4.14%	6.78%
EPS - Estimate	$2.65	$2.91
YoY Growth	2.64%	9.91%
EPS - Consensus	$2.32	$2.66
YoY Growth	-10.10%	14.66%

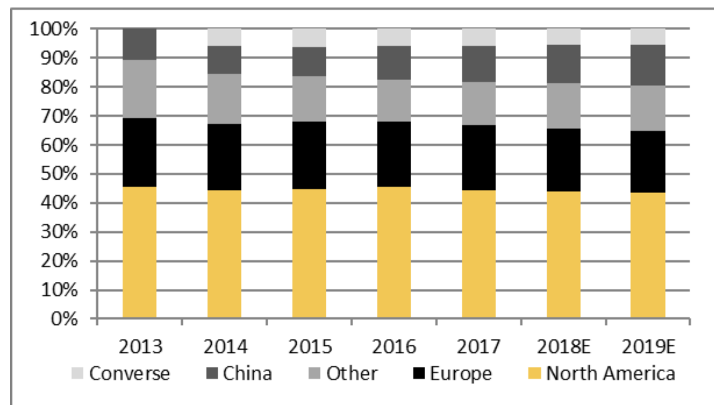
Source: FactSet, IMCP

Revenues

Nike's revenue has been steadily increasing since its small dip in FY 2010, although, growth has slowed recently. In FY 2014, Nike saw 10% revenue growth, and growth has now settled down to roughly 6% in FY 2016 and 2017. While I expect that trend to continue in 2018 and 2019, I anticipate the revenue growth rates will continue to shift from North America and Europe towards Asia, especially China. The U.S and European markets have seen a decline in revenue growth since 2013 primarily due to competition in the market. However, Nike's new agreement with Amazon.com may help NKE regain some of the North American and European market share that it has lost in its last fiscal year.

I forecast continued double-digit (13%) revenue growth in China through FY 2018 and into FY 2019. Additionally, I estimate that Japan and Nike's emerging markets will also continue to rise at about 8% after growing 13.2% in FY 2017. While these are notable high growth rates North America and Europe make up roughly 65% of Nike's overall revenue worldwide and will keep a lid on overall growth rates for Nike.

Figure 17: Nike segment revenues breakdown, 2013 – 2019E

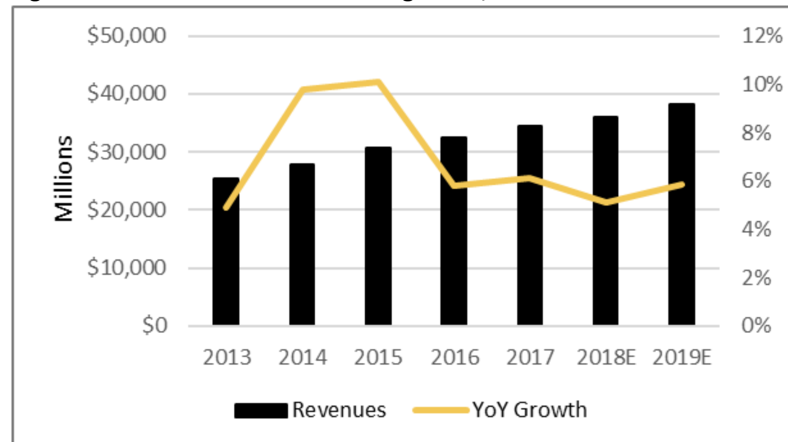


Source: Company Reports, IMCP

Direct-to-consumer revenue will be the dominant source of revenue growth and margin increases moving forward. In June 2017, NKE announced that it would eliminate 1400 jobs in a restructuring mission to sell more shoes directly online. Furthermore, Nike has also been working to make its sneaker-selling apps available in more parts of the world. By making these apps available in more places around the globe, not only is NKE broadening its range of sales, but it is also extending its brand into regions that have not been broken into yet.

NKE plans to cut 1400 jobs to begin the shift to a more online revenue presence

Figure 18: Revenue vs YoY revenue growth, 2013 – 2019E



Source: Company Reports

Return on Equity

Nike's ROE has risen 10% since FY 2014, but ROE should remain relatively steady over the course of the next two years with a slight drop in 2018 due to a 0.7% decline in its EBIT margin. This combined with a decrease in asset turnover results in a lower ROA for FY 2018. In 2018, the decline in ROA was slightly offset by an increase in leverage, although; the overall ROE for NKE is still expected to drop in FY18. In 2019, NKE will experience a slight rebound in EBIT margin as well as asset turnover; therefore, ROA will rise. Because of this and slightly higher leverage, BKE's ROE will rise 1% in 2019.

ROE expected to stay relatively flat over the next two years

Figure 19: ROE breakdown, 2014 – 2019E

5-stage DuPont	2014	2015	2016	2017	2018E	2019E
EBIT / sales	12.9%	13.8%	14.3%	14.4%	13.7%	13.8%
Sales / avg assets	1.54	1.52	1.51	1.54	1.52	1.53
EBT / EBIT	99.1%	99.3%	99.6%	98.8%	98.4%	98.4%
Net income /EBT	76.0%	77.8%	81.3%	86.8%	86.8%	86.8%
ROA	14.9%	16.3%	17.5%	19.0%	17.7%	18.0%
Avg assets / avg equity	1.65	1.71	1.72	1.81	1.89	1.92
ROE	**24.5%**	**27.8%**	**30.1%**	**34.4%**	**33.6%**	**34.6%**

Source: Company Reports

Free Cash Flow

Figure 20: Free cash flows 2013 – 2019E

I expect that the primary use of cash over the course of FY18 and FY19 will be share repurchases

Free Cash Flow	2013	2014	2015	2016	2017	2018E	2019E
NOPAT	$2,449	$2,718	$3,295	$3,775	$4,292	$4,293	$4,578
Growth		11.0%	21.2%	14.6%	13.7%	0.0%	6.6%
NWC*	6,541	6,623	5,971	6,574	7,110	7,474	7,911
Net fixed assets	3,958	4,898	5,624	6,354	7,198	7,641	8,131
Total net operating capital*	$10,499	$11,521	$11,595	$12,928	$14,308	$15,115	$16,042
Growth		9.7%	0.6%	11.5%	10.7%	5.6%	6.1%
- Change in NWC*		82	(652)	603	536	364	437
- Change in NFA		940	726	730	844	443	490
FCFF*		$1,696	$3,221	$2,442	2,912	$3,486	$3,651
Growth			89.9%	-24.2%	19.2%	19.7%	4.7%
- After-tax interest expense	(2)	25	22	15	51	70	74
FCFE**		$1,671	$3,199	$2,427	$2,861	$3,416	$3,577
Growth			91.4%	-24.1%	17.9%	19.4%	4.7%
FCFF per share*		$1.90	$1.87	$1.45	$1.77	$2.19	$2.36
Growth			*-1.5%*	*-22.3%*	*22.1%*	*23.4%*	*8.0%*
FCFE per share**		$1.87	$1.86	$1.44	$1.74	$2.14	$2.31
Growth			*-0.7%*	*-22.3%*	*20.7%*	*23.0%*	*7.9%*

Source: Company Reports, IMCP

NKE's free cash flow has been growing at a moderately steady rate over the last several years. In November of 2015, Nike approved a four-year, $12 billion share repurchase program. After two years of this program, approximately $8 billion worth of shares have been repurchased. I expect that over the next two years Nike will continue to make efforts to complete the $12 billion program. I anticipate that Nike to repurchase approximately $2.5 billion worth of shares in both 2018 and 2019. I expect net operating capital will grow at a slightly faster pace than NOPAT over the next two years due to NKE's slightly decreasing inventory turnover ratio and slightly increasing accounts payable turnover ratio. Additionally, I foresee that Nike will continue to increase dividends over the course of

the next two years as this will benefit shareholders as well as keep Nike from having too much excess cash. Lastly, I expect that Nike is going to keep issuance of new debt to a low because it does not necessarily have a use for the excess cash.

I expect both FCFF and FCFE to increase about 20% in 2018 largely due to less investment in operating capital than 2017. However, I anticipate FCFF and FCFE to grow only 4.5% in 2019 as investment spending rises modestly.

Valuation

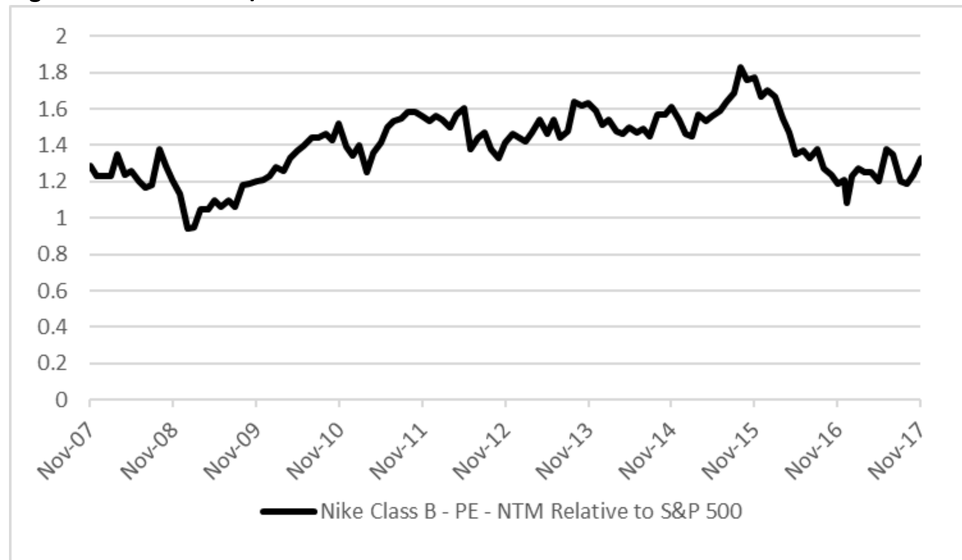
NKE was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is worth $68.50. Relative valuation shows NKE to be slightly overvalued based on its fundamentals versus those of its peers in the retail apparel industry. Price to book valuation yielded a target price of $77. A detailed DCF analysis values NKE slightly higher, at $71.33; although I give the price to book valuation a little more weight because its regression has a high R-squared. Finally, a scenario analysis yields a price range of $76.50 to $66.03. As a result of these valuations, I value the stock at $68.00.

Trading History

NKE is currently trading near its ten-year low relative to the S&P 500. This is the result of the reduction of net income growth as well as the fact that most analysts believe that earnings will drop this fiscal year. NKE's current NTM P/E is at 27.6 compared to its five-year average of 25. This P/E is considerably higher than the past two years. Because of this, I anticipate the NTM P/E will fall somewhere around 25.5 instead of 27.6. For the purpose of this valuation, I will use the NTM P/E of 27.6 that is based on NKE's current stock price of about $68.00.

NKE P/E relative to the market is trading at an almost 10 yr low

Figure 21: NKE NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 27 NTM P/E at the end of 2018, it should trade at $71.00 by the end of the fiscal year.

- Price = P/E x EPS = 27.6 x $2.65 = $71.00

Discounting $71.00 back to today at a 9.6% cost of equity (explained in Discounted Cash Flow section) yields a price of $68.50.

Relative Valuation

Nike is currently trading at a P/E lower than most of its competitors, with a P/E TTM of 29.1 compared to a competitor average of 36.5. Investors are paying less for NKE because its competitors have more potential to grow (e.g. Under Armour). NKE has had some outstanding years of sales and earnings growth, but has slowed in recent years. NKE's projected earnings growth is much lower than that of its competitors, growing at only 2.6% in 2018. However, NKE's P/B and P/S ratios are significantly higher than those of its competitors – both are roughly double the average for the group. This is a reflection of NKE's relatively high ROE and net margin compared to its competitors.

Figure 22: NKE comparable companies

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
NKE	NIKE INC	$68.29	$111,100	0.5	5.6	20.6	16.6	20.6	9.2	8.2	6.0%	17.7%	15.4%	2.6%	9.9%	15.8%	0.57	29.5%	A+	1.08%	32.0%
ADS-DE	ADIDAS AG	$221.26	$44,880	0.2	5.2	(4.7)	(8.7)	18.6	6.1	21.3	30.2%	36.9%	48.8%	19.4%	18.5%	9.7%	0.67	15.2%		1.07%	
PUM-DE	PUMA SE	$411.20	$6,143	1.7	3.5	(12.8)	(7.4)	8.0	(9.2)	40.5	54.5%	65.4%	148.8%	37.4%	24.1%	14.2%	0.44			0.22%	
UAA	UNDER ARMOUR INC	$18.41	$8,074	3.7	21.8	48.3	1.0	(15.9)	27.6	25.5	-257.5%	7.4%	-67.2%	16%	50.0%		0.01	37.9%	B+	0.00%	
SKX	SKECHERS U S A INC	$39.47	$6,255	(2.2)	2.4	21.7	40.8	49.6	4.3	15.0	96.9%	4.7%	8.3%	24.7%	15.1%	78.3%	-0.11	3.9%	B	0.00%	
DECK	DECKERS OUTDOOR CORP	$96.00	$3,049	0.5	15.7	40.2	49.2	82.1	19.6	9.7	135.4%	-11.7%	4.5%	13.6%	13.1%	-7.7%	0.88	3.1%	B+	0.00%	
Average			$29,917	0.7	9.0	18.9	15.2	27.2	9.6	20.0	10.9%	20.1%	26.4%	18.9%	21.8%	22.0%	0.41	17.9%		0.40%	32.0%
Median			$7,164	0.5	5.4	21.1	8.8	19.6	7.6	18.1	42.3%	12.6%	11.9%	17.6%	16.8%	14.2%	0.51	15.2%		0.11%	32.0%
SPX	S&P 500 INDEX	$2,731		1.2	(2.0)	6.5	10.8	16.3	2.2			0.5%	10.2%	11.0%	10.1%						

Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
NKE	http://www.nike.com	35.6%	9.43	25.3	28.0	19.7	29.6	27.9	25.8	23.5	11.9%	3.16	12.2%	28.1%	20.2	25.1		6.9%	7.5%	7.3%	$7.24
ADS-DE	http://www.adidas-group.com	19.7%	5.57	18.1	18.5	20.2	30.1	23.1	23.6	20.0	6.3%	1.78	8.6%	13.9%	25.6	18.9	16.9	23.2%	14.0%	7.6%	$39.74
PUM-DE	http://www.puma.com	8.0%	2.97	77.6	48.5	23.8	40.1	26.0	27.0	21.8	3.4%	1.26	5.9%			22.7		19.8%		4.8%	$138.43
UAA	http://www.underarmour.com	4.0%	3.87	65.0	71.8	152.9	-168.1	106.8	83.7	55.8	1.7%	1.64		-1.7%	45.9	14.1		2.8%	5.0%		$4.76
SKX	http://www.skechers.com	14.1%	3.27	12.3	19.2	14.5	34.6	17.6	18.6	16.2	6.6%	1.54	8.8%	10.0%	14.7			12.7%	11.0%	21.7%	$12.08
DECK	http://www.deckers.com	12.9%	2.95	20.1	11.8	13.3	39.5	16.8	20.2	17.9	7.3%	1.69	9.7%	0.6%	11.1	14.9	12.7	1.0%	-1.2%	4.8%	$32.52
Average		15.7%	4.68	36.4	33.0	40.7	1.0	36.4	33.2	25.8	6.2%	1.84	9.0%	10.2%	23.5	19.1	14.8	11.1%	7.3%	9.2%	
Median		13.5%	3.57	22.7	23.6	19.9	32.4	24.6	24.7	20.9	6.5%	1.66	8.8%	10.0%	20.2	18.9	14.8	9.8%	7.5%	7.3%	

Source: Factset

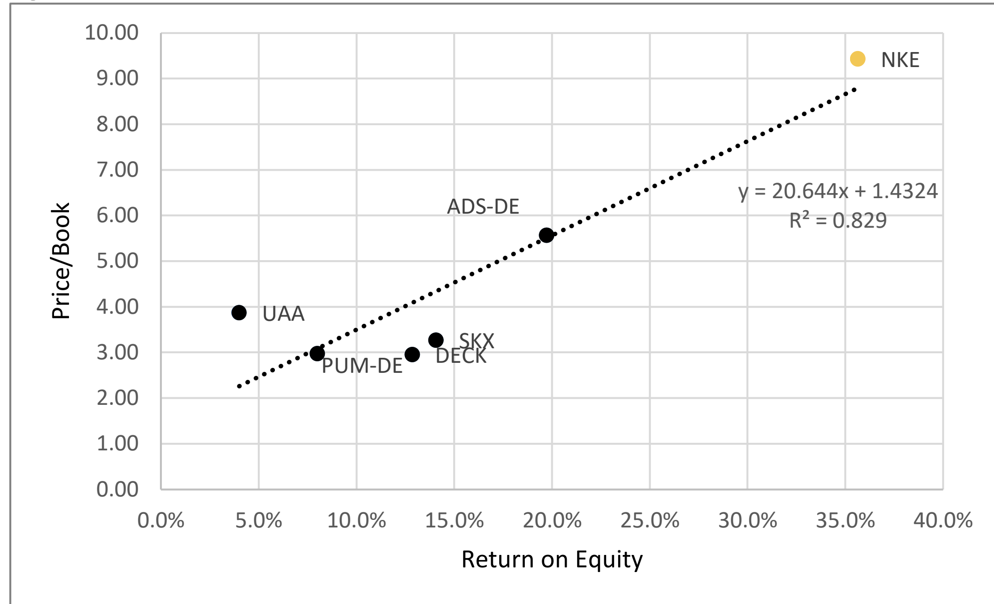
A more in-depth analysis of P/B and ROE is shown in figure 23. The calculated R-squared of the regression indicates that over 88% of a sampled firm's P/B is explained by its NTM ROE. NKE has the highest P/B and ROE of the competitors shown, and according to this measure is very overvalued. Additionally, given the recent announcements of new products and NBA contracts with star athletes, I believe that ROE will be increase again in 2019 (I project a small dip in 2018). Using my 2018 ROE estimates and the formula of the regression in figure 23, I estimate the future price.

- Estimated P/B = Estimated 2018 ROE (34%) x 20.644 + 1.432 = 10.05
- Target Price = Estimated P/B (10.05) x 2018E BVPS ($7.98) = $80.00

Discounting back to the present at a 9.6% cost of equity leads to a target price of $77.

NKE is slightly overvalued according to price to book valuation

Figure 23: P/B vs NTM ROE



Source: Factset

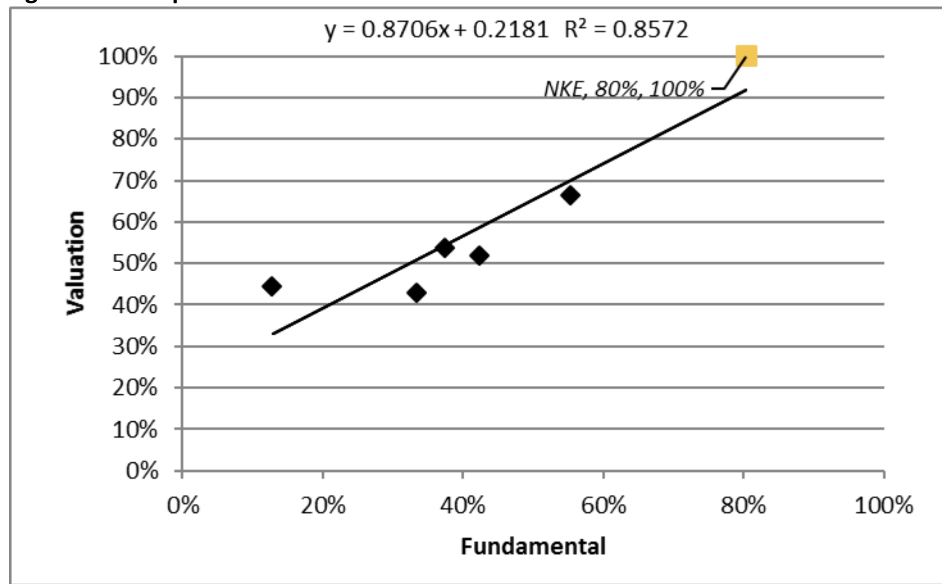
For a final comparison, I created a composite ranking of a few valuation and fundamental metrics. Since the variables have different scales, each variable was converted to a percentile before calculating the composite score. An equal weighting of long term growth rate and NTM ROE was compared to an equal weight composite of P/B, P/S and P/CF. Upon running these fundamental and valuation characteristics as a regression, the regression line had an R-squared of 85%. It is observed in figure 25 that NKE lies above the regression line, therefore making it about 8% overvalued based on its fundamentals.

Figure 24: Composite valuation, % of range

				Fundamental		Valuation		
			Weight	25.0%	75.0%	33.3%	33.3%	33.3%
Ticker	**Name**	**Fund**	**Value**	**LTG**	**ROE**	**P/B**	**P/S**	**P/CF**
NKE	NIKE INC	80%	100%	22%	100%	100%	100%	100%
ADS-DE	ADIDAS AG	55%	66%	49%	57%	64%	59%	76%
PUM-DE	PUMA SE	42%	52%	100%	23%	33%	40%	82%
UAA	UNDER ARMOUR INC	13%	44%	18%	11%	34%	43%	57%
SKX	SKECHERS U S A INC	38%	54%	32%	39%	37%	51%	73%
DECK	DECKERS OUTDOOR CORP	33%	43%	17%	39%	31%	50%	47%

Source: IMCP

Figure 25: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

For the purpose of this analysis, the company's cost of equity was calculated to be 9.6% 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 2.65%.
- A ten year beta of 0.95 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 9.6% (2.65 + 0.95 (10.0 – 2.65)).

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 $2.15 and $2.38, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $4.15 per share. Thus, stage one of this discounted cash flow analysis contributes $4.15 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 9.6% cost of equity. I assume 5.5% sales growth in 2020, rising to 6% through 2024. The ratio of NWC to sales and NFA to sales will remain relatively the same as 2019 levels. Also, the NOPAT margin is expected to rise to 12.2% in 2024 from 12% in 2019. Finally, the amount of shares outstanding is expected to grow 0% by 2024, compared to shrinking -3.0% in 2019 due to NKE's $2 billion share repurchase program.

Figure 32: FCFE and discounted FCFE, 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	$2.15	$2.38	$2.33	$2.62	$2.82	$3.08	$3.38
Discounted FCFE	$2.07	$2.09	$1.87	$1.91	$1.88	$1.87	$1.88

Added together, these discounted cash flows total $13.56.

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 $2.91 in 2019 to $4.30 in 2024.

Figure 33: EPS estimates for 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$2.65	$2.91	$3.15	$3.40	$3.71	$4.06	$4.30

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. The current P/E of 26 reflects NKE's positive growth outlook. By 2024, NKE will most likely have matured so a lower multiple ranging from 20-23 is reasonable. Nike will still be dominant and command an above market multiple. However, the market will most likely continue to price in a higher premium over the next year. Therefore, a P/E ratio of 24 is assumed at the end of NKE's terminal year.

Given the assumed terminal earnings per share of $4.30 and a price to earnings ratio of 24, a terminal value of $103.26 per share is calculated. Using the 9.6% cost of equity, this number is discounted back to a present value of $57.23.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $71.33 is calculated (4.18 + 9.48 + 57.67). Given NKE's current price of $67.14, this model indicates that the stock is slightly undervalued.

Scenario Analysis

Nike is difficult to value with certainty because it has seen a variety of EPS and sales growth fluctuations over the past few years. Furthermore, the ability for Nike to grow sales in China is going to be another difficult aspect to add to a valuation. With China's economy slowly transitioning from a production based economy to a consumption based economy, there is great potential for NKE to continue its Chinese growth. I valued NKE under three scenarios by changing combinations of two key factors. More detailed numbers can be found in Appendix 8.

Sales Growth – Strong growth assumes that NKE can grow its online sales at an increasing rate over the course of the outlook. Additionally, NKE's continued efforts to expand its business in China is also going to have a great impact on its overall revenue. I would say that this scenario has a higher probability than a poor scenario simply because of the plans already in place for NKE to expand online as well as internationally. Overall, the good scenario assumes that NKE sales will grow by 6% in 2020 and increase to 9% in 2024. Modest growth is the base assumption used in the prior DCF analysis, and is the scenario with the highest probability. Poor growth assumes that Nike has not successfully stopped its competitors from gaining market share. In FY17 and the beginning of FY18, NKE lost a considerable amount of the footwear market to its competitors. Under this scenario, revenue shrinks to 4% growth in 2020 to only 5% growth in 2024; I give this outcome a relatively low probability because while NKE may be losing market share in the U.S, the potential in foreign markets seems promising.

Gross Margin – Scenario one, strong gross margin, assumes that NKE can keep charging a premium for its products as well as keep its cost of goods sold to a minimum. To do this, NKE must continue to expand sales globally as well as maintain its image of excellence and prestige. This will allow NKE to continue charging high prices for its products. Scenario two, declining gross margin, assumes that NKE is forced to start charging less for its products to take back some of the market share from its rising competitors. Because NKE has a strong brand identity and is in the process of signing more

professional athletes, I assume that the scenario with the strong gross margin has a higher probability than NKE having a lower gross margin.

Good scenario:

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $76.50 is calculated (4.15 + 9.18 + 63.17). Given NKE's current price of $67.14, this model indicates that the stock is slightly undervalued.

Poor scenario:

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $66.03 is calculated (4.15 + 9.41 + 52.47). Given NKE's current price of $67.14, this model indicates that the stock is slightly overvalued.

Business Risks

Although I see that there are many reasons to be optimistic about Nike, I believe that it is priced fairly at its current price

Exposure to currency fluctuations:

Nearly 55% of NKE's revenues are from international countries. Because of this, fluctuations of the dollar against currency's like the Euro, Yean, and Yuan could cause a decrease in margins.

Competitors in market:

Competitors in the athletic marketplace are everywhere. Nike is premier brand in this market, and therefore charges more for its products. This leaves room for its competitors to price lower and therefore take part of NKE's market share.

Innovation:

Being such a competitive market, it is important for athletic apparel companies to stay as innovative as possible. If NKE does not remain one of the most innovative companies, this will leave opportunity for its competitors to gain a leg up.

Global economic conditions:

As stated many times in this report, NKE's future success is heavily dependent on how well it can grow its current business in China. Recently, China's economy has been growing at a fast rate. That being said, if China's economy begins to slow in growth, this could have a negative effect on NKE's revenue.

New Amazon partnership:

Starting this year, Nike has begun selling its products directly on Amazon.com. At first glance, this strategy seems as if it should increase margins for Nike. However, if Amazon decides to charge Nike a high premium for using its website, this could result in less of a margin increase for Nike than anticipated.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Relatively Low

Since the athletic apparel industry is already so competitive, it is difficult for new companies to successfully enter this industry.

Threat of Substitutes – Very High

As stated multiple times, one of the main drivers behind Nike's decrease in sales growth in North America last quarter was the high performance of its competition. Due to the variety of athletic apparel manufacturers for consumers to choose from, the industry as a whole is very competitive.

Supplier Power – Low

Textile manufacturers of non-luxury clothing items have little to no leverage over their customers, and modern production techniques have made it very easy to switch suppliers with little cost in time, money or efficiency.

Buyer Power – High

Consumers have most of the power in the relationship between consumer and apparel manufacturer or retailer. In the athletic apparel industry, there are many substitute products, therefore giving the consumer the option to pick whichever brand he or she may choose. Additionally, it is not urgent for consumers to buy athletic apparel goods, allowing them to wait until they are offered the best price.

Intensity of Competition – High

As sated above, there are many large competitors in this industry. Over the past fiscal year, NKE has experienced market share loss in North America largely due to Adidas. Additionally, in this competitive industry it is constantly a race to provide consumers the best deal in the fastest possible way. This is driving up online sales.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
High net margin High brand recognition Shoe contracts with NBA stars	Lower than average gross margins Lost U.S. market share in Q1'18
Opportunities	**Threats**
Internal expansion Digital sales growth Expansion of women's segment	Currency fluctuations Lack of innovation Rising cost of materials

Appendix 3: Income Statement

Income Statements (in millions)							
Items	2013	2014	2015	2016	2017	2018E	2019E
Revenue	$25,313	$27,799	$30,601	$32,376	$34,350	$36,105	$38,215
Cost of goods sold	14,279	15,353	16,504	17,405	19,038	19,966	21,095
Gross profit	11,034	12,446	14,097	14,971	15,312	16,139	17,120
Operating Expenses							
SG&A, R&D, and other	7,796	8,766	9,922	10,469	10,563	11,193	11,847
Other (income) expenses	(15)	103	(58)	(140)	(196)	-	-
Earnings before interest and taxes	3,253	3,577	4,233	4,642	4,945	4,946	5,274
Interest expense	(3)	33	28	19	59	81	86
Earnings before tax	3,256	3,544	4,205	4,623	4,886	4,866	5,188
Taxes	805	851	932	863	646	642	685
Net operating profit after tax	2,451	2,693	3,273	3,760	4,240	4,224	4,503
Other	(21)						
Net income	2,472	2,693	3,273	3,760	4,240	4,224	4,503
Basic Shares	870.0	894.0	1,723.4	1,682.0	1,643.0	1,594.5	1,546.8
EPS	$2.84	$3.01	$1.90	$2.24	$2.58	$2.65	$2.91
DPS	$0.81	$0.89	$0.52	$0.61	$0.69	$0.75	$0.81

Appendix 4: Balance Sheets

Balance Sheets (in millios)							
Items	2013	2014	2015	2016	2017	2018E	2019E
Cash	3,337	2,220	3,852	3,138	3,808	3,799	3,701
Operating assets ex cash	10,289	11,476	12,124	11,887	12,253	12,926	13,719
Operating assets	13,626	13,696	15,976	15,025	16,061	16,725	17,421
Operating liabilities	3,748	4,853	6,153	5,313	5,143	5,452	5,809
NOWC	9,878	8,843	9,823	9,712	10,918	11,273	11,612
NOWC ex cash (NWC)	6,541	6,623	5,971	6,574	7,110	7,474	7,911
NFA	3,958	4,898	5,624	6,354	7,198	7,641	8,131
Invested capital	$13,836	$13,741	$15,447	$16,066	$18,116	$18,915	$19,743
Marketable securities	-	-	-	-	-	-	-
Total assets	**$17,584**	**$18,594**	**$21,600**	**$21,379**	**$23,259**	**$24,366**	**$25,551**
Short-term and long-term debt	$1,388	$1,373	$1,260	$2,038	$3,802	$4,177	$4,302
Other liabilities	1,292	1,544	1,480	1,770	1,907	2,007	2,107
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	11,156	10,824	12,707	12,258	12,407	12,731	13,334
Total supplied capital	$13,836	$13,741	$15,447	$16,066	$18,116	$18,915	$19,743
Total liabilities and equity	**$17,584**	**$18,594**	**$21,600**	**$21,379**	**$23,259**	**$24,366**	**$25,551**

Appendix 5: Sales Forecast

Sales (in millions)							
Items	2013	2014	2015	2016	2017	2018E	2019E
Sales	25,313	27,799	30,601	32,376	34,350	36,105	38,215
Growth		9.8%	10.1%	5.8%	6.1%	5.1%	5.8%
North America	10,387	12,299	13,740	14,764	15,216	15,825	16,616
Growth		18.4%	11.7%	7.5%	3.1%	4.0%	5.0%
% of sales	41.0%	44.2%	44.9%	45.6%	44.3%	43.8%	43.5%
Europe	5,415	6,366	7,126	7,315	7,698	7,898	8,127
Growth		17.6%	11.9%	2.7%	5.2%	2.6%	2.9%
% of sales	21.4%	22.9%	23.3%	22.6%	22.4%	21.9%	21.3%
China	2,453	2,602	3,067	3,785	4,237	4,771	5,391
Growth		6.1%	17.9%	23.4%	11.9%	12.6%	13.0%
% of sales	9.7%	9.4%	10.0%	11.7%	12.3%	13.2%	14.1%
Other	4,626	4,848	4,686	4,557	5,157	5,570	6,029
Growth		4.8%	-3.3%	-2.8%	13.2%	8.0%	8.3%
% of sales	18.3%	17.4%	15.3%	14.1%	15.0%	15.4%	6.0%
Converse	-	1,684	1,982	1,955	2,042	2,042	2,052
Growth			17.7%	-1.4%	4.5%	0.0%	0.5%
% of sales	0.0%	6.1%	6.5%	6.0%	5.9%	5.7%	5.4%
Footwear	14,539	16,208	18,318	19,871	21,081	22,385	23,694
Growth		11.5%	13.0%	8.5%	6.1%	6.2%	5.8%
% of sales	57.4%	58.3%	59.9%	61.4%	61.4%	62.0%	62.0%
Apparel	6,820	8,109	8,636	9,067	9,654	10,109	10,700
Growth		18.9%	6.5%	5.0%	6.5%	4.7%	5.8%
% of sales	26.9%	29.2%	28.2%	28.0%	28.1%	28.0%	28.0%
Converse	-	1,684	1,982	1,955	2,042	2,166	2,293
Growth			17.7%	-1.4%	4.5%	6.1%	5.8%
% of sales	0.0%	6.1%	6.5%	6.0%	5.9%	6.0%	6.0%
Equipment	1,405	1,670	1,632	1,496	1,425	1,444	1,529
Growth		18.9%	-2.3%	-8.3%	-4.7%	1.3%	5.8%
% of sales	5.6%	6.0%	5.3%	4.6%	4.1%	4.0%	4.0%

Appendix 6: Ratios

Sales (in millions)							
Items	2013	2014	2015	2016	2017	2018E	2019E
Profitability							
Gross margin	43.6%	44.8%	46.1%	46.2%	44.6%	44.7%	44.8%
Operating (EBIT) margin	12.9%	12.9%	13.8%	14.3%	14.4%	13.7%	13.8%
Net profit margin	9.8%	9.7%	10.7%	11.6%	12.3%	11.7%	11.8%
Activity							
NFA (gross) turnover		6.28	5.82	5.41	5.07	4.87	4.85
Total asset turnover		1.54	1.52	1.51	1.54	1.52	1.53
Liquidity							
Op asset / op liab	3.64	2.82	2.60	2.83	3.12	3.07	3.00
NOWC Percent of sales		33.7%	30.5%	30.2%	30.0%	30.7%	29.9%
Solvency							
Debt to assets	7.9%	7.4%	5.8%	9.5%	16.3%	17.1%	16.8%
Debt to equity	12.4%	12.7%	9.9%	16.6%	30.6%	32.8%	32.3%
Other liab to assets	7.3%	8.3%	6.9%	8.3%	8.2%	8.2%	8.2%
Total debt to assets	15.2%	15.7%	12.7%	17.8%	24.5%	25.4%	25.1%
Total liabilities to assets	36.6%	41.8%	41.2%	42.7%	46.7%	47.8%	47.8%
Debt to EBIT	0.43	0.38	0.30	0.44	0.77	0.84	0.82
EBIT/interest	(1,084)	108.39	151.18	244.32	83.81	61.36	61.56
Debt to total net op capital	10.0%	10.0%	8.2%	12.7%	21.0%	22.1%	21.8%
ROIC							
NOPAT to sales	9.7%	9.8%	10.8%	11.7%	12.5%	11.9%	12.0%
Sales to NWC		4.22	4.86	5.16	5.02	4.95	4.97
Sales to NFA		6.28	5.82	5.41	5.07	4.87	4.85
Sales to IC ex cash		2.52	2.65	2.64	2.52	2.45	2.45
Total ROIC ex cash		24.7%	28.5%	30.8%	31.5%	29.2%	29.4%
NOPAT to sales	9.7%	9.8%	10.8%	11.7%	12.5%	11.9%	12.0%
Sales to NOWC		2.97	3.28	3.31	3.33	3.25	3.34
Sales to NFA		6.28	5.82	5.41	5.07	4.87	4.85
Sales to IC		2.02	2.10	2.05	2.01	1.95	1.98
Total ROIC		19.7%	22.6%	24.0%	25.1%	23.2%	23.7%
NOPAT to sales	9.7%	9.8%	10.8%	11.7%	12.5%	11.9%	12.0%
Sales to EOY NWC	3.87	4.20	5.12	4.92	4.83	4.83	4.83
Sales to EOY NFA	6.40	5.68	5.44	5.10	4.77	4.73	4.70
Sales to EOY IC ex cash	2.41	2.41	2.64	2.50	2.40	2.39	2.38
Total ROIC using EOY IC ex cash	23.3%	23.6%	28.4%	29.2%	30.0%	28.4%	28.5%
NOPAT to sales	9.7%	9.8%	10.8%	11.7%	12.5%	11.9%	12.0%
Sales to EOY NOWC	2.56	3.14	3.12	3.33	3.15	3.20	3.29
Sales to EOY NFA	6.40	5.68	5.44	5.10	4.77	4.73	4.70
Sales to EOY IC	1.83	2.02	1.98	2.02	1.90	1.91	1.94
Total ROIC using EOY IC	17.7%	19.8%	21.3%	23.5%	23.7%	22.7%	23.2%
ROE							
5-stage							
EBIT / sales		12.9%	13.8%	14.3%	14.4%	13.7%	13.8%
Sales / avg assets		1.54	1.52	1.51	1.54	1.52	1.53
EBT / EBIT		99.1%	99.3%	99.6%	98.8%	98.4%	98.4%
Net income /EBT		76.0%	77.8%	81.3%	86.8%	86.8%	86.8%
ROA		14.9%	16.3%	17.5%	19.0%	17.7%	18.0%
Avg assets / avg equity		1.65	1.71	1.72	1.81	1.89	1.92
ROE		24.5%	27.8%	30.1%	34.4%	33.6%	34.6%
			13.53%	8.28%	14.14%		
3-stage							
Net income / sales		9.7%	10.7%	11.6%	12.3%	11.7%	11.8%
Sales / avg assets		1.54	1.52	1.51	1.54	1.52	1.53
ROA		14.9%	16.3%	17.5%	19.0%	17.7%	18.0%
Avg assets / avg equity		1.65	1.71	1.72	1.81	1.89	1.92
ROE		24.5%	27.8%	30.1%	34.4%	33.6%	34.6%
Payout Ratio		29.7%	27.5%	27.2%	26.7%	28.4%	27.8%
Retention Ratio		70.3%	72.5%	72.8%	73.3%	71.6%	72.2%
Sustainable Growth Rate		17.2%	20.2%	21.9%	25.2%	24.1%	25.0%

Appendix 8: 3-stage DCF Model

	First Stage		Second Stage				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	*5.1%*	*5.8%*	*5.5%*	*5.5%*	*5.8%*	*5.9%*	*6.0%*
NOPAT / S	*11.9%*	*12.0%*	*12.0%*	*12.0%*	*12.1%*	*12.2%*	*12.2%*
S / NOWC	*3.20*	*3.29*	*3.25*	*3.25*	*3.25*	*3.25*	*3.29*
S / NFA (EOY)	*4.73*	*4.70*	*4.70*	*4.70*	*4.70*	*4.70*	*4.70*
S / IC (EOY)	*1.91*	*1.94*	*1.92*	*1.92*	*1.92*	*1.92*	*1.94*
ROIC (EOY)	*22.7%*	*23.2%*	*23.1%*	*23.1%*	*23.2%*	*23.4%*	*23.6%*
ROIC (BOY)		*24.2%*	*24.5%*	*24.3%*	*24.6%*	*24.8%*	*24.8%*
Share Growth		*-3.0%*	*-2.4%*	*-2.3%*	*-2.3%*	*-2.3%*	*0.0%*
Sales	$36,105	$38,215	$40,317	$42,535	$45,002	$47,657	$50,516
NOPAT	$4,293	$4,578	$4,838	$5,104	$5,445	$5,814	$6,163
Growth		*6.6%*	*5.7%*	*5.5%*	*6.7%*	*6.8%*	*6.0%*
- Change in NOWC	355	339	793	682	759	817	686
NOWC EOY	*11273*	*11612*	*12405*	*13088*	*13847*	*14664*	*15349*
Growth NOWC		*3.0%*	*6.8%*	*5.5%*	*5.8%*	*5.9%*	*4.7%*
- Chg NFA	443	490	447	472	525	565	608
NFA EOY	*7,641*	*8,131*	*8,578*	*9,050*	*9,575*	*10,140*	*10,748*
Growth NFA		*6.4%*	*5.5%*	*5.5%*	*5.8%*	*5.9%*	*6.0%*
Total inv in op cap	799	828	1241	1154	1284	1382	1294
Total net op cap	18915	19743	20983	22138	23422	24803	26098
FCFF	$3,495	$3,749	$3,597	$3,950	$4,161	$4,432	$4,869
% of sales	*9.7%*	*9.8%*	*8.9%*	*9.3%*	*9.2%*	*9.3%*	*9.6%*
Growth		*7.3%*	*-4.1%*	*9.8%*	*5.3%*	*6.5%*	*9.8%*
- Interest (1-tax rate)	70	74	79	84	89	94	100
Growth		*6.3%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
FCFE w/o debt	$3,425	$3,675	$3,519	$3,867	$4,073	$4,338	$4,769
% of sales	*9.5%*	*9.6%*	*8.7%*	*9.1%*	*9.1%*	*9.1%*	*9.4%*
Growth		*7.3%*	*-4.3%*	*9.9%*	*5.3%*	*6.5%*	*9.9%*
/ No Shares	1594.5	1546.8	1,510.5	1,475.7	1,442.5	1,409.4	1,409.4
FCFE	$2.15	$2.38	$2.33	$2.62	$2.82	$3.08	$3.38
Growth		*10.6%*	*-2.0%*	*12.5%*	*7.8%*	*9.0%*	*9.9%*
* Discount factor	0.97	0.88	0.81	0.74	0.67	0.61	0.56
Discounted FCFE	$2.08	$2.10	$1.88	$1.93	$1.90	$1.88	$1.89

Appendix 8: 3-stage DCF Model

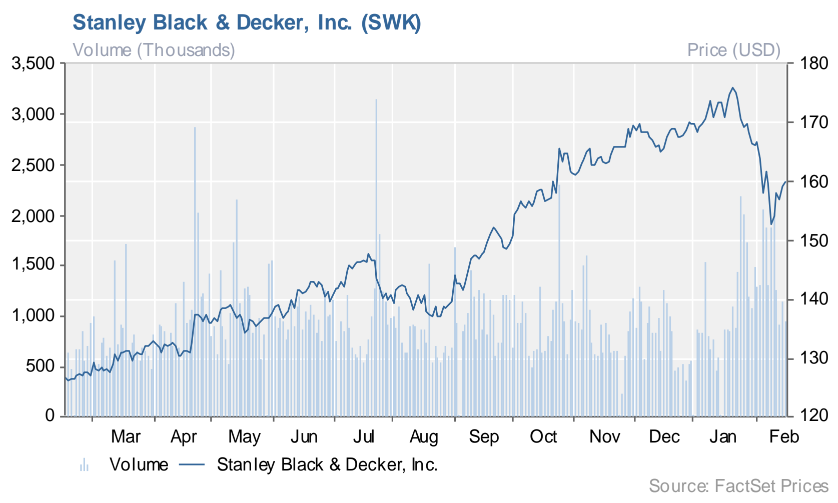
Third Stage								
Terminal value P/E								
Net income	$4,224	$4,503	$4,759	$5,021	$5,357	$5,720	$6,063
% of sales	*11.7%*	*11.8%*	*11.8%*	*11.8%*	*11.9%*	*12.0%*	*12.0%*
EPS	$2.65	$2.91	$3.15	$3.40	$3.71	$4.06	$4.30
Growth		*9.9%*	*8.2%*	*8.0%*	*9.1%*	*9.3%*	*6.0%*
Terminal P/E							24.00
* Terminal EPS							$4.30
Terminal value							$103.26
* Discount factor							0.56
Discounted terminal value							$57.67

Summary		
First stage	$4.18	Present value of first 2 year cash flow
Second stage	$9.48	Present value of year 3-7 cash flow
Third stage	$57.67	Present value of terminal value P/E
Value (P/E)	**$71.33**	= value at beg of fiscal yr 2018

Recommendation	Neutral
Target (today's value)	$170.00
Current Price	$160.13
52 week range	$125.33- $176.62

Tools and Hardware

Stanley Black & Decker



Share Data	
Ticker:	SWK
Market Cap. (Billion):	$24.5
Inside Ownership	0.7%
Inst. Ownership	82.6%
Beta	1.05
Dividend Yield	1.5%
Payout Ratio	30%
Cons. Long-Term Growth Rate	12.0%

	'15	'16	'17	'18E	'19E
Sales (billions)					
Year	$11.2	$11.4	$12.7	$13.3	$14.0
Gr %	-1.5%	2.1%	11.8%	5.6%	5.0%
Cons	-	-	$12.5	$13.4	$14.0
EPS					
Year	$5.96	$6.60	$7.42	$8.44	$9.64
Gr %	22.4%	10.7%	12.4%	13.7%	14.2%
Cons	-	-	$7.40	$8.32	$9.32

Summary: I recommend a neutral rating with a target of $170. Although SWK has the ability to improve efficiency and increase margins, stagnant foreign sales growth and future improvement in growth already being priced in has created doubt. The stock is fairly valued, based on relative and DCF analysis.

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	14.3%	15.8%	16.3%	16.3%	16.5%
Industry	19.8%	27.5%	20.0%	20.1%	19.8%
NPM (%)	8.5%	8.5%	8.5%	9.0%	9.5%
Industry	10.4%	10.7%	10.8%	11.4%	11.9%
A. T/O	0.72	0.74	0.71	0.66	0.66
ROA (%)	5.7%	6.3%	6.3%	6.1%	6.6%
Industry	9.3%	8.2`%	8.1%	7.7%`	7.7%
A/E	2.50	2.51	2.51	2.61	2.49

__Key Drivers__:

- Acquisition and divestment: SWK purchased Newell tools and Craftsman and sold part of its mechanical security line. SWK is moving resources from less profitable operations to areas where they have seen higher sales growth and profit margins.
- Foreign sales growth: SWK's foreign sales growth has been falling since 2013. Part of this was due to currency movements, but in 2016, only 1% can be attributed to movements
- Competition: SWK has not been able to grow its profit margin to the degree of its competition and is only helped by its large market share.

Valuation	'16	'17	'18E	'19E
P/E	17.5	21.4	22.8	20.3
Industry	21.2	24.3	22.6	20.6
P/S	1.5	2.1	2.0	1.9
P/B	2.8	3.6	3.1	2.8
P/CF	11.48	19.7	16.4	15.3
EV/EBITDA	11.8	11.8	18.5	16.2

__Valuation:__ Using a relative valuation approach, SWK is fairly valued compared to its peers. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of the approaches suggests that Stanley Black & Decker is fairly valued, as the stock's value is about $170, and the shares trade at $160.13.

Performance	Stock	Industry
1 Month	-4.0%	3.4%
3 Month	-2.0%	32.3%
YTD	-5.6%	-19.4%
52-week	26.4%	2.7%
3-year	63.10%	-28.6%

__Risks:__ Threats to the business include declining international sales, foreign currency fluctuations, loss of brand identity, and competition.

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Company Overview

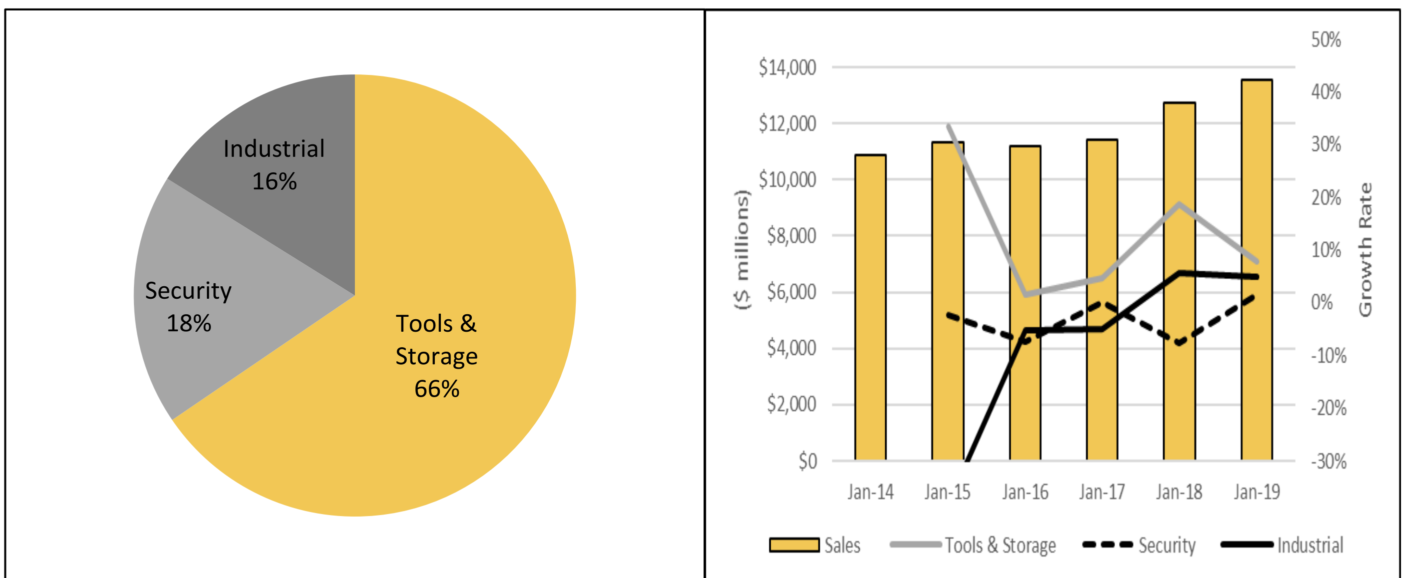
Stanley Black & Decker (SWK) is a global producer of hand tools, power tools and related accessories, electronic security and monitoring systems, healthcare solutions, engineered fastening systems and various other products and services for industrial applications. Stanley Black & Decker was founded in 1843 by Fredrick T. Stanley and is headquartered in New Britain, CT. In March 2010, the Company merged with The Black & Decker Corporation and changed its name from The Stanley Works to Stanley Black & Decker. The company services a wide variety of consumers that range from industrial professionals to ordinary homeowners. Stanley Black & Decker has a global footprint when it comes to its operations; nearly half of SWK's revenue (48%) is derived from international sources. SWK has continued its strategy of growth and acquisition through avenues such as geographic and customer diversification. Some of the firm's notable brands include the following: DEWALT, Black & Decker, and Stanley. SWK's high level of customer service has resulted in a loyal customer base. Stanley Black & Decker generates revenue from the following three segments:

- Tools & Storage is comprised of the power and hand tools, accessories, and storage. It is sometimes referred to as the "Do It Yourself Division." Some of the products include drills, impact wrenches and drivers, saws, routers, sanders, nail guns, and lawn and garden products. It is the largest segment of SWK: 66% of total revenue. It has seen steady growth over the last four years, averaging 3.5% growth.

- Security is comprised of the convergent security solutions and mechanical access solutions. Some products include supplies and installs, and electronic security systems such as alarm monitoring, video surveillance, and system maintenance. The last four-year growth rate is 4.6%, underperforming relative to the Tool & Storage segment.

- Industrials include the engineered fastening and infrastructure businesses. Some of the products for the engineered fastening line include stud welding systems, engineered plastic and mechanical fasteners, and high-strength structural fasteners. The infrastructure business focuses on oil & gas and hydraulics businesses.

Figures 1 and 2: Revenue Sources for SWK, Year-end 2017 (left) and Revenue History since 2014 (right)



Source: Company reports

Business/Industry Drivers

Though several factors must be considered when analyzing Stanley Black & Decker's future success, the following are the most important business drivers:

1) Acquisitions and divestments
2) Foreign sales growth
3) Domestic and international competition
4) Macroeconomic Trends

Acquisition of Newell Tools

Stanley Black & Decker made several acquisitions and divestments over the past 12 months that will greatly impact future earnings. SWK recently purchased Newell Tools for $1.95 billion (around 15% of total revenue). In addition, the firm purchased Craftsman from Sears for $525 million and 2.5-3.5% of Craftsman's revenue over the next 15 years. Lastly, the company sold a majority of the mechanical security business for $725 million. These moves outline SWK's plan to shift resources from less profitable operations to areas where they have seen higher sales growth and profit margins.

Figure 3: 2016 Acquisitions and Divestments for SWK

(in $ Millions)	Value
Acquisitions:	
Newell Tools	$1,950
Craftsman	$525
Divestments:	
Mechanical Security	$725
Net Cash Flow	($1,750)

Source: Company reports

SWK reached an agreement to sell Craftsman products to Lowe's starting in 2018.

SWK's purchase of Newell Tools from Newall Brands closed in March of 2017. SWK increased its market share in the Tools and Storage segment, an area where the firm is already a large part of the market. Tools & Storage is 66% of revenue, and this acquisition will boost revenues to 10%. The Tools & Storage segment also had the highest profit margin for SWK in 2016. Based on past performance, the acquistion could net up to an additional $0.60 EPS by year three.

Figure 4: Newell Tools - past historical performance

	Sales ($) millions	Net Income ($) millions	Net Margin (%)	EPS conversion to SWK shares
2016	$ 761	$ 85	11.2%	$0.55*
2015	$ 791	$ 85	10.8%	$0.55*
2014	$ 852	$ 95	11.1%	$0.62*

Source: Company Reports

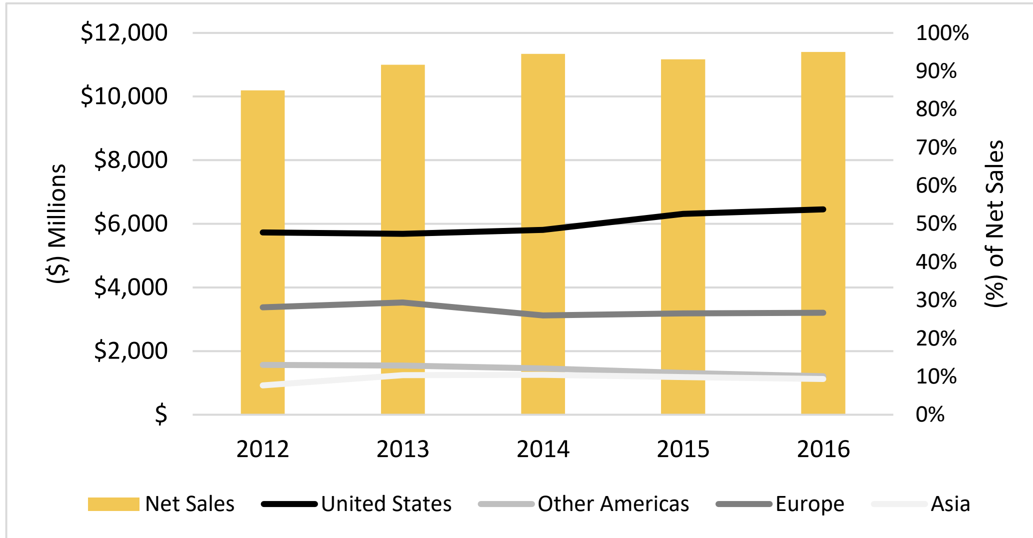
Foreign Sales Growth

SWK has had organic growth through innovation and growth in foreign markets.

International revenue has been falling as a percent of sales since 2013.

While SWK generates a large portion of revenue from outside the US and this presents opportunities, this business is shrinking in dollars, down $19 million in 2016, and as a percentage of sales, down 6% since 2013. The negative growth in 2016 is attributed to currency which drove sales down $250 million in 2016. In 2017, the dollar began to retreat and currency effects were less than one percent of sales compared to two percent in 2016.

Figure 5: Net Sales and % of Sales by Geography



Source: Company Reports

SWK's growth the last three years was driven by positive US growth.

Figure 6: Year over Year Growth Rate by Geographic Region

	2016	2015	2014	2013
Net Sales	2.1%	-1.5%	3.1%	8.0%
United States	4.3%	7.1%	5.4%	7.2%
Other Americas	-5.9%	-11.4%	-2.4%	6.3%
Europe	2.8%	-9.6%	1.5%	12.8%
Asia	-2.8%	-7.2%	4.0%	45.7%

Source: Company Reports

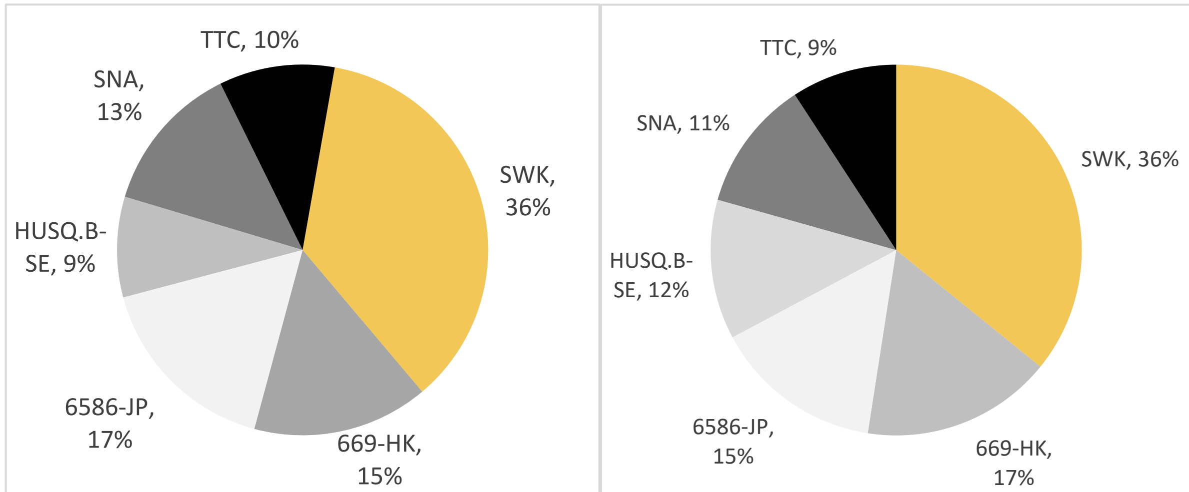
Competitor Analysis

The Tools & Storage business has the highest profit margin of all business segments.

The Tool & Storage industry is very competitive internationally and domestically. Major consumers are everyday people who are concerned with price and quality. Consumers have very inelastic demand for products because of many substitute products. As a result, it is important to monitor profit margins for signs that competitive pressures are leading to lower prices and profits.

SWK's percent of sales and percent of market cap are the same. This implies that the market believes that prospects for SWK and its competition are about the same.

Figures 8 and 9: Comparison of SWK comps by market cap (left) and Revenue (right)



Source: FactSet

Snap-On Incorporated (SNA) and Makita Corp (6586-JP) have higher profit margins than Stanley Black & Decker (SWK).

SWK's profit margins have been steadily increasing over the past five years as shown in Figure 10, but the margins are still below average. Its margins follow the industry, which have been improving over time. SWK's margins could jump as the firm offloads less profitable segments such as mechanical security operations and reallocates resources to the more profitable Tools & Storage segment.

Figure 10 Comparison of SWK and comps profit margins

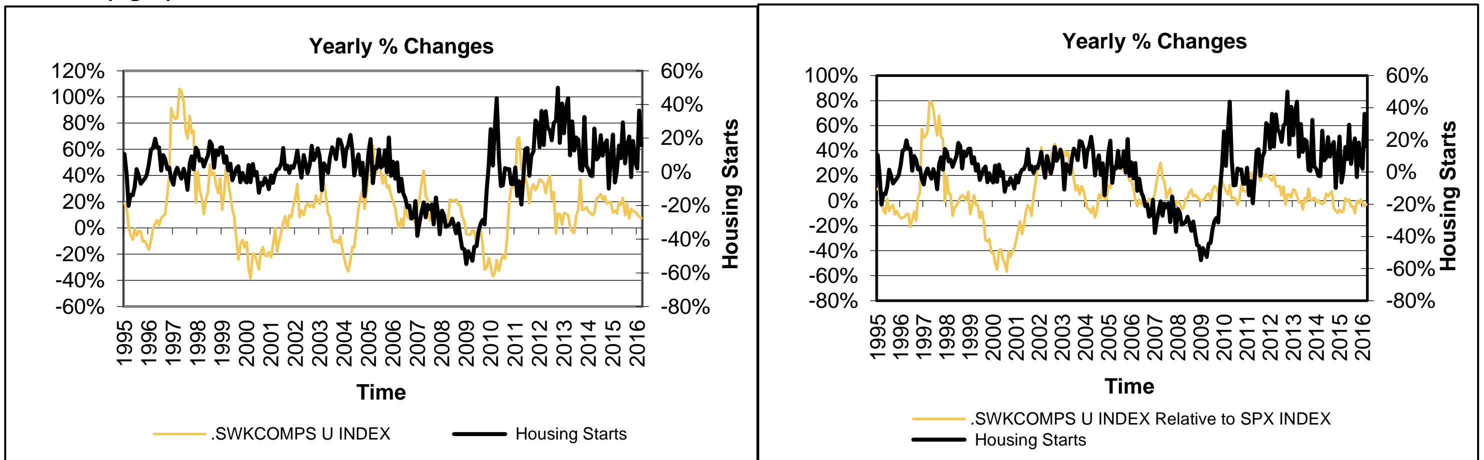
Company	2016	2015	2014	2013	2012
SWK	8.5%	8.1%	7.6%	4.7%	4.4%
SNA	14.5%	15.9%	12.1%	10.8%	9.9%
TTC	9.7%	8.5%	8.0%	7.58%	6.6%
HUSQVY	5.8%	5.2%	2.5%	3.0%	3.3%
6586-JP	10.8%	10.9%	10.0%	10.0%	10.1%
669-HK	7.5%	7.0%	6.3%	5.8%	3.9%

Source: FactSet

Macroeconomic Trends

While many believe that housing drives the industry since individuals need more tools as construction increases, housing starts only have a 0.02 correlation with the industry.

Figures 11 & 12: Housing Starts, Compared to SWK Comps (left), Housing Starts Compared to SWK Comps Relative to the S&P 500 (right)



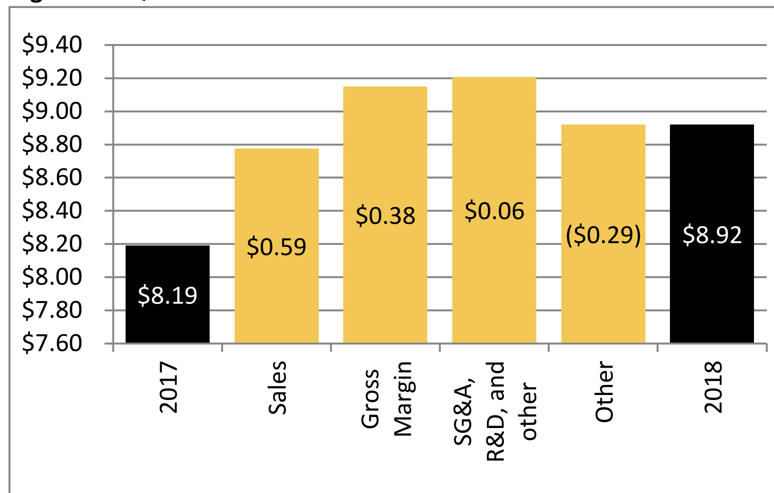
Source: Bloomberg, IMCP

The takeaway is that the industry is not entirely reliant on US housing. Of course, US sales are only 53% of total sales and many of the comps are foreign firms. However, this correlation proves the importance of the international market in diversifying SWK's business.

Financial Analysis

I anticipate EPS to grow to $8.92 in FY 2018. Sales will continue to receive a boost with the acquisitions of Newell Tools and Craftsman, contributing to approximately $0.59 in EPS assuming no change in profit margins. This sales growth will also be helped by SWK's renewed focus on its Tools segment. In addition, Gross Margins will increase due to the increase in production in the Tool segment, adding $0.38. To continue, reduction in SG&A as a percent of sales will add $0.06, due to divestment in SWK's Security segment which has low profit margins. Lastly, I forecast that SWK will continue to pay restructuring costs from the acquisition, lowering EPS $0.29.

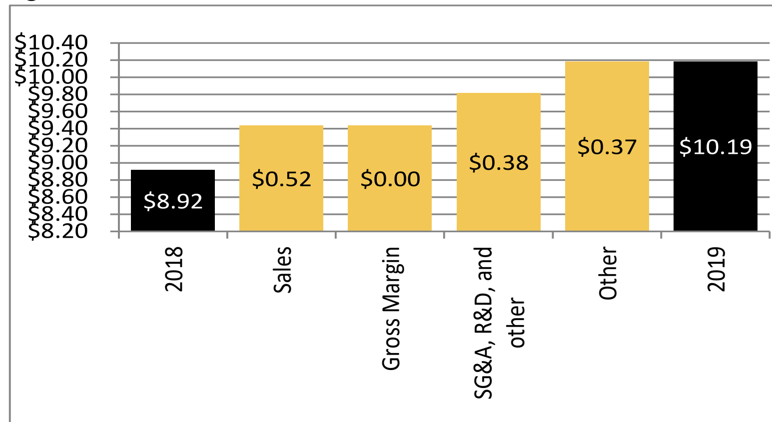
Figure 13: Quantification of 2018 EPS drivers



Source: Company Reports, IMCP

I expect 2019 EPS to increase $1.27 to $10.37. Sales will continue to climb with the addition of Craftsman tool sales in 2018. Furthermore, sales in the emerging market will continue to improve, helped by the falling of the US dollar, resulting in a net EPS increase of $0.52. I anticipate a reduction in SG&A as SWK's supply chain efficiency improves. With continued growth of the Tools & Storage segment as a percent of sales, SG&A as a percentage of sales will decrease, resulting in a higher EBIT margin, adding $0.38 to EPS. In addition, the ending of restructuring costs of the previous mergers will increase EPS by $0.37

Figure 14: Quantification of 2019 EPS drivers



Source: Company Reports, IMCP

Figure 15: EPS and YoY growth estimates

	FY 2018E	FY2019E
YoY Growth	6%	5%
Revenue-Consensus	$13,415	$14,156
YoY Growth	7%	6%
EPS-Estimate	$8.39	$9.33
YoY Growth	3%	11%
EPS-Consensus	$8.32	$9.32
YoY Growth	1%	12%

Source: FactSet

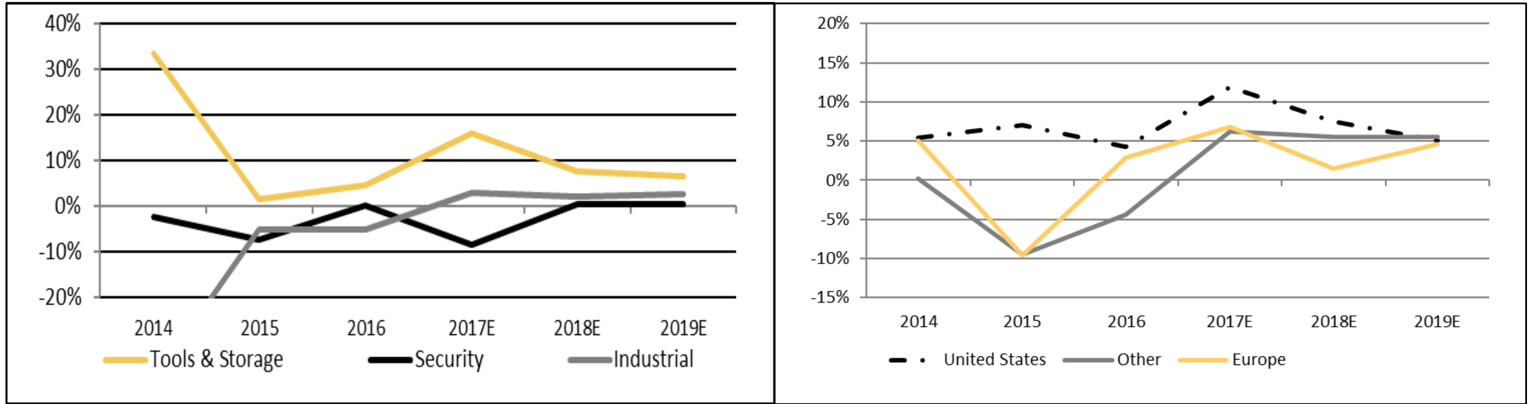
I am close to consensus estimates for 2018 and 2019 in sales. In 2018, I expect sales to grow at 6% compared to 7% by consensus. In all, I expect earnings to outperform 2018 estimates by a large margin. These earnings will continue to improve in 2019 as SWK continues to improve its supply chain and finalizes all its restructuring from its recent acquisition.

Revenues

Stanley Black & Decker's revenue growth rebounded since 2015. Recent economic trends in the US have helped boost revenue growth, but growth will slow as the economy cools down. I expect growth rates will rise, carried by a strengthening Tools & Storage segment due to recent acquisitions, along with the weakening of the dollar vs Euro and emerging market currencies. Sales growth in Tools & Storage will fall back to normal levels of 5% by 2019 after rising 10% in 2017 due to the acquisition. SWK's industrial division has had stable growth, and I project growth of 5% in 2018 and 2019. The security division will decline in 2017 due to the divestment in 2016 and will recover back to positive growth rates by 2019.

International revenue rebounds to 5% growth in 2017 and maintains this in 2018 and 2019 due to the weakening of the US dollar relative to the Euro and emerging market currencies. Continued expansion of SWK's production operation to other countries could also help offset any possible losses from currency if my assumption for exchange rates is incorrect.

Figures 16 &17: Stanley Black and Decker segment revenue growth rate, 2014-2019E, geographical growth rates, 2014-2019E

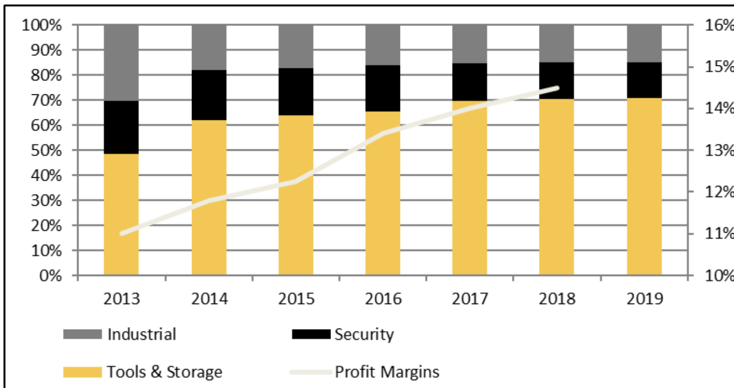


Source: Company Reports

Operating Income and Margins

Operating margins are expected to rise as SWK focuses more on improvements to its supply chain and places more focus on its Tools & Storage segment. By 2018, the division will make up 70% of SWK's total revenue. The higher weight should help boost EBIT margins as the Tools & Storage segment is the most profitable. In addition, restructuring will be finished by 2019, resulting in a more efficient and less expensive supply chain.

Figures 17 and 18 segment % of sales 2013-2019E, 2016 segment profit margin



2016 Segment Summary		
	Sales	Profit Margin
Tools and Storage	$7,469	17.0%
Security	$2,097	12.8%
Industrials	$1,840	16.5%

Source: Company Reports

In addition, the industrials segment is growing with the economy after three years of decline and will have high margins.

Return on Equity

Stanley Black & Decker's ROE has risen from 11.4% in 2014 to 16.7% in 2017 and will fall to 15.6% by 2019. EBIT margins are expected to improve over time. Improvements in SWK's supply chain, divestment of unprofitable businesses and the firm's focus on 5-6% organic growth will boost margins.

Figure 19: ROE breakdown, 2014 – 2019E

5-stage Dupont	2014	2015	2016	2017	2018E	2019E
EBIT / sales	11.0%	11.8%	12.3%	13.4%	14.0%	14.5%
Sales / avg assets	0.70	0.72	0.74	0.73	0.69	0.69
EBT / EBIT	86.9%	87.4%	87.7%	89.3%	92.8%	93.4%
Net income /EBT	70.1%	76.8%	78.7%	80.3%	75.7%	79.0%
ROA	4.7%	5.7%	6.3%	7.1%	6.8%	7.4%
Avg assets / avg equity	2.42	2.50	2.51	2.37	2.24	2.12
ROE	11.4%	14.3%	15.8%	16.7%	15.2%	15.6%

Source: Company Reports

Higher margins are offset somewhat by lower asset turns. However, lower interest and tax burdens contribute to a higher ROA. ROE is still rising even as the firm deleverages. A/E will decline as the increase in assets is lower than the rise in equity. I forecast no additional debt in 2018-19.

Free Cash Flow

SW's free cash flow has been volatile over the last several years. I forecast that NOPAT will grow rapidly over the course of the next three years. This will be offset by increases in net operating capital due to restructuring. Net working capital excluding cash will slowly increase due to SWK acquiring many new assets.

Figure 20: Free cash flows 2014 – 2019E

Free Cash Flow	2014	2015	2016	2017	2018E	2019E
NOPAT	$987	$1,032	$1,100	$1,372	$1,519	$1,654
Growth	*52.1%*	*4.5%*	*6.6%*	*24.8%*	*10.7%*	*8.9%*
NOWC	1,118	862	1,985	210	420	1,229
Net fixed assets	11,900	11,466	10,846	14,514	15,238	15,495
Total net operating capital	$13,019	$12,328	$12,832	$14,723	$15,658	$16,725
Growth	*-4.9%*	*-5.3%*	*4.1%*	*14.7%*	*6.3%*	*6.8%*
- Change in NOWC	(55)	(256)	1,123	(1,776)	210	809
- Change in NFA	(618)	(435)	(619)	3,667	724	258
FCFF	$1,660	$1,723	$596	-$520	$585	$587
Growth		*3.8%*	*-65.4%*	*-187.2%*	*212.5%*	*0.3%*
- After-tax interest expense	129	130	135	147	109	109
+ Net new short-term and long-	(351)	(47)	25	(971)	-	-
FCFE	$1,180	$1,546	$486	-$1,637	$475	$477
Growth		*31.0%*	*-68.6%*	*-437.0%*	*129.0%*	*0.4%*

Source: Company Reports, IMCP

I expect both FCFF and FCFE to bounce back in 2018 after being negative as a result of acquisitions. In 2018 and 2019 growth in NOPAT was 7.9%, with most of it being used for acquisition purposes. FCFF will rebound in 2018 and 2019 due to growth in NOPAT (7.9% and 5.8%) and will outpace increases in NFA and NOWC (5.6% and 5.9%).

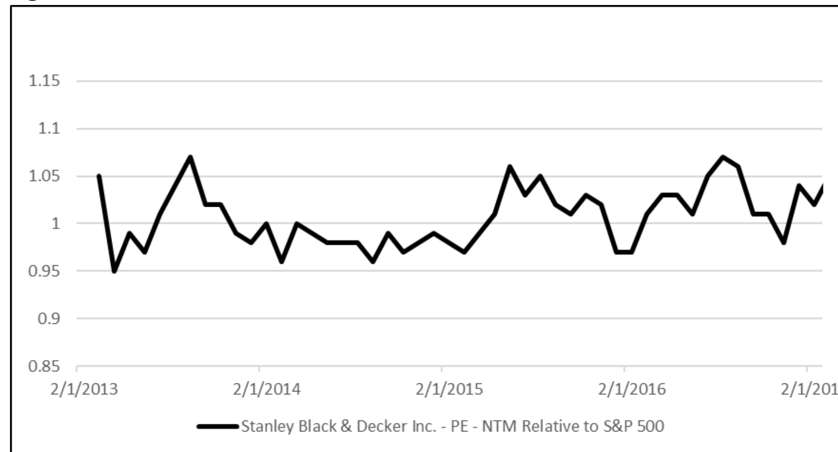
Valuation

SWK was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is slightly expensive relative to other firms and is worth $184. Price to book valuation yielded a price of $183. A detailed DCF analysis values SWK slightly higher, at $171. Lastly, a probability-weighted scenario analysis values the stock at $177.54. As a result of these valuations, I value the stock at $175.

Trading History

SWK is currently trading at its five-year relative NTM P/E high to the S&P 500. This is the result of steady increases in earnings and the fact that most analysts project earnings to continue to grow at above market rates. SWK's current NTM P/E is at 19.9 compared to its five year average of 19.5. I do not expect regression towards that number as the economy continues to heat up.

Figure 21: SWK NTM P/E relative to S&P 500



Source: Factset

Assuming the firm maintains a 19.9 NTM P/E at the end of 2018, it should trade at $202.78 by the end of the year.

- Price = P/E x EPS = 19.9x $10.19 = $202.78

Discounting $202.78 back to today at a 10.4% cost of equity (explained in Discounted Cash Flow section) yields a price of $183.67. Given SWK's potential earnings growth and continued profitability, this seems to be a reasonable valuation for current market conditions. However, I am also more bullish on near-earnings than consensus.

Relative Valuation

Stanley Black & Decker is currently trading at a P/E much lower than its peers, with a P/E TTM of 21.0 compared to an average of 25.4. Investors may be skeptical of SWK delivering consistent and sustainable earnings growth (12.4% EPS growth in 2017, 13.7% EPS growth in 2018, and 12.4% in 2019). SWK's P/S ratio is also lower than its peers which reflects its lower operating margin.

Figure 22: SWK comparable companies

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growt LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	LT Debt Equity	S&P Rating	LTM Dividend Yield	Payout
SWK	STANLEY BLACK & DECKER INC	$169.16	$25,941	(0.8)	1.0	3.4	18.9	36.1	(0.3)	12.0	4.4%	2.1%	12.4%	13.7%	12.4%	20.7%	1.28	34.3%	B+	1.43%	30.1%
SNA	SNAP-ON INC	$181.03	$10,320	(1.0)	3.6	13.2	20.7	1.1	3.9	8.3	9.8%	13.4%	13.6%	9.6%	10.6%	14.8%	1.05	25.8%	A	1.69%	29.2%
TTC	TORO CO	$66.97	$7,140	(0.2)	2.9	6.5	(6.4)	12.0	2.7		9.9%	15.3%	36.4%	17.0%	8.3%	17.8%	0.49	49.5%	A	1.11%	29.0%
DHR	DANAHER CORP	$102.70	$71,439	1.3	9.9	13.3	25.3	26.7	10.6	8.1	24.9%	1.1%	-16.1%	10.4%	10.9%	5.4%	1.02	42.3%	A	0.60%	16.1%
6586-JP	MAKITA CORP	$46.83	$12,712	(1.5)	6.4	12.7	18.1	29.5	7.5	10.2	19.8%	3.0%	-8.6%	16.5%	18.2%	6.9%	0.65	0.0%		1.08%	28.6%
669-HK	TECHTRONIC INDUSTR	$6.30	$11,553	(0.5)	(0.2)	11.2	34.6	84.1	(3.3)			18.8%	15.8%	18.2%	19.2%	18.9%	0.18			1.13%	
Average			$23,184	(0.5)	3.9	10.1	18.5	31.6	3.5	9.6	13.7%	8.9%	8.9%	14.2%	13.3%	14.1%	0.78	30.4%		1.17%	26.6%
Median			$12,133	(0.7)	3.3	12.0	19.8	28.1	3.3	9.2	9.9%	8.2%	13.0%	15.1%	11.7%	16.3%	0.83	34.3%		1.12%	29.0%
SPX	S&P 500 INDEX	$2,839		0.1	5.8	11.0	14.6	23.5	6.2			-0.1%	0.5%	10.3%	11.7%						

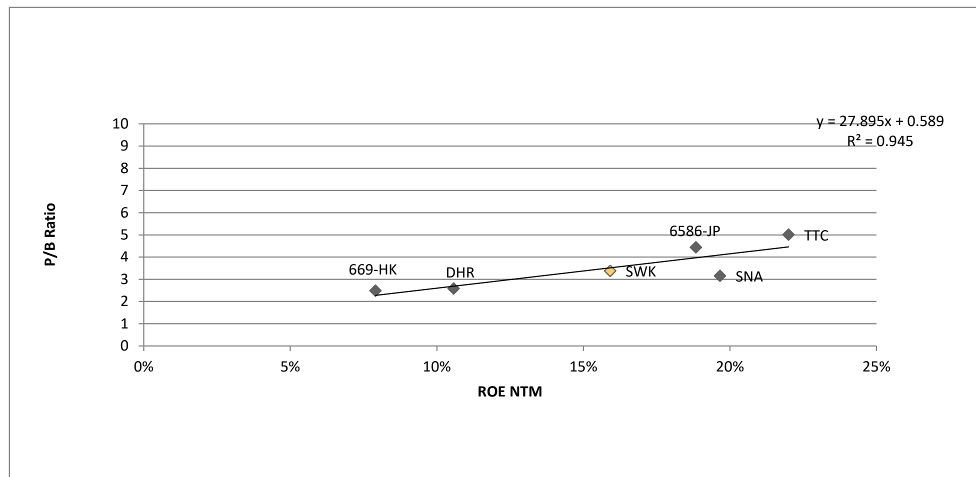
Ticker	Website	2017 ROE	P/B	P/E 2015	2016	2017	TTM	NTM	2018	2019	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
SWK	http://www.stanleyblackanddecker.com	13.7%	3.57	16.9	18.4	17.6	21.0	20.1	22.9	20.3	8.8%	2.27	12.9%	11.5%	17.7	18.9	13.1	7.2%	5.7%	4.6%	$47.38
SNA	http://www.snapon.com	17.9%	3.53	19.2	21.2	18.6	18.6	16.9	18.0	16.2	13.9%	2.74	23.3%	16.5%	12.3	13.6	13.5	-5.0%	4.0%	4.8%	$51.25
TTC	http://www.thetorocompany.com	35.7%	11.60	24.4	24.2	27.2	27.8	25.3	27.8	25.7	9.2%	2.99	14.2%	29.7%	19.8	22.2	18.5	5.2%	5.3%	5.0%	$5.77
DHR	http://www.danaher.com	8.4%	2.81	17.9	19.2	25.3	30.3	24.3	30.2	27.2	12.7%	4.23	16.2%	6.3%	22.0	20.9	15.7	6.0%	4.3%	1.0%	$36.49
6586-JP	http://www.makita.co.jp	7.2%	2.67	16.9	21.0	26.4	29.3	24.5	31.6	26.8	9.8%	3.61	15.1%	9.1%	13.9	23.2	15.9			7.0%	$17.55
669-HK	http://www.ttigroup.com	15.9%	4.56	20.1	21.5	16.3			24.2	20.3	7.4%	2.11		14.8%	14.0	17.3	11.3			8.3%	$1.38
Average		16.5%	4.79	19.2	20.9	21.9	25.4	22.2	25.8	22.8	10.3%	2.99	16.3%	14.6%	16.6	19.3	14.7	3.3%	4.8%	5.1%	
Median		14.8%	3.55	18.5	21.1	21.9	27.8	24.3	26.0	23.0	9.5%	2.86	15.1%	13.2%	15.9	19.9	14.6	5.6%	4.8%	4.9%	

A more thorough analysis of P/B and ROE is shown in figure 23. The calculated R-squared of the regression indicates that 94.5% of a sampled firm's P/B is explained by its NTM ROE. SWK has below average P/B and ROE of this grouping, and according to this measure is slightly undervalued.

- Estimated P/B = Estimated 2018 ROE (15.9%) x 27.895-0.5809 = 3.86
- Target Price = Estimated P/B (3.86) x 2018E BVPS ($47.36) = $182.81

Discounting $182.81 back to the present at a 10.4% cost of equity leads to a target price of $165.59 using this metric.

Figure 23: P/B vs NTM ROE



Source: Factset

For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. An equal weighting of NTM earnings growth and 2017 ROE were compared to an equal weight composite of 2016 P/E and P/B. After eliminating Toro Co and Makita Corp which were

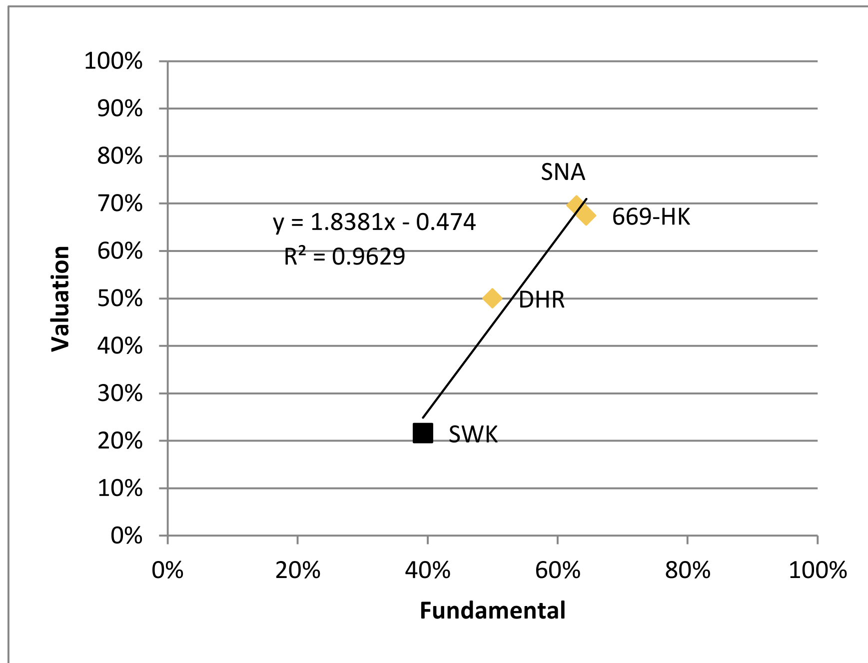
both outliers, the regression line had an R-squared of 0.96. One can see that SWK is near the line, meaning that it is fairly valued using fundamental analysis.

Figure 24: Composite valuation, % of range

		Fundamentals		Valuation			
	Weight	50%	50%	50%	50%		
Ticker	**Name**	**Earnings Growth NTM**	**ROE**	**2016 P/E**	**P/B**	**Fund**	**Value**
SWK	STANLEY BLACK & DECKER INC	0%	79%	0%	43%	39%	22%
SNA	SNAP-ON INC	26%	100%	98%	41%	63%	70%
DHR	DANAHER CORP	100%	0%	100%	0%	50%	50%
669-HK	TECHTRONIC INDUSTR	50%	79%	35%	100%	64%	67%

Source: IMCP

Figure 25: Composite relative valuation



Source: IMCP

<u>Discounted Cash Flow Analysis</u>

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

For the purpose of this analysis, the company's cost of equity was calculated to be 10.4% 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 2.33%.
- A beta of 1.05 was utilized since the company has slightly higher risk than the market and its performance has aligned with the S&P 500.
- 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 10.40% (2.33 + 1.05 (10.0 – 2.33)).

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 ($1.00) and $8.46, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $6.04 per share. Therefore, stage one of this discounted cash flow analysis contributes $6.04 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 10.40% cost of equity. I assume a conservative 5% growth rate from 2020-2024. The ratio of NWC to sales will fall back to 2017 levels and NFA turnover will gradually rise from 0.92 in 2020 to 0.94 in 2021 as a result of improvements in operations, in part due to acquisitions. Also, the NOPAT margin is expected to rise to 13.5% in 2023 from 12.0% in 2020 due to continued synergies in the Tool Segment from acquisitions.

Figure 25: FCFE and discounted FCFE, 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
FCFE	($1.00)	$8.46	$3.41	$9.59	$9.21	$6.48	$12.24
Growth		*749.4%*	*-59.7%*	*181.5%*	*-4.0%*	*-29.6%*	*88.9%*

Source: IMCP

Added together, these discounted cash flows total $20.09.

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 $11.24 in 2020 to $14.92 in 2024.

Figure 26: EPS estimates for 2018-2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$8.92	$10.19	$11.51	$11.84	$12.71	$13.63	$15.20

Source: IMCP

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. For the purpose of this analysis, it is generally assumed that as a company grows larger and matures, its P/E ratio will converge near to the historical average of the S&P 500. Stanley Black & Decker, on the other hand will not face this situation. SWK's comps average NTM P/E is 22.2 and SWK has seen a steady increase in P/E over time. As a result, a P/E ratio of 19.50 is assumed at the end of SWK's terminal year. This P/E multiple though seeming rather high, fits the conditions of today's market and the possible future as the firm is a strong company with good brands.

Given the assumed terminal earnings per share of $14.92 and a price to earnings ratio of 19.5, a terminal value of $290.90 per share is calculated. Using the 10.40% cost of equity, this number is discounted back to a present value of $145.69.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $170.26 is calculated (4.48 + 20.09 + 145.69). Given SWK's current price of $169.69, this model indicates that the stock is fairly valued.

Scenario Analysis

To better understand the catalysts in determining SWK's stock price, I valued the firm using six scenerios that are based on changes in NOPAT margin and sales growth.

Figure 27: Scenario analysis

Sales	NOPAT Margin	DCF Value	Probability	Weighted Average
Strong Growth p=0.25	Growing (p=0.5)	$191.35	12.50%	$23.92
	Stable (p=0.5	$183.42	12.50%	$22.93
Modest Growth p=0.50	Growing (p=0.5)	180.99	25%	$45.25
	Stable (p=0.5	$173.73	25%	$43.43
Weak Growth p=0.25	Growing (p=0.5)	171.37	12.50%	$21.42
	Stable (p=0.5	$164.75	12.50%	$20.59

If SWK is unable to maintain its consistent sales growth of 5% annually, the value drops to $164.75. However, if NOPAT margins are able to improve from 11.5% to 12.5% as SWK moves more into the Tool industry, value increases by nearly $7 across all estimates. The scenario analysis shows that NOPAT margin is the more important in determining SWK's value compared to sales. It appears the market is expecting moderate growth with stable margin for SWK.

Business Risks

Although I have many reasons to be optimistic about Stanley Black &Decker, there are several good reasons why I find the stock to be fairly priced only a few dollars below its 52-week high:

Business Risks were derived from SWK's 10-K

Global Competition:

Stanley Black & Decker competes with both larger and smaller companies that offer similar products, but are located in countries in which labor and other production costs are substantially lower. SWK may have to reduce prices on its products and services to stay competitive and retain market share.

Change in customer preferences:

Customers change what they demand all the time. If SWK does not adapt the to the needs of its customers, SWK could see a decline in sales.

Loss of brand reputation:

SWK's biggest asset is its brand recognition. It keeps the firm profitable and competitive. If the company violates trademark agreements and product requirements, its brand could be damaged.

Exposure to currency fluctuations:

Nearly 50% of SWK's revenues are denominated in currencies other than the dollar. Strengthening of the dollar relative to currencies such as the Euro could reduce margins.

Possible Valuation Changes

If SWK is able to increase profit margins at a faster rate, the stock may become a buy. Profit margins are key driver in SWK's stock price and buy bringing those future cash flows closer to present time will increase the stock's valuation.

SWK could be considered a sell if current market conditions deteriorate. SWK's current valuation is dependent on strong sales growth over the near future. If the economy (especially in the US) sees a sudden slowing of consumer spending, SWK's valuation could change drastically.

Appendix 1: Income Statement

Income Statement (in $ millions)	2013	2014	2015	2016	2017	2018E	2019E
Sales	$10,890	$11,338	$11,172	$11,406	$12,747	$13,561	$14,255
Direct costs	6,986	7,235	7,100	7,085	7,969	8,408	8,838
Gross Margin	3,904	4,103	4,072	4,321	4,778	5,153	5,417
SG&A, R&D, and other	3,169	2,854	2,756	2,924	3,069	3,255	3,350
EBIT	735	1,248	1,316	1,397	1,709	1,899	2,067
Interest	147	164	165	171	183	137	137
EBT	588	1,085	1,151	1,226	1,526	1,762	1,930
Taxes	69	227	249	261	301	352	386
Income	519	858	902	965	1,226	1,410	1,544
Other	29	97	19	0	0	75	20
Net income	490	761	884	965	1,225	1,335	1,524
Basic Shares	155.2	156.1	148.2	146.0	149.6	149.6	149.6
EPS	$3.16	$4.87	$5.96	$6.60	$8.19	$8.92	$10.19
DPS	$1.93	$1.93	$2.14	$2.26	$2.42	$2.68	$3.06

Appendix 2: Balance Sheet

Balance Sheet (in millions)	2013	2014	2015	2016	2017	2018	2019
Cash	469	497	465	1,132	460	842	1,669
Operating assets ex cash	3,547	3,452	3,197	3,657	4,560	4,824	4,929
Operating assets	4,017	3,949	3,662	4,789	5,020	5,666	6,598
Operating liabilities	2,843	2,830	2,800	2,803	3,464	3,618	3,803
NOWC	1,173	1,118	862	1,985	1,556	2,048	2,796
NOWC ex cash (NWC)	704	622	397	854	1,096	1,206	1,127
NFA	12,519	11,900	11,466	10,846	14,647	15,056	15,309
Invested capital	*$13,692*	*$13,019*	*$12,328*	*$12,832*	*$16,203*	*$17,103*	*$18,105*
Marketable securities	-	-	-	-	-	-	-
Total assets	*$16,535*	*$15,849*	*$15,128*	*$15,635*	*$19,667*	*$20,721*	*$21,907*
Short-term and long-term debt	$4,192	$3,841	$3,795	$3,820	$4,393	$4,393	$4,393
Other liabilities	2,619	2,665	2,674	2,639	2,639	2,639	2,639
Debt/equity-like securities	-	-	-	-	728	728	728
Equity	6,881	6,512	5,859	6,374	7,247	8,148	9,149
Total supplied capital	*$13,692*	*$13,019*	*$12,328*	*$12,832*	*$15,006*	*$15,907*	*$16,908*
Total liabilities and equity	*$16,535*	*$15,849*	*$15,128*	*$15,635*	*$18,470*	*$19,525*	*$20,711*

Appendix 3: Sales Forecast

Sales (in millions)	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Sales	10,890	11,338	11,172	11,406	12,747	13,561	14,255
Growth		*4.1%*	*-1.5%*	*2.1%*	*11.8%*	*6.4%*	*5.1%*
Tools & Storage	5,271	7,033	7,141	7,469	8,862	9,548	10,121
Growth		*33.4%*	*1.5%*	*4.6%*	*18.7%*	*7.7%*	*6.0%*
% of sales	*48.4%*	*62.0%*	*63.9%*	*65.5%*	*69.5%*	*70.4%*	*71.0%*
Security	2,316	2,261	2,093	2,097	1,939	1,970	2,009
Growth		*-2.4%*	*-7.4%*	*0.2%*	*-7.5%*	*1.6%*	*2.0%*
% of sales	*21.3%*	*19.9%*	*18.7%*	*18.4%*	*15.2%*	*2.0%*	*14.1%*
Industrial	3,303	2,044	1,938	1,840	1,946	2,043	2,125
Growth		*-38.1%*	*-5.2%*	*-5.1%*	*5.8%*	*5.0%*	*4.0%*
% of sales	*30.3%*	*18.0%*	*17.3%*	*16.1%*	*15.3%*	*15.1%*	*6.0%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	5,208	5,492	5,882	6,136	7,011	7,459	7,841
Growth		*5.5%*	*7.1%*	*4.3%*	*14.3%*	*6.4%*	*5.1%*
% of sales	*47.8%*	*48.4%*	*52.6%*	*53.8%*	*55.0%*	*55.0%*	*55.0%*
Canada	600	591	516	515	561	597	641
Growth		*-1.5%*	*-12.7%*	*-0.2%*	*8.8%*	*6.4%*	*7.5%*
% of sales	*5.5%*	*5.2%*	*4.6%*	*4.5%*	*4.4%*	*4.4%*	*4.5%*
Other Americas	818	788	707	636	663	705	784
Growth		*-3.6%*	*-10.4%*	*-10.0%*	*4.3%*	*6.4%*	*11.2%*
% of sales	*7.5%*	*7.0%*	*6.3%*	*5.6%*	*5.2%*	*5.2%*	*5.5%*
France	705	696	596	583	637	678	713
Growth		*-1.3%*	*-14.4%*	*-2.2%*	*9.4%*	*6.4%*	*5.1%*
% of sales	*6.5%*	*6.1%*	*5.3%*	*5.1%*	*5.0%*	*5.0%*	*5.0%*
Other Europe	2,418	2,585	2,372	2,469	2,677	2,848	2,922
Growth		*6.9%*	*-8.3%*	*4.1%*	*8.4%*	*6.4%*	*2.6%*
% of sales	*22.2%*	*22.8%*	*21.2%*	*21.6%*	*21.0%*	*21.0%*	*20.5%*
Asia	1,141	1,186	1,100	1,069	1,195	1,271	1,354
Growth		*4.0%*	*-7.2%*	*-2.8%*	*11.8%*	*6.4%*	*6.5%*
% of sales	*10.5%*	*10.5%*	*9.8%*	*9.4%*	*9.4%*	*9.4%*	*9.5%*

Appendix 4: Ratios

Ratios	2014	2015	2016	2017	2018	2019
Profitability						
Gross margin	36.2%	36.4%	37.9%	37.5%	38.0%	38.0%
Operating (EBIT) margin	11.0%	11.8%	12.3%	13.4%	14.0%	14.5%
Net profit margin	6.7%	7.9%	8.5%	9.6%	9.8%	10.7%
Activity						
NFA (gross) turnover	0.93	0.96	1.02	1.01	0.91	0.93
Total asset turnover	0.70	0.72	0.74	0.73	0.69	0.69
Liquidity						
Op asset / op liab	1.40	1.31	1.71	1.05	1.09	1.27
NOWC Percent of sales	10.1%	8.9%	12.5%	8.6%	2.3%	5.8%
Solvency						
Debt to assets	24.2%	25.1%	24.4%	14.9%	14.1%	13.4%
Debt to equity	59.0%	64.8%	59.9%	34.3%	30.8%	27.7%
Other liab to assets	16.8%	17.7%	16.9%	18.7%	17.8%	16.8%
Total debt to assets	41.1%	42.8%	41.3%	33.7%	31.9%	30.2%
Total liabilities to assets	58.9%	61.3%	59.2%	56.5%	54.1%	51.6%
Debt to EBIT	3.08	2.88	2.73	1.67	1.50	1.38
EBIT/interest	7.63	7.97	8.16	9.36	13.89	15.12
Debt to total net op capital	29.5%	30.8%	29.8%	19.3%	18.2%	17.0%
ROIC						
NOPAT to sales	8.7%	9.2%	9.6%	10.8%	11.2%	11.6%
Sales to NWC	17.10	21.94	18.25	59.90	(1,288.14)	34.16
Sales to NFA	0.93	0.96	1.02	1.01	0.91	0.93
Sales to IC ex cash	0.88	0.92	0.97	0.99	0.91	0.90
Total ROIC ex cash	7.7%	8.5%	9.3%	10.6%	10.2%	10.5%
NOPAT to sales	8.7%	9.2%	9.6%	10.8%	11.2%	11.6%
Sales to NOWC	9.89	11.28	8.01	11.62	43.08	17.29
Sales to NFA	0.93	0.96	1.02	1.01	0.91	0.93
Sales to IC	0.85	0.88	0.91	0.93	0.89	0.88
Total ROIC	7.4%	8.1%	8.7%	10.0%	10.0%	10.2%
NOPAT to sales	8.7%	9.2%	9.6%	10.8%	11.2%	11.6%
Sales to EOY NWC	18.23	28.17	13.36	(29.79)	33.33	33.33
Sales to EOY NFA	0.95	0.97	1.05	0.88	0.89	0.92
Sales to EOY IC ex cash	0.91	0.94	0.97	0.90	0.87	0.90
Total ROIC using EOY IC ex cash	7.9%	8.7%	9.4%	9.7%	9.7%	10.4%
NOPAT to sales	8.7%	9.2%	9.6%	10.8%	11.2%	11.6%
Sales to EOY NOWC	10.14	12.96	5.75	60.82	32.29	11.60
Sales to EOY NFA	0.95	0.97	1.05	0.88	0.89	0.92
Sales to EOY IC	0.87	0.91	0.89	0.87	0.87	0.85
Total ROIC using EOY IC	7.6%	8.4%	8.6%	9.3%	9.7%	9.9%
EBIT / sales	11.0%	11.8%	12.3%	13.4%	14.0%	14.5%
Sales / avg assets	0.70	0.72	0.74	0.73	0.69	0.69
EBT / EBIT	86.9%	87.4%	87.7%	89.3%	92.8%	93.4%
Net income /EBT	70.1%	76.8%	78.7%	80.3%	75.7%	79.0%
ROA	4.7%	5.7%	6.3%	7.1%	6.8%	7.4%
Avg assets / avg equity	2.42	2.50	2.51	2.37	2.24	2.12
ROE	11.4%	14.3%	15.8%	16.7%	15.2%	15.6%

Appendix 5: 3-stage DCF Model

		First Stage		Second Stage				
		2018	2019	2020	2021	2022	2023	2024
Sales Growth		*6.4%*	*5.1%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
NOPAT / S		*11.2%*	*11.6%*	*12.0%*	*12.0%*	*12.5%*	*12.5%*	*13.0%*
S / NWC		*33.33*	*33.33*	*12.50*	*12.50*	*12.50*	*12.50*	*12.50*
S / NFA (EOY)		*0.89*	*0.92*	*0.92*	*0.93*	*0.93*	*0.94*	*0.94*
S / IC (EOY)		*0.87*	*0.90*	*0.86*	*0.87*	*0.87*	*0.87*	*0.87*
ROIC (EOY)		*9.7%*	*10.4%*	*10.3%*	*10.4%*	*10.8%*	*10.9%*	*11.4%*
ROIC (BOY)			*10.6%*	*11.3%*	*10.8%*	*11.4%*	*11.4%*	*11.9%*
Share Growth			*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales		$13,561	$14,255	$14,968	$15,717	$16,503	$17,328	$18,194
NOPAT		$1,519	$1,654	$1,796	$1,886	$2,063	$2,166	$2,365
Growth			*8.9%*	*8.6%*	*5.0%*	*9.4%*	*5.0%*	*9.2%*
- Change in NWC		835	21	770	60	63	66	69
NWC EOY		*407*	*428*	*1197*	*1257*	*1320*	*1386*	*1456*
Growth NWC			*5.1%*	*180.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
- Chg NFA		724	258	775	630	845	689	922
NFA EOY		*15,238*	*15,495*	*16,270*	*16,900*	*17,745*	*18,434*	*19,355*
Growth NFA			*1.7%*	*5.0%*	*3.9%*	*5.0%*	*3.9%*	*5.0%*
Total inv in op cap		1559	278	1545	690	908	755	991
Total net op cap		15644	15923	17467	18157	19065	19820	20811
FCFF		($40)	$1,375	$252	$1,196	$1,155	$1,411	$1,374
% of sales		*-0.3%*	*9.6%*	*1.7%*	*7.6%*	*7.0%*	*8.1%*	*7.6%*
Growth			*-3567.2%*	*-81.7%*	*375.4%*	*-3.5%*	*22.2%*	*-2.6%*
- Interest (1-tax rate)		109	109	114	118	123	128	133
Growth			*0.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*	*4.0%*
FCFE w/o debt		($149)	$1,266	$138	$1,078	$1,032	$1,283	$1,241
% of sales		*-1.1%*	*8.9%*	*0.9%*	*6.9%*	*6.3%*	*7.4%*	*6.8%*
Growth			*-949.4%*	*-89.1%*	*681.8%*	*-4.3%*	*24.3%*	*-3.3%*
/ No Shares		149.6	149.6	149.6	149.6	149.6	149.6	149.6
FCFE		($1.00)	$8.46	$0.92	$7.20	$6.90	$8.57	$8.29
Growth			*-949.4%*	*-89.1%*	*681.8%*	*-4.3%*	*24.3%*	*-3.3%*
* Discount factor		0.91	0.82	0.74	0.67	0.61	0.55	0.50
Discounted FCFE		($0.90)	$6.94	$0.69	$4.85	$4.21	$4.74	$4.15
Third Stage								
Terminal value P/E								
	Net income	$1,335	$1,524	$1,682	$1,768	$1,940	$2,038	$2,232
	% of sales	*9.8%*	*10.7%*	*11.2%*	*11.2%*	*11.8%*	*11.8%*	*12.3%*
	EPS	$8.92	$10.19	$11.24	$11.81	$12.96	$13.62	$14.92
	Growth		*14.2%*	*10.4%*	*5.1%*	*9.7%*	*5.1%*	*9.5%*
	Terminal P/E							19.50
	* Terminal EPS							$14.92
	Terminal value							$290.90
	* Discount factor							0.50
	Discounted terminal value							$67.68

Summary

First stage	$6.04	Present value of first 2 year cash flow
Second stage	$18.64	Present value of year 3-7 cash flow
Third stage	$145.69	Present value of terminal value P/E
Value (P/E)	**$170.37**	= value at beg of fiscal yr 2018

Appendix 6: Porter's 5 Forces

Threat of New Entrants - Low

New entrants are rare in the tools and hardware industry due to the large amounts of capital needed in order to enter the marketplace. In addition, the companies already in the industry have loyal customers.

Threat of Substitutes - High

Stanley Black & Decker has strong brand recognition that attracts and keeps loyal customers. Lower cost options are still there and place a threat to growing profit margins.

Buyer Power- High

It is difficult for Stanley Black & Decker to increase profit margins due to consumer's elasticity of demand. Consumers have numerous other options in the tools and hardware industry and have a high degree of power over the manufacturer.

Supplier Power- Low

Suppliers compete on price in the industry because of the interchangeable nature of raw materials.

Competitive Rivalry- High

SWK's competitive threat can mostly be found in the international market. Most of the major players in the industry are foreign-based so fluctuations in the US dollar can have a great affect SWK's international market share.

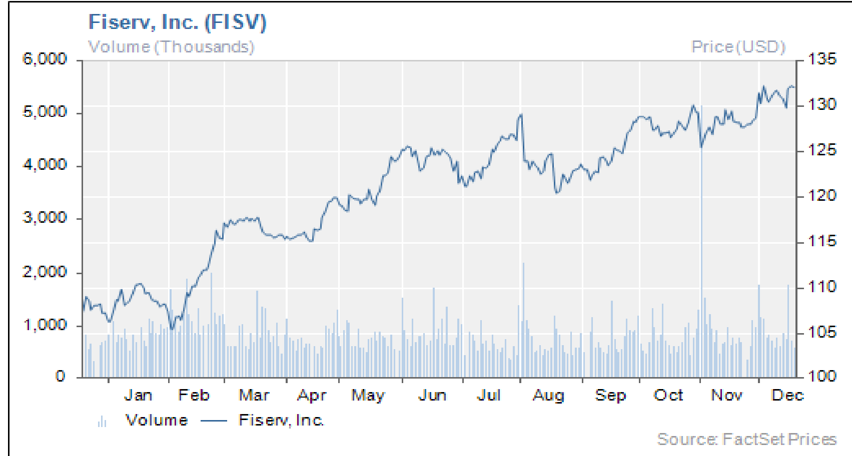
Appendix 7: SWOT Analysis

Strengths	Weaknesses
Well-known brands Large Market Share	Margins Currency Fluctuations
Opportunities	**Threats**
Acquisitions Economic Conditions Emerging Markets	Loss of Customers Lack of Product Diversity

Recommendation	BUY
Target Price	$168
Current Price	$130.11 (Feb 5)
52 week range	$104.51 - $133.36

Financial Technology

Fiserv.



Share Data	
Ticker:	FISV
Market Cap. (Billion):	$27.54
Inside Ownership	0.4%
Inst. Ownership	90.6%
Beta	0.90
Dividend Yield	0.00%
Payout Ratio	0.00%
Cons. Long-Term Growth Rate	0.0%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$5.25	$5.51	$5.70	$5.98	$6.29
Gr %		4.8%	3.5%	4.9%	5.2%
Cons				$5.69	$6.02
EPS					
Year	$2.99	$3.98	$5.01	$5.27	$6.03
Gr %		32.9%	25.9%	5.3%	14.4%
Cons	-	-	$5.08	$5.74	$6.39

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	23.9%	35.8%	35.8%	19.4%	18.7%
Industry	16.7%	20.8%	20.6%	25.6%	21.9%
NPM (%)	13.6%	16.9%	19.7%	19.9%	19.9%
Industry	10.6%	12%	11.8%	17.7%	18.3%
A. T/O	0.56	0.58	0.58	0.59	0.61
ROA (%)	7.6%	9.7%	9.7%	11.6%	12.1%
Industry	5.9%	7.1%	7.0%	8.4%	8.8%
A/E	46.6%	46.8%	50.1%	NA	NA

Valuation	'15	'16	'17	'18E
P/E	31.4	32.2	31.4	23.0
Industry	31.6	34.9	49.5	27.3
P/S	4.17	4.35	5.05	4.57
P/B	7.3	9.0	11.7	4.1
P/CF	16.6	16.5	20.2	13.8
EV/EBITDA	19.7	19.3	19.3	18.9

Performance	Stock	Industry
1 Month	2.9%	11.1%
3 Month	5.6%	4.5%
YTD	24.4%	-15.8%
52-week	23.1%	-19.4%
3-year	44.5%	-9.4%

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Summary: I recommend a Buy rating with a 1-year price target of $168. Fiserv's historical strength and long-term, revenue generating customer list provides a stable base for their gross margin and international expansion. While my forecasts are still below market estimates, I believe Fiserv will be given a higher valuation premium due to its competitive edge, shareholder capital allocation, and superior product suite.

Key Drivers:

Bank & Financial Services Spending: As interest rates normalize and digital banking grows due to new generational demand, Fiserv positioned well with its existing banking and financial institutional customers to leverage this growth.

Gross margin expansion and operational efficiency: Fiserv's current gross margin expansion initiative is beating expectations and I predict this outperformance will continue into 2018 and 2019.

P2P Payments Leader: As Peer-to-peer Payments grow exponentially globally, Fiserv's existing Payments Segment will continue to be an application-neutral leader within the processing and architectural layers throughout the networks.

Competition & Industry: Looking at the financial, valuation, and product suite categories, Fiserv continually holds leading positions among its peer group. Valuation multiples continue to be at the mid to low end while profit margin growth and shareholder capital return outpaces the competition.

International Opportunity: Emerging markets are predicted to massively come online within the payments and banking industries within the over the next 2-5 years. Fiserv's existing products have proven to be the industry standard and this market will provide the company with an entirely new revenue opportunity.

Valuation*:* Assuming a stagnant PE ratio and continued earnings growth, FISV is valued at $176.88. On a relative P/CF basis, when looking at its peer group, FISV should be trading at $150.76. The three stage DCF results in an absolute valuation of $157.01.

Risks*:* FISV's largest risk is the continued consolidation of financial institutions. Cyber security, product failure, and increasing debt load are other large risks.

Company Overview

Fiserv, Inc. (FISV) is a financial services IT company that operates through two segments: Payments & Financial. Fiserv's financial segment services banks, credit unions, and other financial companies through its product suite of digital banking, mobile applications, and back office software. Fiserv creates longstanding contracts mostly with middle market (<$25 Billion AUM) depository institutions along with smaller investment banks, trading institutions, and FinTech companies. Their Payments section focuses on P2P payments, electronic payment processes, and merchant / card software. The Payments products include the Zelle™ P2P banking payments app and EMV credit card processing.

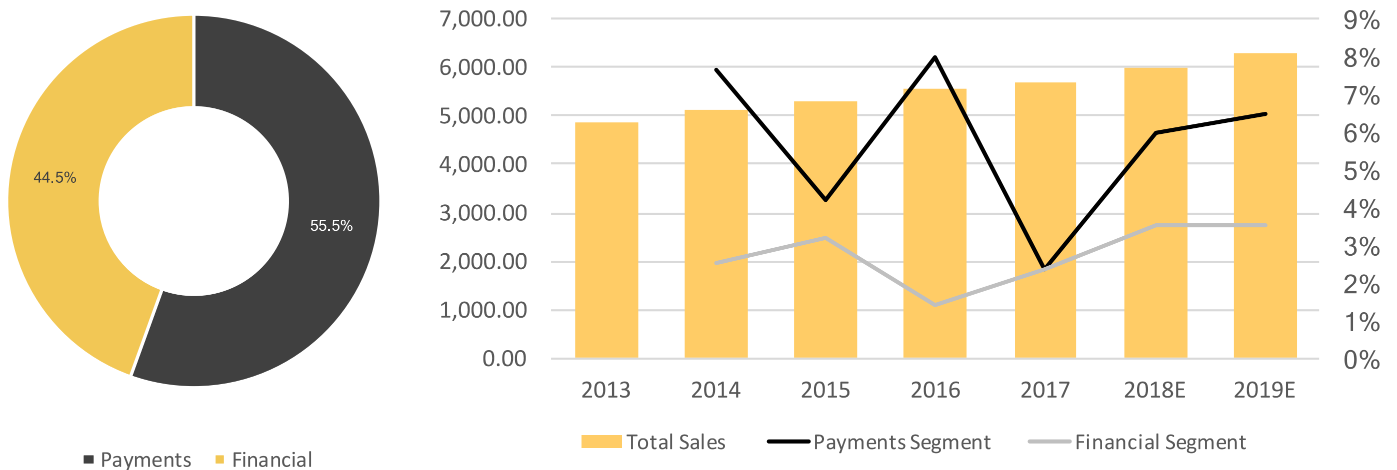
Fiserv's growth catalysts include the accelerating growth of online banking where Fiserv designs the software, processing services, and applications for some of the world's largest banks and credit unions. Additionally, the continued emergence of digital Peer-to-Peer payments is Fiserv's growth engine.

Headquartered in Brookfield, WI, FISV has over 23,000 employees globally. The company was founded in 1984 when First Data Processing & Sunshine State Systems merged to create Fiserv – a data processing company focused on the financial services industry. FISV went public on the NASDAQ in 1986 and became a $1B sales company in 1998.

Fiserv operates through only two business segments, Payments accounts for 56% of sales and their Financial segment accounts for 44% of sales:

- **Payments (56%):** Segment includes electronic banking payments (~30%), card services (25%), billing and merchant solutions (20%), investment servicing (15%) and other services (10%).
- **Financial (44%):** Segment includes account processing (~70%), item processing (15%), and lending solutions (15%).

Figure 1: Fiserv 2017 Business Segmententation & Historical Segment Growth + Sales in Millions of USD



Source: Company Filings

Business/Industry Drivers

Fiserv's company and industry drivers can be found below:

1) Bank & Financial Services Spending
2) Gross Margin Expansion and Operational Efficiency
3) P2P Payments Leader
4) Competition & Industry
5) International Opportunity

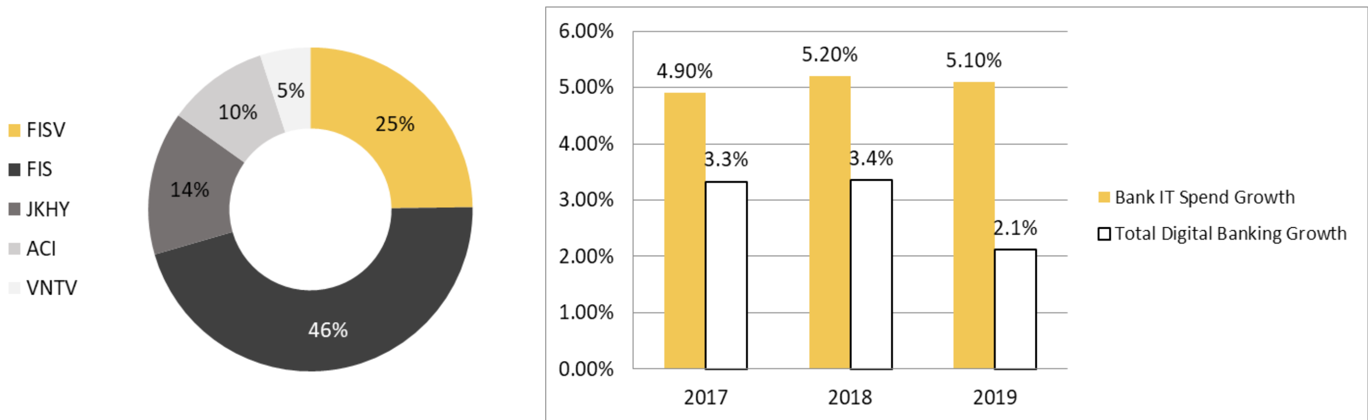
On a population weighted average, digital banking usage will grow 2.7% per year for the next two years.

Bank & Financial Services Spending

Financial services security and digitization has been a growing concern globally. Digital banking, of which Fiserv owns 24.8% of the market, is the main sub-segment behind Fiserv's financial business unit. As millienials, baby boomers, and all generations in between demand online banking, banks are continuing to engage Fisev for full turnkey mobile and online banking suites.

The market believes bank consolidation, expanded upon later within the risks section, has dimmed Fiserv's long-term growth prospects. On the other hand, overall bank and credit union spending has continued to grow in Fiserv's target market, the $1B – 10B AUM segment is the leader in IT spending.

Figures 2 & 3: Bank IT Market Share & Bank IT Spend vs. Digital Banking Usage Growth



Source: Company reports & IDC

1 in 3 financial institutions trust Fiserv for its account processing

Currently, IT spending for all financial institutions is 10-15% of their annual budgets and is expected to rise 500bps by 2018. With pressure by both the IMF for digitalization of banking and the U.S. regulatory agencies for increased security through digital processes, Fiserv has positioned itself with both its ongoing contracts and new business to build out the midmarket's IT capabilities. The drivers behind this increased IT spending will come both from customer demand for the tools, features, and security needed along with the increase in banking top-line growth from higher interest rates and loan growth.

On a more macro level, with interest rates expected to begin their normalization path in the next few years, banks and credit unions are going to become more profitable with as net interest rate spreads widen. This increase in topline will also help drive financial services IT spending.

Further, Fiserv management is continuing to target the <$25B AUM financial institutions, with an increased focus on credit unions. According to IDC, total North American financial institution tech spending is going to be $78B in 2017. Assuming Fiserv is on target for its FY2017 financial segment

revenue estimate of $2.53B, one could assume that Fiserv holds approximately 3.24% of the total banking IT spending. It is fair to project that banking IT spending will accelerate beyond the IDC & internal Fiserv estimates due to the increase in banking topline revenue from rate normalization and the threat from growing FinTech firms and new technology. Assuming just a 50bps increase in IDC and macro growth estimates would lead to a 7.24% increase in EPS[1].

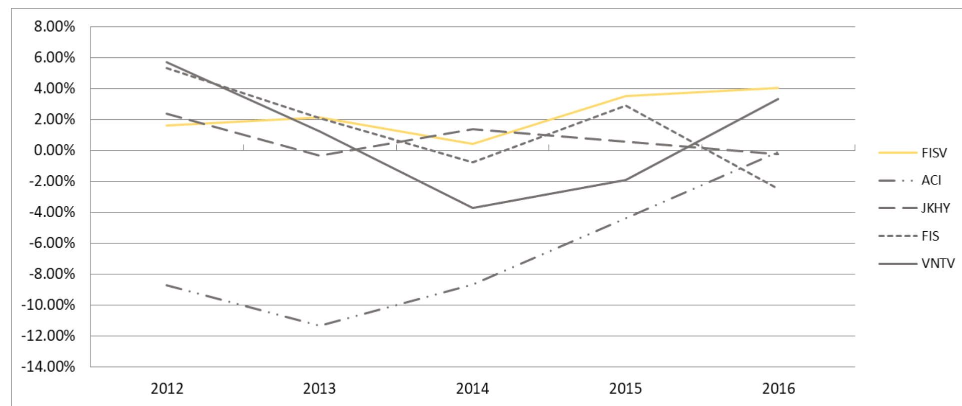
Gross Margin Expansion & Operational Efficiency

One of Fiserv's three long-term shareholder initiative includes "high-quality revenue which we define as long-term and recurring with attractive margin."[2] This has started to take hold with both the gross and operating margins increasing ~4% in 2018 and ~5.92% and 2019, respectively.

At the gross margin level, Fiserv has been outpacing all peers on the gross margin growth and is only second to ACI on the absolute gross margin, but as seen in Figure 4 below ACI has been experiencing steep gross margin declines. Fiserv's gross margin improvements are expected to continue with 50bps acceleration for the next 2-3 years according to management commentary.

Fiserv has experienced the fastest gross margin growth through its workforce optimization and atomization efforts

Figure 4: Fiserv & Peers Gross Margin Growth



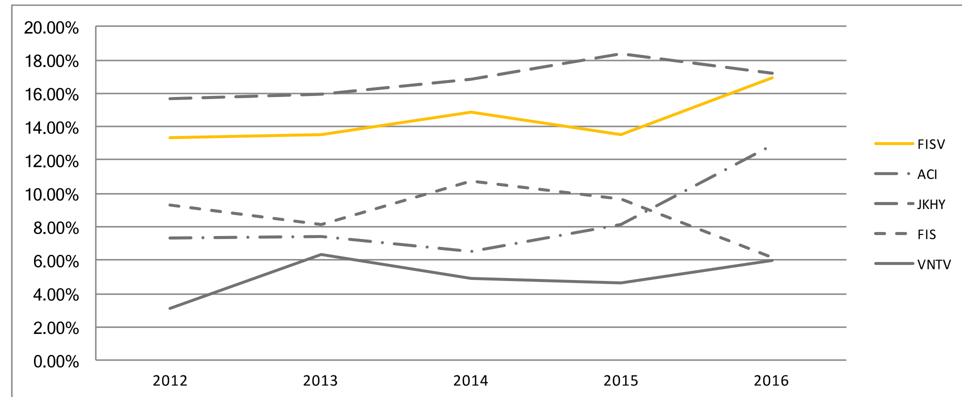
Source: Factset

Fiserv's most recent operational initiative included a $60M work force optimization project which the company is well on track to outperform. Historically, Fiserv has had industry leading gross margin growth and has continued to focus on 50bps expansion annually.

Operational efficiency is being achieved through consolidation of Fiserv's data centers and as the firm transitions much of its client process and data to off-site cloud storage. Figure 5 shows Fiserv has historically been operating at lower margins than Jack Henry & Associates – one of its largest direct competitors within the online banking and financial services software space. Over the next few years I expect Fiserv will operate at higher margins compared to JKHY as it continues to focus on operational efficiency.

[1] Assuming stagnant net margins of 16% and an unchanged PE of 31
[2] Q2 2017 Earnings Call Transcript - Factset

Figure 5: Fiserv & Peers Historical Operating Margin



Source: Factset

P2P Payments Leader

The most recent FinTech trend has been the significant growth of Peer-to-Peer (P2P) technology such as blockchain and crypto-currencies. In September 2017, Fiserv brought Zelle to the digital banking market with many of its existing banking and credit union partners along with outside firms. Zelle offers an integrated solution within a user's existing banking applications – unlike Venmo, Paypal, or Square Cash where the users must connect, verify, and integrate the banking connection on their own.

Zelle's biggest value add is its instant account integration with the largest banks

In all, Zelle has been backed, both financially and strategically, by 30 of the largest financial institutions. There has been little to no discussion from Fiserv's management what the Zelle product will do to FISV's existing P2P Payment framework, PopMoney, and the potential cannibalization effect Zelle might cause.

Figure 6: P2P Payment Product Matrix

Product	Zelle	Venmo	Paypal	Square Cash	Messenger	Circle	Bitcoin
Company	Fiserv	Paypal	Paypal	Sqaure	Facebook	Circle	N/A
Bank Integration	Integrated	User	User	User	User	User	N/A
Payment Settlement	Instant	T+2	T+2	T+2	Unkown	T+2	Instant
LatestQuarterly Volume	$16B	$6.8B	$99B	~0.9B	Uknown	Uknown	$59B

Source: Company websites, earnings releases, press releases, blockchain.info

Payment markets rely on network effect – where the product becomes more valuable with every user that joins the payment network - and therefore these applications are some of the hardest to start. Strategically, Fiserv made a successful move in targeting the payment sources, banks and credit unions, and then forcing the users to take a serious look at a product that already ships with any online / digital banking application. With the integration of these banks, Zelle is on track to be available to over 86 million users within the United States – capturing 37.4%[3] of the American banking user base.

Looking forward, as the P2P payment industry evolves and expands, P2P lending will also start to pick up. With the early on difficulties and failures from LendingClub and Prosper MarketPlace, P2P lending has cooled down due to regulatory constraints and P2P due diligence difficulties. It is easy to picture Fiserv and its Zelle / PopMoney products becoming important players within the P2P lending industry when the regulatory approval moves forward.

[3] Using US Census data of 247.8 million adults in the United States and FDIC data of 93% of adults having a bank account

The financial IT segment is becoming increasingly threatened by FinTech startups and blockchain technology

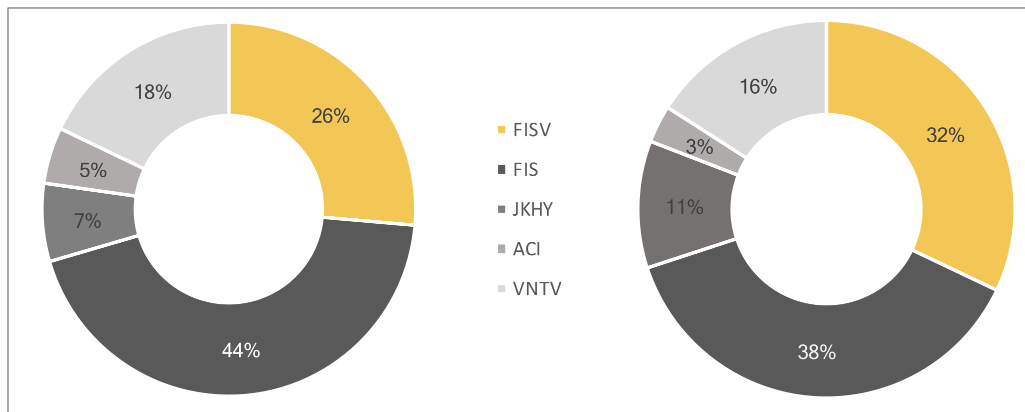
On the other hand, blockchain and cryptographically enabled P2P lending solutions such as SALT and R3ve have gained global traction with their current bypassing of the regulatory frameworks. These decentralized services utilize the P2P architecture of the blockchain and bypass the usual banking payment infrastructure. Fiserv invested $5 million in the Series A of Chain, an enterprise-level blockchain infrastructure company, positioning itself with a leading blockchain company focusing on both the banking architecture and P2P payments industry. This investment is expected to grant Fiserv early access to Chain's banking products that Fiserv could wrap into its existing product offerings.

Competition & Industry

The financial services IT industry is controlled by the main five players listed in Figure 7 & 8, with their market share being over 96% of the total market. New entrants by traditional financial software entrants has been road-blocked by the long-term contracts and relationships that many of the companies have formed with existing banks and credit unions. However, most recently, the introduction of untraditional FinTech and blockchain startups has started to disrupt parts of the industry.

Looking at Fiserv specifically, the company contributes 28% of the markets sales while controlling 32% of the market capitalization, implying that Fiserv's efforts within gross margin expansion, operational efficiency, and long-term, high cash flow contracts has convinced the market to value its sales higher than FISV's peers.

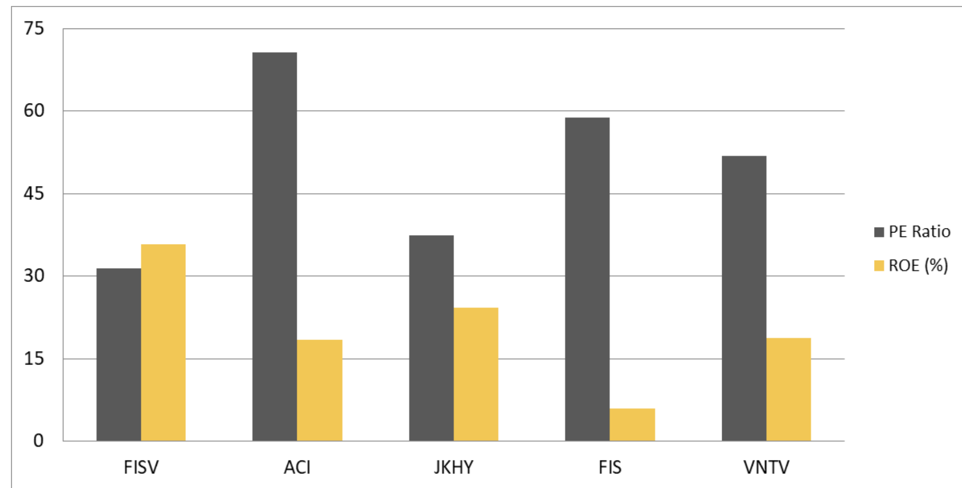
Figures 7 and 8: FISV & Peers Revenue Share (left) & FISV & Peers Market Share (right)



Source: Factset

Against its four main competitors, Fiserv has the lower P/E ratio and the highest ROE (Figure 9) – assuming a peer weighted average PE of 47 and a peer weighted average ROE of 20.00%. The low PE is most likely due to the market being concerned about Fiserv's high debt load in relation to peers; the debt amount will be looked at further within the risks section.

Figure 9: Fiserv & Peers PE Ratio (grey) and Fiserv & Peers Return on Equity (yellow)

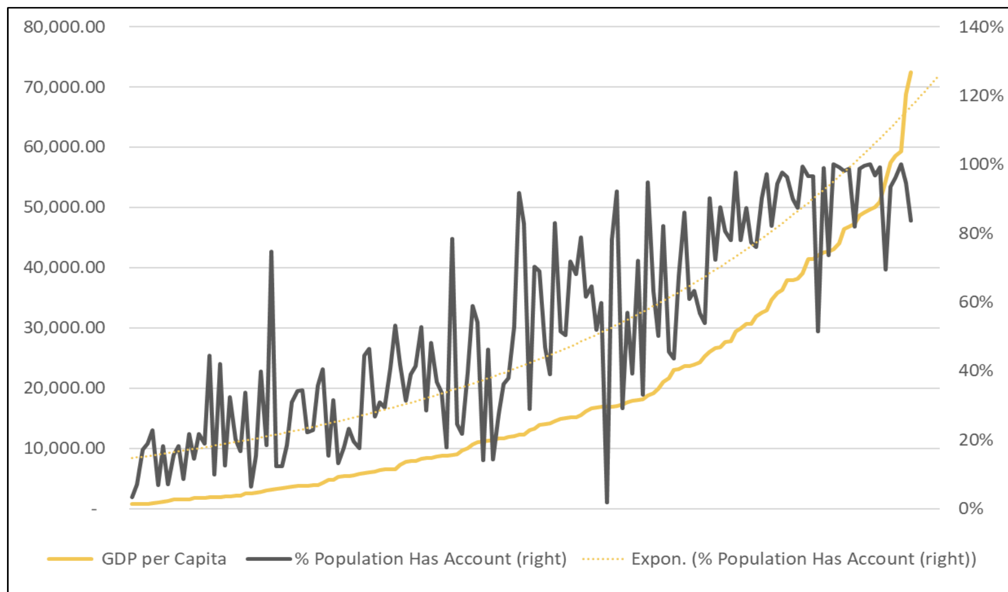


Source: Factset

International Banking Opportunity

The World Bank Group estimates that ~2 billion people globally remain without a bank account[4] with ~233 million individuals creating an account annually[5]. Both the World Bank and the IMF agree that financial technology and digital banking systems will drive global adoption of depository institutions. Specifically, the World Bank estimates that in "Sub-Saharan Africa, 12 percent of adults (64 million adults) have mobile money accounts (compared to just 2 percent worldwide); 45 percent of them have only a mobile money account."[6]

Figure 10: GDP per Capita by Country Compared to Percent of Population that has a Bank Account by Country with Percent of Population Trend line



Source: IMF Estimates, The World Bank, & Bloomberg

[4] http://www.worldbank.org/en/programs/globalfindex
[5] http://www.worldbank.org/en/programs/globalfindex
[6] http://www.worldbank.org/en/programs/globalfindex/overview

As seen in Figure 10, there is a 0.719 correlation coefficient between the percent of population that has a bank account within a country and the GDP per capital by country. As the entire continent of Africa, South Eastern Asia, and Far Western Asia come online with digital banking, Fiserv and the financial services IT industry have a massive opportunity at hand. The IMF estimates that the emerging economies - this is excluding China for this report's purposes - GDP per capita will grow at 5% on average for the next five years. Assuming "emerging" is defined as a nominal GDP per capita below $20,000 and excluding any sanctioned nations or countries that cannot have American financial services within them, there will be ~76 million new bank accounts created in the next twelve months and ~108 million bank accounts created in the following twelve months. In total, the next five years are expected to bring 811 million bank accounts online within the emerging economies alone.[7]

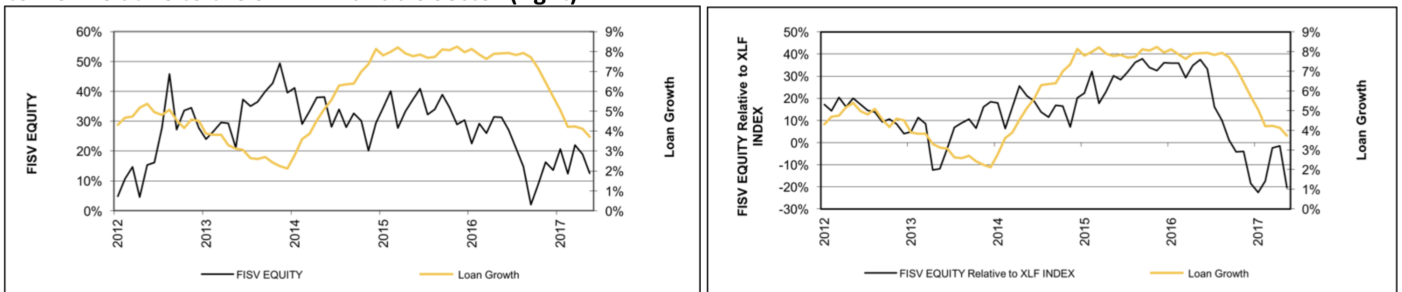
This growth in the digital banking industry is driven by the mobile phone ownership and stable communication infrastructure in the emerging economies. In Kenya alone, it is estimated that more than 88% of the population owns a cellular phone[8] - this figure is higher than many developed nations in Asia and South America.

Macroeconomic Trends

Looking at the broader picture, Fiserv – being a major vendor for financial services – is indirectly linked to banking growth. As interest rate spread increases and loan growth continues, bank IT and general spending will follow. See charts below for loan growth correlation with Fiserv and the financial sector (XLF ETF).

Loan growth change has a correlation coefficient of 0.562 when compared to the Fiserv relative XLF (financial sector) performance. Following the supplier to assembler "spiral" this would make sense as bank suppliers will outperform the banks themselves – especially when the supplier is software / IT based. However, when looking at only Fiserv compared to loan growth there is little to no performance correlation.

Figure 11 & 12: Commercial & Retail Total Loan Growth compared to FISV (left) & Loan Growth Compared to FISV relative to the SPDR Financials Sector (right)



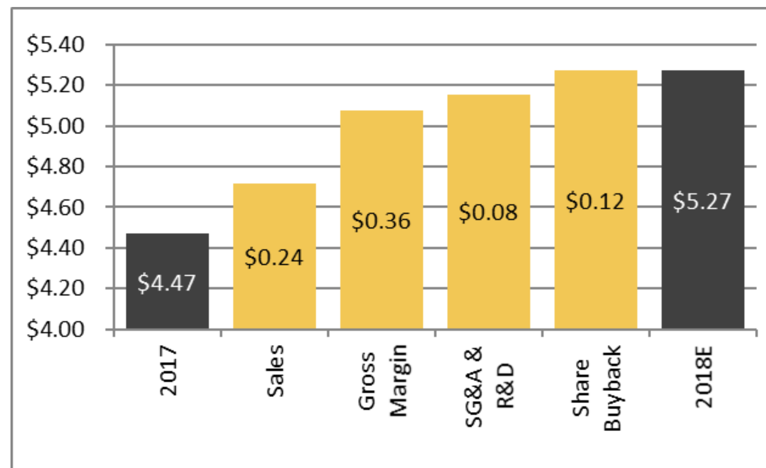
Source: Bloomberg, IMCP

[7] Assuming GDP + 300bps growth rate on account creation for 2 years, +250bps growth for one year, and +200bps growth for the last two years.
[8] http://www.ca.go.ke/index.php/what-we-do/94-news/366-kenya-s-mobile-penetration-hits-88-per-cent

Financial Analysis

I expect FISV's EPS to grow to $5.27 in 2018 – up from $4.47 in 2017. Sales growth, driven by strength in the Payments Segment, will be a large driver with $0.24 in EPS accretion alone. Fiserv's gross margin expansion and operational efficiency initiatives are expected to continue into 2018 and will account for $0.36 and $0.08 respectively. Management expects to continue the current share buyback program in 2018 which will add an additional $0.12 in EPS. Share buybacks could increase in 2018 as the cash balance grows. The Zelle™ investment will also begin to wind down leading to further opportunities for buybacks – management has not mentioned anything regarding debt repayment even as Fiserv's debt-to-assets ratio continues to grow into record territory.

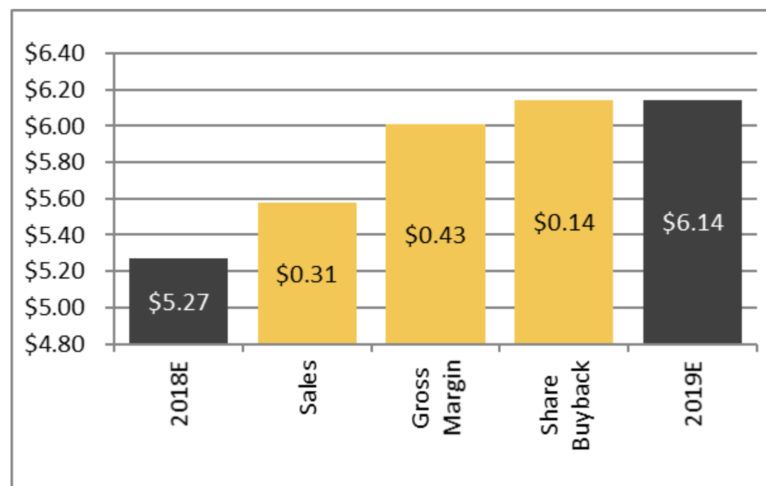
Figure 13: 2018 EPS Drivers Quantification



Source: Company reports, Management commentary, & IMCP

FISV's 2019 EPS will expand to $6.14 from the previous $5.27 in 2018. Sales growth will continue to be a main contributor as the international banking and payments initiative begins to take hold in many of the emerging markets. Further gross margin expansion will lead the EPS uptick as SG&A efficiencies plateau. Share repurchasing will also account for $0.14 as FISV closes out its buyback program.

Figure 14: 2019 EPS Drivers Quantification



Source: Company reports, Management commentary, & IMCP

Estimate & Consensus Comparison

Looking at the four main financial benchmarks below, my estimates are mostly lower across the board – except for an above average gross margin figure as FISV's automation and efficiency initiatives expand further. The 2018 numbers are relatively lower than 2019 since I believe there will be a hesitancy throughout the banking industry as interest rates don't rise as fast as the market believes. Additionally, banks won't carry the interest spreads down their P&L and into increased spending. Moving into 2019, I believe the internationalization of P2P payments and online banking will begin to expand more rapidly and FISV will be positioned well to take advantage of this new opportunity.

Figure 15: FISV Estimates vs. Market Consensus

	Estimate		Consensus	
	2018E	2019E	2018E	2019E
Revenue	$5,976	$6,286	$6,024	$6,295
Gross Margin	$2,928	$3,206	$2,876	$2,911
Net Income	$1,014	$1,119	$1,186	$1,256
EPS	$5.27	$6.14	$5.74	$6.39

Source: FactSet, Estimates

My revenue estimates are lower as management commented that M&A targets will remain small and non-material to top-line growth as FISV continues to target back-office technology for their M&A strategy and not companies that will significantly change FISV's financial standing in the short-term.

My EPS estimates may rise if management continues to expand their share buyback program if no other cash intensive investments or acquisition targets arise. One management comment that is interesting is that shares repurchases are "generally held for issuance in connection with our equity plans" and not directly used for fundraising down the road. This does align with the fact that FISV's share count has steadily declined from 394M in 2014 to 223.9 today.

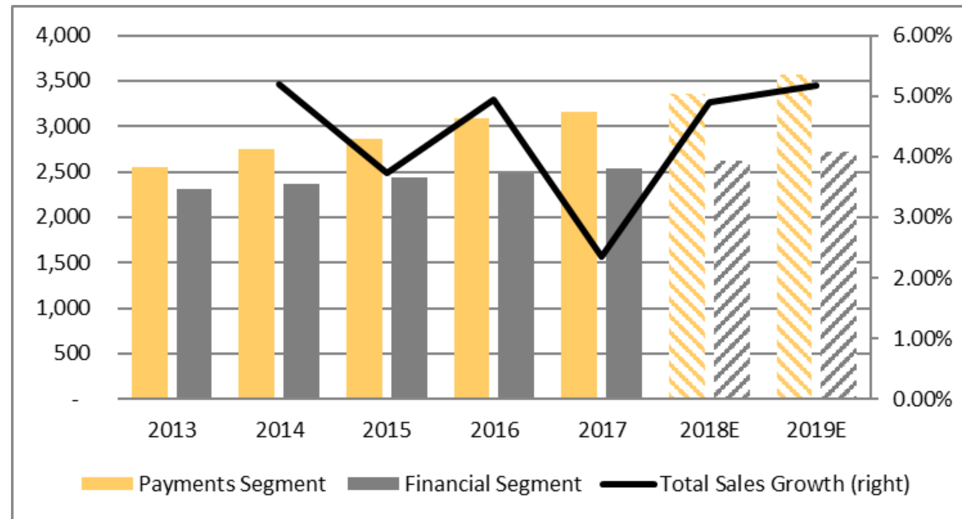
Revenues

FISV's overall revenue growth has been steady over the last four years with an average annual growth rate of 4.1%. The Payments Segment has been the growth engine with an average growth rate of 5.5% as the P2P payments, credit payments, and payments infrastructure industries quickly expand both domestically and abroad.

The strength within the Payments Segment has made up for the sluggish (2.4% annually) growth within the Financial Segment due to the low interest rate environment and poor loan growth within the banking industry leading to a stagnation in investment and spending. The recent uptick in bank consolidation has also proven itself as an ongoing risk for FISV as their customer base shrinks in unit size and larger financial institutions take much of the account processes and technology stack in-house.

Looking forward, I expect 2018 to see a ~100bps jump in the slower Financial Segment as interest rates normalize globally and banks begin to have more funds to spend within their interest spreads. Additionally, as digital banking and security move further into the spotlight, smaller banks and regional credit unions will be forced by their customer base and regulators to increase the spending on technology. I also believe 2019 will be the year that many of the developing nations within EMEA and SEA come to market within digital banking.

Figure 16: Revenue Breakdown & Sales Growth 2013-2019E



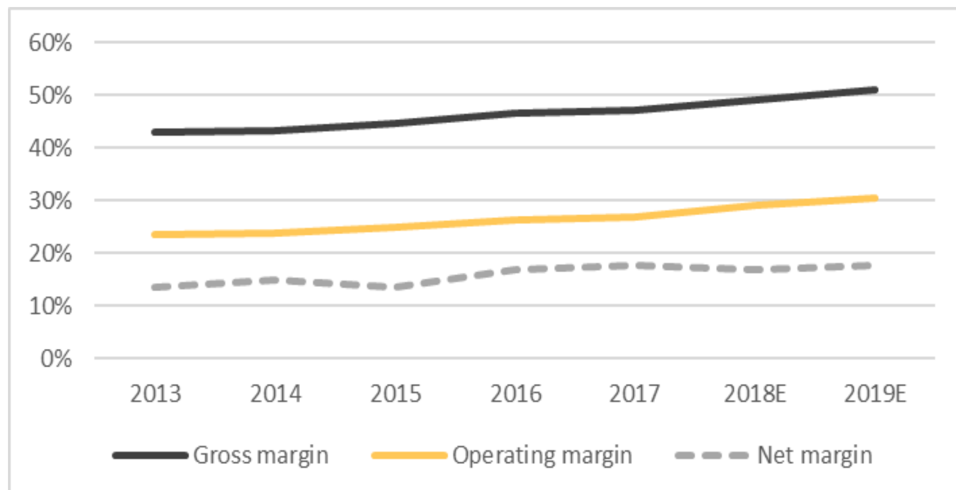
Source: Company reports, IMCP, & estimates

The payments segment will continue to be the growth engine for FISV as global P2P payments rapidly expand with 6.0% & 6.5% top-line growth in 2018 and 2019 respectively. FISV understands the FinTech disruptions within the P2P arena pose a large risk to its other financial business unit as robo-banking, online wealth management, and digital currencies begin to shift the banking and financial services world. The firm's payment segment acts almost as a direct hedge to this risk as FISV has invested largely in the architectural layer of the P2P payments industry and not directly in the consumer facing application layer which can easily change with the low stickiness of applications. In other words, as the payments, shadow banking, and non-traditional banking sector grows and takes market share away from the traditional banks, FISV is well positioned to guard itself against this potential migration.

Operating Income and Margins

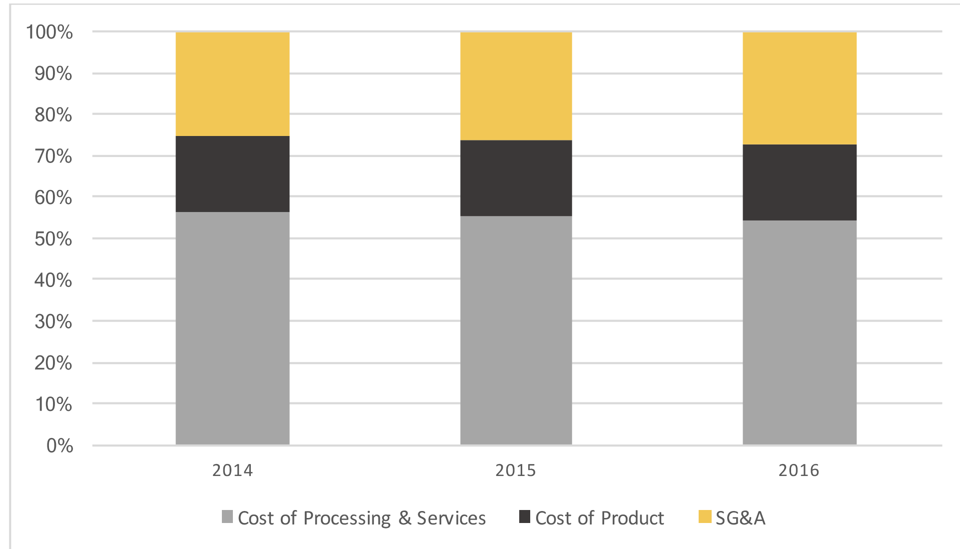
Direct costs, which account for ~75% of FISV's expenses include cost of product / software, cost of processing, and cost of services. The gross margin gains in both 2016 and 2017 came from an "increase in higher-margin software license revenue" as FISV builds on its already long-standing customer base and brings longer-term contracts to market.

Figure 17: Gross, Operating, & Net Margin 2013-2019E



Source: Company Filings, Estimates

Figure 18: Historical Breakdown of Costs



Source: Company Filings

Looking at Figure 18, FISV's gross margin expansion has been successfully implemented as the technology stack moves into the cloud, direct workforce optimization and consolidation occurs, and more business shifts into the payments segment. I hypothesize that the Financial Segment revenues are of lower quality when compared to the Payments Segment as the large financial institutions have far more negotiation leverage with FISV when compared to smaller P2P payment apps, credit processors, and other Payments customers.

Return on Equity

FISV's ROE is the highest among its industry competitors as seen in Figure 9. Driven by FISV's exceptional net margin and return on assets, its ROE over the last 4 years has been steadily increasing and outpacing most of the industry's broader growth. Looking forward, Gross and operating margin expansion will drive ROE higher but I also expect FISV's higher than normal debt load to artificially prop up this ROE.

Figure 19: FISV Return on Equity Breakdown

3-Stage DuPont Analysis	2013	2014	2015	2016	2017	2018E	2019E
3-stage							
Net income / sales		14.9%	13.6%	16.9%	17.6%	17.0%	17.8%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%

Free Cash Flow

Figure 20: FCF FY2013 – FY2019E

Free Cash Flow	2013	2014	2015	2016	2017	2018E	2019E
NOPAT	$746	$765	$882	$894	$1,000	$1,137	$1,258
Growth		*2.6%*	*15.3%*	*1.3%*	*11.9%*	*13.7%*	*10.6%*
NWC*	741	921	955	933	1,013	1,063	1,118
Net fixed assets	7,085	7,941	7,851	7,834	8,015	8,187	8,382
Total net operating capital*	$7,826	$8,862	$8,806	$8,767	$9,028	$9,249	$9,499
Growth		*13.2%*	*-0.6%*	*-0.4%*	*3.0%*	*2.5%*	*2.7%*
- Change in NWC*		180	34	(22)	80	50	55
- Change in NFA		856	(90)	(17)	181	172	195
FCFF*		($271)	$938	$933	739	$915	$1,008
Growth			*-446.2%*	*-0.6%*	*-20.8%*	*23.9%*	*10.1%*
- After-tax interest expense	103	99	107	98	106	123	139
FCFE**		($370)	$831	$835	$633	$792	$869
Growth			*-324.9%*	*0.5%*	*-24.2%*	*25.2%*	*9.7%*
* NWC excludes cash							
** No adjustment is made for debt							

Outside of the sharp 2014 decrease[9], FISV's free cash flow has been relatively stable over the last four years. The modest jump in NWC and NFA in 2017 were due to FISV's M&A strategy continuing to be one of its largest uses of cash – management considers M&A a cornerstone to FISV's technology and product portfolio as the payments and financial infrastructure industries move far faster than organic internal R&D.

I expect FCFE to remain around the $650M - $850M range over the next two years as FISV builds out it P2P payments infrastructure via M&A and continues to buy back shares as profitability increases. I could see a pick-up in investment as international markets come online and FISV capture the global payment network opportunity as touched on in the drivers section.

[9] Due to a large acquisition leading to an increase in intangible assets on FISV's balance sheet

Valuation

FISV was valued using a one year EPS outlook, a market peer weighted PE ratio multiple, and a 3-stage DCF model. Looking at the current PE and 2018E EPS, I find a one-year discounted price of $176.88, a ~36% premium over today's price. Moving onto a peer weighted PE multiple, FISV is valued at ~$198 due to the high PE's of ACIW and FIS. The PE multiple price results in a ~50% premium on today's price. The relative valuation section finds a fully valued FISV at today's price of ~142. Finally, the absolute valuation presented within the 3-stage DCF model values FISV at $157, a ~19% premium at current prices. Averaging these valuation methods leads to a target price of $168.47.

Trading History

FISV is trading at a ~10.7% premium to its 10-year S&P 500 relative PE valuation average. While valuations are still ripe, earnings have caught up recently both in respect to FISV and the broader market. FISV's absolute PE reached 33.28 in early 2016 as broader market valuations were higher across the board.

Figure 21: FISV NTM PE relative to S&P 500

Source: Factset

If we assume FISV maintains its current NTM PE of 31.2 through the end of 2018 it should trade up to $164 assuming the above EPS estimates in Figure 15.

- Price 2018E = NTM P/E x EPS 2018E = 31.2 x $6.14 = $191.57

Discounting this one year price horizon back to today would yield a current price expectation of ~$152 assuming a cost of equity of 8.3% as discussed in the DCF section below.

- Price(Today) = Price(2018E) / (1+WACC)^1 = 191.57 / (1+0.083) = $176.88

Relative Valuation

The peer group of FISV is relatively small but provides an interesting landscape for relative valuation purposes. FISV currently and historically has had the highest ROE of its peers but the lowest PE ratio – I believe this is due to the high debt load that FISV has taken on to increase its equity return ratios. Turning to Price-to-Sales, FISV has one of the higher PS ratios due to its profitability strength and outlook on margin expansion which the market values highly.

Figure 22: Comparable Companies as of 12/15/2017

Comp Sheet (12/15/2017)

		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	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
FISV	FISERV INC	$131.83	$27,473	0.1	3.0	6.0	7.3	25.8	24.0	10.9	31.9%	-16.4%	-11.0%	15.6%	4.1%	20.4%	0.80	2.14	B+	0.00%	0.0%
FIS	FIDELITY NATIONAL INFO SVCS	$95.71	$31,955	(0.1)	3.2	2.5	13.1	26.7	26.5	12.2	194.2%	36.1%	-9.6%	-9.5%	-1.4%	2.5%	0.85	0.88	B+	1.20%	70.2%
JKHY	HENRY (JACK) & ASSOCIATES	$116.89	$9,028	(0.3)	2.8	14.0	13.2	30.6	31.7	11.9	5.3%	5.8%	4.2%	11.6%	8.6%		0.72	-	A+	1.08%	38.2%
ACIW	ACI WORLDWIDE INC	$22.38	$2,654	(0.0)	(4.1)	(1.0)	(2.0)	12.8	23.3	12.3	66.0%	-60.1%	-99.1%		2.3%	19.1%	1.46	0.87	B+	0.00%	
VNTV	VANTIV INC	$74.62	$12,129	(0.2)	7.7	3.0	18.2	30.1	25.2	14.5	153.8%	-12.6%	-17.0%	3.5%	-14.9%	78.4%	0.58	8.24		0.00%	
Average			########	-$0.13	$2.52	$4.51	$9.97	$25.21	$26.14	$12.34	90%	-9.4%	-26.5%	5.3%	-0.3%	30.1%	0.88	2.43		$0.00	$0.36
Median			$12,129	-$0.15	$2.99	$2.97	$13.12	$26.67	$25.16	$12.18	66.04%	-12.59%	-11.05%	7.53%	2.33%	19.79%	0.80	0.88		$0.00	$0.38
SPX	S&P 500 INDEX	$2,660		0.3	3.0	6.9	9.4	17.7	18.8			-0.1%	0.5%	10.3%	11.7%						

		2017		P/E							2017	2017			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2018	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
FISV	http://www.fiserv.com	27.9%	11.71	16.8	25.9	33.8	31.4	23.8	36.3	34.9	35%	1.47	26.2%	13.3%	19.3	19.6	15.3	6.0%	5.0%	4.9%	$11.25
FIS	http://www.fisglobal.com	15.5%	3.19	16.5	11.8	16.3	59.4	20.2	22.8	23.1	2.2%	0.46	17.1%	2.8%	22.1	16.5	12.9	-0.8%	3.9%	10.0%	$29.98
JKHY	http://www.jackhenry.com	25.7%	8.70	19.9	23.6	25.7	36.9	35.0	30.4	28.0	0.8%	0.27	25.1%	23.7%	22.1	21.4		5.8%		6.9%	$13.44
ACIW	http://www.aciworldwide.com	-0.2%	3.43	-6.9	-18.3		69.9	42.1	52.0	50.9	0.0%	0.21	13.8%	8.9%	38.0	16.2		-0.2%		16.7%	$6.52
VNTV	http://www.vantiv.com	18.8%	21.73	7.8	12.4	18.8	51.5	20.3	22.8	26.7	2.0%	0.47	15.2%	5.1%	22.5	14.4	12.6	-42.2%	8.8%	17.1%	$3.43
Average		17.5%	9.75	10.81	11.09	23.67	49.81	28.27	32.85	32.71	1.7%	0.58	19.5%	10.8%	######	17.63	13.58	-6.3%	5.9%	11.1%	
Median		18.8%	8.70	16.50	12.41	22.27	51.46	23.77	30.36	27.96	2.0%	0.46	17.1%	8.9%	22.13	16.54	12.92	-0.2%	5.0%	10.0%	
SPX	S&P 500 INDEX			17.31	17.21	18.76			20.21	18.10											

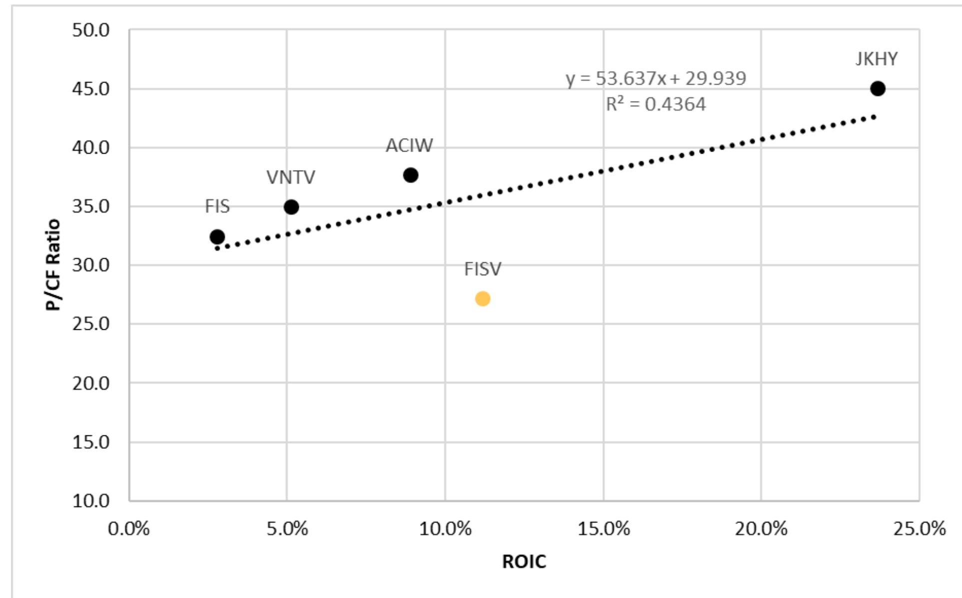
Source: IMCP, FactSet

Since FISV and its peers are software companies, they have fairly volatile earnings and extremely high cash flows, I elected to compare P/CF as a function of the firms ROIC ratio. As seen in Figure 23, the peer group follows a highly correlated regression when comparing ROIC to P/CF. If FISV is taken out of the regression function, the R-squared value becomes 0.98 – an extremely strong correlation. As seen below, utilizing the peer average for the ROIC function, FISV is fully valued at today's price on a discounted basis.

- Estimated P/CF 2018 = Estimated 2018E ROIC (12.4%) x 53.64 + 29.94 = 36.59
- Target Price = Estimated P/CF (36.59) x 2018E CF/Share (4.12) = $150.76

Discounting back to the present at a 8.3% cost of equity leads to a current target price of $139.2 which would imply that FISV is fully valued using the cash flow valuation metric.

Figure 23: ROIC vs. P/CF Ratio



Source: IMCP

For a final relative comparison, I created a fundamental vs. firm valuation scatterplot. As seen in Figure 24, the fundamental metrics are long term growth of earnings, return on equity, and net profit margins of the different firms. Turning to valuation, price to sales and price to cash flow were used since the financial technology sector is highly driven by earnings and profitability growth.

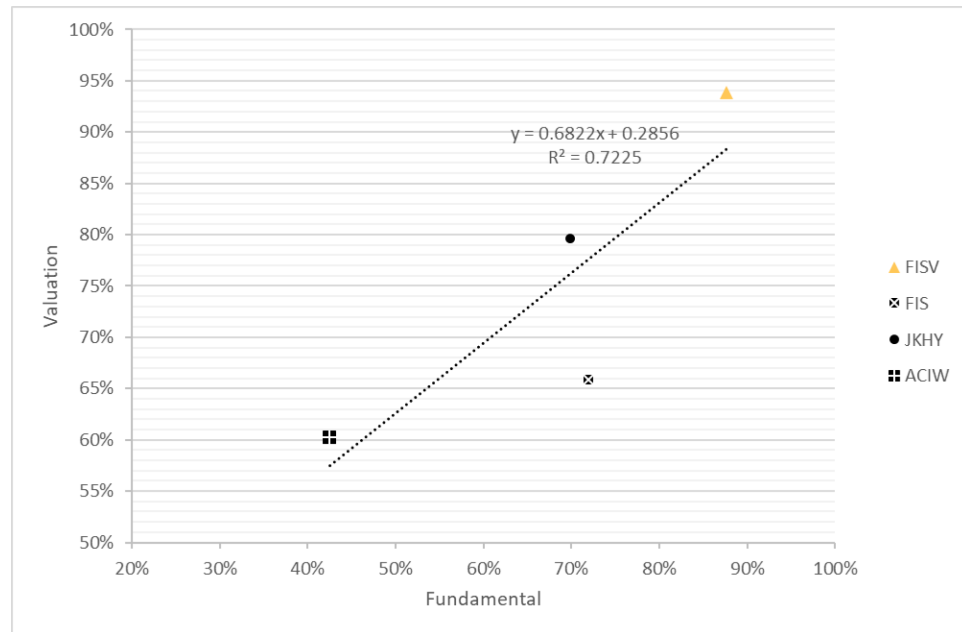
Figure 24: Composite valuation, % of range

						Weight	Fundamental 50.0%	25.0%	25.0%	Valuation 25.0%	75.0%
		Rank			Weighted		Earnings				
Ticker	Name	Diff	Diff	Value	Fund	Value	LTG	ROE	NPM	P/S	P/CF
FISV	FISERV INC	1	-94%	0%	88%	94%	75%	100%	100%	100%	92%
FIS	FIDELITY NATIONAL INFO SVCS	3	-66%	0%	72%	66%	84%	55%	63%	31%	77%
JKHY	HENRY (JACK) & ASSOCIATES	2	-80%	0%	70%	80%	82%	92%	23%	19%	100%
ACIW	ACI WORLDWIDE INC	4	-60%	0%	42%	60%	85%	-1%	0%	14%	76%

Source: IMCP

Please note while the correlation strength is not as strong as I would like to see it, none of the other fundamental vs. valuation metrics reached a R-squared value of even 0.25 or above except for the above mix of LTG of earnings, ROE, and NPM vs. P/S and P/CF.

Figure 25: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

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

Below you will find the breakdown of the Capital Asset Pricing Model (CAPM) assumptions that led to the discounting factor within the DCF:

- The risk-free rate, as represented by the ten year Treasury bond yield, is 2.38%.
- A one year beta of 0.90 was used as FISV has historically less risk and volatility than the broader market.
- A long-term market rate of return of 9% was assumed.

Given the above assumptions, the cost of equity is 8.34% (2.38 + 0.90 (9.0 – 2.38)).

Stage One – The first step within the model assumes 2018E and 2019E cash flow to equity (FCFE). Assuming outstanding shares of 192.3M and 185.4M in 2018E and 2019E leads to a cash flow per share of $4.12 and $4.69, respectively. Using a cost of equity of 8.34%, the cash flow per share discounts to $3.80 and $3.99. Therefore, the first stage of the DCF model contributes $7.80 to the present value.

Stage Two – The second step within the DCF looks at the years between 2020 and 2024. During these years, FCFE is derived from revenue growth, NOPAT margin and share growth. I assume sales growth of 3.5% falling to 3.0% by 2024. I expect NOPAT margin to continue its expansion from 16.5% to 17.5% by 2024 led by gross margin expansion and operational efficiencies as touched on in the drivers section. Outstanding shares are expected to fall -2.0% and -1.0% in 2020 and 2021, respectively.

Figure 32: FCFE and discounted FCFE, 2018-2024

	First Stage		Second Stage				
	2018	2019	2020	2021	2022	2023	2024
FCFE	$4.12	$4.69	$3.29	$3.62	$3.75	$4.04	$4.48
Discounted FCFE	$3.80	$3.99	$2.58	$2.63	$2.51	$2.50	$2.56

Added together, the 2020 – 2024 discounted cash flows total $12.78.

Stage Three – 2020 – 2024 net income is found much like the figures within stage two in that I assume the NOPAT figures and deduct the interest expense to reach the bottom line income. Fully diluted EPS is expected to increase from $5.12 in 2020 to $6.29 in 2024.

Figure 33: EPS estimates for 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$5.27	$6.03	$5.12	$5.54	$5.73	$5.91	$6.29
Growth		*14.4%*	*-15.2%*	*8.2%*	*3.5%*	*3.2%*	*6.4%*

The third stage of the DCF model requires a terminal year PE ratio to find the terminal value. FISV's PE today sits around 33 and has expanded recently to reach historical highs, ignoring the illogical high values seen within the dot com era of 2001. As FISV's growth continues and profitability rises, I expect the PE to move upwards towards 38 in the terminal year. As seen in the drivers section, the market capitalization averaged PE for FISV's peer group currently stands at 47 so I am still assuming a steep discount when comparing it to the competitor group. FISV's PE could be held down slightly if it does not reduce its higher than market debt levels.

Assuming a terminal EPS of $6.29 and the above PE of 38, I find a terminal value of $239. Discounting this figure back to today I get a discounted terminal value of $136.44, assuming a discount factor of 0.57.

Total Present Value – Assuming the three stages above, I come to a present, discounted value of $157.01 per share.

Scenario Analysis

The Financial Technology and IT services sector is a highly volatile market in terms of technological advances, new entrants, and security concerns. See below for a brief overview of the different bull and bear cases that could be made for FISV's two year outlook.

Sales Growth – FISV has had historical high – that is, higher than GDP growth – sales growth. One bull-case that could be made for FISV is the acceleration of this sale growth as the digitization of banking and payments takes hold globally. Adjusting top-line growth to 5.9% 2018E would lead to a new EPS of $5.33 in 2018E. Assuming no expansion in FISV's PE, this would result in a discounted price of $153.55.

The bear case could be made for FISV if revenue growth slows due to the accelerating influx of new competitors within the payments and FinTech space. As blockchain technology takes hold and draws banks, companies, and consumers away from the incumbent technologies and onto open-source, decentralized, and more secure platforms, FISV could lose significant market share. This downturn could draw EPS down to $5.10 which would imply a discounted price of $147.

Margin Expansion – FISV has one of the highest gross and operating margins when comparing it to the peer group. Much of this success is drawn from the longer term, low servicing contracts that FISV enters with its banking and payments customers. A bull case could be made for gross margin to expand to 52% by 2019E as increased automation and pricing power is created by FISV's dominance in the market.

The market could argue a bear case as the entry of substitutes and competition increases, forcing FISV to lower contract prices and increase the after-sale servicing to beat out competition.

Share Repurchase Program – FISV has continually pledged to return excess capital to shareholders and I believe the firm will instate a new share repurchase program once the current one ends in the next year. The bull case could be made by the market if the sales and margin growth above continues and FISV finds itself with excess cash to distribute. Share repurchase programs could lead to an EPS range of $5.50 – $5.75 depending on the capital outlay management is comfortable with. This would result in a current price of $158 - $165, again assuming no change in PE.

Business Risks

Banking consolidation:

Due to the FED's capital requirements and stricter regulations, banking and financial institutions have continued their consolidation trend over the last decade. The risk posed by this consolidation is two-fold. First, FISV's customer list begins to shorten and it becomes reliant on fewer customers. Second, as banks consolidate and become larger through mergers, many of them will decide to bring the technology development in-house due to economies of scale and security.

Cyber-security & product failures:

As the cyber security arena becomes increasingly attacked, FISV's products must prove to be safe for both the consumer and banks to use. If even one of FISV's products fail due to poor security practices, many of company's customers will be forced by the consumer or government to leave and use other solutions.

Increased debt load:

FISV's debt-to-assets ratio is at an all-time high of 0.5 which could lead investors to discount the stock due to the increased debt risk. With that said, FISV's Debt-to-EBITDA of 2.46 is comfortably below its 10-year average of 2.95.

Goodwill & intangible asset write-down:

Due to FISV's increased M&A activity, its balance sheet has become heavily loaded with goodwill and intangible assets. Currently, these two assets together account for 74% of the total asset base. Historically, FISV's Intangible assets-to-total assets ratio has averaged around 71.3%.

Appendix:

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Moderate

FISV has created financial business moats with their longer-term contracts with customers – especially in the Financial Segment covering banks, credit unions, and insurance companies, all of which have inherent stickiness of suppliers to begin with. With that said, their Payments Segment is relatively easy to disrupt with newer, faster, and cheaper technology and applications. It should also be noted that FISV and its peers often acquire any smaller technology firms aiming to compete before they reach a competitive size.

Threat of Substitutes - Moderate

Outside of open-source blockchain protocols or projects, FISV and its competitors have a relatively strong contractual grip within the financial services technology sector.

Supplier Power - Low

Much like the upstream competition to financial institutions and payment application companies, the downstream supplier base is highly competitive and "drop and play" software is growing within the cloud infrastructure industry.

Buyer Power – Very High

FISV and its peers all enter bidding processes when a new large financial or payment customer comes to the market for a technology investment. FISV management has mentioned in numerous earnings calls that the institutions they sell to have strict pay ranges and timelines for FISV and its peers to bid on.

Intensity of Competition – Very High

As touched on in the Buyer Power section, the financial technology and payments technology sector is quite competitive. FISV mostly operates with comparable, US-only companies. Internationally, there are even more firms competing with the emerging markets and their new digital banking industry that is coming online.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Long-term revenue generating contracts with some of the largest financial institutions Gross margin expansion strength	Lack of diversification outside of financial service focus High debt load posing a large risk according to capital markets Little to no international exposure
Opportunities	**Threats**
Global digital banking coming online Blockchain and self-banking technology P2P Payments indsutry outpacing banking growth	Blockchain & digital assets could outspace the innovation in current FinTech & P2P payments and make much of the technology irrelevant

Appendix 3: Income Statement

Income Statement						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Sales	$4,814	$5,066	$5,254	$5,505	$5,698	$5,976	$6,286	$6,033	$6,407	$5,901	$6,110
Costs of Product	2,746	2,881	2,909	2,949	3,011	3,048	3,080	3,077	3,203	3,245	3,422
Gross Margin	2,068	2,185	2,345	2,556	2,687	2,928	3,206	2,956	3,203	2,655	2,689
SG&A, R&D, and other	942	975	1,034	1,101	1,163	1,195	1,289	1,237	1,345	1,180	1,192
EBIT	1,126	1,210	1,311	1,455	1,524	1,733	1,917	1,720	1,858	1,475	1,497
Interest	155	156	159	159	161	187	212	187	212	187	212
EBT	971	1,047	1,152	1,275	1,363	1,546	1,705	1,532	1,646	1,288	1,285
Taxes	328	385	377	492	469	532	587	527	566	443	442
Income	650	754	712	930	1,050	1,014	1,119	1,005	1,080	845	843
Other	-	-	-	-	-	-	-	-	-	-	-
Net Income	650	754	712	930	1,001	1,014	1,119	1,005	1,080	845	843
Basic Shares	266.0	252.0	238.0	233.9	200.0	192.3	185.4	192.3	185.4	192.3	185.4
EPS	$2.44	$2.99	$2.99	$3.98	$5.01	$5.27	$6.03	$5.23	$5.82	$4.39	$4.55
DPS	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Appendix 4: Balance Sheets

Balance Sheet						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Cash	358	400	294	275	300	342	561	245	332	291	382
Operating assets ex cash	1,054	1,172	1,192	1,231	1,428	1,498	1,575	1,512	1,606	1,479	1,531
Operating assets	1,412	1,572	1,486	1,506	1,728	1,840	2,137	1,757	1,937	1,769	1,913
Operating liabilities	313	251	237	298	415	435	458	439	467	430	445
NOWC	1,099	1,321	1,249	1,208	1,313	1,405	1,679	1,318	1,470	1,340	1,468
NOWC ex cash (NWC)	741	921	955	933	1,013	1,063	1,118	1,073	1,139	1,049	1,086
NFA	7,085	7,941	7,851	7,834	8,015	8,187	8,382	8,265	8,542	8,083	8,147
Invested capital	*$8,184*	*$9,262*	*$9,100*	*$9,042*	*$9,328*	*$9,592*	*$10,060*	*$9,583*	*$10,012*	*$9,423*	*$9,616*
Marketable securities	-	-	-	-	-	-	-	-	-	-	-
Total assets	***$8,497***	***$9,513***	***$9,337***	***$9,340***	***$9,743***	***$10,027***	***$10,518***	***$10,022***	***$10,479***	***$9,852***	***$10,061***
Short-term and long-term debt	$3,230	$3,848	$3,803	$4,293	$4,562	$4,812	$5,162	$4,812	$5,162	$4,812	$5,162
Other liabilities	1,537	1,829	2,002	2,089	2,225	2,225	2,225	2,225	2,225	2,225	2,225
Debt/equity-like securities	-	-	-	-	-	-	-	-	-	-	-
Equity	3,417	3,585	3,295	2,660	2,541	2,555	2,673	2,546	2,625	2,386	2,229
Total supplied capital	*$8,184*	*$9,262*	*$9,100*	*$9,042*	*$9,328*	*$9,592*	*$10,060*	*$9,583*	*$10,012*	*$9,423*	*$9,616*
Total liabilities and equity	***$8,497***	***$9,513***	***$9,337***	***$9,340***	***$9,743***	***$10,027***	***$10,518***	***$10,022***	***$10,479***	***$9,852***	***$10,061***

Appendix 5: Sales Forecast

Sales						Base Case		Bull Case		Bear Case	
Items	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**	**2018E**	**2019E**	**2018E**	**2019E**
Total Sales	**$4,861**	**$5,114**	**$5,305**	**$5,567**	**$5,698**	**5,976**	**$6,286**	**6,033**	**$6,407**	**$5,901**	**$6,110**
Total Sales Growth		*5.2%*	*3.7%*	*4.9%*	*2.4%*	*4.9%*	*5.2%*	*5.9%*	*6.2%*	*3.6%*	*3.6%*
Payments Segment	2,552	2,747	2,862	3,090	3,163	3,352	3,570	3,384	3,638	3,289	3,421
Growth		*7.6%*	*4.2%*	*8.0%*	*2.4%*	*6.0%*	*6.5%*	*7.0%*	*7.5%*	*4.0%*	*4.0%*
% of sales	*52.5%*	*53.7%*	*53.9%*	*55.5%*	*55.5%*	*56.1%*	*56.8%*	*56.1%*	*56.8%*	*55.7%*	*56.0%*
Financial Segment	2,309	2,367	2,443	2,477	2,535	2,624	2,716	2,649	2,769	2,611	2,690
Growth		*2.5%*	*3.2%*	*1.4%*	*2.4%*	*3.5%*	*3.5%*	*4.5%*	*4.5%*	*3.0%*	*3.0%*
% of sales	*47.5%*	*46.3%*	*46.1%*	*44.5%*	*44.5%*	*2.0%*	*43.2%*	*43.9%*	*43.2%*	*44.3%*	*44.0%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	4,861	5,114	5,305	5,567	5,698	5,976	6,286	6,033	6,407	5,901	6,110
Growth		*5.2%*	*3.7%*	*4.9%*	*2.4%*	*4.9%*	*5.2%*	*5.9%*	*6.2%*	*3.6%*	*3.6%*
% of sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Appendix 6: Ratios

Ratios						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Profitability											
Gross margin	43.0%	43.1%	44.6%	46.4%	47.2%	49.0%	51.0%	50.0%	52.0%	45.0%	44.0%
Operating (EBIT) margin	23.4%	23.9%	25.0%	26.4%	26.7%	29.0%	30.5%	30.0%	32.0%	25.0%	24.5%
Net profit margin	13.5%	14.9%	13.6%	16.9%	17.6%	17.0%	17.8%	17.7%	19.0%	14.1%	13.7%
Activity											
NFA (gross) turnover		0.67	0.67	0.70	0.72	0.74	0.76	0.74	0.76	0.73	0.75
Total asset turnover		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
Liquidity											
Op asset / op liab	4.51	6.26	6.27	5.05	4.16	4.23	4.67	3.69	3.31	4.55	5.37
NOWC Percent of sales		23.9%	24.5%	22.3%	22.1%	22.7%	24.5%	20.7%	17.6%	24.0%	28.4%
Solvency											
Debt to assets	38.0%	40.4%	40.7%	46.0%	46.8%	48.0%	49.1%	48.7%	51.2%	47.9%	49.0%
Debt to equity	94.5%	107.3%	115.4%	161.4%	179.5%	188.3%	193.1%	199.6%	231.3%	187.2%	190.8%
Other liab to assets	18.1%	19.2%	21.4%	22.4%	22.8%	22.2%	21.2%	22.5%	22.1%	22.2%	21.1%
Total debt to assets	56.1%	59.7%	62.2%	68.3%	69.7%	70.2%	70.2%	71.2%	73.2%	70.1%	70.1%
Total liabilities to assets	59.8%	62.3%	64.7%	71.5%	73.9%	74.5%	74.6%	75.6%	77.9%	74.4%	74.3%
Debt to EBIT	2.87	3.18	2.90	2.95	2.99	2.78	2.69	2.66	2.52	3.26	3.45
EBIT/interest	7.26	7.76	8.25	9.15	9.47	9.24	9.05	10.16	10.82	6.99	6.67
Debt to total net op capital	39.5%	41.5%	41.8%	47.5%	48.9%	50.2%	51.3%	50.9%	53.7%	50.1%	51.1%
ROIC											
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to NWC		6.10	5.60	5.83	5.86	5.76	5.77	5.79	5.79	5.72	5.72
Sales to NFA		0.67	0.67	0.70	0.72	0.74	0.76	1.46	0.76	1.46	0.75
Sales to IC ex cash		0.61	0.59	0.63	0.64	0.65	0.67	0.66	0.67	0.65	0.67
Total ROIC ex cash		9.2%	10.0%	10.2%	11.2%	12.4%	13.4%	12.9%	14.1%	10.7%	10.7%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to NOWC		4.19	4.09	4.48	4.52	4.40	4.08	4.83	5.67	4.16	3.52
Sales to NFA		0.67	0.67	0.70	0.72	0.74	0.76	1.46	0.76	1.46	0.75
Sales to IC		0.58	0.57	0.61	0.62	0.63	0.64	0.64	0.67	0.62	0.62
Total ROIC		8.8%	9.6%	9.9%	10.9%	12.0%	12.8%	12.6%	14.1%	10.2%	10.0%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to EOY NWC	6.50	5.50	5.50	5.90	5.62	5.62	5.62	5.62	5.62	5.62	5.62
Sales to EOY NFA	0.68	0.64	0.67	0.70	0.71	0.73	0.75	0.73	0.75	0.73	0.75
Sales to EOY IC ex cash	0.62	0.57	0.60	0.63	0.63	0.65	0.66	0.65	0.66	0.65	0.66
Total ROIC using EOY IC ex ca	9.5%	8.6%	10.0%	10.2%	11.1%	12.3%	13.2%	12.7%	13.9%	10.6%	10.6%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to EOY NOWC	4.38	3.83	4.21	4.56	4.34	4.25	3.74	5.10	5.95	3.87	3.14
Sales to EOY NFA	0.68	0.64	0.67	0.70	0.71	0.73	0.75	0.73	0.75	0.73	0.75
Sales to EOY IC	0.59	0.55	0.58	0.61	0.61	0.62	0.62	0.64	0.67	0.61	0.61
Total ROIC using EOY IC	9.1%	8.3%	9.7%	9.9%	10.7%	11.9%	12.5%	12.6%	14.0%	10.1%	9.7%
ROE											
5-stage											
EBIT / sales		23.9%	25.0%	26.4%	26.7%	29.0%	30.5%	30.0%	32.0%	25.0%	24.5%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
EBT / EBIT		86.5%	87.9%	87.6%	89.4%	89.2%	88.9%	90.2%	90.8%	85.7%	85.0%
Net income /EBT		72.0%	61.8%	72.9%	73.4%	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%	10.9%	12.2%	8.4%	8.1%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93	3.96	4.30	3.87	3.90
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%
3-stage											
Net income / sales		14.9%	13.6%	16.9%	17.6%	17.0%	17.8%	17.7%	19.0%	14.1%	13.7%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%	10.9%	12.2%	8.4%	8.1%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93	3.96	4.30	3.87	3.90
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%
Payout Ratio		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retention Ratio		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sustainable Growth Rate		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%

Appendix 7: Comps Sheet

Comp Sheet (12/15/2017)

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
FISV	FISERV INC	$131.83	$27,473	0.1	3.0	6.0	7.3	25.8	24.0	10.9	31.9%	-16.4%	-11.0%	15.6%	4.1%	20.4%	0.80	2.14	B+	0.00%	0.0%
FIS	FIDELITY NATIONAL INFO SVCS	$95.71	$31,955	(0.1)	3.2	2.5	13.1	26.7	26.5	12.2	194.2%	36.1%	-9.6%	-9.5%	-1.4%	2.5%	0.85	0.88	B+	1.20%	70.2%
JKHY	HENRY (JACK) & ASSOCIATES	$116.89	$9,028	(0.3)	2.8	14.0	13.2	30.6	31.7	11.9	5.3%	5.8%	4.2%	11.6%	8.6%		0.72	-	A+	1.08%	38.2%
ACIW	ACI WORLDWIDE INC	$22.38	$2,654	(0.0)	(4.1)	(3.0)	(2.0)	12.8	23.3	12.3	66.0%	-60.1%	-99.1%		2.3%	19.1%	1.46	0.87	B+	0.00%	
VNTV	VANTIV INC	$74.62	$12,129	(0.2)	7.7	3.0	18.2	30.1	25.2	14.5	153.8%	-12.6%	-17.0%	3.5%	-14.9%	78.4%	0.58	8.24		0.00%	
Average			##########	-$0.13	$2.52	$4.51	$9.97	$25.21	$26.14	$12.34	90%	-9.4%	-26.5%	5.3%	-0.3%	30.1%	0.88	2.43		$0.00	$0.36
Median			$12,129	-$0.15	$2.99	$2.97	$13.12	$26.67	$25.16	$12.18	66.04%	-12.59%	-11.05%	7.53%	2.33%	19.79%	0.80	0.88		$0.00	$0.38
SPX	S&P 500 INDEX	$2,660		0.3	3.0	6.9	9.4	17.7	18.8			-0.1%	0.5%	10.3%	11.7%						

Ticker	Website	2017 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2018	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
FISV	http://www.fiserv.com	27.9%	11.71	16.8	25.9	33.8	31.4	23.8	36.3	34.9	3.5%	1.47	26.2%	13.3%	19.3	19.6	15.3	6.0%	5.0%	4.9%	$11.25
FIS	http://www.fisglobal.com	15.5%	3.19	16.5	11.8	16.3	59.4	20.2	22.8	23.1	2.2%	0.46	17.1%	2.8%	22.1	16.5	12.9	-0.8%	3.9%	10.0%	$29.98
JKHY	http://www.jackhenry.com	25.7%	8.70	19.9	23.6	25.7	36.9	35.0	30.4	28.0	0.8%	0.27	25.1%	23.7%	22.1	21.4		5.8%		6.9%	$13.44
ACIW	http://www.aciworldwide.com	-0.2%	3.43	-6.9	-18.3		69.9	42.1	52.0	50.9	0.0%	0.21	13.8%	8.9%	38.0	16.2		-0.2%		16.7%	$6.52
VNTV	http://www.vantiv.com	18.8%	21.73	7.8	12.4	18.8	51.5	20.3	22.8	26.7	2.0%	0.47	15.2%	5.1%	22.5	14.4	12.6	-42.2%	8.8%	17.1%	$3.43
Average		17.5%	9.75	10.81	11.09	23.67	49.81	28.27	32.85	32.71	1.7%	0.58	19.5%	10.8%	2478.7%	17.63	13.58	-6.3%	5.9%	11.1%	
Median		18.8%	8.70	16.50	12.41	22.27	51.46	23.77	30.36	27.96	2.0%	0.46	17.1%	8.9%	22.13	16.54	12.92	-0.2%	5.0%	10.0%	
SPX	S&P 500 INDEX			17.31	17.21	18.76			20.21	18.10											

Appendix 8: 3-stage DCF Model

3 Stage Discounted Cash Flow

	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Sales Growth	*4.9%*	*5.2%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
NOPAT / S	*19.0%*	*20.0%*	*16.5%*	*17.0%*	*17.0%*	*17.0%*	*17.5%*
S / NWC	*5.62*	*5.62*	*5.62*	*5.62*	*5.62*	*5.62*	*5.62*
S / NFA (EOY)	*0.73*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*
S / IC (EOY)	*0.65*	*0.66*	*0.66*	*0.66*	*0.66*	*0.66*	*0.66*
ROIC (EOY)	*12.3%*	*13.2%*	*10.9%*	*11.2%*	*11.2%*	*11.2%*	*11.6%*
ROIC (BOY)		*13.6%*	*11.3%*	*11.6%*	*11.6%*	*11.6%*	*11.9%*
Share Growth		*-3.6%*	*-2.0%*	*-1.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$5,976	$6,286	$6,506	$6,734	$6,970	$7,193	$7,408
NOPAT	$1,137	$1,258	$1,074	$1,145	$1,185	$1,223	$1,296
Growth		*10.6%*	*-14.6%*	*6.6%*	*3.5%*	*3.2%*	*6.0%*
- Change in NWC	50	55	39	40	42	40	38
NWC EOY	*1063*	*1118*	*1157*	*1197*	*1239*	*1279*	*1317*
Growth NWC		*5.2%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
- Chg NFA	172	195	293	304	314	297	288
NFA EOY	*8,187*	*8,382*	*8,675*	*8,979*	*9,293*	*9,590*	*9,878*
Growth NFA		*2.4%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
Total inv in op cap	221	250	332	344	356	337	326
Total net op cap	9249	9499	9832	10176	10532	10869	11195
FCFF	$915	$1,008	$741	$801	$829	$886	$970
% of sales	*15.3%*	*16.0%*	*11.4%*	*11.9%*	*11.9%*	*12.3%*	*13.1%*
Growth		*10.1%*	*-26.5%*	*8.0%*	*3.5%*	*6.9%*	*9.6%*
- Interest (1-tax rate)	123	139	144	149	154	160	165
Growth		*13.1%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
FCFE w/o debt	$792	$869	$597	$652	$675	$726	$805
% of sales	*13.3%*	*13.8%*	*9.2%*	*9.7%*	*9.7%*	*10.1%*	*10.9%*
Growth		*9.7%*	*-31.3%*	*9.1%*	*3.5%*	*7.7%*	*10.9%*
/ No Shares	192.3	185.4	181.7	179.9	179.9	179.9	179.9
FCFE	$4.12	$4.69	$3.29	$3.62	$3.75	$4.04	$4.48
Growth		*13.7%*	*-29.9%*	*10.2%*	*3.5%*	*7.7%*	*10.9%*
*** Discount factor**	0.92	0.85	0.79	0.73	0.67	0.62	0.57
Discounted FCFE	$3.80	$3.99	$2.58	$2.63	$2.51	$2.50	$2.56
Third Stage							
Terminal value P/E							
Net income	$1,014	$1,119	$930	$996	$1,031	$1,063	$1,131
% of sales	*17.0%*	*17.8%*	*14.3%*	*14.8%*	*14.8%*	*14.8%*	*15.3%*
EPS	$5.27	$6.03	$5.12	$5.54	$5.73	$5.91	$6.29
Growth		*14.4%*	*-15.2%*	*8.2%*	*3.5%*	*3.2%*	*6.4%*
Terminal P/E							38.00
* Terminal EPS							$6.29
Terminal value							$239.00
* Discount factor							0.57
Discounted terminal value							$136.44

Summary

First stage	$7.80	Present value of first 2 year cash flow	
Second stage	$12.78	Present value of year 3-7 cash flow	
Third stage	$136.44	Present value of terminal value P/E	
Value (P/E)	**$157.01**	= value at beg of fiscal yr	2018

Medical Distribution

McKesson Corp.

Recommendation	HOLD
Target (today's value)	$171.08
Current Price	$170.66
52 week range	$133.82 - $177.97

Share Data	
Ticker:	MCK
Market Cap. (Billion):	$33.4
Inside Ownership	0.3%
Inst. Ownership	90.7%
Beta	0.95
Dividend Yield	0.9%
Payout Ratio	5.8%
Cons. Long-Term Growth Rate	2.0%

	'15	'16	'17	'18E	'19E
Sales (billions)					
Year	$179.1	$190.8	$198.5	$205.7	$211.6
Gr %		6.6%	4.0%	3.6%	2.9%
Cons				$205.5	$210.1
EPS					
Year	$9.82	$12.08	$12.54	$11.95	$12.85
Gr %		23.0%	3.8%	-4.7%	7.5%
Cons				$12.23	$13.15

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	21.5%	27.1%	51.9%	21.9%	20.3%
Industry	10.1%	31.1%	24.9%	18.0%	19.2%
NPM (%)	1.0%	1.2%	2.6%	1.0%	1.1%
Industry	0.8%	1.1%	1.2%	0.8%	0.8%
A. T/O	3.39	3.46	3.38	3.32	3.25
ROA (%)	2.8%	4.1%	8.6%	4.1%	4.0%
Industry	2.7%	4.3%	4.3%	4.0%	3.8%
A/E	6.39	6.52	5.87	5.38	5.03

Valuation	'16	'17	'18E	'19E
P/E	15.8	7.7	13.2	12.4
Industry	24.6	17.7	13.8	12.6
P/S	0.19	0.17	0.16	0.16
P/B	4.1	4.1	3.0	3.0
P/CF	14.9	5.2	10.2	8.2
EV/EBITDA	16.7	11	8.6	9.5

Performance	Stock	Industry
1 Month	12.8%	10.6%
3 Month	8.0%	2.7%
YTD	14.1%	2.9%
52-week	12.6%	2.1%
3-year	-24.4%	-16.1%

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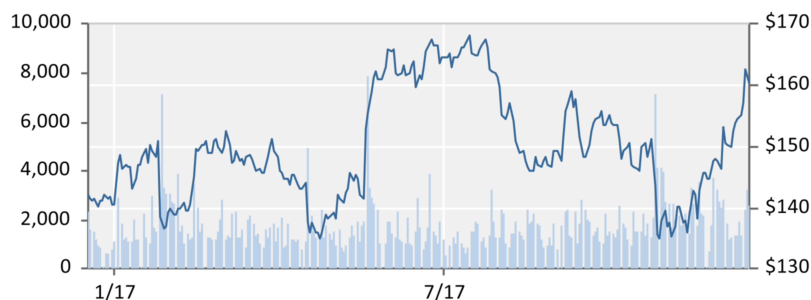


Source: FactSet Prices

Summary: I recommend a hold rating with a target of $171. MCK's current share price offers limited upside in a competitive drug distribution industry that features small margins. Potential exists if drug pricing pressures subside and MCK expands into specialty / biosimilar pharmaceuticals more efficiently than competitors.

Key Drivers:

- Pharmaceutical Pricing & Spending Trends: Recent generic and branded drug price declines are expected to continue into 2018.
- M&A: Recent acquisitions by MCK are targeting higher growth, higher margin businesses. Will MCK's recent spending surge result in value for shareholders long-term?
- Competitor Analysis: Competition among the three main pharmaceutical distributors is high and threats of Amazon entering medical distribution are causing a stir within the industry.
- Medicine Usage / Demographic Trends: Pharmaceutical spending in North America is expected to grow 4-7% annually on average through 2021.

Valuation: Using a relative value and DCF, MCK appears to be fairly valued. Valuation models suggest that the stock's value is about $171 and the shares currently trade around $170.

- Target Price = (50% * $167.98) + (50% * $174.12) = $171

Risks: Threats to the business include changes in U.S. & international regulatory/political environment, further drug price deflation, industry consolidation, Amazon, and corporate governance.

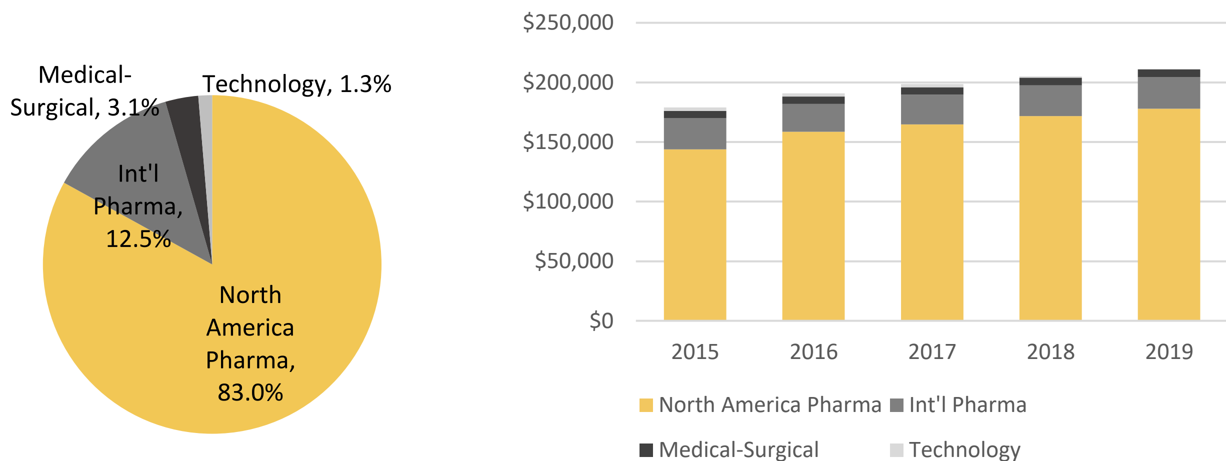
Company Overview

McKesson Corp. provides medicines, pharmaceutical supplies, information and care management products and services across the healthcare industry. It operates through the McKesson Distribution Solutions and McKesson Technology Solutions segments. The McKesson Distribution Solutions segment distributes pharmaceuticals, medical-surgical supplies and equipment and health and beauty care products throughout North America. This segment also provides specialty pharmaceutical solutions for biotech and pharmaceutical manufacturers, sells financial, operational and clinical solutions for pharmacies. The McKesson Technology Solutions segment provides software, automation, business services and consulting to hospitals, physician offices, imaging centers and home healthcare. It also provides interactive connectivity services that streamline clinical, financial and administrative communication between patients, providers, payers, pharmacies and financial institutions agencies and payers.

MCK is made up of a number of sub-segments.

- The North America Pharmaceutical Distribution & Services (83% sales) is comprised of U.S. Pharmaceutical Distribution, McKesson Specialty Health, McKesson Canada, and McKesson Pharmacy Technology & Services
- International Pharmaceutical Distribution & Services (12.5% sales) provides distribution and services to the pharmaceutical and healthcare sectors primarily in Europe. Consists of Pharmacy Solutions and Patient & Consumer solutions.
- Medical-Surgical Distribution & Services (3.1% sales) engages in medical-surgical supply distribution, equipment, and logistics to physicians' offices, surgery centers, extended care facilities, and homecare sites. MCK also has its own private label line.
- Technology Solutions (1.3% sales) provides a comprehensive portfolio of information technology and services to help healthcare organizations improve quality of care and ensure patient safety, reduce the cost and variability of care and better manage their resources and revenue stream.

Figures 1 and 2: Revenue Sources for MCK, fiscal year Mar. 2017 (left) and Revenue history/estimates (right, millions)



Source: Company Reports, FactSet

Business/Industry Drivers

Several factors contribute to McKesson's future success. In the near term, I believe the following are the most important drivers of the business.

1. Pharmaceutical Pricing & Spending Trends
2. M&A and Spin-off
3. Competitor Analysis
4. Medicine Usage / Demographic Trends

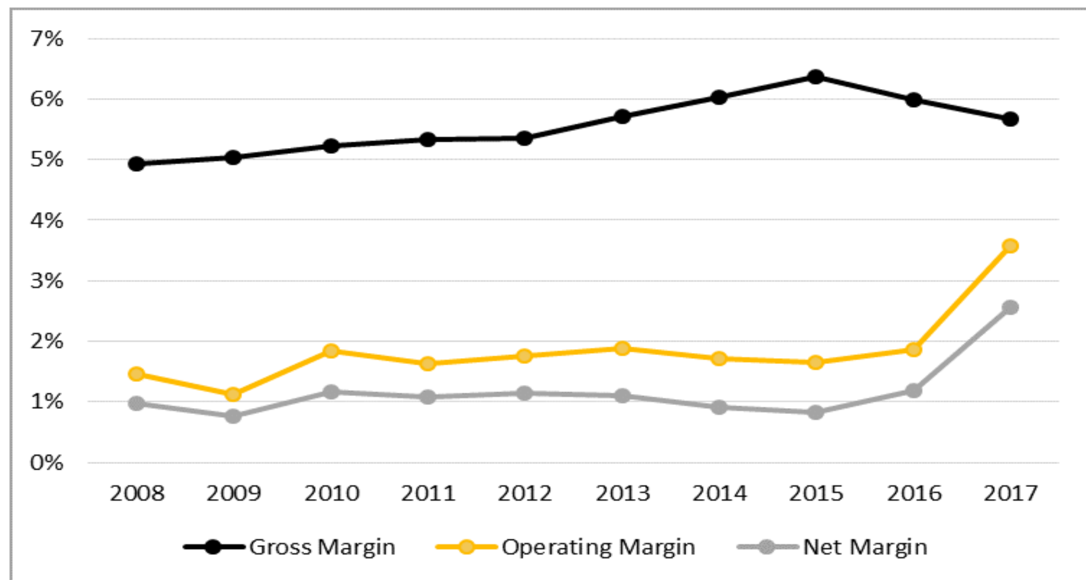
Pharmaceutical Pricing & Spending Trends

Fiscal year 2017 was tough for MCK, as generic drug prices declined.

MCK operates in an oligopoly in the medical distribution industry and is the largest of three major players controlling an estimated 90% combined market share in the U.S. MCK and other medical distributors are the intermediaries between pharmaceutical manufacturers and end consumers, such as pharmacies and hospitals. For example, Novartis, a drug manufacturer, does not have the scale required to distribute its drugs to thousands of pharmacies in an efficient manner. As an alternative, drug manufacturers pay MCK a small fee to distribute their products to pharmacies and hospitals across the globe. MCK may also purchase the drugs directly from the manufacturer and sell them wholesale at a small markup. These fees are in part reliant on the price manufacturers charge for their drugs. Distributors' revenues are partially tied to gross drug spending, and benefit from list price increases on pharmaceuticals. As a result, the drug distribution industry has very small margins (Figure 3). Five segments – generic, branded, specialty, biosimilar, and OTC drugs have slightly different pricing dynamics but are important to MCK's profitability going forward.

In FY 2017, net Income and operating profit were above average due to a one-time gain from the Change Healthcare transaction, which resulted in a $3,018 billion after-tax gain.

Figure 3: MCK's historical margins (March fiscal year)

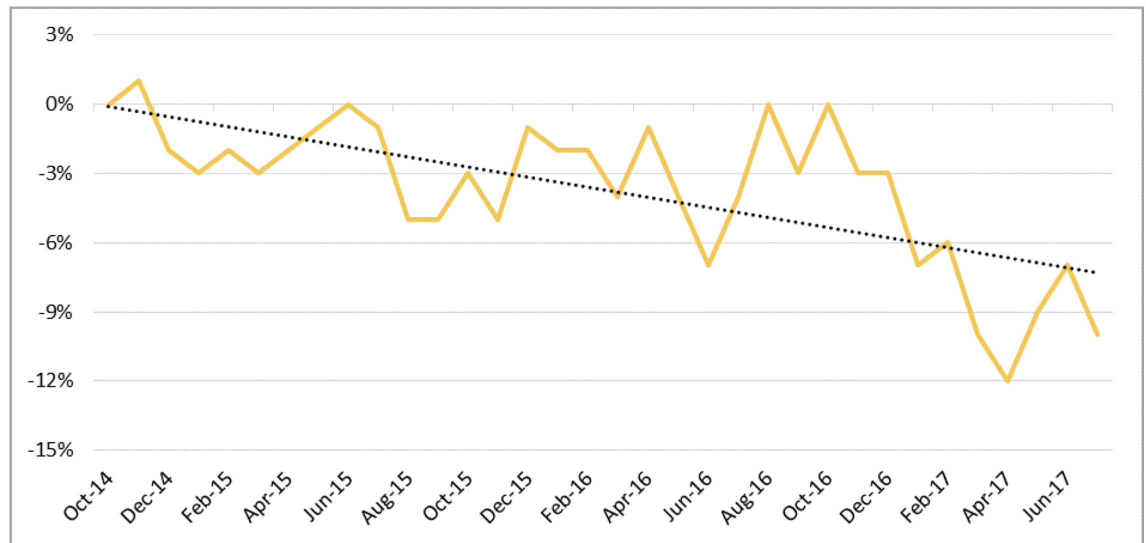


Source: Company Reports, FactSet

The FDA fell behind on approving new generic market entrants, reducing competition. This trend began to reverse in 2016.

Recently, generic-drug prices have been deflating in the U.S. at the fastest rate in years (Figure 4). Generic drugs are cheaper reproductions of medicines that have lost patent protection. Typically, when a drug loses its patent protection, multiple companies may begin producing it and prices fall dramatically, often over 75%. However, in recent years, generic prices have actually been increasing due to multiple factors. A number of manufacturers stopped making certain drugs due to quality-control problems and the Food and Drug Administration (FDA) fell behind on approving new generic market entrants, reducing competition. These trends began to reverse in 2016 and generic prices are now decreasing at a faster rate than historical averages. Due to this, wholesalers such as MCK were compelled to cut prices to stay competitive, detrimental to profitability in FY 2017. Although MCK does not break down specific financials by category, I estimate generics to be 15%-20% of revenue.

Figure 4: Median price change, generic basket (YoY % Change)



Source: Medicaid.gov, Baird

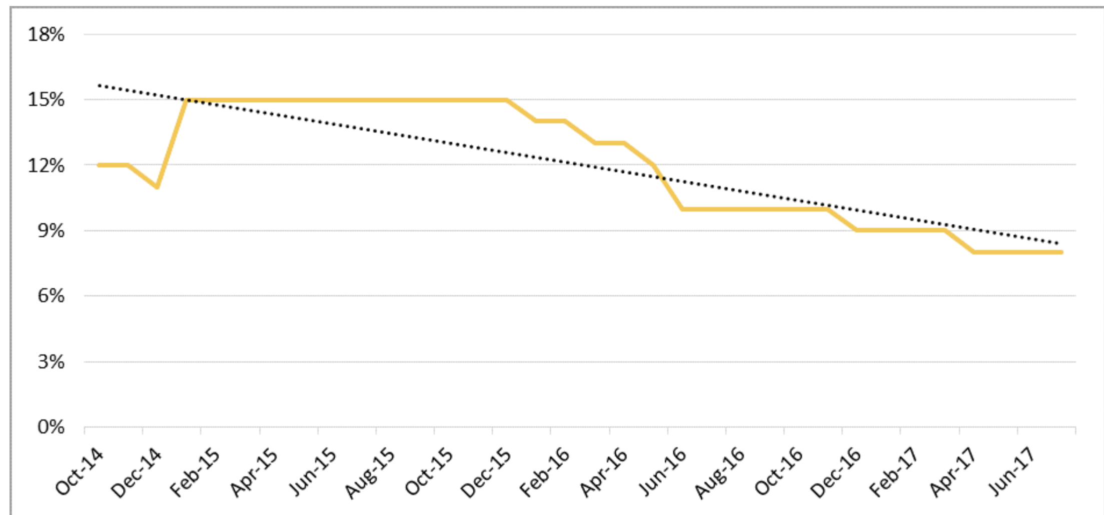
In May 2016, MCK and Walmart announced they would jointly source generics through a partnership called ClarusOne.

To help mitigate this trend, management has renegotiated several purchasing agreements with manufacturers to favor fixed versus variable compensation, which should benefit MCK in the long term with less price volatility. Additionally, the company formed ClarusONE, a partnership with Walmart (WMT), to source generic pharmaceuticals. The partnership benefits both companies by increasing their purchasing scale - wholesalers with large purchasing volumes and scale can negotiate better prices from manufacturers. As generics come to dominate pharmacy dispensing, pharmacies and wholesalers with below-average procurement costs will be best positioned to succeed. ClarusONE is expected to contribute $100 million - $150 million to EBIT (+5% MCK EBIT) in FY 2018 (net WMT's 50% stake). Going forward, generic price deflation is expected to continue for several years, although with less variability.

MCK had $24 billion + in specialty revenues in Fiscal 2017 (approx. 12% of total revenues).

Outside of generics, branded price increases have also slowed recently, as drug manufacturers face increasing political and consumer pressure (Figure 5). Growth decelerated in 2016 after two historically high years due to lower price increases for protected brands, fewer new products launched, and lower spending growth, particularly for hepatitis C treatments. Spending growth has mostly been driven by new brands and protected brand volume increases. Additionally, new brands have shifted significantly to specialty therapies, despite a decline in new brand spending for hepatitis C treatments, mentioned previously. MCK has been attempting to take advantage of the growing and profitable specialty market with its recent Vantage Oncology and Biologics acquisitions, further discussed below. Going forward, management forecasts mid-single-digit growth on branded drug pricing.

Figure 5: Median price change, branded basket (YoY % Change)



Source: Medicaid.gov, Baird

M&A and Spin-off

MCK CFO James Beer on capital deployment priorities:

1. Internal Capex
2. M&A
3. Share Buybacks
4. Dividends

MCK operates in a mature industry and places a high priority on M&A to diversify and expand its business. Over 80% ($4 bil) of operating cash flow in FY 2017 was spent on acquisitions, adding faster growing, higher margin businesses to its distribution segment. A few recent acquisitions include CoverMyMeds.com, Rexall Health, and Vantage Oncology / Biologics. Additionally in FY 2017, McKesson combined the majority of its technology solutions business with Change Healthcare, creating a separate company. McKesson received approximately $1.2 billion cash for the transaction and will retain a 70% ownership stake in the new company. The divesture will allow the company to focus on its primary distribution business. Eventually the company will split or be spun-off, which management expects to happen sometime in CY 2019.

CoverMyMeds.com was acquired in February 2017 for approximately $1.1 billion, funded from cash. CoverMyMeds (CMM) is a leader in electronic prior authorization solutions and helps facilitate the fulfillment of prescriptions at the pharmacy, making the company valuable to clinicians, patients, pharmacies and manufacturers. The business model simplifies and accelerates the prior authorization process through cloud-based technology, instead of traditional phone calls and faxes. CMM works with over 45,000 pharmacies and generates revenue of over $100 million annually. In addition, CMM issued over two million prior authorizations per month in 2017 and has grown over 100% annually over the past four years. CMM has worked closely with MCK's RelayHealth Pharmacy claims processing business since 2010, decreasing integration risk.

MCK will retain 70% ownership in Change Healthcare. Eventual monetization via IPO should help MCK shareholders realize value.

Rexall Health, a retail pharmacy chain in Canada, was purchased in December 2016 for $2.1 billion. The acquisition allows MCK to expand as a direct retail operator, creating value when working with pharmaceutical manufacturers looking for "one-stop" market access. The company operates over 470 retail pharmacies and has potential to drive growth in two of Canada's fastest growing regions, Ontario and Western Canada. National Bank Financial estimates Rexall has annual sales of $2 billion to $2.5 billion and generates annual EBITDA of $200 million to $250 million.

In February 2016, MCK acquired Vantage Oncology and Biologics for $1.2 billion. The purchase allows the company to expand its footprint in the specialty pharmaceutical space where the clinical care needs of its physician partners are increasingly complex and growing. Vantage offers comprehensive oncology management services, including community-based radiation oncology, medical oncology, surgical specialties, and other integrated cancer care services. Vantage operates over 50 cancer centers in the U.S. and strengthens MCK's current offerings while allowing patients to

access efficient, customizable and cost effective care. It is estimated oncology alone should nearly double from $46 billion in revenues in 2016 to $86 billion in 2025. Expanding in the profitable and growing specialty market should also allow MCK to diversify away from generic pricing deflation.

MCK acquisition spending (net cash acquired) -

2017: $4.2 B
2016: $0.04 B
2015: $0.17 B
2014: $4.6 B

Mergers and acquisitions among pharmacies and payers are pressuring wholesaler margins, especially as the acquiring companies consolidate buying power. The largest dispensing pharmacies, CVS Health, Walgreens Boots Alliance, Express Scripts, Walmart, Rite Aid, and UnitedHealth Group – account for the bulk of U.S. prescription dispensing revenues. These large pharmacies are increasingly entering into multifaceted partnerships with the drug wholesalers, cementing the distributors' role in the system (Figure 6). Further discussion on the competitive landscape continues below.

Figure 6: MCK and competitors major partnerships

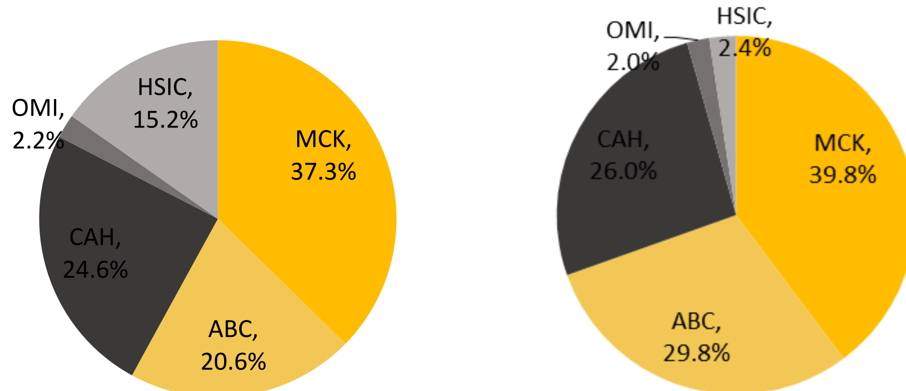
	McKesson (MCK)	Cardinal Health (CAH)	AmerisourceBergen (ABC)
Large PBM Customer	CVS/caremark	OptumRx	Express Scripts
Large Retail Customer	Walmart	CVS/pharmacy	Walgreens Boots Alliance

Source: Pembroke Consulting Research, drugchannels.net

Competitor Analysis

MCK operates in an oligopoly in the medical distribution industry and is the largest of three major players controlling an estimated 90% combined market share in the U.S. Due to extremely thin profit margins and little market share up for grabs, new entrants would face a difficult time penetrating the drug distribution market. Historically, new players have had a tough time carving out enough share to efficiently leverage distribution assets into positive economic profits. Additionally, the three main firms are able to obtain material pricing discounts from drug manufacturers that many of their customers cannot acquire on their own. These aspects provide a long-term competitive position for the three major drug distributors, although not as powerful as in the past with an ever-changing healthcare environment. For example, recent news (and lots of speculation) about Amazon (AMZN) entering healthcare, either with its own pharmacies, wholesale pharmaceutical or medical supply distribution, or other avenues have caused a stir in the industry. Additionally, competition between the three major distributors is high, as changes in drug prices have begun to harm margins, mentioned previously. This trend has led the firms to a greater focus on operating efficiencies/leverage and seeking new avenues for growth such as specialty & biosimilar pharmaceuticals.

Figures 7 & 8: Comparison of MCK comps by market cap (left) and 2017 revenue (right)



Source: Morningstar, IMCP

On October 26, 2017, St. Louis Post-Dispatch reported it was announced Amazon had gained approval from a number of state pharmaceutical boards to become a wholesale distributor, citing public records. Although these licenses only applied to 12 states, shares of companies within the pharmaceutical supply chain sank 4% - 7% that afternoon alone. Weeks later, a report from Jefferies indicated Amazon was instead homing in on the medical devices and supplies industries and the licenses reported previously could only be used for medical device and supplies, not pharmaceutical distribution (via a Freedom of Information Act request by Jefferies). Although MCK distributes medical supplies, it is only estimated to be 3% of total revenues.

Although it is justified to consider Amazon a potential threat to the space in years to come, I believe the near-term fears (specifically related to MCK) are slightly overblown. It is easy to underestimate the complexity of entering the pharmaceutical distribution industry. Amazon had been considering the healthcare and pharmacy space for close to 20 years (remember Drugstore.com in 1999). Additionally, this December Amazon let three medical distribution license applications in the state of Maine expire. On December 3rd, 2017, RBC analyst George Hill wrote about the expiration, "That's either a sign Amazon isn't interested in selling drugs or an example of rookie struggles with the complex regulations. Our key takeaway from this experience is that Amazon will have to endure the same learning curve and regulatory hurdles in the space as any other company." Furthermore, industry consultant Adam Fein of Drug Channels Institute, reported many shoppers prefer to get their medications from a store, which offers peace of mind that their orders are correct and provides them the opportunity to speak with pharmacists. This is something that is not as easy to do online. He continued by citing the fact mail-order prescriptions fell 23% from 2012 to 2016, with mail pharmacies dispensing only 10% of all 30-day equivalent prescriptions in 2016.

Competition amongst the three main distributors is also high. In 2016, as highlighted by a WSJ article*, one of MCK's key competitors, AmeriSourceBergen (ABC) ignited a price war amongst the three distributors in an attempt to win business from independent pharmacies. These smaller pharmacies are more profitable for the distributors as they typically have less purchasing power compared to larger retail chains. Many of the smaller pharmacies procure drugs through group-purchasing organizations (GPOs). When ABC provided generous pricing terms to win a contract, many other GPOs began seeking more favorable pricing terms from their own distributors, further squeezing margins. Specifically in CY 2016, MCK had to re-negotiate several contracts with independents to maintain business, harming margins. It is worth noting that ABC's strategy to win business through price reduction was not successful, as estimates show almost no shift in market share within the GPOs. If any one of the three main distributors were to blink on price again, it could hurt profitability for all.

Although MCK faces potential headwinds mentioned above, the firm has taken steps to mitigate potential issues going forward. The company has been able to increase generic distribution volume through the expansion of its Albertsons and Wal-Mart (ClarusONE) relationships. In addition, the firm has begun a restructuring campaign to enhance current efficiencies while reducing its cost structure through a head count reorganization as well as divesting its struggling healthcare IT segment (via Change Healthcare, mentioned above). Although a specific timeline has not been announced, it is estimated the restructuring campaign could add 3-5 bps to distribution solutions EBIT margins.

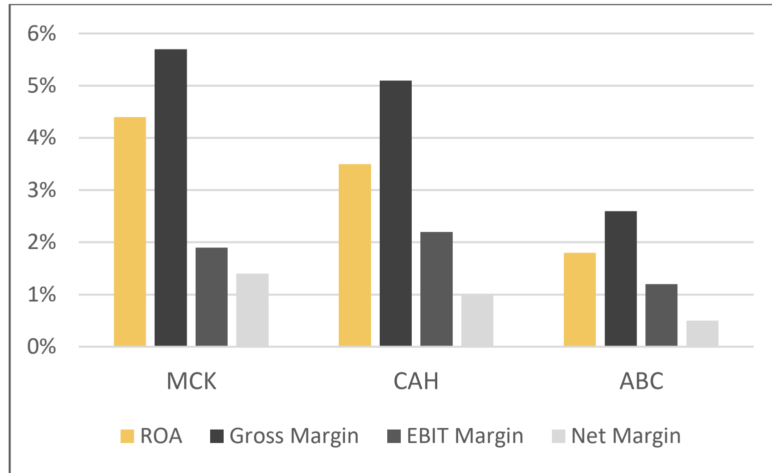
MCK retail pharmacy store ownership:

U.S. – 4,800+
Europe/UK – 8,100+
Canada – 2,500+

MCK has historically had above industry average margins, attributable to higher concentrations of independent pharmacy business, U.S. Oncology, and pharmacy ownership (Figure 9). MCK's North American distribution business is estimated to have more exposure to specialty than competitors. The firm also has more exposure to Canada and Europe/UK than its three main competitors, with revenue exposure around 13% of total sales. The company's long-term goal is to reach sustainable double-digit EPS growth, driven by more diverse areas such as specialty, medical-surgical, private label, international, and capital deployment.

**WSJ Article: "Falling U.S. Generic Drug Prices Hurt Manufacturers, Wholesalers", 8/4/17*

Figure 9: Comparison of MCK comps by margin (5-year average)



Source: Morningstar

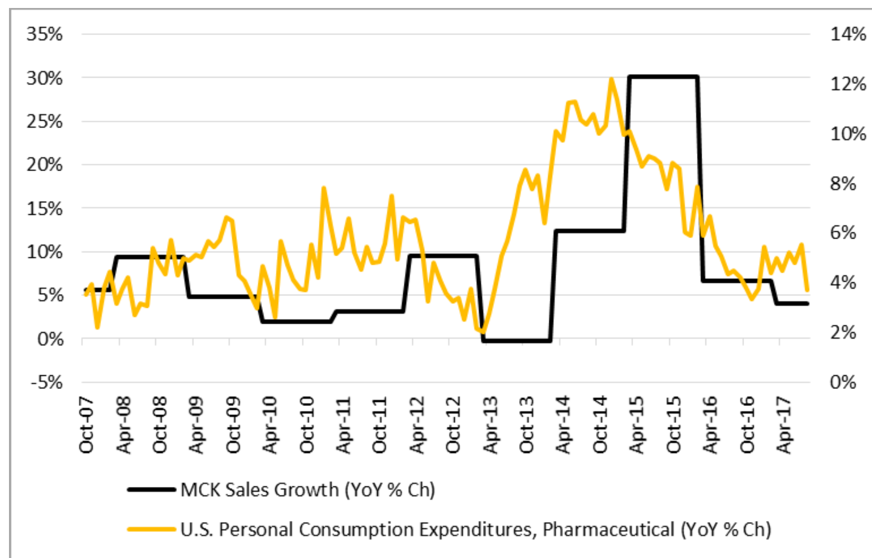
Medicine Usage / Demographic Trends

Distribution Solutions EBIT Margins -

2017: 1.72%
2016: 1.89%
2015: 1.73%
2014: 1.84%

Over 98% of MCK's revenue comes from its distribution services segment, 84% of which is generated from North America. Due to very low margins, volume is extremely important. Outpatient prescription drug spending is projected to grow along with overall national healthcare expenditures. The usage of medicines by patients has continued to rise, as many have wider access to insurance and low cost generic medicines, with a small number of patients facing high out-of-pocket costs.

Figure 10: MCK sales growth (left) and U.S. personal consumption expenditures, pharma (right)



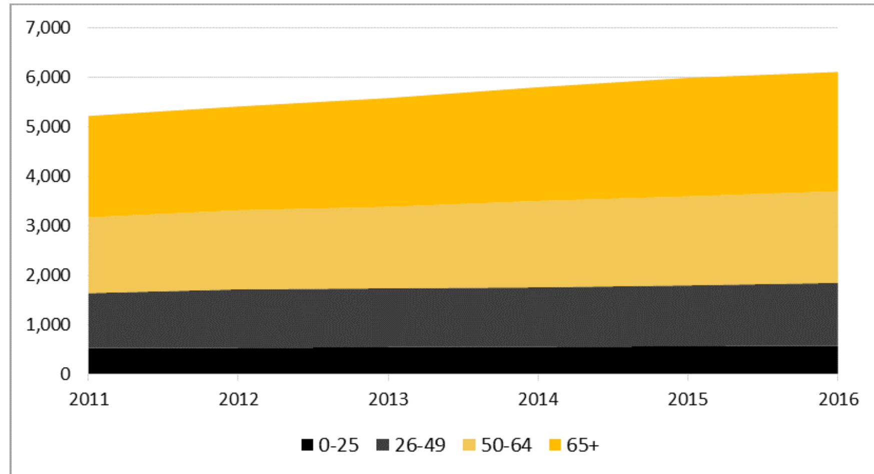
Source: FactSet

Patients are living longer and an aging population are driving higher prescription usage.

The United States added 12.3 million to the population from 2011 to 2016, 91% of that of that increase coming from the over 50-age group, as patients are living longer and frequently healthier lives. The aging population is driving higher prescription usage. Patients over 50 accounted for 682 million of the 884 million incremental prescriptions over the past five years, 70% of that coming from a rising share of the population and 30% originating from higher usage.

Medicine usage per 1 mil of overall U.S. population averaged 18,869 in 2016, up from 16,775 in 2011, an increase of 2.4% per year on average and 12.5% overall. Overall healthcare spending is predicated to account for nearly 20% of the U.S. economy by 2025.

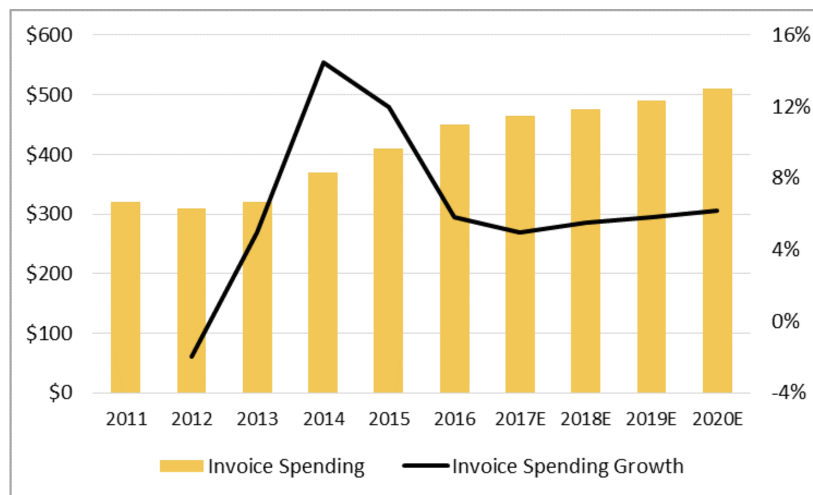
Figure 11: Adjusted dispensed prescriptions by patient age (millions)



Source: QuintilesIMS National Prescription Audit; U.S. Census Bureau, Dec. 2016

The Affordable Care Act (ACA) will continue to influence medicine spending over the next several years as insurance coverage expands, increasing medicine usage. Although uncertainty surrounds the healthcare system in the U.S., the failed repeal and replace of the ACA in March 2017 should be a positive for distributors. Although approximations vary, Goldman Sachs and RAND estimated between 17 million – 18 million people gained access to health insurance through the ACA or expanded Medicaid as of May 2015.

Figure 12: Total spending on medicines (USD, Billions)



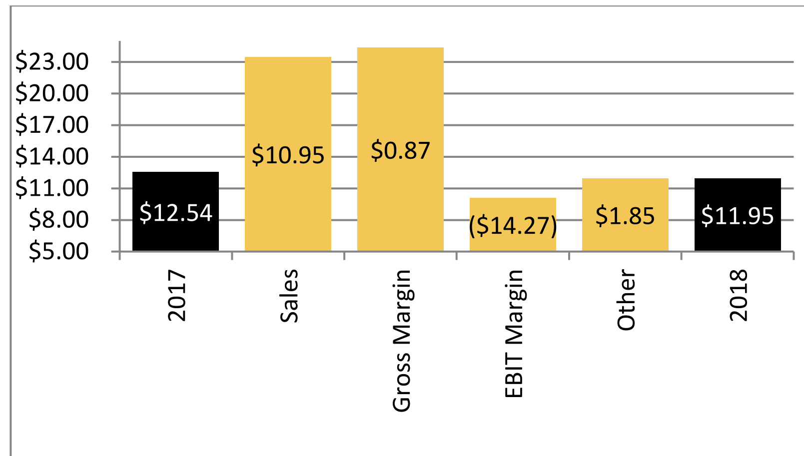
Source: QuintilesIMS Market Prognosis, QuintilesIMS Institute, March 2017

Due to more strict health management, higher government oversight in several countries, and the relative lack of end-of-life therapies, the EU pharmaceutical market is expected to grow 3-4% annually through 2020, slightly slower than the 4-7% growth expected in the U.S. market (QuintilesIMS).

Financial Analysis

I anticipate adj. EPS to decline to $11.85 in FY 2018. The majority of the estimated decline comes from earnings returning to "normal" levels, as FY 2017 EPS was boosted due to a one-time gain from the technology solutions divesture, mentioned previously. Anticipated revenue growth of 3.6% should increase earnings by $10.95. Gross margin and EBIT margin decline should contribute $0.87 and ($14.27) to earnings, respectively. Margins for the distributors were depressed in 2017 due to several factors discussed previously, including deflating drug prices, customer consolidation, and increased competition. These trends are expected to continue into 2018. Alleviating factors to these trends include MCK's restructuring campaign aimed at increasing efficiencies, the ramping up of MCK's ClarusONE sourcing venture with Walmart, share buybacks, and favorable FX movements.

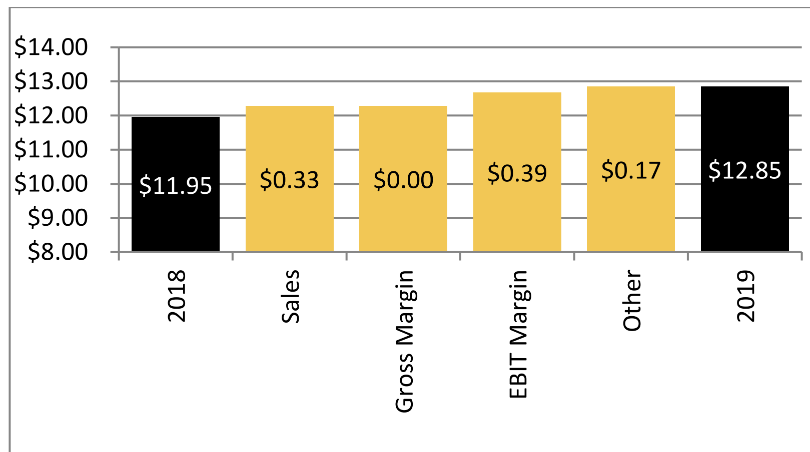
Figure 13: Quantification of FY 2018 EPS Drivers



Source: Company Reports, IMCP

I anticipate FY 2019 adj. EPS to increase $1.29 to $12.85. Revenue growth of 3% should increase earnings by $0.33. I estimate slight gross and EBIT margin improvements (from lower SG&A as a % of sales) to contribute a positive $0.39 to earnings. As drug pricing pressures subside and move toward more normal levels, margins should be positively impacted. Additionally, a reduced tax rate and continued share buybacks, as well as monetization of Change Healthcare (management considering FY 2019 IPO) should provide a positive impact to EPS.

Figure 14: Quantification of FY 2019 EPS Drivers



Source: Company Reports, IMCP

I am, for the most part, in line with consensus estimates for FY 2018 and 2019 EPS estimates. I anticipate drug pricing will slowly move toward historical averages, although I do not believe they will return to 2014-2015 levels anytime soon. MCK should benefit from an aging population and increased spending on pharmaceuticals for several years to come. It is worth noting I am also in line with management's forecasted FY 2018 EPS of $11.80 - $12.50.

Figure 15: Sales and EPS estimates for FY '17 and '18

	2018E	2019E
Revenue	$205,482	$210,824
YoY Growth	3.5%	2.6%
Revenue - Consensus	$205,828	$210,123
YoY Growth	3.6%	2.3%
EPS	$11.95	$12.85
YoY Growth	-4.7%	7.5%
EPS - Concensus	$12.23	$13.15
YoY Growth	-2.5%	7.5%

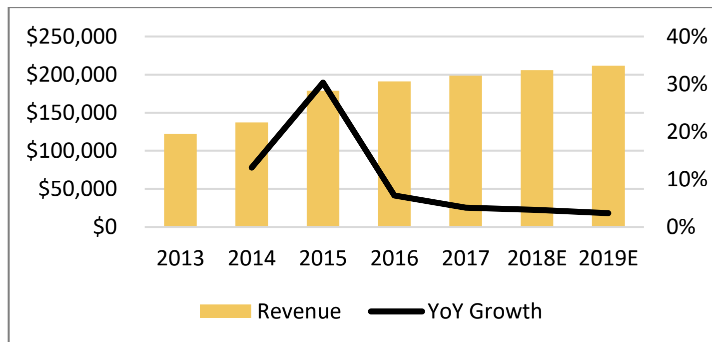
Source: FactSet, IMCP

Revenues

MCK's revenues have grown at a 7.9% CAGR over the past 10 years as the company benefited from increased spending on pharmaceuticals, a leading market share, and prescription drug price increases. Most recently in FY 2017, revenue grew below historical averages at 4% to $198.5 billion. I believe revenue growth will continue to moderate for the next several years as the pharmaceutical wholesale environment continues to mature. Although prescription spending is expected to increase at low-to-mid-single digits, competition within the industry's three main players should remain high, in addition to a potentially evolving, but difficult to predict, Amazon threat.

I expect MCK's North America pharma segment (83% of total sales) to grow 3.5% - 4.5% over the next several years as the firm's dominant market share put the company in position to take advantage of increased pharmaceutical spending. Pharmacy ownership and disciplined M&A would also allow the company to expand in high-growth areas such as specialty and biosimilar medicines. I anticipate MCK's international pharma segment (12.5% of total sales) will grow 2.5% - 3.5% over the next few years as European and UK prescription spending growth lag the U.S. Also, I forecast MCK's medical-surgical segment (3.1% of total sales) to grow 1% - 3%; a segment which is more vulnerable to an Amazon threat due to lower barriers to entry compared to pharmaceutical distribution. Lastly, MCK's technology solutions segment (1.3% of total sales) should fall to 0% by FY 2019, as the company divests from the space.

Figure 16: Revenue (million, L) and YoY Growth (R) 2013-2019E



Source: Company Reports

Return on Equity

MCK has achieved a return on equity above its comps in recent years. This is due to its higher net profit margins compared to the industry, which more than offsets its lower average financial leverage and asset turnover. This could indicate MCK has achieved a higher ROE with less risk. Going forward, continued pressure on net margins should weigh on both ROA and ROE for MCK. I do not expect the company to increase leverage materially in the next several years, as the company should be able to generate sufficient cash flow.

Figure 17: ROE breakdown, 2014-2019E

5-stage DuPont	2014	2015	2016	2017	2018E	2019E
EBIT / Sales	1.7%	1.7%	1.9%	3.6%	1.7%	1.7%
Sales / Avg Assets	3.18	3.39	3.46	3.38	3.33	3.30
EBT / EBIT	88.6%	89.5%	91.7%	96.9%	90.9%	90.9%
Net Income / EBT	60.3%	55.6%	69.5%	73.6%	79.0%	79.0%
ROA	2.9%	2.8%	4.1%	8.6%	4.1%	4.0%
Avg Assets / Avg Equity	5.55	6.39	6.52	5.87	5.38	5.03
ROE	16.2%	17.9%	26.7%	50.7%	21.9%	20.3%

Source: Company Reports

Free Cash Flow

MCK's free cash flow has varied extensively over the last several years. NOPAT (excluding the one-time FY17 gain mentioned previously) has grown while changes in operating capital varied as the company has made numerous acquisitions in recent years. MCK's management has stated they intend to continue with share buybacks, and favor them over dividends. In 2017, the company spent over $2.3 billion on buybacks, compared to $1.6 billion in 2016. The company has also reduced its borrowing recently, and does not predict material increases in the near term. In 2016, MCK repaid significantly more debt than it issued, leading to negative FCFE in my analysis.

Figure 18: FCF analysis 2015 – 2019E

	2015	2016	2017	2018E	2019E
NOPAT	$2,058	$2,555	$5,444	$2,725	$2,796
Growth		*24.2%*	*113.1%*	*-50.0%*	*2.6%*
NOWC	4,837	4,985	2,576	4,677	5,900
Net fixed assets	17,200	18,126	24,021	22,831	23,425
Total net operating capital	$22,037	$23,111	$26,597	$27,508	$29,325
Growth		*4.9%*	*15.1%*	*3.4%*	*6.6%*
- Change in NOWC	(5)	148	(2,409)	2,101	1,223
- Change in NFA	(1,986)	926	5,895	(1,190)	594
FCFF	$4,049	$1,481	$1,958	$1,814	$979
Growth		*-63.4%*	*32.2%*	*-7.4%*	*-46.0%*
- After-tax interest expense	259	254	236	265	275
+ Net new short-term and long-term debt	(875)	(1,690)	391	200	150
FCFE	$2,914	-$464	$2,113	$1,765	$875
Growth		*-115.9%*	*-555.6%*	*-16.5%*	*-50.4%*
FCFF per share	$17.5	$6.4	$8.9	$8.6	$4.7
Growth		*-63.1%*	*37.6%*	*-3.3%*	*-45.1%*
FCFE per share	$12.6	-$2.0	$9.6	$8.3	$4.2
Growth		*-116.1%*	*-574.2%*	*-12.8%*	*-49.5%*

Source: Company Reports, IMCP

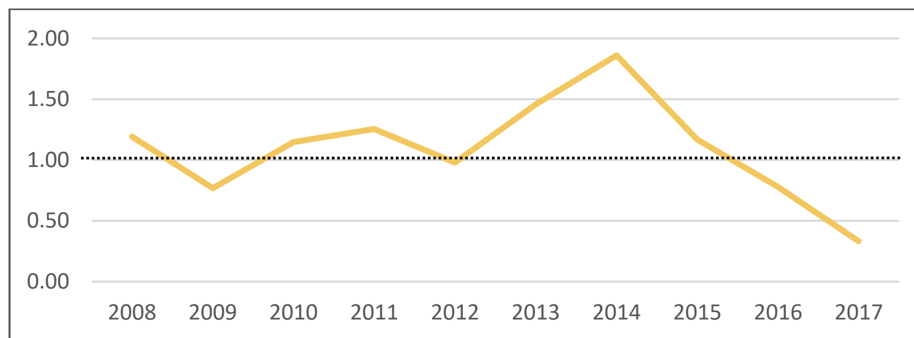
Valuation

MCK was valued using multiples and a 3-stage discounting cash flow model. Relative valuation shows MCK to be fairly valued based on its fundamentals versus those of its peers in the medical distribution industry.

Trading History

MCK is currently trading near its ten year low relative to the S&P 500 based on trailing P/E. This is the result of a negative industry outlook due to recent pharmaceutical pricing trends, industry consolidation, and other trends. MCK's current forward P/E is at 13.4 compared to its ten year average of 18.5. While I expect slight regression towards that number in the future, I do not think that is likely to be the case in the near term as I am doubtful pharmaceutical pricing will return to 2014-2015 levels. It is important to note that MCK's FY 2017 P/E is very low due to the one-time gain from the Change Healthcare spin-off, which temporarily increased MCK's operating and net margins for the year. Normalizing this would put its FY 17 P/E around 10 (as reported: 7.6). Considering these factors and my future outlook, I incorporated a 15.5x terminal P/E for my DCF valuation (FY 2024).

Figure 19: MCK TTM P/E relative to S&P 500



Source: Morningstar, Company Reports

Assuming the firm's forward P/E rises to 13.4 by the end of 2018 as conditions improve, it should trade around $172 by the end of its fiscal year based on my FY 2019 EPS estimate.

- Price = NTM P/E x FY '19 EPS = 13.4 x $12.85 = $172.19
- Discounted = 172.19 / (1.104^3/12) = 167.98

Discounting $172.19 back today at a 10.4% cost of equity (explained in the Discounted Cash Flow section) yields a price of $167.98.

Figure 20: MCK valuation compared to 5yr average, comps, healthcare sector and S&P 500

(TTM used)	MCK	*MCK 5yr Avg*	ABC	CAH	Health - Care**	S&P 500
P/E	10.5*	*21.8*	62.6	18.1	22.5	22.9
P/S	0.2	*0.2*	0.1	0.2	1.9	2.2
P/B	2.9	*4.4*	10.1	3.0	4.0	3.2
P/CF	10.7	*10.9*	13.9	8.9	17.5	14.3
Div. Yield	0.8%	*0.6%*	1.6%	2.9%	1.4%	1.9%

**MCK's TTM P/E was adjusted to account for one-time gain on Change Healthcare (actual reported TTM P/E: 8.6)*

***Healthcare industry estimated using VHT Healthcare ETF*

Source: Morningstar

Relative Valuation

MCK is currently trading at a P/E below its peers, based on a forward P/E of 13.4 compared to an industry average 15.0. The medical distribution industry is discounted when compared to the healthcare industry or S&P 500, due primarily to investors' concerns over pharmaceutical pricing trends, industry consolidation, and a potential AMZN threat. Additionally, MCK's P/B is lower than peers, while its P/S is around the average. This is despite its higher margins and ROE vs. peers. As noted, the recent bump in ROE is temporary, but even before the 2017 rise, MCK's margin and ROE were above peer averages.

Figure 21: MCK comparable companies

		Current	Market	Price Change						GAAP 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	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
MCK	MCKESSON CORP	$172.96	$36,058	1.5	9.2	14.7	4.2	15.1	10.9	2.0	-69.6%	15.4%	54.3%	133.7%	-47.9%	33.0%	1.28	67.2%	A-	0.80%	5.8%
ABC	AMERISOURCEBERGEN CORP	$102.66	$22,388	2.6	11.0	23.4	12.0	22.6	11.8	8.0	281.8%	-150.8%	-1119.4%	-74.1%	152.4%	5.7%	0.94	183.2%	B	1.61%	89.0%
CAH	CARDINAL HEALTH INC	$73.51	$23,127	2.2	17.6	10.2	(3.6)	(2.0)	20.0	5.5	56.9%	7.0%	19.1%	-11.7%	8.6%	-10.1%	0.86	135.8%	B+	3.00%	53.1%
Average			$27,191	2.1	12.6	16.1	4.2	11.9	14.2	5.2	89.7%	-42.8%	-348.6%	16.0%	37.7%	9.5%	1.03	128.7%		1.80%	49.3%
Median			$23,127	2.2	11.0	14.7	4.2	15.1	11.8	5.5	56.9%	7.0%	19.1%	-11.7%	8.6%	5.7%	0.94	135.8%		1.61%	53.1%
SPX	S&P 500 INDEX	$2,833		0.8	5.6	10.0	14.6	24.7	6.0			-0.1%	0.5%	10.3%	11.7%						

		FY2017		P/E							FY2017			FY2017	EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2018E	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
MCK	http://www.mckesson.com	51.0%	2.80	32.6	36.0	16.2	8.4	13.4	7.6	14.1	2.55%	0.17	1.6%	30.7%	11.8	7.0	11.5	2.7%	3.7%	10.1%	$53.57
ABC	http://www.amerisourcebergen.com	17.4%	8.70	66.1	-	12.8	62.6	16.9	55.9	16.5	0.24%	0.12	1.3%	6.2%	9.8	12.2	10.8	8.7%	7.6%	14.0%	$9.47
CAH	http://www.cardinalhealth.com	19.3%	3.60	20.3	23.1	18.1	21.4	14.8	19.3	14.2	0.99%	0.19	1.8%	9.4%	11.5	21.0	11.9	4.9%	3.2%	3.9%	$20.87
Average		29.2%	5.03	39.7	29.6	15.7	30.8	15.0	27.6	14.9	1.26%	0.16	1.6%	15.4%	11.0	13.4	11.4	5.4%	4.8%	9.3%	
Median		19.3%	3.60	32.6	29.6	16.2	21.4	14.8	19.3	14.2	0.99%	0.17	1.6%	9.4%	11.5	12.2	11.5	4.9%	3.7%	10.1%	
spx	S&P 500 INDEX			17.3	17.2	18.8			21.5	19.3											

Discounted Cash Flow Analysis

I estimate MCK's stock to be worth $174. based on a three-stage discounted cash flow model.

Using CAPM, I calculated the firm's cost of equity to be 10.4%. The underlying assumptions used in calculating this rate are as follows:

- Risk-free rate of 2.75%, based on the 10-year Treasury bond yield.
- A beta of 1.05 was utilized, slightly above the industry average. With recent uncertainty surrounding the industry, an above average beta is warranted.
- Market return of 10%, which has historically been about the average return of the market.

Using the above, cost of equity = 2.75% + 1.05 x (10% - 2.75%) = 10.4%

Stage One – For the first stage, the model discounts FY17 & FY18 free cash flow to equity (FCFE). Main assumptions used include revenue growth of 3.5% for FY18, and 2.6% for FY19, as well as NOPAT margins of 1.3%. I also expect share count to fall to 211 million in FY18 and 208 million by FY19. These assumptions result in discounted FCFE per share of $7.56 and $3.46, respectively.

Stage Two – Stage two of the model focuses on years 2020 – 2024. FCFE is calculated based on several factors including the firm's capital growth assumptions, NOPAT margin, and revenue growth. The resulting numbers are then discounted by 10.4%. As the industry matures, I forecast revenue growth to decline at a linear rate from 2.5% in 2020 to 2.0% in 2024. I expect NOPAT margins to remain around the firm's historical average of 1.2% - 1.6% and to benefit from a reduced corporate tax rate with the government's recent tax bill passage. I am also forecasting MCK's NOWC to sales and NFA turnover to stabilize around historical levels. I am not forecasting any unusual debt increases during this time period, as I expect the firm to keep its debt levels around historical averages.

	2018	2019	2020	2021	2022	2023	2024
FCFE	$8.34	$4.21	$9.07	$10.87	$12.47	$13.25	$13.24
Discounted FCFE	$7.56	$3.46	$6.74	$7.32	$7.61	$7.33	$6.63

Stage Three – For the final stage, I estimate a terminal growth rate of 0.5%, and a terminal P/E of 15.5. Although industry multiples are currently below average, I expect MCK's P/E to revert moderately to its average over the next seven years as investor sentiment and earnings improve.

Assuming terminal earnings per share for MCK are $16.39, with a P/E of 15.5, a terminal value of $253.99 is calculated. Using a discount rate of 10.4%, this number is discounted back to $127.38.

	2018	2019	2020	2021	2022	2023	2024
EPS	$11.70	$12.23	$12.41	$13.89	$15.43	$16.30	$16.39

Total Present Value – given the above assumptions utilized in a three-stage discounted cash flow model, an intrinsic value of $174.04 is calculated ($11.01 + $35.65 + $127.38).

Scenario Analysis

Considering different scenarios for my DCF model, I calculated an intrinsic value for two additional circumstances, one bearing in mind a more bullish outlook, and another a more bearish.

For my bull case, I assumed a 3.6% average sales growth for FY 2018 – 2024, as well as a 1.6% average NOPAT margin, a beta of 1, and a terminal P/E of 16.5. These assumptions would increase my intrinsic value to $221.55. These inputs would imply MCK is able to continue to expand in the U.S. and overseas with competition remaining at the status quo, the firm benefiting from the reduced 21% corporate tax rate, as well as valuation levels returning toward historical averages.

For my bear case, I assumed a 1.8% average sales growth for FY 2018 – 2024, as well as a 1.3% average NOPAT margin, a beta of 1.1, and a terminal P/E of 14.5. These assumptions would decrease my intrinsic value to $128.87. These inputs would imply competition within the distribution industry notches up, with a potential outside player like Amazon taking market share. Additionally, this input would assume a new player or continued drug price deflation cutting into margins and valuation levels remaining suppressed.

Figure 22: Scenario Analysis

(2018 - 2024)	Base Case	Bull Case	Bear Case
7 yr. avg. sales growth	2.40%	3.60%	1.80%
7 yr. avg. NOPAT margin	1.40%	1.60%	1.30%
Beta	1.05	1.00	1.10
Terminal P/E	15.5	16.5	14.5
DCF Value	$174.04	$221.55	$128.87

Business Risks

There are multiple potential risks facing MCK which could impede my investment thesis of having a cautiously optimistic outlook on MCK in the near term.

Changes in the U.S. healthcare industry & regulatory environment

MCK's operations are structured around the current healthcare system in the United States, which has changed significantly in recent years. Further disruption such as changes in Medicare and Medicaid reimbursement levels, changes in basis for payments, shifting away from fee-for-service and towards value-based payments and risk-sharing models, increases in the use of managed care, and further consolidation within the healthcare industry could negatively impact MCK.

International operation risks

MCK conducts business worldwide in U.S. dollars and the functional currencies of its foreign subsidiaries, including the Euro, British pound sterling, and Canadian dollars. Changes in foreign currency exchange rates could negatively impact the company's financial results which are reported in U.S. dollars. Changes in Canadian, EU, or UK regulatory or healthcare environments could negatively impact the company's financial position.

Competition and industry consolidation

MCK operates in a highly competitive environment and would be negatively impacted by a new entrant such as Amazon entering the pharmaceutical distribution marketplace. Additionally, in recent years, the healthcare industry has been subject to increasing consolidation. Having a smaller number of pharmaceutical suppliers and customers could cause the company to be less able to negotiate favorable pricing terms. If consolidation trends continue among MCK's customers, suppliers, or competitors, it could erode the company's purchasing power and profitability. During 2017, sales to the company's ten largest customers, including GPOs, accounted for 54.2% of total revenues. Sales to the company's largest customer, CVS Health, accounted for 20.2% of total revenues.

Corporate Governance

I question MCK's corporate governance in recent years, as the firm has been under scrutiny around internal controls handling controlled substances. The firm was charged by the government in 2007 and 2008 for failing to report suspect opioid orders from some of its customers. Although the board agreed to increase internal controls surrounding controlled substances, by 2014 the firm was investigated again and ultimately paid a $150 million fine. These failures occurred while the board agreed to record paydays for CEO John Hammergren, who has been compensated over $500 million over the past 13 years. Specifically, he was compensated $46 million in 2011, $55 million in 2010, and $37 million in 2009. This compares to the average pay package for a CEO running a top 100 company around $12 million (Reda, compensation consultant). Shareholders voted this past July 2017 against the company's executive pay policy, following a shareholder campaign that criticized the company for its role in the U.S. opioid drug epidemic. Hopefully this recent shareholder vote sends a message to MCK's board, but if mismanagement continues, MCK could be negatively affected.

The present value of CEO John Hammergren's pension benefit is over $130 million.

It is unfortunate management emphasizes adjusted earnings instead of GAAP, which the board seems to be okay with reporting. In fact, short-term bonuses for management are based on two criteria, adjusted EPS (75%) and adjusted operating cash flow (25%). Long-term bonuses are determined based on a combination of adjusted operating cash flow and average ROIC (20%), total

shareholder returns vs. the S&P 500 Health Care Index and adjusted EPS (40%), and the final 40% is based on the stock's price performance. In my opinion, shareholders would benefit if the board focused on longer term results and ROIC, rather than short term adjusted earnings and stock price which can encourage aggressive management and excessive share buybacks.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Relatively Low

A new competitor would have a hard time carving out market share in an industry where the three top players control 90%. Significant capital would be required to establish an efficient supply chain capable of navigating a complex healthcare environment and handing very small margins.

Threat of Substitutes – Medium to High

MCK relies on long term contracts with pharmacies and other end users and faces significant competition from CAH and ABC. Distribution firms attempt to create value for customers in an attempt to make it harder for customers to switch to a competitor.

Supplier Power - Medium

Numerous drug manufactures rely on the big three distributors to efficiently distribute their products to pharmacies and other end users. A supplier with a significant brand name or patent could negotiate more favorable terms, reducing the purchasing power of distributors.

Buyer Power – Medium

M&A activity among pharmacies and payers are pressuring wholesaler margins, as the acquiring companies consolidate buying power. CVS Health, Walgreens Boots Alliance, Express Scripts, Walmart, Rite Aid, and United Health Group account for the majority of U.S. prescription dispensing sales.

Intensity of Competition – Medium to High

Competition between the three major distributors is high, as changes in drug prices have begun to harm margins, mentioned previously. This trend has led the firms to a greater focus on operating efficiencies/leverage and seeking new avenues for growth such as specialty & biosimilar pharmaceuticals.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Above average margins	Limited business segments
Highest market share	Below average dividend
Robust cash flow	Poor corporate governance
Opportunities	**Threats**
Healthcare spending increasing	Regulatory/political pressure
Higher margin business opps (oncology)	Further drug price deflation
International expansion	Amazon

Appendix 3: Income Statement (Millions, USD)

Income Statement	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19
Sales	$122,196	$137,392	$179,045	$190,844	$198,533	$205,482	$210,824
Direct costs	115,315	129,040	167,634	179,428	187,262	194,797	199,440
Gross Margin	6,881	8,352	11,411	11,416	11,271	10,685	11,385
SG&A, R&D, and other	4,566	5,985	8,443	7,871	4,162	7,192	7,800
EBIT	2,315	2,367	2,968	3,545	7,109	3,493	3,584
Interest	240	303	374	353	308	319	325
EBT	1,919	2,096	2,657	3,250	6,891	3,174	3,259
Taxes	581	742	815	908	1,614	667	684
Income	1,338	1,354	1,842	2,342	5,277	2,508	2,574
Other	-	91	366	84	207	-	-
Net income	1,338	1,263	1,476	2,258	5,070	2,508	2,574
Basic Shares	235.0	229.0	232.0	230.0	221.0	211.6	207.9
EPS	$5.69	$5.52	$6.36	$9.82	$22.94	$11.85	$12.38
DPS	$0.83	$0.93	$0.98	$1.06	$1.14	$1.25	$1.32

Appendix 4: Balance Sheet (Millions, USD)

Balance Sheet	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19
Cash	2,456	4,193	5,341	4,048	2,783	4,708	5,964
Operating assets ex cash	20,714	28,380	31,329	34,389	34,165	34,932	35,840
Operating assets	23,170	32,573	36,670	38,437	36,948	39,640	41,804
Operating liabilities	21,005	27,731	31,833	33,452	34,372	34,932	35,840
NOWC	2165	4842	4837	4985	2576	4,708	5,964
NOWC ex cash (NWC)	(291)	649	(504)	937	(207)	-	-
NFA	11616	19186	17200	18126	24021	22,831	23,425
Invested capital	*$13,781*	*$24,028*	*$22,037*	*$23,111*	*$26,597*	*$27,540*	*$29,389*
Total assets	*$34,786*	*$51,759*	*$53,870*	*$56,563*	*$60,969*	*$62,472*	*$65,229*
Short-term and long-term debt	$4,873	$10,719	$9,844	$8,154	$8,545	$8,745	$8,895
Other liabilities	1,838	4,787	4,192	6,033	6,957	6,957	6,957
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	7,070	8,522	8,001	8,924	11,095	11,838	13,537
Total supplied capital	*$13,781*	*$24,028*	*$22,037*	*$23,111*	*$26,597*	*$27,540*	*$29,389*
Total liabilities and equity	*$34,786*	*$51,759*	*$53,870*	*$56,563*	*$60,969*	*$62,472*	*$65,229*

Appendix 6: Ratios

Ratios	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19
Profitability							
Gross margin	5.63%	6.08%	6.37%	5.98%	5.68%	5.20%	5.40%
Operating (EBIT) margin	1.89%	1.72%	1.66%	1.86%	3.58%	1.70%	1.70%
Net profit margin	1.09%	0.92%	0.82%	1.18%	2.55%	1.22%	1.22%
Activity							
NFA (gross) turnover		8.92	9.84	10.80	9.42	8.77	9.12
Total asset turnover		3.18	3.39	3.46	3.38	3.33	3.30
Liquidity							
Op asset / op liab	1.10	1.17	1.15	1.15	1.07	1.13	1.17
NOWC Percent of sales		2.6%	2.7%	2.6%	1.9%	1.8%	2.5%
Solvency							
Debt to assets	14.0%	20.7%	18.3%	14.4%	14.0%	14.0%	13.6%
Debt to equity	68.9%	125.8%	123.0%	91.4%	77.0%	73.9%	65.7%
Other liab to assets	5.3%	9.2%	7.8%	10.7%	11.4%	11.1%	10.7%
Total debt to assets	19.3%	30.0%	26.1%	25.1%	25.4%	25.1%	24.3%
Total liabilities to assets	79.7%	83.5%	85.1%	84.2%	81.8%	81.1%	79.2%
Debt to EBIT	2.10	4.53	3.32	2.30	1.20	2.50	2.48
EBIT/interest	9.65	7.81	7.94	10.04	23.08	10.95	11.02
Debt to total net op capital	35.4%	44.6%	44.7%	35.3%	32.1%	31.8%	30.3%
ROIC							
NOPAT to sales	1.3%	1.1%	1.1%	1.3%	2.7%	1.3%	1.3%
Sales to NWC		767.55	2,469.59	881.50	543.93	(1,985.33)	#DIV/0!
Sales to NFA		8.92	9.84	10.80	9.42	8.77	9.12
Sales to IC ex cash		8.82	9.80	10.67	9.26	8.81	9.12
Total ROIC ex cash		9.8%	11.3%	14.3%	25.4%	11.8%	12.2%
ROE							
5-stage							
EBIT / sales		1.7%	1.7%	1.9%	3.6%	1.7%	1.7%
Sales / avg assets		3.18	3.39	3.46	3.38	3.33	3.30
EBT / EBIT		88.6%	89.5%	91.7%	96.9%	90.9%	90.9%
Net income /EBT		60.3%	55.6%	69.5%	73.6%	79.0%	79.0%
ROA		2.9%	2.8%	4.1%	8.6%	4.1%	4.0%
Avg assets / avg equity		5.55	6.39	6.52	5.87	5.38	5.03
ROE		16.2%	17.9%	26.7%	50.7%	21.9%	20.3%
Payout Ratio		16.9%	15.4%	10.8%	5.0%	10.6%	10.7%
Retention Ratio		83.1%	84.6%	89.2%	95.0%	89.4%	89.3%
Sustainable Growth Rate		13.5%	15.1%	23.8%	48.1%	14.9%	13.9%

Appendix 8: 3-stage DCF Model

Cost of equity	
Market return	10.0%
- Risk free rate	2.75%
= Market risk premium	7.3%
* Beta	1.05
= Stock risk premium	7.6%
r = r_f+ stock RP	

Terminal year P/E	
year 7	15.50

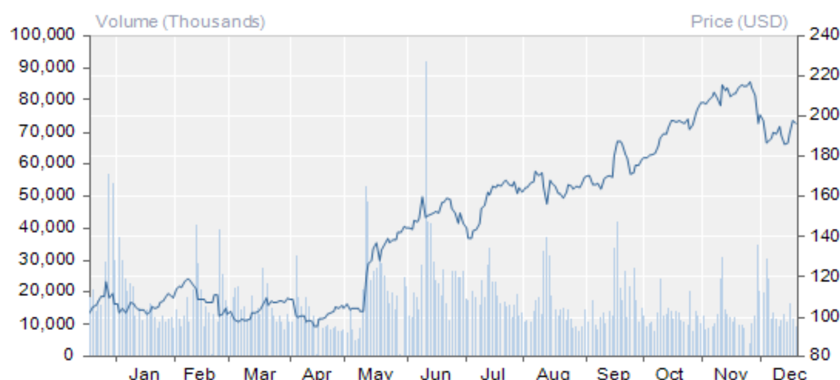
	Year						
	1	2	3	4	5	6	7
First Stage			**Second Stage**				
Cash flows	2018	2019	2020	2021	2022	2023	2024
Sales	$205,482	$210,824	$216,095	$221,281	$226,371	$231,351	$236,209
NOPAT	$2,760	$2,831	$2,809	$3,098	$3,396	$3,551	$3,543
Growth		*2.6%*	*-0.8%*	*10.3%*	*9.6%*	*4.6%*	*-0.2%*
- Change in NOWC	2132	1256	149	147	144	141	137
NOWC EOY	*4708*	*5964*	*6113*	*6260*	*6404*	*6545*	*6682*
Growth NOWC		*26.7%*	*2.5%*	*2.4%*	*2.3%*	*2.2%*	*2.1%*
- Chg NFA	-1190	594	586	576	565	553	540
NFA EOY	*22,831*	*23,425*	*24,011*	*24,587*	*25,152*	*25,706*	*26,245*
Growth NFA		*2.6%*	*2.5%*	*2.4%*	*2.3%*	*2.2%*	*2.1%*
Total inv in op cap	943	1849	735	723	709	694	677
Total net op cap	27540	29389	30124	30847	31556	32250	32928
FCFF	$1,817	$982	$2,075	$2,375	$2,686	$2,857	$2,866
% of sales	*0.9%*	*0.5%*	*1.0%*	*1.1%*	*1.2%*	*1.2%*	*1.2%*
Growth		*-46.0%*	*111.2%*	*14.5%*	*13.1%*	*6.3%*	*0.3%*
- Interest (1-tax rate)	252	257	258	260	261	262	264
Growth		*2.0%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*
+ Net new debt	200	150	44	45	45	45	45
Debt	8745	8895	8939	8984	9029	9074	9120
Debt / tot net op capital	*31.8%*	*30.3%*	*29.7%*	*29.1%*	*28.6%*	*28.1%*	*27.7%*
FCFE w debt	$1,765	$875	$1,861	$2,160	$2,470	$2,639	$2,648
% of sales	*0.9%*	*0.4%*	*0.9%*	*1.0%*	*1.1%*	*1.1%*	*1.1%*
Growth		*-50.4%*	*112.6%*	*16.1%*	*14.4%*	*6.9%*	*0.3%*
/ No Shares	211.6	207.9	205.8	204.1	202.5	200.9	199.3
FCFE	$8.34	$4.21	$9.04	$10.58	$12.20	$13.14	$13.29
Growth		*-49.5%*	*114.8%*	*17.0%*	*15.3%*	*7.7%*	*1.1%*
* Discount factor	0.91	0.82	0.74	0.67	0.61	0.55	0.50
Discounted FCFE	$7.56	$3.46	$6.73	$7.13	$7.45	$7.27	$6.66
Third Stage							
Terminal value P/E							
Net income	$2,508	$2,574	$2,551	$2,838	$3,135	$3,289	$3,280
% of sales	*1.2%*	*1.2%*	*1.2%*	*1.3%*	*1.4%*	*1.4%*	*1.4%*
EPS	$11.85	$12.38	$12.40	$13.90	$15.48	$16.37	$16.46
Growth		*4.5%*	*0.1%*	*12.2%*	*11.3%*	*5.8%*	*0.5%*
Terminal P/E							15.50
* Terminal EPS							$16.46
Terminal value							$255.08
* Discount factor							0.50
Discounted terminal value							$127.91

Summary		
First stage	$11.01	Present value of first 2 year cash flow
Second stage	$35.24	Present value of year 3-7 cash flow
Third stage	$127.91	Present value of terminal value P/E
Value (P/E)	**$174.17**	= value at beg of fiscal yr 2018

Information Technology

NVIDIA Corporation

Recommendation	NEUTRAL
Target (today's value)	$250.00
Current Price	$223.77
52 week range	$95.17-249.27



Share Data	
Ticker:	NVDA
Market Cap. (Billion):	$134.5
Inside Ownership	4.7%
Inst. Ownership	65.5%
Beta	1.36
Dividend Yield	0.3%
Payout Ratio	13.9%
Cons. Long-Term Growth Rate	12.0%

	'16	'17	'18E	'19E	'20E
Sales (billions)					
Year	$5.0	$6.9	$9.3	$11.5	$14.6
Gr %	7.0%	37.9%	34.8%	23.0%	27.8%
Cons	-	-	$9.4	$11.0	$12.8
EPS					
Year	$1.13	$3.08	$4.54	$6.02	$8.02
Gr %	-1.1%	172.3%	47.4%	32.6%	33.3%
Cons	-	-	$4.19	$4.69	$6.11

Ratio	'16	'17	'18E	'19E	'20E
ROE (%)	13.8%	32.6%	36.1%	36.7%	38%
Industry	14.1%	16.8%	25.4%	24.7%	23%
NPM (%)	12.3%	24.1%	26.4%	28.1%	29%
Industry	10.5%	18.2%	20.7%	18.9%	19%
A. T/O	0.69	0.80	0.87	0.91	0.96
ROA (%)	8.4%	19.4%	23.1%	25.7%	28%
Industry	4.9%	10.4%	13.7%	13.6%	14%
A/E	1.64	1.68	1.56	1.43	1.37

Valuation	'16	'17	'18E	'19E
P/E	27.1	42.5	52.9	47.4
Industry	14.8	15.7	30.3	24.4
P/S	3.1	8.5	14.2	12.3
P/B	3.7	12.0	19.8	15.0
P/CF	14.0	37.5	44.8	40.6
EV/EBITDA	10.8	25.4	38.6	32.2

Performance	Stock	Industry
1 Month	15.9%	11.1%
3 Month	22.5%	4.5%
YTD	14.7%	-15.8%
52-week	118.2%	-19.4%
3-year	1,021.8%	-28.6%

Contact: Travis Wiedmeyer
Email: wiedme23@uwm.edu
Phone: 262-365-4452

Summary: I recommend a neutral rating with a target of $250. NVDA has strong positioning within multiple strong growth verticals in the technology sector. I believe this positioning will lead to both top line growth as well as margin expansion going forward. My neutral rating is based on my belief that strong growth is already priced in the stock by the market. The stock is fairly valued based on my DCF analysis.

Key Drivers:

- Crypto-Currency Demand: Over 59% of NVDA's revenues currently come from its gaming segment. Leading growth within this segment over the past year has been the huge demand in hardware to mine crypto-currencies. This trend looks to continue over the next two years.

- Autonomous Driving: NVDA's segment with the highest potential growth over the next year is automotive. This growth is driven by NVDA's DrivePX Platform, the leading system in autonomous driving movements across the automotive industry.

- Strong Operating Leverage: NVDA's strategic R&D has led to a business model in which top-line growth significantly outpaces expense growth. This allows margins to expand, increasing free cash flow available to the company.

- Competitive Positioning: NVDA has allocated significant capital to building its CUDA platform. This platform allows the company to provide an exclusive database to customers increasing Artificial Intelligence capabilities and efficiency.

Valuation: Using a relative valuation approach, NVIDIA appears to be overvalued in comparison to the semiconductor industry. Due to greater precision of inputs, DCF analysis provides the best way to value the stock. A combination of DCF analysis and sensitivity analysis suggests that NVIDIA is slightly undervalued, as the stock's value is about $250 and the shares trade at $223.77.

Risks: Threats to the business include crypto-currency exposure, competition, and high variability in R&D capital needs.

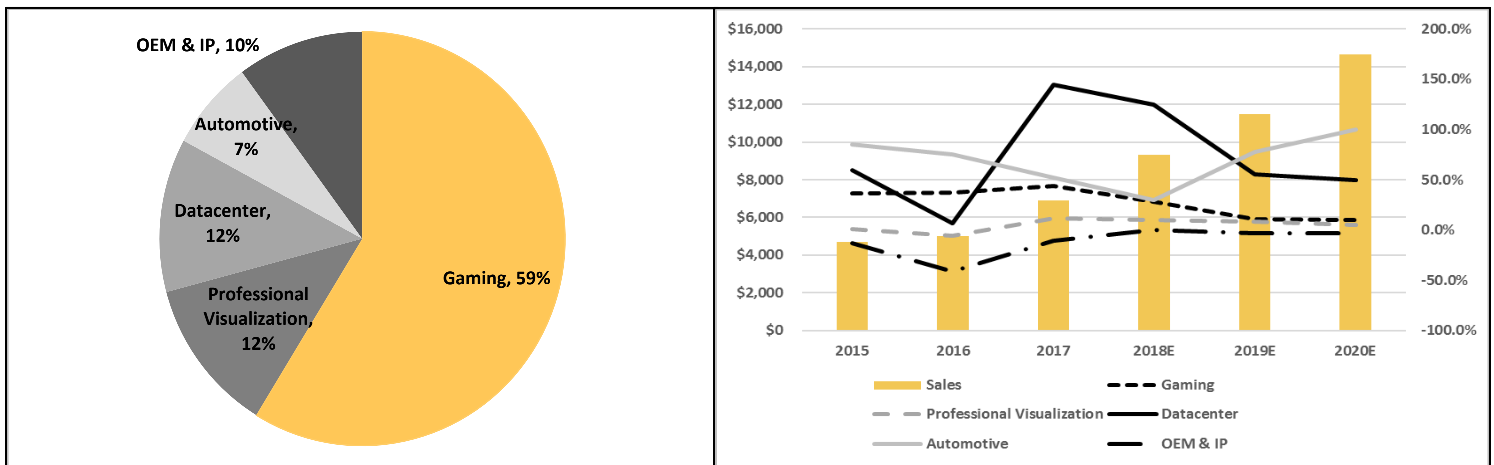
Company Overview

NVIDIA Corporation (NVDA) is a lead designer and manufacturer of computer graphic processors and chipsets. The company focuses on its two main products: Graphics Processing Unit (GPU) and Tegra Processor. NVDA sells its GPU products globally into the PC gaming, Cloud computing, and Artificial Intelligence (AI) industries, among others. The Tegra Processor platform is sold throughout the world and is an industry driver in both autonomous driving and electric cars. NVIDIA was founded in 1993 by Jensen Huang, Chris Malachowsky, and Curtis Priem and is headquartered in Santa Clara, California.

NVIDIA generates a majority of its revenue through the sale of its products with a small portion of revenue historically derived from licensing. NVDA divides its product sales into five business segments:

- Gaming: GPUs are used throughout the gaming industry including competitive online gaming, eSports, and virtual reality. It has experienced strong 2017 growth of 44%. Projected growth is 28% FY 2018, 11% FY 2019, and 10% FY 2020.
- Data Visualization: GPU computing enhances productivity and efficiency and is used in multiple industries including medical imaging, entertainment, and engineering. This division had moderate 2017 growth of 11%. Projected growth is 10% for FY 2018, 8% for FY 2019, and 5% for FY2020.
- Datacenter: GPUs are leading the movement into deep learning and AI and are used heavily in cloud computing. The firm generated high growth of 145% in 2017. Projected growth is 125% for FY 2018, 55% for FY 2019, and 50% for FY 2020.
- Automotive: Tesla GPUs are built into platforms that are used in multiple electric and autonomous driving cars throughout the industry. 2017 growth was 52%. Projected growth is 30% for FY 2018, 78% for FY 2019, and 100% for FY 2020.
- PC/Mobile OEM: This is a steadily declining segment consisting of GPUs used in OEM manufacturing of PCs and mobile phones. Revenue growth was -11% for 2017 and is projected to be 0%, -3%, and -3% for FY 2018, FY 2019, and FY 2020 respectively.

Figures 1 and 2: Revenue Sources for NVDA (2017) (left) and Revenue History with Segment Growth Since 2015



Source: NVIDIA Annual 10K

Business/Industry Drivers

Though several factors may contribute to NVIDIA's future success, the following are the most important near-term business drivers:

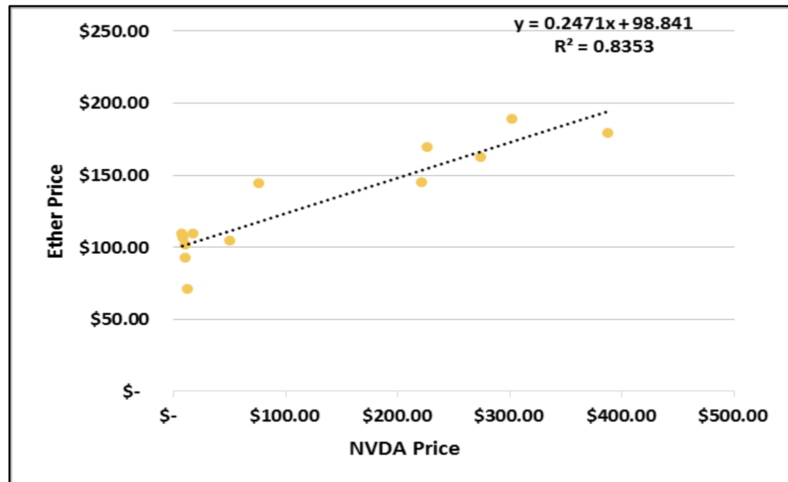
1) Crypto-Currency Demand
2) Automotive Partnerships
3) Strong Operating Leverage
4) Competitive Positioning

Crypto-currency Demand

Crypto-currency has experienced a huge increase in value and public interest in past year.

NVDA's gaming revenue segment appears be primarily driven in the short term by continued high demand in the non-Bitcoin, crypto-currency mining industry. These currencies include the extremely popular Ethereum, among others, and require computing power to mine which increases exponentially to the amount currently mined. The price of Ethereum has risen from $13.26 to $258.26 over the past year driving up demand for both mining and the blockchain technology backing the currency. Figure 3 shows the strong correlation of NVDA's price increase over the past year to the price of Ether. NVDA estimates a $7 billion target addressable market in the gaming segment by FY 2020 which represents a CAGR of 19.9%.

Figure 3: Correlation of NVDA Price and Ether Price from Oct. 1, 2016-Oct.1, 2017



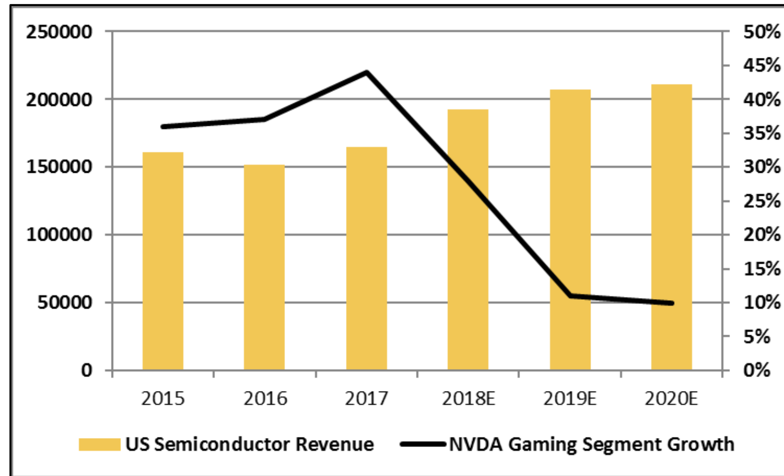
Source: Factset, CoinMarketCap

The NVIDIA GTX 1070 is currently considered by many as the best GPU on the market for crypto-currency mining. The current end-market price-point of the GTX 1070 is $534 per unit. This price-point as well as the sharp increase in demand driven by mining requirements was a significant factor in the growth of NVDA's gaming segment in 2017. Gaming revenues realized growth of 44% in 2017 and strongly contributed to the 39% growth of the overall GPU business of NVIDIA.

Many traditional financial service firms are looking to enter the crypto-currency and blockchain markets.

Traditional financial service firms have a rapidly growing interest in entering the crypto-currency and blockchain area which would cause demand to rise even more quickly. Sharp increases in demand for efficient GPUs that excel in crypto-currency mining have caused an overall industry supply tightening. NVDA's strong competitive position, and this along with continued high levels of demand in the mining market, should boost gaming revenues going forward.

Figures 4: US Semiconductor Revenue (left axis) and NVDA Gaming Revenue Growth (right axis)



Source: NVIDIA Annual 10K, Factset

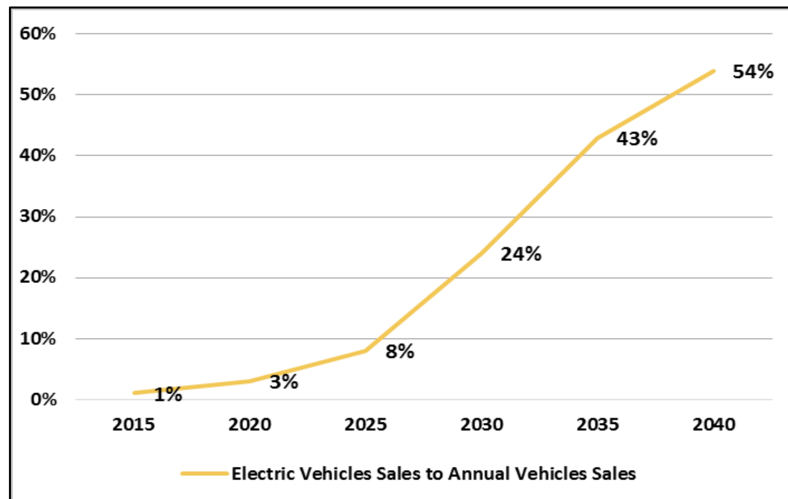
Traditionally, NVDA's gaming segment revenue accounted for 2.45% of the overall US semiconductor market revenues. The consensus estimates for the US semiconductor industry are for growth of 16.4% for 2017, 7.8% for 2018, and 2% in 2019. I believe demand for GPUs led by the continued need for increased computing power to mine crypto-currencies as well as supply shortages will contribute to an expansion from the 2.45% market share to 3.00% by FY 2020. This translates to gaming segment growth of 28% in FY 2018, 11% in FY 2019, and 10% in FY 2020 as shown in figure 4 above.

Automotive Partnerships

NVDA's Drive PX platform is the premier system for electric cars and autonomous driving.

NVIDIA has realized significant recent growth through its automotive business segment's implementation of its Drive PX platform. The Drive PX platform is the leading chip platform in electric vehicles as well as autonomous driving; both high growth opportunities for the automotive industry. The automotive business segment grew revenue 75% in FY 2016 and 52% in FY 2017. Tesla is the most significant automotive producer using the Drive PX platform, with every model sold operating on NVDA technology. NVIDIA projects a target addressable market $8 billion though 2025 in autonomous driving which represents a 36.5% CAGR from the $487 million in automotive revenue in 2016.

Figures 5: Projected Electric Vehicles as a Percentage of Total Vehicle Sales



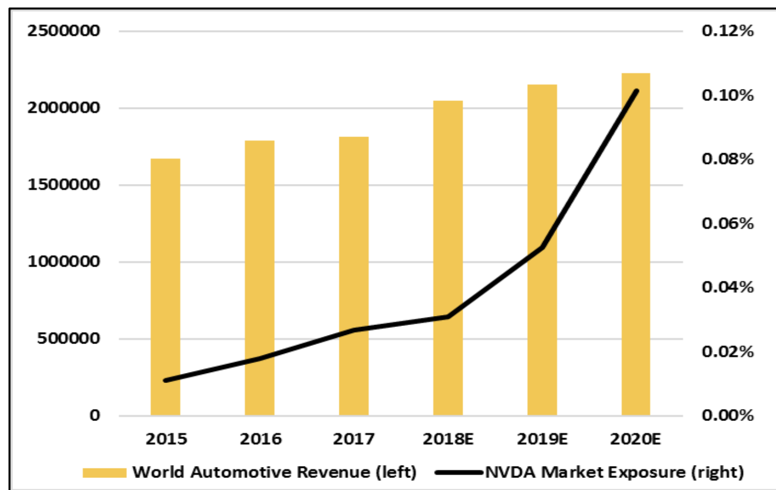
Source: Bloomberg New Energy Finance

Announcements of new partnerships with Toyota and others as well as manufacturer commitments to go fully electric are strong catalysts for NVDA growth.

In addition to Tesla, the NVDA Drive PX platform has been adopted and used in vehicles produced by Audi, Mercedes-Benz, and Volvo among others. Earlier in 2017, NVDA announced a new partnership with Toyota, the largest car manufacturer in the world, to introduce the Drive PX platform in Toyota's push into autonomous driving. Car manufacturers continue to align with NVDA to maximize efficiency in achieving autonomous driving instead of competitors such as AMD. This trend appears to project forward.

The move into autonomous driving is also connected to an industry-wide move to electric powered vehicles. Tesla has led this movement, but may have significant competition in the future. In the past year, multiple car manufacturers have announced near-term commitments to greatly transition to electric vehicles. Among these commitments is Volvo's announcement to fully electrify its entire vehicle line by the year 2019.

Figure 6: World Automotive Revenues (left) and NVDA Market Exposure (right)



Source: FactSet

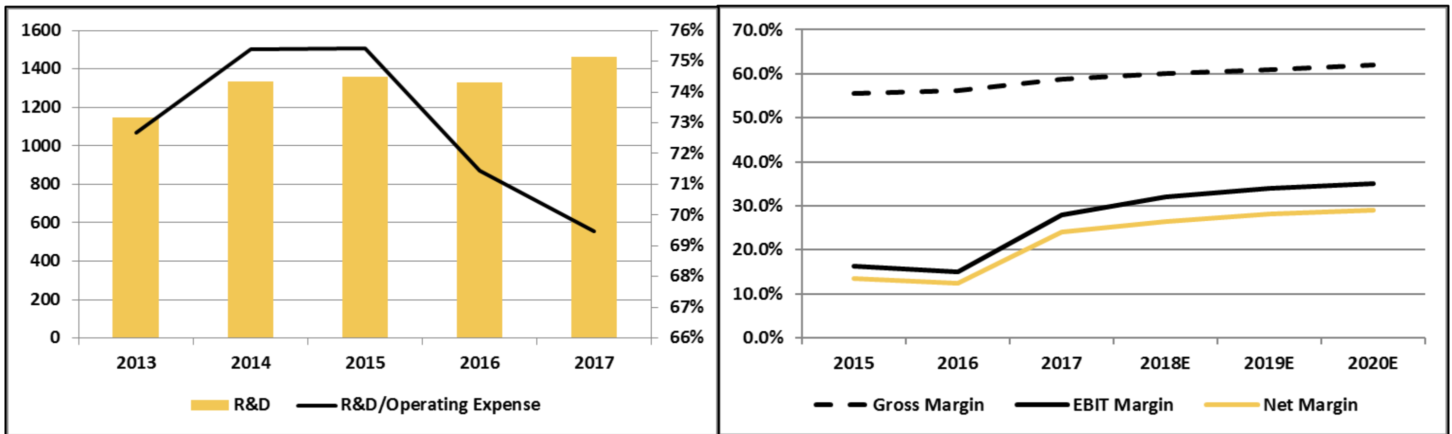
NVIDIA's market exposure to the world automotive market was 0.026% in FY2017. This market share realized growth of 63% in FY2016 and growth of 50% in FY2017. The consensus world motor vehicle revenue growth rates are 12.5% for 2017, 5% for 2018, and 3% for 2019. I believe that the industry transitions into electric-powered vehicles and autonomous driving will allow NVDA to grow exposure to the automotive market to 0.1% from the current 0.02% by FY 2020 as shown in Figure 6 above. This increased exposure coupled with world automotive revenue growth translates to NVDA automotive segment growing 30% in FY 2018, 78% in FY 2019, and 100% in FY 2020.

Strong Operating Leverage

NVDA completes the majority of R&D in-house, reducing the variability of expenses.

NVIDIA exhibits substantial operating leverage, which continues to grow as gross margin has risen with sales (figure 8). Gross margin expanded from 54.9% in FY2014 to 58.8% for FY2017. NVDA's ability to pass through cost increases, along with sales growth should push gross margin above 60% by 2020. Strong forecasted revenue growth coupled with high operating leverage will translate into significant bottom line margin expansion. This margin expansion will take place despite NVDA's continued commitment to research and development. Research and development expenses were $1.33 billion or 27% of sales in FY2016 and $1.46 billion or 21% of sales in FY2017.

Figure 7 and 8: NVDA R&D Expenses (left) and Margins (right)



Source: NVIDIA Annual 10K

High operating leverage will boost bottom-line growth.

I believe that strong top line growth will lead to gross margin of 60% in FY 2018 and continued expansion to 60.6% in FY2019. Given this continued gross margin expansion and fixed costs growing slower than sales, I believe high sales growth will translate to increases net margins of 26.4% in FY2018, 28% in FY2019, and 29% in FY 2020. Net margins were 12.3% and 24.1% for FY 2016 and FY 2017 respectively. Revenue estimates of $8.9 billion for FY 2018 and $11 billion for FY 2019 translate to earnings per share growth of 47.4% for FY 2018, 32% for FY 2019, and 33% for FY 2020 as shown in Figures 12-14 below.

Competitor Analysis

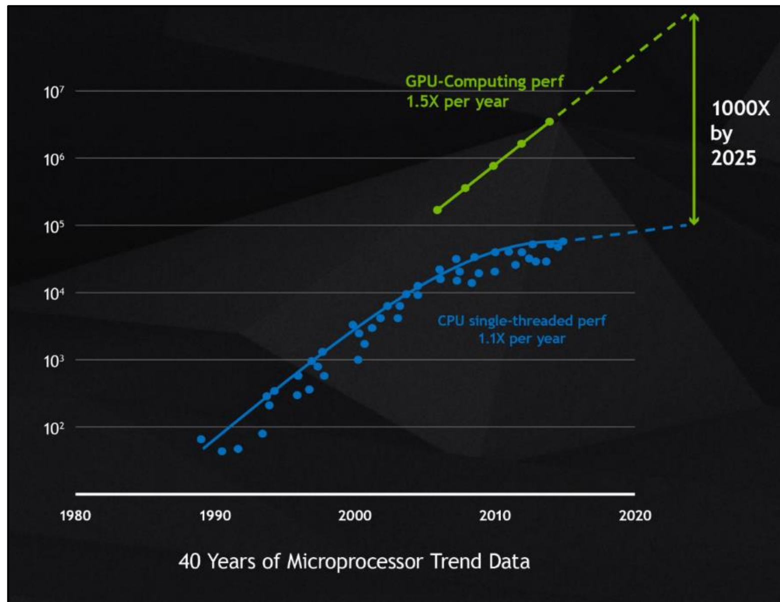
The semiconductor manufacturer industry is capital intensive and has high research and development requirements, both of which act as barriers of entry. Competition is between established players. Semiconductors are generally grouped into two categories based on the type of processing they use to complete computations. These include computer processing units (CPU), where Intel (INTC) is the largest, and graphic processing units (GPU), where NVIDIA is regarded as the industry leader. Although Intel is making movements into GPU manufacturing, Advanced Micro Devices (AMD) is generally regarded as NVDA's most direct competitor in the GPU space.

NVDA's CUDA platform is a highly defensible advantage against competitors.

The OEM PC/laptop industry has long relied on CPU-type chips for overall processing, a trend that looks to continue going forward. In contrast, all major emerging growth verticals within the technology sector are driven by the high-level computing capabilities produced through GPU processors. This has led to sharp increases in demand for high-powered and highly efficient GPU-type processors, and NVDA is the industry lead in both processing power and efficiency. The top 13 most efficient supercomputers in the world on the 2017 Green 500 list are powered by NVDA's Tesla GPU platform. Leading this list is NVIDIA's own DGX SATURNV supercomputer. NVDA's superior processing efficiency is helping it continue to expand its competitive position against competitors such as AMD as increased demand for computing power causes industry shortages.

NVIDIA's strongest barrier to competition is its CUDA platform. CUDA is a parallel computing platform as well as a programming model. It has been completely designed since 2006 and allows general computing to take place on GPUs. The CUDA platform is the first of its kind and is a substantial barrier to all competitors due to the time and capital necessary to build a suitable competitive platform. CUDA is the main driver in artificial intelligence and deep learning across multiple industries because of the higher levels of computing power by GPUs compared to traditional CPU chips as shown in figure 9.

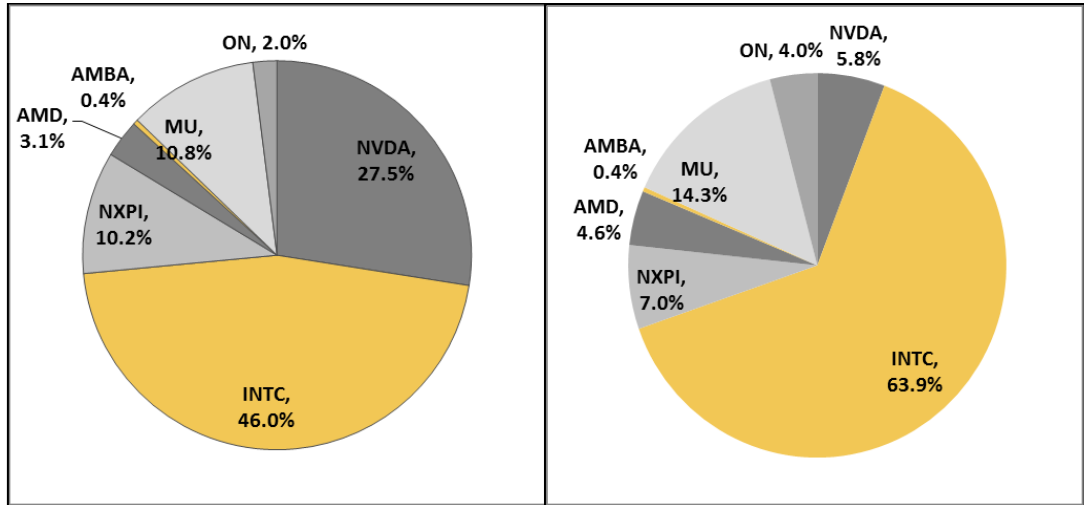
Figure 9: Data Representing GPU vs. CPU Processing Power



Source: About NVIDIA Brochure

The market is very optimistic about NVIDIA's growth opportunities as shown in figures 11 and 12 below. NVDA has 27.5% of the market capitalization even though it only generates 5.8% of total revenue.

Figures 10 and 11: Comparison of NVDA Comps by Market Cap (left) and Revenues (right)

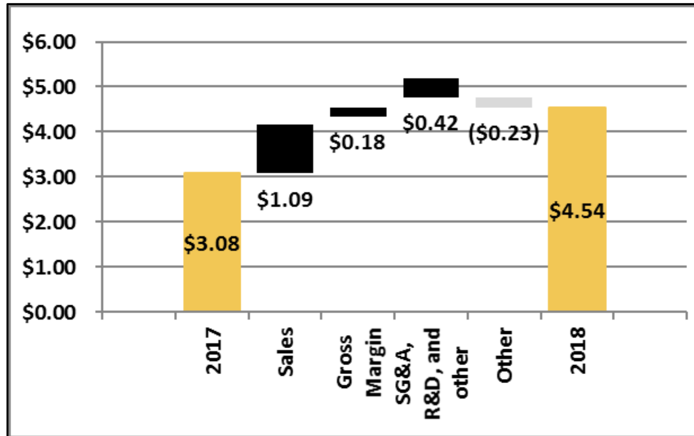


Source: FactSet, IMCP

Financial Analysis

I anticipate EPS to grow to $4.54 in FY 2018. Strong revenue growth should drive a large portion of earnings growth, providing a $1.09 increase in 2018 EPS. A modestly higher gross margin, courtesy of pricing increases due to high demand should add $0.18. I anticipate that SG&A will rise significantly slower than sales, adding $0.42 to earnings. I expect this earnings growth to be offset $0.23 by a return to traditional average effective tax rates of 16% from FY 2017's outlier tax rate of 12%.

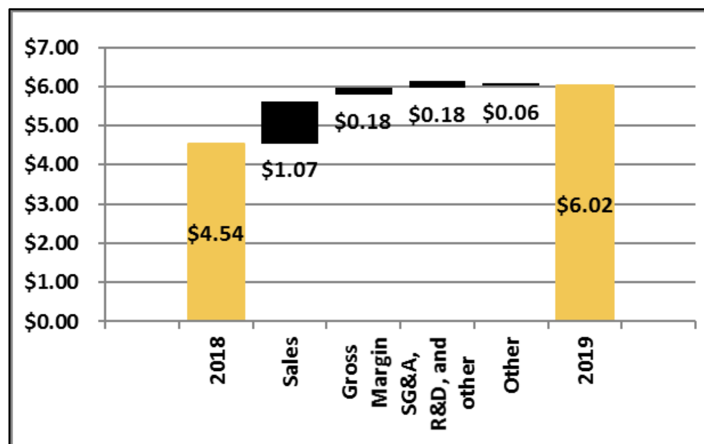
Figure 12: Quantification of 2018 EPS Drivers



Source: Company Reports, IMCP

I expect 2019 EPS to increase $1.48 to $6.02. NVIDIA will gain $1.07 of earnings from continued increased sales across datacenter and automotive segments among others. I anticipate a continued expansion in gross margin and operating margin will add to EPS by $0.18 each. Additionally, I project NVDA will use an increasing cash balance to execute $1 billion in share buybacks, adding $0.06 in FY 2019 EPS.

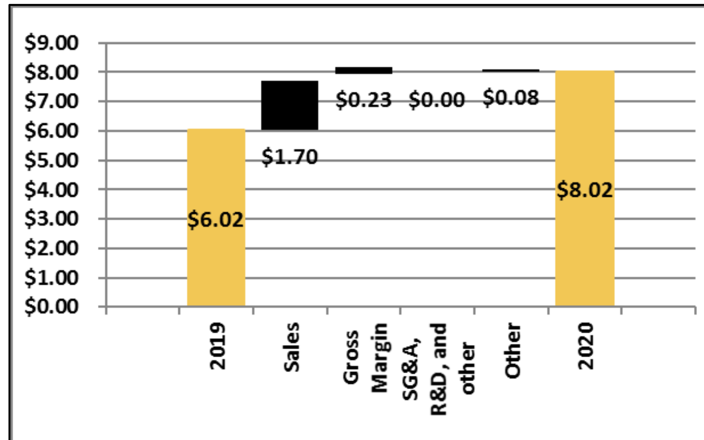
Figure 13: Quantification of 2019 EPS Drivers



Source: Company Reports, IMCP

I believe NVDA will see continued significant earnings growth in 2020 with EPS reaching $8.02. Strong automotive growth will lead increases in revenue adding $1.70 to earnings. Gross margin expansion will add to EPS by $0.23. Continued strong cash flows and increases in cash for NVDA lead me project continued stock buyback from 2019, adding an additional $0.08 to 2020 earnings.

Figure 14: Quantification of 2020 EPS Drivers



Source: Company Reports, IMCP

I am slightly more pessimistic than consensus estimates for 2018 revenues, but my EPS estimates are higher based on my optimistic view on NVDA's ability to continue to expand margins. Looking forward to 2019 and 2020, I am consistently more optimistic than consensus in estimates based on my belief that automotive growth with be significant in the next two years and NVDA's opportunity is currently underappreciated.

Figure 15: Revenue (M) and EPS YoY Estimates vs. Consensus

	FY 2018E	FY2019E	FY2020E
Revenue - Estimate	$ 9,314	$ 11,459	$ 14,639
YoY Growth	*35%*	*23%*	*28%*
Revenue - Consensus	$ 9,438	$ 10,914	$ 12,678
YoY Growth	*37%*	*16%*	*16%*
EPS - Estimate	$ 4.54	$ 6.02	$ 8.02
YoY Growth	*47%*	*33%*	*33%*
EPS - Consensus	$ 4.48	$ 5.26	$ 6.60
YoY Growth	*45%*	*17%*	*25%*

Source: Factset, IMCP

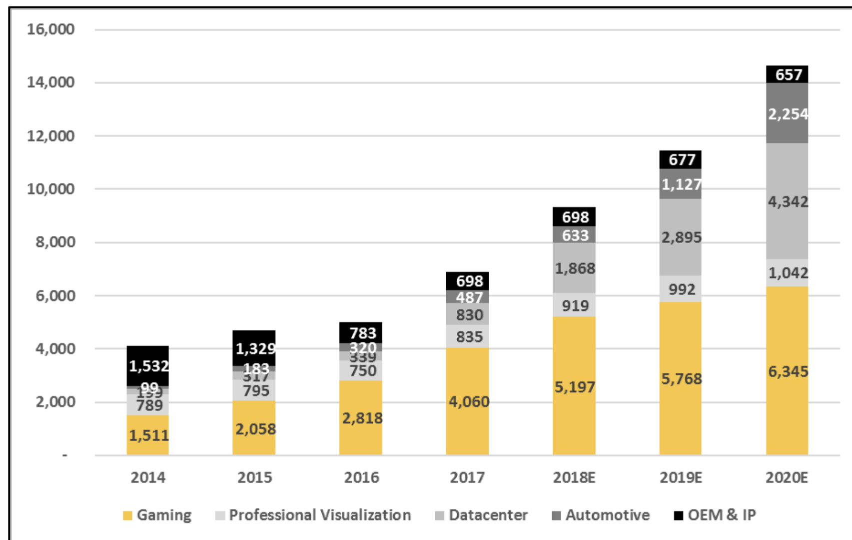
Revenues

NVIDIA's revenue has seen strong growth since falling 3.5% in 2014. While I forecast a stabilization of this growth over the next seven years, I believe strong sales growth will continue through 2020. The automotive and datacenter segments will primarily lead this growth. I anticipate that NVDA's automotive segment will see significant increasing growth of 30%, 78%, and 100% for 2018, 2019, 2020 respectively as autonomous driving becomes widely adopted throughout the automotive industry. Similarly, I see strong, although declining, growth of 125%, 55%, and 50% for 2018, 2019, and 2020 respectively for the datacenter segment as AI and cloud technologies see continued integration into society.

NVIDIA's traditional segments are forecasted to provide stable additional growth to the more explosive automotive and datacenter segments. The gaming segment is historically NVDA's largest, providing 59% of 2017 revenues. This segment has seen strong growth over the past three years, which I project will stabilize over the next two years as market saturation occurs. Similarly, I anticipate that the professional visualization will remain a stable growth segment as AI technologies continue to integrate into fields such as architecture and engineering. NVIDIA's lone struggling segment is OEM. I believe that this segment will continue to realize revenue declines as NVDA transitions to its new business model.

NVIDIA's strong vertical positioning in AI technology is leading a general transition in the business model for the company. Traditionally, NVDA has been recognized for its visualization technologies primarily within gaming-type applications. This trend is forecasted to change going forward with automotive and datacenter segment sales representing 45% of sales compared to 43% in the gaming segment in FY2020 as shown in figure 16 below.

Figure 16: Revenue (M) by Segment for NVDA 2014-2020E

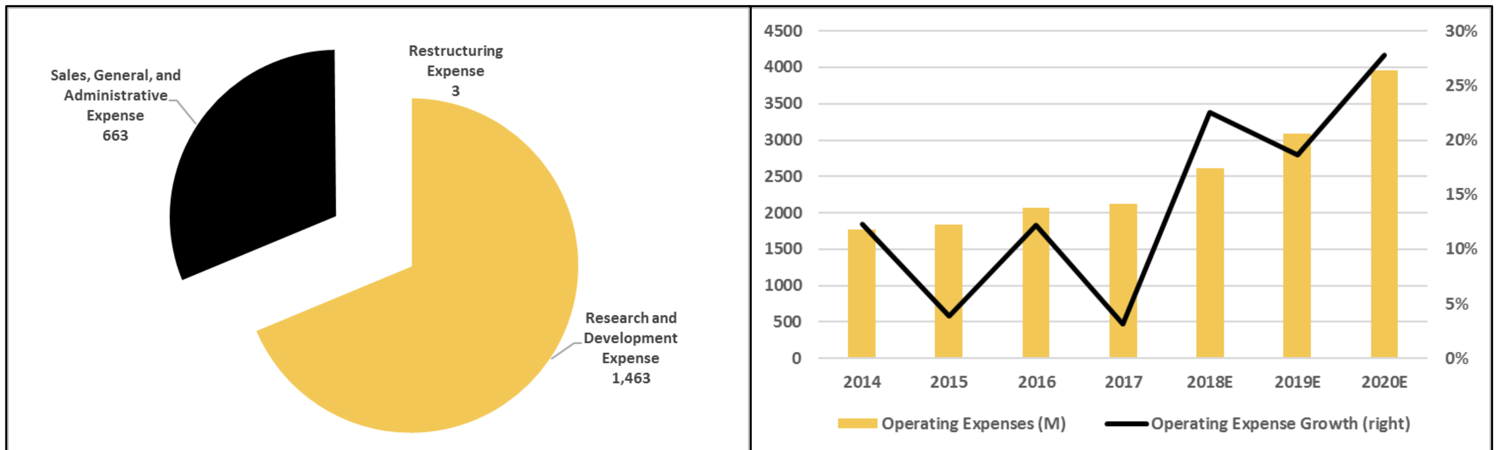


Source: NVIDIA Annual 10K, IMCP

Operating Income and Margins

Operating expenses are composed primarily of research and development expense and sales, general, and administrative expense. NVDA's high previous investment in research and development has allowed recent expenses to grow at a rate significantly lower than sales. R&D expenses for 2017 grew 10% over 2016 while sales growth was 38%. I anticipate that this trend will continue going forward with R&D growing at a stable rate. Similarly, NVIDIA has been able to maintain a stable low growth in SG&A expense; a trend I believe will continue.

Figures 17 & 18: Composition of 2017 Operating Expenses (left) and Operating Expenses vs YoY Operating Expense Growth



Source: NVIDIA Annual 10K, IMCP

Explosive revenue growth coupled with stable growth in operating expenses will allow for continued operating margin expansion going forward. Given the nature of the semiconductor industry, research and development is a consistent commitment for NVIDIA and provides a limiting factor on margin expansion capabilities. I anticipate operating margin to expand to 35% by 2020 from the current margin of 28% in 2017.

Operating margins are forecasted to expand to 35% by FY 2020.

Figure 19: NVDA Operating Margins, 2016 – 2020E

Numbers in M	2016	2017	2018E	2019E	2020E
Sales	5,010	6,910	9,314	11,459	14,639
Costs of Goods Sold	2,199	2,847	3,726	4,469	5,563
Gross Income	2,811	4,063	5,588	6,990	9,076
Gross Margin	*56.1%*	*58.8%*	*60.0%*	*61.0%*	*62.0%*
Operating Expenses					
R&D Expense	1,331	1,463	1,609	1,851	2,184
Growth	*-2%*	*10%*	*10%*	*15%*	*18%*
SG&A Expense	602	663	729	802	882
Growth	*25%*	*10%*	*10%*	*10%*	*10%*
Other Operating Expense	131	3	269	441	886
Operating Income	747	1,934	2,980	3,896	5,124
Operating Margin	*14.9%*	*28.0%*	*32.0%*	*34.0%*	*35.0%*

Source: NVIDIA Annual 10K, IMCP

Return on Equity

NVIDIA had a significant increase ROE during FY 2017, rising from 13.8% in 2016 to 32.6% in 2017. DuPont analysis for NVDA reveals that ROE is driven primarily by operating margins; although, asset turnover jumped in 2017 as well. Essentially, this shows that R&D of the past is paying off as growth in sales rose faster than costs and assets.

Figure 20: NVDA ROE Breakdown, 2015 – 2020E

5-Stage DuPont	2015	2016	2017	2018E	2019E	2020E
EBIT / sales	16.2%	14.9%	28.0%	32.0%	34.0%	35.0%
Sales / avg assets	0.65	0.69	0.80	0.87	0.91	0.96
EBT / EBIT	99.5%	99.5%	98.5%	98.1%	98.5%	98.9%
Net income /EBT	83.6%	82.6%	87.5%	84.0%	84.0%	84.0%
ROA	8.7%	8.4%	19.4%	23.1%	25.7%	27.9%
Avg assets / avg equity	1.63	1.64	1.68	1.56	1.43	1.37
ROE	14.2%	13.8%	32.6%	36.1%	36.7%	38.2%

Source: NVIDIA Annual 10K, IMCP

I expect ROE growth in the next two years to continue to rise due to continued increases in operating margin as discussed above. NVDA's ROE is forecasted to increase to 38% by FY 2020. This growth in ROE will be partially offset in 2019 and 2020 as the assets to equity ratio decreases.

Free Cash Flow

Figure 21: NVDA Free Cash Flow Breakdown, 2015 – 2020E

Free Cash Flow						
Numbers in M	2015	2016	2017	2018E	2019E	2020E
NOPAT	$ 634	$ 617	$ 1,691	$ 2,504	$ 3,273	$ 4,304
Growth	*48.2%*	*-2.7%*	*174.0%*	*48.0%*	*30.7%*	*31.5%*
NWC*	194	78	746	1,006	1,238	1,581
Net fixed assets	1,488	1,317	1,305	1,757	2,162	2,762
Total net operating capital*	1,682	1,395	2,051	2,763	3,400	4,343
Growth	*3.0%*	*-17.1%*	*47.0%*	*34.7%*	*23.0%*	*27.8%*
- Change in NWC*	187	(116)	668	260	232	343
- Change in NFA	(138)	(171)	(12)	452	405	600
FCFF*	$ 585	$ 904	$ 1,035	$ 1,791	$ 2,636	$ 3,360
Growth		*54.5%*	*14.5%*	*73.0%*	*47.2%*	*27.5%*
- After-tax interest expense	3	3	25	48	48	48
FCFE**	$ 582	$ 901	$ 1,010	$ 1,743	$ 2,588	$ 3,312
Growth		*54.8%*	*12.1%*	*72.6%*	*48.5%*	*28.0%*
FCFF per share	$ 1.06	$ 1.67	$ 1.91	$ 3.31	$ 4.92	$ 6.33
Growth		*57.1%*	*14.9%*	*73.0%*	*48.6%*	*28.7%*
FCFE per share	$ 1.05	$ 1.66	$ 1.87	$ 3.22	$ 4.83	$ 6.24
Growth		*57.4%*	*12.5%*	*72.6%*	*49.9%*	*29.3%*

Source: NVIDIA Annual 10K, IMCP

NVDA's free cash flow has been consistently growing over the last several years as sales and NOPAT have risen. I forecast that NOPAT will grow at a much faster pace than net operating capital over the next two years, and NVDA's strong cash balance of $2.3 billion gives it the ability to meet any funding shortfalls that may arise. The firm has repurchased 245 million shares in the past two years and has the option to repurchase $2 billion worth more; I fully expect them to do so in the next two years as the firm is generating about $2 billion or more in FCFE each year.

I expect both FCFF per share and FCFE per share to increase 49% and 50% respectively for FY 2019 and 29% for both in FY 2020 as NOPAT continues to grow.

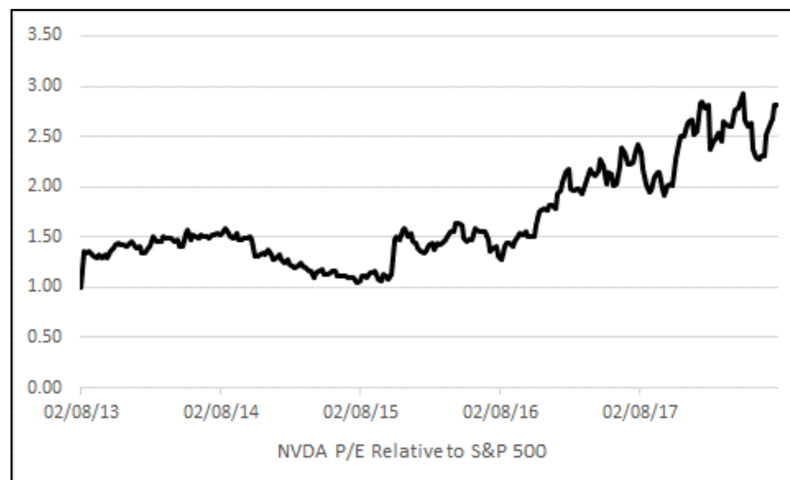
Valuation

NVDA was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is expensive relative to its peers; however, due to NVIDIA's strong vertical positioning and significant growth opportunities, this metric may be unreliable. Relative valuation shows NVDA to be overvalued based on its fundamentals versus its peers in the semiconductor industry. A price to book valuation based on a regression with ROE against peers yielded a price of $315.96. A detailed DCF analysis values NVDA slightly higher, at $233.09 using a terminal P/E of 35; I give this value a bit more weight because it incorporates assumptions that reflect NVDA's growth expectations. Finally, a scenario analysis of the terminal value of the DCF yields a price range of $198 - $270. As a result of these valuations, I value the stock at $250.00.

Trading History

NVDA is currently trading near its five-year high of 2.93 relative to the S&P 500. This is the result of high expectations by analysts believing that earnings will grow significantly in the future. NVDA's current NTM P/E is 50.2 compared to its five-year average of 24.8. While I expect some regression towards that number in the future, I do not believe that is likely to be the case in the near term.

Figure 22: NVDA NTM P/E Relative to S&P 500



Source: Factset

Assuming the firm maintains a 40 NTM P/E at the end of FY 2019, allowing some room for reversion, it should trade at $320.90 by the end of the year.

- Price = P/E x EPS = 40 x $8.02 = $320.90

Discounting $320.90 back to today at a 12.3% cost of equity (explained in Discounted Cash Flow section) yields a price of $285.75. Given NVDA's potential for earnings growth and continued profitability, this seems to be a fair valuation given its current price of $224 and an assumption of minimal P/E regression over the next year.

Relative Valuation

NVIDIA is currently trading at a P/E much higher than its peers, with a P/E NTM of 50.2 compared to an average of 25.7. Investors are willing to temporarily pay a premium for NVDA because it has the

potential for greater growth than many of the other companies in its market segment. Similarly, NVDA's P/B and P/S ratios are significantly higher than those of its peers – both are more than 2 times the average for the group. This reflects NVDA's relatively strong ROE compared to its competitors as well as its expanding net profit margin.

Figure 23: NVDA 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	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
NVDA	NVIDIA CORP	$224.44	$136,011	(0.1)	13.4	13.6	35.2	118.0	16.0	12.0	11.0%	-3.6%	138.0%	62.3%	12.2%	21.8%	1.39	31.3%	B	0.29%	13.9%
INTC	INTEL CORP	$44.48	$208,166	0.2	(3.8)	10.5	28.8	21.0	(3.6)	8.4	12.8%	0.9%	16.7%	19.1%	0.3%	-2.5%	1.24	38.8%	B+	2.33%	37.2%
NXPI	NXP SEMICONDUCTORS NV	$120.00	$40,683	0.6	2.7	4.0	9.6	22.4	2.5	16.9	49.9%	17.6%	8.6%	7.4%	11.3%		0.73	45.3%		0.00%	
AMD	ADVANCED MICRO DEVICES	$12.47	$12,031	2.4	13.6	(11.4)	(7.5)	26.2	21.3	8.0	-440.1%	-60.0%	28.0%	87.0%	176.9%		2.96	260.8%	C	0.00%	
AMBA	AMBARELLA INC	$52.60	$1,752	(2.2)	(9.6)	(0.8)	2.8	6.4	(10.5)	14.8	41.0%	65.5%	-11.8%	-32.2%	-20.2%		0.92	0.0%		0.00%	
MU	MICRON TECHNOLOGY INC	$43.99	$50,867	(0.6)	0.6	5.6	37.9	97.1	7.0	12.5	52.6%	-97.8%	8166.7%	89.3%	-9.5%		2.04	34.0%	B-	0.00%	0.0%
ON	ON SEMICONDUCTOR CORP	$24.74	$10,494	3.4	18.7	25.5	61.2	86.6	18.1	20.2	75.5%	10.7%	8.4%	60.0%	15.3%	70.3%	2.33	121.3%	B-	0.00%	
Average			$65,715	0.5	5.1	6.7	24.0	54.0	7.3	13.3	-28.2%	-9.0%	1193.5%	41.8%	26.6%	29.9%	1.66	75.9%		0.38%	17.0%
Median			$40,683	0.2	2.7	5.6	28.8	26.2	7.0	12.5	41.0%	0.9%	16.7%	60.0%	11.3%	21.8%	1.39	38.8%		0.00%	13.9%
SPX	S&P 500 INDEX	$2,798		(0.2)	4.0	9.2	13.7	23.2	4.7			0.0%	0.5%	9.9%	11.0%						

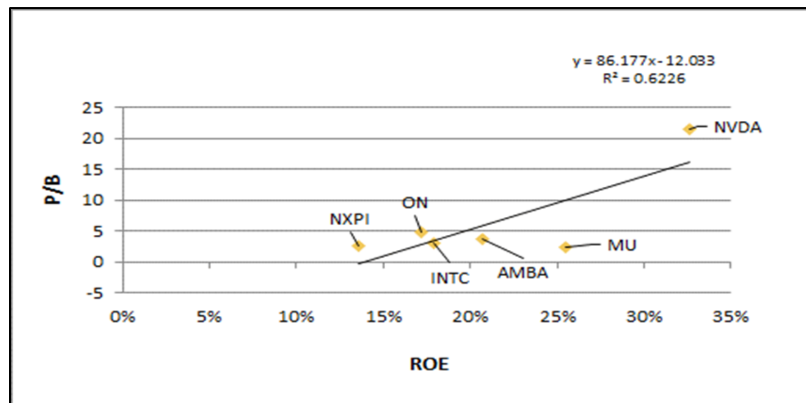
		2016		P/E							2016	2016			EV/	P/CF	P/CF	Sales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2018	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
NVDA	http://www.nvidia.com	32.6%	21.40	17.9	30.5	41.5	55.7	50.2	53.8	48.0	24.1%	19.68	32.0%	27.0%	34.8	42.6	17.7	17.7%	12.0%	11.6%	$14.51
INTC	http://www.intel.com	17.9%	2.93	15.7	14.8	13.3	15.6	13.8	13.7	13.7	21.4%	3.51	28.0%	12.2%	12.5	9.3	7.8	2.1%	3.8%	1.9%	$15.16
NXPI	http://www.nxp.com	13.6%	2.69	16.1	15.0	16.1	25.1	16.7	18.4	16.5	21.7%	4.28	5.5%	1.0%	-20791.3	15.0	15.7	-1.6%	4.9%	23.4%	$44.69
AMD	http://www.amd.com	-26.0%	23.14	44.5	-5.3	-81.0	-147.1	43.2	95.9	34.6	-3.2%	2.82	0.6%	-28.6%	-20.5	49.4	-35.1	16.4%	9.9%	-8.2%	$0.54
AMBA	http://www.ambarella.com	20.7%	3.73	25.4	16.8	18.5	50.6	35.9	26.6	33.3	31.4%	5.65	13.8%	14.4%	21.5	20.0	19.2	-7.0%	16.8%	26.1%	$14.09
MU	http://www.micron.com	25.5%	2.26	12.9	236.0	4.4	6.9	4.5	4.7	5.2	28.2%	2.50	37.2%	20.5%	7.4	4.1	5.4	21.3%	2.3%	19.8%	$19.45
ON	http://www.onsemi.com	17.2%	4.73	13.5	11.8	14.2	27.2	15.5	17.2	14.9	9.8%	2.69	11.1%	4.9%	27.0	9.2	7.9	1.7%	3.1%	2.6%	$5.23
Average		14.5%	8.70	20.8	45.7	3.9	4.9	25.7	32.9	23.7	19.1%	5.88	18.3%	7.3%	-2958.4	21.4	5.5	7.2%	7.6%	11.0%	
Median		17.9%	3.73	16.1	15.0	14.2	25.1	16.7	18.4	16.5	21.7%	3.51	13.8%	12.2%	12.5	15.0	7.9	2.1%	4.9%	11.6%	
SPX	S&P 500 INDEX			17.3	17.2	18.7			21.3	19.2											

Source: Factset, IMCP

A more thorough analysis of P/B and ROE is shown in figure 24. The calculated R-squared of the regression indicates that over 62% of a sampled firm's P/B is explained by its ROE. Note that that AMD is excluded from this regression, because they have a negative ROE. NVDA has the highest P/B and ROE of this grouping, and according to this measure is slightly overvalued. However, given NVDA's strong positioning and growth potential, I believe that ROE will continue to expand, justifying the valuation based on this regression.

- Estimated P/B = Estimated 2019 ROE (36.7%) x 86.177 – 12.033 = 19.594
- Target Price = Estimated P/B (19.594) x 2019E BVPS (18.11) = $354.83
- Discounted Target Price = $354.83 / (1 + 12.3%) = $315.96

Figure 24: P/B vs ROE



Source: Factset, IMCP

Discounted Cash Flow Analysis

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

For this analysis, the company's cost of equity was calculated to be 12.3% 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 2.33%.
- A beta of 1.30 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 12.3% = (2.33 + 1.30 (10.0 – 2.33)).

Stage One - The model's first stage simply discounts fiscal years 2019 and 2020 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $4.83 and $6.24, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of $9.25 per share. Thus, stage one of this discounted cash flow analysis contributes $9.25 to value.

Stage Two - Stage two of the model focuses on fiscal years 2021 to 2025. 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 12.3% cost of equity. I assume 15% sales growth in 2021, stabilizing to 5% through 2025. The ratio of NWC to sales will remain at 2019 levels of 9.26. Similarly, NFA to sales will remain at the 2019 5.3 ratio. NOPAT margin is expected to increase slightly to 30% in 2025 from 28.6% in 2019.

Figure 25: FCFE and Discounted FCFE, 2019 – 2025

	2019	2020	2021	2022	2023	2024	2025
FCFE	$4.83	$6.24	$8.04	$9.31	$10.29	$11.16	$11.99
Discounted FCFE	$4.30	$4.95	$5.68	$5.85	$5.76	$5.56	$5.32

Added together, these discounted cash flows total $28.18.

Stage Three – Net income for the years 2021 – 2025 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $6.02 in 2019 to $12.59 in 2025.

Figure 26: EPS estimates for 2019 – 2025

	2019	2020	2021	2022	2023	2024	2025
EPS	$6.02	$8.02	$9.27	$10.25	$11.11	$11.94	$12.59

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. For this analysis, it is generally assumed that as a company grows larger and matures, its P/E ratio will converge near to the historical average of the company's industry. This method would assume a P/E ratio of 25 at the end of NVDA's terminal year. While this may be a fair multiple at the end of 2021, one must consider what the market will price in today. I believe that a multiple of 25 is extremely unlikely to become priced into NVDA's value within the next year and thus use a more reasonable P/E value of 35 in establishing my terminal value.

Given the assumed terminal earnings per share of $12.59 and a price to earnings ratio of 35, a terminal value of $440.70 per share is calculated. Using the 12.3% cost of equity, this number is discounted back to a present value of $195.66.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $233.09 is calculated (9.25 + 28.18 + 195.66). Given NVDA's current price of $224, this model indicates that the stock is slightly undervalued.

Scenario Analysis

NVIDIA is difficult to value with certainty due to the inherent risks the company has to future growth as well as the inability to predict with certainty the markets pricing in of growth going forward. Given the derived price equation of P/E x EPS, the sensitivity of the DCF model's terminal value to these two factors is high. Too better understand this variability, I conducted a sensitivity analysis determining the effect on the valuation of NVDA of change in terminal year P/E multiple as well as terminal year EPS.

Terminal Price to Earnings – As stated above, determining the expectations that the market will price into NVDA is difficult to do with accuracy. Given NVDA's current P/E of 49 and the peer average of 25, there is a significant range of values that could be reasonably argued for its terminal value providing a large amount of variability in the overall valuation. For this analysis, I used the P/E range of 20-50, representing both the peer average and the 50 P/E which NVDA has been valued around for most of the past year and a half. Also represented in this range is the 35 P/E value I used in my DCF analysis above.

Terminal Earnings Per Share – Given NVDA's valuation is heavily dependent on future growth, I used varying terminal EPS numbers to determine the sensitivity of growth. Due to the fact that this estimate is seven years out, minimizing greatly any accuracy of forecasting, I used a range $11.09-$14.09 for the terminal EPS. This range was based on a $1.50 variability up or down from my forecasted terminal EPS of $12.59 in my model.

Figure 27: NVDA Terminal Value Sensitivity Analysis

		Terminal Price to Earnings						
		20	**25**	**30**	**35**	**40**	**45**	**50**
Terminal EPS	**11.09**	135.90	160.25	185.14	209.76	234.37	258.99	283.61
	11.59	140.34	166.07	191.80	217.53	243.25	268.98	294.71
	12.09	144.78	171.62	198.46	225.29	252.13	278.97	305.81
	12.59	149.22	177.17	205.12	233.06	261.01	288.96	316.91
	13.09	153.66	182.72	211.78	240.83	269.89	298.95	328.01
	13.59	158.10	188.27	218.44	248.60	278.77	308.94	339.10
	14.09	162.54	193.82	225.10	256.37	287.65	318.93	350.20
	Valuation Range:			**$198.46 - $269.89**				

A valuation of NVDA stock was reached using the same discounted cash flow method outlined in the previous section. One can see from this analysis that NVDA is extremely sensitive to both growth and associated risks as well as market expectations. I believe that this analysis results in a reasonable target price range of $198 - $270. Although current market conditions and NVDA's high growth potential increases the possibility of the company's P/E remaining above 40 for the upcoming year, I believe that much of the company's growth has already been priced in by the market and this scenario is unlikely.

Business Risks

Although I have many reasons to be optimistic about NVIDIA, there are several significant risks to the investment thesis based on the firm's growth potential:

Crypto-Currency Exposure:

A portion of NVDA's growth opportunity is directly tied to the crypto-currency market. This market is yet not fully proven and seen by many as a possible financial bubble. A crash in this market space would directly affect NVDA's gaming revenue segment growth going forward.

Competitive marketplace:

Competition in the semiconductor industry is strong both at the same level in the supply chain as well as in end-market companies working on developing their own chips. Companies such as Google are investing significant capital in building their own chips to use in datacenter type applications. This poses a significant risk to NVDA's datacenter segment growth.

Automotive Integration:

Automotive integration of electric vehicles and autonomous driving forecasts to be significant over the next five years and is a primary growth opportunity for NVDA. Tesla, a main customer of NVIDIA, has experienced significant difficulty in high-level production of its main-market vehicle, the Model 3. If difficulties like this persist in the space it poses risk to NVDA's growth opportunity.

Research and Development Variability:

The semiconductor industry is very reliant on the newest levels of technology. This leads to high levels of variability in R&D expenses and the constant possibility of large investments to maintain in a competitive position. NVDA projects to have stable growth in R&D in the coming years but a spike in necessary R&D would have significant negative effects on projected margin expansion.

Poor Allocation of Assets:

NVIDIA's strong cash flows and building cash balance can be used going forward to return value to shareholders in the form of dividends, share buybacks, or non-speculative investments in new technologies. Use of this cash in bad investments, such as possible poor acquisition activity, could destroy this possible shareholder value.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Relatively Low

Barriers of entry in the semiconductor industry are high due to the significant level of research and development needed to reach the level of processing power being provided by industry leaders.

Threat of Substitutes - Medium

NVIDIA faces threat of substitution from its lower-cost, direct competitor, Advanced Micro Devices. This threat, however, is offset by NVDA's highly-evolved, proprietary CUDA platform.

Supplier Power - Low

Although material pricing is a factor that NVDA has little control over, they can mostly pass-through increases in costs to customers due to its power relative to end-market users.

Buyer Power – Low

Consumers and users of graphic processing units such as NVDA's chips only have two main suppliers to choose from, NVDA and AMD. This factor coupled with NVIDIA's CUDA platform add-on service with its chips severely minimize the buyer power customers have.

Intensity of Competition – High

Intensity of competition between NVDA, AMD, and other players in the semiconductor industry is very high. The industry is consistently racing to provide faster and more efficient processing. Adding to this competition is end-market companies, such as Google, investing in building comparable chips in-house.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
CUDA Platform High Operating Margins	OEM Manufacturing Minimal Dividend
Opportunities	**Threats**
Emerging Market Expansion Industrial Shipping	End-Market Competition Lower-Priced Competition

Appendix 3: Income Statement

Income Statement							
Numbers in M	2014	2015	2016	2017	2018E	2019E	2020E
Sales	$ 4,130	$ 4,682	$ 5,010	$ 6,910	$ 9,314	$ 11,459	$ 14,639
Cost of Goods Sold	1,862	2,083	2,199	2,847	3,726	4,469	5,563
Gross Margin	2,268	2,599	2,811	4,063	5,588	6,990	9,076
SG&A, R&D, and other	1,772	1,840	2,064	2,129	2,608	3,094	3,953
EBIT	496	759	747	1,934	2,980	3,896	5,124
Interest	(14)	4	4	29	58	58	58
EBT	510	755	743	1,905	2,923	3,839	5,066
Taxes	70	124	129	239	468	614	811
Income	440	631	614	1,666	2,455	3,224	4,256
Other							
Net income	$ 440	$ 631	$ 614	$ 1,666	$ 2,455	$ 3,224	$ 4,256
Dividends							
Basic Shares	588.0	552.0	543.0	541.0	541.0	535.7	530.5
Earnings per Share	$ 0.75	$ 1.14	$ 1.13	$ 3.08	$ 4.54	$ 6.02	$ 8.02
Dividends per Share	$ 0.31	$ 0.34	$ 0.39	$ 0.48	$ 0.68	$ 0.69	$ 0.72

Appendix 4: Balance Sheets

Balance Sheet							
Numbers in M	2014	2015	2016	2017	2018E	2019E	2020E
Cash	1,152	497	596	1,766	2,312	3,530	5,462
Operating assets ex cash	952	1,090	1,016	1,738	2,347	2,888	3,689
Operating assets	2,104	1,587	1,612	3,504	4,659	6,418	9,151
Operating liabilities	945	896	938	992	1,341	1,650	2,108
NOWC	1,159	691	674	2,512	3,318	4,768	7,043
NOWC ex cash (NWC)	7	194	78	746	1,006	1,238	1,581
NFA	1,626	1,488	1,317	1,305	1,757	2,162	2,762
Invested capital	2,785	2,179	1,991	3,817	5,075	6,930	9,805
Marketable securities	3,520	4,126	4,441	5,032	5,032	5,032	5,032
Total assets	$ 7,250	$ 7,201	$ 7,370	$ 9,841	$ 11,448	$ 13,612	$ 16,945
Short-term and long-term debt	1,356	1,384	-	1,983	1,983	1,983	1,983
Other liabilities	493	503	463	277	277	277	277
Debt/equity-like securities	-	-	1,500	827	-	-	-
Equity	4,456	4,418	4,469	5,762	7,847	9,702	12,577
Total supplied capital	$ 6,305	$ 6,305	$ 6,432	$ 8,849	$ 10,107	$ 11,962	$ 14,837
Total liabilities and equity	$ 7,250	$ 7,201	$ 7,370	$ 9,841	$ 11,448	$ 13,612	$ 16,945
Balance	*0*	*0*	*0*	*0*	*0*	*0*	*0*

Appendix 5: Sales Forecast

Sales							
Numbers in M	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Sales	$ 4,130	$ 4,682	$ 5,010	$ 6,910	$ 9,314	$ 11,459	$ 14,639
Growth		*13.4%*	*7.0%*	*37.9%*	*34.8%*	*23.0%*	*27.8%*
Gaming	1,511	2,058	2,818	4,060	5,197	5,768	6,345
Growth	*0.0%*	*36.2%*	*36.9%*	*44.1%*	*28.0%*	*11.0%*	*10.0%*
% of sales	*36.6%*	*44.0%*	*56.2%*	*58.8%*	*55.8%*	*50.3%*	*43.3%*
Professional Visualization	789	795	750	835	919	992	1,042
Growth	*0.0%*	*0.8%*	*-5.7%*	*11.3%*	*10.0%*	*8.0%*	*5.0%*
% of sales	*19.1%*	*17.0%*	*15.0%*	*12.1%*	*9.9%*	*2.0%*	*7.1%*
Datacenter	199	317	339	830	1,868	2,895	4,342
Growth	*0.0%*	*59.3%*	*6.9%*	*144.8%*	*125.0%*	*55.0%*	*50.0%*
% of sales	*4.8%*	*6.8%*	*6.8%*	*12.0%*	*20.1%*	*25.3%*	*29.7%*
Automotive	99	183	320	487	633	1,127	2,254
Growth	*0.0%*	*84.8%*	*74.9%*	*52.2%*	*30.0%*	*78.0%*	*100.0%*
% of sales	*2.4%*	*3.9%*	*6.4%*	*7.0%*	*6.8%*	*9.8%*	*15.4%*
OEM & IP	1,532	1,329	783	698	698	677	657
Growth	*0.0%*	*-13.3%*	*-41.1%*	*-10.9%*	*0.0%*	*-3.0%*	*-3.0%*
% of sales	*37.1%*	*28.4%*	*15.6%*	*10.1%*	*7.5%*	*5.9%*	*4.5%*

Appendix 6: Ratios

Ratios	2014	2015	2016	2017	2018E	2019E	2020E
Profitability							
Gross margin	54.9%	55.5%	56.1%	58.8%	60.0%	61.0%	62.0%
Operating (EBIT) margin	12.0%	16.2%	14.9%	28.0%	32.0%	34.0%	35.0%
Net profit margin	10.7%	13.5%	12.3%	24.1%	26.4%	28.1%	29.1%
Activity							
NFA (gross) turnover		3.01	3.57	5.27	6.08	5.85	5.95
Total asset turnover		0.65	0.69	0.80	0.87	0.91	0.96
Liquidity							
Op asset / op liab	2.23	1.77	1.72	3.53	3.47	3.89	4.34
NOWC Percent of sales		19.8%	13.6%	23.1%	31.3%	35.3%	40.3%
Solvency							
Debt to assets	18.7%	19.2%	0.0%	20.2%	17.3%	14.6%	11.7%
Debt to equity	30.4%	31.3%	0.0%	34.4%	25.3%	20.4%	15.8%
Other liab to assets	6.8%	7.0%	6.3%	2.8%	2.4%	2.0%	1.6%
Total debt to assets	25.5%	26.2%	6.3%	23.0%	19.7%	16.6%	13.3%
Total liabilities to assets	38.5%	38.6%	19.0%	33.0%	31.5%	28.7%	25.8%
Debt to EBIT	2.73	1.82	0.00	1.03	0.67	0.51	0.39
EBIT/interest	(35.43)	189.75	186.75	66.69	51.83	67.75	89.10
Debt to total net op capital	48.7%	63.5%	0.0%	52.0%	39.1%	28.6%	20.2%
ROIC							
NOPAT to sales	10.4%	13.5%	12.3%	24.5%	26.9%	28.6%	29.4%
Sales to EOY NOWC	3.56	6.78	7.43	2.75	2.81	2.40	2.08
Sales to EOY NFA	2.54	3.15	3.80	5.30	5.30	5.30	5.30
Sales to EOY IC	1.48	2.15	2.52	1.81	1.84	1.65	1.49
Total ROIC using EOY IC	15.4%	29.1%	31.0%	44.3%	49.3%	47.2%	43.9%
ROE							
5-stage							
EBIT / sales		16.2%	14.9%	28.0%	32.0%	34.0%	35.0%
Sales / avg assets		0.65	0.69	0.80	0.87	0.91	0.96
EBT / EBIT		99.5%	99.5%	98.5%	98.1%	98.5%	98.9%
Net income /EBT		83.6%	82.6%	87.5%	84.0%	84.0%	84.0%
ROA		8.7%	8.4%	19.4%	23.1%	25.7%	27.9%
Avg assets / avg equity		1.63	1.64	1.68	1.56	1.43	1.37
ROE		14.2%	13.8%	32.6%	36.1%	36.7%	38.2%
3-stage							
Net income / sales		13.5%	12.3%	24.1%	26.4%	28.1%	29.1%
Sales / avg assets		0.65	0.69	0.80	0.87	0.91	0.96
ROA		8.7%	8.4%	19.4%	23.1%	25.7%	27.9%
Avg assets / avg equity		1.63	1.64	1.68	1.56	1.43	1.37
ROE		14.2%	13.8%	32.6%	36.1%	36.7%	38.2%
Payout Ratio		29.8%	34.9%	15.7%	15.1%	11.5%	8.9%
Retention Ratio		70.2%	65.1%	84.3%	84.9%	88.5%	91.1%
Sustainable Growth Rate		10.0%	9.0%	27.4%	30.6%	32.5%	34.8%

Appendix 7: 3-stage DCF Model

3 Stage Discounted Cash Flow							
	Year						
	1	2	3	4	5	6	7
	First Stage		**Second Stage**				
Cash flows	2019	2020	2021	2022	2023	2024	2025
Sales Growth	*23.0%*	*27.8%*	*15.0%*	*10.0%*	*8.0%*	*7.0%*	*5.0%*
NOPAT / S	*28.6%*	*29.4%*	*29.5%*	*29.6%*	*29.8%*	*29.9%*	*30.0%*
S / NWC	*9.26*	*9.26*	*9.26*	*9.26*	*9.26*	*9.26*	*9.26*
S / NFA (EOY)	*5.30*	*5.30*	*5.30*	*5.30*	*5.30*	*5.30*	*5.30*
S / IC (EOY)	*3.37*	*3.37*	*3.37*	*3.37*	*3.37*	*3.37*	*3.37*
ROIC (EOY)	*96.3%*	*99.1%*	*99.5%*	*99.9%*	*100.3%*	*100.7%*	*101.1%*
ROIC (BOY)		*126.6%*	*114.4%*	*109.9%*	*108.3%*	*107.8%*	*106.2%*
Share Growth		*-1.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Sales	$11,459	$14,639	$16,835	$18,519	$20,000	$21,400	$22,470
NOPAT	$3,273	$4,304	$4,970	$5,489	$5,952	$6,394	$6,741
Growth		*31.5%*	*15.5%*	*10.4%*	*8.4%*	*7.4%*	*5.4%*
- Change in NWC	232	343	237	182	160	151	116
NWC EOY	*1238*	*1581*	*1818*	*2000*	*2160*	*2311*	*2427*
Growth NWC		*27.8%*	*15.0%*	*10.0%*	*8.0%*	*7.0%*	*5.0%*
- Chg NFA	405	600	414	318	280	264	202
NFA EOY	*2,162*	*2,762*	*3,176*	*3,494*	*3,774*	*4,038*	*4,240*
Growth NFA		*27.8%*	*15.0%*	*10.0%*	*8.0%*	*7.0%*	*5.0%*
Total inv in op cap	636	944	651	499	440	415	317
Total net op cap	3400	4343	4995	5494	5934	6349	6666
FCFF	$2,636	$3,360	$4,318	$4,990	$5,513	$5,979	$6,424
% of sales	*23.0%*	*23.0%*	*25.7%*	*26.9%*	*27.6%*	*27.9%*	*28.6%*
Growth		*27.5%*	*28.5%*	*15.5%*	*10.5%*	*8.5%*	*7.4%*
- Interest (1-tax rate)	48	48	51	53	56	59	62
Growth		*0.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
FCFE w/o debt	$2,588	$3,312	$4,268	$4,936	$5,457	$5,920	$6,362
% of sales	*22.6%*	*22.6%*	*25.3%*	*26.7%*	*27.3%*	*27.7%*	*28.3%*
Growth		*28.0%*	*28.8%*	*15.7%*	*10.5%*	*8.5%*	*7.5%*
/ No Shares	535.7	530.5	530.5	530.5	530.5	530.5	530.5
FCFE	$4.83	$6.24	$8.04	$9.31	$10.29	$11.16	$11.99
Growth		*29.3%*	*28.8%*	*15.7%*	*10.5%*	*8.5%*	*7.5%*
* Discount factor	0.89	0.79	0.71	0.63	0.56	0.50	0.44
Discounted FCFE	$4.30	$4.95	$5.68	$5.85	$5.76	$5.56	$5.32
Third Stage							
Terminal value P/E							
Net income	$3,224	$4,256	$4,919	$5,436	$5,896	$6,336	$6,679
% of sales	*28.1%*	*29.1%*	*29.2%*	*29.4%*	*29.5%*	*29.6%*	*29.7%*
EPS	$6.02	$8.02	$9.27	$10.25	$11.11	$11.94	$12.59
Growth		*33.3%*	*15.6%*	*10.5%*	*8.5%*	*7.5%*	*5.4%*
Terminal P/E							35.00
* Terminal EPS							$12.59
Terminal value							$440.70
* Discount factor							0.44
Discounted terminal value							$195.66

Summary			
First stage	$9.25	Present value of first 2 year cash flow	
Second stage	$28.18	Present value of year 3-7 cash flow	
Third stage	$195.66	Present value of terminal value P/E	
Value (P/E)	**$233.09**	= value at beg of fiscal yr	2019